Installation and characterisation of a cylindrical measurement trap and mass measurements of transuranium elements at TRIGA-TRAP

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Jacques Joseph Wilhelmus van de Laar

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Contents

List of Figures

List of Tables

Zusammenfassung

Das TRIGA-TRAP Experiment ist ein Penningfallen-Massenspektrometer, das am Forschungsreaktor TRIGA Mainz angesiedelt wurde. Neben der Untersuchung von Basiseigenschaften exotischer Nuklide wie Spaltprodukte können auch langlebige Aktinide untersucht werden. Da in der Vergangenheit Unstimmigkeiten bei früher an TRIGA-TRAP durchgeführten Massenmessungen von Transuranen aufgetreten sind, wurden bereits im Vorfeld dieser Arbeit ein paar Veränderungen im Experimentaufbau durchgeführt. Im Rahmen dieser Arbeit wurde eine neue Messfalle entworfen, eingebaut und charakterisiert. Nachdem diese Charakterisierung abgeschlossen war, wurden Massenmessungen an elf verschiedenen Aktinidisotopen durchgeführt. Neben den vier Isotopen, welche 2013 bereits an TRIGA-TRAP gemessen wurden, wurden sieben neue Isotope gemessen. Nach der Datenanalyse der Massenmessungen sollten die Massen bei der Atomic Mass Evaluation (AME) aufgenommen werden. Dabei wurde festgestellt, dass die neuen Massenmessungen von TRIGA-TRAP die Masse des als Referenz verwendeten ^{208}Pb verschieben. Dies hätte zur Folge, dass die im Vorfeld bestimmten TRIGA-TRAP-spezifischen Korrekturterme nicht mehr angewendet werden können, da diese auch mit ^{208}Pb bestimmt wurden. Erst nachdem mit dem PENTATRAP Massenspektrometer in Heidelberg eine unabhängige präzisere Massenbestimmung für ^{208}Pb durchgeführt wurde, konnten alle für diese Arbeit erhaltenen Daten ein weiteres Mal evaluiert werden. Auch diese Ergebnisse wurden anschließend an die AME übermittelt. Diese daraus resultierenden Ergebnisse zeigen, dass im Bereich der Aktinide noch viele interessante Möglichkeiten für die Massenspektrometrie mit Penningfallen vorhanden sind.

Abstract

The TRIGA-TRAP experiment is a Penning trap mass spectrometer located at the research reactor TRIGA Mainz. In addition to the investigation of basic properties of exotic nuclides such as fission products, long-lived actinides can also be studied. ince inconsistencies in the mass measurements of transuranium elements carried out at TRIGA-TRAP have occurred in the past, changes in the experimental setup were were already carried out before the start of this work. As part of this work, a new measurement trap was designed, installed, and characterized. After this characterization was completed, mass measurements were performed on eleven different actinide isotopes. In addition to the four isotopes that were already measured at TRIGA-TRAP in 2013, seven new isotopes were measured. After the evaluation of the mass measurements, the masses were submitted for integration into the Atomic Mass Evaluation (AME). It was found that the new mass measurements from TRIGA-TRAP shifted the mass of ^{208}Pb used as a reference. This means that the TRIGA-TRAP-specific correction terms determined in the evaluation could no longer be applied, since these were also determined with ^{208}Pb. Only after the PENTATRAP mass spectrometer in Heidelberg determined the mass of Pb-208 independently and with higher precision, all data obtained within this work could be evaluated a second time and also these results were subsequently submitted to the AME. These results show that there are still many interesting possibilities for mass spectrometry with Penning traps in the actinide region.

1 Introduction

The masses of atoms play a very important role in nuclear physics and the nuclear mass is a unique fingerprint of an atomic nucleus [1]. With the help of Einstein's well-known formula

$$E = mc^2 \tag{1.1}$$

the relation between the energy E and the mass m was established. From this it is clear that the mass of an atomic nucleus also represents the binding energy and thus all interactions taking place there as well. In 1907, the first mass spectrograph was built by Joseph John Thomson. In 1913 he made the discovery, which was very important for nuclear physics, that the element neon consists of two species with different masses, $A = 20$ and 22. Thus, he was the first to directly observe two different nuclear species of the same element and who has shown that elements can consist of different isotopes [2]. Jeffrey Dempster built the first mass spectrometer, with a low resolving power of $R = 100$. In 1919, his student Francis William Aston improved the instrument, which was now able to focus the ions, regardless of their velocity (energy focussing) [3]. The resolving power was raised to $R = 130$. During the following years he developed this instrument further, to a machine with higher resolving power ($R = 600$). The work of several researchers led in the 1930's to the construction of highly resolving machines ($R = 3000, 6000, 10000$). This was the basis for the development of the first double focusing device by A. O. Nier in the late 1940's [4]. This again was the starting point for the development during the next thirty years, which resulted in the first Penning trap mass spectrometer [5].

In order to be able to make, evaluate, and compare mass measurements, units had to be defined as well. The most widely used system of units is the International

System of Units (Système international d'unités). Since May 20, 2019, SI units have been defined using physical constants. Thus, since then, there is also a new definition for the kilogram and for the mole. This is important for mass spectrometry as well. In atomic mass spectrometry, the mass is usually given in atomic mass units. This is given as $1/12$ of the mass of the ^{12}C atom in the ground state. Since the mole used to be defined as the number of ^{12}C atoms in 0.012 kg, the molar mass of ^{12}C was exactly 0.012 $\mathrm{kg/mol}$. Because of the new definition of the mole, this is no longer valid. Now ^{12}C has a mass of 0.012 $\mathrm{kg/mol}$ with a relative uncertainty of $4.5 \cdot 10^{-10}$ [6]. Applying Eq. 1.1 the mass can also be expressed in energy. By using the following conversion

$$1\,\mathrm{u} = 931494.10242(28)\,\mathrm{keV} \tag{1.2}$$

it is now easy to convert between the units [7]. Another possibility to express the atomic mass is via the mass excess $\Delta ME(A, Z)$

$$\Delta M(A, Z) = M(A, Z) - A \tag{1.3}$$

where $\Delta M(A, Z)$ is the mass excess of the nuclide with mass number A and Z protons, and M(A,Z) is the mass of the nuclide in u. Nuclear transformations have an influence on the binding energy and through this on the mass of nuclei involved. This change can be expressed in the Q-value. The Q-value describes the reaction energy of a nuclear reaction, analogous to the reaction enthalpy ΔH in a chemical reaction. It can be determined from the mass difference of the reactants involved in the nuclear reaction. The advantage of using the mass excess shall be shown, as an example, by the determination of Q_α of the α decay of ^{242}Pu.

$$\begin{aligned} m(^{4}\mathrm{He}) &= 4.00260325413\,\mathrm{u} & \Delta M(^{4}\mathrm{He}) &= 2424.91587\,\mathrm{keV} \\ m(^{242}\mathrm{Pu}) &= 242.058740979\,\mathrm{u} & \Delta M(^{242}\mathrm{Pu}) &= 54716.876\,\mathrm{keV} \\ m(^{238}\mathrm{U}) &= 238.050786936\,\mathrm{u} & \Delta M(^{238}\mathrm{U}) &= 47307.732\,\mathrm{keV} \end{aligned}$$

$$\begin{aligned}Q_\alpha &= [m(^{242}\mathrm{Pu}) - (m(^{238}\mathrm{U}) + m(^{4}\mathrm{He}))] \cdot c^2 = \Delta M(^{242}\mathrm{Pu}) - (\Delta M(^{238}\mathrm{U}) + \Delta M(^{4}\mathrm{He}))\\ &= [242.058740979\,\mathrm{u} - (238.050786936\,\mathrm{u} + 4.00260325413\,\mathrm{u}] \cdot c^2 = 0.00535078887\,\mathrm{u} \cdot c^2\\ &= 54716.876\,\mathrm{keV} - (47307.732\,\mathrm{keV} + 2424.91587\,\mathrm{keV}) = 4984.22813\,\mathrm{keV}\end{aligned}$$

The values were taken from [8]. It is obvious that working with the last expression is much more convenient, than working with the one with the quadratic term.

1.1 The nuclear mass

The great interest in nuclear masses arises from the fact that the mass of an atomic nucleus $M(N, Z)$ consisting of Z protons and N neutrons is smaller than the sum of the masses of the individual Z protons and N neutrons. This mass difference can be expressed as the binding energy $B(N, Z)$ of the nucleons in the atomic nucleus, thanks to Albert Einstein's world-famous formula (Eq. 1.1). This effect was already discovered in 1920 by Aston [9] and is called "mass defect". Because of this relation between the nuclear mass and the binding energy of the atomic nucleus, the atomic mass is a fundamental parameter in physics. Since then, the number of known nuclides has increased drastically. There are at present 118 elements with more then 3200 different nuclides known (excluding isomers) [10], but only 244 of them are stable [11]. All other nuclides are radioactive and undergo a decay. The lifetimes of nuclides vary from $\sim 10^{19}$ years to picoseconds. To explain the stability of the nuclides, models were developed. The Liquid Drop Model (LDM) was a very early and quite simple model, which though works surprisingly well. However, the elements from rutherfordium ($Z = 104$) onwards to higher proton numbers would decay immediately by spontaneous fission (SF) according to this model [12]. The elements with $Z \geq 104$, the so-called SuperHeavy Elements (SHE), do not decay immediately by SF due to nuclear shell stabilization, the effects of which are not included in the LDM.

1.1.1 Liquid Drop Model

The LDM is a theoretical model presented by Gamov in 1930. It assumes that the nucleus consists of an incompressible ionic liquid with homogeneous density. The surface tension holds the nucleus together, whereas the Coulomb forces between the protons in the nucleus act in the opposite direction. To gain a better understanding of the stability of nuclei, the binding energy of the nucleus is very important. In order to determine the binding energy per nucleon, Carl-Friedrich von Weizäcker developed in 1935 a semi-empirical formula on the basis of the droplet model of an atomic nucleus presented by Gamow [13]. Bethe and Bacher [14] modified the formula in 1936 and obtained what is still known as the Bethe-Weizäcker formula today

$$B(Z, A) = a_V A - a_s A^{2/3} - a_c \frac{Z\,(Z-1)}{A^{1/3}} - a_a \frac{(A-2Z)^2}{A} + \delta. \tag{1.4}$$

Here Z is the proton number, A the mass number ($A = Z + N$) and a_V, a_s, a_c as well as a_a are empirically determined constants. The equation consists of several terms. Here $a_V A$ is the volume term, it describes the strong nuclear force which acts on all nucleons in the same way and therefore does not depend on Z. Since the nucleons at the surface of the nucleus have fewer neighboring nucleons, the binding energy must be corrected by the surface term $a_s A^{2/3}$. The Coulomb term $a_c \frac{Z(Z-1)}{A^{1/3}}$ accounts for the Coulomb repulsion of the protons in the nucleus. The asymmetry term is a quantum mechanical contribution that considers the different binding energies of nuclei with $N = Z$ and $N \neq Z$. A classical set of parameters is listed in Tab. 1.1. δ is the pairing term, which takes into account the special stability of fully paired nucleons in an even-even nucleus and, in contrast, the low stability of odd-odd nuclei. Therefore this term is parametrized as follows

$$\delta = \begin{cases} +11/A^{1/2}, & \text{for even-even nuclei} \\ 0, & \text{for even-odd and odd-even nuclei} \\ -11/A^{1/2}, & \text{odd-odd nuclei} \end{cases} \tag{1.5}$$

Table 1.1: Parameters used in the Bethe-Weizäcker mass formula (BWMF) in Eq. 1.4. Values taken from [15].

Parameter	values
a_V	14.1 MeV
a_s	13.1 MeV
a_c	0.585 MeV
a_a	19.4 MeV

1.1.2 Nuclear shell model

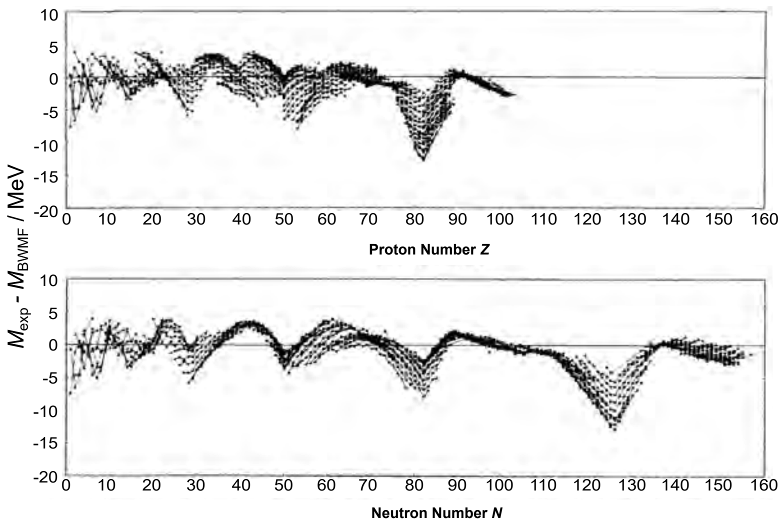

Figure 1.1: Comparison of the ground-state masses in MeV between experimentally observed data, and LDM calculations. Pronounced deviations are observed at nucleon numbers 28, 50, 82 and 126: the so-called magic numbers. The figure is adapted from [16].

The LDM shows good agreement with the masses and binding energies. However, if the differences of the experimentally determined and the calculated LDM masses are plotted against the proton number Z or the neutron number N, systematic deviations appear at certain proton and neutron numbers (Fig. 1.1). This effect is clearly visible at the numbers 28, 50, 82, and 126, showing that the experimentally determined mass is lighter at these numbers and therefore the nucleus has more binding energy than predicted by the LDM. This energy gain is in the order of

10 MeV. It is not that obvious at the numbers 2, 8, and 20 as these are light compared to systems properly approximated by a liquid droplet, but again there is extra stability. Since this stability could not be explained, the proton and neutron numbers 2, 8, 20, 28, 50, 82, and 126 were called “magic numbers”. This particular stability of nuclei with magic numbers however can be described by the nuclear shell model. In this model, the shells of protons and neutrons must be considered independently of each other. Here, each nucleon occupies a single-particle orbit in the nucleus analogous to the electron shell model. The magic numbers can be explained up to 20, using a square-well and harmonic-oscillator potential for the calculation of the energies of these orbits [17, 18]. To explain magic numbers larger than 20, a spin-orbit-coupling should be considered as well [19, 20].

Shell closure become visible when plotting the experimental two-neutron separation energy

$$S_{2n}(N,Z) = B(N,Z) - B(N-2,Z) \tag{1.6}$$

or the two-proton separation energy

$$S_{2p}(N,Z) = B(N,Z) - B(N,Z-2). \tag{1.7}$$

This is because, analogous to the electron shell model, the last nucleon in a full shell is bound more strongly than nucleons which are added later. So a reduction of the separation energy after shell closures can be observed. To avoid the odd-even staggering of the binding energy due to pairing, the two neutron, respectively two proton separation energy is used, because this effect cancels out there. If now, e.g., the two-neutron separation energy is plotted against the number of neutrons N as shown in Fig. 1.2, one can clearly observe a stronger decrease of the separation energy after the neutron number $N = 126$.

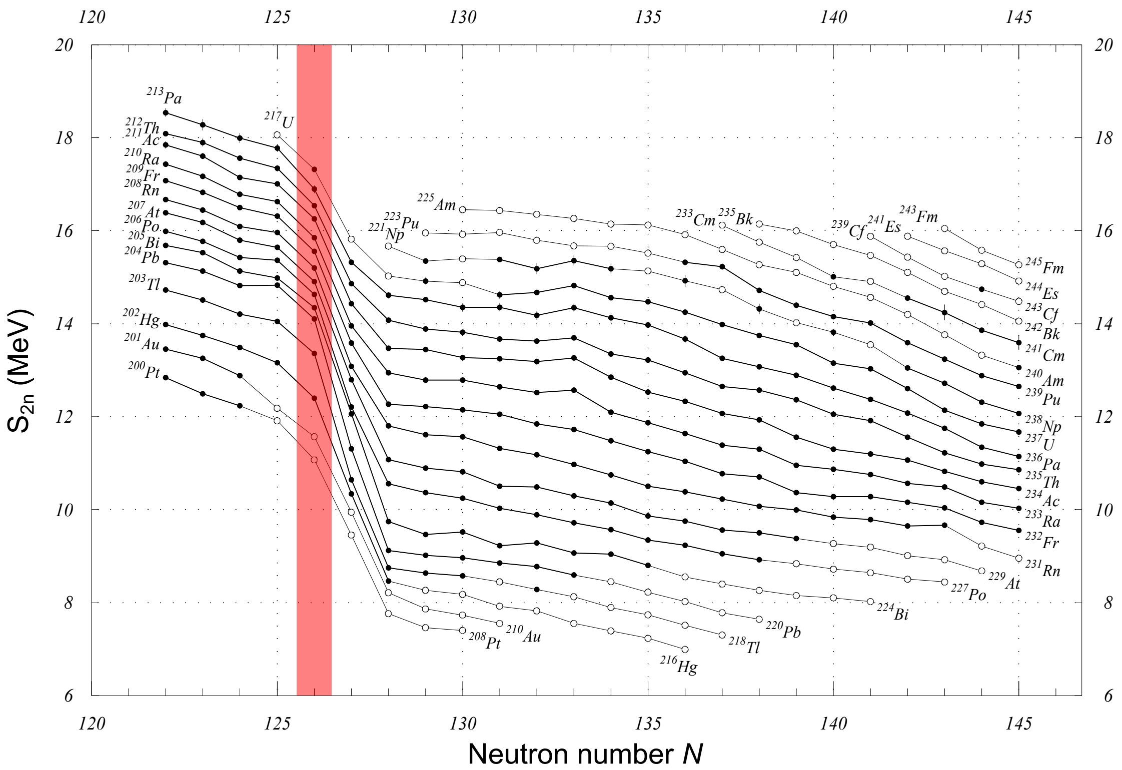

Figure 1.2: Two-neutron separation energies $N = 122$ to 145 for the elements from Pt to Fm. The red mark shows $N = 126$. Figure is adapted from [8].

The shell model is only capable to describe spherical nuclei, because the effect of the deformation of the nuclei is not taken into account. This is valid for magic numbers up to $Z = 82$ and $N = 126$, because these correspond to spherical nuclei. For $N = 152$, 162 respectively $Z = 100$ these magic numbers appear in deformed nuclei [21, 22], which can be described by the Nilsson-model [23].

1.1.3 The Atomic Mass Evaluation (AME)

The knowledge of atoms and atomic nuclei has increased exorbitantly in the first half of the last century and it soon became clear that the properties of nuclides had to be compiled. Livingston and Bethe in 1937 first summarized data from mass spectrometry, nuclear reactions and radioactive decays in tables [24]. Over time, more and more data were published and it became apparent that the mass of many nuclides was overdetermined. The Dutch physicist Aaldert H. Wapstra introduced the least squares method in the 1950s as a solution to the problem of overdetermination and so the consistency of different results could be checked [5]. The first tables containing an overview of atomic masses determined in this way were published by Wapstra [25, 26] and Huizenga [27]. Since that time Wapstra continued the evaluation of experimental atomic masses and in 1971 he published "The 1971 atomic mass evaluation". It contained atomic masses obtained by least squares fit from experimental data for all nuclides for which data were available and estimations for other nuclides obtained from systematics [28, 29, 30, 31]. It should not go unmentioned that Wapstra was also involved in the definition of the unified atomic mass unit [32]. The last atomic mass evaluation (AME) was published in 2021, the AME2020 [33, 8]. Here, 2550 atomic masses have been evaluated from experimental data. This variety of experimentally determined masses helped increasing not only the understanding of nuclear structure, but also of phenomena in other areas of physics. There are mainly two different methods used for atomic mass measurements. First, there is the mass-spectroscopic method, which is often called the direct method. The mass is determined by a trajectory, the cyclotron frequency, or phase of an ion in a magnetic field, or by the time of flight. The other, so-called indirect method uses reaction energies to determine the difference between two or more masses based on specific nuclear reactions or decays. It does not matter which method is used, the relation between the atomic masses is always determined experimentally. An attempt is always made to use the primary experimental information in the data analysis rather than the absolutely determined masses. This has the advantage that in later recalibrations the masses are automatically adjusted.

1.2 Penning-trap facilities

For high-precision mass measurements, Penning-trap mass spectrometry should be chosen as the most accurate method so far [33]. LIONTRAP in Mainz [34], FSU/MIT-TRAP in Florida [35] and PENTATRAP in Heidelberg [36] have recently published results with ultra-high precision (10^{-11}). However, such measurements can only be performed on stable or very long-lived and often light nuclides. Currently, there are seven Penning-trap experiments which study radioactive nuclides: CPT in Argonne, USA [37], ISOLTRAP at CERN, Geneva, Switzerland [38], JYFLTRAP in Jyväskyla, Finland [39], LEBIT in East-Lansing, USA [40], SHIPTRAP in Darmstadt, Germany [41], TITAN in Vancouver, Canada [42], and TRIGA-TRAP in Mainz, Germany [43]. There are three methods to produce the required radioactive nuclides [1]. 1. Heavy-ion collisions, where the energy of the projectiles is near the Coulomb barrier. CPT and SHIPTRAP make use of this method. 2. if the energy of the projectiles is over the Fermi domain, the nuclides are obtained by fragmentation. This method is used by LEBIT. 3. Medium-mass neutron-rich nuclei are produced by fission. In this way the production of radioactive ions is done for ISOLTRAP, JYFLTRAP, TITAN and TRIGA-TRAP.

An international center for high-energy ion and antiproton beams is currently being built in Darmstadt at the GSI Helmholtzzentrum für Schwerionenforschung [44]. This center is called FAIR (**F**acility for **A**ntiproton and **I**on **R**esearch). Several experimental setups are planned there. One of these planned experiments is MATS (Precision **M**easurement of very short-lived nuclei using an **A**dvanced **T**rapping **S**ystem for highly-charged ions). MATS will be installed in the low-energy branch of the Super-Fragment Separator (S-FRS) at FAIR. The MATS Collaboration consists of groups around the world with a wealth of experience in Penning-trap mass spectrometry [45]. TRIGA-TRAP is one of the development platforms for MATS and will become part of the future MATS setup. The TRIGA-TRAP experiment is a double Penning-trap mass spectrometer used to perform high-precision mass measurements of long-lived transuranium isotopes and short-lived fission-products at the research reactor TRIGA (Training, Research, Isotopes, General Atomics) Mainz. In 2014, Eibach et al. reported the first measurement of the masses of ^{241,243}Am, ^{244}Pu, and ^{249}Cf with TRIGA-TRAP [46]. Since the results of the measurement campaign at that time could not be reproduced, the TRIGA-TRAP experiment was modified. Several upgrades were introduced: the MCP detector behind the Penning traps was replaced by a position-sensitive delay-line detector [47] that enables to use the PI-ICR method. The offline ion source was modified by introducing a mini-RFQ to improve the efficiency of the ion production for rare isotopes [48]. Lastly, the hyperbolic measurement trap was replaced by a cylindrical measurement trap with improved design to minimize inhomogeneities of the electrostatic trapping potential. After this new measurement trap was characterized, the masses of eleven actinide nuclides were determined (See Fig. 1.3). This characterization and the measurements are presented in this work.

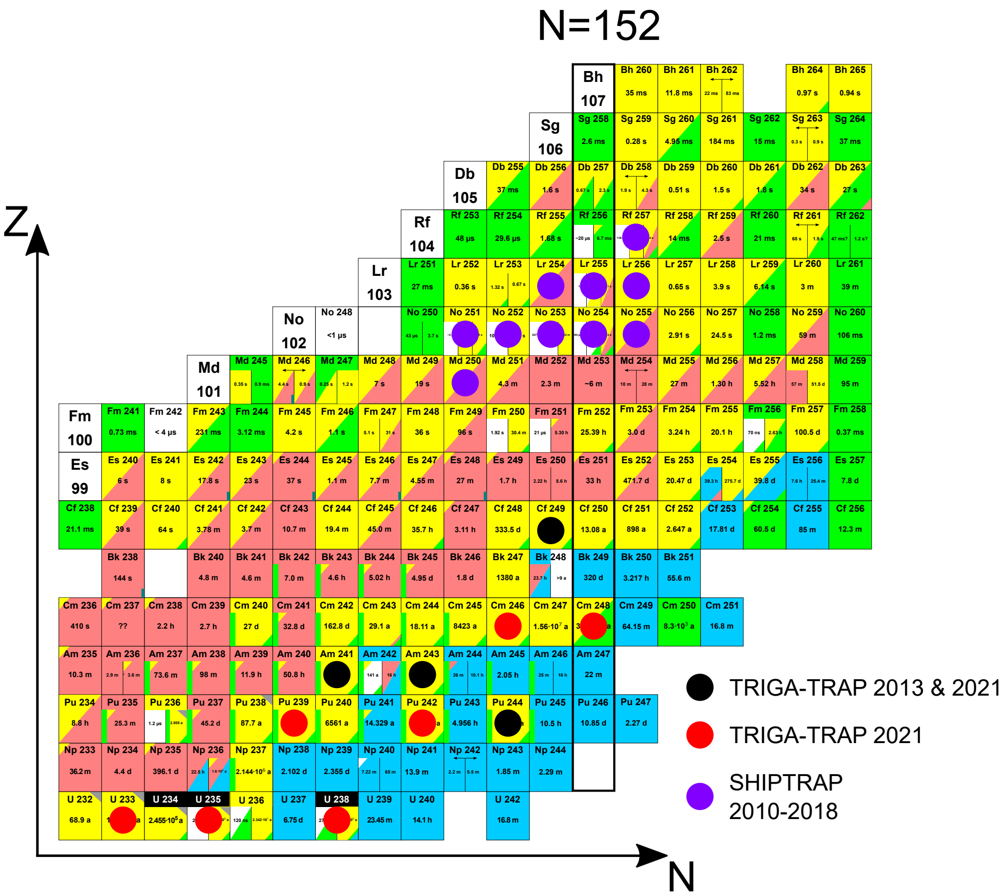

Figure 1.3: Section of the chart of nuclides around the deformed shell closure at $N = 152$ (black outline). Isotopes were marked where direct mass measurements were performed at SHIPTRAP (purple) [49, 50, 51] and TRIGA-TRAP (black and red) [46]. The measurements of nuclides measured at TRIGA-TRAP in 2013 were repeated in 2021. The results of the 2021 measurements are presented as part of this thesis.

In Fig. 1.4 the nuclides are shown whose mass values have been improved in AME2020 compared to AME2016, or where new experimental masses became available. A range of $Z = 90 - 100$ and $N = 140 - 155$ is marked and enlarged. In the enlargement the nuclides, which were measured in the context of this work, are additionally shown (black squares). It can be seen that there are no new experimental data obtained for any of the nuclides measured and reported in this thesis, since AME2016.

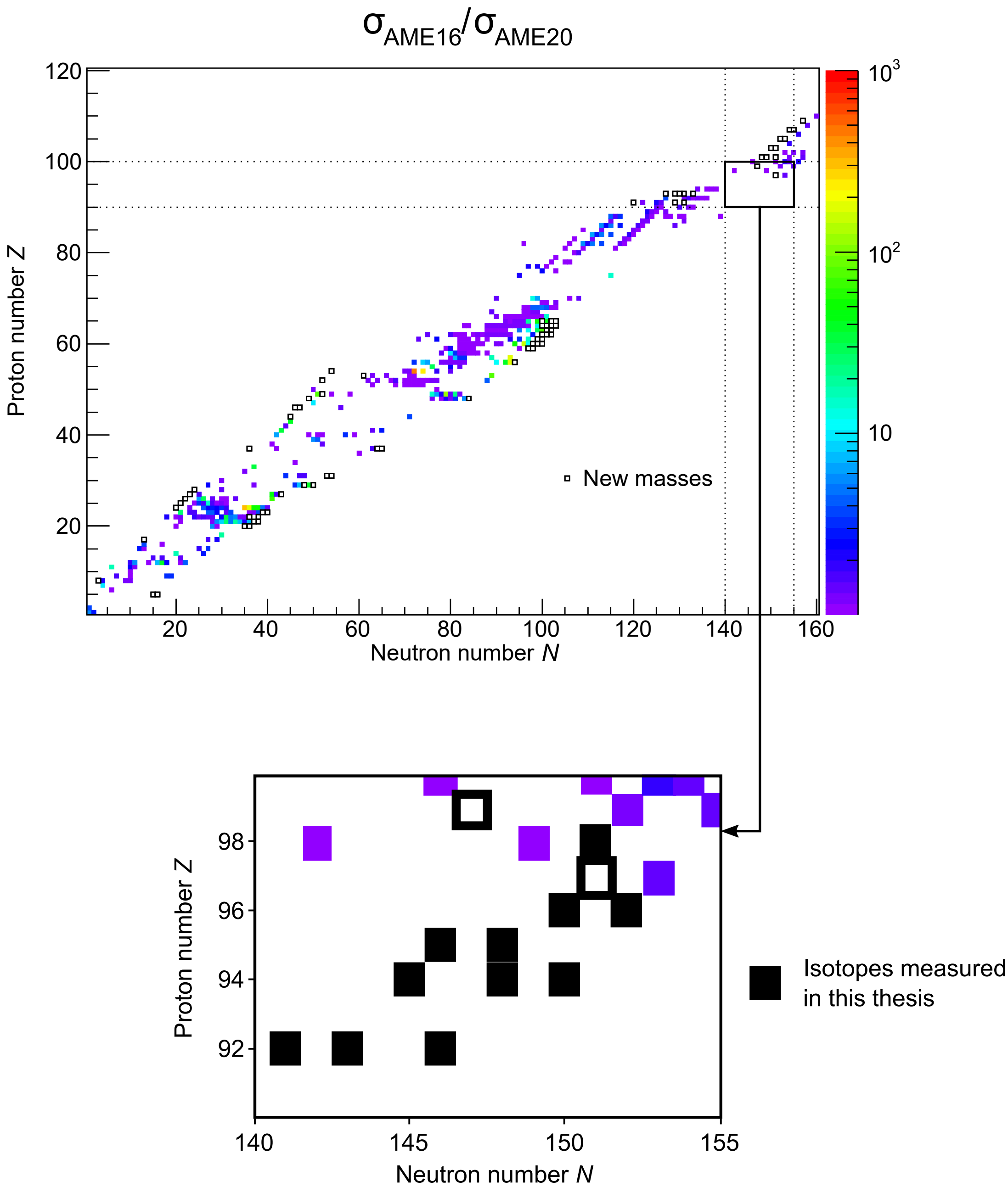

Figure 1.4: Ratios of mass uncertainties in AME2016 and AME2020 for nuclides whose mass precision has been improved. The new experimental masses in AME2020 are shown as the black frames. In the enlarged area, additionally the nuclides whose masses were measured as part of this work were also indicated with black squares. Figure is adapted from [33].

2 Fundamentals of a Penning trap

In this chapter, the most important basics of the Penning trap are covered. To perform high-precision mass measurements, the usage of Penning trap mass spectrometers is a state-of-the-art method, as it allows the most accurate mass measurement to date. The Penning trap was named after the Dutch physicist Frans Michel Penning. He developed the principle for storing charged particles in an arrangement of an electrostatic and a magnetic dipole field in 1936 [52]. Hans Georg Dehmelt refined this technique. Together with Wolfgang Paul he was awarded the Nobel Prize in Physics in 1989 "for the development of the ion trap technique" [53]. For a detailed description of the physics of Penning traps, reference is made to the articles by Brown and Gabrielse [54] and Blaum [1].

2.1 The ideal Penning trap

An ion with mass m and charge q performs a circular motion in a homogeneous magnetic field $\vec{B}$ with the cyclotron frequency

$$\omega_c = \frac{qB}{m} \tag{2.1}$$

perpendicular to the magnetic field axis. Thus, the ion is already radially confined, nevertheless it can still move freely along the magnetic field axis. To trap the ion

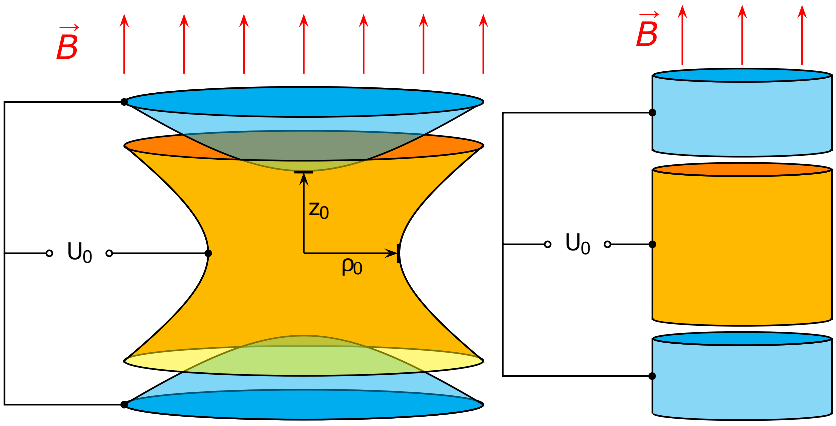

Figure 2.1: Possible electrode arrangement for Penning traps. The hyperbolic Penning trap (left) and the cylindrical Penning trap (right), with the ring electrode (orange) and the two end cap electrodes (blue).

along the magnetic field axis as well, an additional electric quadrupole potential

$$\Phi(x, y, z) = \frac{U_0}{2d_{char}^2}\left(z^2 - \frac{1}{2}\left(x^2 + y^2\right)\right) \tag{2.2}$$

has to be applied. Here d_{char} is a characteristic dimension and U_0 is a voltage difference, which will both be explained later. Thus, one can consider an ideal Penning trap as a superposition of a homogeneous magnetic field $\mathbf{B} = B\hat{z}$ and a quadrupole potential $\Phi(\rho, z)$ coaxial to the magnetic field. In this way, charged particles can be stored in a defined volume and the exact description of the particle motion is possible. The electrostatic quadrupole field can be generated by electrode arrangements as shown in Fig. 2.1. The potential difference U_0 between the end cap and ring electrodes generate the quadrupole potential

$$U(\rho, z) = \frac{U_0}{2d_{char}^2}\left(z^2 - \frac{\rho^2}{2}\right), \tag{2.3}$$

where ρ is the radial distance, z is the axial distance of the stored particle to the trap centre and d_{char} is the characteristic trap dimension, given by

$$d_{char}^2 = \frac{1}{2}\left(z_0^2 + \frac{\rho_0^2}{2}\right), \tag{2.4}$$

with ρ_0 as the inner radius of the ring electrode and z_0 the minimum distance between the centre of the trap and the end cap. In an ideal Penning trap, the following coupled equations of motion apply to an ion of mass m and charge q (see Fig. 2.2)

$$\ddot{x} = \frac{qU_0}{2md_{char}^2} \cdot x + \frac{qB}{m} \cdot \dot{y}, \tag{2.5}$$

$$\ddot{y} = \frac{qU_0}{2md_{char}^2} \cdot y - \frac{qB}{m} \cdot \dot{x}, \tag{2.6}$$

$$\ddot{z} = -\frac{qU_0}{md_{char}^2} \cdot z. \tag{2.7}$$

The equation of motion (Eq. 2.7) for z is that of an undamped harmonic oscillator with the angular frequency

$$\omega_z = \sqrt{\frac{qU_0}{md_{char}^2}}, \tag{2.8}$$

if $qU_0 > 0$. Otherwise the ion will escape to $z = \pm\infty$. By substitution $u = x + iy$ the differential equations Eq. 2.5 and Eq. 2.6 can be combined to the following equation

$$\ddot{u} + i\omega_c\dot{u} - \frac{1}{2}\omega_z^2 u = 0. \tag{2.9}$$

With the ansatz $u = e^{-i\omega t}$ one finally obtains the characteristic polynomial

$$\omega - \omega_c \cdot \omega + \frac{1}{2}\omega_z^2 = 0 \tag{2.10}$$

resulting in the radial motions

$$\omega_\pm = \frac{1}{2}\left(\omega_c \pm \sqrt{\omega_c^2 - 2\omega_z^2}\right). \tag{2.11}$$

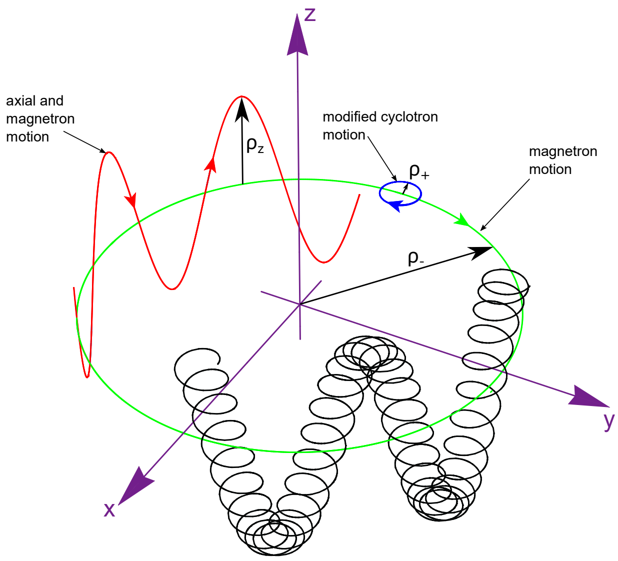

Figure 2.2: The ion motions in an ideal Penning trap. The magnetron motion with amplitude ρ_- is shown in green, the modified cyclotron motion with amplitude ρ_+ in blue and the axial motion with amplitude ρ_z combined with the magnetron motion in red. The black trajectory of the ion motion results from superposition of the three eigenmotions. The amplitudes are arbitrarily chosen and are for illustrative purposes only.

Here ω_+ is the modified cyclotron frequency and ω_- the magnetron frequency. Fig. 2.2 shows the motion of an ion in a Penning trap, which is a combination of the three eigenmotions. Through a series expansion of the radial eigenfrequencies one obtains

$$\omega_- \approx \frac{U_0}{2d_{char}^2 B} \tag{2.12}$$

and

$$\omega_+ \approx \omega_c - \frac{U_0}{2d_{char}^2 B}. \tag{2.13}$$

The magnetron frequency ω_- is in first approximation mass-independent, as can be seen from Eq. 2.12. The following relationships are valid between the cyclotron frequency and the three eigenfrequencies:

$$\omega_c = \omega_+ + \omega_- \tag{2.14}$$

$$\omega_z = 2 \cdot \omega_+ \omega_- \tag{2.15}$$

$$\omega_c^2 = \omega_+^2 + \omega_z^2 + \omega_-^2 \tag{2.16}$$

where $\omega_c > \omega_+ \ll \omega_z \ll \omega_-$. Eq. 2.16 is the so-called invariance theorem by which the true cyclotron frequency can be calculated from the three measurable frequencies [54]. Eq. 2.14 is used for mass measurements of short-lived radionuclides. Here the Penning trap is assumed to be ideal within the framework of the achievable resolution and thus the true cyclotron frequency is determined only via the sum of the magnetron frequency ω_- and the modified cyclotron frequency ω_+.

2.2 The real Penning trap

The real Penning trap differs from the ideal Penning trap described above in many respects. Field inhomogeneities, deviations from the ideal geometry, or misalignments of the trap axis with respect to the magnetic field can occur [55]. All these deviations from the ideal Penning trap lead to a shift of the eigenfrequencies and a broadening of the measured resonance. This results in a reduced resolving power and a systematic error in the mass determination. The most important effects are considered in more detail below.

Electric field imperfections: Deviations from the pure quadrupole field described in Eq. 2.3 are caused by geometrical imperfections of the trap construction, holes in the end caps for ion transport, and the finite extension of the electrodes. As a consequence, higher order terms of the electric field will occur. The electric potential U in the vicinity of the center of the Penning trap can be expanded in Legendre polynomials:

$$U = \frac{1}{2} U_0 \sum_{n=0}^{\infty} C_{2n} \left(\frac{\rho}{d}\right)^{2n} P_{2n} \cos(\theta) \tag{2.17}$$

where U_0 is the trapping potential, d the characteristic trap dimension (Eq. 2.4), C_{2n} are the coefficients and P_{2n} are the Legendre polynomials [56]. These higher order terms of the electric field cause amplitude-dependent frequency shifts. They can be reduced or even completely compensated by correction electrodes, applying the correction voltage U_{cor} calculated with the so-called tuningratio: $TR = U_{cor}/U_0$. This tuningratio is obtained by electric field simulations of the trap. Furthermore, frequency shifts can be reduced by using a Penning trap with a large characteristic dimension d and by choosing the trap potential U_0 very low [54].

Magnetic field imperfections: Magnetic field inhomogeneities and fluctuations are one of the major limitations in high-precision Penning-trap mass spectrometry. There are several different factors that cause a change in the magnetic flux density of a superconducting magnet. There is the *flux-creep-effect* [57] which causes the current of the superconducting coils of the magnet to decrease steadily and thus the magnetic field strength to change continuously. Also, if ferro-magnetic or paramagnetic objects are brought close to the magnet, they influence the magnetic field because of their temperature-dependent magnetic susceptibility. Already the experimental setup itself with the traps and the vacuum chambers influences the magnetic field. To minimize this effect, all the electrodes in the magnet bore are made of oxygen-free copper. Other important factors are the temperature and pressure fluctuations in the liquid helium and liquid nitrogen vessels of the superconducting magnet. The superconducting coils are cooled with liquid helium. As soon as the pressure in the helium vessel changes, the boiling temperature of the helium also changes. To avoid this, the pressure in the helium tank is stabilized.

Misalignment and ellipticity of the trap: A lot of attention must be paid to the careful alignment of the trap to the magnetic field. Any resulting misalignment can be described as a rotation of the magnetic field to the z axis [54, 58]

$$\vec{B}^{tilt} = B(\sin\theta\cos\varphi, \sin\theta\sin\varphi, \cos\theta) \tag{2.18}$$

with the polar angles $0 < \varphi < 2\pi$ and $0 < \theta < \pi$. In addition, the electrical potential in the trap can be distorted. This can happen, for example, due to imperfections in the manufacturing of the electrodes. Thus, the equipotential lines projected into the xy-plane are distorted into an ellipse. The characteristic measure of this distortion is the ellipticity ϵ [54]. For any real experiment, it can be assumed that tiny tilts or ellipticities will be present, but these can usually be minimized to fulfill the conditions, $|\sin\theta| \ll 1$ and $\epsilon \ll 1$. The main interest lies in the shift of the cyclotron frequency which can be described as follows [59]

$$\Delta\bar{\omega}_c[\theta,\varphi,\epsilon] \approx \bar{\omega}_- \left(\frac{9}{4}\theta^2 - \frac{1}{2}\epsilon^2\right), \tag{2.19}$$

resulting in the measured cyclotron frequency

$$\bar{\omega}_c[\theta,\varphi,\epsilon] = \omega_c + \Delta\bar{\omega}_c[\theta,\varphi,\epsilon]. \tag{2.20}$$

But even in this case the invariance theorem [54] Eq. 2.16 retains its validity [59].

Ion-ion interaction: Ideally, only a single ion should be stored in high-precision trap experiments, since the Coulomb interaction with other ions in the trap affects the ion motion and thus the cyclotron frequency. If the stored ions are of the same species, only a line broadening of the resonance frequency occurs [60]. However, if the stored ions are not identical, then this is shown by the occurrence of frequency shifts. The cyclotron frequency shift to smaller values and the line broadening also occurs here. Therefore, for high-precision measurements with Penning traps, a preceding ion selection is very important [61].

2.3 Manipulation of ions in a Penning trap

So far, it has only been described how the ions can be stored in a Penning trap. However, in order to be able to carry out high-precision measurements with the ions, the ion motion in the Penning trap, which was described in Sect. 2.1, must be specifically manipulated. In the following, the manipulations required for a mass measurement are discussed. The first step is the targeted excitation and then the cooling of ions in a Penning trap.

2.3.1 Dipolar and quadrupolar excitation of the ion motion in a Penning trap

The three independent eigenmotions of an ion stored in a Penning trap can be regarded as harmonic oscillators. Therefore, the total energy (without taking spin into account) can be described as follows:

$$E = \hbar\omega_+ \left(n_+ + \frac{1}{2}\right) + \hbar\omega_z \left(n_z + \frac{1}{2}\right) - \hbar\omega_- \left(n_- + \frac{1}{2}\right). \tag{2.21}$$

ω_+, ω_z and ω_- are the angular frequencies of the eigenmotions, n_+, n_z and n_- are the quantum numbers of the eigenmotions and $\hbar$ is the reduced Planck constant. Fig. 2.3 shows the energy levels of a charged particle in a Penning trap, they are also called Landau levels. It should be noted that an increase in the quantum number n_-, which corresponds to an increase in the magnetron radius, leads to a decrease in energy. With a dipolar excitation with one of the eigenfrequencies, the corresponding eigenmotion can be manipulated. If the magnetron motion ω_- is excited, all ions in the trap are excited because this is in first order not mass dependent. In contrast, when the cyclotron or the axial motion is excited, only ions with a certain mass-to-charge ratio are excited. To excite a radial ion motion, an alternating electric field of frequency ω_d must be applied. To excite one of the radial eigenmotions, a segmented ring electrode is needed. In Fig. 2.4(a) it is shown how the alternating field of amplitude U_d and frequency ω_d is applied to opposite segments in a fourfold segmented ring electrode. For example, the magnetron motion can be addressed individually. For the excitation of the magnetron motion, the phase difference $\Delta\phi_- = \phi_d - \phi_-$ between the phases of the initial ion magnetron motion ϕ_- and the irradiated dipole field ϕ_d, has a strong influence on the magnetron radius ρ_-. Fig. 2.5 shows for three phase differences the effect on the final magnetron radius [1]. In Fig. 2.4(b), one sees how the same phase of the radio frequency ω_q is applied to two opposite segments of the ring electrode in each case for a quadrupolar excitation. If this frequency corresponds to the sum of two eigenfrequencies, these motions are coupled and a periodic conversion of the motions takes place. If $\omega_q = \omega_c = \omega_+ + \omega_-$ is chosen, the two radii of motion ρ_+ and ρ_- are converted into each other. Fig. 2.6 shows a conversion of a pure magnetron

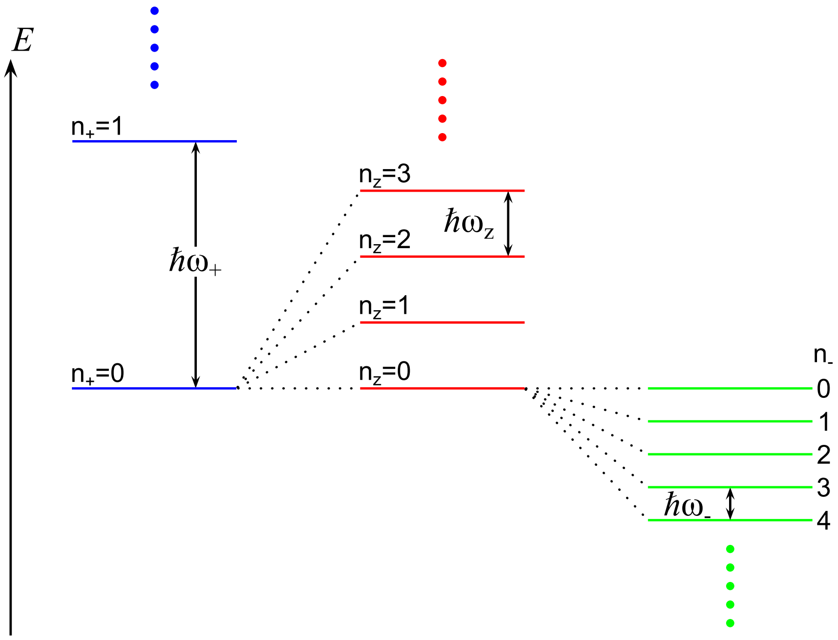

Figure 2.3: Energy levels without taking into account the spin of a charged particle in an ideal Penning trap. The total energy is obtained by summing the energies of the three independent eigenmotions. Here ω_+ is the angular frequency and n_+ the quantum number of the modified cyclotron motion, the angular frequency ω_z and n_z the quantum number of the axial motion, ω_- the angular frequency and n_- the quantum number of the magnetron motion.

motion into the modified cyclotron motion in case of a quadrupole excitation with ω_c. Initially, there is a pure magnetron motion with radius ρ_-. Due to the excitation, the amplitude of the modified cyclotron motion grows and the amplitude of the magnetron motion shrinks. After a certain time T_{Conv} (depending on the excitation amplitude U_q) a complete conversion is achieved

$$T_{Conv} = \frac{\pi a^2}{2U_q}\frac{m}{q}(\omega_+ - \omega_-) \approx \frac{\pi a^2}{2U_q}B. \tag{2.22}$$

Here a is an effective distance corresponding to ρ_0 at first order. This means that the magnetron motion has been completely transformed into the modified cyclotron motion, with the resulting radius ρ_+ corresponding to the initial radius ρ_- (see Fig. 2.6). The radial kinetic energy E_r is propotional to the orbital

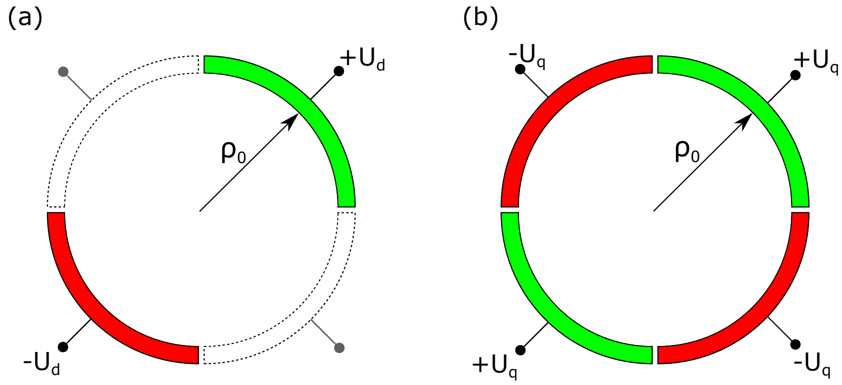

Figure 2.4: Schematic of a dipolar (a) and a quadrupolar (b) excitation, with a fourfold segmented ring electrode. In the case of dipolar excitation, a radio frequency (rf) with amplitude U_d and frequency ω_d is applied to two electrodes. In the case of quadrupolar excitation, a radio frequency with the amplitude U_q and the frequency ω_q is applied to four electrodes. The colours indicate a 180° phase shift of the applied rf between the corresponding electrodes.

frequency of the stored ion and therefore

$$E_r \propto \omega_+^2 \rho_+(t)^2 - \omega_-^2 \rho_-(t)^2 \approx \omega_+^2 \rho_+(t)^2 \tag{2.23}$$

where ρ_+ and ρ_- are the radii of the modified cyclotron and magnetron motion. The approximation is valid for $\omega_+ \ll \omega_-$. So, with resonant coupling of these two motions, one obtains an increase in the radial kinetic energy by converting the magnetron motion into the modified cyclotron motion. With non-resonant excitation ($\omega_q \neq \omega_c$), the conversion is not complete.

2.3.2 Buffer-gas cooling of ions in a Penning trap

A common method to cool singly-charged ions stored in ion traps is the so-called buffer-gas cooling combined with radio frequency excitation at the true cyclotron frequency ω_c. The effect of the buffer gas on the ion motion can be described as a kind of Stokes friction, with a velocity-dependent frictional force

$$\vec{F} = -\delta m \vec{v}, \tag{2.24}$$

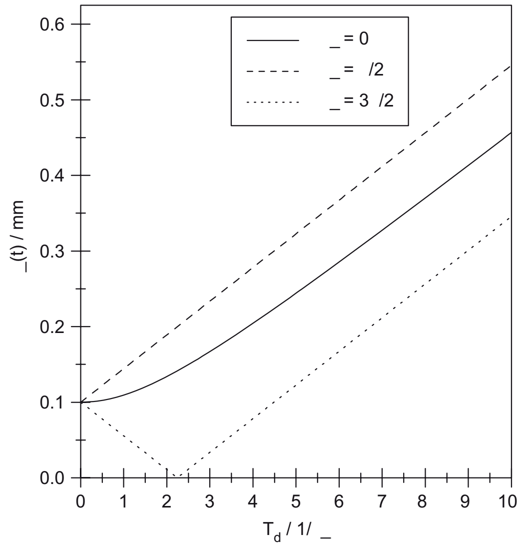

Figure 2.5: Evolution of the magnetron radius ρ_- as a function of the dipole excitation T_d for the phase differences $\Delta\phi_- = 0, {}^{\pi}/_{2} and {}^{3\pi}/_{2}$. For $\Delta\phi_- = 0$, the amplitude ρ_- grows slowly at first and then increases linearly with excitation time. For $\Delta\phi_- = {}^{\pi}/_{2}$ the linear increase already starts at the beginning of the excitation. For $\Delta\phi_- = {}^{3\pi}/_{2}$ the magnetron radius first decreases linearly to 0 and then increases again at the same rate [1].

experienced by an ion of mass m and velocity v, where δ is the damping parameter. This damping parameter can be described as follows:

$$\delta = \frac{q}{m}\frac{1}{K_{ion}}\frac{{}^{p}/_{p_N}}{{}^{T}/_{T_N}} \tag{2.25}$$

Here q is the charge of the ion, m is the mass of the ion, p and T are the pressure and temperature of the gas in units of normal pressure p_N and normal temperature T_N and K_{ion} is the reduced mobility of the ions in the buffer gas [1, 64]. Usually, noble gases are used as buffer gas because of their high ionisation potential to minimize charge-exchange reactions and molecule formation. This cooling causes a decrease in the amplitudes of the modified cyclotron as well as the axial motion, but the amplitudes of the magnetron motion of all ions in the trap grow because of the negative sign in Eq. 2.21. The magnetron radius grows much more slowly than the radius of the modified cyclotron motion shrinks because $\omega_+ \gg \omega_-$. By

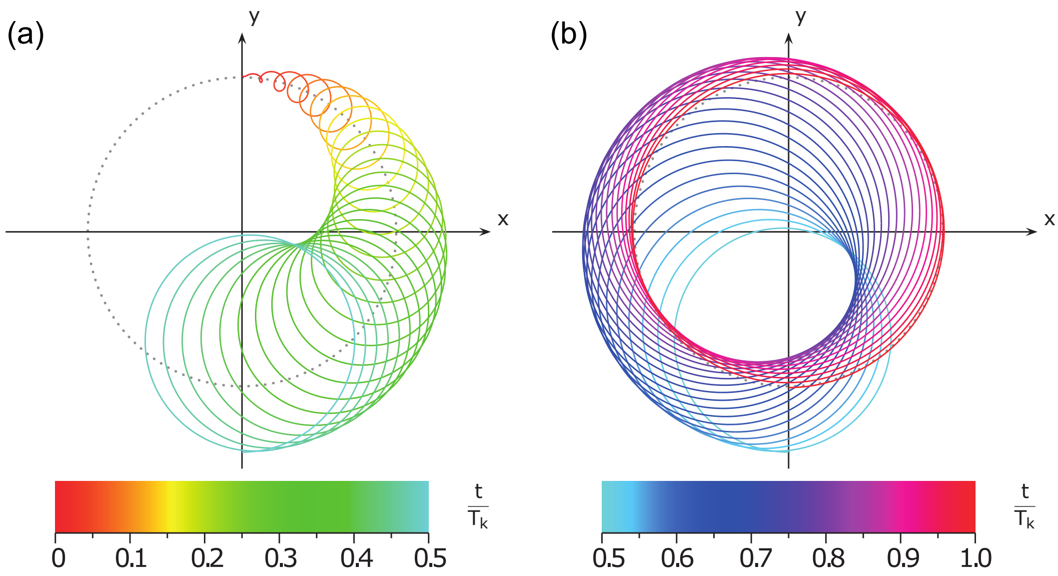

Figure 2.6: The conversion of a pure magnetron motion into pure modified cyclotron motion. For sake of clarity, the conversion is divided into two parts and the time course is marked in colour. (a) The first half of the conversion. (b) The second half of the conversion [62].

coupling the two radial motions with the quadrupole excitation at ω_c, the increase of the magnetron radius can be counteracted by conversion and thus a loss of ions can be prevented. With a suitable choice of pressure, excitation amplitude U_q and excitation duration T_q, both amplitudes of the radial motion are reduced. However, since ω_c depends on the mass, only an ion with one desired mass can thus be centered in the Penning trap (see Fig. 2.7). After ejection from the trap through a diaphragm, the centered ions are separated from the other ions.

2.4 Frequency-measurement techniques

To perform a mass measurement with Penning-trap mass spectrometers, the free cyclotron frequency ω_c must be determined. Direct measurement of ω_c is not possible, due to the fact that it is not an eigenfrequency. Three different meth-

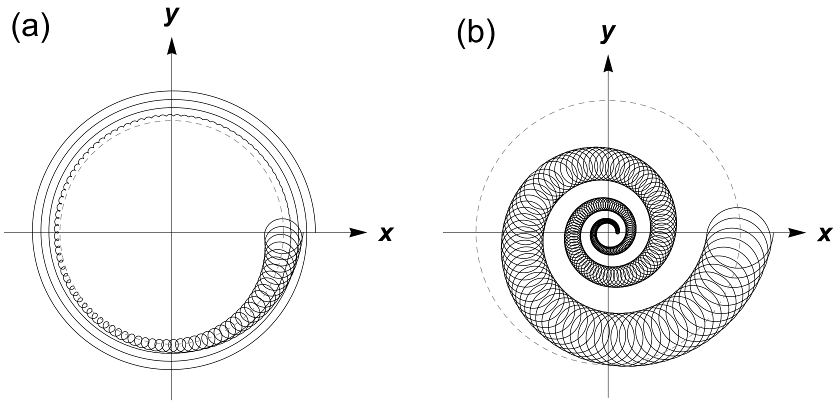

Figure 2.7: The radial motion of the ions in a Penning trap when a buffer gas is present. (a) Since the cooling is velocity-dependent, the radius of the modified cyclotron motion decreases very rapidly; in comparison, the magnetron radius increases slowly. (b) By applying an external quadrupole field with $\omega_q = \omega_c$, the two radial motions are coupled, so the decrease of the radius of the modified cyclotron motion occurs slowly with a simultaneous decrease of the magnetron radius. Since ω_c is mass-dependent, mass-selective centering takes place [63].

ods are available to do so. A distinction is made between destructive methods, in which the ions are ejected from the trap and detected with an external detector and non-destructive methods, in which the measurements are repeated, while the ion remains in the trap. At the moment, only the Time-of-Flight Ion-Cyclotron-Resonance (ToF-ICR) method [65] is used at TRIGA-TRAP for high-precision mass measurements. Here, the change in the time of flight of the ions is measured as function of the excitation frequency around the expected cyclotron frequency. The non-destructive Fourier-Transform Ion-Cyclotron-Resonance (FT-ICR) method, in which the mirror currents of the oscillating ion are measured, is still under development for the use at TRIGA-TRAP [66]. In the future, the Phase-Imaging Ion-Cyclotron-Resonance (PI-ICR) technique [67], which is even more precise than the ToF-ICR technique, will also be implemented at TRIGA-TRAP. Here, the phases of the ion's radial motion are determined from an image on a position-sensitive detector.

2.4.1 Time-of-Flight Ion-Cyclotron-Resonance (ToF-ICR) Technique

In the Time-of-Flight Ion-Cyclotron-Resonance (ToF-ICR) technique, the ions are first set to a defined radius of magnetron motion in the measurement trap by means of a dipolar excitation. With a resonant quadrupolar excitation with the correctly chosen amplitude U_q as well as excitation duration T_q, the magnetron motion is completely converted into the modified cyclotron motion (Sect. 2.3), whereby the radius does not change. After the conversion, the potential of one of the end cap electrodes is reduced so that the ions are ejected along the symmetry axis of the magnetic field with a low axial velocity. The ions pass through the magnetic field gradient and undergo an acceleration due to the interaction of their magnetic moment $\vec{\mu}$ and the field gradient (see Fig. 2.8). The force is proportional to the magnetic moment and thus also to the radial energy E_r:

$$\vec{F} = -\vec{\mu}\left(\vec{\nabla}\vec{B}\right) = -\frac{E_r}{B}\frac{\partial B}{\partial z}\hat{z} \tag{2.26}$$

Since the radial energy of the ions is at its maximum in the resonance case due to the higher value of the modified cyclotron frequency compared to the magnetron frequency, resonantly excited ions are accelerated more strongly than non-resonantly excited ions. To determine the time of flight, the ejection of the ions from the trap is chosen as the start signal and the impact of the ions on the surface of the detector as the stop signal. The time that the ions need to travel from the centre of the trap ($z = z_0$) to the detector ($z = z_D$) at a given radial energy E_r can be calculated by means of

$$T_{ToF}(\omega_q) = \int_0^{z_D} \sqrt{\frac{m}{2(E_0 - qU(z) - \mu(\omega_q)B(z))}}dz. \tag{2.27}$$

Here E_0 is the initial axial energy of the ion, $U(z)$ the electric potential and $B(z)$ the magnetic field strength. The variation of the frequency ω_{rf} leads to the characteristic time-of-flight cyclotron resonance curve. The shape of such a resonance curve is shown in Fig. 2.9b. For the ToF-ICR technique, it is important

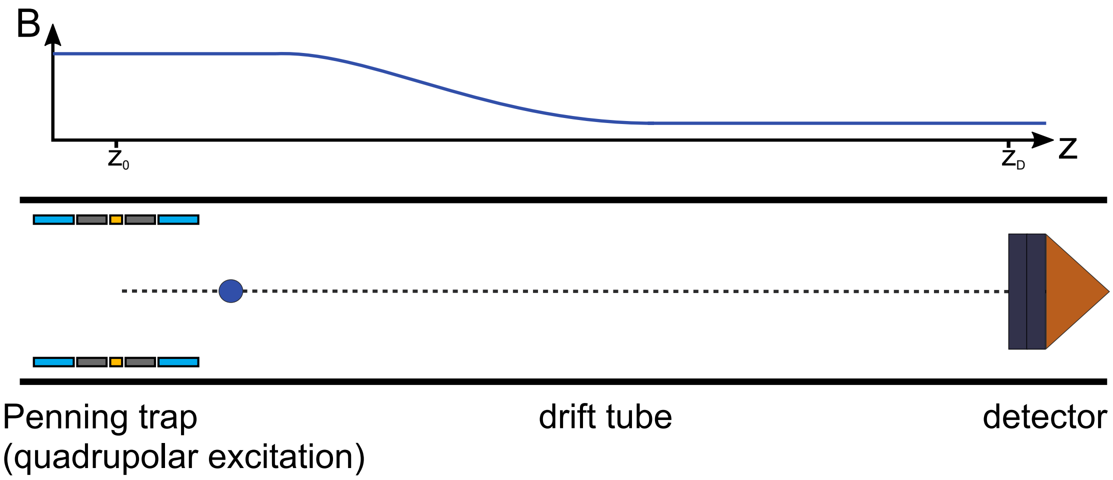

Figure 2.8: Concept of the Time-of-Flight Ion-Cyclotron-Resonance technique. In the trap the ions are put on a pure magnetron motion. Then a quadrupolar rf puls is applied which is varied around ν_c. After the rf pulse the ions are ejected towards a detector. On their way to the detector, the ions cross the magnetic field gradient.

that sufficient time is available for the conversion from radial to axial energy. This means that the ions should stay as long as possible in the area of the magnetic field gradient to support an adiabatic conversion [68, 69]. In order to obtain a time-of-flight resonance from which the cyclotron frequency can be obtained, a minimum number of ions and scans are required so that a meaningful fit can be used. The statistical uncertainty of the fit

$$s(\omega_c) \propto \frac{1}{\sqrt{N_{ion}} \cdot T_q} \tag{2.28}$$

depends on the number of detected ions N_{ion} and the excitation time T_q. From this it can be seen that a longer quadrupolar excitation time would be preferable. To store ions longer in the trap, the vacuum in the trap must be as good as possible to minimize the probability of collisions with the residual gas. These collisions could lead to the loss of the ion, or the modified cyclotron motion could be damped (as described in Sect. 2.3.2). This would increase the time of flight of the excited ions and thus weaken the minimum in the ToF spectrum. If radioactive ions are investigated, the half-life of the ions also puts a limit on the storage time in the trap. Besides the continuous quadrupolar excitation, other rf excitation patterns can be used [70, 71]. For example, the excitation pulse can be split into two equal pulses with a defined waiting time in between, keeping the total time and the integral of the excitation pulses equal (Fig. 2.9a and c). In this way, a complete conversion is also performed in this excitation scheme. This method is called Ramsey excitation. In this case, in contrast to the continuous excitation the sidebands are emphasized more, but at the same time the line width is reduced (Fig. 2.9d), which can improve the precision by up to a factor of three for the same excitation time [69, 72].

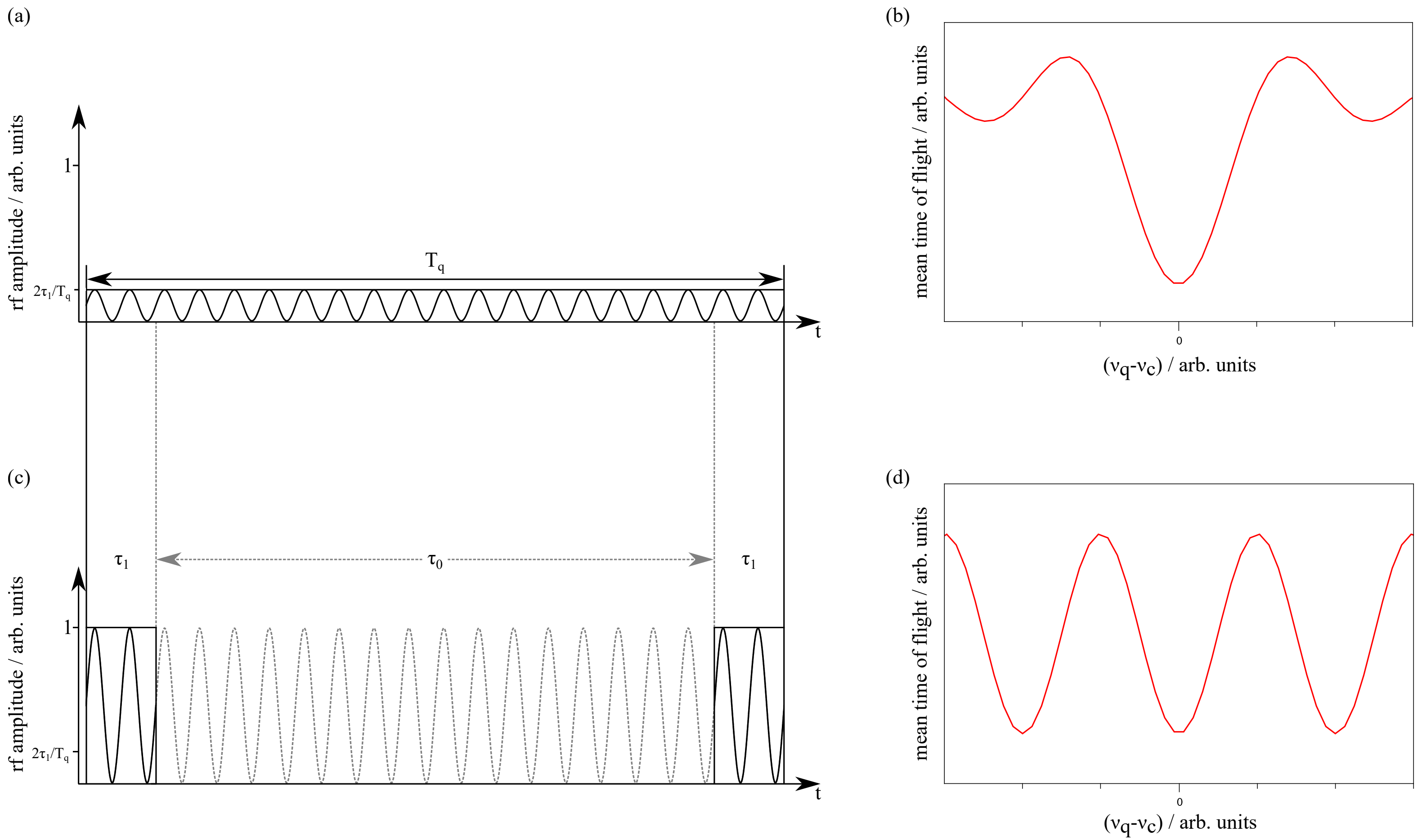

Figure 2.9: Illustration of a continuous excitation (a) with the corresponding time-of-flight spectrum (b). (c) illustrates a Ramsey excitation scheme with the corresponding time-of-flight spectrum (d). With the Ramsey excitation, one can see that the sidebands are more pronounced and the linewidth becomes smaller. See text, for more details.

2.4.2 Fourier-Transform-Ion Cyclotron Resonance (FT-ICR) Technique

Another way to determine the cyclotron frequency is the Fourier-transform ion-cyclotron-resonance technique [73]. In this non-destructive method, the image current induced by the oscillating ion is measured in the trap electrodes. With this method, a single ion can be sufficient for a complete frequency measurement. This depends on the pressure conditions in the trap and the half-life of the ion of interest. This method opens up the possibility of investigating ions with very low production rates. The challenge here is to obtain a high signal to noise ratio, since the amplitude of the mirror current to be measured is only a few fA. Further details on the development of FT-ICR at TRIGA-TRAP can be found in the PhD-thesis by Lohse [74].

2.4.3 Phase-Imaging Ion-Cyclotron-Resonance (PI-ICR) Technique

The phase-imaging ion-cyclotron-resonance method is a technique that can be used to determine the modified cyclotron frequency and the magnetron frequency. In this process, the radial motion of the ion is projected onto a position sensitive detector (delay-line MCP detector) installed on the axis of the trajectory. There are two ways to determine the cyclotron frequency. First, there is the single-pattern scheme, in which ω_+ and ω_- are determined independently of each other, and since Eq. 2.14 applies here as well, the true cyclotron frequency is obtained. Since the measurement procedure for ω_+ and ω_- is the same, the indices (+) and (-) are used in the following to distinguish between them, otherwise we will speak of the radial motion. The principle for determining the radial motion frequency is shown in Fig. 2.10. First, ions without radial motion are ejected from the measurement trap. The half-width of the spatial distribution of these ions on the detector (position 1 in Fig. 2.10, center) depends on the temperature of the ions. This is followed by bringing the ions to a radius R by applying a dipolar excitation at the radial motion frequency with a certain initial phase (position 2

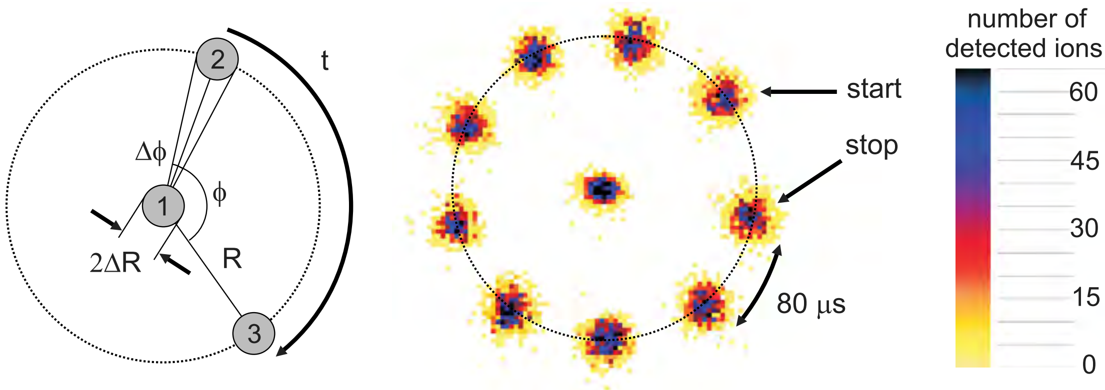

Figure 2.10: Concept of the PI-ICR method [75]. For more details see text.

in Fig. 2.10, reference phase). The ions can now move on the circular path for the time t, after which they have the accumulated phase $\phi + 2\pi n = \omega t$ (position 3 in Fig. 2.10, final phase). ϕ is the angle between positions 2 and 3 of the ion, n is the number of revolutions the ion makes during time t and ω is the angular frequency of the radial motion. Thus, at known n, the frequency determination is reduced to a determination of the angle ϕ. To enable the determination of the modified cyclotron frequency ω_+ in this way, the modified cyclotron motion is converted into magnetron motion. Applying a uniformly voltage to the electrodes of the drift section behind the trap assures that the ion motion is not distorted during transport towards the detector [75]. A second possibility to measure the cyclotron frequency would be the so-called double-pattern scheme. In this case, the cyclotron frequency is determined directly instead of summing the two measured frequencies ω_+ and ω_-. The excitation scheme consists of two patterns in this case. These differ only in one step. One takes the pattern that is also used in the single pattern scheme to determine the modified cyclotron frequency. The reference phase is not determined, as it does not change for either pattern. The only difference between the patterns is the time of the quadrupole excitation, i.e., the conversion of the reduced cyclotron motion into magnetron motion, which is performed directly before the accumulation time t_1 in the first pattern and directly after the accumulation time t_2 in the second pattern. Thus, the accumulated phase $\phi_- + 2\pi n_- = \omega_- t_1$ is obtained in the first step and $\phi_+ + 2\pi n_+ = \omega_+ t_2$ in the second step. Advantage is taken from the fact that with a quadrupolar excitation the phase of the ion is mirrored and thus the sign changes. Therefore, if $t_1 = t_2 = t_{acc}$, the following equation applies

$$\omega_c = \frac{\phi + 2\pi\left(n_- + n_+\right)}{t_{acc}} = \frac{\phi_- - \phi_+ + 2\pi\left(n_- + n_+\right)}{t_{acc}}. \tag{2.29}$$

Compared to the ToF method, the PI-ICR method can achieve a 40-fold improvement in resolving power and a factor of ten improvement in accuracy, or the measurement time can be reduced by an order of magnitude [67].

2.4.4 Magnetic field calibration

From the cyclotron frequency, the mass of the measured ion can be determined with the help of Eq. 2.1. To obtain the desired mass precision $< 10^{-8}$ for the ion of interest, the magnetic field $\vec{B}$ needs to be known (at least) with this same precision. As already mentioned in Sect. 2.2, there are magnetic field fluctuations. This makes a continuous measurement of the magnetic field necessary. However this would influence the frequency measurement as well, so before and after the measurement of the cyclotron frequency ω_c of the ion of interest with atomic mass m_{atom} and charge q, the cyclotron frequency $\omega_{c,ref}$ of a reference ion with the very well-known atomic mass m_{ref} and charge q_{ref} is measured. A linear interpolation between these two measurements is performed to obtain the cyclotron frequency of the reference ion $\omega_{c,ref}$ at the time the cyclotron frequency of the ion of interest ω_c is measured. With this procedure, the magnetic field strength drops out of the equation and one obtains the frequency ratio:

$$r = \frac{\omega_{c,ref}}{\omega_c} = \frac{m_{atom} - q \cdot m_e}{m_{ref} - q_{ref} \cdot m_e} \frac{q_{ref}}{q} \tag{2.30}$$

$$m_{atom} = \frac{\omega_{c,ref}}{\omega_c} \frac{q}{q_{ref}} \left(m_{ref} - q_{ref} \cdot m_e\right) + q \cdot m_e \tag{2.31}$$

If only singly charged ions are used, as is the case at TRIGA-TRAP, Eq. 2.31 can be simplified to

$$m_{atom} = \frac{\omega_{c,ref}}{\omega_c} \left(m_{ref} - m_e\right) + m_e. \tag{2.32}$$

Ions of the alkali metals are popular as reference ions, since they are easily ionized, and have also been measured with high precision. The mass of, e.g., ^{133}Cs is known with a relative precision of $6.8 \cdot 10^{-11}$ [8]. To avoid having to consider some systematics, one would ideally have to record frequency ratios of mass doublets. However, this becomes rather difficult in the transuranium region, because in this mass range ≥ 230 amu the mass of only a few isotopes have been measured directly so far and there is no sufficiently well-known nuclide to act as an ideal reference to perform a measurement with a relative precision in the range of $10^{-8} - 10^{-9}$. In this case, $^{133}Cs^{+}$ is already more than 100 mass units away. Carbon clusters $^{12}C_{n}$, $n \in \mathbb{N}$ were also used as reference [76, 77], because $1/12$ of the mass of the ^{12}C atom is the definition of the atomic mass unit. If carbon clusters are used as reference ion, theoretically the whole chart of nuclides can be covered in steps of twelve atomic mass units. So the mass difference of the reference ion and the ion of interest is a maximum of six atomic mass units.

3 Experimental setup of the mass spectrometer TRIGA-TRAP

The TRIGA-TRAP mass spectrometer was commissioned in 2008 as part of the TRIGA-SPEC experiment. The aim was to investigate nuclear ground-state properties of long-lived transuranium elements and short-lived neutron-rich nuclei [43]. The short-lived neutron-rich nuclei are produced by neutron-induced fission of, for example, ^{235}U using thermal neutrons from the research reactor TRIGA Mainz. However, in this work the masses of long-lived actinides were in the focus. Ions of these isotopes are produced in the mini-RFQ ion source, see the article by Grund et al. [78]. There, the first online measurement with TRIGA-TRAP is described. In the next part, the so-called "off-line part" of TRIGA-TRAP will be presented in more detail. The schematic structure of TRIGA-TRAP is shown in Fig. 3.1.

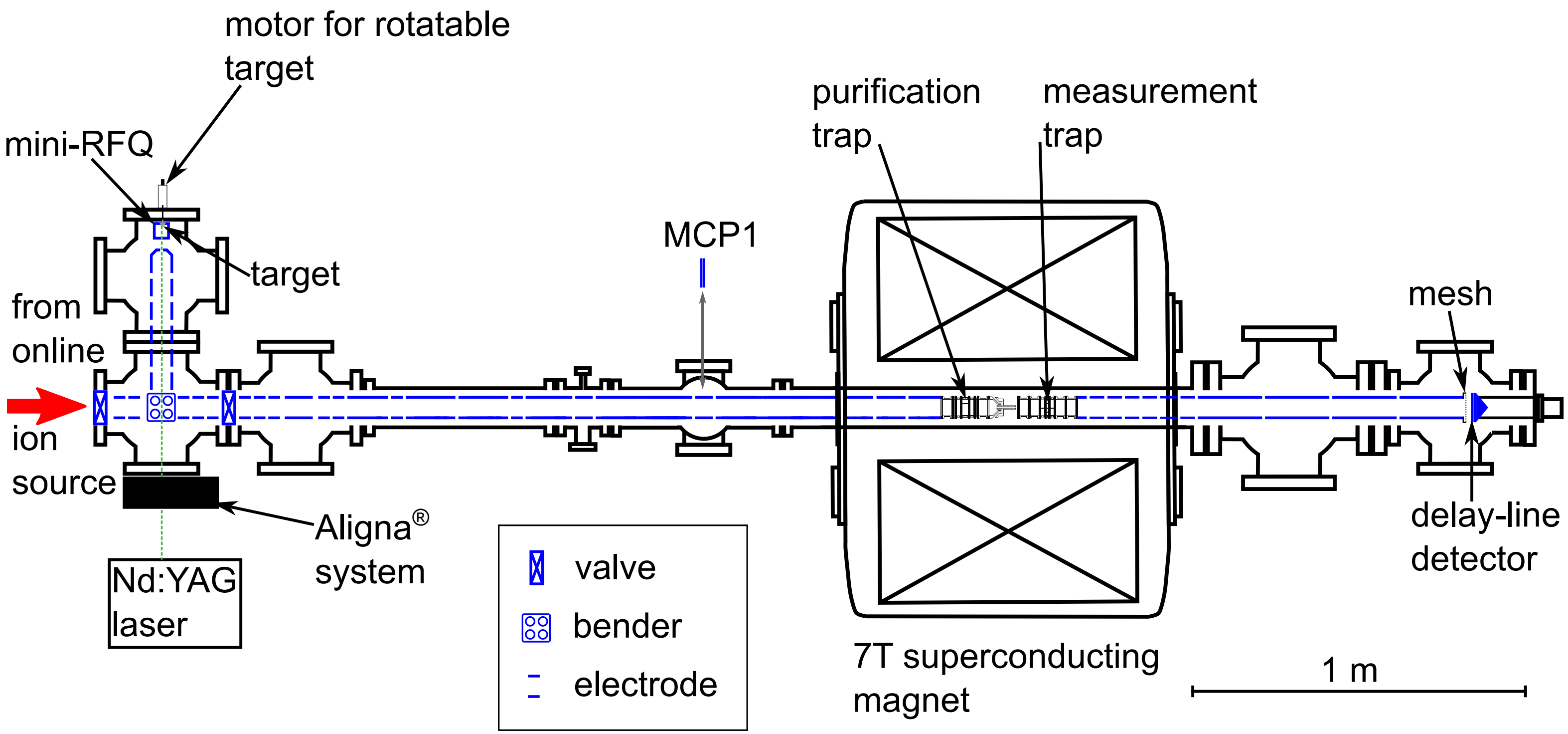

Figure 3.1: Schematic illustration of the TRIGA-TRAP experiment.

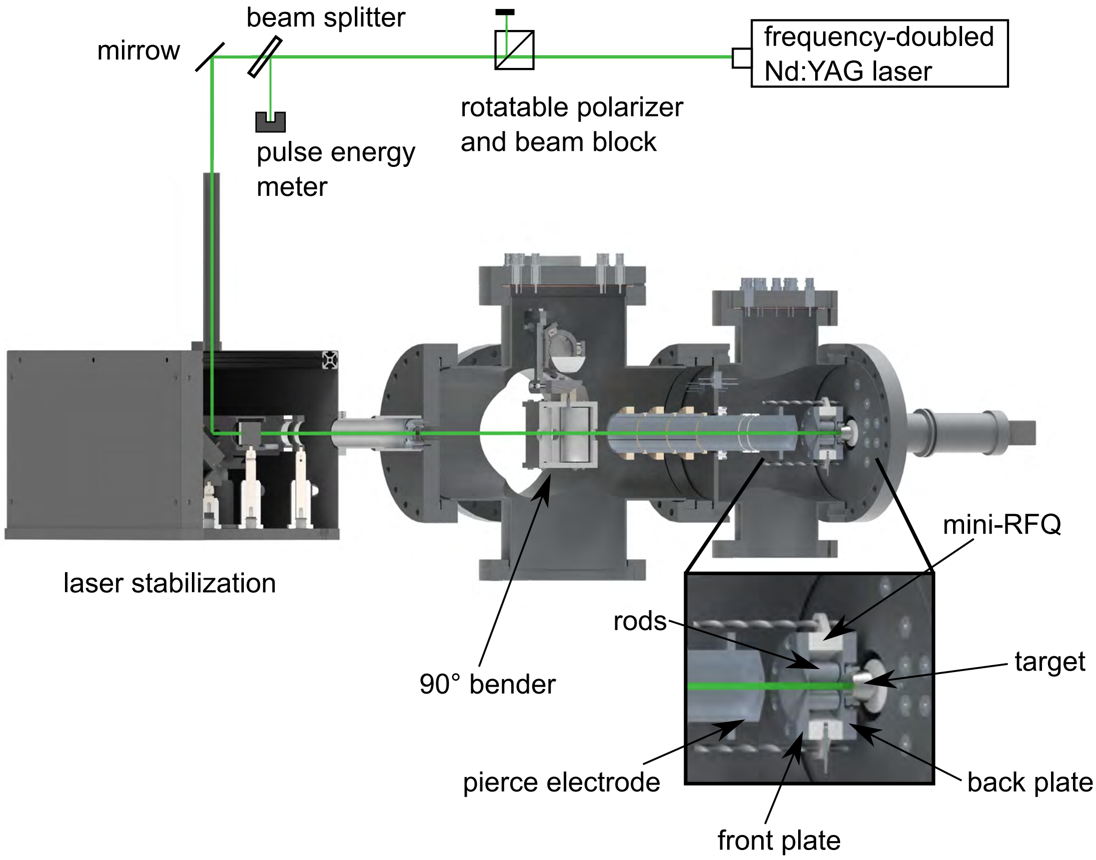

Figure 3.2: 3D model of the laser ablation ion source with laser stabilization and mini-RFQ.

3.1 The Mini-RFQ

A miniature radio frequency quadrupole (mini-RFQ) ion source was developed for TRIGA-TRAP [48], which serves as a source for reference ions as well as transuranium ions, and is shown in Fig. 3.2. A pulsed frequency-doubled Nd:YAG laser with a wavelength of $\lambda = 532\,\text{nm}$, a pulse length of $3-5\,\text{ns}$ and a pulse energy up to 25 mJ is used for laser ablation. The laser beam is directed to a target by a rotatable polariser to adjust the required energy, by mirrors and the Aligna® system (TEM Messtechnik GmbH, Hannover). The Aligna® system is an automated laser beam alignment and stabilization system. It consists of active mirrors and a combined angle and position detector. The target tip is mounted slightly offset from the laser beam. Since the target holder can be rotated, different positions of the target can be shot at [46]. Another major advantage of the stabilization system is that the area on the target that can be reached with the laser has also been increased (see Fig. 3.3). The target tip has been revised and is now completely made of titanium. The new design allows an easier handling of the target tip. It can be replaced in a very short time, which is an enormous advantage, especially when dealing with radioactive substances. By the laser pulse, ions are generated in the mini-RFQ and stored there with the help of two end-cap electrodes and an rf field applied to the rods (50 V, 1.077 MHz). Here, the energy distribution of the ions is reduced in about 5 ms by collision with helium atoms at a pressure of about 10^{-3} mbar at room temperature, thus increasing the number of ions that can be used for a mass measurement. After this cooling process, the ion bundle is ejected by switching the mini-RFQ's front plate and from there it is directed to a 90° electrostatic bender. This brings the ions into the main beam path and thus in the direction of the Penning traps. Between the 90° bender and the Penning traps, lenses and deflectors are installed which enable corrections of the direction of the beam so that it can be shot straight into the first Penning trap. 30.5 cm in front of the magnet, a manipulator was installed, allowing a microchannelplate detector (MCP1) for diagnostic purposes to be moved into the beamline.

3.2 The double Penning trap system

The two Penning traps from TRIGA-TRAP (see Fig. 3.4) are embedded in the bore of a superconducting magnet, manufactured by MAGNEX SCIENTIFIC LTD. This is a 7 T magnet with a 160 mm room-temperature bore, identical in construction to the magnets used at SHIPTRAP [79] and JYFLTRAP [80]. The magnet is actively shielded, which means that the operation of turbomolecular pumps in the immediate vicinity of the magnet is not a problem. In TRIGA-TRAP, as in many other Penning trap experiments for high-precision mass measurement, two Penning traps were installed. The first trap is the so-called purifi-

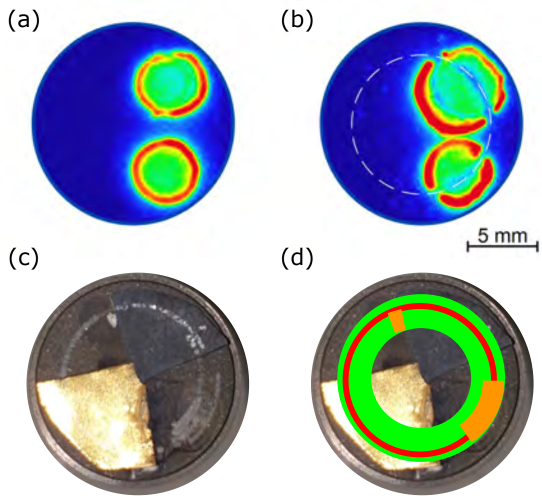

Figure 3.3: Comparison of the ranges on the targets, which are achievable by the laser beam. The top row shows radiographic images of Sigradur targets as used in the past. In a) an unused target is shown where 2 radioactive samples were applied. In b) a used Sigradur target is shown. The dashed circle indicates the area that could be reached with the laser. In the bottom row, a current target with a new design is shown. In c), the trace of the laser on the surface can be seen. For clarification, the laser trajectory is highlighted in color in d). The red circle shows the area reached by the laser now, which was also possible with the old system. The new Aligna® system allows enlarging the area, as indicated in green. In addition, the area where the trajectory of the laser can be seen in c) is marked in orange. The radiographic images are taken from [46].

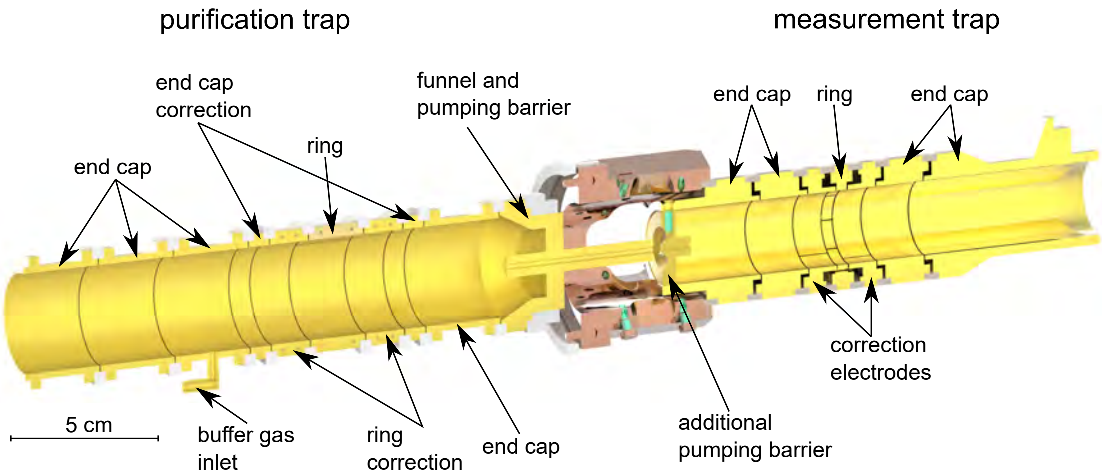

Figure 3.4: 3D model of the two TRIGA-TRAP Penning traps. On the left, the purification trap, consisting of seven electrodes is shown. The ring and ring correction electrodes are segmented. All ions that are not centered in the purification trap due to the buffer-gas cooling hit the funnel, whereas ions of interest are able to pass the pumping barrier and can be investigated in the measurement trap. The measurement trap consists of five electrodes and the cyclotron frequency is measured there.

cation trap. It is used to prepare the ion cloud, i.e., to cool the ions and separate them according to their mass up to the separation of isobars. The second trap is the measurement trap, which is used to measure the mass via the cyclotron frequency. The purification trap is a cylindrical seven-electrode Penning trap [81] with an inner diameter of $2\rho_0 = 32\,\mathrm{mm}$ and a total length of 212.5 mm. It consists of a total of seven electrodes: two end caps, two end cap correction electrodes, two ring correction electrodes and the ring electrode. The ring electrode is fourfold segmented. It is divided into two 40° and two 140° segments. A funnel electrode with combined pumping barrier is attached to the ejection side of the purification trap. In the purification trap, the ions are cooled and centered with helium via resonant buffer-gas cooling at a pressure of $10^{-4}\,\mathrm{mbar}$ (see Sect. 2.3.2). The unwanted species are stopped by the funnel electrode during ejection. A high buffer-gas pressure in the purification trap is needed for fast cooling the ions, but in the measurement trap the pressure should be as low as possible, because there collisions of the ions with the residual gas will damp the motion and thus reduce the accuracy of the mass measurement. A pumping barrier with a diameter of

2 mm between the two traps serves as the diaphragm for separation. This is a 50-mm long tube with a diameter of 2 mm placed between the two traps. A 5-mm thick disc has been placed additionally on the injection side of the measurement trap which has a 10 mm long tube with a diameter of 3 mm in the middle as a further pumping barrier. This ensures that the pressure on the measurement trap side is much lower than in the purification trap. In the past a hyperbolic measurement trap was used, it was replaced by a cylindrical Penning trap. It consists of five electrodes with an inner diameter of $2\rho_0 = 24$ mm and a total length of 145 mm. The trap consists of two end caps and two correction electrodes with a length of $l_c = 9.45$ mm and a ring electrode with a length of $l_r = 3.53$ mm. The correction electrodes are segmented (2 x 180°), and can be used for the excitation of the ions, e.g. for active damping of the initial axial motion. The ring electrode consists of eight 45° segments which enables applying external rf fields, e.g. for an octupolar excitation in future [71]. The characterization of the new measurement trap is described in Chap. 4. Both traps are made of oxygen-free copper and coated with a protective gold layer.

3.3 The drift section and the position-sensitive detector

The so-called drift section begins behind the measurement trap. This is an area consisting of eleven cylindrical electrodes that serve as drift tubes. Fig. 3.5 shows a drawing of the drift section with all electrodes and the position-sensitive delay-line detector. The electrodes have an inner diameter of $d = 45$ mm and are identified

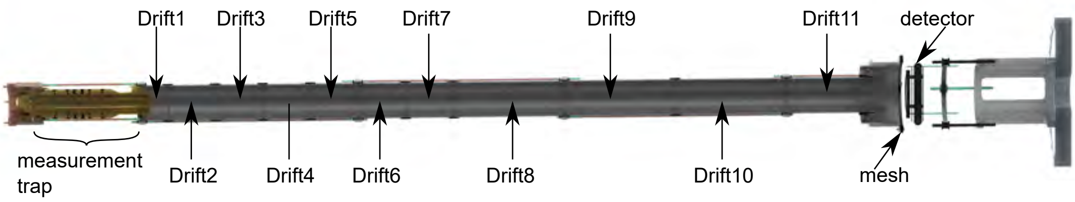

Figure 3.5: Model of the drift section and the delay-line detector.

as Drift 1 - Drift 11. In Tab. 3.1 the operating voltages used for the ToF-ICR measurements are listed. A mesh was installed at electrode Drift 11 to obtain a homogeneous electric field between the last electrode Drift 11 and the microchannel plate (MCP) of the delay-line detector. The position-sensitive detector installed behind the drift electrodes is a delay-line detector DLD40 (RoentDek Handels GmbH, Kelkheim). The detector can be used to detect charged particles with high position resolution ($< 0.1\,\mathrm{mm}$). The detector consists of a microchannel plate detector with a delay-line anode. Fig. 3.6 shows the schematic structure of the detector. A microchannel plate is an arrangement, usually made of lead glass, of many parallel channels that serve as electron multipliers. A channel typically has a diameter of $10 - 100\,\mu\mathrm{m}$ and a length-to-diameter ratio (L/D) between 40 and 100. The channels are either perpendicular or inclined at a small angle ($\sim 8°$) to the normal of the entrance surface.

Table 3.1: Operating voltages of the time-of-flight section. For ToF-ICR measurements, the electrodes Drift 4-6 are set to $-3\,\mathrm{V}$ to enable a slow adiabatic conversion and Drift 9 is set to $-120\,\mathrm{V}$ to focus the ions on the detector.

Name	Voltage	Length
Drift 1	-50 V	32.4 mm
Drift 2	-50 V	59.0 mm
Drift 3	-50 V	59.0 mm
Drift 4	-3 V	59.0 mm
Drift 5	-3 V	59.0 mm
Drift 6	-3 V	59.0 mm
Drift 7	-50 V	59.0 mm
Drift 8	-50 V	138.4 mm
Drift 9	-120 V	138.4 mm
Drift 10	-50 V	138.4 mm
Drift 11	-50 V	125.0 mm

A voltage is applied between the front and back of the channels. When a particle hits the surface of the channel, this generates a primary electron and due to the potential difference along the channel, the electron experiences an acceleration and triggers a cascade of $10^3 - 10^5$ secondary electrons. When the MCP's are arranged in the 'chevron' configuration, where the relative angle between the pores of the

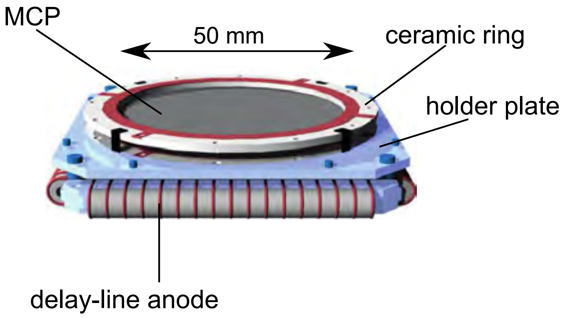

Figure 3.6: The delay-line detector consists of two MCP's held and insulated by ceramic rings, a holding plate and the delay-line anode. Only a few delay-line wires have been drawn in for sake of recognizably [82].

two plates is maximized [83], an electron multiplication of $> 10^7$ can be achieved, resulting in a signal that can be registered by the delay-line anode. Furthermore, the ion-feedback phenomenon is suppressed in this configuration. The delay-line anode consists of two pairs of wires that are helically wound on a ceramic core and rotated by 90° relative to each other (see Fig. 3.7). The position of the detected particle is obtained by the difference of the arrival times of the signals at both ends of the parallel-pair delay line, independent for x- and y-direction. Since the signal velocity along the delay line is of the order of the speed of light, a perpendicular signal velocity $v_{x_\perp}$ is defined. This describes the signal velocity transverse to the wire direction, i.e. it corresponds to the distance between two wire loops (typically 1 mm) divided by the full transit time along one wire loop. For illustration purposes, the geometry of one of the two delay lines is shown in Fig. 3.8. Let t_1 and t_2 be the time it takes for the signal to reach one of the ends of the wire, $T = t_1 + t_2$ be the sum of the travel times and $v_{x_\perp}$ be the propagation speed of the signal in the x-direction. Then the position x can be determined via

$$x = v_{x_\perp} \left(t_1 - \frac{T}{2} \right) \tag{3.1}$$

or

$$x = v_{x_\perp} \left(t_2 - \frac{T}{2} \right) . \tag{3.2}$$

These lead to:

$$x = \frac{1}{2} v_{x_\perp} \left(t_1 - t_2 \right) . \tag{3.3}$$

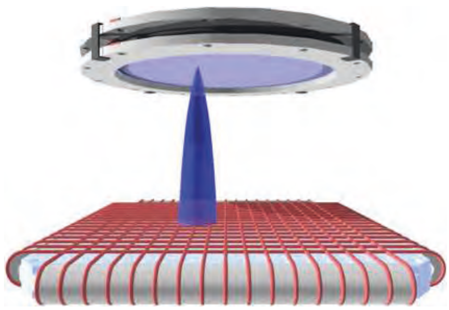

Figure 3.7: The avalanche of electrons created in the MCP's hits the delay-line wires. The generated signals propagate in opposite directions. The time it takes for the signals to reach the respective end of the wire is measured by using a Time-to-Digital Converter card (TDC) [82].

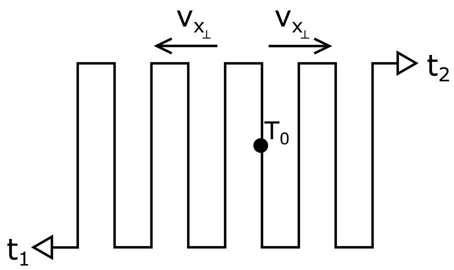

Figure 3.8: Geometry of the delay-line-wire. At T_0, the electron avalanche hits the delay-line-wire and the signals propagate in the x-direction with the velocity $v_{x_\perp}$. The signals need the time t_1 or t_2 to reach the end of the wire.

These travel times t_1 and t_2 can be determined and thus, according to Eq. 3.3, also the position of the event. The same applies to the y-direction. This results in a two-dimensional position resolution [84].

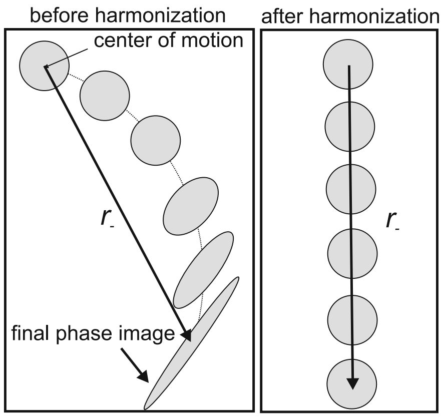

Figure 3.9: Effect on magnetron spot with increasing magnetron radii when first the Penning trap has non-quadratic potential before harmonization (left) and after harmonization with a quadratic potential. With the non-quadratic potential, the spot becomes more distorted the larger the radius becomes [67]

Besides the PI-ICR method planned for the near future, where the delay-line detector is mandatory, it is also a very useful tool in trap optimization. For example, as described by Eliseev et al. in [67], the harmonicity of the trapping potential can be tested. This involves recording the magnetron phase with a fixed reference phase as well as a constant accumulation time with different excitation amplitudes resulting in different magnetron radii r_-. If the potential in the trap is not quadratic, a distortion of the magnetron spot occurs which becomes stronger the larger the magnetron radius r_- is (see Fig. 3.9). This method is called the magnetron line method. The detector is also an important tool for selecting the condition in which the species to be studied should be. With the help of the detector it can be checked whether the measurement trap contains only the species to be investigated or if there are any additional contaminants in the measurement trap as well. To investigate this, the reduced cyclotron motion of the ions of interest is excited by a dipolar excitation and then all ions are released from the trap. If only ions of the species of interest are in the trap, the reduced cyclotron motion is imaged as a smeared circle on the detector (Fig. 3.10a). However, if there are contaminants in the measurement trap for whatever reason, they will not be excited and will remain in the center of the trap. In this case, when the ions are ejected, the smeared out ring of excited ions is obtained as well as a spot of unexcited contaminants in the center as shown in Fig. 3.10b. Such contamination check was carried out in this work before each measurement of the actinide isotopes.

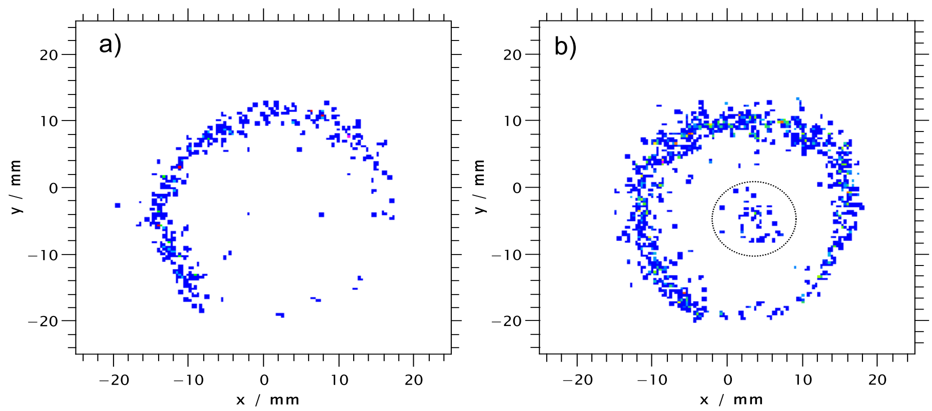

Figure 3.10: Contamination check using ^{242}Pu as an example. Thereby it was investigated which species is more suitable for a mass measurement. For a), $^{242}PuO_2^+$ was chosen as the species. No unexcited ions are seen after dipolar excitation at the modified cyclotron frequency $\nu_{+,dioxide}$ with an excitationamplitude 0.3 V and an excitationtime 10 µs, indicating that this species is suitable for mass measurement. For b), $^{242}PuO^+$ was used. Here, after dipolar excitation with $\nu_{+,monoxide}$, unexcited ions are clearly seen in the center. These unexcited ions would interfere with a mass measurement. Therefore, the choice for the species to be studied falls on $^{242}PuO_2^+$.

3.4 Measurement and evaluation procedure

To perform a mass measurement at TRIGA-TRAP, the cyclotron frequency of the ion of interest and the reference ion are measured alternately as described in Sect. 2.4.4. In Fig. 3.11 the time sequence of a measurement cycle is shown graphically and described below. A measurement cycle starts with the production of the ions. A 5 ns laser pulse (1.) is used to produce the ions in the mini-

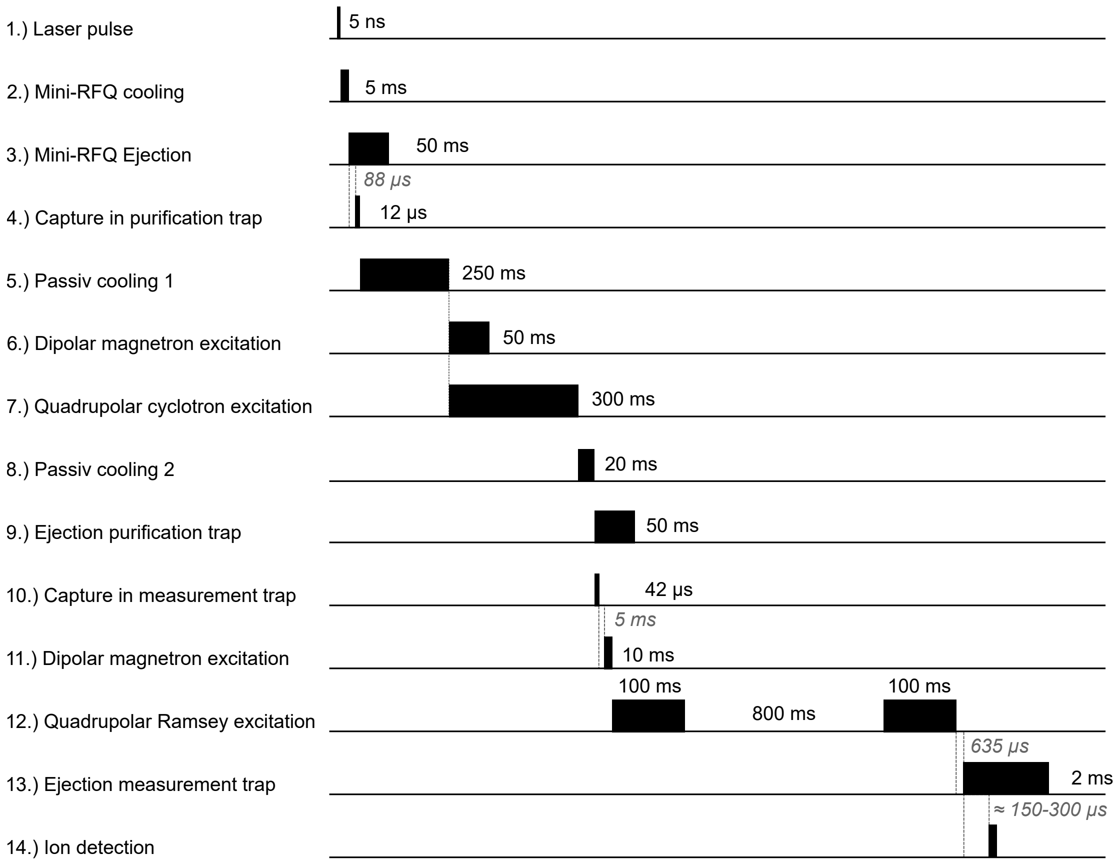

Figure 3.11: The measurement cycle of a time-of-flight measurement with a Ramsey excitation scheme as used in this work, starting with the laser pulse to generate the ions until they hit the detector. Waiting times were written in gray italic. The length of the drawn time intervals is not to scale.

RFQ. In the mini-RFQ the ions are stored for 5 ms (2.) to cool the ion ensemble. Subsequently, the voltage of the front end cap electrode is set to −20 V for 50 ms (3.) in order to release the ions from the mini-RFQ. After about 88 µs the ions reach the first trap. The voltage of the end caps and correction electrodes on the input side of the purification traps are set down for 12 µs to allow the ions to enter the trap (4.). In the purification trap, the ions are first stored for 250 ms (5.) while the initial axial and the initial cylcotron motion by buffer-gas collisions are damped. Then a dipolar excitation (6.) at the magnetron frequency ν_- for 50 ms and a quadrupolar excitation (7.) at the cyclotron frequency ν_c of the studied ion for 300 ms are started simultaneously. With the dipolar excitation the ions are brought to a magnetron radius, the simultaneous quadrupolar excitation immediately converts the magnetron motion into reduced cyclotron motion for the ion of interest (mass resolution: $1-1.5\cdot10^5$). After the completion of both excitations, the ions remain in the purification trap (8.) for another 20 ms to cool any remaining cyclotron motion. Now the centered ions can be ejected from the purification trap by lowering the electrode voltage on the ejection side of the trap for 50 ms (9.). At the same time, the injection side of the measurement trap is opened for 42 µs (10.) to trap the ions. After a waiting time of 5 ms, the actual frequency measurement is performed as described in Sect. 2.4.1. Here, the ions are first brought to a defined magnetron radius by means of a dipolar excitation for 10 ms (11.). Then the conversion of the magnetron to the modified cyclotron motion with quadrupolar excitation is performed for one second. The Ramsey excitation pattern is used, in this case the two excitation pulses of 100 ms each are separated by a waiting time of 800 ms (12.) . After the excitation is finished, the ions are ejected from the measurement trap towards the delay-line detector (13.). The ions move through the drift section to the detector and hit it after about $200-300$ µs. Now this measurement cycle is repeated and in the next step the excitation frequency for the conversion ν_q in the measurement trap is increased by 150 mHz. One scan consists of 29 measurement cycles, which means that a frequency range of 4.2 Hz is investigated. In order to detect enough ions to later perform a z-class analysis [85], 40 scans were performed. This corresponds to a measurement time of about 40 minutes. To control this measurement sequence the software program “MM8” was used [86]. To obtain the cyclotron frequency from the spectra with the help of fits and the z-class analysis the program “EVA 8.3.0.5” was used [87]. In the z-class analysis the data are divided into different count-rate classes. In other words, the subdivision is done on the basis of the number of particles registered on the detector after the ejection. The classes are divided so that each class has the same number of ions and the cyclotron frequency is determined by a fit [88]. By linear extrapolation of the cyclotron frequency of each class, the cyclotron frequency is determined corresponding to one trapped ion at an assumed detector efficiency of 30 %. For further evaluation the frequency ratio $r = {}^{\nu_{c,ref}}/_{\nu_c}$ of the cyclotron frequencies of the reference ion and the ion of interest is needed. Since the cyclotron frequencies of the ion of interest and the reference ion cannot be measured simultaneously, they are always measured alternately. Before and after the frequency measurement of the ion of interest, the reference ion is measured. From the two measured frequencies of the reference ion, the reference frequency $\bar{\nu}_{c,ref}$ is determined by linear extrapolation to the time of the measurement of the ion of interest. The time of a measurement is always taken as the middle of the time interval in which the measurement took place. As already described in Sect. 2.2, the measured cyclotron frequency $\bar{\nu}_c$ is shifted by $\Delta\bar{\nu}_c$. Therefore, the true cyclotron frequency ν_c is calculated with Eq. 2.20. To obtain the resulting frequency ratio the weighted average of all frequency ratios is computed

$$r = \frac{\sum\limits_i \frac{r_i}{\sigma_i^2}}{\sum\limits_i \sigma_i^{-2}} \tag{3.4}$$

The resulting uncertainty is described by:

$$\sigma_i = \sqrt{\left(\frac{\partial r_i}{\partial \nu_{i,ref}} \cdot \delta\nu_{i,ref}\right)^2 + \left(\frac{\partial r_i}{\partial \nu_{i,ioi}} \cdot \delta\nu_{i,ioi}\right)^2 + \left(\frac{\partial r_i}{\partial \Delta\bar{\nu}_c} \cdot \delta\Delta\bar{\nu}_c\right)^2 + \left(\frac{u_f(\nu_{ref})}{\nu_{ref}} \cdot \Delta t\right)^2} \tag{3.5}$$

Here the first term is related to the determination of the cyclotron frequency of the reference ion, the second to that of the ion of interest, the third term to the frequency shift and the last term considers nonlinear fluctuations of the magnetic field, which is discussed in Sect. 4.3.

4 Commissioning of the new cylindrical measurement trap

Count rate variations depending on the magnetron phase have been observed in the past [47]. Possible explanations for this phenomenon were a non-harmonic potential of the hyperbolic measurement trap, or a mechanical offset or tilt angle between the purification and measurement trap [89]. Several attempts to overcome this problem were not successful. After a quench of the superconducting magnet in 2017, it was decided to replace the hyperbolic measurement trap [81] with a cylindrical measurement trap. In addition, cylindrical traps have the following advantages: (1) Cylindrical electrodes can be produced much more easily than hyperbolic electrodes. (2) Ion transport is much easier [90]. In this chapter, the new trap itself is presented first. Then the optimization of the electric field of the measuring trap and finally the investigations of the systematic errors are described.

4.1 The cylindrical measurement trap

In Fig. 4.1 the 3D model of the new cylindrical measurement trap is shown. It is a Penning trap consisting of five electrodes. The cylindrical Penning trap described by F. Köhler in his PhD-thesis [90] was taken as a basis. Based on this model, the dimensions were scaled to make it suitable for TRIGA-TRAP. Thus, the inner diameter was scaled to $r = 12\,\mathrm{mm}$. With the dimensions obtained by scaling, the design of the trap was numerically optimized to minimize $|C_4|, |C_6|$ and D_2. This calculation was performed by F K [91].The dimensions listed in Tab. 4.1

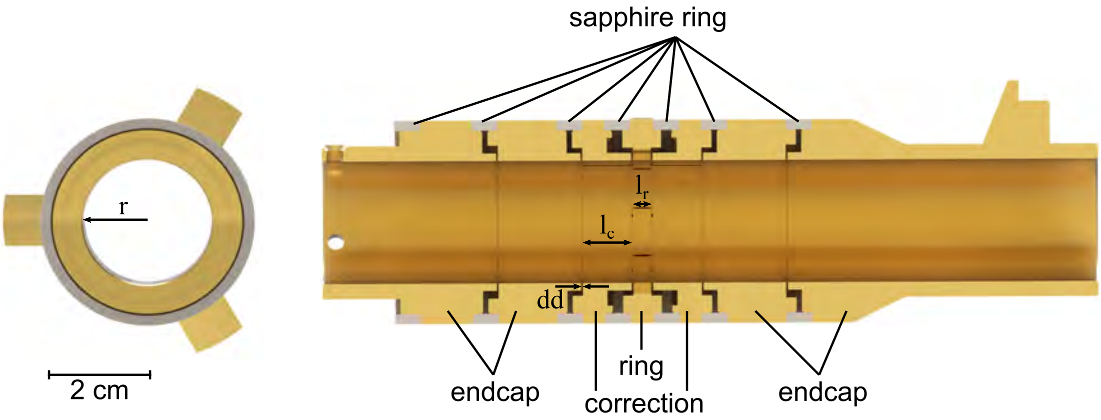

Figure 4.1: Top view of the new measurement trap (left). Cross section of the measurement trap (right). Electrodes are represented in gold and the insulators in gray. The correction electrodes are split in two segments and the ring electrode is split in eight segments.

were calculated for the new cylindrical Penning trap. The ring electrode thus has a length $l_r = 3.530\,\text{mm}$, to the left and right of the ring come the correction electrodes of length $l_c = 9.450\,\text{mm}$ and then come the end caps. The distance between the electrodes $dd = 0.336\,\text{mm}$. Eq. 2.4 can now be used to calculate the characteristic trap dimension $d_{char} = \sqrt{1/2 \cdot (z_0^2 + r^2/2)}$ with $z_0 = l_r + dd + l_c + dd$. The length of the end caps was chosen so that the electric fields, left and right of the trap do not disturb the electric potential in the centre of the measurement trap. The tuning ratio: $TR = U_{cor}^*/U_r^*$ is a result of determining the minimum of higher order terms of the trapping potential, in addition to the quadrupolar term. That is why it is an important parameter. U_r^* is the voltage applied to the ring electrode and U_{cor}^* is the voltage applied to the correction electrode when the end caps are grounded. At TRIGA-TRAP, the trap potential is shifted by 20 V, in order to have the ring electrode on 0 V, a convenient situation to attach the rf signals for excitation. This gives us the following theoretical values: $U_r = 0\,\text{V}$, $U_{cor} = 2.379\,\text{V}$, $U_e = 20\,\text{V}$.

After the superconducting magnet was re-energized, the magnetic field had to be measured again so that the optimum position of the ring electrode in the magnetic field could be found. For this purpose, the magnetic field was measured with a Gauss/Teslameter Modell 7010 (F.W. Bell®) and a PT2025 NMR precision

Table 4.1: Trap dimensions and the calculated electric potential coefficients from the new cylindrical measurement trap.

Electrode dimensions (mm)	
r	12.0
l_r	3.530
l_c	9.450
dd	0.336

Characteristic trap parameter (mm)	
d_{char}	10.327

coefficient el. potential	value
C_4	$8.9197 \cdot 10^{-9}$
C_6	$8.6896 \cdot 10^{-6}$
D_2	$-4.4297 \cdot 10^{-5}$

Tuning ratio	
TR_{th}	0.88103729

Teslameter (Metrolab Technology SA). This measurement was not only done on the axis of the bore, but also with different radial offsets $r = 5, 10, 15$ and 20 mm and different angles $\phi = 0°, 45°, 90°, 135°, 180°, 225°, 270°$ and 315°. In Fig. 4.2 the measured magnetic field in the radial center of the bore is shown along the z-axis with two homogeneous zones in which the centers of the Penning traps should be located. Thus, the ring electrode of the measuring trap should be positioned 97.5 mm away from the center so that the ions when stored in the trap experience the magnetic field with the highest homogeneity.

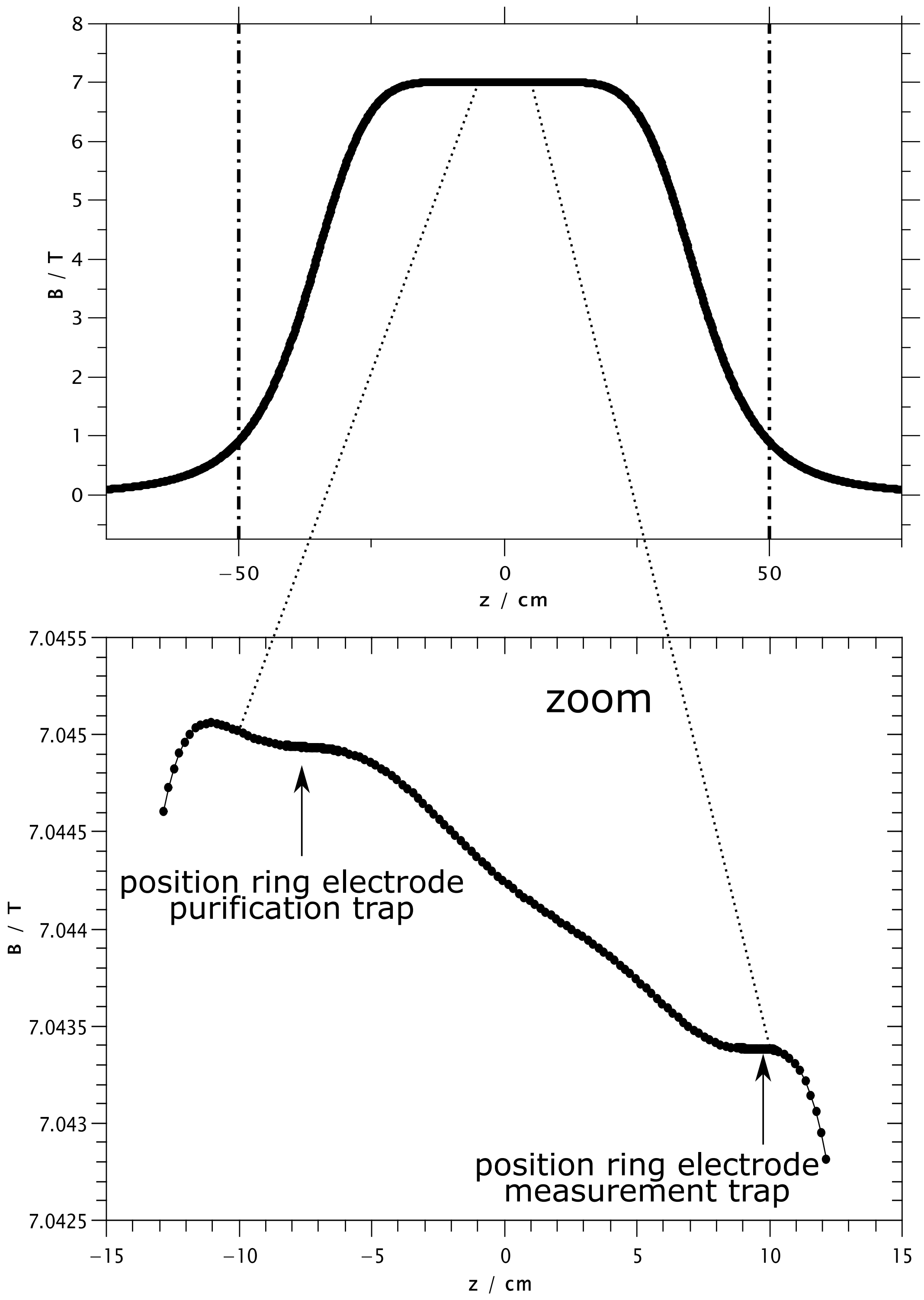

Figure 4.2: The magnetic field and the location of the Penning traps

4.2 Optimisation of the electric field

To perform a mass measurement with a Penning trap requires an electric field that should resemble a quadrupolar shape. To obtain an ideal quadrupole potential in the area of the ring electrode, the voltages of the correction electrodes must be fine adjusted. This is the only way to minimize contributions from higher order terms in the quadrupole potential in the trap. For this purpose, the proper voltage of the correction electrode must be applied. Starting from the voltage obtained from the theoretical tuning ratio for the correction electrodes, using the so-called magnetron line method (see Sect. 3.3), a roughly optimized correction voltage was determined (see Tab. 4.1). For this purpose $^{208}Pb^{+}$ ions were used. In Fig. 4.3 a) and b) two recorded magnetron lines are shown, first at the theoretical voltage $U_c = 2.379\,\mathrm{V}$ and at $U_c = 2.515\,\mathrm{V}$. One can clearly see the distortion of the magnetron line at $U_c = 2.379\,\mathrm{V}$, and the potential in the trap is hence not optimal. In contrast, the magnetron line is hardly distorted at $U_c = 2.515\,\mathrm{V}$ and almost a straight line. Therefore, the voltage of the correction electrode was investigated in more detail in the region of $U_c = 2.515\,\mathrm{V}$. The method described by Beck et al. in [92] was used. In an ideal electric field the ions have the same modified cyclotron frequency independent from their motional amplitude. The modified cyclotron frequencies were measured at different voltages of the correction electrodes. This was repeated for different capture times. The different capture times lead to different axial amplitudes for the ions in the measurement trap, allowing them to probe different volumes of the measurement trap. Ideally, the measured modified cyclotron frequencies should be the same for the different capture times. Here three different capture times were used. In Fig. 4.4, the measured modified cyclotron frequencies are plotted against the applied voltage of the correction electrodes for different capture times $t_1 = 40.55\,\mu\mathrm{s}$, $t_2 = 41.8\,\mu\mathrm{s}$, and $t_3 = 43.05\,\mu s$. The ions in t_2 have the smallest axial amplitudes and so is this the optimal capture time. Hence, this frequency was used as a reference frequency for the further procedure. In Fig. 4.5 the difference $\Delta\nu_+$ of the measured modified cyclotron frequencies to the reference frequency are plotted now for $t_1 = 40.55\,\mu\mathrm{s}$ and $t_3 = 43.05\,\mu s$ at different correction voltages. Both capture times deviate from the optimal capture times to enlarge the axial amplitude of the ion, because

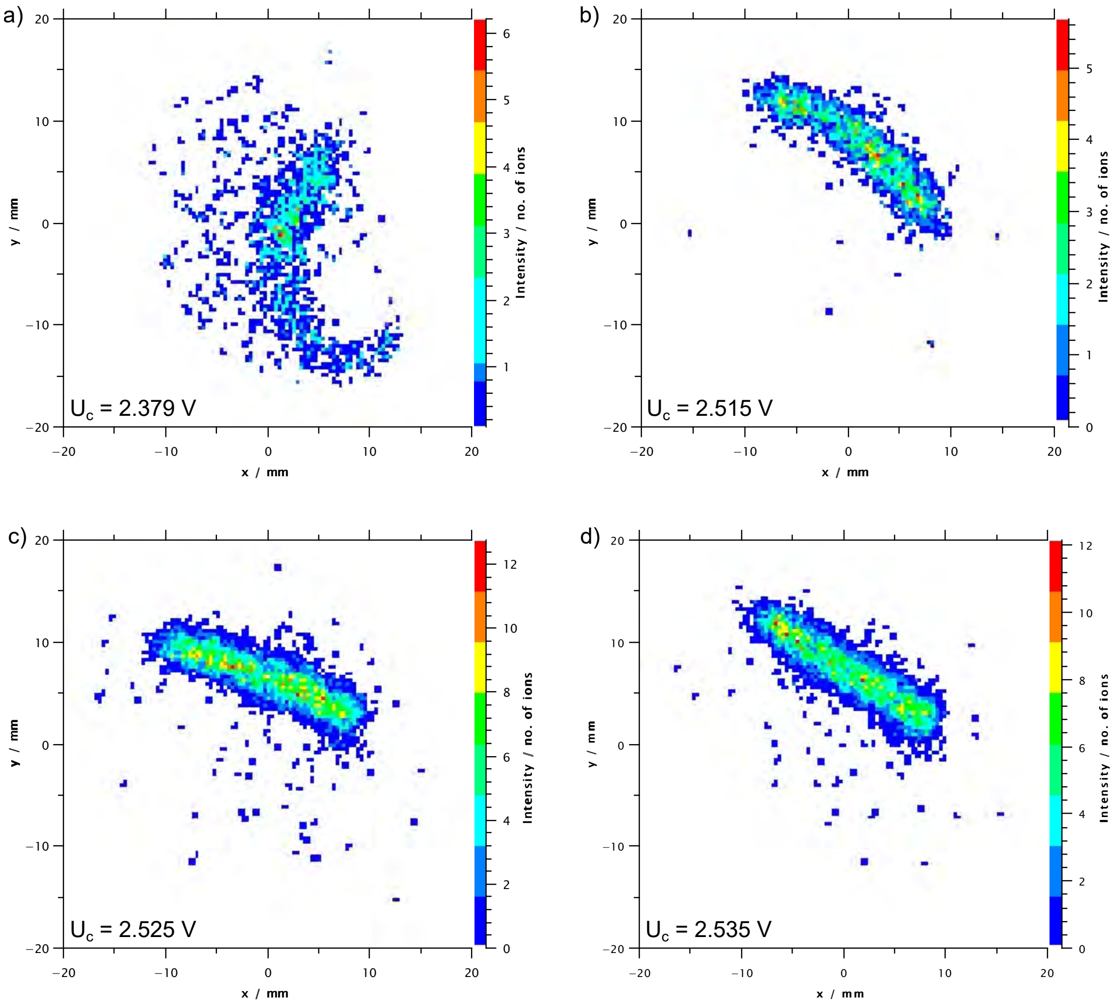

Figure 4.3: Four different magnetron lines are shown. In each case the excitation amplitude was varied from 0 mV to 500 mV in 50 mV steps and after an accumulation time of one second the stored ions were ejected towards the position-sensitive detector. In a), the voltage obtained from the theoretical tuning ratio for the correction electrode $U_c = 2.379$ V was used. In b), the used voltage for the correction electrode was $U_c = 2.515$ V. Magnetron lines with correction voltages $U_c = 2.525$ V (c) and $U_c = 2.535$ 3V (d) were finally recorded.

then the ion experiences the perturbations more strongly. If no perturbations are present, the modified cyclotron frequencies should be the same. A linear extrapolation gives a correction voltage $V_c = 2.525\,\mathrm{V}$.

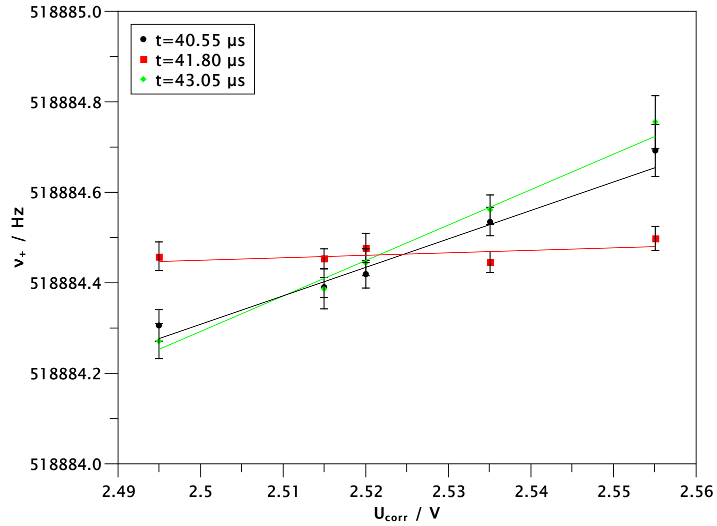

Figure 4.4: Modified cyclotron frequency as a function of the correction voltage for different capture times $t_1 = 40.55\,\mu\mathrm{s}$ (black), $t_2 = 41.8\,\mu\mathrm{s}$ (red), and $t_3 = 43.05\,\mu s$ (green).

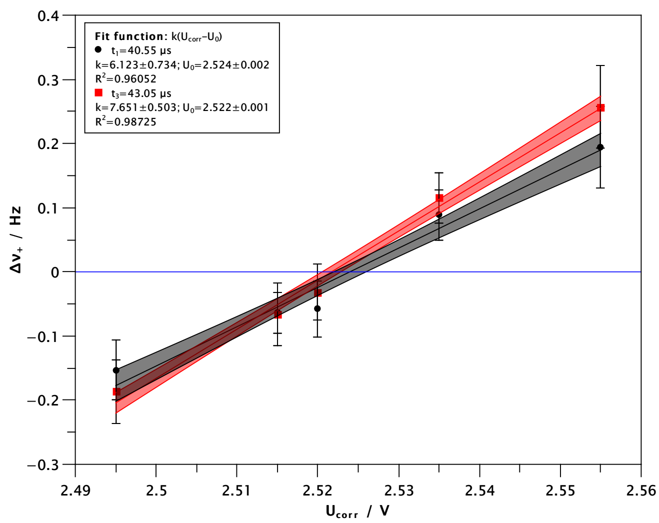

Figure 4.5: Difference between measured modified cyclotron frequencies and the reference frequency at times t_1 and t_3 at different correction voltages.

As a check of the correction voltage, the so-called magnetron line (see Sect. 3.3) was recorded for three different voltages $V_1 = 2.515\,\mathrm{V}$, $V_2 = 2.525\,\mathrm{V}$, and $V_3 = 2.535\,\mathrm{V}$. The result is presented in Fig. 4.3 b)-d). At a voltage of $V_c = 2.535\,\mathrm{V}$ the magnetron line starts to bend in the opposite direction. These measurements confirm the correction voltage of $U_c = 2.525\,\mathrm{V}$ obtained from the linear fit. With the new correction voltage, the experimental tuning ratio $TR_{exp} = 0.87385$ is obtained. The fact that the experimentally obtained value differs from the predicted one is probably due to the fact that the segmentation of the electrodes was not implemented in the simulations.

4.3 Stability of the magnetic field

Due to the *flux-creep-effect* described in Sect. 2.2, the magnetic field strength would decrease steadily logarithmically. To counteract this effect, the magnet is equipped with auxiliary coils which have to be discharged once a month. In order to perform high-precision mass measurements on TRIGA-TRAP, the temporal stability of the magnetic field was further investigated. Therefore the cyclotron frequency ν_c of $^{208}\mathrm{Pb}^+$ ions was measured over a period of about 140 h with the ToF-ICR method. The Ramsey excitation scheme with two 100 ms pulses and a waiting time of 800 ms in between was used. In one measurement 40 scans were recorded, this corresponds to the duration which was also used for the mass measurements of actinide isotopes. During the entire measurement, the pressure in the liquid helium vessel was stabilized to $\pm 0.5\,\mathrm{mbar}$ and the temeprature of the bore of the magnet was kept constant within an interval of $\pm 75\,\mathrm{mK}$. The magnetic field was calculated by

$$B = 2\pi \frac{m_{Pb^+} \nu_c}{e}, \tag{4.1}$$

where m_{Pb^+} is the mass of the $^{208}\mathrm{Pb}^+$ ion, and e the charge of the ion. As a result in Fig. 4.6 the relative deviation of the magnetic field $\frac{\Delta B}{B}$ is plotted versus time. It is found that the magnetic field strength increases slightly over time. The linear fit gives an increase of

$$\frac{\Delta B}{B \cdot \Delta t} = 2.5(2) \cdot 10^{-10}\,\mathrm{h}^{-1} \tag{4.2}$$

which is generated by overcompensation of the auxiliary coil. If this result is compared with earlier measurements performed at TRIGA-TRAP [77], it shows that the installation of the temperature stabilization of the borehole at 30° C, as well as the pressure regulation of the liquid helium vessel has improved the long-term stability of the magnetic field by an order of magnitude [93]. The absolute value of the long-term drift of the magnetic field has not to be considered in the data evaluation, since the measurement time (40 minutes) is sufficiently short and will only serve as a value for the long-term stability of the magnet.

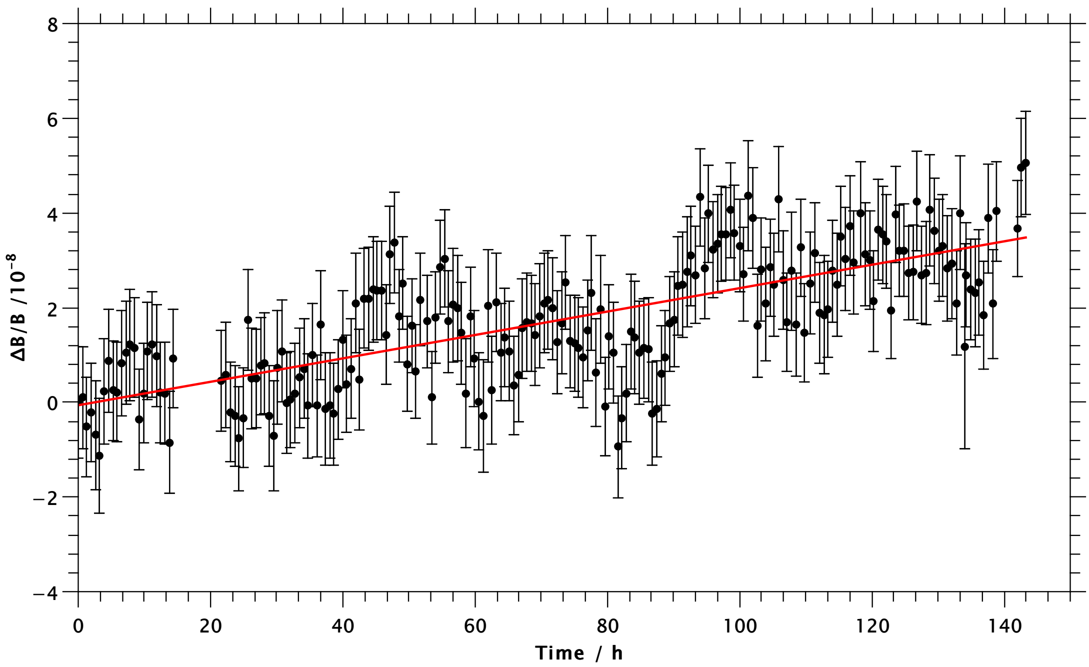

Figure 4.6: Magnetic field fluctuations in the measurement trap

In addition to the linear change in magnetic field strength, another fluctuation can be seen in Fig. 4.6, which takes place on a much shorter time scale. Since the reference ion and the ion of interest are measured alternately in the frequency measurements for a mass measurement, this creates an additional systematic uncertainty in determining the cyclotron frequency of the reference ion at the time of the frequency measurement of the ion of interest. In order to take this effect into account in the subsequent evaluation, we proceed as it was done in the past for other experiments [77, 85]. For this purpose, the same data set is used as shown in Fig. 4.6. As already described, one measurement consists of 40 scans. The middle of the time interval in which the measurement took place, is taken as the time of the measurement. Now one takes two frequency measurements which are separated by the time Δt as a reference measurement, interpolates these two frequencies to the middle of the time interval, and compares the linearly-interpolated frequency ν_{int} with the actual frequency measured ν_{meas} at this time one obtains the frequency difference. This procedure is performed with different Δt. In Fig. 4.7, the relative standard deviation $\sigma(\nu_{int} - \nu_{meas})/\nu_{int}$ of the interpolated cyclotron frequency to the actual cyclotron frequency is plotted for time intervals Δt. For the linear fit, the relative standard deviation of a single measurement $6.8 \cdot 10^{-9}$ is taken as the fixed intercept. The slope gives the additional uncertainty of the interpolated cyclotron frequency due to the nonlinear fluctuations of the magnetic field

$$\frac{u_f(\nu_{ref})}{\nu_{ref}} = 5.1(3) \cdot 10^{-12}/\mathrm{min} \cdot \Delta t. \tag{4.3}$$

In addition to the long-term stability, the influence of the stabilized temperature of the bore on the cyclotron frequency was also investigated. For this purpose, the target temperature of the temperature stabilization was varied between 28 °C and 34 °C. In order for the entire bore to thermalize, one hour was waited and then the cyclotron frequency of $^{208}\mathrm{Pb}^{+}$ was measured using the time-of-flight method with Ramsey excitation pattern. Measurements were started at 30 °C and the temperature was then increased in steps of 2 °C up to 34 °C. Subsequently, the temperature was lowered in 2 °C steps to 28°C and finally, a frequency measurement was taken one more time at 30 °C. In Tab. 4.2 the measured frequencies at the corresponding temperatures are listed. In Fig. 4.8 this is represented graphically. The measured cyclotron frequency obviously increases with increasing temperature. The equation resulting from the fit is as follows

$$\nu_c(T) = 0.105(3) \cdot T + 520049.74(9) \tag{4.4}$$

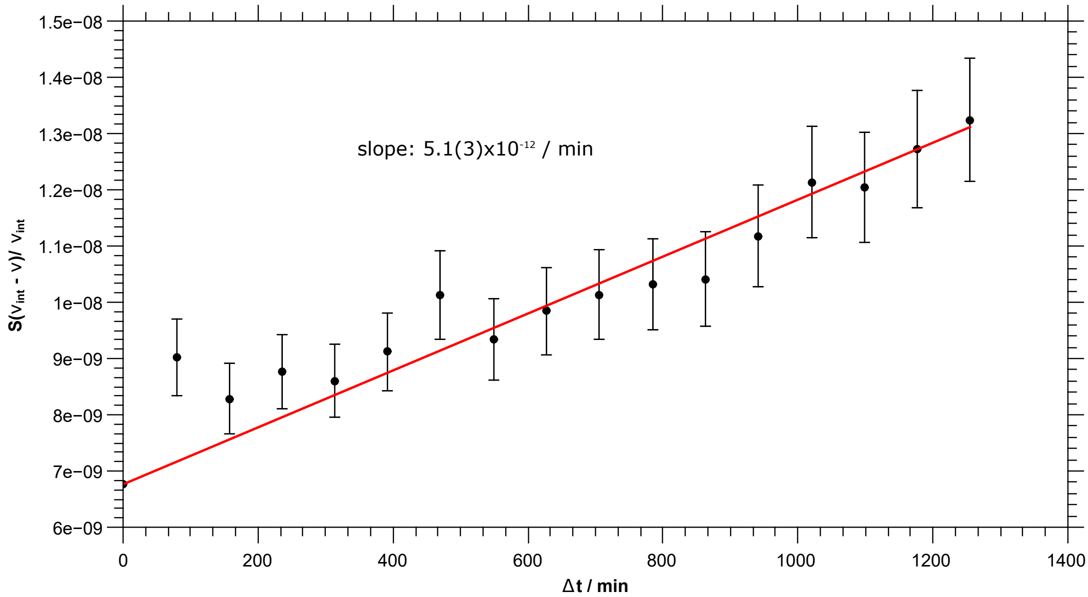

Figure 4.7: Relative deviation of the interpolated from the true cyclotron frequency

As a consequence, a change in temperature by 1°C changes the frequency of the $^{208}Pb^{+}$ ion by about 100 mHz

Table 4.2: Measured cyclotron frequency for different temperatures of the bore.

Temperature (°C)	measured cyclotron frequency ν_c (Hz)
30.00(3)	520052.873(12)
32.00(3)	520053.087(7)
34.00(4)	520053.298(8)
32.00(4)	520053.111(6)
30.00(3)	520052.878(11)
28.00(3)	520052.665(17)
30.00(4)	520052.889(5)

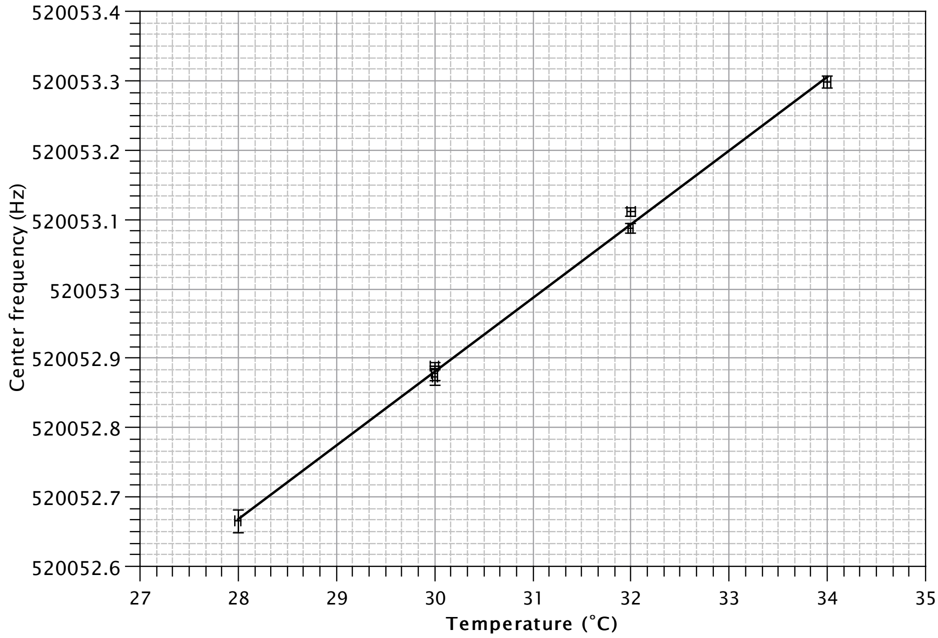

Figure 4.8: Measured cyclotron frequency as a function of the temperature of the magnet bore. With the help of a linear fit, the temperature dependence of the cyclotron frequency can be determined.

4.4 Mass dependent shift

Another important effect to be investigated in this work is the so-called mass-dependent shift of the measured cyclotron-frequency ratio. This effect is caused by the misalignment described in Sect. 2.2. In first approximation, this shift $\Delta\bar{\nu}_c$ is not mass dependent and can be described by Eq. 2.20. As already described in Sect. 2.4.4, mass measurements in Penning trap spectrometer experiments always measure the frequency ratio between the reference ion and the ion of interest. Therefore, the required frequency ratio is

$$r_{corr} = \frac{\nu_{c,ref} - \Delta\bar{\nu}_c}{\nu_{c,ioi} - \Delta\bar{\nu}_c}, \tag{4.5}$$

where r_{corr} is the corrected frequency ratio, $\bar{\nu}_{c,ref}$ is the measured cyclotron frequency of the reference ion, $\bar{\nu}_{c,ioi}$ is the measured cyclotron frequency of the ion of interest and $\Delta\bar{\nu}_c$ is the frequency shift due to the misalignment. As already mentioned, at present only singly charged ions can be used at TRIGA-TRAP. With Eq. 2.32 an equation was already introduced with which the desired atomic mass can be calculated, applying the correction results in:

$$m_{atom,corr} = \frac{\nu_{c,ref} - \Delta\bar{\nu}_c}{\nu_{c,ioi} - \Delta\bar{\nu}_c}\left(m_{ref} - m_e\right) + m_e. \tag{4.6}$$

With the following conversion

$$\begin{aligned}
\Delta m_{atom} &= m_{atom,corr} - m_{atom} \\
&= \frac{\nu_{c,ref} - \Delta\bar{\nu}_c}{\nu_{c,ioi} - \Delta\bar{\nu}_c}\left(m_{ref} - m_e\right) - \frac{\nu_{c,ref}}{\nu_{c,ioi}}\left(m_{ref} - m_e\right) \\
&= \frac{\Delta\bar{\nu}_c\left(\nu_{c,ioi} - \nu_{c,ref}\right)}{\left(\nu_{c,ioi} + \Delta\bar{\nu}_c\right)\nu_{c,ioi}}\left(m_{ref} - m_e\right) + m_e \\
&= \frac{\Delta\bar{\nu}_c}{\nu_{c,ioi} + \Delta\bar{\nu}_c}\left(m_{ref} - m_{atom}\right)
\end{aligned} \tag{4.7}$$

it can be shown that the relative mass shift

$$\begin{aligned}
\frac{\Delta m_{atom}}{m_{atom}} &= \frac{\Delta\bar{\nu}_c}{m_{atom}\left(\nu_{c,ioi} + \Delta\bar{\nu}_c\right)}\left(m_{ref} - m_{atom}\right) \\
&\propto \left(m_{ref} - m_{atom}\right)
\end{aligned} \tag{4.8}$$

is proportional to the mass difference of the reference mass and the desired mass [94]. To keep this effect as small as possible, the mass difference between reference and ion of interest should be kept as small as possible. That is why mass measurements of mass doublets are preferable. In the past, carbon clusters ions have been used as reference ions at TRIGA-TRAP as well as at other Penning trap spectrometer experiments [77, 85, 95, 96]. Carbon clusters seemed to be predestined for mass measurements in the actinide range because there are no suitable reference masses in the $A \geq 230$ amu range that are known with sufficient precision.

Moreover, the maximum mass difference between the carbon cluster reference and the species considered can be a maximum of six atomic mass units by choosing the nearest carbon cluster size. In the current work carbon cluster ions were not used due to technical difficulties in obtaining a pure cooled ion sample for a specific carbon-cluster size in the measurement trap. ^{208}Pb is one of the heaviest nuclides for which the mass is known with a relative uncertainty of $5.8 \cdot 10^{-9}$. ^{208}Pb^{+} ions can be produced in the laser-ablation ion source and prepared properly in the purification trap in a straightforward manner.

4.4.1 Frequency shift using the AME2020

The cyclotron frequencies of two of the isotopes mentioned below were alternately recorded and evaluated, as described in Sect. 3.4. To determine the frequency shift $\Delta\bar{\nu}_c$, different frequency ratios were recorded with the following isotopes ^{46}Ti, ^{48}Ti, ^{133}Cs, ^{197}Au, ^{206}Pb, ^{207}Pb and ^{208}Pb and then the frequency shift to the frequency ratios r_t based on the masses given in the AME2020 [8] was calculated using the following formula:

$$\Delta\bar{\nu} = \frac{r_t \cdot \nu_{c,ioi} - \nu_{c,ref}}{r_t - 1}. \tag{4.9}$$

The individual nuclides were produced as follows. For lead and gold, a thin foil was glued to the targetholder. Caesium was deposited onto the target as a solution and then evaporated to dryness. An ICP-MS ^{133}Cs-standard solution from SCP Science containing $1.4 \cdot 10^{16}$ Cs atoms in a nitric acid matrix was used for this purpose. Since the target tip itself is made of titanium, the nuclides of interest were obtained by bombarding the target surface.

Table 4.3: Calibration measurements of several ion species. Each ion of interest and the corresponding reference ion with the measured cyclotron-frequency ratio r are listed. The frequency shift $\Delta\bar{\nu}_c$ was determined The uncertainty given was calculated according to the error propagation law.

Ion of interest	Reference ion	r	$\Delta\bar{\nu}_c$ / mHz
^{206}Pb	^{208}Pb	0.9903729935(37)	-160(200)
^{207}Pb	^{206}Pb	1.0048619351(61)	-100(670)
^{208}Pb	^{207}Pb	1.0048351382(56)	371(600)
^{48}Ti	^{208}Pb	0.2305428148(9)	59.1(3.0)
^{46}Ti	^{48}Ti	0.9583853480(34)	340(190)
^{46}Ti	^{206}Pb	0.2230966083(6)	65.4(3.4)
^{197}Au	^{208}Pb	0.9470608483(33)	169(34)
^{197}Au	^{207}Pb	0.9516400184(43)	148(51)
^{197}Au	^{206}Pb	0.9562668242(42)	99.0(55.0)
^{197}Au	^{48}Ti	4.1079607779(155)	56.9(2.8)
^{197}Au	^{46}Ti	4.2863351823(130)	50.8(2.1)
^{207}Pb	^{46}Ti	4.5041560359(147)	64.4(2.2)
^{208}Pb	^{46}Ti	4.5259342619(128)	65.0(1.9)
^{206}Pb	^{48}Ti	4.2958311298(128)	56.9(2.0)
^{207}Pb	^{48}Ti	4.3167171265(128)	64.6(1.8)
^{133}Cs	^{208}Pb	0.6390393251(26)	58.5(6.3)
^{133}Cs	^{197}Au	0.6747605854(27)	58.6(7.0)
^{197}Au	^{208}Pb	0.9470608393(40)	80.0(44.0)
^{197}Au	^{208}Pb	0.9470608384(41)	72.0(43.0)
^{48}Ti	^{208}Pb	0.2305428130(8)	54.0(2.4)

In Tab. 4.3 all measurements used to determine the frequency shift are listed. The table includes the ions used, the reference ion with the measured frequency ratios r_{meas} and the resulting frequency shift $\Delta\bar{\nu}_i$. The weighted mean of the frequency shifts $\Delta\bar{\nu}_i$ listed in Tab. 4.3 gives

$$\Delta\bar{\nu}_{AME2020} = 60.4(1.4)\,\text{mHz}. \tag{4.10}$$

4.4.2 Frequency shift with a new mass value for ^{208}Pb

As will be shown in Sect. 5.3, the mass of ^{208}Pb published in AME2020 with an accuracy of $6 \cdot 10^{-9}$, turned out not to be suitable to be used as a reference. However, in an independent recent measurement at PENTATRAP [97] of the frequency ratio of $^{208}Pb^{41+}$ vs. $^{132}Xe^{26+}$, the ^{208}Pb mass was determined with a relative precision of $4.5 \cdot 10^{-10}$. This value differs by 1.33 keV [98] from the value listed in the AME2020. As a result, the entire calibration for the frequency shift is no longer correct and must be recalculated using the measured frequency ratio data. However, the masses of ^{206}Pb and ^{207}Pb are strongly related to the ^{208}Pb mass and these were not re-measured. Therefore, all measurements available in Tab. 4.3 where ^{206}Pb or ^{207}Pb were used had to be discarded from the calculation. Thus, a smaller set of data has been evaluated. Therefore, the existing data were evaluated twice, swapping reference ion and ion of interest for the second evaluation. Again, Eq. 4.9 is used to determine the frequency shift, but in this case $m\left(^{208}\text{Pb}\right) = 207.976650580(112)$ u determined at PENTATRAP was used to calculate r_t.

In Tab. 4.4 all measurements used to determine the frequency shift are listed. The table includes the ions used, the reference ion with the measured frequency ratios r_{meas}, the difference to the theoretical frequency ratio and the resulting frequency shift $\Delta\bar{\nu}_i$. In Fig. 4.9, $\Delta\bar{\nu}_c$ from Tab. 4.4 is plotted as a function of the mass difference between the reference ion and the ion of interest. The weighted mean of the frequency shifts $\Delta\bar{\nu}_i$ listed in Tab. 4.4 gives

$$\Delta\bar{\nu}_{new} = 55.1(2.1)\,\text{mHz}. \tag{4.11}$$

In Fig. 4.10, the deviations between the measured mass and the mass from the AME2020*, in which only new the ^{208}Pb mass value (measured at PENTATRAP) was exchanged, are shown as a function of the mass difference between reference ion and ion of interest. The masses obtained from the uncorrected frequency ratios are shown in black and the masses determined with the frequency ratios corrected by $\Delta\bar{\nu}_{new}$ are shown in red. The resulting mass correction (Δm_{atom}) in keV depends sensitively on the mass difference between reference ion and ion

Table 4.4: Calibration measurements of several ions. Each ion of interest and the related reference ion with the measured cyclotron-frequency ratio r are listed. The frequency shift $\Delta\bar{\nu}_c$ was determined.

Ion of interest	Reference ion	r	$\Delta\bar{\nu}_c$ / mHz
^{48}Ti	^{208}Pb	0.2305428148(9)	54.7(2.7)
^{208}Pb	^{48}Ti	4.3375890923(170)	55.5(2.7)
^{46}Ti	^{48}Ti	0.9583853480(34)	342(189)
^{48}Ti	^{46}Ti	1.0434216286(35)	305(182)
^{197}Au	^{208}Pb	0.9470608483(33)	103(34)
^{208}Pb	^{197}Au	1.0558983638(30)	101(28)
^{197}Au	^{48}Ti	4.1079607779(155)	56.9(2.8)
^{48}Ti	^{197}Au	0.2434297827(8)	56.6(2.4)
^{197}Au	^{46}Ti	4.2863351823(130)	50.8(2.1)
^{46}Ti	^{197}Au	0.2332995344(5)	52.2(1.5)
^{208}Pb	^{46}Ti	4.5259342619(128)	60.5(1.9)
^{46}Ti	^{208}Pb	0.2209488565(5)	60.4(1.6)
^{133}Cs	^{208}Pb	0.6390393251(26)	48.6(5.9)
^{208}Pb	^{133}Cs	1.5648489202(69)	51.7(6.3)
^{133}Cs	^{197}Au	0.6747605854(27)	58.6(7.0)
^{197}Au	^{133}Cs	1.4820071317(60)	58.9(7.0)
^{197}Au	^{208}Pb	0.9470608393(40)	10.3(42.0)
^{208}Pb	^{197}Au	1.0558983743(46)	4.0(43.0)
^{197}Au	^{208}Pb	1.0558983769(42)	-19.8(39.4)
^{208}Pb	^{197}Au	0.9470608388(41)	49.8(42.9)
^{48}Ti	^{208}Pb	0.2305428130(8)	49.5(2.4)
^{208}Pb	^{48}Ti	4.3375891243(151)	50.6(2.3)

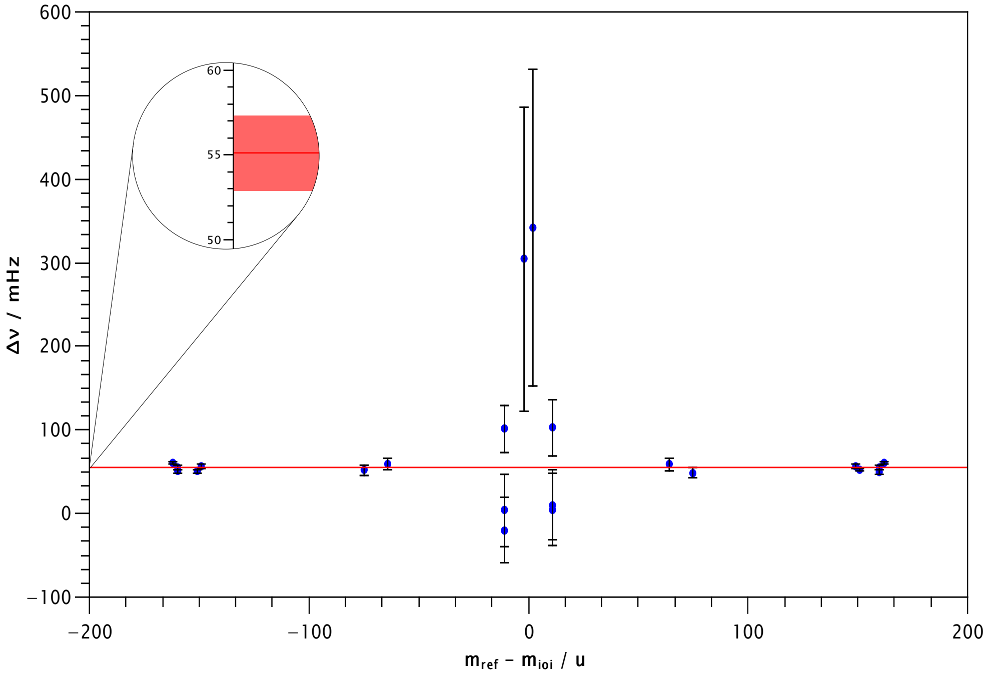

Figure 4.9: Individual frequency shifts $\Delta\nu$ for different mass differences, which were used to determine the frequency shift for the new setup.

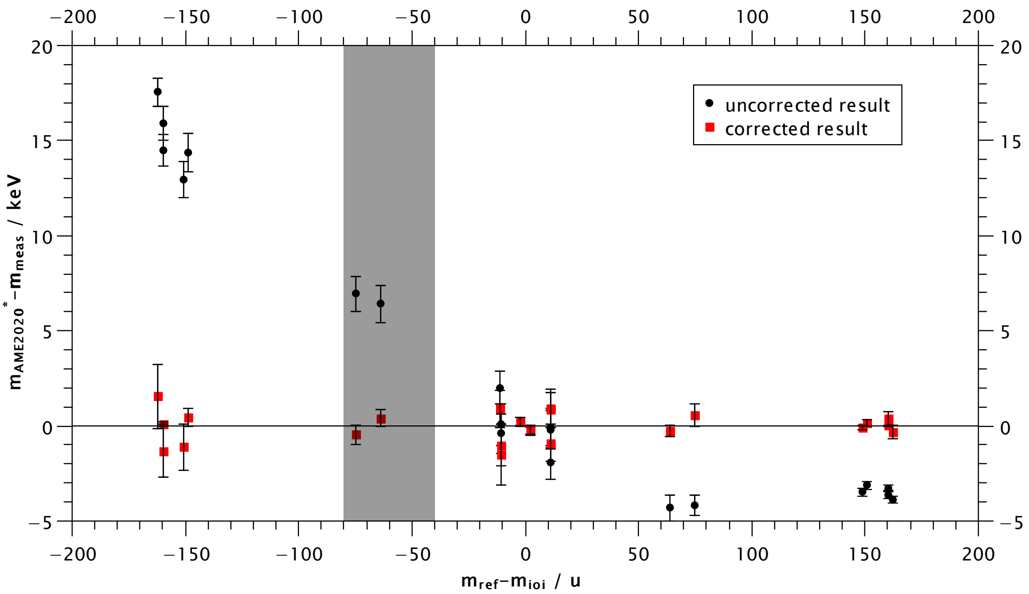

Figure 4.10: Deviation of the determined mass as a function of the mass difference between reference ion and ion of interest. The black dots are masses which were determined without the additional frequency correction and for the red squares this frequency correction was applied. It can be seen that after the correction the masses are in the expected range.

of interest. The correction increases with increasing mass difference. The area highlighted in gray, shows the region of the mass differences (-70 to -45 amu) used in the measurements described in Chap. 5. In this region, the resulting mass correction is between 5-10 keV. This correction is significant to determine the final mass of the studied atom. Assuming that this frequency shift is caused purely by the misalignment of the Penning trap electric field to the magnetic field, then Eq. 2.19 can be used to determine the angle of the tilt. Thus, a frequency shift of 55.1 mHz and a magnetron frequency of $\nu_- = 1174.2\,\text{Hz}$ yields angles of $\theta \approx 0.26°$. This means that the measuring trap with a total length of 145 mm is tilted by 0.66 mm to the magnetic field. This misalignment could be corrected using the position sensitive detector. The initial magnetron radius that the ion has when it is captured in the measuring trap is recorded. Since the magnet is placed on movable feet, the magnetic field axis can be adjusted relative to the measurement trap axis. By adjusting the magnet properly, the initial radius can be minimized. Because of the limited access to the reactor hall due to corona restrictions, this correction could not take place within the scope of this thesis. However, a correction could further reduce the frequency shift.

5 Mass measurements of actinide nuclides at TRIGA-TRAP

Eibach et al. reported on the last mass measurements of TRIGA-TRAP in the actinide region in 2014 [46]. At that time, the masses of ^{241,243}Am, ^{244}Pu, and ^{249}Cf were determined. These data show a three sigma deviation of the ^{249}Cf mass compared to the mass published in AME2012 [99]. Special consideration was given to the mass excess difference of ^{241}Am and ^{249}Cf , since they are linked to each other via two α decays and one β^- decay. Thus, using the derived Q values of the decays, this difference can be determined independently. It was assumed that there may be an misassignment in one of the transitions as the decay populates excited states. However, later high-precision α spectroscopy measurements [100] were performed which could not confirm Eibach's result (discrepancy 7.2(2.3) keV) [101]. After the results of Eibach et al. were implemented in AME, they shifted the absolute masses of 20 nuclides in AME2016 [102] and a total of 84 mass values were improved. At that time, it was already pointed out that it is important to perform further direct mass measurements in the actinide region. In the thesis of Renisch already further investigations were made to examine the discrepancy concerning the ^{249}Cf mass [89]. The measurements revealed some problems, which led to the idea of installing a new measurement trap. Based on the problems with the hyperbolic trap, which were discussed in Chap. 4, a new cylindrical measurement trap was developed, installed, and characterized. After the new measurement trap was fully characterized, TRIGA-TRAP was again ready for performing mass measurements. Since this is a completely new system, the mass measurements already published in 2014 should be repeated with the new setup and more mass measurements should follow. These measurements are discussed below. It should be noted that the data obtained in this thesis are of great importance for the AME, because except the four nuclides measured by Eibach et al., all other other in this mass range originate from energy measurements [103].

At the moment, at least 10^{16} atoms of the nuclide under investigation are needed on the target to perform a mass measurement. Therefore only nuclides that are available in sufficiently large quantities could be used for this work. As will become apparent in the course of this chapter, further optimizations must be carried out so that offline mass measurements can also be performed with smaller quantities. At the Department of Chemistry's TRIGA site, the nuclides listed in Tab. 5.1 are currently available for study.

Table 5.1: Nuclides available at Johannes Gutenberg University Mainz. The nuclides written in bold were used in this thesis.

Nuclide	Amount	Purity	Half life
$\mathbf{^{233}U}$	$> 10^{17}$ atoms	pure sample	$1.59 \cdot 10^5$ a
^{234}U	$> 10^{17}$ atoms	pure sample	$2.46 \cdot 10^5$ a
$\mathbf{^{235}U}$	$> 10^{17}$ atoms	pure sample	$7.04 \cdot 10^8$ a
^{236}U	$3 \cdot 10^{16}$ atoms	pure sample	$2.34 \cdot 10^7$ a
$\mathbf{^{238}U}$	$> 10^{17}$ atoms	pure sample	$4.47 \cdot 10^9$ a
$\mathbf{^{239}Pu}$	$> 10^{17}$ atoms	pure sample	24110 a
^{240}Pu	$> 10^{17}$ atoms	pure sample	6561 a
$\mathbf{^{242}Pu}$	$> 10^{17}$ atoms	pure sample	$3.75 \cdot 10^5$ a
$\mathbf{^{244}Pu}$	$> 10^{17}$ atoms	pure sample	$8.13 \cdot 10^7$ a
$\mathbf{^{241}Am}$	$> 10^{17}$ atoms	pure sample	432.6 a
$\mathbf{^{243}Am}$	$> 10^{17}$ atoms	pure sample	7364 a
^{244}Cm	$> 10^{17}$ atoms	pure sample	18.1 a
^{245}Cm	$1.3 \cdot 10^{16}$ atoms	pure sample	8423 a
$\mathbf{^{246}Cm}$	$2 \cdot 10^{16}$ atoms	5% ^{246}Cm & 95% ^{248}Cm	4706 a
$\mathbf{^{248}Cm}$	$> 10^{17}$ atoms	5% ^{246}Cm & 95% ^{248}Cm	$3.48 \cdot 10^5$ a
^{249}Bk	$> 10^{17}$ atoms	mixed with ^{249}Cf	330 d
$\mathbf{^{249}Cf}$	$> 10^{17}$ atoms	pure sample	351 a
^{250}Cf	$1.5 \cdot 10^{16}$ atoms	mixed Cf sample	13.1 a
^{251}Cf	$3.9 \cdot 10^{16}$ atoms	mixed Cf sample	898 a
^{252}Cf	10^{16} atoms	mixed Cf sample	2.6 a
^{254}Es	10^{14} atoms	pure sample	275.7 d

5.1 Target preparation

During this measurement campaign, 11 different nuclides were investigated. For this purpose, twelve targets in total were produced for the mini-RFQ ion source. In addition to lead, which serves as a reference, one to two actinide isotopes were deposited on a target. Tab. 5.2 lists all the compositions of the targets prepared. Two different methods were used to deposit the actinides on the target. These will be described in more detail below.

Table 5.2: Prepared targets.

#	Nuclides on the Target
Target-1	^{nat}Pb, ^{246}Cm, ^{246}Cm, ^{197}Au
Target-2	^{nat}Pb, ^{243}Am, ^{197}Au
Target-3	^{nat}Pb, ^{241}Am, ^{197}Au
Target-4	^{nat}Pb, ^{238}U, ^{242}Pu
Target-5	^{nat}Pb, ^{244}Pu, ^{249}Cf
Target-6	^{nat}Pb, ^{238}U, ^{248}Cm
Target-7	^{nat}Pb, ^{238}U, ^{249}Cf
Target-8	^{nat}Pb, ^{233}U, ^{235}U
Target-9	^{nat}Pb, ^{233}U, ^{239}Pu
Target-10	^{nat}Pb, ^{243}Am, ^{244}Pu
Target-Pu244	^{nat}Pb, ^{244}Pu, ^{197}Au
Target-Cf249	^{nat}Pb, ^{249}Cf, ^{197}Au

5.1.1 Targets with manually deposited actinides

With the exception of Target-2, Target-3, Target-Pu244 and Target-Cf249, all targets were produced in the same manner. A piece of 0.25 mm thick natural lead foil and 0.025 mm thick gold foil from Alfa Aesar were first glued to opposite sides of the target tip using ACHESON 1451 conductive silver glue (PLANO GmbH, Wetzlar, Germany). Next, $5 - 10\,\mu$l of dilute nitric acid containing 10^{16} atoms of the desired actinide is dropped onto the tip and then evaporated to dryness (see Fig. 5.1). This method of target preparation has been used many times in the past for TRIGA-TRAP. In this method, the dissolved actinide is deposited on the backing in a circular pattern during the drying [104]. This results in over 90% of the deposited material remaining unused (see Sect. 3.1. When two actinides are applied to the target, the second solution is applied after the first has dried. The gold foil served as a support in case there were problems with the measurements, so that lead and gold could be measured without removing the targets. After every change of the target at least 24h must be waited for the vacuum conditions to normalize again.

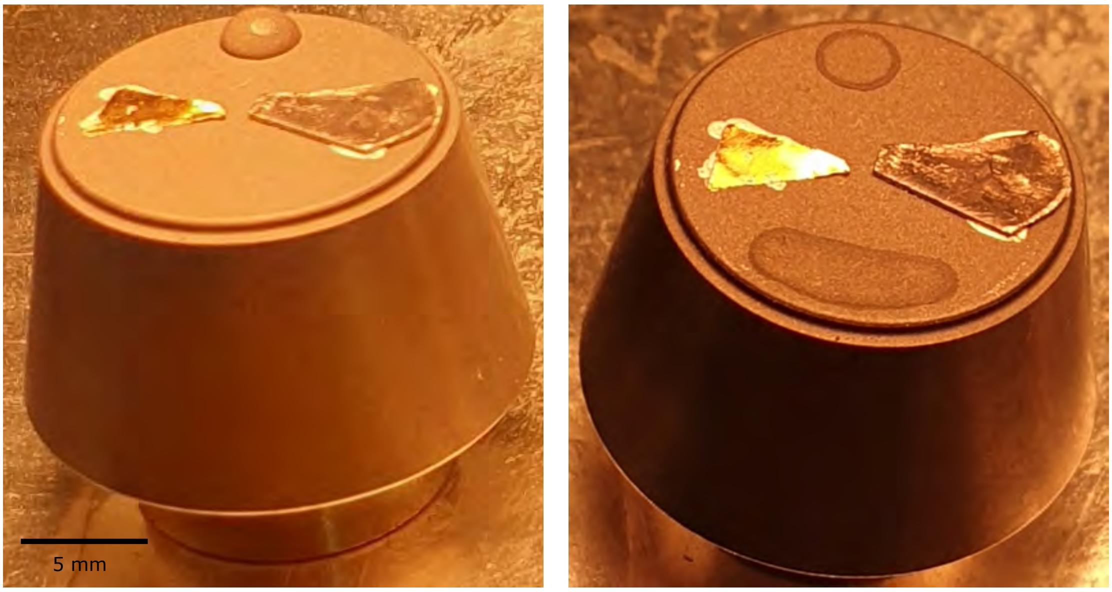

Figure 5.1: On the left side a target in preparation is shown. The glued gold and lead foil are visible. On top is the drop of 5 µl diluted nitric acid containing 10^{16} atoms ^{233}U. The same target is shown on the right, this time both deposited drops have already evaporated to dryness. In the lower region $2 \cdot 10^{16}$ atoms ^{235}U were applied. It can be seen that this method produces a kind of ring structure as described in [46] when the actinides are deposited. The travel range of the laser is limited by the extraction hole of the mini-RFQ, as a result, the laser can only reach a small fraction of the atoms.

5.1.2 Drop-on-Demand technique (DoD) used for target preparation

As already described in Renisch's PhD thesis [89], the use of hydrophobic surfaces would be one way to prevent the ring-shaped deposition of actinides described in the previous section. However, a new method of target preparation was developed in our group by Haas et al., the so-called drop-on-demand technique (DoD) [105]. This method uses the principle of an inkjet printer and can print $5 - 60\,\mathrm{nl}$ large droplets on the surface in freely selectable geometry. With the right printing pattern, this can ensure a homogeneous distribution of the actinide material on the surface. Limited by the extraction aperture of the mini-RFQ, the laser can travel about 3 mm laterally on the target surface. Therefore, the actinide solution is printed in the form of a 3 mm quarter circle segment on the target. In Fig. 5.2 (left), a photo of the first target obtained in this way is shown. Since at that time the alignment of the target under the printer was not yet perfect, the printed area is not properly aligned on the target. Estimations showed that the laser reaches a part of the printed area. For this reason it was planned to install the target. Before installation a radiographic image of the target was taken. This involves irradiating a photographic plate with the radioactive radiation of the target material and then analyzing it with a position-sensitive imager (Fujifilm FLA 7000).

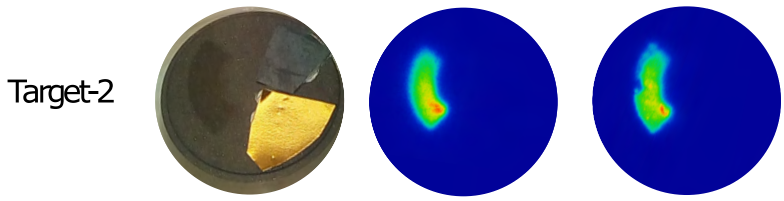

Figure 5.2: On the left a photograph of the first target produced using the DoD technique is shown. In the middle, a radiographic image of the target is shown to indicate the distribution of ^{243}Am on the target surface before this target was inserted into the apparatus and used for a mass measurement. After the measurement, the target was removed and another radiographic image was taken to see which atoms were removed by the laser.

After the target was used and measurements were completed, a radiograhpic image of the used target was taken again, which proved that the estimations were correct. In Fig. 5.2 the radiographic images before (center) and after (right) usage are shown. It can be seen that the DoD method produces a more homogeneous distribution of actinides on the target surface. This should be an advantage compared to manual application. On the right picture one can see that despite the poor positioning, the laser has nevertheless ablated part of the ^{243}Am. In this measurement 27460 atoms were registered. Since this result exceeded all expectations, three more targets were prepared using this method a short time later. On one target 10^{16} ^{241}Am atoms (Target-3) were printed on the target. On the other targets, 10^{16} ^{244}Pu atoms (Target-Pu244) and 10^{16} ^{249}Cf atoms (Target-Cf249) were printed. In Fig. 5.3 the images and the radiographic images are shown. It can be seen that the positioning now works very well. Target-3, see Fig. 5.3 a-d, was still used for one measurement, but only 6234 ions could be registered. After that no more ions could be detected, although on the radiography the trace of the laser is clearly visible and also a large part of the activity has been ablated. The Target-Cf249 again looked very promising, but after installation, the ion production was so low that no measurement was possible. However, as the radiographic image after use showed, the laser was aligned at the correct position. It is easy to see where the laser ablated the californium. When printing the Target-Pu244, a strange print pattern occurred as seen in Fig. 5.3 i, j. However, since the main activity was at the inner part of the printed area, this target could not be used. One possible explanation how this pattern came about, is the use of a fan to speed up drying. However, this problem did not occur with the previously printed targets, although a fan was used as well.

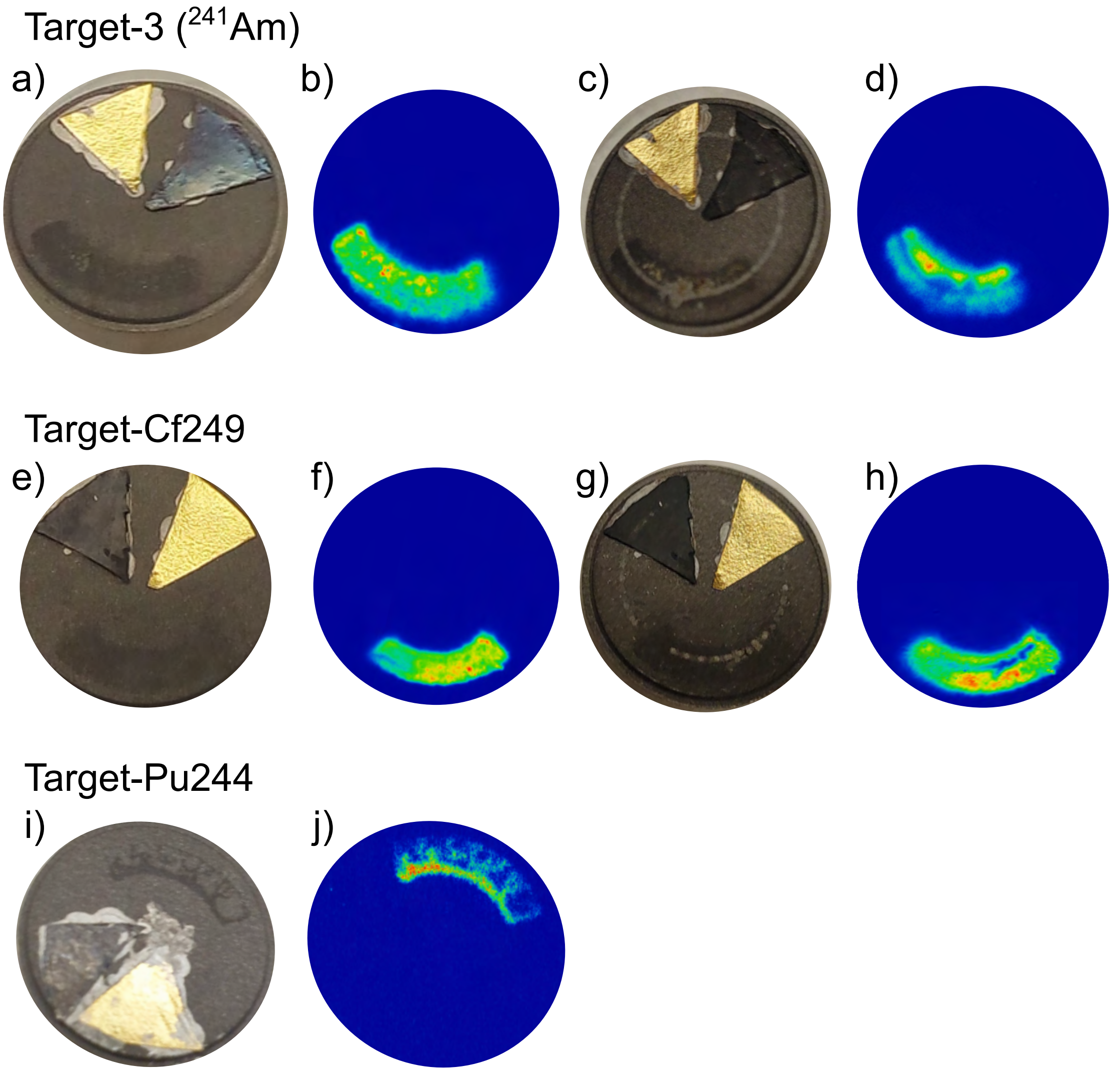

Figure 5.3: Overview of other DoD Targets. Top row: Target-3 with ^{241}Am, middle row: Target-Cf249 and bottom row: Target-Pu244. A photograph of the target (a, e, i), a radiographic image of the unused target (b, f, j) and a picture (c, g) and radiographic image (d, h) of the used target are shown.

5.2 Mass measurement of ^{233,235,238}U, ^{239,242,244}Pu, ^{241,243}Am, ^{246,248}Cm and ^{249}Cf

The targets listed in Tab. 5.2 Target1 - Target10 were used for the measurement campaign in this work. After the specific target was installed, the ions were produced by laser ablation in the mini-RFQ and directed to the Penning traps as described in Sect. 3.4 and the measurements were performed. Some nuclides were applied to different targets and also measured multiple times. In Tab. 5.3 all measured frequency ratios are listed. If a nuclide was measured more than once, the combined frequency ratio is shown. In addition, the number of detected ions for the respective measurement is given.

5.3 First evaluation with AME2020 and influence on mass surface of the AME

5.3.1 Results

The evaluation can now be continued with the measured frequency ratios. For this, the corrections described in Sect. 4.4 must be included first. The frequency shift should be inserted as early as possible in the evaluation since the corrected frequency ratio of reference ion and ion of interest strongly depends on this shift. Therefore, each single measured frequency ν_c was corrected according to Eq. 2.20 by $\Delta\bar{\nu}_{AME2020} = 60.4(1.4)\,\text{mHz}$ (Eq. 4.10), before subsequently the additional uncertainty due to nonlinear fluctuations was added quadratically to the uncertainty. The weighted average (Eq. 3.4) is formed from the frequency ratios obtained in this way. In Tab. 5.4 the corrected frequency ratios are listed. Besides the frequency ratios, the masses of the corresponding nuclides (calculated according to Eq. 2.32) as well as the resulting mass excesses (ME) and the difference to the mass excesses published in AME2020 are shown.

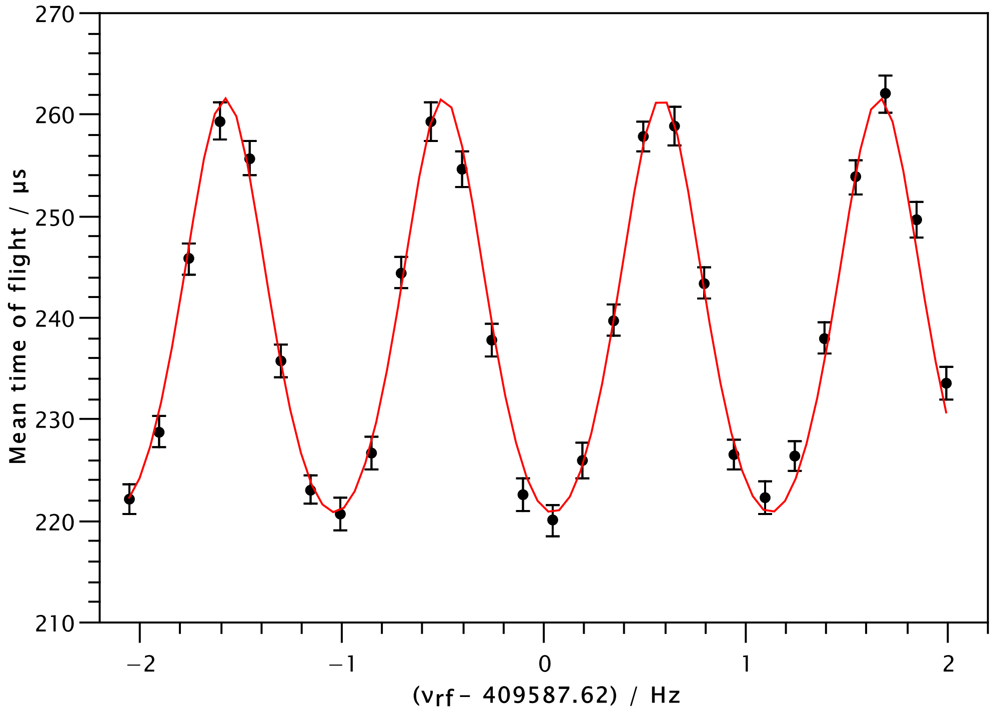

Figure 5.4: Ramsey time-of-flight ion-cyclotron-resonance of $^{248}Cm^{+}$ using an excitation pattern of 100 ms-800 ms-100 ms. The mean time of flight is displayed as function of the quadrupolar excitation frequency in the measurement trap. The red line is the fit of the theoretical function [69] to the data.

Table 5.3: Overview of all measurements. The ions used for the measurement, as well as the resulting frequency ratio, the number of detected ions and the number of measured frequency ratios are shown. In case a nuclide was measured more than once, the results were combined (bold).

Ion	r_{meas}	detected ions	measured ratios
$^{233}U^{16}O_2^+$	1.2743238609(82)	14705	21
$^{233}U^{16}O_2^+$	1.2743238542(62)	22616	22
comb. $^{233}U^{16}O_2^+$	**1.2743238567(49)**	**37321**	**43**
$^{235}U^{16}O_2^+$	1.2839610062(73)	18368	22
$^{238}U^{16}O_2^+$	1.2984187368(57)	35261	18
$^{238}U^{16}O_2^+$	1.2984187137(73)	16545	18
$^{238}U^{16}O_2^+$	1.2984187235(84)	15567	18
comb. $^{238}U^{16}O_2^+$	**1.2984187271(40)**	**68373**	**54**
$^{239}Pu^{16}O^+$	1.2263261047(68)	20283	22
$^{242}Pu^{16}O_2^+$	1.3176899469(109)	13089	17
$^{244}Pu^{16}O^+$	1.2504251652(75)	11875	20
$^{244}Pu^{16}O_2^+$	1.3273326383(87)	17891	20
$^{241}Am^{16}O^+$	1.2359650089(112)	6234	13
$^{243}Am^{16}O^+$	1.2456034298(55)	27460	16
$^{243}Am^{16}O^+$	1.2456034150(62)	18037	20
comb. $^{243}Am^{16}O^+$	**1.2456034229(41)**	**45497**	**36**
$^{246}Cm^{16}O^+$	1.2600562379(122)	11481	25
$^{248}Cm^{16}O^+$	1.2696972938(101)	57230	13
$^{248}Cm^{16}O^+$	1.2696973108(43)	60452	18
comb. $^{248}Cm^{16}O^+$	**1.2696973082(40)**	**117682**	**31**
$^{249}Cf^+$	1.1976101846(47)	31689	20
$^{249}Cf^+$	1.1976101911(71)	13374	18
comb. $^{249}Cf^+$	**1.1976101866(39)**	**45063**	**38**

Table 5.4: Result of the evaluation of the mass measurements with AME2020.

Ion	$R_{corr.}$	$\delta R/R$ / 10^{-9}	ME^{atom}_{TT} (keV)	$ME^{atom}_{AME2020}$ (keV)	$\Delta ME^{atom}_{AME2020}$ (keV)
$^{233}U^{16}O_2^+$	1.2743238962(49)	3.9	36922.6(1.7)	36919,1(2.3)	3.5(2.9)
$^{235}U^{16}O_2^+$	1.2839610486(73)	5.7	40925.4(2.0)	40918.8(1.1)	6.6(2.3)
$^{238}U^{16}O_2^+$	1.2984187721(40)	3.0	47316.3(1.7)	47307.7(1.5)	8.6(2.2)
$^{239}Pu^{16}O^+$	1.2263261369(68)	5.6	48591.8(1.9)	48588.2(1.1)	3.6(2.2)
$^{242}Pu^{16}O_2^+$	1.3176899955(109)	8.3	54725.4(2.6)	54716.9(1.2)	8.5(2.9)
$^{244}Pu^{16}O_2^+$	1.3273326888(87)	6.6	59801.8(2.3)	59806.0(2.3)	-4.2(3.3)
$^{244}Pu^{16}O^+$	1.2504252039(78)	6.3	59797.7(2.1)	59806.0(2.3)	-8.3(3.1)
$^{241}Am^{16}O^+$	1.2359650428(112)	9.1	52934.5(2.6)	52934.3(1.1)	0.2(2.8)
$^{243}Am^{16}O^+$	1.2456034585(41)	3.3	57182.2(1.6)	57175.0(1.4)	7.2(2.1)
$^{246}Cm^{16}O^+$	1.2600562760(122)	9.7	62622.8(2.8)	62616.9(1.5)	5.9(3.2)
$^{248}Cm^{16}O^+$	1.2696973480(40)	3.2	67385.1(1.6)	67392.7(2.4)	-7.6(2.9)
$^{249}Cf^+$	1.1976102141(39)	3.3	69726.4(1.6)	69722.7(1.2)	3.6(2.0)

The ions obtained from the target were different species. In cases were not the atomic ion was measured, but the monoxide or dioxide ion, one has to subtract the mass excess of one respectively two oxygen atoms, to calculate the mass excess of the nuclide of interest. The molecular binding energy, in the range of eV, can be neglected, because this does not affect the measurement precision since it is below the uncertainty of the measurements. These results are also displayed graphically in Fig. 5.5.

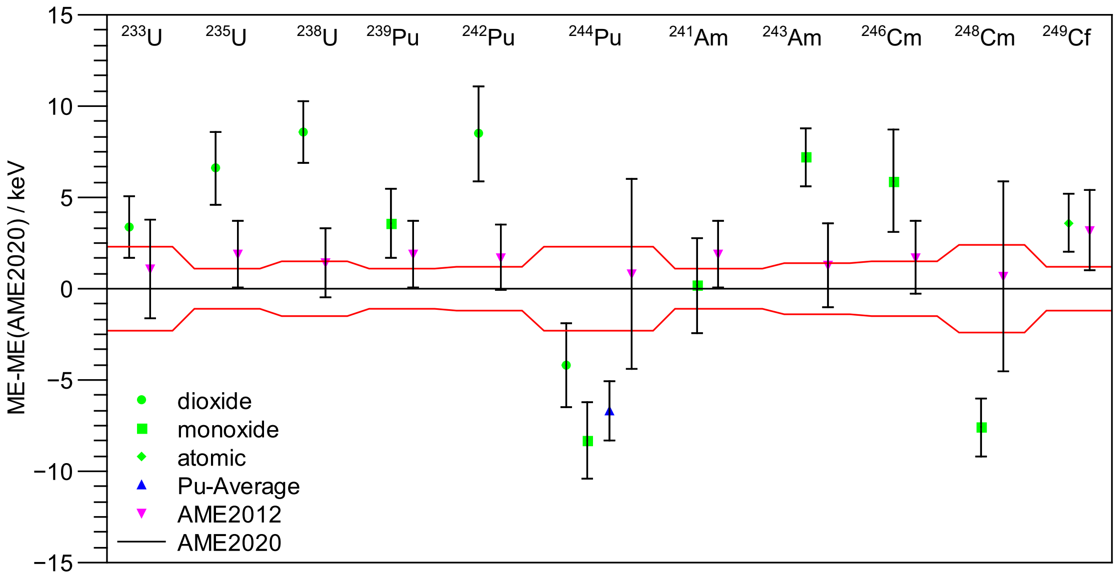

Figure 5.5: Illustration of the results presented in Tab. 5.4. For the purpose of simplicity, the mass is shown as the difference between the measured mass excess and the mass excess in the AME2020. The red lines indicate the 1σ error. All masses which were measured during this measurement campaign are schown in green. All species that were measured as dioxide ions are shown with a circle, monoxide ions as a square and atomic ions as a diamond. The blue triangle shows the weighted average of the two ^{244}Pu measurements using two different species. The values of AME2012 are plotted in magenta. They were included, because the values published by Eibach et al. did not influence them.

5.3.2 Discussion

From Tab. 5.4 it can be seen that the masses of ^{244}Pu and ^{248}Cm are 8.3 keV and 7.6 keV respectively, lighter than given in AME2020. The mass of ^{241}Am agrees with the value given in the AME2020, but all other isotopes are 3.5 – 8.6 keV heavier than in AME2020. Since the masses of Eibach et al. have had an impact on the masses of the transuranium elements in the AME2016 and no new measurement results in this range have influenced the AME2020, the results are also compared with the AME2012. Note that the mass of ^{249}Cf is consistent with the mass from AME2012. This was taken as an opportunity to provide the AME results obtained here to see how the new measurement results obtained at

TRIGA-TRAP fit into the AME mass network. W H has inserted the data into the AME. Inserting the data led to the results presented in Tab. 5.5. It can be seen that the data do not only affect the actinide region but also the mass of ^{208}Pb, which we used as reference, and which changes by -3.0(1.4) keV. This is not a problem for the mass evaluation of the AME. However, in Sect. 4.4.1 the mass published in AME2020 for ^{208}Pb was used to determine the mass-dependent frequency shift $\Delta\bar{\nu}_{AME2020}$ (Eq. 4.10). As a result, this shift is no longer correct and thus an incorrect correction has been applied to all of the frequency ratios transmitted to the AME. A reliable frequency shift determination requires an accurate reference mass value. Therefore, a new independent high-precision mass measurement of ^{208}Pb would be the answer to this dilemma.

Table 5.5: Result after implementation of the preliminary data of TRIGA-TRAP into the AME2020.

$N-Z$	N	Z	A	Element	ME(new) / keV	ME(AME2020) / keV
44	126	82	208	Pb	-21751.566(0.746)	-21748.519(1.148)
49	141	92	233	U	36918.971(1.254)	36919.111(2.254)
51	143	92	235	U	40920.007(0.985)	40918.782(1.116)
54	146	92	238	U	47311.312(1.105)	47307.732(1.492)
51	145	94	239	Pu	48589.440(0.979)	48588.220(1.112)
54	148	94	242	Pu	54718.885(1.085)	54716.876(1.245)
56	150	94	244	Pu	59795.094(1.155)	59806.021(2.346)
51	146	95	241	Am	52935.554(0.981)	52934.335(1.113)
53	148	95	243	Am	57177.611(1.051)	57175.005(1.388)
54	150	96	246	Cm	62618.865(1.333)	62616.912(1.525)
56	152	96	248	Cm	67381.744(1.144)	67392.748(2.358)
53	151	98	249	Cf	69723.339(0.976)	69722.733(1.182)

5.4 Final evaluation with new ^{208}Pb mass

5.4.1 Results

As shown in the previous section, inserting the masses measured in this work into the AME would change the mass surface in such a way that the mass of ^{208}Pb would also change by about 3 keV, since its mass is not known accurately enough. At the Max Planck Institute for Nuclear Physics in Heidelberg, the mass of ^{208}Pb was thus measured in 2021 at the PENTATRAP experiment. The measurement at PENTATRAP gave a deviation from AME2020 of 1.4 keV, with a relative uncertainty of $4.5 \cdot 10^{-10}$. As a consequence the calculation of the frequency shift in Sect. 4.4.1 was performed again. This time the mass measured at PENTATRAP for ^{208}Pb, mentioned above, was used in the calculations. As described in Sect. 4.4.2, the frequency shift $\Delta\bar{\nu}_{new} = 55.1(2.2)$ mHz (Eq. 4.11) was obtained, and the data shown in Tab. 5.3 were reevaluated. In Fig. 5.6 the resulting frequency ratios are displayed. In Tab. 5.6 the new corrected frequency ratios are listed as weighted mean value for each nuclide. In addition, the relative uncertainty, the calculated mass excess, the mass excess of the respective nuclide published in AME2020 and the difference between the two values are given.

5.4.1.1 ^{233}U

^{233}U was applied to two targets and measured twice. All uranium ions were measured as uranium dioxide ions. In the first measurement, 21 frequency ratios were measured and 14705 $^{233}UO_2^+$ ions were detected. During the second measurement, 22 frequency ratios have been recorded and 22616 ions were detected. For the evaluation all measured frequency ratios were considered as one set of data. Correction of the measured frequencies gives a corrected frequency ratio of 1.2743238937(49). Subtractrion of the mass excess of the two oxygen atoms gives a mass excess for ^{233}U of 36920.2(0.9) keV, of which 7.18 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

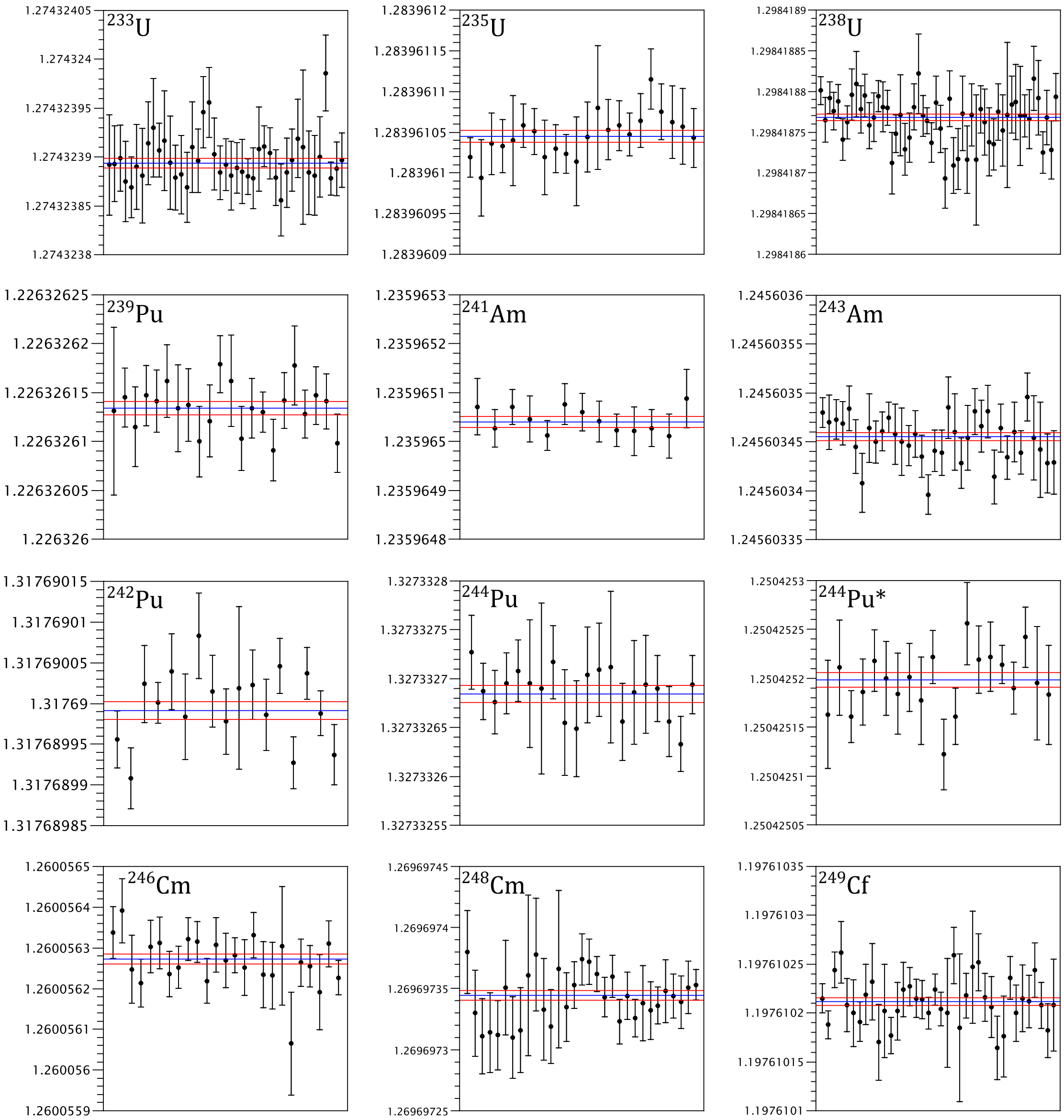

Figure 5.6: Corrected frequency ratios determined in this work. All measurements are shown here. For all measurements $^{208}Pb^{+}$ was used as reference ion. For ^{244}Pu the monoxide and the dioxide ion were measured once and the monoxide was marked with *. The blue line shows the weighted mean of the corrected frequency ratios and the standard deviation is shown with the red lines.

5.4.1.2 ^{235}U

One measurement was performed for ^{235}U. In this case the uranium ions were present as $^{235}UO_2^+$ ions. Twenty-two frequency ratios were recorded and 18369 $^{235}UO_2^+$ ions were detected. Correction of the measured frequency gives a corrected frequency ratio of 1.2839610449(73). Subtraction of the mass excess of the two oxygen atoms gives a mass excess for ^{235}U of 40922.9(1.4) keV, of which 7.48 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.3 ^{238}U

Three measurements were performed for ^{238}U present as $^{238}UO_2^+$ ions. Eighteen frequency ratios were recorded each time and 35261, 16545 and 15567 $^{238}UO_2^+$ ions were detected respectively. Correction of the measuered frequency gives a corrected frequency ratio of 1.2984187681(40). Subtraction of the mass excess of the two oxygen atoms gives a mass excess for ^{238}U of 47313.9(0.8) keV, of which 7.95 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.4 ^{239}Pu

One measurement was performed for ^{239}Pu. In this case the plutonium ions were present as $^{239}PuO^+$ ions. Twenty-two frequency ratios were recorded and 20283 $^{239}PuO^+$ ions were detected. Correction of the measured frequency gives a corrected frequency ratio of 1.2263261341(68). Subtraction of the mass excess of the oxygen atom gives a mass excess for ^{239}Pu of 48589.6(1.3) keV, of which 5.70 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.5 ^{242}Pu

One measurement was performed for ^{242}Pu. In this case the plutonium ions were present as $^{242}PuO_2^+$ ions. Seventeen frequency ratios were recorded and 13089 $^{242}PuO_2^+$ ions were detected. Correction of the measured frequency gives a corrected frequency ratio of 1.3176899913(109). Subtraction of the mass excess of the two oxygen atoms gives a mass excess for ^{242}Pu of 54722.9(2.1) keV, of which 8.59 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.6 ^{244}Pu

In case of ^{244}Pu two different types of measurements were performed. During the first measurement only dioxide ions could be observed without contaminants. In contrary during the second measurement the countrate of the dioxide ions was that small, prohibiting any measurement. A contamination check of the monoxide ions showed no contamination. That is the reason the $^{244}PuO^+$ ion was used as ion of interest. In both measurements 20 frequency ratios were measured in which 17891 and 11875 ions were detected. Correction of the measured frequencies gives a corrected frequency ratio for the $^{244}PuO_2^+$ ion of 1.3273326843(87) and for the monoxide 1.2504251983(75). This gives a mass excess of ^{244}Pu in case of the $^{244}PuO_2^+$ ion 59799.2(1.7) keV, of which 8.92 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$. In case of the monoxide ion the resulting mass excess of ^{244}Pu is 59794.9(1.5) keV, of which 6.43 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$. The weighted mean of both masses results in a mass excess of ^{244}Pu of 59796.8 keV.

5.4.1.7 ^{241}Am

One measurement was performed for ^{241}Am. In this case the americium ions were present as $^{241}AmO^+$ ions. Thirteen frequency ratios were recorded and 6234 $^{241}AmO^+$ ions were detected. Correction of the measured frequency gives a corrected frequency ratio of 1.2359650398(112). Subtraction of the mass excess of the oxygen atom gives a mass excess for ^{241}Am of 52932.3(2.1) keV, of which 5.99 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.8 ^{243}Am

^{243}Am was measured twice. All americium ions were measured as americium monoxide ions. In the first measurement, 16 frequency ratios were measured and

27460 $^{243}AmO^+$ ions were detected. During the second measurement, 20 frequency ratios have been recorded and 18037 ions were detected. For the evaluation all measured frequency ratios were considered as one set of data. Correction of the measured frequencies gives a corrected frequency ratio of 1.2456034553(41). Subtractrion of the mass excess of the oxygen atom gives a mass excess for ^{243}Am of 57180.0(1.7) keV, of which 6.28 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.9 ^{246}Cm

One measurement was performed for ^{246}Cm. In this case the curium ions were present as $^{246}CmO^+$ ions. Twenty-five frequency ratios were recorded and 11481 $^{246}CmO^+$ ions were detected. Correction of the measured frequency gives a corrected frequency ratio of 1.2600562726(122). Subtraction of the mass excess of the oxygen atom gives a mass excess for ^{246}Cm of 62620.4(2.3) keV, of which 6.73 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.10 ^{248}Cm

^{248}Cm was measured twice. All curium ions were measured as curium monoxide ions. In the first measurement, 13 frequency ratios were measured and 57230 $^{248}CmO^+$ ions were detected. During the second measurement, 18 frequency ratios have been recorded and 60452 ions were detected. For the evaluation all measured frequency ratios were considered as one set of data. Correction of the measured frequencies gives a corrected frequency ratio of 1.2696973445(40). Subtractrion of the mass excess of the oxygen atom gives a mass excess for ^{248}Cm of 67382.8(0.8) keV, of which 7.03 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

5.4.1.11 ^{249}Cf

^{249}Cf was measured twice. All californium ions were measured as atomic californium ions. In the first measurement, 20 frequency ratios were measured and

31689 $^{249}Cf^+$ ions were detected. During the second measurement, 18 frequency ratios have been recorded and 13374 ions were detected. For the evaluation all measured frequency ratios were considered as one set of data. Correction of the measured frequencies gives a corrected frequency ratio of 1.1976102117(39). The mass excess for ^{249}Cf is 69724.3(0.8) keV, of which 4.86 keV was due to the application of the frequency shift $\Delta\bar{\nu}_{new}$.

Table 5.6: Result of the evaluation of the mass measurements with the new ^{208}Pb mass. Listed are the ion of interest as measured, then the corrected frequency ratio to $^{208}Pb^+$, the relative uncertainty, the resulting mass excess (ME), for comparison the mass excess of the corresponding nuclide in AME2020 and the difference between the ME measured at TRIGA-TRAP and the ME of AME2020.

Ion	$R_{corr.}$	$\delta R/R$ / 10^{-9}	ME^{atom}_{TT} (keV)	$ME^{atom}_{AME2020}$ (keV)	$\Delta ME^{atom}_{AME2020}$ (keV)
$^{233}U^{16}O_2^+$	1.2743238937(49)	3.9	36920.2(0.9)	36919.1(2.3)	1.1(2.4)
$^{235}U^{16}O_2^+$	1.2839610449(73)	5.7	40922.9(1.4)	40918.8(1.1)	4.1(1.8)
$^{238}U^{16}O_2^+$	1.2984187681(40)	3.1	47313.9(0.8)	47307.7(1.5)	6.2(1.7)
$^{239}Pu^{16}O^+$	1.2263261341(68)	5.6	48589.6(1.3)	48588.2(1.1)	1.4(1.7)
$^{242}Pu^{16}O_2^+$	1.3176899913(109)	8.3	54722.8(2.1)	54716.9(1.2)	5.9(2.5)
$^{244}Pu^{16}O^+$	1.2504251983(75)	6.0	59794.9(1.5)	59806.0(2.3)	-11.1(2.8)
$^{244}Pu^{16}O_2^+$	1.3273326843(87)	6.6	59799.2(1.7)	59806.0(2.3)	-6.8(2.9)
$^{241}Am^{16}O^+$	1.2359650398(112)	9.1	52932.3(2.1)	52934.3(1.1)	-2.0(2.4)
$^{243}Am^{16}O^+$	1.2456034553(41)	3.3	57180.0(0.8)	57175.0(1.4)	5.0(1.6)
$^{246}Cm^{16}O^+$	1.2600562726(122)	9.7	62620.4(2.3)	62616.9(1.5)	3.5(2.8)
$^{248}Cm^{16}O^+$	1.2696973445(40)	3.1	67382.8(0.8)	67392.7(2.4)	-10.1(2.5)
$^{249}Cf^+$	1.1976102117(39)	3.3	69724.3(0.8)	69722.7(1.2)	1.6(1.4)

5.4.2 Discussion

Since ^{244}Pu was measured once as a monoxide ion and once as a dioxide ion, again the respective mass excesses of atomic ^{244}Pu had to be calculated first and then the weighted average of these two values is determined, yielding a $ME(^{244}\text{Pu}) = 59796.8(1.1)$ keV. Comparing the newly obtained masses with the values published in AME2020, the results of ^{233}U, ^{239}Pu and ^{241}Am agree within the errors. The masses of ^{235}U, ^{238}U, ^{242}Pu, ^{243}Am, ^{246}Cm, and ^{249}Cf are

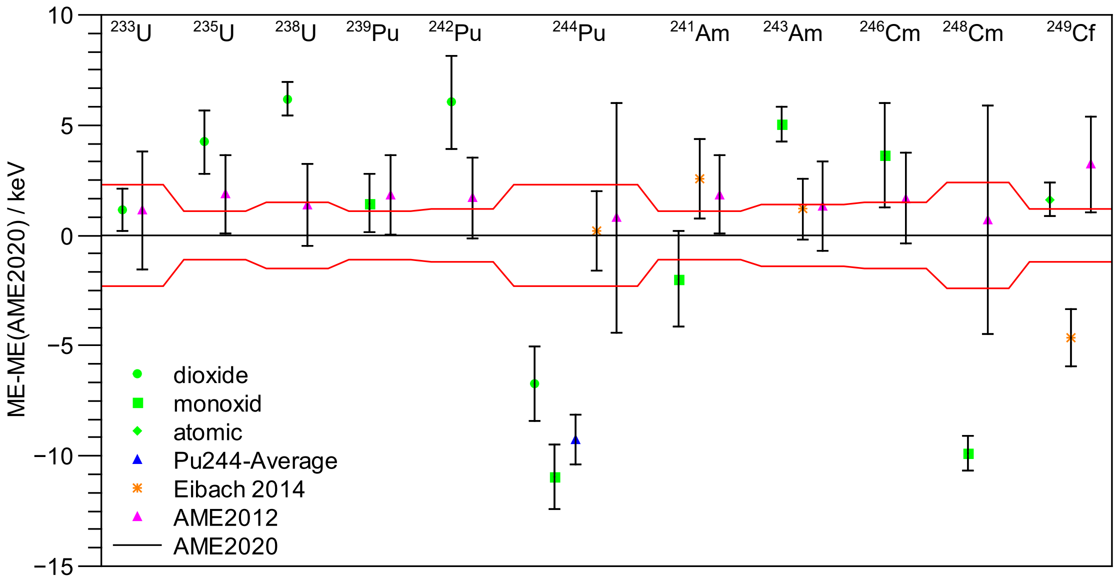

Figure 5.7: Illustration of the results reported in Tab. 5.6 the red lines show the 1σ error. For comparison, the results of Eibach et al. (orange) and the values of AME2012 (magenta) are also shown.

all heavier than those reported in AME2020. Here the difference varies between 1.6(1.4) – 6.2(1.8) keV. The masses of ^{244}Pu and ^{248}Cm, on the other hand, behave in an opposite manner. Compared to the AME, they are 9.2(2.5) and 10.1(2.5) keV lighter than indicated in the AME. In Fig. 5.7 the situation is also graphically presented. The results measured by Eibach et al. and the values published in AME2012 were also included. This shows that the results, with the exception of ^{244}Pu, ^{241}Am and ^{248}Cm, are more consistent with the results of AME2012 than with AME2020. Therefore, the obtained masses were checked for consistency. As can be seen from Fig. 5.8, there is no nuclide that is not connected to one of the other nuclides via decay. Thus, ^{248}Cm and ^{244}Pu are the first decay chain. ^{246}Cm, ^{242}Pu and ^{238}U form the second chain, ^{249}Cf, ^{241}Am and ^{233}U are in the third decay chain and the last chain contains ^{243}Am, ^{239}Pu and ^{235}U. According to the decay chains shown in Fig. 5.8 the masses of the red dotted nuclides will now be discussed in detail.

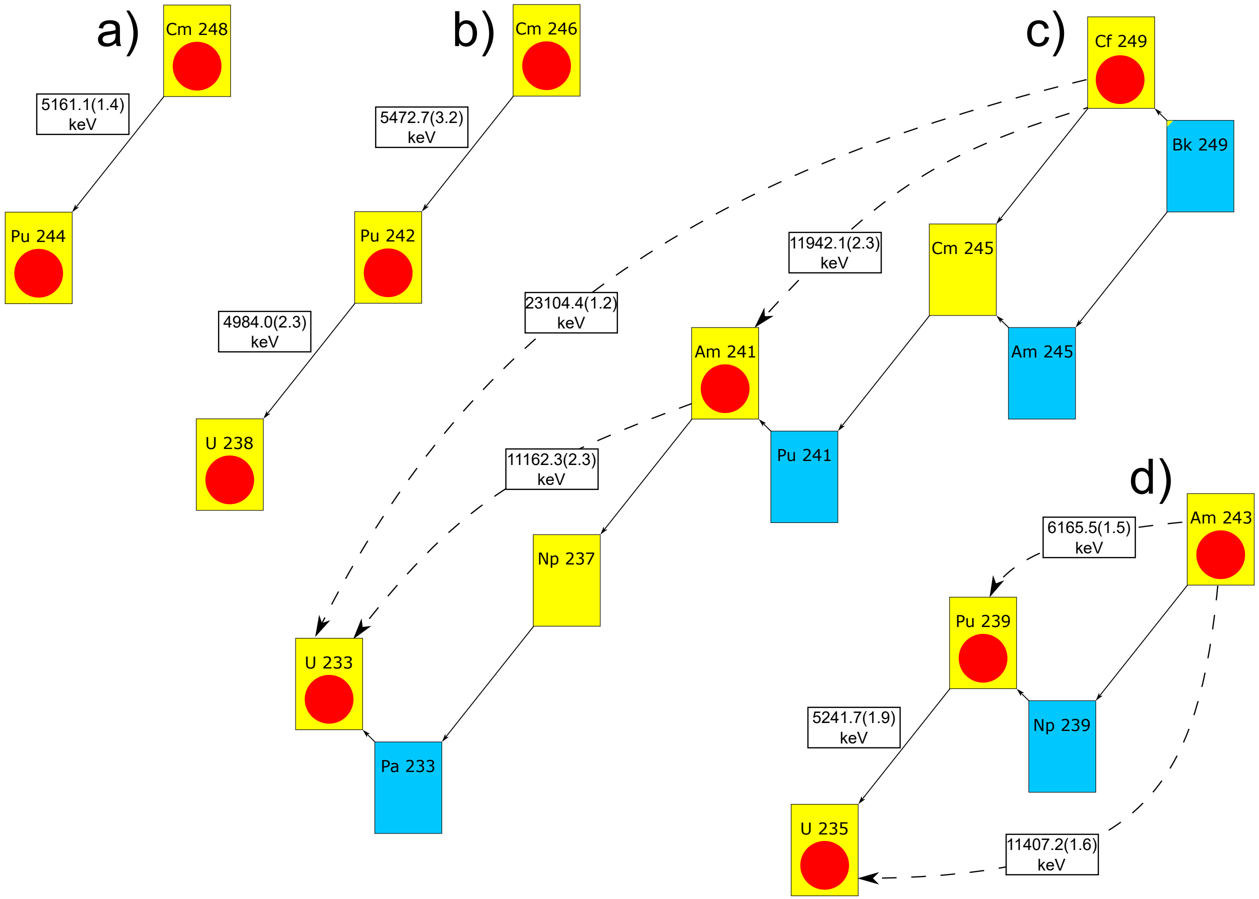

Figure 5.8: Illustration of the four different decay chains containing the nuclides which where measured in this thesis. a) shows the α decay of ^{248}Cm , b) is the decay chain from ^{246}Cm to ^{238}U , the decay chain in c) starts with ^{249}Bk and ends with ^{233}U and d) ist the decay chain from ^{243}Am to ^{235}U. The values shown are the Q-values respectively the sum of the Q-values of the transitions involved. For Details see text.

5.4.2.1 Decay chain ^{248}Cm-^{244}Pu

The experimental value of the mass excess of ^{248}Cm is 67382.8(0.8) keV, differing from the value listed in the AME2020 by 10.1 keV. As mentioned in Sect. 5.4.1.6 ^{244}Pu was measured twice, once as monoxide and secondly as dioxide. The two measurements resulted in two mass excesses with a mass difference of 4.3(2.3) keV, which could not be explained. The value of the weighted mean was taken (59796.8(1.1) keV). The mass excess of ^{4}He is 2424.9159(0.00015) keV. The ground-state to ground-state Q-value ($Q_\alpha(GS-GS)$) is 5161.81(25) keV [106]. Calculation based on our results for the masses of ^{248}Cm und ^{244}Pu gives

$$\begin{aligned} Q_\alpha\left({}^{248}\mathrm{Cm}\right) &= ME\left({}^{248}\mathrm{Cm}\right) - ME\left({}^{244}\mathrm{Pu}\right) - ME\left({}^{4}\mathrm{He}\right) \\ &= 5161.1(1.4)\,\mathrm{keV}. \end{aligned} \tag{5.1}$$

So this result is, within the error bars, in good agreement with literature. This provides confidence in our result, despite the large difference between the values of the masses of the AME2020 and ours. In the considered region of the nuclear chart the AME2020 is mainly influenced by data from decay spectroscopy that usually provides information on mass differences. This may lead to deviations of the determined ground-state masses based on uncertainties in the mass of the reference nuclide and if the decay populates excited states whose energies are not well known. The latter is usually not an issue for alpha decays in even-even nuclei.

5.4.2.2 Decay chain ^{246}Cm-^{242}Pu-^{238}U

The experimental values of the mass excess are 62620.4(2.3) keV for ^{246}Cm, 54722.8(2.1) keV for ^{242}Pu and 47313.9(0.8) keV for ^{238}U. The ground-state to ground-state Q-values ($Q_\alpha(GS-GS)$) from literature for the following transitions are:
^{246}Cm-^{242}Pu: 5474.8(1.0) keV [107]
^{242}Pu-^{238}U: 4984.7(1.0) keV [108]
For the α decay of ^{246}Cm calculations with our results give :

$$Q_\alpha\left({}^{246}\mathrm{Cm}\right) = ME\left({}^{246}\mathrm{Cm}\right) - ME\left({}^{242}\mathrm{Pu}\right) - ME\left({}^{4}\mathrm{He}\right) \\ = 5472.7(3.2)\,\mathrm{keV} \tag{5.2}$$

and for the α decay of ^{242}Pu:

$$Q_\alpha\left({}^{242}\mathrm{Pu}\right) = ME\left({}^{242}\mathrm{Pu}\right) - ME\left({}^{238}\mathrm{U}\right) - ME\left({}^{4}\mathrm{He}\right) \\ = 4984.0(2.3)\,\mathrm{keV} \tag{5.3}$$

These results are, within the error bars, in good agreement with literature. This indicates that the measured values are consistent.

5.4.2.3 Decay chain ^{249}Cf-^{241}Am-^{233}U

The experimental value of the mass excess of ^{249}Cf is 69724.3(0.8) keV, the mass excess of ^{241}Am is 52932.3(2.1) keV, and the mass excess of ^{233}U is 36920.2(0.9) keV. The ground-state to ground-state Q-values ($Q(GS-GS)$) literature for the following transitions are:
^{249}Cf-^{245}Cm: 6296.0(0.7) keV [109]
^{245}Cm-^{241}Pu: 5622.0(0.5) keV [110]
^{241}Pu-^{241}Am: 20.78(0.17) keV [110]
^{241}Am-^{237}Np: 5637.82(0.12) keV [111]
^{237}Np-^{233}Pa: 4957.3(0.7) keV [112]
^{233}Pa-^{233}U: 570.3(2.0) keV [112].

The listed Q-values can be calculated as follows:

$$Q_\alpha\left({}^{249}\mathrm{Cf}\right) = ME\left({}^{249}\mathrm{Cf}\right) - ME\left({}^{245}\mathrm{Cm}\right) - ME\left({}^{4}\mathrm{He}\right) \tag{5.4}$$

$$Q_\alpha\left({}^{245}\mathrm{Cm}\right) = ME\left({}^{245}\mathrm{Cm}\right) - ME\left({}^{241}\mathrm{Pu}\right) - ME\left({}^{4}\mathrm{He}\right) \tag{5.5}$$

$$Q_\beta\left({}^{241}\mathrm{Pu}\right) = ME\left({}^{241}\mathrm{Pu}\right) - ME\left({}^{241}\mathrm{Am}\right) \tag{5.6}$$

$$Q_\alpha\left({}^{241}\mathrm{Am}\right) = ME\left({}^{241}\mathrm{Am}\right) - ME\left({}^{237}\mathrm{Np}\right) - ME\left({}^{4}\mathrm{He}\right) \tag{5.7}$$

$$Q_\alpha\left({}^{237}\mathrm{Np}\right) = ME\left({}^{237}\mathrm{Np}\right) - ME\left({}^{233}\mathrm{Pa}\right) - ME\left({}^{4}\mathrm{He}\right) \tag{5.8}$$

$$Q_\beta\left({}^{233}\mathrm{Pa}\right) = ME\left({}^{233}\mathrm{Pa}\right) - ME\left({}^{233}\mathrm{U}\right) \tag{5.9}$$

In the actual decay chain, the single Q-value cannot be determined, because only the three masses of ^{249}Cf, ^{241}Am and ^{233}U in this chain were determined. However, the mass excess of ^{241}Am calculated from the Q values from literature provides a useful cross check of our mass values. To calculate the mass excess of ^{241}Am, starting from ^{233}U, the above equations can be transformed and one gets

$$\begin{aligned} ME\left({}^{241}\mathrm{Am}\right) &= ME\left({}^{233}\mathrm{U}\right) + Q_\beta\left({}^{233}\mathrm{Pa}\right) + Q_\alpha\left({}^{237}\mathrm{Np}\right) + Q_\alpha\left({}^{241}\mathrm{Am}\right) + 2\cdot ME\left({}^{4}\mathrm{He}\right) \\ &= 52935.5(2.3)\,\mathrm{keV} \end{aligned} \tag{5.10}$$

This results in a difference of 3.2(3.2) keV with the measured value.

From Eq. 5.10 it follows:

$$\begin{aligned} \sum Q_\mathrm{I} &= Q_\beta\left({}^{233}\mathrm{Pa}\right) + Q_\alpha\left({}^{237}\mathrm{Np}\right) + Q_\alpha\left({}^{241}\mathrm{Am}\right) \\ &= ME\left({}^{241}\mathrm{Am}\right) - ME\left({}^{233}\mathrm{U}\right) - 2\cdot ME\left({}^{4}\mathrm{He}\right) \\ &= 11162.3(2.3)\,\mathrm{keV}. \end{aligned} \tag{5.11}$$

This summed Q-value is shown in Fig. 5.8.

The same procedure is applied to the calculation of the mass excess of ^{249}Cf starting from ^{241}Am:

$$\begin{aligned} ME\left(^{249}\mathrm{Cf}\right) &= ME\left(^{241}\mathrm{Am}\right) + Q_\beta\left(^{241}\mathrm{Pu}\right) + Q_\alpha\left(^{245}\mathrm{Cm}\right) + Q_\alpha\left(^{249}\mathrm{Cf}\right) + 2\cdot ME\left(^{4}\mathrm{He}\right) \\ &= 69720.9(2.3)\,\mathrm{keV} \end{aligned} \tag{5.12}$$

This gives a difference of 3.4(2.4) keV between the measured and calculated value. From Eq. 5.12 it follows:

$$\begin{aligned} \sum Q_{\mathrm{II}} &= Q_\beta\left(^{241}\mathrm{Pu}\right) + Q_\alpha\left(^{245}\mathrm{Cm}\right) + Q_\alpha\left(^{249}\mathrm{Cf}\right) \\ &= ME\left(^{249}\mathrm{Cf}\right) - ME\left(^{241}\mathrm{Am}\right) - 2\cdot ME\left(^{4}\mathrm{He}\right) \\ &= 11942.1(2.3)\,\mathrm{keV} \end{aligned} \tag{5.13}$$

This summed Q-value is shown in Fig. 5.8.

From Fig. 5.7 one can expect that the result of the mass excess calculation of the transitions from ^{249}Cf via ^{241}Am to ^{233}U will cause a deviation between calculated and measured values, because two concerned mass excess values are higher and one mass excess value is lower compared with the values taken from AME2020. If one calculates the mass excess from ^{249}Cf starting from ^{233}U:

$$\begin{aligned} ME\left(^{249}\mathrm{Cf}\right) &= ME\left(^{233}\mathrm{U}\right) + Q_\beta\left(^{233}\mathrm{Pa}\right) + Q_\alpha\left(^{237}\mathrm{Np}\right) + Q_\alpha\left(^{241}\mathrm{Am}\right) \\ &\quad + Q_\beta\left(^{241}\mathrm{Pu}\right) + Q_\alpha\left(^{245}\mathrm{Cm}\right) + Q_\alpha\left(^{249}\mathrm{Cf}\right) + 4\cdot ME\left(^{4}\mathrm{He}\right) \\ &= 69724.1(2.5)\,\mathrm{keV} \end{aligned} \tag{5.14}$$

This result is within 1σ in agreement with measured value.
From Eq. 5.14 it follows:

$$\begin{aligned} \sum Q_{\mathrm{III}} &= Q_\beta\left(^{233}\mathrm{Pa}\right) + Q_\alpha\left(^{237}\mathrm{Np}\right) + Q_\alpha\left(^{241}\mathrm{Am}\right) + Q_\beta\left(^{241}\mathrm{Pu}\right) \\ &\quad + Q_\alpha\left(^{245}\mathrm{Cm}\right) + Q_\alpha\left(^{249}\mathrm{Cf}\right) \\ &= ME\left(^{249}\mathrm{Cf}\right) - ME\left(^{233}\mathrm{U}\right) - 4\cdot ME\left(^{4}\mathrm{He}\right) \\ &= 23104.4(1.2)\,\mathrm{keV} \end{aligned} \tag{5.15}$$

This summed Q-value is shown in Fig. 5.8.

5.4.2.4 Decay chain ^{243}Am-^{239}Pu-^{235}U

The experimental values of the mass excess are 57180.0(0.8) keV for ^{243}Am, 48589.6(1.3) keV for ^{239}Pu and 40922.9(1.4) keV for ^{235}U. The ground-state to ground-state Q-values from literature for the following transitions are:

^{243}Am-^{239}Np: 5438.8(1.0) keV [113]
^{239}Np-^{239}Pu: 722.5(1.0) keV [113]
^{239}Pu-^{235}U: 5244.5(0.21) keV [114]

Calculation of the Q-value of the transition ^{239}Pu-^{235}U with our results give

$$\begin{aligned} Q_\alpha\left({}^{239}\mathrm{Pu}\right) &= ME\left({}^{239}\mathrm{Pu}\right) - ME\left({}^{235}\mathrm{U}\right) - ME\left({}^{4}\mathrm{He}\right) \\ &= 5241.7(1.9)\,\mathrm{keV}. \end{aligned} \tag{5.16}$$

This gives a difference of 2.8(1.9) keV between the measured value and the value taken from literature. This is within 1.5σ.

For the next step, again two transitions are involved. The corresponding ground-state to ground-state Q-values can be calculated by:

$$Q_\alpha\left({}^{243}\mathrm{Am}\right) = ME\left({}^{243}\mathrm{Am}\right) - ME\left({}^{239}\mathrm{Np}\right) - ME\left({}^{4}\mathrm{He}\right) \tag{5.17}$$

$$Q_\beta\left({}^{239}\mathrm{Np}\right) = ME\left({}^{239}\mathrm{Np}\right) - ME\left({}^{239}\mathrm{Pu}\right) \tag{5.18}$$

Now the calculation of the mass excess of ^{243}Am using ^{239}Pu as starting point is as follows:

$$\begin{aligned} ME\left({}^{243}\mathrm{Am}\right) &= ME\left({}^{239}\mathrm{Pu}\right) + Q_\beta\left({}^{239}\mathrm{Np}\right) + Q_\alpha\left({}^{243}\mathrm{Am}\right) + ME\left({}^{4}\mathrm{He}\right) \\ &= 57175.8(1.9)\,\mathrm{keV} \end{aligned} \tag{5.19}$$

Hence the difference between calculated and measured value is 4.2 keV with an error of 2.1 keV.

From Eq. 5.19 it follows:

$$\begin{aligned} \sum Q_{\mathrm{IV}} &= Q_\beta\left({}^{239}\mathrm{Np}\right) + Q_\alpha\left({}^{243}\mathrm{Am}\right) \\ &= ME\left({}^{243}\mathrm{Am}\right) - ME\left({}^{239}\mathrm{Pu}\right) - ME\left({}^{4}\mathrm{He}\right) \\ &= 6165.5(1.5)\,\mathrm{keV}. \end{aligned} \tag{5.20}$$

This summed Q-value is shown in Fig. 5.8.
Because the above mentioned difference between calculated and measured value is 2σ, the calculation of the mass excess of ^{243}Am will be performed, starting from ^{235}U, using the Q-values in between, so the mass excess values of the two nuclides in between are not needed.

$$\begin{aligned} ME\left({}^{243}\mathrm{Am}\right) &= ME\left({}^{235}\mathrm{U}\right) + Q_\alpha\left({}^{239}\mathrm{Pu}\right) + Q_\beta\left({}^{239}\mathrm{Np}\right) + Q_\alpha\left({}^{243}\mathrm{Am}\right) + 2\cdot ME\left({}^{4}\mathrm{He}\right) \\ &= 57178.6(2.0)\,\mathrm{keV} \end{aligned} \tag{5.21}$$

Within the error bars this result is in agreement with the measured value. This is as well an indication for consistency of the measured values of ^{243}Am and ^{235}U. From Eq. 5.21 it follows:

$$\begin{aligned} \sum Q_{\mathrm{V}} &= Q_\alpha\left({}^{239}\mathrm{Pu}\right) + Q_\beta\left({}^{239}\mathrm{Np}\right) + Q_\alpha\left({}^{243}\mathrm{Am}\right) \\ &= ME\left({}^{243}\mathrm{Am}\right) - ME\left({}^{235}\mathrm{U}\right) - 2\cdot ME\left({}^{4}\mathrm{He}\right) \\ &= 11407.2(1.6)\,\mathrm{keV}. \end{aligned} \tag{5.22}$$

This summed Q-value is shown in Fig. 5.8.
The masses, except for the mass of ^{239}Pu and ^{241}Am, determined in this indirect way agree within 1σ with our results from the direct scheme. Only a small deviation of 3.4(2.4) keV is obtained in the case of ^{241}Am when the calculation is done via the direct way. If the path via ^{249}Bk is taken or one calculates the value starting from ^{233}U, the values agree within the error bars. In contrast, ^{239}Pu to ^{243}Am has a deviation of 4.2(2.1) keV and ^{239}Pu to ^{235}U one of $-2.8(1.9)$ keV, both of which are still within 2σ. Due to the large contribution of the frequency shift ($\Delta\bar{\nu}_{new} = 55.1(2.2)$ mHz) to the final mass values, there could be some doubts on

the correctness of parts of the data, but on the other hand the data obtained by the measurements at TRIGA-TRAP are self-consistent in themselves.

5.5 Influence on the atomic mass evaluation

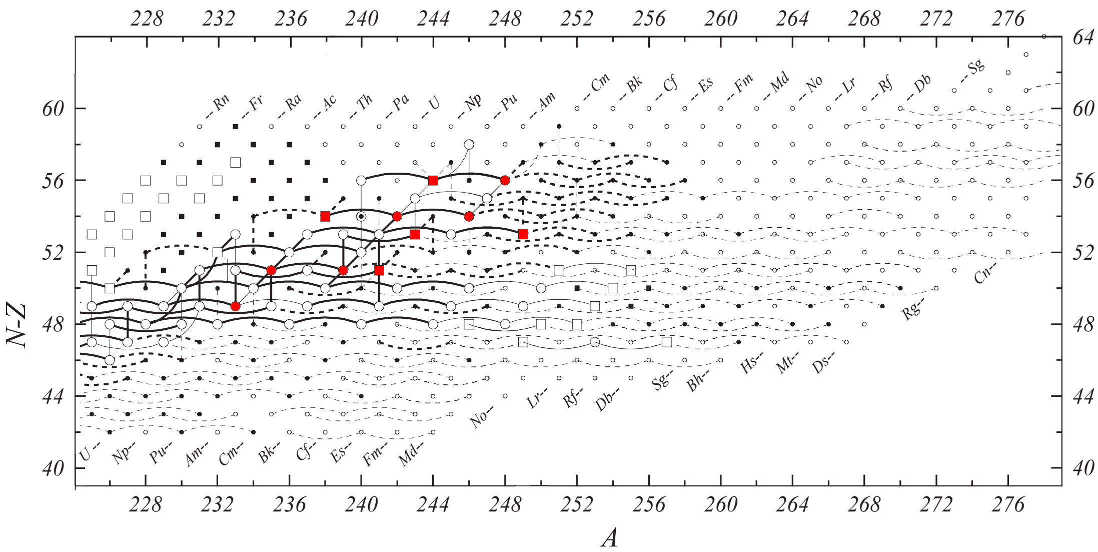

Figure 5.9: An excerpt of the mass links from the AME2020. The nuclides whose masses were determined in this work are marked in red. The figure is adapted from [33]

After reanalysing the mass measurements with the new frequency shift $\Delta\bar{\nu}_{new}$ and the new mass value of ^{208}Pb, the corrected frequency ratios listed in Tab. 5.6 were again submitted to the AME. Fig. 5.9 shows a section of the connection diagram from the AME2020. There, the nuclides with masses $A = 225 - 278$ are plotted against $(N-Z)$ and each line between two points represents an experimentally determined relation. The points marked in red show the masses measured at TRIGA-TRAP and provided to AME for integration. Before the latest mass measurements from TRIGA-TRAP could be integrated into the AME, the new mass of ^{208}Pb measured by PENTATRAP had to be integrated first. This integration was done by W H [103]. Except for the mass measurements of Eibach et al., all mass results in this mass range come from decay energy measurements; since the publication of the AME2016 no new experimental data were provided to the AME. So the newly obtained results from TRIGA-TRAP serve as a valuable cross-check. The input file used to integrate the mass measurement results presented in Sect. 5.4 is shown in Sect. B.1. After the new measurement results of ^{233}U, ^{235}U, ^{238}U, ^{239}Pu, ^{242}Pu, ^{244}Pu, ^{241}Am, ^{243}Am, ^{246}Cm, ^{248}Cm and ^{249}Cf were integrated into the AME, two output files where received in which the results of the calculations were reported (see Sect. B.2). First, the so-called partial consistency factor (PCF) is an important parameter that can be assigned to a laboratory and a specific measurement method. The AME uses this factor to identify questionable data sets. To account for the fact that the statistical uncertainties and its internal systematic error do not reflect the real experimental situation, a factor F is assigned to each group of mass-spectrometric data. The factor F has values of $1.0, 1.5, 2.5$ and 4.0. For weighting in the AME calculations, the uncertainty is multiplied by the factor F [33]. The measurement results presented here have a PCF of 1.56 and a factor F of 1.0. Because of insufficient significance the measurement result of ^{241}Am was labeled with 'U' (unconsidered), by AME, and is not considered in the calculations because of insufficient significance. Nevertheless, the data presented in this thesis have an overall 1.5σ consistency with other experimental data included in the AME. The outcome of integrating our results into the AME are summarized in Tab. 5.7. The mass excess determined at TRIGA-TRAP, the adjusted AME value and the difference between the two values are given for the respective nuclide.

Table 5.7: Implementing the final TRIGA-TRAP results to the AME. ^{241}Am is marked with * because this value determined with TRIGA-TRAP was not considered in the evaluation from the AME.

Nuclide	ME_{TT}^{atom} (keV)	$ME_{AME_{new}}^{atom}$ (keV)	$\Delta ME_{AME_{new}}^{atom}$ (keV)
^{233}U	36920.2(0.9)	36920.5(0.9)	-0.3(1.3)
^{235}U	40922.9(1.4)	40921.3(0.6)	1.6(1.5)
^{238}U	47313.9(0.8)	47312.7(0.7)	1.2(1.0)
^{239}Pu	48589.6(1.3)	48590.8(0.6)	-1.2(1.4)
^{242}Pu	54722.8(2.1)	54720.2(0.7)	2.6(2.3)
^{244}Pu	59796.8(1.1)	59796.5(0.7)	0.2(1.3)
^{241}Am*	52932.3(2.1)	52936.9(0.6)	-4.6(2.2)
^{243}Am	57180.0(0.8)	57178.9(0.7)	1.1(1.0)
^{246}Cm	62620.4(2.3)	62620.2(1.0)	0.2(2.6)
^{248}Cm	67382.8(0.8)	67383.2(0.6)	-0.4(1.0)
^{249}Cf	69724.3(0.8)	69724.7(0.6)	-0.4(1.0)

Comparing these results with the results from (Tab. 5.4), the mass differences have all decreased, with the exception of ^{241}Am. Here the difference has increased by 2.6 keV and is now −4.6 keV. Because of too small significance, the measurement result was not considered in the evaluation. For a better overview, all values are shown in Fig. 5.9. For a good comparability, they are plotted as difference to the new adjusted values of the AME. In addition to the values presented in this thesis, the values of the AME2020, AME2012 and the results of Eibach et al. [46] are also plotted. Of course, the values of ^{244}Pu and ^{248}Cm catch the eye, since the old values deviate by 9.5 keV. Additionally the situation for ^{249}Cf is interesting, because the new value measured at TRIGA-TRAP is in agreement with the mass already published in AME2012. Since only limited data is available in this mass range, the mass of Eibach et al. had an influence of 36.5% on the value of the AME2020 (see Tab. 5.8).

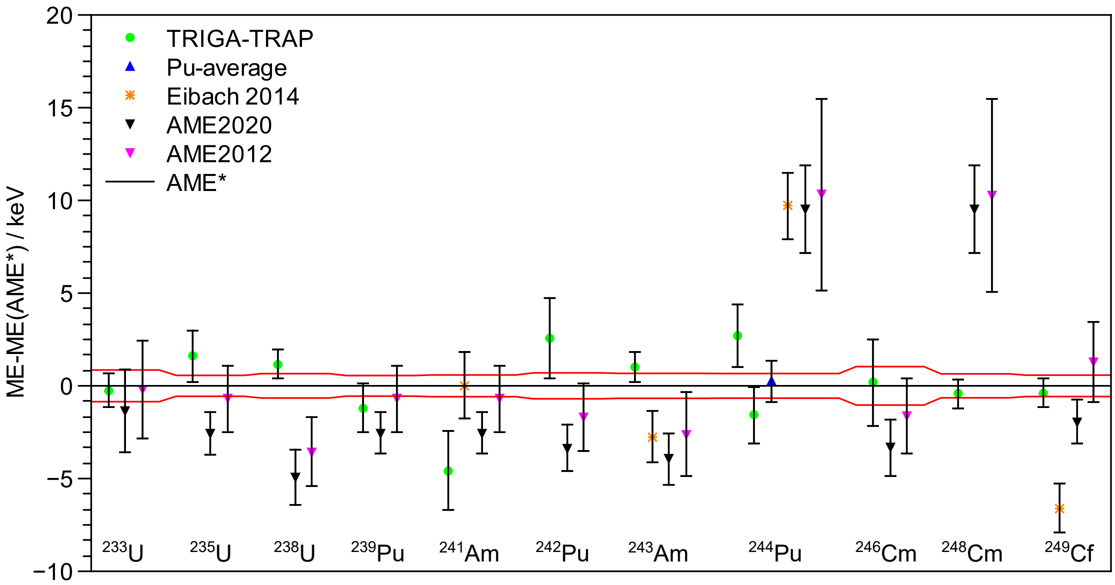

Figure 5.10: Illustration of the results after the data from the measurements shown in Tab. 5.6 was implemented into the AME, the red lines show the new uncertainties for the adjusted mass excess and for comparison reasons the difference to the AME2020 (black triangles) and the AME2012 (magenta triangles) are also included.

In Tab. 5.8 the three data sources with the largest contributions, taken from the AME2020, for the nuclides measured in this work are listed with the corresponding relative influence. After integrating the data presented in this thesis in AME, the influence on the primary nuclides changed. In Tab. 5.9 the three most highly contributing data with the corresponding influence on the adjusted AME are listed. For ^{233}U (82.9%), ^{238}U (70.5%), ^{243}Am (70.1%), ^{248}Cm (67.6%), and ^{249}Cf (55.7%) the data obtained in this work are the main contributors to the masses.

In the case of ^{244}Pu (34.2%) and ^{246}Cm (18.9%) the contribution of the data measured here is in second place and for ^{235}U (15.2%), ^{239}Pu (16.9%) and ^{242}Pu (9.7%) in third place. Since the significance of the measurement of ^{241}Am was too low, this data point has no contribution in the mass of ^{241}Am. A comparison to Tab. 5.8 shows that the mass measurements presented in this work reduce the influence of the results published by Eibach et al. considerably. For ^{249}Cf the influence changed from 36.5% to 8.5%, for ^{243}Am from 43.9% to 10.2% and for

Table 5.8: Influence on the primary nuclides measured in this work before the data were implemented in the AME. These values were taken from the AME2020 [8]. The values of Eibach et al. are shown in red.

Nuclide	Infl.	Equation	Infl.	Equation	Infl.	Equation
^{233}U	51.3	^{233}Pa$(\beta^-)^{233}$U	23.3	^{233}U$(\alpha)^{229}$Th	14.6	^{239}Pu$(\alpha)^{235}$U
^{235}U	41.2	^{239}Pu$(\alpha)^{235}$U	30.4	^{235}U$(n,\gamma)^{236}$U	18.5	^{234}U$(n,\gamma)^{235}$U
^{238}U	77.9	^{242}Pu$(\alpha)^{238}$U	20.9	$C_{24}H_{20} -^{238} U^{35}Cl_2$	1.2	^{229}Fr $-^{238}$ U$_{.962}$
^{239}Pu	46.2	^{239}Pu$(n,\gamma)^{240}$Pu	27.1	^{239}Pu$(\alpha)^{235}$U	19.3	^{239}Np$(\beta^-)^{239}$Pu
^{241}Am	80.9	^{241}Pu$(\beta^-)^{241}$Am	17.6	^{241}AmO $-$ C_{22}	18.3	^{241}Am$(\alpha)^{237}$Np
^{242}Pu	80.8	^{241}Pu$(n,\gamma)^{242}$Pu	13.9	^{242}Pu$(\alpha)^{238}$U	4.4	^{242}Pu$(n,\gamma)^{243}$Pu
^{243}Am	53.8	^{243}Am$(\alpha)^{239}$Np	43.9	^{243}AmO $-$ C_{22}	2.3	^{243}Pu$(\beta^-)^{243}$Am
^{244}Pu	78.1	^{244}PuO $-$ C_{22}	15.3	^{244}Pu$(d,t)^{243}$Pu	5.3	^{248}Cm$(\alpha)^{244}$Pu
^{246}Cm	98.1	^{246}Cm$(\alpha)^{242}$Pu	1.7	^{246}Cm$(d,p)^{247}$Cm	0.2	^{246}Am$^m(\beta^-)^{246}$Cm
^{248}Cm	94.6	^{248}Cm$(\alpha)^{244}$Pu	5.4	^{248}Cm$(d,t)^{247}$Cm		
^{249}Cf	63.5	^{249}Cf$(\alpha)^{245}$Cm	36.5	^{249}CfO $-$ C_{22}		

Table 5.9: Influence on the primary nuclides measured in this work after the values were implemented in the AME [103]. The values obtained within the scope of this work are shown in green and the values of Eibach et al. are shown in red. For details see text.

Nuclide	Infl.	Equation	Infl.	Equation	Infl.	Equation
^{233}U	82.9	$^{233}UO_2-^{208}Pb_{1.274}$	8.8	^{233}Pa$(\beta^-)^{233}$U	3.9	^{233}U$(\alpha)^{229}$Th
^{235}U	41.7	^{239}Pu$(\alpha)^{235}$U	28.2	^{235}U$(n,\gamma)^{236}$U	15.2	$^{235}UO_2-^{208}Pb_{1.284}$
^{238}U	70.5	$^{238}UO_2-^{208}Pb_{1.298}$	25.2	^{242}Pu$(\alpha)^{238}$U	4.1	$C_{24}H_{20} -^{238} U^{35}Cl_2$
^{239}Pu	40.7	^{239}Pu$(n,\gamma)^{240}$Pu	25.7	^{239}Pu$(\alpha)^{235}$U	16.9	$^{239}PuO-^{208}Pb_{1.226}$
^{241}Am	91.2	^{241}Pu$(\beta^-)^{241}$Am	4.4	^{241}AmO $-$ C_{22}	3.4	^{241}Am$(\alpha)^{237}$Np
^{242}Pu	53.6	^{241}Pu$(n,\gamma)^{242}$Pu	27.5	^{242}Pu$(\alpha)^{238}$U	9.7	$^{242}PuO_2-^{208}Pb_{1.317}$
^{243}Am	70.1	$^{243}AmO-^{208}Pb_{1.245}$	18.9	^{243}Am$(\alpha)^{239}$Np	10.2	^{243}AmO $-$ C_{22}
^{244}Pu	64.5	^{248}Cm$(\alpha)^{244}$Pu	34.2	$^{244}PuO_2-^{208}Pb_{1.327}$	1.3	^{244}Pu$(d,t)^{243}$Pu
^{246}Cm	79.9	^{246}Cm$(\alpha)^{242}$Pu	18.9	$^{246}CmO-^{208}Pb_{1.260}$	1.0	^{246}Cm$(d,p)^{247}$Cm
^{248}Cm	67.6	$^{248}CmO-^{208}Pb_{1.269}$	32.0	^{248}Cm$(\alpha)^{244}$Pu	0.4	^{248}Cm$(d,t)^{247}$Cm
^{249}Cf	55.7	$^{249}Cf-^{208}Pb_{1.197}$	35.8	^{249}Cf$(\alpha)^{245}$Cm	8.5	^{249}CfO $-$ C_{22}

^{241}Am from 17.6% to 4.4%. The mass of ^{244}Pu in the AME2020 is mainly based on the data by Eibach et al., after the new values of TRIGA-TRAP have been implemented, the result of Eibach et al. does not contribute anymore to this value.

Not only the influence on the directly measured nuclides has changed. The integration of the new data also influences the masses and uncertainties of further nuclides in this area. The uncertainties of 41 nuclides improve by at least 10% in the adjusted AME, compared to the AME2020 (See Sect. B.3).

Finally, the two-neutron separation energy S_{2n} was determined, using Eq. 1.6 and the values from adjusted AME and plotted in Fig. 5.11 as a function of the neutron number in the range $N = 141 - 160$ to show the shell closure at $N = 152$. The drop in S_{2n} is clearly visible for higher Z (≥ 99). For lower Z (< 99), the trend appears to change to the global linear trend without shell closure. The nuclides measured for this thesis are marked in green.

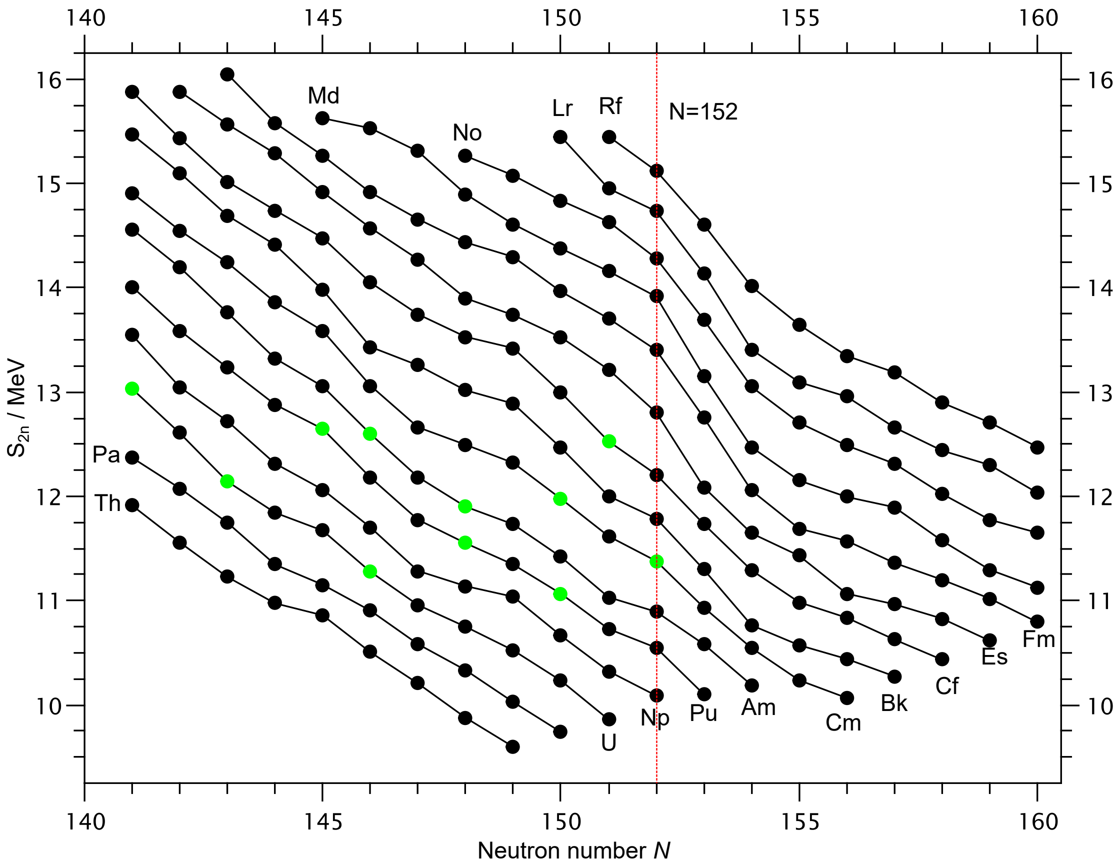

Figure 5.11: Two-neutron separation energies for the elements Th - Rf, derived from the values taken from the adjusted AME

6 Conclusion and Outlook

In this work, a new cylindrical measuring trap was installed and commissioned at TRIGA-TRAP, replacing the old hyperbolic precision trap. The new trap was characterized and the influence of systematic effects on the cyclotron frequency measurement were investigated. Items which were characterized include

1. the magnetic field, because the magnet had to be re-energized due to a quench
2. during the first series of tests also the electrical field was optimized
3. the determination of the frequency shift (mass-dependent shift) in the new arrangement.

After these steps the system was used with the ToF-ICR method for the determination of the masses of eleven different actinide nuclides.

After providing the frequency ratios results to the AME-team, a preliminary output was received. A critical inspection of this showed that the value of the mass of ^{208}Pb was influenced by our data. However, ^{208}Pb was used as a reference mass to determine the frequency shift of the new TRIGA-TRAP setup. Therefor, a new evaluation of these data had to be performed. To do so, an independent determination of the mass of ^{208}Pb with higher accuracy was needed. This new value was kindly provided by the PENTATRAP experiment in Heidelberg. From this a new value of the frequency shift was derived. With this new value of the frequency shift, all mass measurements were reevaluated. After a critical consistency check of our data against previous, independent energies of nuclear reactions that connect pairs of the nuclides measured in this work, these were sent to the AME again. Our results were in good agreement with other experimental data. The overall 1.5σ consistency was satisfactory in terms of statistics.

For future measurements special attention has to be paid to the alignment of the measurement trap to further minimize the frequency shift due to a tilt of the trap axis with respect to the magnetic field. Unfortunately up to now this was not possible due to restrictions imposed by the corona virus pandemic.

Here it should also be emphasized that for the reference ion as well as for the ion of interest the mass to charge ratio should be very similar. This could be realized by using ^{238}U as reference ion. This, though necessitates a high-precision mass measurement of the ^{238}U mass. If ^{238}U would be available as atomic ion and also as mono- and dioxide ions, one would have three possible reference species in the transuranium range, which cover a mass range from $A = 230$ to 278. The individual species are 16 mass units apart, so the largest mass difference between reference ion and ion of interest is eight mass units at maximum.

Another possibility is the use of singly charged caesium ions as a reference, which have the advantage that the mass is well known with high precision. If one could produce doubly charged ions of interest, for example, by using recoil ion sources [115], the mass-to-charge ratios would be similar. Unfortunately in the current setup it is not possible to create such ions.

Up to now, a minimum amount of 10^{16} atoms of each considered radioactive species is needed to perform a mass measurement. A reduction of the amount needed by an order of magnitude could be reached by using the drop on demand technique, developed in Mainz, for the production of the targets for the mini-RFQ ion source. To achieve this, further investigations are needed to get the benefit of two advantages. First, the investigation of species with a higher specific activity will become possible, and second, the study of species with a low available amount, e.g. $1.5 \cdot 10^{16}$ atoms of ^{250}Cf, can be realized. Latter would be interesting as well because of its position in chart of nuclei with regard to the deformed shell closure at $N = 152$.

Another important milestone for the TRIGA-TRAP experiment would be the implementation of the PI-ICR technique, which would lead to an increase of the resolution by a factor of 40 and of a factor of five in precision.

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Appendices

A Implementing Data from Penning-trap mass spectrometers to the AME

The evaluation of experimental data in the AME is unique. Since most mass measurements are relative mass measurements, where the mass or energy of one nuclide is determined as a function of the mass or a related property of a second nuclide. This creates a link between these two nuclides. A network is created from all these links. The mass of many nuclides has been determined several times and these data form the basic structure of the network. Since this creates interconnections in the network, the least squares method is used to determine the masses. Each experimental result has the value $q_i \pm dq_i$, where dq_i is a standard deviation, and represents the connection between different unknown masses m_μ. An overdetermined system ($Q > M$) with Q data for M masses, can be described by Q linear equations with M different parameters:

$$\sum_{\mu=1}^{M} k_i^\mu m_\mu = q_i \pm \delta q_i, \tag{1}$$

where k_i^μ are constants to describe the relationship of the transition. A more detailed description of the mathematical calculations (calculation procedures) which are performed in the AME is described in [33].

In Penning-trap mass spectrometry, the result is a frequency ratio of the cyclotron frequencies of the reference ion and the ion of interest. However, a linear equation for the atomic mass is needed. To obtain this linear equation one proceeds as follows. All expressions with a subscript r refer to the reference ion, without subscript to the ion of interest. For the frequency ratio the following applies:

$$R = \frac{\nu_r}{\nu} = \frac{\mathcal{M} + D - m_e\, q + B}{\mathcal{M}_r + D_r - m_e\, q_r + B_r} \cdot \frac{q_r}{q} \tag{2}$$

here $\mathcal{M}$ is the absolute mass, D is the molecular binding energy, B is the electron binding energy, q is the charge state of the ion and m_e is the mass of the electron at rest. This equation can now be rewritten using the mass excess M and the mass number A as follows:

$$A + M - D - m_e q + B = R\frac{q}{q_r}(A_r + M_r - D_r - m_e q_r + B_r). \tag{3}$$

By transformation one obtains:

$$\begin{aligned} M - R\frac{q}{q_r}M_r = m_e q(1-R) + A_r\left(\frac{q}{q_r}R - \frac{A}{A_r}\right) \\ + R\frac{q}{q_r}(B_r - D_r) - (B - D) \end{aligned} \tag{4}$$

To get the desired quantity y one defines C as a three digit number resulting from the ratio of A and A_r and it is possible to write:

$$y = M - CM_r = y_1 + y_2 + y_3 + y_4 \tag{5}$$

and it applies:

$$y_1 = M_r\left(R\frac{q}{q_r} - C\right) \tag{6}$$

$$y_2 = m_e\, q\,(1 - R) \tag{7}$$

$$y_3 = A - r\left(\frac{q}{q_r}\,R - \frac{A}{A_r}\right) \tag{8}$$

$$y_4 = R\frac{q}{q_r}(B_r - D_r) - (B - D). \tag{9}$$

The corresponding precision is

$$dy = dy_1 + dy_2 + dy_3 + dy_4. \tag{10}$$

An estimation of the individual precisions shows that only dy_3 contributes significantly and the other three terms can be neglected. Therefore $dy = dy_3$ is chosen. [33]

B Files from AME

Listed are input and output files as well as a comparison file as received from AME after the final frequency-ratio correction (with $\Delta\bar{\nu}_{new} = 55.1(2.2)\,\text{mHz}$).

B.1 Input file

```
000 00000014374   TG3  2   1.0  Triga                          P-Trap
233 000925000a1  JTG3.21Na.A    59211.9      1.0     233U O2-208Pb1.274           27446.20    0.95 m   WH
235 000925000b1  JTG3.21Na.A    63742.5      1.5     235U O2-208Pb1.284           31449.0     1.4  m   WH
238 000925000d1  JTG3.21Na.A    70930.31     0.83    238U O2-208Pb1.298           37839.87    0.78 m   WH
239 000945000a1  JTG3.21Na.A    75704.1      1.4     239Pu O-208Pb1.226           43852.6     1.3  m   WH
241 000955000a1 UJTG3.21Na.A    80599.7      2.3     241Am O-208Pb1.236           48195.3     2.2  m   WH
242 000945000a1  JTG3.21Na.A    79327.8      2.3     242Pu O2-208Pb1.317          45248.9     2.1  m   WH
243 000955000a1  JTG3.21Na.A    85369.89     0.85    243Am O-208Pb1.245           52442.99    0.80 m   WH
244 000945000a1  JTG3.21Na.A    85011.0      1.8     244Pu O2-208Pb1.327          50325.2     1.7  m   WH
244 000945000b1  JTG3.21Na.A    88293.9      1.6     244Pu O-208Pb1.250           55058.0     1.5  m   WH
246 000965000a1  JTG3.21Na.A    91560.7      2.5     246Cm O-208Pb1.260           57883.5     2.4  m   WH
248 000965000a1  JTG3.21Na.A    96883.43     0.83    248Cm O-208Pb1.269           62645.80    0.78 m   WH
249 000985000a1  JTG3.21Na.A   102801.38     0.81    249Cf-208Pb1.197             69724.32    0.76 m   WH
```

B.2 Output files

The AME output consists of two output files, the first (a0dsskgy.output) contains the values of the adjusted masses, the second one (a0p4kqgy.output) contains the adjusted values for the input equations.

a0dsskgy.output:

```
1BEGINNING PHASE 1 OF ATOMIC MASS ADJUSTMENT              time is    0.1
0     OPTIONS REQUESTED for this Adjustment
                                PHASE 1 OPTIONS
                                LIST 0
                                USE V-CARDS
                                REGION 000 TO 305
                                TEST FACTOR  3.0
                                TEST ALPHA   0.1
                                C XZERO 931494.0090 0.0071    ph1bn.
                                END OPTIONS
0     PARAMETERS USED in this Adjustment
                                Region =   0  to  305
                                Test Factor =  3.00
                                Number of Standards =   1

      CONSTANTS USED in this Adjustment:
                                Xo   = 0.9314941024
                                 unc.= 0.0000000003




inconsisten Exc.==>076 0291W *76Cum       non-exist
inconsisten Exc.==>084 0311W *84Gam       non-exist
inconsisten Exc.==>084 0331W *84Asm       non-exist
inconsisten Exc.==>085 0412W *85Nbn       non-exist
inconsisten Exc.==>086 0412W *86Nbn       non-exist
inconsisten Exc.==>117 0571W *117Lam      non-exist
inconsisten Exc.==>138 0611W *138Pmm      non-exist
inconsisten Exc.==>142 0601W *142Ndm      non-exist
inconsisten Exc.==>144 0552W *144Csn      non-exist
inconsisten Exc.==>152 0612W *152Pmn      non-exist
inconsisten Exc.==>174 0741W *174Wxm      non-exist
inconsisten Exc.==>174 0742W *174Wxn      non-exist
inconsisten Exc.==>181 0821W  181Pbm      non-exist
inconsisten Exc.==>190 0812W *190Tln      non-exist
inconsisten Exc.==>196 0821W *196Pbm      non-exist
inconsisten Exc.==>197 0832W *197Bin      non-exist




 4065  Mass-Cards were found
0  23  Types of Reactions were found



0029 000130000a1 CK  TT1 12Ch.A     29Al-O1.812                 -18204.68    0.94 m      -10328.8       1.0
                    Calc.Coef.=  1   -1.813
0029 000130000a2 UK  TT1 16Kw.A     29Al-O1.812                 -18209.0     1.6  m      -10333.5       1.7
                    Calc.Coef.=  1   -1.813
0030 000112000a1  H  TT1 13Ch49     30Na-O1.876                   8475.4     5.2  m       18638.9       5.6
                    Calc.Coef.=  1   -1.875
0030 000121000a1  k  TT1 13Ch49     30Mg-O1.876                  -8883.8     3.4  m           3.0       3.7
                    Calc.Coef.=  1   -1.875
0033 000121000a1  k  TT1 13Ch49     33Mg-O2.062                   4962.3     2.9  m       15813.3       3.1
                    Calc.Coef.=  1   -2.063
0034 000121000a1 UG  TT1 13Ch49     34Mg-O2.126                   8323      29    m       19747        31
```

```
                   Calc.Coef.=  1   -2.125

 44V-32S                 Mass in keV was -28542.1     7.8  m    should be  -23805.102       7.825

 44Vxm-32S               Mass in keV was -28274.1     5.5  m    should be  -23537.018       5.496

 51Sc H-19F 33S          Mass in keV was -40698.4     2.5  m    should be  -43250.353       2.515

 C H2 37Cl-51Fe          Mass in keV was -40189.2     1.4  m    should be      -0.016       0.101

 52Sc-33S 19F            Mass in keV was -45260.6     3.0  m    should be  -40523.560       3.074

 53Sc-34S 19F            Mass in keV was -43506      17    m    should be  -38769.555      17.698
0065 000325000b1  H  MS1 07Sc24,*   C5 H2-65Ge.939                                        72585.2       4.0
                   Calc.Coef.=  1   -0.954
0065 000325000c1  H  MS1 07Sc24,*   C5 H5-65Ge.985                                        98847.2       4.2
                   Calc.Coef.=  1   -1.000
0066 000325000a1  H  MS1 07Sc24,*   C5 H5-66Ge.970                                       103278.9       2.5
                   Calc.Coef.=  1   -0.985

 O 18O-68Co.5            Mass in keV was  -5664      95    m    should be   -4737.235       0.999

 132Ce O-142Sm1.042      Mass in keV was -87211      33    m    should be  -82459.938      29.742

 134Ce O-142Sm1.056      Mass in keV was -89595      33    m    should be  -84844.621      29.740
 15529 Q-Cards were recognised, among which :

            7 References
         6052 Mass-Doublets
          218 Mass-Triplets
         9252 Reactions (in 126 Reaction type):
               1  15N,2p            3 16O,2n            1 13C,2p
               1  7Li,2p            6 ea             2843 a
              30  g,2n              8 B-n               1 p,pi-
              38  ep                1 3He,2n          230 p
             266  IT             1369 B-              889 B+
             173  e                 1 d,2p              2 2B+
              17  pi+,pi-           5 pi-,pi+           4 g,3n
              58  2p              820 n,g             415 d,p
              11  d,n             238 p,n             129 g,n
             140  p,g              24 n,a             108 p,a
             100  d,a             199 p,t              74 3He,t
               9  a,g              48 t,a              51 d,3He
               1  t,d              39 3He,a            86 3He,d
              23  t,3He             4 18O,14O           1 26Mg,22Mg
               2  64Ni,60Ni       131 t,p              53 3He,p
               2  d,g              41 3He,n            19 a,p
              28  a,n               1 15N,17F          11 p,3He
              58  p,d             171 d,t               2 13C,13O
               5  14C,14O           1 t,g              38 3He,6He
               1  9Be,8B            2 13C,12N           1 14N,14B
               2  g,d               4 7Li,8B           24 a,8He
               1  7Li,a             3 a,d               1 3He,9Li
              10  18O,20Ne          1 11B,12N           8 7Li,7Be
               4  14C,14N           2 14C,12N           2 7Li,3He
               3  48Ca,51V          2 48Ca,49Ti         1 207Pb,208Po
               2  48Ca,48Ti        12 18O,17F           2 48Ca,47Sc
               1  208Pb,207Bi      12 3He,8Li           1 48Ca,46Sc
               6  18O,15O           1 64Ni,61Ni         1 208Pb,205Pb
               1  208Pb,204Pb       5 p,6He             1 6Li,8He
               5  7Li,8He           5 13C,14O           1 11B,8B
               7  n,p               1 48Ca,52V          4 14C,17O
               1  11B,14N           2 11B,13N           9 14C,16O
               2  64Ni,66Zn         8 14C,15O           1 64Ni,65Zn
               1  14C,15N           1 6Li,7Be           1 64Ni,65Cu
               1  14C,13C           1 14C,12C           1 18O,19Ne
               2  14N,15C           1 3He,11C           3 3He,8B
```

```
               1  a,9Be               3 3He,7Be            4 a,7Be
               1  6Li,8B              2 14C,11C            1 6Li,t
               1  34S,35Ar            1 n,d                2 a,6He
              22  a,t                 1 16O,14C            1 16O,13C
               1  16O,12C             1 g,12C              1 d,6Li
               1  12C,10Be            2 12C,9Be            1 14N,11Be
0   0  Q-Cards rejected   15529  Q-Cards accepted
0   0  Standards written on file 2
0   0  New Masses merged into Mass File (File4)
0
 USE of ARRAYS :
      4065 / 4100 masses               297 /  315 pointers
         1 /  455 stand.+new masses       6 /   10 nucl. per data
       126 /  132 reaction types         40 /   59 comment cards
     15529 data written on file 3      4065 masses written on file4
 NORMAL END OF PHASE 1                                   time is    0.7
1BEGINNING PHASE 2 OF ATOMIC MASS ADJUSTMENT             time is    0.1
0OPTIONS REQUESTED FOR PHASE 2
                                 PHASE 2 OPTIONS
                                 LIST 1
                                 FACTOR H39 4.0     Winnipeg  54Fe,12
                                 FACTOR H41 2.5     Winnipeg  Gd
                                 FACTOR H48 2.5     Winnipeg  Hg
                                 FACTOR H49 2.5     Winnipeg  Xe
                                 FACTOR M23 4.0     Minnesota
                                 FACTOR MZ3 1.0     Mainz-Heidelberg
                                 FACTOR WA1 2.5     Washington
                                 FACTOR TR1 1.0     Titan MR-TOF
                                 FACTOR CP2 1.0     Canadian Penning
                                 FACTOR JY2 1.0     Jyvaskyla
                                 FACTOR RT1 1.0     RIKEN, Japan
                                 FACTOR ST3 1.0     Stockholm --> MPI
                                 FACTOR Hep 1.0     Max-Planck-Instit
                                 FACTOR IS1 1.0     ISOLTRAP
                                 FACTOR GR1 1.0     GSI      MR-TOF
                                 FACTOR Dbp 1.0     Dubna (p) 2017Ja0
                                 FACTOR TG2 1.0     Triga    cooling
                                 FACTOR TG3 1.0     Triga
                                 NOUSEP
                                 AVERAGE 2.5
                                 SAVE CONNECTIONS LIST
                                 END OPTIONS
0ROUTINE POINTS CALLED FOR  4065 NUCLEI


1************OUTPUT FROM AVERAGING***********
             ext. error is chosen  if EXT/INT larger than : 2.5

      ID            Item                   Ext/Int      Ext.Error

 002 0800150     H2-D                 2    1.2481        0.0000          ----
 004 8800340     4Li(p)3He            2    0.9287      211.4882          ---
 005 8700150     5H(g,2n)3H           2    0.0000        0.0000
 006 8600150     6H(g,3n)3H           4    0.1876       51.1759
 006 8900360     6Li(p,n)6Be          2    0.2965        1.7340          -
 007 8800250     7He(g,n)6He          4    1.5501       12.5795          ------
 007 8900360     7Li(p,n)7Be          2    0.8485        0.0644          ---
 007 8900458     7Bei(IT)7Be          2    0.4685       15.7104          -
 008 8500430     8Be(a)4He            2    1.1314        0.0429          ----
 008 8800350     7Li(n,g)8Li          3    1.1211        0.0640          ----
 009 8700630     7Be(3He,n)9C         3    1.7584        4.0311          -------
 009 8800250     9He(g,n)8He          2    0.4685       31.4208          -
 009 8900270     9Be(pi-,pi+)9He      2    1.0049       76.2817          ----
 010 8700250     10He(g,2n)8He        2    0.6685       66.6338          --
 010 8800350     10Li(g,n)9Li         2    0.1767        2.4125
 010 8800351     10Lim(g,n)9Li        2    0.3841       15.8392          -
 010 8800362     9Be(13C,12N)10Lin    2    0.7156       29.9015          --
```

010	8800450	9Be(n,g)10Be	2	1.5100	0.0894	------
011	8700548	9Be(3He,p)11Bxi	2	0.0257	0.2842	
012	8500650	12C(a,8He)8C	2	0.6920	17.1375	--
012	8700830	12O(2p)10C	2	2.0800	26.7957	--------
013	8500638	9Be(a,g)13Cxi	2	1.2347	1.5091	----
013	8800740	12C(p,g)13N	2	1.4487	0.4192	-----
014	0700470	14Be-u	2	1.3344	189.4420	-----
014	8900560	14C(7Li,7Be)14B	2	0.3152	7.1773	-
015	8900760	15N(p,n)15O	2	2.0300	1.2756	--------
016	8600850	16O(3He,6He)13O	2	0.2617	2.6765	-
016	8700650	14C(t,p)16C	2	0.2236	0.8588	
016	8800750	15N(d,p)16N	5	0.9957	2.4599	---
016	8900860	16O(3He,t)16F	2	1.0539	9.4142	----
016	8900870	16O(pi+,pi-)16Ne	2	1.6028	35.2391	------
017	0400560	17B-u	2	0.6427	140.8325	--
017	8800940	16O(p,g)17F	2	0.6306	0.1678	--
018	0300830	C D3-18O	2	0.6173	0.0005	--
018	8600820	18O(48Ca,51V)15B	2	0.1431	3.4353	
018	8800830	18O(48Ca,49Ti)17C	2	0.3473	6.4743	-
018	8801140	18Na(p)17Ne	2	0.1764	21.3038	
018	8900760	18O(7Li,7Be)18N	2	0.4202	8.3769	-
019	0601050	19Ne-22Ne.864	2	0.8811	0.1507	---
019	8800650	18C(n,g)19C	2	0.6247	62.8416	--
019	8800760	18O(18O,17F)19N	3	0.9200	16.2018	---
019	8800850	18O(d,p)19O	5	0.5603	1.5862	--
020	0100650	20C-u	4	0.2907	71.9648	-
020	0100740	20N-u	3	0.5363	45.4268	--
020	8700850	18O(t,p)20O	2	0.3260	0.3097	-
020	8800950	19F(n,g)20F	4	0.3335	0.0106	-
020	8901058	20Nei(IT)20Ne	2	0.6937	1.4947	--
021	0000740	21N-u	3	0.4489	64.6021	-
021	8600850	18O(18O,15O)21O	2	0.9833	12.6680	---
021	8801050	20Ne(n,g)21Ne	2	0.2060	0.0085	
022	0000740	22N-u	4	1.1981	267.2592	----
022	0801150	22Na-23Na.957	2	0.4784	0.1037	-
022	0901160	22Mg-22Na	2	0.1048	0.0243	
022	8500850	18O(18O,14O)22O	3	1.8047	110.2788	-------
022	8900960	22Ne(t,3He)22F	3	0.5089	6.7743	--
023	0000830	23O-u	2	0.0181	2.3638	
023	0000920	23F-u	2	0.6219	23.9471	--
023	0001100	23Na-u	3	0.6801	0.0013	--
023	8801050	22Ne(n,g)23Ne	2	0.0429	0.0047	
024	0000920	24F-u	2	0.4741	49.7155	-
024	8801150	23Na(n,g)24Na	3	1.3017	0.0230	-----
024	8801348	24Ali(p)23Mg	2	0.1553	0.5440	
024	8901270	24Mg(pi+,pi-)24Si	2	1.3017	27.2110	-----
025	0000920	25F-u	3	0.7675	79.4593	---
025	8800850	25O(g,n)24O	2	1.4977	13.3780	-----
025	8801250	24Mg(n,g)25Mg	2	0.6471	0.0490	--
026	0000920	26F-u	2	0.6874	82.0654	--
026	0001010	26Ne-u	2	0.5129	10.1477	--
026	0001100	26Na-u	2	0.2563	0.9635	-
026	0901360	26Si-26Al	2	0.2712	0.0247	-
026	8801230	26Mg(7Li,8B)25Ne	2	1.3302	63.8644	-----
026	8801340	25Mg(p,g)26Al	2	0.0735	0.0051	
027	0001010	27Ne-u	2	0.5952	58.0022	--
027	8701538	27Pxi(2p)25Al	2	2.0812	74.7329	--------
027	8801250	26Mg(n,g)27Mg	3	1.3645	0.0590	-----
028	0001010	28Ne-u	2	0.1821	24.6391	
028	8801445	27Al(p,g)28Sir	2	0.5145	0.0137	--
029	0001250	29Mg-u	2	0.5234	6.4052	--
029	8801540	28Si(p,g)29P	2	0.9430	0.5728	---
030	0001010	30Ne-u	2	0.4542	145.0000	-
030	8801450	29Si(n,g)30Si	3	0.7868	0.0183	---
031	8801450	30Si(n,g)31Si	2	0.0923	0.0037	
033	8801740	32S(p,g)33Cl	2	0.3885	0.1823	-
033	8901560	33P(B-)33S	2	0.2935	0.3434	-

034 0401350	34Al-39K.872	2	1.1927	2.6947	----
034 8801650	33S(n,g)34S	2	0.3987	0.0393	-
035 8801650	34S(n,g)35S	2	1.4311	0.0687	-----
035 8901760	35Cl(p,n)35Ar	3	1.3202	0.9629	-----
036 0001450	36Si-u	4	0.8212	63.2997	---
036 8801630	36S(14C,15O)35Si	3	1.8701	71.9864	-------
036 8801640	36S(d,3He)35P	2	1.1142	2.2211	----
036 8801849	35Cl(p,g)36Arj	2	1.7599	2.2037	-------
036 8901560	36S(7Li,7Be)36P	2	0.0851	1.1981	
037 0001450	37Si-u	2	0.6606	80.7092	--
037 8801560	36S(18O,17F)37P	2	0.5815	23.6883	--
037 8801650	36S(n,g)37S	3	0.6686	0.0452	--
038 0001550	38P-u	4	0.7326	57.0843	--
038 0901951	38Kxm-38K	2	0.5312	0.0313	--
038 8801750	37Cl(n,g)38Cl	2	1.2203	0.1090	----
038 8901660	38S(B-)38Cl	3	0.3852	2.9655	-
039 0001550	39P-u	4	0.6920	83.6814	--
039 8701750	37Cl(t,p)39Cl	2	1.3274	2.4671	-----
040 0001450	40Si-u	2	0.7347	96.2207	--
040 0001550	40P-u	3	0.6439	57.7903	--
040 0001850	20Ne2-40Ar	2	0.4779	0.0016	-
040 8801850	40Ar(3He,a)39Ari	2	1.3242	10.4818	-----
040 8801950	39K(n,g)40K	2	0.3354	0.0258	-
040 8802060	40Ca(7Li,8He)39Sc	2	0.7422	19.1219	--
040 8802148	40Sci(p)39Ca	2	0.2540	1.5635	-
040 8901760	40Cl(B-)40Ar	2	2.2114	76.1258	--------
041 0001750	41Cl-u	4	0.8766	64.6723	---
041 0801940	41K-40Ar H	2	0.4794	0.0016	-
041 8801850	40Ar(n,g)41Ar	2	0.8682	0.3237	---
041 8801950	40K(n,g)41K	2	0.2683	0.0258	-
041 8802050	40Ca(n,g)41Ca	4	0.4845	0.0710	-
041 8802148	40Ca(p,g)41Sci	3	0.4594	1.5779	-
041 8902155	41Scr(IT)41Sc	2	1.1147	0.0616	----
042 0001550	42P-u	2	0.2740	27.9439	-
042 8801950	41K(n,g)42K	2	0.1886	0.0215	
043 0001650	43S-u	2	0.2514	1.3412	-
043 0001750	43Cl-u	2	0.2123	14.1000	
043 8802050	42Ca(n,g)43Ca	4	0.6089	0.1135	--
043 8802140	42Ca(p,g)43Sc	2	1.1142	2.2211	----
043 8902068	43Ca(3He,t)43Sci	2	0.2236	0.8588	
044 0001750	44Cl-u	4	0.9708	89.1728	---
044 8802050	43Ca(n,g)44Ca	3	1.6223	0.4113	------
044 8802050	44Ca(p,d)43Cai	2	0.3166	5.5974	-
044 8802140	43Ca(p,g)44Sc	3	1.7282	3.2297	------
044 8902068	44Ca(3He,t)44Sci	2	0.8839	2.6839	---
045 0001750	45Cl-u	2	1.5745	230.1619	------
045 8802050	44Ca(n,g)45Ca	2	0.1092	0.0202	
046 0001750	46Cl-u	3	0.5585	58.3052	--
046 8802150	45Sc(n,g)46Sc	3	0.5325	0.0593	--
047 0002450	47Cr-u	2	0.2292	1.5527	
047 8802050	46Ca(n,g)47Ca	2	1.9379	0.5582	-------
048 8802548	48Mni(p)47Cr	2	0.3201	2.6399	-
049 8802050	48Ca(n,g)49Ca	3	0.2420	0.0459	
049 8802140	48Ca(p,g)49Sc	2	0.0170	0.0584	
049 8902260	49Ti(p,n)49V	2	1.1127	0.9799	----
050 8702450	50Cr(p,t)48Cr	2	0.2741	2.1515	-
051 0002310	51V-39K1.308	2	0.4471	0.2627	-
051 0002400	51Cr-39K1.308	2	0.2376	0.1554	
051 0902360	51Cr-51V	2	0.8320	0.5084	---
051 8802250	50Ti(n,g)51Ti	3	0.2161	0.1136	
051 8802350	50V(n,g)51V	3	0.4665	0.0402	-
051 8802548	50Cr(p,g)51Mni	2	0.9105	1.4752	---
052 8702250	50Ti(t,p)52Ti	2	0.1414	1.0735	
052 8802350	51V(n,g)52V	3	0.2218	0.0299	
053 8802450	52Cr(n,g)53Cr	3	1.0107	0.1552	----
054 8702650	54Fe(p,t)52Fej	2	0.1764	1.1184	
054 8802450	53Cr(n,g)54Cr	4	1.5695	0.2122	------

054	8802650	54Fe(d,t)53Fe	2	0.2121	0.3721	
055	8802450	54Cr(n,g)55Cr	2	0.1771	0.0353	
055	8802650	54Fe(n,g)55Fe	2	1.5361	0.3310	------
055	8802740	54Fe(p,g)55Co	2	0.1240	0.0462	
055	8902560	55Fe(e)55Mn	3	0.7022	0.1413	--
056	0002150	56Sc-u	2	0.6030	168.0824	--
056	0002250	56Ti-u	6	1.4365	159.9487	-----
056	0002350	56V-u	3	0.4313	94.5750	-
056	0002950	56Cu-u	2	0.9880	6.7823	---
056	8802550	55Mn(n,g)56Mn	2	0.3280	0.0472	-
057	0002250	57Ti-u	3	0.9304	205.6315	---
057	8802650	56Fe(n,g)57Fe	2	1.6447	0.0299	------
057	8802740	56Fe(p,g)57Co	2	0.8875	0.7928	---
057	8802748	56Fe(p,g)57Coi	2	1.1094	0.3894	----
057	8802948	57Cui(p)56Ni	2	0.9515	25.6256	---
057	8902660	57Fe(p,n)57Co	2	0.4019	0.6048	-
058	0002250	58Ti-u	2	0.1621	31.9007	
058	0002350	58V-u	2	0.6170	63.4639	--
058	8802650	57Fe(n,g)58Fe	2	0.1301	0.0262	
059	0002350	59V-u	4	1.6575	244.4861	------
059	8802650	58Fe(n,g)59Fe	3	0.4149	0.0477	-
060	0002350	60V-u	4	0.8495	165.9343	---
060	8702650	58Fe(t,p)60Fe	4	2.0258	7.3756	--------
060	8802750	59Co(n,g)60Co	2	1.0000	0.0758	----
061	0002350	61V-u	2	1.3239	333.8824	-----
061	8802850	60Ni(n,g)61Ni	2	0.2983	0.0153	-
062	0002350	62V-u	2	0.3895	110.5173	-
062	8802850	61Ni(n,g)62Ni	4	0.9588	0.3370	---
062	8902760	62Ni(t,3He)62Co	2	1.0028	19.9901	----
063	8802850	62Ni(n,g)63Ni	4	0.6231	0.0570	--
063	8902960	63Cu(p,n)63Zn	2	0.6222	1.9458	--
064	8603050	64Zn(3He,6He)61Zn	2	0.6579	11.4869	--
064	8802850	63Ni(n,g)64Ni	2	0.5574	0.1231	--
065	0003250	C5 H2-65Ge.939	2	0.3725	1.0789	-
065	8802850	64Ni(n,g)65Ni	2	1.5225	0.2251	------
065	8803140	64Zn(p,g)65Ga	2	0.7071	0.5368	--
065	8902960	65Cu(p,n)65Zn	2	1.1113	0.4503	----
066	8802950	65Cu(n,g)66Cu	2	1.7179	0.1728	------
067	0002750	28Si F2-67Co.985	2	0.1245	0.8481	
067	8803050	66Zn(n,g)67Zn	3	0.0000	0.0000	
068	0002650	68Fe-u	2	1.1446	236.5539	----
068	0003250	68Ge-C5 H8	2	0.6946	1.3991	--
068	0003350	68As-C5 H8	2	0.6360	1.3470	--
068	8803050	67Zn(n,g)68Zn	2	0.3067	0.0635	-
069	8803548	69Bri(p)68Se	3	1.2637	25.3407	-----
069	8903260	69As(B+)69Ge	2	1.3435	50.9933	-----
070	0002950	70Cu-85Rb.824	3	0.1570	0.1823	
070	8903060	70Zn(p,n)70Ga	2	0.8043	1.4165	---
071	0002750	71Co-u	2	0.7119	355.3846	--
071	0003150	71Ga-85Rb.835	2	0.4282	0.5108	-
071	8803250	70Ge(n,g)71Ge	2	0.0943	0.0107	
071	8903260	71As(B+)71Ge	3	0.3105	1.3608	-
072	8903260	72As(B+)72Ge	3	0.8856	3.8814	---
073	0003660	73Kr-85Rb.859	2	0.1484	1.0481	
073	8803748	73Rbi(p)72Kr	2	1.1180	21.4709	----
074	0003150	74Ga-85Rb.871	2	0.0149	0.0478	
074	0003660	74Kr-85Rb.871	2	1.3892	3.1096	-----
074	0003750	74Rb-85Rb.871	3	0.5609	2.0028	--
074	8803250	73Ge(n,g)74Ge	4	1.5567	0.0928	------
074	8903260	74As(B+)74Ge	5	0.7659	1.5366	---
075	0003750	75Rb-85Rb.882	2	0.0392	0.0497	
075	8803450	74Se(n,g)75Se	2	0.0559	0.0043	
075	8903360	75As(p,n)75Se	2	0.0585	0.0599	
076	0003750	76Rb-85Rb.894	3	1.3436	1.3526	-----
076	8803350	75As(n,g)76As	2	2.3195	0.1670	---------
076	8903460	76Br(B+)76Se	3	1.5898	15.9101	------
077	8803450	76Se(n,g)77Se	3	0.0674	0.0044	

077	8903460	77Se(p,n)77Br	2	0.0092	0.0279	
078	0203750	78Rb-85Rb.918	3	0.2577	0.8957	-
078	8703250	76Ge(t,p)78Ge	2	0.0000	0.0000	
078	8803450	77Se(n,g)78Se	2	0.1365	0.0252	
078	8903460	78Se(p,n)78Br	4	1.0652	4.0882	----
079	8803450	78Se(n,g)79Se	3	1.9634	0.2796	-------
079	8903560	79Kr(B+)79Br	3	1.8215	6.5181	-------
080	0403840	80Sr-85Rb.941	2	1.0735	3.9922	----
080	8703440	80Se(d,a)78As	3	1.3951	14.5778	-----
080	8703450	80Se(p,t)78Se	2	0.4950	1.1272	-
080	8803440	80Se(d,3He)79As	3	0.4580	2.5799	-
080	8803550	79Br(n,g)80Br	2	1.1149	0.1601	----
081	0503750	81Rb-85Rb.953	2	0.6234	3.7632	--
081	0503840	81Sr-85Rb.953	2	0.3063	1.0287	-
081	8803450	80Se(n,g)81Se	2	0.0000	0.0000	
082	8803440	82Se(d,3He)81As	2	0.9097	5.0247	---
082	8803550	81Br(n,g)82Br	2	0.8800	0.1134	---
083	8903560	83Br(B-)83Kr	2	1.3720	7.5780	-----
084	0803840	84Sr-85Rb.988	2	0.2635	0.3732	-
084	8903660	84Rb(B+)84Kr	2	0.5145	1.4209	--
085	0003950	85Y-u	2	0.3406	6.9337	-
086	0804200	86Mo-85Rb1.012	2	0.2931	0.9226	-
086	1803660	86Kr-85Rb	2	0.2816	0.0013	-
086	2703650	86Kr-84Kr	2	1.3780	0.0062	-----
086	8903860	86Y(B+)86Sr	2	1.4142	21.4709	-----
087	8803650	86Kr(n,g)87Kr	2	0.2432	0.0643	
087	8903860	87Sr(p,n)87Y	2	0.3987	0.4827	-
089	0004150	89Nb-u	2	0.3103	8.9275	-
089	8803850	88Sr(n,g)89Sr	2	0.1632	0.0161	
089	8903760	89Rb(B-)89Sr	2	1.6000	12.3672	------
089	8903960	89Zr(B+)89Y	3	0.7656	2.4705	---
090	0404450	90Ru-85Rb1.059	2	1.5382	6.6481	------
090	8803950	89Y(n,g)90Y	3	0.5892	0.0643	--
090	8903860	90Sr(B-)90Y	2	0.0000	0.0000	
091	0004350	91Tc-C7 H7	2	1.5627	5.9260	------
091	0304450	91Ru-85Rb1.071	2	0.6370	2.4993	--
091	8804050	90Zr(n,g)91Zr	2	1.8020	0.8202	-------
091	8903760	91Rb(B-)91Sr	2	0.2808	5.2153	-
091	8903860	91Sr(B-)91Y	3	1.2369	7.6578	----
091	8903960	91Y(B-)91Zr	2	0.1857	0.3702	
091	8904060	91Zr(p,n)91Nb	2	0.8990	2.8550	---
091	8904160	91Mo(B+)91Nb	2	0.6613	12.9592	--
092	0004350	92Tc.989-C7 H7	2	0.3810	1.9842	-
092	0203840	92Sr-85Rb1.082	2	0.2005	0.7780	
092	0204450	92Ru-85Rb1.082	2	0.8964	3.0770	---
092	8804250	92Mo(p,d)91Mo	2	0.4802	6.6307	-
092	8903760	92Rb(B-)92Sr	3	0.6000	6.6216	--
092	8903860	92Sr(B-)92Y	2	0.2774	4.9548	-
092	8903960	92Y(B-)92Zr	2	0.4000	5.1530	-
092	8904060	92Zr(p,n)92Nb	2	0.2362	0.5299	
093	0004450	93Ru-C7 H9	3	0.5127	1.3261	--
093	0104550	93Rh-85Rb1.094	2	1.1314	4.7671	----
093	8804050	92Zr(n,g)93Zr	3	1.0828	0.5247	----
093	8903760	93Rb(B-)93Sr	3	0.3399	4.5706	-
093	8903960	93Y(B-)93Zr	2	0.4000	5.1530	-
094	8804150	93Nb(n,g)94Nb	2	0.6860	0.0568	--
094	8804742	94Agn(p)93Pd	2	0.3883	6.9367	-
094	8904160	94Nb(B-)94Mo	2	0.4472	1.2883	-
094	8904260	94Tc(B+)94Mo	2	1.8073	7.8942	-------
095	0804610	95Pd-94Mo1.011	2	0.0307	0.0999	
095	8804050	94Zr(n,g)95Zr	2	0.1638	0.1573	
095	8903760	95Rb(B-)95Sr	2	0.1403	4.1620	
095	8904260	95Tc(B+)95Mo	2	0.8575	4.7362	---
096	8903860	96Sr(B-)96Y	2	1.2924	26.7459	-----
096	8904260	96Mo(p,n)96Tc	2	0.5145	2.8417	--
097	8804250	96Mo(n,g)97Mo	2	0.7420	0.1689	--
097	8804340	96Mo(3He,d)97Tc	2	0.7955	4.8309	---

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 097 8804450     96Ru(d,p)97Ru        2    0.7878        2.3322         ---
 097 8904460     97Rh(B+)97Ru         2    0.2828       10.7354         -
 098 0003750     98Rb-u               2    0.2682        5.5000         -
 098 0003840     98Sr-85Rb1.153       2    1.0255        3.7858         ----
 098 8804250     97Mo(n,g)98Mo        2    0.1553        0.0109
 098 8804340     97Mo(3He,d)98Tc      2    0.4685        3.1421         -
 099 0003750     99Rb-85Rb1.165       2    0.4598        1.9896         -
 099 0004750     99Ag-85Rb1.165       2    1.8703       12.5796         -------
 099 8804350     99Tc(p,d)98Tc        2    1.4569        6.8362         -----
 100 0003840     100Sr-85Rb1.176      2    0.1593        1.7665
 100 0004750     100Ag-85Rb1.176      2    0.1752        0.9402
 100 8804240     100Mo(d,3He)99Nb     2    1.5756       20.2982         ------
 100 8804450     99Ru(n,g)100Ru       2    1.5435        0.0426         ------
 101 0003840     101Sr-85Rb1.188      2    0.4966        4.5205         -
 101 0004750     101Ag-85Rb1.188      2    1.4524        7.5437         -----
 101 0004950     101In-u              2    0.6050        7.5744         --
 101 0004951     101Inm-u             2    0.4989       19.2095         -
 101 8804250     100Mo(n,g)101Mo      2    0.2620        0.0192         -
 101 8804450     100Ru(n,g)101Ru      2    0.0538        0.0136
 101 8904360     101Tc(B-)101Ru       2    0.3600        9.2754         -
 102 8904460     102Rh(B+)102Ru       3    0.6379        4.3799         --
 103 8804450     102Ru(n,g)103Ru      2    0.5800        0.0921         --
 103 8804650     102Pd(n,g)103Pd      2    0.5717        0.4736         --
 103 8904460     103Ru(B-)103Rh       4    0.8348        2.0411         ---
 104 8804440     104Ru(d,3He)103Tc    2    0.5252        5.3491         --
 104 8804550     103Rh(n,g)104Rh      2    0.0581        0.0051
 104 8904260     104Mo(B-)104Tc       2    0.0884        2.6839
 104 8904360     104Tc(B-)104Ru       2    0.3254       15.9137         -
 105 8804450     104Ru(n,g)105Ru      3    0.2864        0.0344         -
 105 8904560     105Rh(B-)105Pd       3    1.0761        3.0602         ----
 105 8904760     105Cd(B+)105Ag       2    0.3310        1.6177         -
 106 0004650     106Pd-u              2    0.5129        1.3551         --
 106 0004850     106Cd-u              2    0.8799        2.0149         ---
 106 8804650     105Pd(n,g)106Pd      2    1.5910        0.4831         ------
 106 8904460     106Ru(B-)106Rh       2    0.9428        0.2147         ---
 106 8904560     106Rh(B-)106Pd       3    1.0541        7.5441         ----
 106 8904660     106Ag(e)106Pd        2    1.9761        6.6261         -------
 106 8904860     106In(B+)106Cd       3    0.5503        7.1931         --
 107 0004950     107In-u              2    0.4793        9.9943         -
 107 8505230     107Te(a)103Sn        2    0.3779        1.8700         -
 108 0004650     108Pd-u              2    0.2051        0.3854
 108 0004850     108Cd-u              2    0.1551        0.3734
 108 8505330     108I(a)104Sb         2    0.1878        0.9289
 108 8904860     108In(B+)108Cd       2    1.0658       10.4250         ----
 109 8804650     108Pd(n,g)109Pd      2    0.7540        0.1197         ---
 109 8904860     109In(B+)109Cd       2    0.8824        6.6864         ---
 110 0004650     110Pd-u              3    0.1949        0.2422
 110 0004850     110Cd-u              3    0.9983        1.1772         ---
 110 0005050     110Sn-u              2    1.2963       19.1733         -----
 110 0904670     110Pd-110Cd          2    0.0193        0.0126
 110 8505330     110I(a)106Sb         2    0.1746        6.7089
 110 8505430     110Xe(a)106Te        5    0.6628        6.7594         --
 110 8904760     110Ag(B-)110Cd       2    0.4160        0.7432         -
 110 8904860     110In(B+)110Cd       3    2.2913       28.4033         ---------
 111 8505330     111I(a)107Sb         2    1.5556       12.2513         ------
 111 8505430     111Xe(a)107Te        4    0.2364        6.8896
 111 8804850     110Cd(n,g)111Cd      3    1.3047        0.2359         -----
 111 8904760     111Ag(B-)111Cd       2    1.2728        1.9324         -----
 112 0005150     112Sb-u              3    0.4234        8.1045         -
 112 8505430     112Xe(a)108Te        3    1.1116        7.4833         ----
 112 8805050     112Sn(p,d)111Sn      2    0.7688        4.3975         ---
 112 8805540     112Cs(p)111Xe        2    0.3487        1.5233         -
 113 0004450     113Ru-u              2    0.7257       65.8822         --
0PLEASE CHECK113In(p,t)111In-115In()113In
                    CONNECTION NOT USED  1130490  1130490
 113 8805050     112Sn(n,g)113Sn      2    0.2198        0.4407
 113 8805540     113Cs(p)112Xe        3    2.1020        5.0284         --------
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113	8904760	113Ag(B-)113Cd	2	0.5824	10.4051	--
113	8904960	113Sn(B+)113In	2	1.0175	4.1959	----
113	8905060	113Sb(B+)113Sn	4	0.8863	16.2901	---
114	0005150	114Sb-u	2	0.3430	8.8235	-
114	0005250	114Te-u	2	0.0809	2.1226	
114	8505630	114Ba(a)110Xe	2	1.5652	31.1543	------
114	8804850	113Cd(n,g)114Cd	2	1.5225	0.2251	------
114	8904960	114In(B-)114Sn	2	0.3536	0.2684	-
115	0005150	115Sb-u	2	0.0000	0.0000	
116	0004550	116Rh-u	2	0.0637	8.2759	
116	0005250	116Te-u	2	0.0160	0.4204	
116	8805050	115Sn(n,g)116Sn	2	0.6377	0.0652	--
116	8905260	116I(B+)116Te	2	0.2096	24.5274	
117	0005250	117Te-u	2	0.9664	20.5000	---
117	0005350	117I-u	2	0.4434	12.9349	-
117	0005460	117Xe-133Cs.880	2	0.2166	2.4138	
117	8805050	116Sn(n,g)117Sn	2	1.4272	0.7381	-----
117	8905160	117Te(B+)117Sb	2	1.6641	29.7289	------
117	8905260	117I(B+)117Te	2	0.4709	37.4040	-
118	0005350	118I-u	2	0.2828	6.0000	-
118	0005460	118Xe-133Cs.887	2	1.2999	14.4828	-----
118	0704690	118Pd-120Sn.983	2	0.2764	0.9056	-
119	0005350	119I-u	2	0.6928	16.1437	--
119	0005556	119Csx-133Cs.895	2	0.3264	3.0000	-
119	8805050	118Sn(n,g)119Sn	2	0.8047	0.4812	---
119	8905060	119Sb(e)119Sn	2	0.3061	3.9435	-
120	0005460	120Xe-133Cs.902	2	0.5739	7.2810	--
120	0005556	120Csx-133Cs.902	2	1.2975	12.7206	-----
120	8705250	120Te(p,t)118Te	2	0.6888	13.4736	--
121	0004850	121Cd-130Xe.931	2	0.1198	0.2499	
121	0005460	121Xe-133Cs.910	2	0.8564	10.2152	---
121	8805050	120Sn(n,g)121Sn	3	0.4202	0.1535	-
121	8905460	121Cs(B+)121Xe	2	0.0000	0.0000	
121	8905560	121Ba(B+)121Cs	2	0.2324	35.2152	
122	0005460	122Xe-133Cs.917	2	0.1529	1.8241	
122	0005552	122Csn-133Cs.917	2	0.2883	2.8268	-
122	8805040	122Sn(d,3He)121In	3	0.9202	26.9770	---
122	8805150	121Sb(n,g)122Sb	2	0.1193	0.0172	
122	8904960	122Inn(B-)122Sn	2	0.5426	77.9357	--
122	8905160	122Sb(B-)122Te	2	1.7150	4.7362	------
123	8805050	122Sn(n,g)123Sn	3	0.4648	0.5949	-
123	8805250	122Te(n,g)123Te	2	0.9878	0.0843	---
123	8905060	123Sn(B-)123Sb	2	1.7678	13.4193	-------
124	0004850	124Cd-133Cs.932	2	0.4431	2.1941	-
124	0005550	124Cs-133Cs.932	2	0.4534	4.4543	-
124	0005640	124Ba-133Cs.932	2	0.0596	0.8000	
124	0005750	124La-u	2	1.0456	63.6136	----
124	8805040	124Sn(d,3He)123In	2	0.4589	19.6357	-
124	8805150	123Sb(n,g)124Sb	3	0.8869	0.0601	---
124	8805250	123Te(n,g)124Te	2	1.5179	0.1546	------
124	8905260	124I(B+)124Te	2	0.7305	1.4580	--
125	0105550	125Cs-133Cs.940	2	0.2020	2.0000	
125	0105640	125Ba-133Cs.940	2	1.5293	18.2413	------
125	8905160	125Sb(B-)125Te	2	0.4714	1.0735	-
125	8905460	125Cs(B+)125Xe	2	0.3536	5.3677	-
126	0005750	126La-u	2	0.0744	7.2259	
126	0204850	126Cd-133Cs.947	2	0.8921	3.3325	---
126	0205640	126Ba-133Cs.947	2	0.1789	2.4000	
126	8705050	124Sn(t,p)126Sn	2	0.0471	0.5368	
127	0304850	127Cd-133Cs.955	2	0.5339	3.5538	--
127	0304851	127Cdm-133Cs.955	2	0.6578	3.0889	--
127	0305550	127Cs-133Cs.955	2	0.4170	2.7624	-
127	0305640	127Ba-133Cs.955	2	0.4379	5.4000	-
127	8805250	126Te(n,g)127Te	2	0.4472	0.0859	-
127	8905260	127Te(B-)127I	2	0.8485	6.4413	---
127	8905360	127Xe(e)127I	2	0.9220	2.0445	---
127	8905460	127Cs(B+)127Xe	3	0.8636	11.4118	---

128 0005750	128La-u	2	0.7670	44.8351	---
128 0404850	128Cd-133Cs.962	2	1.5053	13.3526	------
128 0905270	128Te-128Xe	2	0.7280	0.8045	--
128 8805350	127I(n,g)128I	2	0.6727	0.0340	--
128 8905061	128Sn(B-)128Sbm	3	0.4973	6.7914	-
128 8905160	128Sbm(B-)128Te	2	0.0800	2.0612	
129 8805250	128Te(n,g)129Te	2	0.2854	0.0249	-
129 8905160	129Sb(B-)129Te	2	1.4378	32.7431	-----
129 8905660	129La(B+)129Ba	2	0.3123	10.4736	-
130 0005750	130La-u	2	0.3962	11.0345	-
130 0604952	130Inn-133Cs.977	2	0.2833	0.8160	-
130 0905090	130Sn-130Xe	2	0.3157	0.7417	-
130 0905270	130Te-130Xe	2	0.3271	0.0068	-
130 8905060	130Sn(B-)130Sb	3	1.5323	24.4474	------
130 8905460	130Cs(B+)130Xe	2	0.7071	10.7354	--
131 0705050	131Sn 34S-133Cs1.24	2	0.5445	2.3533	--
131 8806340	131Eu(p)130Sm	2	1.7121	9.6828	------
131 8905360	131I(B-)131Xe	2	0.4319	0.2803	-
132 0004850	132Cd-u	2	0.8588	55.3773	---
132 0006050	132Nd-u	2	0.7496	19.4784	--
132 0805050	132Sn-133Cs.992	2	0.2293	0.6223	
132 3605450	132Xe-129Xe	4	0.3125	0.0017	-
132 8905360	132I(B-)132Xe	3	1.2776	8.0133	-----
132 8905660	132La(B+)132Ba	2	1.2522	60.1185	-----
133 0005850	133Ce-u	2	0.3214	5.6420	-
133 0905910	133Pr-133Cs	2	0.2385	3.2000	
133 8905460	133Xe(B-)133Cs	2	0.2000	0.5153	
134 0005750	134La-u	3	1.2580	26.9153	-----
134 0005850	134Ce-u	2	0.7729	16.9148	---
134 0005950	134Pr-u	2	0.6113	13.3327	--
134 0806000	134Nd-133Cs1.008	2	0.9062	11.4964	---
134 8805550	133Cs(n,g)134Cs	2	0.0000	0.0000	
135 0705910	135Pr-133Cs1.015	2	0.3323	4.2153	-
135 0706000	135Nd-133Cs1.015	2	0.2510	5.1536	-
135 8805650	134Ba(n,g)135Ba	3	1.0265	0.1123	----
135 8905460	135Xe(B-)135Cs	2	1.0733	5.1530	----
135 8905760	135Ce(B+)135La	2	0.7898	3.9566	---
136 0005750	136La-u	2	0.4324	24.6840	-
136 0006150	136Pm-u	2	0.9561	70.8976	---
136 0606000	136Nd-133Cs1.023	2	0.7249	9.1971	--
136 0606250	136Sm-133Cs1.023	2	1.6100	21.6000	------
136 0905470	136Xe-136Ba	2	0.6173	0.3033	--
136 0905670	136Ce-136Ba	2	0.0851	0.0194	
136 1005450	136Xe-13C3 O6	2	0.5774	0.0045	--
136 8805650	135Ba(n,g)136Ba	2	0.0515	0.0022	
136 8905560	136Cs(B-)136Ba	2	0.1671	0.3332	
137 8805450	136Xe(n,g)137Xe	2	0.8450	0.0937	---
137 8805650	136Ba(n,g)137Ba	3	0.9008	0.0670	---
137 8805850	136Ce(n,g)137Ce	2	0.6442	0.1082	--
137 8905560	137Cs(B-)137Ba	2	0.4033	0.0746	-
137 8906061	137Pmm(B+)137Nd	2	0.2794	16.3388	-
138 0406000	138Nd-133Cs1.038	2	0.3625	4.5985	-
138 0406250	138Sm-133Cs1.038	2	0.3625	4.5985	-
138 8905560	138Cs(B-)138Ba	2	0.6174	8.5252	--
139 0306250	139Sm-133Cs1.045	3	0.1924	2.2483	
139 0306350	139Eu-133Cs1.045	2	0.2647	3.7370	-
139 8905560	139Cs(B-)139Ba	2	0.4685	1.5710	-
139 8906060	139Pm(B+)139Nd	3	0.8812	28.2052	---
140 0205550	140Cs-133Cs1.053	2	1.0102	10.0000	----
140 0206250	140Sm-133Cs1.053	2	0.4770	6.4000	-
140 8805750	139La(n,g)140La	2	0.5716	0.0119	--
140 8905560	140Cs(B-)140Ba	2	0.4061	6.8078	-
140 8905660	140Ba(B-)140La	3	0.2500	3.4332	-
140 8906060	140Pm(B+)140Nd	2	1.4000	36.0711	-----
141 0006450	141Gd-u	2	0.3300	7.0000	-
141 0105640	141Ba-133Cs1.060	2	0.2736	2.9938	-
141 8805850	140Ce(n,g)141Ce	2	0.7717	0.0853	---

141	8806740	141Ho(p)140Dy	2	0.2089	1.6658	
141	8905860	141Ce(B-)141Pr	4	0.5646	0.8018	--
141	8905960	141Nd(B+)141Pr	2	0.9363	2.8236	---
141	8906260	141Eu(B+)141Sm	2	0.5303	16.1032	--
142	0005550	142Cs-133Cs1.068	2	1.2135	15.9389	----
142	0005640	142Ba-133Cs1.068	2	0.4560	4.9896	-
142	0006150	142Pm-u	3	0.8067	21.7046	---
142	0006351	142Eum-133Cs1.068	2	0.1580	2.1200	
142	8805950	141Pr(n,g)142Pr	2	0.1280	0.0106	
142	8905960	142Pr(B-)142Nd	2	1.6641	2.9729	------
143	0006350	143Eu-133Cs1.075	3	1.0519	12.4058	----
143	8805850	142Ce(n,g)143Ce	2	0.1562	0.0157	
143	8806050	142Nd(n,g)143Nd	2	1.3024	0.0971	-----
143	8905960	143Pr(B-)143Nd	2	1.0607	1.6103	----
144	0005750	144La-u	2	1.2917	17.9386	-----
144	0906070	144Sm-144Nd	2	0.6125	0.5448	--
144	8806050	143Nd(n,g)144Nd	2	1.6933	0.0958	------
144	8905560	144Cs(B-)144Ba	2	1.1223	38.6335	----
144	8905860	144Ce(B-)144Pr	2	2.4407	2.1801	---------
144	8905960	144Pr(B-)144Nd	2	0.8000	2.0612	---
144	8906260	144Eu(B+)144Sm	3	0.8071	14.9724	---
145	0005550	145Cs-133Cs1.090	2	0.2403	2.3557	
145	0006450	145Gd-u	2	0.1650	3.5000	
145	8806050	144Nd(n,g)145Nd	2	0.0538	0.0136	
145	8806340	144Sm(3He,d)145Eu	2	1.7678	5.3677	-------
145	8806940	145Tm(p)144Er	2	0.5657	4.2942	--
145	8905860	145Ce(B-)145Pr	3	0.5635	24.6954	--
145	8906160	145Sm(e)145Pm	2	1.9206	7.9196	-------
145	8906460	145Tb(B+)145Gd	2	1.2000	154.5904	----
146	0005550	146Cs-133Cs1.098	2	1.5961	4.9578	------
146	0005850	146Ce-u	2	0.4614	8.5139	-
146	8806050	145Nd(n,g)146Nd	2	1.1170	0.1048	----
146	8806940	146Tm(p)145Er	2	0.0884	0.5368	
146	8905860	146Ce(B-)146Pr	4	1.0199	39.8144	----
146	8905960	146Pr(B-)146Nd	2	0.4243	32.2063	-
146	8906260	146Eu(B+)146Sm	3	0.8069	7.0726	---
147	8806050	146Nd(n,g)147Nd	2	0.0000	0.0000	
147	8806941	147Tmm(p)146Er	2	0.8664	3.0414	---
147	8905960	147Pr(B-)147Nd	2	0.8602	21.1827	---
147	8906160	147Pm(B-)147Sm	3	1.4448	0.4711	-----
148	0006650	148Dy-133Cs1.113	2	0.6585	6.9381	--
148	8806250	147Sm(n,g)148Sm	2	0.5852	0.1765	--
148	8806450	148Gd(p,d)147Gd-148	3	0.2718	0.3732	-
148	8905960	148Pr(B-)148Nd	2	0.1715	4.7362	
149	8506430	149Gd(a)145Sm	3	0.3001	1.3517	-
149	8506530	149Tb(a)145Eu	3	1.2962	3.0939	-----
149	8806050	148Nd(n,g)149Nd	2	0.4036	0.0321	-
149	8806240	149Sm(d,3He)148Pm	2	0.6809	4.0721	--
149	8906660	149Ho(B+)149Dy	2	0.6314	12.5864	--
150	0006750	150Ho-133Cs1.128	2	0.8868	18.4894	---
150	8506430	150Gd(a)146Sm	2	0.5828	5.6191	--
150	8506630	150Dy(a)146Gd	4	0.7299	1.2122	--
150	8806250	149Sm(n,g)150Sm	2	0.0000	0.0000	
150	8807140	150Lu(p)149Yb	3	0.0000	0.0000	
150	8807141	150Lum(p)149Yb	2	0.9100	4.6892	---
150	8906360	150Eu(B-)150Gd	2	0.9285	3.7019	---
151	0006850	151Er-u	3	1.0705	18.9276	----
151	8506630	151Dy(a)147Gd	2	0.9261	2.6273	---
151	8506730	151Ho(a)147Tb	4	0.3157	0.6166	-
151	8806050	150Nd(n,g)151Nd	2	0.0000	0.0000	
151	8806250	150Sm(n,g)151Sm	2	0.0838	0.0098	
151	8807140	151Lu(p)150Yb	3	0.1419	0.2776	
151	8807141	151Lum(p)150Yb	2	1.5774	5.2892	------
151	8905960	151Pr(B-)151Nd	2	1.4800	38.1323	-----
151	8906460	151Tb(B+)151Gd	2	0.3077	1.5246	-
152	8506630	152Dy(a)148Gd	2	0.2120	0.9911	
152	8506730	152Ho(a)148Tb	4	0.3611	0.5186	-

152 8506830	152Er(a)148Dy	3	0.1117	0.1945	
152 8906060	152Nd(B-)152Pm	2	0.7928	17.0818	---
152 8906160	152Pm(B-)152Sm	2	0.0000	0.0000	
152 8906160	152Pmm(B-)152Sm	2	0.8321	74.3223	---
152 8906260	152Eu(B+)152Sm	2	0.8000	1.0306	---
152 8906960	152Yb(B+)152Tm	2	0.1110	16.6346	
153 0005950	153Pr-u	2	1.0624	15.1825	----
153 8506630	153Dy(a)149Gd	2	0.5300	2.4773	--
153 8506730	153Ho(a)149Tb	2	0.1838	0.6978	
153 8506830	153Er(a)149Dy	4	0.5552	0.8370	--
153 8506930	153Tm(a)149Ho	3	0.6183	0.9659	--
153 8806250	152Sm(n,g)153Sm	2	0.0000	0.0000	
153 8806450	152Gd(n,g)153Gd	2	1.0081	0.1407	----
154 8506730	154Ho(a)150Tb	2	0.0566	0.2204	
154 8506731	154Hom(a)150Tbm	2	0.4204	2.0722	-
154 8506830	154Er(a)150Dy	2	0.1715	0.4863	
154 8506930	154Tm(a)150Ho	2	0.6860	1.9451	--
154 8506931	154Tmm(a)150Hom	3	0.4852	0.8445	-
154 8507030	154Yb(a)150Er	3	0.2365	0.4390	
154 8806240	154Sm(d,3He)153Pm	2	1.5808	26.5029	------
154 8806350	153Eu(n,g)154Eu	2	0.0000	0.0000	
154 8806450	153Gd(n,g)154Gd	2	2.1633	0.3865	--------
154 8906160	154Pmm(B-)154Sm	2	1.0375	49.8124	----
154 8906460	154Tb(B+)154Gd	2	0.5834	28.3694	--
155 8506930	155Tm(a)151Ho	3	0.5380	3.1414	--
155 8507030	155Yb(a)151Er	5	1.1549	2.5713	----
155 8507130	155Lu(a)151Tm	4	1.3102	3.6098	-----
155 8507131	155Lum(a)151Tmm	4	0.7373	2.2535	--
155 8806250	154Sm(n,g)155Sm	2	0.2981	0.0859	-
155 8806450	154Gd(n,g)155Gd	2	0.4762	0.0933	-
155 8906560	155Dy(B+)155Tb	2	0.7906	1.6103	---
155 8907151	155Lum(IT)155Lu	2	0.3536	1.6640	-
156 0006150	156Pm-u	2	0.5995	1.4092	--
156 8506930	156Tm(a)152Ho	2	0.2828	2.2037	-
156 8507030	156Yb(a)152Er	3	0.2181	0.8367	
156 8507130	156Lu(a)152Tm	2	0.7809	2.6875	---
156 8507131	156Lum(a)152Tmm	5	0.4995	1.1718	-
156 8507230	156Hf(a)152Yb	2	0.4642	1.8998	-
156 8806450	155Gd(n,g)156Gd	2	1.7285	0.1219	------
156 8807340	156Ta(p)155Hf	2	0.7289	3.3403	--
156 8807341	156Tam(p)155Hf	2	0.3467	2.4774	-
156 8906260	156Sm(B-)156Eu	2	0.0000	0.0000	
156 8906360	156Eu(B-)156Gd	3	1.5151	10.4031	------
156 8906660	156Ho(B+)156Dy	2	1.2804	52.7973	-----
157 8507030	157Yb(a)153Er	2	0.0819	0.5176	
157 8507131	157Lum(a)153Tm	6	1.0738	2.3646	----
157 8507230	157Hf(a)153Yb	3	0.9358	3.0738	---
157 8507331	157Tam(a)153Lu	2	0.5571	2.2793	--
157 8806650	156Dy(d,p)157Dy	2	0.3536	2.6839	-
158 8507030	158Yb(a)154Er	2	0.6402	5.4171	--
158 8507130	158Lu(a)154Tm	2	0.2326	1.1455	
158 8507230	158Hf(a)154Yb	3	0.5472	1.5966	--
158 8507330	158Ta(a)154Lu	2	0.1060	0.4951	
158 8507331	158Tam(a)154Lum	4	0.8891	2.2305	---
158 8507430	158W(a)154Hf	2	0.1715	0.4860	
158 8806450	157Gd(n,g)158Gd	2	0.0000	0.0000	
158 8806650	158Dy(d,t)157Dy	2	0.0000	0.0000	
158 8906660	158Ho(B+)158Dy	2	0.7840	22.7291	---
158 8906860	158Tm(B+)158Er	2	0.8060	44.5205	---
159 0007050	159Yb-142Sm1.120	2	0.6195	11.6098	--
159 0007150	159Lu-u	2	1.2177	49.2338	----
159 8507230	159Hf(a)155Yb	4	0.7884	2.2587	---
159 8507331	159Tam(a)155Lu	3	0.1822	0.6112	
159 8507430	159W(a)155Hf	3	0.9207	3.5109	---
159 8806450	158Gd(n,g)159Gd	3	1.0003	0.0911	----
159 8807541	159Rem(p)158W	2	0.6847	12.2564	--
159 8906660	159Ho(B+)159Dy	2	0.0000	0.0000	

160	0006850	160Er-u	2	0.1209	3.2321	
160	0706450	160Gd 35Cl-158Gd 37	2	0.0443	0.0492	
160	8507230	160Hf(a)156Yb	6	0.5357	1.4956	--
160	8507330	160Ta(a)156Lu	2	0.6261	3.0832	--
160	8507331	160Tam(a)156Lum	4	1.0472	3.3599	----
160	8507430	160W(a)156Hf	2	0.7155	3.5236	--
160	8706650	160Dy(p,t)158Dy	2	0.1819	0.5491	
160	8806550	159Tb(n,g)160Tb	2	0.9541	0.1374	---
161	0007050	161Yb-142Sm1.134	2	0.5998	9.6281	--
161	8507230	161Hf(a)157Yb	5	0.0796	1.9394	
161	8507430	161W(a)157Hf	2	0.1273	0.4954	
161	8507531	161Rem(a)157Tam	3	0.8902	4.0631	---
161	8507630	161Os(a)157W	2	0.4716	5.3429	-
161	8706650	161Dy(p,t)159Dy	2	0.3399	0.8159	-
161	8806650	160Dy(n,g)161Dy	2	0.3605	0.0293	-
162	0006351	162Eum-133Cs1.218	2	0.7102	1.6343	--
162	0007050	162Yb-142Sm1.141	2	0.1380	2.2149	
162	0007150	162Lu-u	3	0.6469	52.1120	--
162	8507230	162Hf(a)158Yb	4	0.2609	1.3958	-
162	8507330	162Ta(a)158Lu	2	0.0573	2.2005	
162	8507430	162W(a)158Hf	4	0.7427	1.9137	--
162	8507531	162Rem(a)158Tam	3	0.6339	2.2573	--
162	8507630	162Os(a)158W	2	0.3511	1.0857	-
162	8806850	162Er(d,t)161Er	2	1.0296	9.6619	----
162	8906860	162Tm(B+)162Er	5	1.2742	35.6296	-----
163	0007050	163Yb-142Sm1.148	2	0.0986	1.5821	
163	8507330	163Ta(a)159Lu	3	0.4682	2.7605	-
163	8507430	163W(a)159Hf	4	0.0204	0.5500	
163	8507531	163Rem(a)159Tam	3	0.2091	0.7749	
163	8507630	163Os(a)159W	4	0.5674	4.3270	--
163	8806650	162Dy(n,g)163Dy	3	0.7921	0.0396	---
163	8906660	163Ho(e)163Dy	3	0.5745	0.0179	--
164	0007050	164Yb-142Sm1.155	2	0.4787	7.6844	-
164	8507430	164W(a)160Hf	5	0.5136	1.1107	--
164	8507530	164Re(a)160Ta	3	0.3691	2.0208	-
164	8507630	164Os(a)160W	2	0.4915	3.1019	-
164	8807741	164Irm(p)163Os	2	0.4596	2.7209	-
165	8507430	165W(a)161Hf	2	0.0447	1.7175	
165	8507531	165Rem(a)161Tam	3	1.0587	3.2271	----
165	8507630	165Os(a)161W	3	1.5460	9.3766	------
165	8806650	164Dy(n,g)165Dy	2	0.0745	0.0043	
166	8507430	166W(a)162Hf	3	0.1957	0.8403	
166	8507530	166Re(a)162Ta	2	1.5767	60.4846	------
166	8507630	166Os(a)162W	3	1.8858	6.7114	-------
166	8507730	166Ir(a)162Re	2	0.7683	4.6044	---
166	8507731	166Irm(a)162Rem	3	1.1996	5.2212	----
166	8507830	166Pt(a)162Os	2	0.4706	3.6544	-
166	8906760	166Ho(B-)166Er	4	1.2965	1.4538	-----
166	8906860	166Tm(B+)166Er	3	0.3055	3.7871	-
167	8507430	167W(a)163Hf	2	0.1233	4.9341	
167	8507531	167Rem(a)163Ta	3	1.1415	3.5087	----
167	8507630	167Os(a)163W	4	0.1678	4.5223	
167	8507730	167Ir(a)163Re	2	0.5145	1.4558	--
167	8507731	167Irm(a)163Rem	5	1.3167	4.4389	-----
167	8507830	167Pt(a)163Os	2	0.0473	1.8250	
167	8806850	166Er(n,g)167Er	3	0.1782	0.0344	
167	8807740	167Ir(p)166Os	2	0.2357	1.0735	
168	8507630	168Os(a)164W	3	1.5420	4.4945	------
168	8507730	168Ir(a)164Re	2	0.1664	1.5228	
168	8507731	168Irm(a)164Rem	2	0.2343	1.6094	
168	8806850	167Er(n,g)168Er	3	1.1279	0.1444	----
168	8907060	168Lu(B+)168Yb	2	0.2210	13.4193	
169	8507630	169Os(a)165W	4	1.1731	3.8867	----
169	8507730	169Ir(a)165Re	2	1.3417	5.2782	-----
169	8507731	169Irm(a)165Rem	2	0.2108	0.6598	
169	8806850	168Er(n,g)169Er	2	0.9718	0.1610	---
169	8807050	168Yb(n,g)169Yb	3	0.5040	0.0822	--

170	0007550	170Re-u	2	0.1795	4.9704	
170	8507630	170Os(a)166W	5	1.0658	3.0907	----
170	8507830	170Pt(a)166Os	6	0.5856	2.1808	--
170	8807941	170Aum(p)169Pt	2	0.6946	3.8363	--
170	8906960	170Tm(B-)170Yb	2	1.2075	1.1594	----
170	8907060	170Lu(B+)170Yb	3	0.7597	13.7373	---
171	0007650	171Os-u	2	0.2357	5.0000	
171	8507630	171Os(a)167W	5	0.8511	4.0575	---
171	8507730	171Ir(a)167Rem	3	0.9852	5.0480	---
171	8507731	171Irm(a)167Re	5	1.1812	2.9044	----
171	8507830	171Pt(a)167Os	3	0.2147	0.7092	
171	8507931	171Aum(a)167Irm	2	0.1000	0.5277	
171	8806850	170Er(n,g)171Er	2	0.1414	0.0537	
171	8807940	171Au(p)170Pt	2	0.3364	3.5405	-
171	8807941	171Aum(p)170Pt	2	0.2357	1.0735	
172	0007250	172Hf-u	2	0.3238	8.4906	-
172	8507630	172Os(a)168W	2	0.0707	0.5496	
172	8507731	172Irm(a)168Re	2	0.0343	0.0947	
172	8507931	172Aum(a)168Irm	3	0.9461	5.7393	---
172	8508030	172Hg(a)168Pt	2	0.1440	0.9568	
173	8507630	173Os(a)169W	2	0.1638	1.0326	
173	8507731	173Irm(a)169Re	5	1.4272	3.8495	-----
173	8507830	173Pt(a)169Os	3	0.2041	6.3907	
173	8507930	173Au(a)169Ir	2	1.7000	8.9679	------
173	8507931	173Aum(a)169Irm	4	1.1195	3.6660	----
173	8508030	173Hg(a)169Pt	3	0.7653	3.6636	---
174	8507730	174Ir(a)170Rem	2	0.4187	2.0421	-
174	8507731	174Irm(a)170Re	3	0.1603	0.6351	
174	8507830	174Pt(a)170Os	3	0.5993	2.1950	--
174	8507930	174Au(a)170Ir	2	0.1414	1.0989	
174	8507931	174Aum(a)170Irm	2	0.9290	7.9728	---
174	8508030	174Hg(a)170Pt	3	0.1818	1.1733	
174	8906960	174Tm(B-)174Yb	2	0.0000	0.0000	
175	8507930	175Au(a)171Ir	3	0.2500	0.7325	-
175	8507931	175Aum(a)171Irm	6	0.5158	1.3817	--
175	8508030	175Hg(a)171Pt	2	1.3242	6.6224	-----
175	8807250	174Hf(n,g)175Hf	2	0.5121	0.2112	--
175	8907060	175Yb(B-)175Lu	4	0.7201	1.2652	--
176	8507830	176Pt(a)172Os	5	1.0061	2.2122	----
176	8507931	176Aum(a)172Irm	4	0.3449	1.4275	-
176	8508030	176Hg(a)172Pt	2	1.2380	7.5763	----
177	0007750	177Ir-u	2	0.0236	0.5000	
177	8507830	177Pt(a)173Os	2	2.0572	6.0633	--------
177	8507930	177Au(a)173Ir	4	0.4391	1.8472	-
177	8507931	177Aum(a)173Irm	5	0.6118	2.3679	--
177	8508030	177Hg(a)173Pt	4	0.1595	4.3788	
177	8508131	177Tlm(a)173Aum	2	0.8159	8.2382	---
177	8807150	176Lu(n,g)177Lu	2	0.5752	0.0966	--
177	8808141	177Tlm(p)176Hg	2	0.2561	2.1119	-
177	8907160	177Lu(B-)177Hf	2	0.2683	0.2577	-
178	8507830	178Pt(a)174Os	3	1.5951	3.7904	------
178	8507930	178Au(a)174Ir	2	0.1789	0.8786	
178	8507932	178Aun(a)174Irm	2	0.0584	0.4151	
178	8508030	178Hg(a)174Pt	4	0.1260	0.4023	
178	8508230	178Pb(a)174Hg	2	0.1510	2.1044	
178	8807250	177Hf(n,g)178Hf	2	1.0752	0.2048	----
179	8508030	179Hg(a)175Pt	3	0.1350	4.2169	
179	8508130	179Tl(a)175Au	4	0.6958	1.9688	--
179	8508131	179Tlm(a)175Aum	3	1.0261	3.2786	----
179	8508230	179Pb(a)175Hg	2	0.1116	0.5810	
179	8807250	178Hf(n,g)179Hf	2	0.4481	0.0370	-
180	0007550	180Re-u	3	0.3949	9.0689	-
180	0007750	180Ir-u	2	0.2939	6.8488	-
180	8508030	180Hg(a)176Pt	5	0.1190	0.2887	
180	8508130	180Tl(a)176Au	2	0.1045	4.0256	
180	8508230	180Pb(a)176Hg	3	0.1761	1.0359	
180	8807250	179Hf(n,g)180Hf	3	0.8957	0.1456	---

180 8907160	180Lu(B-)180Hf	2	0.6364	48.3095	--
181 0007850	181Pt-u	2	0.4714	10.0000	-
181 8507930	181Au(a)177Ir	3	0.2110	0.6637	
181 8508030	181Hg(a)177Pt	3	0.9637	4.3753	---
181 8508130	181Tl(a)177Au	3	0.2910	1.4171	-
181 8508130	181Tl(a)177Aum	3	0.4330	2.4195	-
181 8508230	181Pb(a)177Hg	3	1.9299	15.1533	-------
181 8807350	181Ta(g,n)180Ta	2	1.5126	2.1725	------
181 8807350	180Tam(n,g)181Ta	2	0.6128	0.1222	--
182 0008070	182Hg-208Pb.875	2	0.1766	2.4875	
182 8507930	182Au(a)178Ir	2	0.3130	1.5030	-
182 8508030	182Hg(a)178Pt	2	0.5744	2.9423	--
182 8508230	182Pb(a)178Hg	4	1.1295	6.6805	----
182 8807350	181Ta(n,g)182Ta	5	0.2970	0.0336	-
182 8907360	182Ta(B-)182W	2	0.6860	1.8945	--
183 0008070	183Hg-208Pb.880	2	0.2605	3.5000	-
183 8507830	183Pt(a)179Os	2	0.7155	7.0245	--
183 8507930	183Au(a)179Ir	3	0.6004	1.9025	--
183 8508030	183Hg(a)179Pt	2	0.8963	3.7786	---
183 8508231	183Pbm(a)179Hg	3	1.0740	4.7242	----
183 8807450	182W(n,g)183W	3	0.7505	0.0322	---
184 0008050	184Hg-u	2	0.2121	4.5000	
184 8507830	184Pt(a)180Os	3	0.7000	6.2724	--
184 8508030	184Hg(a)180Pt	3	0.1807	0.8499	
184 8508230	184Pb(a)180Hg	7	0.5206	1.7586	--
185 8507550	185Re(a,8He)181Re	2	1.0222	13.7414	----
185 8507930	185Au(a)181Ir	2	0.1089	0.5320	
185 8508030	185Hg(a)181Pt	3	0.6445	3.1291	--
185 8508331	185Bim(a)181Tl	2	1.4907	21.9466	-----
185 8907360	185Ta(B-)185W	2	1.3789	20.9341	-----
185 8907560	185Os(e)185Re	2	0.0894	0.0429	
186 0007750	186Ir-u	2	0.4032	7.1532	-
186 0008070	186Hg-204Pb.912	2	0.6656	11.0769	--
186 8508030	186Hg(a)182Pt	2	0.0943	1.0972	
186 8508131	186Tlm(a)182Aum	2	0.0000	0.0000	
186 8508230	186Pb(a)182Hg	6	0.5249	2.8310	--
186 8508330	186Bi(a)182Tl	2	0.2000	2.5765	
186 8508430	186Po(a)182Pb	2	0.2981	4.3888	-
186 8907560	186Re(B-)186Os	2	1.3763	1.7625	-----
186 8908152	186Tln(IT)186Tlm	2	0.8944	0.0859	---
187 8508131	187Tlm(a)183Au	3	0.6167	4.4135	--
187 8508230	187Pb(a)183Hg	2	0.3818	2.8986	-
187 8508231	187Pbm(a)183Hgm	3	0.4465	3.1327	-
187 8508330	187Bi(a)183Tlm	4	0.7853	3.0224	---
187 8508331	187Bim(a)183Tl	3	0.3589	2.6126	-
187 8807450	186W(n,g)187W	2	2.4412	0.1066	---------
187 8807650	186Os(n,g)187Os	2	1.3275	0.8903	-----
187 8907460	187W(B-)187Re	2	1.4142	2.1471	-----
187 8907560	187Re(B-)187Os	2	0.8973	0.0015	---
188 0008070	188Hg-208Pb.904	2	1.1926	19.8462	----
188 0008150	188Tl-u	2	0.7322	23.5052	--
188 8507830	188Pt(a)184Os	3	1.0580	7.4227	----
188 8508230	188Pb(a)184Hg	6	0.6097	2.2283	--
188 8508330	188Bi(a)184Tl	3	1.4224	7.5964	-----
188 8508332	188Bin(a)184Tln	3	0.3144	1.5777	-
188 8807650	187Os(n,g)188Os	2	0.0580	0.0092	
188 8907660	188Ir(B+)188Os	2	1.2758	22.7922	-----
189 0007950	189Au-u	2	0.3013	6.4965	-
189 8508230	189Pb(a)185Hg	2	0.0176	0.0898	
189 8508330	189Bi(a)185Tl	5	0.6248	1.8188	--
189 8508331	189Bim(a)185Tl	3	0.3933	1.6053	-
190 8508230	190Pb(a)186Hg	2	0.2504	1.2283	-
190 8508330	190Bi(a)186Tl	3	0.2720	0.8894	-
190 8508331	190Bim(a)186Tlm	4	0.5576	1.6603	--
190 8508430	190Po(a)186Pb	2	0.2828	2.1934	-
190 8807640	190Os(t,a)189Re	3	0.3756	3.2919	-
191 8508330	191Bi(a)187Tl	4	0.2506	0.9691	-

191	8508330	191Bi(a)187Tlm	3	1.1167	3.2439	----
191	8508331	191Bim(a)187Tl	2	0.0625	0.2140	
191	8807650	190Os(n,g)191Os	2	0.6383	0.0750	--
191	8907660	191Os(B-)191Ir	5	0.6872	0.8853	--
192	0008070	192Hg-208Pb.923	2	0.9430	15.6923	---
192	8508330	192Bi(a)188Tl	2	0.2687	1.0199	-
192	8508331	192Bim(a)188Tlm	4	0.8822	2.9142	---
192	8508430	192Po(a)188Pb	3	0.0811	0.2832	
192	8707650	192Os(p,t)190Os	2	0.3123	1.0474	-
192	8807750	191Ir(n,g)192Ir	2	0.1677	0.0196	
192	8907760	192Ir(B-)192Pt	2	0.6800	1.7520	--
192	8907860	192Au(B+)192Pt	2	0.1874	3.1421	
193	0008250	193Pb-u	2	0.3509	13.6144	-
193	0008350	193Bi-133Cs1.451	2	0.5320	5.4946	--
193	8508330	193Bi(a)189Tlm	3	0.6329	2.3129	--
193	8508331	193Bim(a)189Tl	2	0.4830	2.3680	-
193	8508430	193Po(a)189Pb	3	0.6614	2.6001	--
193	8508431	193Pom(a)189Pbm	4	0.8260	3.0565	---
193	8907960	193Hg(B+)193Au	2	0.0277	0.4955	
194	8508430	194Po(a)190Pb	5	0.4337	1.4791	-
194	8508530	194At(a)190Bi	2	0.7542	8.5884	---
194	8508531	194Atm(a)190Bim	2	1.3914	7.2349	-----
194	8807750	193Ir(n,g)194Ir	3	0.6726	0.0796	--
195	0008150	195Tl-u	2	1.0606	26.9989	----
195	0008150	195Tl-133Cs1.466	2	1.1619	29.6845	----
195	0008250	195Pb-u	3	0.1508	3.7836	
195	8508330	195Bi(a)191Tlm	2	0.8408	4.1212	---
195	8508331	195Bim(a)191Tl	3	0.7322	2.6751	--
195	8508430	195Po(a)191Pb	5	1.1332	3.4007	----
195	8508431	195Pom(a)191Pbm	5	0.5240	1.6066	--
196	0008250	196Pb-208Pb.942	2	0.2688	4.7688	-
196	0008350	196Bi-u	2	0.5828	15.2830	--
196	8508430	196Po(a)192Pb	6	1.0082	2.6114	----
196	8508530	196At(a)192Bi	4	0.8489	2.4829	---
196	8807850	195Pt(n,g)196Pt	2	0.1524	0.0212	
196	8907760	196Ir(B-)196Pt	2	1.2804	52.7973	-----
197	8508331	197Bim(a)193Tl	2	0.8676	4.2519	---
197	8508430	197Po(a)193Pb	4	0.5591	1.9153	--
197	8508431	197Pom(a)193Pbm	4	0.8726	1.9498	---
197	8508530	197At(a)193Bi	3	0.4838	1.6150	-
197	8508531	197Atm(a)193Bim	2	0.0971	0.4652	
197	8508631	197Rnm(a)193Pom	2	0.1278	0.8767	
197	8807850	196Pt(n,g)197Pt	4	0.4708	0.1374	-
197	8807950	197Au(g,n)196Au	2	0.9300	4.0621	---
198	0008250	198Pb-208Pb.952	2	0.6349	11.5885	--
198	8508430	198Po(a)194Pb	2	0.5367	0.7889	--
198	8508530	198At(a)194Bi	6	0.6193	1.2498	--
198	8508531	198Atm(a)194Bin	6	0.6748	1.6712	--
198	8508630	198Rn(a)194Po	3	0.8871	3.4852	---
198	8807950	197Au(n,g)198Au	2	0.1545	0.0150	
198	8907960	198Au(B-)198Hg	2	0.3599	0.2336	-
199	0008350	199Bi-u	2	1.5067	32.4825	------
199	8508430	199Po(a)195Pb	2	0.2228	0.4534	
199	8508431	199Pom(a)195Pbm	5	0.9358	1.7526	---
199	8508530	199At(a)195Bi	4	0.8515	1.0544	---
199	8508630	199Rn(a)195Po	5	0.6207	2.7263	--
199	8508631	199Rnm(a)195Pom	5	0.4515	1.9833	-
199	8508730	199Fr(a)195At	2	0.8762	9.2528	---
199	8508731	199Frm(a)195Atm	2	0.4952	3.0224	-
199	8908351	199Bim(IT)199Bi	2	0.0000	0.0000	
200	8508430	200Po(a)196Pb	4	0.4924	0.9813	-
200	8508530	200At(a)196Bi	4	0.4421	0.6359	-
200	8508531	200Atm(a)196Bi	2	0.2058	0.5800	
200	8508531	200Atm(a)196Bim	4	0.3321	0.4777	-
200	8508531	200Atm(a)196Bin	5	0.7904	1.6676	---
200	8508630	200Rn(a)196Po	3	0.2020	0.4637	
200	8508730	200Fr(a)196At	3	0.2388	1.0744	

200	8808050	199Hg(n,g)200Hg	3	1.5013	0.1842	------
200	8907960	200Au(B-)200Hg	3	0.4014	21.4366	-
200	8908060	200Tl(B+)200Hg	2	0.7373	4.5391	--
201	8508430	201Po(a)197Pb	3	0.7623	1.4063	---
201	8508431	201Pom(a)197Pbm	3	0.7094	1.3089	--
201	8508530	201At(a)197Bi	3	0.6451	1.0857	--
201	8508630	201Rn(a)197Po	2	0.2326	0.5696	
201	8508631	201Rnm(a)197Pom	3	0.4260	0.9526	-
201	8508730	201Fr(a)197At	2	0.0000	0.0000	
201	8508731	201Frm(a)197Atm	3	0.7519	3.9445	---
202	8508430	202Po(a)198Pb	2	0.1941	0.3539	
202	8508530	202At(a)198Bi	6	0.4362	0.6264	-
202	8508531	202Atm(a)198Bim	3	0.5884	0.8244	--
202	8508630	202Rn(a)198Po	3	0.7976	1.5662	---
202	8508730	202Fr(a)198At	5	0.4766	1.7975	-
202	8508731	202Frm(a)198Atm	3	0.8155	3.5246	---
202	8508830	202Ra(a)198Rn	2	0.8495	6.1473	---
202	8808050	201Hg(n,g)202Hg	2	1.7757	0.3839	-------
203	8508530	203At(a)199Bi	4	0.4702	0.4244	-
203	8508630	203Rn(a)199Po	3	0.2024	0.4525	
203	8508631	203Rnm(a)199Pom	4	0.3587	0.6045	-
203	8508730	203Fr(a)199At	3	0.4791	1.8814	-
203	8508830	203Ra(a)199Rn	2	1.0932	7.4792	----
203	8508831	203Ram(a)199Rnm	2	0.4419	2.7379	-
203	8908060	203Hg(B-)203Tl	3	1.0871	1.4929	----
204	0008550	204At-u	2	0.3105	8.2430	-
204	0508610	204Rn-208Pb.981	2	2.0630	18.1514	--------
204	8508250	204Pb(a,8He)200Pb	3	0.0696	0.8117	
204	8508430	204Po(a)200Pb	2	0.5068	0.7446	--
204	8508530	204At(a)200Bi	5	0.7792	1.0239	---
204	8508630	204Rn(a)200Po	3	0.6611	1.2980	--
204	8508730	204Fr(a)200At	5	0.2508	0.6438	-
204	8508731	204Frm(a)200Atm	5	0.6261	1.3628	--
204	8508830	204Ra(a)200Rn	2	0.1387	1.0108	
204	8808250	204Pb(p,d)203Pb	2	1.2372	11.8794	----
204	8908160	204Tl(B-)204Pb	2	2.0256	0.3901	--------
205	0008450	205Po-u	2	0.9918	24.4016	---
205	0008750	205Fr-133Cs1.541	3	0.5777	4.8528	--
205	0608610	205Rn-208Pb.986	2	1.0515	10.1344	----
205	0708150	205Tl 35Cl-203Tl 37	2	0.4717	0.6218	-
205	8508530	205At(a)201Bi	3	0.6565	1.2108	--
205	8508630	205Rn(a)201Po	3	0.1542	0.3089	
205	8508730	205Fr(a)201At	5	0.4205	1.0840	-
205	8508831	205Ram(a)201Rnm	2	0.6708	6.5698	--
205	8808250	204Pb(n,g)205Pb	2	1.2311	0.1446	----
205	8908260	205Bi(B+)205Pb	2	0.9899	7.5148	---
206	8508430	206Po(a)202Pb	3	0.4910	0.6837	-
206	8508630	206Rn(a)202Po	3	0.5606	0.9927	--
206	8508730	206Fr(a)202At	4	0.4428	1.6637	-
206	8508732	206Frn(a)202Atn	2	0.2406	0.9222	
206	8508830	206Ra(a)202Rn	3	0.2646	1.1826	-
206	8508930	206Ac(a)202Fr	2	0.3323	14.7076	-
206	8908260	206Bi(e)206Pb	2	0.6562	5.3157	--
207	8508630	207Rn(a)203Po	3	1.4789	2.6188	-----
207	8508730	207Fr(a)203At	3	0.1199	3.7328	
207	8508830	207Ra(a)203Rn	3	0.0809	2.5522	
207	8508831	207Ram(a)203Rnm	2	0.6102	5.5580	--
207	8808250	206Pb(n,g)207Pb	3	0.4382	0.0449	-
208	8508430	208Po(a)204Pb	3	0.4705	0.6588	-
208	8508530	208At(a)204Bi	2	0.2357	0.5473	
208	8508630	208Rn(a)204Po	4	1.3526	2.4224	-----
208	8508730	208Fr(a)204At	5	0.2263	5.8293	
208	8508930	208Ac(a)204Fr	3	0.5408	18.8453	--
208	8508931	208Acm(a)204Frn	3	0.5985	8.9159	--
208	8808250	207Pb(n,g)208Pb	5	0.7824	0.0437	---
209	0008760	209Fr-226Ra.925	4	1.2877	20.0988	-----
209	8508430	209Po(a)205Pb	3	0.7885	1.1520	---

209	8508630	209Rn(a)205Po	2	0.8194	1.7225	---
209	8508730	209Fr(a)205At	2	0.0566	0.2189	
209	8508830	209Ra(a)205Rn	3	0.6539	1.8854	--
209	8508930	209Ac(a)205Fr	5	0.1161	2.9424	
209	8509031	209Thm(a)205Ram	2	0.7692	18.8262	---
209	8808350	209Bi(g,n)208Bi	2	0.3287	0.6552	-
210	8508530	210At(a)206Bi	2	0.2519	0.2657	-
210	8508630	210Rn(a)206Po	2	1.4378	3.3380	-----
210	8508830	210Ra(a)206Rn	3	1.0380	3.6437	----
210	8508930	210Ac(a)206Fr	2	0.0000	0.0000	
210	8509030	210Th(a)206Ra	2	0.9985	6.1828	---
210	8808350	209Bi(n,g)210Bi	3	0.3923	0.0331	-
210	8908360	210Bi(B-)210Po	2	0.4714	0.5368	-
211	8508330	211Bi(a)207Tl	2	1.7170	0.8507	------
211	8508530	211At(a)207Bi	3	1.6141	2.2596	------
211	8508630	211Rn(a)207Po	2	1.6617	2.5717	------
211	8508730	211Fr(a)207At	2	0.5154	1.7616	--
211	8508830	211Ra(a)207Rn	3	0.6006	1.9877	--
211	8508930	211Ac(a)207Fr	2	0.1127	4.3477	
211	8509030	211Th(a)207Ra	2	0.1571	6.5540	
212	8508430	212Po(a)208Pb	2	1.1732	0.1437	----
212	8508431	212Pom(a)208Pb	3	0.5774	2.7573	--
212	8508630	212Rn(a)208Po	2	1.6635	4.6827	------
212	8508730	212Fr(a)208At	4	0.5526	0.9559	--
212	8508830	212Ra(a)208Rn	4	0.5559	0.9980	--
212	8508930	212Ac(a)208Fr	4	0.0627	1.7448	
212	8509030	212Th(a)208Ra	2	0.6261	3.0639	--
212	8509130	212Pa(a)208Ac	3	0.2806	9.6045	-
212	8908260	212Pb(B-)212Bi	2	1.3059	3.1347	-----
212	8908360	212Bi(B-)212Po	2	1.4084	2.9038	-----
213	8508330	213Bi(a)209Tl	2	1.1094	4.0399	----
213	8508430	213Po(a)209Pb	2	0.1029	0.2896	
213	8508530	213At(a)209Bi	2	0.0000	0.0000	
213	8508630	213Rn(a)209Po	2	0.0000	0.0000	
213	8508730	213Fr(a)209At	2	0.1143	0.1620	
213	8508830	213Ra(a)209Rn	3	0.2468	0.6060	
213	8508831	213Ram(a)209Rn	2	0.1395	0.5344	
213	8508930	213Ac(a)209Fr	2	0.8480	3.9340	---
213	8509030	213Th(a)209Ra	2	0.0707	0.5471	
213	8509130	213Pa(a)209Ac	2	1.0400	13.6549	----
214	8508630	214Rn(a)210Po	2	0.2236	2.1881	
214	8508730	214Fr(a)210At	4	0.4592	1.8016	-
214	8508731	214Frm(a)210At	3	0.3824	1.3421	-
214	8508830	214Ra(a)210Rn	4	0.4062	1.1365	-
214	8508930	214Ac(a)210Fr	3	0.3477	0.9353	-
214	8509030	214Th(a)210Ra	3	0.2999	1.7381	-
214	8908360	214Bi(B-)214Po	2	0.4472	6.4413	-
215	8508530	215At(a)211Bi	2	0.5571	2.2633	--
215	8508630	215Rn(a)211Po	4	0.5674	3.6300	--
215	8508730	215Fr(a)211At	3	0.7116	4.9790	--
215	8508830	215Ra(a)211Rn	3	0.5117	1.2804	--
215	8508930	215Ac(a)211Fr	2	0.6247	2.1345	--
215	8509030	215Th(a)211Ra	3	0.1367	0.5772	
215	8509130	215Pa(a)211Ac	2	0.0679	2.7360	
216	8508630	216Rn(a)212Po	4	0.4070	2.4695	-
216	8508730	216Fr(a)212At	3	0.0622	0.2286	
216	8508830	216Ra(a)212Rn	2	0.0000	0.0000	
216	8508930	216Ac(a)212Fr	2	0.3277	1.0069	-
216	8508931	216Acm(a)212Fr	2	0.3255	1.4486	-
216	8509030	216Th(a)212Ra	2	0.2357	1.0784	
216	8509031	216Thm(a)212Ra	4	0.6159	4.5661	--
216	8509130	216Pa(a)212Ac	2	0.2325	2.8300	
216	8509230	216U(a)212Th	2	0.7546	21.2336	---
217	8508430	217Po(a)213Pb	3	0.8452	2.1349	---
217	8508530	217At(a)213Bi	5	1.1327	1.4902	----
217	8508630	217Rn(a)213Po	2	0.1061	0.3281	
217	8508730	217Fr(a)213At	2	0.3180	1.4747	-

217	8508830	217Ra(a)213Rn	3	0.2401	1.5951	
217	8509030	217Th(a)213Ra	3	1.0011	4.3327	----
217	8509130	217Pa(a)213Ac	2	0.2257	1.0874	
217	8509230	217U(a)213Thp	2	0.2591	10.4070	-
218	8508530	218At(a)214Bi	2	1.3690	3.8002	-----
218	8508630	218Rn(a)214Po	2	0.4642	0.9428	-
218	8508730	218Fr(a)214At	2	0.2475	0.3828	
218	8508731	218Frm(a)214At	2	0.1414	0.5468	
218	8508830	218Ra(a)214Rn	3	0.8713	3.2098	---
218	8508930	218Ac(a)214Fr	4	0.1587	4.6577	
218	8509030	218Th(a)214Ra	2	0.6708	6.5620	--
218	8509130	218Pa(a)214Ac	2	0.1670	2.0819	
218	8509230	218U(a)214Th	2	0.4893	4.5311	-
218	8509231	218Uxm(a)214Th	2	0.6670	10.7896	--
219	8508730	219Fr(a)215At	2	0.1118	0.2187	
219	8509030	219Th(a)215Ra	5	0.1483	4.0149	
219	8509130	219Pa(a)215Ac	2	0.8163	41.1490	---
219	8509230	219U(a)215Th	2	0.4695	5.9161	-
220	8508730	220Fr(a)216At	2	2.3398	4.6644	---------
220	8508830	220Ra(a)216Rn	5	0.4185	2.2198	-
220	8508930	220Ac(a)216Fr	2	0.0829	0.3995	
220	8509030	220Th(a)216Ra	2	1.1738	13.9904	----
220	8509130	220Pa(a)216Ac	3	0.6006	7.3395	--
221	8508630	221Rn(a)217Po	3	0.1731	0.5927	
221	8508730	221Fr(a)217At	2	0.4243	0.6441	-
221	8508830	221Ra(a)217Rn	3	0.7126	1.4939	--
221	8508930	221Ac(a)217Fr	4	0.2317	6.5579	
221	8509030	221Th(a)217Ra	5	0.6274	1.6262	--
222	8509030	222Th(a)218Ra	2	0.2341	0.7189	
222	8509130	222Pa(a)218Acm	2	1.4248	20.5958	-----
223	8508830	223Ra(a)219Rn	2	0.4714	0.1074	-
223	8509030	223Th(a)219Ra	3	0.1340	0.5875	
223	8509130	223Pa(a)219Ac	5	0.3093	7.9286	-
224	8509030	224Th(a)220Ra	3	1.0392	6.5586	----
224	8509130	224Pa(a)220Ac	2	0.1699	0.8159	
224	8509230	224U(a)220Th	3	0.6709	4.8628	--
225	8508930	225Ac(a)221Fr	2	0.5657	0.8744	--
225	8509030	225Th(a)221Ra	2	0.3300	0.7515	-
225	8509130	225Pa(a)221Ac	3	0.4562	15.2078	-
225	8509230	225U(a)221Th	5	0.9742	6.1674	---
225	8509330	225Np(a)221Pa	2	1.3761	71.8886	-----
226	8509230	226U(a)222Th	4	0.3629	1.6622	-
226	8908960	226Ac(B-)226Th	2	0.0604	0.4114	
227	8509130	227Pa(a)223Ac	2	0.5185	1.1809	--
227	8509330	227Np(a)223Pa	2	0.1061	1.6393	
227	8908960	227Ac(B-)227Th	2	1.1094	0.9910	----
228	8509130	228Pa(a)224Ac	3	0.6291	0.9829	--
228	8509230	228U(a)224Th	2	1.0770	10.9275	----
228	8509430	228Pu(a)224U	2	0.9427	17.8876	---
228	8908860	228Ra(B-)228Ac	3	0.4450	0.3030	-
229	0008850	229Ra-133Cs1.722	2	1.0525	17.4462	----
229	8509030	229Th(a)225Ra	2	0.3430	0.3789	-
229	8509330	229Np(a)225Pa	3	0.1896	6.5489	
229	8509430	229Pu(a)225U	3	0.2189	7.7152	
230	0008850	230Ra-133Cs1.729	2	0.2429	2.6852	
230	8509230	230U(a)226Th	2	0.7071	0.3824	--
230	8509430	230Pu(a)226U	4	0.2583	2.5755	-

0PLEASE CHECK230Th(p,t)228Th-232Th()230Th
CONNECTION NOT USED 2300900 2300900

230	8809050	230Th(d,t)229Th	2	1.8856	8.5884	-------
231	8509130	231Pa(a)227Ac	2	0.4992	0.4459	-
231	8509230	231U(a)227Th	2	0.2496	0.4459	
232	8909160	232Pa(B-)232U	2	0.3714	2.9615	-
233	8809050	232Th(n,g)233Th	2	1.2999	0.1296	-----
233	8909160	233Pa(B-)233U	3	0.2399	0.6822	
234	8509230	234U(a)230Th	2	1.3416	1.3107	-----
234	8509630	234Cm(a)230Pu	2	0.0447	0.4369	

234	8909061	234Th(B-)234Pam	3	1.9030	2.1022	-------
234	8909260	234Np(B+)234U	2	0.3883	3.4684	-
235	8509230	235U(a)231Th	4	0.7747	1.0889	---
235	8809250	234U(n,g)235U	2	0.5145	0.1421	--
235	8909260	235Np(e)235U	2	0.0447	0.0429	
236	8509230	236U(a)232Th	2	0.9803	1.0156	---
236	8809250	235U(n,g)236U	2	0.4243	0.1610	-
236	8909360	236Npm(B-)236Pu	2	1.4837	9.9499	-----
237	8509330	237Np(a)233Pa	2	0.1143	0.0947	
238	8509230	238U(a)234Th	4	0.6667	1.5142	--
239	8509530	239Am(a)235Np	2	1.5556	2.3618	------
239	8509830	239Cf(a)235Cm	2	0.0809	3.2584	
239	8809250	238U(n,g)239U	2	0.6827	0.1261	--
240	8509830	240Cf(a)236Cm	2	0.8356	3.3883	---
240	8509930	240Es(a)236Bk	3	1.2242	49.6128	----
240	8809450	239Pu(n,g)240Pu	3	0.1614	0.0472	
241	8509630	241Cm(a)237Pu	2	0.0958	0.0591	
241	8509830	241Cf(a)237Cmp	2	1.0932	3.7278	----
241	8509930	241Es(a)237Bk	2	0.7489	13.6043	--
241	8809550	241Am(d,t)240Am	2	0.3151	4.6644	-
241	8909460	241Pu(B-)241Am	2	0.2774	0.0495	-
242	8509430	242Pu(a)238U	2	1.8865	2.0839	-------
243	8509930	243Es(a)239Bkp	2	0.5747	1.8026	--
243	8909460	243Pu(B-)243Am	2	0.1414	1.0735	
244	0009450	244Pu O2-208Pb1.327	2	1.9458	2.3269	-------
244	8509830	244Cf(a)240Cm	2	2.0348	3.9730	--------
245	8509730	245Bk(a)241Am	2	0.0468	0.0706	
245	8509830	245Cf(a)241Cm	2	1.3927	2.7764	-----
245	8510030	245Fm(a)241Cfp	2	0.2360	1.7015	
245	8510130	245Md(a)241Esp	2	0.0706	2.9964	
245	8809450	244Pu(d,p)245Pu	2	0.8348	12.0237	---
246	8509630	246Cm(a)242Pu	2	0.1342	0.1288	
246	8510030	246Fm(a)242Cf	2	0.0894	0.4365	
248	8510030	248Fm(a)244Cf	3	0.4075	4.0803	-
249	8509730	249Bk(a)245Am	2	0.4243	0.6441	-
249	8509930	249Es(a)245Bkp	2	1.0213	2.0693	----
249	8510030	249Fm(a)245Cf	3	0.3853	2.7464	-
249	8510130	249Md(a)245Esp	2	0.1789	1.7458	
250	8509830	250Cf(a)246Cm	2	1.0413	0.2152	----
250	8510030	250Fm(a)246Cf	4	0.3444	3.2207	-
251	8509830	251Cf(a)247Cm	2	0.5367	0.5153	--
251	8510130	251Md(a)247Es	2	0.9213	4.4230	---
252	8510230	252No(a)248Fm	2	0.8381	4.9809	---
252	8510330	252Lr(a)248Md	2	0.0555	1.0070	
253	8509830	253Cf(a)249Cm	2	0.3818	1.4493	-
253	8510130	253Md(a)249Es	2	0.1664	1.4864	
253	8510230	253No(a)249Fm	2	0.2648	1.2941	-
254	8509930	254Es(a)250Bk	2	1.0752	0.5475	----
254	8510230	254No(a)250Fm	2	0.1342	1.3089	
254	8510330	254Lr(a)250Md	3	0.6840	6.2028	--
255	8509930	255Es(a)251Bk	2	1.1031	1.5888	----
255	8510130	255Md(a)251Es	3	0.9022	1.6861	---
255	8510330	255Lr(a)251Md	3	0.3291	2.3622	-
255	8510330	255Lr(a)251Mdp	5	0.6618	2.7021	--
255	8510331	255Lrm(a)251Md	4	0.8256	3.4462	---
255	8510430	255Rf(a)251No	2	0.6864	2.8903	--
256	8510030	256Fm(a)252Cf	2	0.4271	0.8650	-
256	8510230	256No(a)252Fm	2	0.2981	1.7450	-
256	8510330	256Lr(a)252Mdp	4	0.7843	9.3800	---
256	8510530	256Db(a)252Lrp	2	0.7778	11.9969	---
257	8510030	257Fm(a)253Cf	2	0.5367	0.5153	--
257	8510130	257Md(a)253Es	2	1.6760	1.7069	------
257	8510330	257Lr(a)253Mdp	3	0.5963	5.5184	--
257	8510430	257Rf(a)253No	2	0.2385	2.1306	
257	8510431	257Rfm(a)253No	3	0.5944	4.3146	--
258	8510130	258Md(a)254Es	2	0.9656	1.9250	---
258	8510330	258Lr(a)254Md	2	0.7428	14.8075	--

```
 258 8510430     258Rf(a)254No        2    0.1208       1.6716
 259 8510330     259Lr(a)255Mdp       2    0.4919       4.7979          -
 259 8510430     259Rf(a)255Nop       4    0.1744       2.0757
 259 8510631     259Sgm(a)255Rfm      2    0.7842       6.3377          ---
 260 8510530     260Db(a)256Lrp       2    0.7619      10.7612          ---
 261 8510430     261Rf(a)257No        3    0.0827       3.7406
 261 8510431     261Rfm(a)257Nop      4    0.3347       5.3599          -
 261 8510530     261Db(a)257Lrp       3    0.0791       1.1493
 261 8510730     261Bh(a)257Db        2    0.1103       6.1835
 262 8510530     262Db(a)258Lrp       4    0.4626       5.4353          -
 262 8510731     262Bhm(a)258Db       2    0.0971       4.7226
 263 8510430     263Rf(a)259Nop       2    0.0000       0.0000
 263 8510631     263Sgm(a)259Rfp      3    0.0996       1.4240
 264 8510730     264Bh(a)260Dbp       2    0.7194      13.6179          --
 265 8510630     265Sg(a)261Rfm       2    0.1016       5.4749
 265 8510631     265Sgm(a)261Rfp      2    0.3180      14.6971          -
 266 8510730     266Bh(a)262Dbp       3    1.3821      48.7141          -----
 266 8510830     266Hs(a)262Sg        2    0.7682      12.8653          ---
 267 8510730     267Bh(a)263Dbp       2    0.3430       9.6169          -
 267 8510830     267Hs(a)263Sg        4    0.5785       8.0762          --
 267 8510830     267Hs(a)263Sgm       3    0.4743       6.7782          -
 268 8510930     268Mt(a)264Bhp       2    0.8171      16.5357          ---
 269 8510630     269Sg(a)265Rf        2    1.2610      75.5491          -----
 269 8510830     269Hs(a)265Sgm       2    0.3124      10.6321          -
 270 8510830     270Hs(a)266Sg        3    1.1859      47.9970          ----
 271 8511030     271Ds(a)267Hs        2    0.0248       0.4694
 271 8511031     271Dsm(a)267Hsm      3    0.3517       5.0249          -
 272 8510730     272Bh(a)268Dbp       2    0.7359      32.6894          --
 272 8511130     272Rg(a)268Mt        3    0.4630       6.6154          -
 279 8511030     279Ds(a)275Hsp       3    0.0645       2.3438
 284 8511330     284Nh(a)280Rg        2    0.6650      27.2143          --
 285 8511230     285Cn(a)281Dsp       3    0.0597       1.9993
 288 8511430     288Fl(a)284Cn        3    0.1754       2.2471
 289 8511430     289Fl(a)285Cn        2    0.6422      29.0247          --
 290 8511630     290Lv(a)286Fl        2    0.2635      16.2912          -
 292 8511630     292Lv(a)288Fl        2    1.6800      21.9440          ------
 293 8511630     293Lv(a)289Fl        2    0.8419      36.6545          ---
 294 8511830     294Og(a)290Lv        2    0.8861      29.7708          ---
1      15529 Data Cards read                    (ICOUNT)
0      15529 Cards Accepted by Data Selector    (INREG)
0       8750 F,v,U,w,z,B,C,D OR R Cards Rejected(IFU)
0       2982 Cards Replaced by Average          (IAVSUM)
0       1190 Averages Added                     (IAVIN)
0      16719 Cards sent to Phase4:INREG+IAVIN   (N4)
0       4987 Cards sent to Connection Routines  (NDATA2)
                         NDATA2 = NEQUAT = INREG-IFU-IAVSUM+IAVIN
0          8 TIMES THRU CONNECTIONS LOOP
```

```
0008 850043000    a 8Be(a)4He                  Aver
                    nucleus   40020 of degree  2 forced to primary due to its occurence within brackets
0009 890027000    a 9Be(pi-,pi+)9He            Aver
                    nucleus      12 of degree  2 forced to primary due to its occurence within brackets
0010 880036200    a 9Be(13C,12N)10Lin          Aver
                    nucleus  120070 of degree  2 forced to primary due to its occurence within brackets
0010 890057000q1  M 10B(14N,14B)10N
                    nucleus  140050 of degree  2 forced to primary due to its occurence within brackets
0011 860055080a1  H 11B(3He,6He)8Bxi             1
                    nucleus   60020 of degree  2 forced to primary due to its occurence within brackets
0013 890047030p1  N 13C(14C,14O)13Bep            3
                    nucleus  140080 of degree  2 forced to primary due to its occurence within brackets
0014 890056000    a 14C(7Li,7Be)14B            Aver
                    nucleus   70040 of degree  2 forced to primary due to its occurence within brackets
0019 880076000    a 18O(18O,17F)19N            Aver
                    nucleus  170090 of degree  2 forced to primary due to its occurence within brackets
```

```
0026 880123000    a 26Mg(7Li,8B)25Ne          Aver
                    nucleus   80050 of degree  2 forced to primary due to its occurence within brackets
         300150  *** Carefull: above doublet involves a mass of degree=3
         550210  *** Carefull: above doublet involves a mass of degree=3
         880431  *** Carefull: above doublet involves a mass of degree=3
         980392  *** Carefull: above doublet involves a mass of degree=3
        1000410  *** Carefull: above doublet involves a mass of degree=3
        1110420  *** Carefull: above doublet involves a mass of degree=3
        1140431  *** Carefull: above doublet involves a mass of degree=3
0

     0 NUCLEI REJECTED BECAUSE THERE IS NO DATA
     0 NUCLEI REJECTED BECAUSE THEY ARE UNCONNECTED
  4065 NUCLEI ACCEPTED : Primaries degree2 deg3  d4  d5  d6  d7  d8  d9 d10 d11 d12 d13 d14 d15 d16 d17 d18
                             1318    1924   316 140  93  68  58  39  35  24  17  16   9   4   1   1   1   1
                                            d19 d20 d21 d22 d23 d24 d25 d26 d27
                                              0   0   0   0   0   0   0   0   0
0
 Total experimental G.S = 2569 +12C
 Total systematical G.S =  988
 Total experimental ISO =  420
 Total systematical ISO =   88
0



 REJECTED MASSES IN PHASE 2


0ROUTINE POINTS CALLED FOR  1318 NUCLEI


0TO SOLVE:  2240 EQUATIONS IN 1318 UNKNOWNS  WITH  5404 COEFFICIENTS





0
 USE of ARRAYS :
      4065 / 4450 masses               297 /  315 pointers
        18 /   18 connections/mass     4987 / 6850 selected data
         4 /    5 nuc. for connect.   16719 /17500 data in N4 list
         7 /   20 data for average       19 /   29 degrees
      1318 primaries                  2747 secondaries
 NORMAL END OF PHASE 2                                    time is    0.3
1BEGINNING PHASE 3 OF ATOMIC MASS ADJUSTMENT              time is    0.
0OPTIONS REQUESTED FOR PHASE 3
                                 PHASE 3 OPTIONS
                                 LIST 0
                                 SAVE INVERTED MATRIX
                                 END OPTIONS
0      ISAVE=  1     ILIST=  0


      2240 equations in  1318 unknowns and  5404 coefficients
0NORMAL MATRIX TO BE SET UP                               time is    0.
     869221 must be at least the dimension of the array A
                    (the present dimension of A is 1005000)
    6953768 bytes needed for this matrice
   nrmmat 1st loop   J=  100   INZ=  1839   ICNT= 125631  time is    4.
   nrmmat 1st loop   J=  200   INZ=  2217   ICNT= 242581  time is    8.
   nrmmat 1st loop   J=  300   INZ=  2475   ICNT= 349531  time is   11.
   nrmmat 1st loop   J=  400   INZ=  2851   ICNT= 446481  time is   14.
   nrmmat 1st loop   J=  500   INZ=  3066   ICNT= 533431  time is   16.
   nrmmat 1st loop   J=  600   INZ=  3348   ICNT= 610381  time is   19.
   nrmmat 1st loop   J=  700   INZ=  3701   ICNT= 677331  time is   21.
```

```
   nrmmat 1st loop   J=  800   INZ=  3938   ICNT= 734281  time is   23.
   nrmmat 1st loop   J=  900   INZ=  4174   ICNT= 781231  time is   24.
   nrmmat 1st loop   J= 1000   INZ=  4411   ICNT= 818181  time is   25.
   nrmmat 1st loop   J= 1100   INZ=  4645   ICNT= 845131  time is   26.
   nrmmat 1st loop   J= 1200   INZ=  4881   ICNT= 862081  time is   27.
   nrmmat 1st loop   J= 1300   INZ=  5085   ICNT= 869031  time is   27.
       5115 non-zero values in A-matrix
          0 percent of the matrix not zero
0ENTRY INTO THE MATRIX INVERSION PROCEDURE               time is   27.

    step 2 of MATINV                                     time is   29.
    step 3 of MATINV                                     time is   30.
0               ******** INVERSION SUCCESSFUL ********

0CALCULATION OF THE ANSWER VECTOR                        time is   31.
0     what goes to file 8:
       1318      2240    869221
0    INVERSION error =   0.3542D-10 for nucleus nb. 1036  time is   31.
          2nd. error =   0.3203D-10 for nucleus nb.  862
0SAVING ALL FILES                                        time is   31.
         file  1     20984 records
         file  2      2750 records
         file  3    869221 records
         file  4      1318 records
         file  8         3 records
 ALL FILES SAVED                                         time is   31.
0
 USE of ARRAYS :
     5404 / 5650 coeff. in K-Matrix  869221 /1005000 size of A-Matrix
     5115 / 5700 non-zeros in A-Mat    8694 /  10150 pointers for A
     2240 / 2950 equations            1318 /  1413 unknows
 NORMAL END OF PHASE 3                                   time is   31.
1BEGINNING PHASE 4 OF ATOMIC MASS ADJUSTMENT             time is    0.
0OPTIONS FOR PHASE 4
                     PHASE 4 OPTIONS
                     ANALYSIS
                     LINES 85
                     INVERSION ERROR
                     MASSTAB
                     END OPTIONS
0SYSTEM THAT HAS BEEN SOLVED:
    2240 equations in1318 unknowns
 LENGTH OF INVERTED MATRIX  869221
           should be within 1005000 (dimension statement)
0  Xo  0.9314941024
       0.0000000003
0  Standard Masses              keV                              micro-u
    120060                0.00000     0.000                 0.00000     0.000
0 Inversion Error     0.3542D-10  for nucl 1870750


0

 ANSWER VECTOR
       Nucleus        Error          Nucleus        Error          Nucleus        Error
             11    -0.1698D-13            12    -0.1625D-13         10000     0.9957D-17
          10010    -0.6803D-19         20010     0.1432D-18         30010     0.3074D-18
          30020     0.1028D-18         40020    -0.6723D-19         60020     0.7316D-17
          60030    -0.6247D-19         70030     0.8290D-18         70038    -0.3901D-14
          70040    -0.4746D-17         80020    -0.1122D-15         80030     0.2676D-16
          80049     0.5598D-16         80050    -0.1931D-15         80060    -0.3041D-15
          90020     0.1231D-13         90040    -0.6679D-17        100040    -0.2667D-16
         100050    -0.3742D-18        100060    -0.4266D-17        110040     0.8711D-17
         110050    -0.4195D-18        110058    -0.3921D-15        110060     0.1400D-16
         110068     0.1086D-15        120040     0.2422D-15        120050     0.1576D-16
         120058    -0.1719D-14        120068    -0.7601D-15        120070     0.1881D-17
         130060    -0.1124D-17        140050     0.2592D-14        140060    -0.1288D-18
```

140070	0.1037D-17	140080	0.1158D-17	150050	-0.3778D-14
150070	-0.1280D-18	150080	-0.1176D-15	160050	0.1000D-13
160080	-0.5775D-18	160088	0.2553D-15	160089	-0.3103D-15
160090	-0.1503D-14	170080	0.7522D-19	170090	-0.4448D-17
170100	-0.4866D-16	180080	-0.2300D-18	180090	-0.2988D-16
180100	0.2978D-16	180110	0.1343D-14	190090	0.1585D-17
190110	-0.1170D-14	200100	-0.2664D-18	200110	0.1048D-15
210100	-0.7735D-17	210110	-0.2874D-16	220100	-0.7547D-18
220110	0.1061D-16	220120	0.2836D-17	220128	-0.1449D-14
230090	0.1554D-13	230110	0.3614D-19	230138	-0.6350D-14
240120	0.1072D-16	240130	0.1571D-16	250100	-0.1298D-14
250120	0.5184D-17	250130	-0.1529D-15	250138	-0.1215D-15
260090	-0.1230D-13	260120	-0.2399D-16	260130	-0.2510D-16
260131	-0.1364D-15	270090	0.3721D-13	270120	0.4617D-16
270130	0.8078D-17	270148	-0.8500D-16	280140	0.2703D-18
280150	-0.2838D-15	290110	0.2484D-16	290120	-0.1138D-15
290140	-0.7407D-18	290150	0.3042D-15	290158	0.1600D-15
300100	0.1928D-13	300110	0.7587D-15	300120	-0.6990D-16
300130	0.1346D-15	310100	-0.2691D-13	310150	0.1557D-17
310160	0.1248D-17	320160	-0.1470D-16	320170	0.3224D-16
330120	0.1445D-15	330160	-0.1549D-16	330170	0.5553D-16
330178	-0.2746D-15	340160	-0.1316D-13	340170	-0.2380D-13
340171	-0.1634D-13	340180	-0.2913D-13	350160	-0.2884D-13
350170	-0.2348D-13	360160	-0.1050D-13	360170	-0.2562D-13
360180	-0.1930D-18	360190	0.5993D-17	370170	0.1693D-13
380180	-0.3610D-15	380190	0.2042D-15	380191	0.4073D-15
380200	0.3118D-15	390190	0.9830D-18	390200	0.2719D-17
400160	-0.3497D-15	400180	-0.6397D-18	400190	-0.1255D-16
400200	0.1379D-16	400220	-0.4203D-14	410190	-0.2434D-17
410200	-0.3955D-16	410210	-0.3515D-19	410215	-0.8599D-17
420200	-0.2327D-16	420210	0.3930D-17	420211	-0.2536D-16
420215	-0.1244D-15	420220	0.1039D-15	430200	-0.1357D-15
430208	0.1801D-15	430218	0.9612D-16	430220	-0.1220D-14
430238	0.2387D-15	440200	-0.1459D-15	440218	-0.2284D-15
440230	0.2907D-15	450200	-0.8766D-16	450210	0.1926D-14
450220	-0.4003D-15	450228	-0.5868D-15	450230	-0.9054D-15
460200	0.5046D-15	460218	-0.1255D-15	460220	0.3849D-15
460230	-0.8352D-16	460240	-0.9294D-15	470200	0.3871D-14
470210	-0.4180D-14	470220	-0.2476D-15	470230	0.6441D-15
470240	-0.4706D-14	480200	0.4579D-17	480210	0.2826D-15
480220	0.4726D-15	480230	0.7751D-15	480238	-0.9947D-15
480250	0.1692D-14	480258	-0.5858D-14	490210	0.3091D-15
490220	-0.1707D-14	490240	-0.3301D-15	490250	0.1502D-14
500210	-0.2503D-13	500220	-0.2876D-15	500230	-0.5949D-15
500238	-0.2128D-15	500240	-0.3300D-15	500250	-0.3183D-15
500251	-0.2945D-15	510210	-0.2731D-15	510220	0.6774D-15
510230	-0.3564D-15	510240	-0.5191D-15	510250	0.2794D-14
520210	-0.2054D-14	520220	0.1520D-15	520240	0.1092D-14
520270	-0.4043D-15	520271	-0.7561D-15	530210	-0.1699D-13
530240	-0.3830D-14	530250	-0.2065D-14	530260	-0.1545D-14
530270	-0.1596D-14	530271	-0.2370D-14	540230	0.1652D-14
540240	0.2074D-14	540258	0.3272D-15	540260	-0.1431D-13
540270	-0.1359D-13	540271	-0.1287D-13	550250	-0.6003D-14
550260	-0.1450D-14	550270	0.1338D-13	560220	0.6273D-15
560230	0.1738D-15	560260	0.8673D-14	560270	0.2998D-14
560280	-0.2546D-13	570250	0.6250D-15	570260	0.2317D-14
570270	-0.9776D-14	570280	0.1802D-13	570290	0.1430D-13
580260	-0.8215D-14	580270	-0.2186D-13	580280	0.8050D-14
580290	-0.2377D-13	590260	-0.4992D-15	590270	0.3041D-13
590280	0.3833D-13	590290	-0.1901D-13	590300	-0.1474D-13
600280	0.4133D-14	600298	0.4858D-15	600300	-0.2670D-13
610280	0.1635D-13	610300	0.1302D-13	610310	0.1943D-13
620280	-0.9847D-13	620300	-0.9898D-13	620310	-0.9746D-13
630260	-0.1334D-14	630270	0.1075D-14	630280	-0.2411D-13
630290	-0.1805D-13	630300	-0.5105D-13	640271	-0.1184D-14
640280	0.2080D-13	640290	-0.1452D-13	640300	-0.2572D-13
640310	-0.1724D-13	640318	0.1857D-14	650290	0.3021D-13

650300	0.3091D-13	650310	-0.3854D-13	650320	0.4080D-16
660290	-0.1252D-14	660300	-0.1610D-13	670290	-0.1529D-14
670300	0.4439D-13	670310	-0.1076D-13	670320	-0.8648D-14
670330	-0.9697D-16	680270	-0.2089D-13	680300	0.2279D-13
680330	0.1431D-15	690271	0.5451D-15	690310	-0.8774D-15
690320	0.4767D-14	690330	0.1700D-13	690340	0.5364D-16
700300	-0.2474D-14	700310	0.1288D-14	700320	0.4119D-13
700340	-0.2811D-14	710300	0.1544D-14	710301	-0.9807D-16
710310	0.8869D-14	710320	-0.1654D-13	710350	0.2391D-14
710360	-0.1308D-15	720310	-0.7654D-14	720320	0.6906D-17
730290	0.7228D-16	730320	0.6308D-17	730330	-0.3456D-15
730340	0.1050D-14	730350	-0.1470D-15	740320	-0.1015D-16
740330	0.2089D-16	740340	0.3170D-17	740350	0.3287D-15
740360	0.1702D-15	740370	0.6816D-16	750290	0.5125D-16
750330	-0.1874D-16	750340	0.1485D-16	760300	-0.4486D-16
760320	-0.8985D-17	760340	0.3265D-17	760360	-0.4141D-15
770300	0.1506D-16	770330	-0.4625D-14	770340	-0.1326D-16
780290	-0.1798D-15	780300	0.8815D-16	780310	0.1446D-16
780340	-0.5014D-16	780360	-0.1376D-15	790300	0.7845D-17
790310	-0.2015D-16	790320	-0.6532D-14	790330	-0.2474D-13
790350	-0.6575D-14	790370	-0.9923D-15	790380	-0.8785D-15
800300	0.2684D-16	800340	-0.1779D-13	800350	-0.2673D-13
800360	-0.3316D-14	810330	0.6152D-15	810340	-0.2301D-13
810350	-0.6676D-14	810360	0.1363D-14	810370	-0.4151D-15
820340	0.1927D-15	820350	0.4111D-15	820360	-0.1913D-18
820380	0.2047D-15	830350	0.1171D-14	830360	-0.1439D-16
830370	0.8308D-16	830380	-0.5771D-15	840340	0.5283D-16
840350	0.5169D-15	840360	0.9246D-17	840370	-0.1028D-15
840380	-0.6966D-16	840390	-0.4046D-15	850370	-0.3746D-17
850380	-0.2090D-16	860360	-0.8672D-17	860380	-0.6892D-17
860400	0.3001D-16	870370	-0.5472D-17	870380	-0.4264D-17
870400	0.6598D-15	870420	0.5073D-16	880370	-0.1497D-17
880380	-0.8488D-17	880400	-0.4612D-15	880410	0.4402D-14
890370	0.1222D-14	890380	-0.1130D-16	890390	0.3431D-16
890400	0.1534D-16	890410	-0.4149D-15	900370	-0.1829D-14
900380	-0.4277D-15	900390	0.1682D-15	900400	-0.6053D-17
900410	-0.1916D-15	900420	-0.1081D-14	900440	-0.1144D-14
910370	-0.4038D-16	910380	-0.1162D-15	910390	0.5755D-16
910400	-0.6232D-16	910410	-0.4392D-16	910420	-0.6270D-15
910430	-0.1652D-15	910440	0.1504D-16	920370	0.1585D-14
920380	-0.4883D-15	920390	0.1529D-14	920400	0.5077D-16
920410	0.1154D-13	920420	-0.4352D-17	920430	-0.2335D-15
920440	0.7980D-17	930370	0.1504D-15	930380	-0.2363D-15
930390	0.3305D-14	930400	0.2061D-14	930410	-0.7005D-14
930440	0.5386D-16	930450	0.1336D-16	940370	0.2223D-16
940380	0.3817D-16	940390	0.3436D-15	940400	0.1079D-19
940410	-0.1303D-13	940420	0.2746D-16	940440	-0.3186D-15
940450	-0.2311D-15	950370	0.7383D-15	950380	0.5974D-15
950390	-0.4509D-15	950400	0.1343D-15	950410	-0.5723D-16
950420	0.4142D-16	950430	0.9691D-15	950440	0.1218D-15
950450	-0.1030D-14	960360	-0.2824D-15	960370	0.4032D-15
960380	0.2073D-14	960390	0.1304D-15	960400	0.6317D-16
960410	0.5019D-16	960420	0.4002D-16	960440	-0.1220D-15
970370	0.1098D-16	970380	-0.5061D-15	970400	0.1102D-16
970410	-0.4251D-15	970420	0.1464D-15	970430	0.8305D-15
980370	0.2573D-15	980380	0.8298D-15	980400	-0.8644D-16
980420	-0.4742D-16	980430	-0.1489D-14	980440	-0.2124D-15
980460	-0.7114D-16	980470	-0.1029D-13	990380	-0.1764D-15
990400	-0.3233D-15	990420	-0.8567D-16	990430	0.1130D-14
990440	-0.1908D-13	990450	-0.1307D-14	990460	0.5674D-16
1000370	-0.3679D-15	1000380	-0.8567D-15	1000400	0.5721D-15
1000420	0.5796D-15	1000440	0.1611D-13	1000450	0.4440D-15
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1010450	0.2875D-14	1010460	0.8012D-15	1020400	0.1066D-14
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1020430	0.7090D-13	1020440	0.6138D-16	1020460	-0.1772D-14
1020480	-0.2408D-17	1020490	-0.2566D-15	1030440	0.8604D-14

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1040480	0.7518D-17	1040500	0.4657D-15	1050420	0.1191D-14
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1050460	-0.3923D-13	1050470	-0.1245D-14	1050480	-0.1257D-15
1050500	-0.5086D-16	1060410	-0.4793D-14	1060440	0.7686D-13
1060450	-0.2663D-12	1060460	-0.8916D-14	1060470	-0.6649D-13
1060480	-0.8948D-14	1060500	-0.5458D-15	1070460	-0.2092D-13
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1080490	-0.2265D-14	1080500	-0.1613D-15	1080520	-0.1780D-14
1090450	0.1420D-13	1090460	-0.8137D-14	1090470	-0.6842D-14
1090480	-0.2134D-14	1090490	-0.6755D-14	1090500	-0.7414D-15
1090510	-0.1654D-15	1090520	0.5104D-15	1100440	-0.1325D-13
1100450	0.1201D-13	1100460	-0.1848D-14	1100470	-0.9987D-14
1100480	-0.6180D-15	1100520	-0.3044D-15	1110480	-0.4483D-14
1110490	0.2950D-14	1110530	-0.2131D-15	1120450	0.3047D-13
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1120500	-0.2282D-15	1130440	-0.8788D-13	1130480	-0.4563D-14
1130490	-0.5682D-15	1130500	-0.1432D-14	1130540	-0.1097D-14
1140450	-0.4889D-14	1140480	-0.3374D-14	1140490	-0.3770D-15
1140500	0.3005D-17	1140510	-0.1517D-14	1150460	0.5175D-13
1150470	0.3578D-14	1150480	-0.3417D-14	1150490	-0.1141D-16
1150500	-0.2050D-16	1160450	0.3093D-13	1160480	0.2806D-14
1160500	0.1581D-15	1160510	-0.1183D-13	1160520	-0.1364D-15
1160530	0.1625D-14	1160540	-0.2217D-15	1170460	0.2633D-13
1170470	-0.4163D-14	1170490	0.2417D-14	1170500	-0.8828D-15
1170510	0.2830D-15	1170520	0.5900D-16	1170530	-0.8060D-15
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1210500	-0.4757D-13	1210510	-0.4173D-13	1210520	-0.5234D-13
1210530	0.3752D-12	1210540	0.2806D-15	1210550	0.1968D-15
1220480	0.9982D-17	1220500	0.1086D-12	1220510	0.1176D-13
1220520	-0.1557D-12	1220550	0.1929D-13	1230480	0.1570D-15
1230490	-0.1396D-12	1230500	0.3261D-14	1230510	0.2418D-12
1230520	0.3166D-12	1230530	0.8389D-13	1230540	0.3745D-13
1240480	0.3554D-16	1240490	-0.8128D-13	1240500	0.1560D-14
1240520	-0.1063D-12	1240540	-0.6353D-13	1250520	-0.4258D-14
1250540	-0.3014D-12	1250550	-0.1167D-13	1250560	-0.1558D-16
1250570	-0.5071D-15	1260480	0.4785D-17	1260520	0.1136D-12
1260530	-0.2409D-11	1260540	-0.3699D-16	1260550	-0.1455D-14
1270490	-0.1126D-13	1270492	0.1552D-13	1270500	-0.4682D-13
1270510	0.3049D-12	1270520	0.2365D-13	1270530	-0.4376D-13
1270540	-0.1129D-11	1270550	-0.2698D-12	1270560	-0.4916D-16
1270570	0.9845D-16	1280480	0.2943D-15	1280500	-0.1913D-13
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1280540	-0.9610D-17	1280550	-0.1076D-14	1280560	0.5016D-15
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1290550	0.8798D-16	1290560	-0.2274D-16	1290570	-0.8773D-15
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1310580	0.6554D-17	1310590	0.1377D-15	1310600	0.1672D-17
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1320530	-0.9334D-15	1320540	-0.2470D-16	1320550	-0.1184D-16
1320560	-0.1188D-14	1320570	0.2517D-14	1320580	-0.3913D-13
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1330530	-0.6559D-16	1330550	0.4803D-17	1330560	-0.8829D-15
1340520	-0.3667D-15	1340530	0.3668D-15	1340540	-0.1014D-16
1340550	0.1988D-16	1340560	0.1774D-15	1350510	0.6100D-16
1350520	-0.2356D-17	1350530	-0.1173D-15	1350540	0.2916D-15
1350550	-0.5208D-15	1350560	-0.2029D-14	1350570	0.1323D-16

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1360530	−0.4716D-16	1360540	0.4119D-18	1360560	−0.2427D-14
1360580	−0.2585D-14	1360590	−0.1041D-14	1370520	−0.1270D-15
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1380560	−0.1270D-14	1380570	−0.2385D-15	1380580	−0.1276D-14
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1400580	−0.4240D-13	1400611	−0.1257D-15	1410550	−0.2071D-14
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1420580	−0.2114D-12	1420590	0.1038D-13	1420600	−0.9087D-13
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1430560	0.2376D-15	1430570	−0.9503D-15	1430580	0.2896D-13
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1470670	0.1741D-15	1470690	0.4517D-15	1480580	−0.1062D-13
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1480660	0.4774D-14	1490610	0.2514D-13	1490620	−0.5743D-13
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1520640	−0.2844D-13	1520670	−0.1152D-12	1520680	−0.6249D-13
1520690	−0.3981D-11	1520700	−0.2965D-10	1530590	−0.1423D-14
1530600	−0.1028D-14	1530610	−0.1555D-13	1530630	−0.4974D-13
1530640	−0.6657D-14	1530650	−0.1181D-12	1530660	−0.7347D-13
1530680	−0.1487D-12	1530690	−0.9627D-13	1540620	0.2632D-13
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1550670	−0.6788D-13	1550700	0.8811D-13	1550710	0.2053D-13
1550712	0.1799D-13	1560610	−0.1092D-14	1560611	−0.9603D-15
1560620	0.1358D-13	1560630	−0.1089D-12	1560640	−0.3944D-13
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1570650	−0.1151D-12	1570660	0.1071D-13	1570670	−0.1684D-13
1570680	0.7772D-15	1570690	−0.2251D-13	1570700	−0.1457D-12
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1580620	−0.2665D-15	1580630	−0.8730D-16	1580640	−0.1322D-12
1580650	−0.2163D-13	1580660	−0.6247D-13	1580680	−0.5784D-16
1580690	−0.8853D-16	1580700	−0.1227D-12	1580720	0.1318D-12

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1660670	-0.7118D-13	1660680	-0.1087D-13	1660740	-0.1402D-12
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1670680	-0.8895D-15	1670690	-0.1079D-14	1670700	0.1744D-13
1670740	0.1436D-13	1670770	0.2612D-13	1670771	0.9231D-14
1680680	-0.8020D-14	1680690	0.1260D-13	1680700	-0.3225D-15
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1690690	0.1323D-13	1690740	0.1789D-14	1690751	-0.8384D-14
1690771	-0.1078D-12	1700680	0.2341D-14	1700690	0.1750D-13
1700700	-0.6140D-17	1700740	-0.2514D-14	1700750	-0.4206D-14
1700760	-0.1202D-12	1700780	0.5338D-13	1710680	-0.1558D-14
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1720690	-0.2012D-14	1720700	-0.1432D-16	1720710	-0.2858D-12
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1730700	0.9770D-17	1730710	-0.1159D-12	1730760	0.1592D-14
1730770	-0.4237D-14	1730791	-0.1888D-15	1740700	-0.1611D-16
1740710	-0.6356D-12	1740720	-0.1804D-12	1740760	-0.1804D-14
1740771	0.9984D-17	1750700	-0.7563D-15	1750710	-0.3063D-12
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1750780	-0.1072D-13	1760700	0.2399D-16	1760710	-0.1715D-12
1760720	-0.4719D-12	1760760	-0.1922D-13	1760770	-0.2834D-15
1760780	0.7395D-14	1760800	-0.1205D-12	1770710	-0.7347D-12
1770720	-0.6104D-12	1770780	-0.3800D-14	1770790	0.7421D-14
1770811	-0.5193D-13	1780700	-0.5894D-16	1780710	-0.4262D-12
1780711	-0.5382D-12	1780720	-0.4388D-12	1780760	-0.1519D-13
1780770	0.4750D-14	1780780	-0.2095D-14	1780792	-0.2898D-14
1790710	-0.6129D-12	1790720	0.2491D-12	1790730	-0.8924D-12
1790740	-0.9822D-12	1790750	-0.2255D-12	1790760	-0.6159D-14
1790770	-0.8663D-14	1790780	-0.4812D-14	1790790	0.3078D-13
1790800	-0.2563D-13	1800720	-0.9989D-12	1800740	-0.1175D-11
1800760	-0.1515D-14	1800780	-0.2342D-13	1800790	0.3817D-15
1800800	0.4508D-13	1810730	-0.6526D-11	1810760	0.2675D-15
1810780	-0.5632D-14	1810800	-0.5669D-14	1810810	-0.1365D-13
1820730	-0.3187D-11	1820740	-0.8537D-11	1820760	-0.2417D-15
1820770	-0.6736D-15	1820780	-0.2323D-13	1820790	-0.8643D-14
1820800	-0.1080D-13	1830740	-0.1200D-10	1830760	0.1849D-14
1830770	0.7825D-16	1830780	-0.5815D-14	1830790	-0.3326D-14
1830800	-0.1001D-13	1830810	0.2300D-12	1830811	-0.3418D-12
1840740	-0.3606D-11	1840750	0.3620D-11	1840760	-0.1154D-10
1840780	-0.1232D-14	1840800	-0.2900D-13	1840810	0.4834D-15
1840820	0.1473D-13	1850740	-0.4893D-11	1850750	-0.1874D-10
1850760	-0.3370D-11	1850780	0.1231D-14	1850800	0.2906D-14
1850831	0.8092D-14	1860740	-0.2156D-10	1860750	-0.1038D-10
1860760	-0.1281D-10	1860780	0.4656D-16	1860790	0.8814D-16
1860800	-0.3699D-13	1860810	-0.4681D-15	1870740	-0.1913D-10
1870750	-0.3542D-10	1870760	0.7162D-11	1870780	0.3250D-15
1870790	-0.8815D-17	1870800	-0.1202D-13	1870801	-0.8578D-14

1870810	0.2183D-14	1870811	-0.4720D-14	1870820	-0.4207D-14
1870821	-0.4115D-14	1880760	-0.1460D-10	1880770	-0.1455D-10
1880780	-0.9573D-11	1880800	-0.4371D-14	1890760	-0.1717D-10
1890770	-0.2664D-10	1890780	-0.1919D-10	1890800	-0.9821D-14
1890801	-0.2586D-13	1890810	-0.1142D-14	1890820	-0.1163D-13
1890821	-0.1034D-13	1900740	-0.1077D-10	1900750	-0.2453D-10
1900760	-0.1026D-10	1900780	-0.1085D-10	1900800	-0.1478D-13
1900811	-0.1321D-17	1910760	-0.1281D-10	1910770	-0.1582D-10
1910780	-0.1922D-10	1910790	-0.1444D-15	1910800	-0.2076D-13
1910820	-0.3332D-15	1910821	-0.4653D-14	1910830	0.9922D-15
1910840	-0.3166D-14	1920760	-0.1828D-10	1920770	-0.2328D-10
1920780	-0.1684D-10	1920820	-0.2482D-14	1930760	-0.2766D-10
1930770	-0.1597D-10	1930780	-0.1835D-10	1930790	-0.6669D-11
1930800	-0.5598D-11	1930820	0.1038D-14	1930830	0.2821D-14
1930831	-0.1560D-14	1940780	-0.9753D-11	1940820	-0.2024D-13
1940832	-0.1306D-14	1950780	-0.1377D-10	1950790	-0.8270D-11
1950800	-0.2044D-11	1950810	-0.1408D-13	1950820	0.8253D-15
1950821	-0.5193D-14	1950830	-0.3418D-13	1950840	-0.5856D-15
1950841	0.1621D-14	1960780	-0.1083D-10	1960790	-0.7201D-11
1960800	-0.4738D-11	1960820	-0.3414D-13	1960840	-0.4691D-14
1970780	-0.1149D-10	1970790	-0.5951D-11	1970800	-0.3685D-11
1970820	0.9217D-13	1970821	0.3060D-12	1970840	0.2023D-14
1970850	-0.7786D-14	1970851	-0.2715D-14	1980780	-0.1216D-10
1980790	-0.8860D-11	1980800	-0.3350D-11	1980820	0.1237D-14
1980830	-0.8034D-13	1980840	0.1327D-13	1980850	0.9090D-15
1980851	0.2161D-14	1990790	-0.5243D-11	1990800	-0.1773D-11
1990830	-0.8306D-14	1990831	-0.1101D-13	1990841	-0.1298D-13
1990850	0.1611D-13	2000790	-0.1002D-11	2000791	-0.1172D-11
2000800	-0.2316D-11	2000820	-0.1063D-12	2000840	-0.2930D-13
2010790	-0.2500D-11	2010800	-0.2044D-11	2010810	-0.5024D-13
2010820	-0.3562D-13	2010840	0.9692D-13	2020800	-0.1770D-11
2020810	-0.1419D-11	2020820	-0.9123D-14	2020830	-0.1999D-12
2020840	-0.8075D-13	2020850	0.6660D-13	2020871	0.4607D-14
2030790	-0.4841D-12	2030800	-0.2359D-12	2030810	-0.9615D-13
2030820	-0.1253D-12	2030840	-0.1053D-14	2030850	-0.1036D-13
2030861	-0.1074D-13	2030870	-0.2461D-15	2040800	-0.6056D-12
2040810	-0.8450D-13	2040820	-0.5468D-13	2040840	-0.1297D-12
2040850	0.2833D-15	2040860	-0.1946D-13	2050800	0.1640D-12
2050810	-0.8313D-13	2050820	-0.3573D-13	2050830	-0.2621D-13
2050840	-0.1545D-14	2050860	0.6701D-12	2060810	-0.1395D-12
2060820	-0.6459D-13	2060850	-0.1947D-12	2060860	0.1073D-13
2060870	0.9434D-13	2070810	-0.3792D-12	2070820	-0.3984D-13
2070830	-0.1443D-12	2070840	-0.1608D-12	2070860	-0.6232D-15
2070870	-0.9891D-15	2080820	-0.2651D-13	2080840	-0.3710D-13
2080860	-0.1296D-12	2080870	-0.2112D-16	2090820	-0.1728D-12
2090830	-0.1643D-12	2090850	-0.2023D-13	2090860	-0.2833D-13
2090870	-0.3557D-12	2100820	-0.1992D-12	2100830	-0.1815D-12
2100840	-0.4814D-13	2100870	-0.2213D-12	2100890	0.2266D-13
2110820	-0.8082D-12	2110830	-0.3355D-12	2110870	-0.1485D-12
2110880	-0.7938D-15	2110890	0.6520D-15	2120820	-0.7793D-12
2120830	-0.3431D-12	2120840	-0.3329D-13	2120870	-0.6148D-13
2120880	-0.1043D-12	2120890	0.2346D-15	2130830	-0.4682D-12
2130840	-0.1904D-12	2130870	-0.1728D-13	2130880	0.3417D-14
2130890	-0.3288D-12	2140820	-0.6135D-12	2140830	-0.3304D-12
2140840	-0.2131D-12	2140850	-0.1883D-12	2140852	-0.1849D-12
2140890	-0.2244D-12	2150830	-0.5824D-12	2150840	-0.7981D-12
2160840	-0.8355D-12	2160890	-0.6343D-13	2170850	-0.5228D-12
2180840	-0.6064D-12	2180860	-0.2151D-12	2180871	-0.1741D-12
2190850	-0.6641D-12	2190860	-0.8000D-12	2200860	-0.7903D-12
2200911	-0.6259D-13	2200912	-0.6403D-13	2210870	-0.5088D-12
2220860	-0.6170D-12	2220880	-0.3465D-12	2230860	0.1882D-15
2230870	-0.7871D-12	2230880	-0.7810D-12	2240860	-0.6871D-16
2240880	-0.8192D-12	2240930	-0.6662D-13	2250860	-0.9084D-16
2250870	-0.2928D-13	2250880	-0.1856D-12	2250890	-0.5009D-12
2260860	0.3572D-17	2260870	0.1612D-15	2260880	-0.6214D-12
2260890	-0.5785D-12	2260900	-0.3645D-12	2270860	-0.1961D-16
2270870	-0.3413D-15	2270890	-0.7915D-12	2270900	-0.8121D-12

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        2280860    -0.7295D-16        2280870    -0.2199D-15        2280900    -0.8220D-12
        2290870    -0.2467D-13        2290900    -0.1806D-12        2290910    -0.6668D-12
        2300870    -0.1210D-15        2300900    -0.6439D-12        2300910    -0.5845D-12
        2310880    -0.1910D-15        2310900    -0.6454D-12        2310910    -0.7427D-12
        2320880     0.3617D-16        2320900    -0.5003D-12        2320920    -0.8426D-12
        2330880    -0.2181D-16        2330900    -0.4960D-12        2330910    -0.5199D-12
        2330920    -0.1311D-12        2340920    -0.5536D-12        2350920    -0.5387D-12
        2350930    -0.5759D-12        2360920    -0.5609D-12        2360940    -0.8185D-12
        2370920    -0.5571D-12        2370930    -0.5541D-12        2370940    -0.5183D-12
        2380920    -0.1556D-12        2380940    -0.5488D-12        2390930    -0.3393D-12
        2390940    -0.5288D-12        2400920    -0.7737D-13        2400930    -0.3925D-12
        2400931    -0.3495D-12        2400940    -0.5522D-12        2400960    -0.8176D-12
        2410940    -0.5590D-12        2410950    -0.5493D-12        2410960    -0.5301D-12
        2420940    -0.3849D-12        2420960    -0.5478D-12        2430940    -0.2755D-12
        2430950    -0.1386D-12        2440940    -0.5973D-13        2440980    -0.8028D-12
        2450960    -0.4260D-12        2450980    -0.5268D-12        2460940    -0.1719D-12
        2460951    -0.2076D-12        2460960    -0.3314D-12        2460980    -0.5436D-12
        2460990     0.3583D-13        2470960    -0.2426D-12        2480960    -0.3924D-13
        2481000    -0.6197D-12        2490980    -0.2953D-12        2491000    -0.4058D-12
        2491010     0.5059D-13        2501000    -0.2850D-12        2501010     0.9103D-14
        2511000     0.8987D-15        2511010     0.4764D-14        2511020     0.2475D-15
        2511021     0.6878D-15        2521020    -0.5660D-12        2531020    -0.3517D-12
        2531030    -0.4229D-13        2541020     0.4368D-15        2541030     0.4551D-13
        2541031     0.2931D-13        2551020    -0.1044D-15        2551030    -0.1643D-14
        2551031     0.3786D-14        2571040    -0.3483D-12        2571050     0.1342D-13
        2581050     0.5718D-13
    Origins not Used :
              14
              28
              29
              31
              34
              35
              39
0
 Total experimental ground states   exp.gs = 2569
 Total systematical ground states   sys.gs =  988
 Total experimental excited isomers exp.m  =  420
 Total systematical excited isomers sys.m  =   88
0Starting next table                                  time is    0.
1                                            A T O M I C   M A S S   A D J U S T M E N T
0                                                    DATE 23 Jun 2021 TIME 09:04
0                                                           A=   0 TO 295
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MASS LIST
for analysis

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 -2	-1	1	0	pi+		140081.390	0.180								
-2	-1	1	0	pi-		139059.392	0.180								
0 1	1	0	1	n		8071.31806	0.00044	0.0	0.0	B-	782.347	0.000	1 008664.91590	0.00047	
-1	0	1	1	H		7288.97106	0.00001	0.0	0.0	B-	*		1 007825.03190	0.00001	
0 0	1	1	2	H		13135.72290	0.00001	1112.283	0.000	B-	*		2 014101.77784	0.00002	
0 1	2	1	3	H		14949.81090	0.00008	2827.265	0.000	B-	18.592	0.000	3 016049.28132	0.00008	
-1	1	2	3	He		14931.21888	0.00006	2572.680	0.000	B-	-13736#	2000#	3 016029.32197	0.00006	
-3	0	3	3	Li	-pp	28667#	2000#	-2267#	667#	B-	*		3 030775#	2147#	
0 2	3	1	4	H	-n	24621.129	100.000	1720.449	25.000	B-	22196.213	100.000	4 026431.867	107.354	
0	2	2	4	He		2424.91587	0.00015	7073.916	0.000	B-	-22898.274	212.132	4 002603.25413	0.00016	
-2	1	3	4	Li	-p	25323.190	212.132	1153.760	53.033	B-	*		4 027185.561	227.733	
0 3	4	1	5	H	-nn	32892.447	89.443	1336.359	17.889	B-	21661.213	91.652	5 035311.492	96.020	
1	3	2	5	He	-n	11231.234	20.000	5512.132	4.000	B-	-447.653	53.852	5 012057.224	21.470	
-1	2	3	5	Li	-p	11678.887	50.000	5266.132	10.000	B-	-25460#	2003#	5 012537.800	53.677	
-3	1	4	5	Be	x	37139#	2003#	18#	401#	B-	*		5 039870#	2150#	
0 4	5	1	6	H	-3n	41875.725	254.127	961.639	42.354	B-	24283.629	254.127	6 044955.437	272.816	
2	4	2	6	He		17592.095	0.053	4878.520	0.009	B-	3505.215	0.053	6 018885.889	0.057	
0	3	3	6	Li		14086.88044	0.00144	5332.331	0.000	B-	-4288.153	5.448	6 015122.88742	0.00155	
-2	2	4	6	Be	-	18375.034	5.448	4487.248	0.908	B-	-28945#	2003#	6 019726.409	5.848	
-4	1	5	6	B	x	47320#	2003#	-467#	334#	B-	*		6 050800#	2150#	
0 5	6	1	7	H	-nn	49135#	1004#	940#	143#	B-	23062#	1004#	7 052749#	1078#	
3	5	2	7	He	-n	26073.128	7.559	4123.058	1.080	B-	11166.023	7.559	7 027990.652	8.115	
1	4	3	7	Li		14907.10463	0.00419	5606.440	0.001	B-	-861.893	0.071	7 016003.43426	0.00450	
1	4	3	7	Lii		26153.982	31.235	11246.877	31.235						
-1	3	4	7	Be		15768.998	0.071	5371.549	0.010	B-	-11907.555	25.150	7 016928.714	0.076	
-1	3	4	7	Bei	IT	26750.705	31.235	10981.707	31.235						
-3	2	5	7	B	p4n	27676.553	25.150	3558.706	3.593	B-	*		7 029712.000	27.000	
0 4	6	2	8	He		31609.683	0.089	3924.521	0.011	B-	10663.878	0.100	8 033934.388	0.095	
2	5	3	8	Li		20945.805	0.047	5159.712	0.006	B-	16004.133	0.059	8 022486.244	0.050	
2	5	3	8	Lii	+pn	31767.539	5.401	10821.734	5.401						
0	4	4	8	Be	-a	4941.672	0.035	7062.436	0.004	B-	-17979.897	1.000	8 005305.102	0.037	
0	4	4	8	Bej		32435.987	1.965	27494.316	1.966						
-2	3	5	8	B		22921.569	1.000	4717.155	0.125	B-	-12142.700	18.270	8 024607.315	1.073	
-2	3	5	8	Bxi	+3n	33545.827	8.000	10624.258	8.062						
-4	2	6	8	C		35064.269	18.243	3101.524	2.280	B-	*		8 037643.039	19.584	
0 5	7	2	9	He		40935.826	46.816	3349.038	5.202	B-	15980.921	46.817	9 043946.414	50.259	
3	6	3	9	Li	-3n	24954.905	0.186	5037.769	0.021	B-	13606.454	0.201	9 026790.191	0.200	
1	5	4	9	Be		11348.451	0.076	6462.669	0.009	B-	-1068.035	0.899	9 012183.062	0.082	
1	5	4	9	Bei	+pn	25738.760	1.700	14390.309	1.702						
-1	4	5	9	B	-	12416.486	0.903	6257.071	0.100	B-	-16494.485	2.319	9 013329.645	0.969	
-1	4	5	9	Bxi	+nn	27070.968	2.300	14654.482	2.471						
-3	3	6	9	C	-pp	28910.971	2.137	4337.423	0.237	B-	*		9 031037.202	2.293	
0 6	8	2	10	He	-nn	49197.147	92.848	2995.134	9.285	B-	16144.519	93.715	10 052815.306	99.676	
4	7	3	10	Li	-n	33052.628	12.721	4531.351	1.272	B-	20445.141	12.722	10 035483.453	13.656	
4	7	3	10	Lim	-n	33248.518	38.412	195.891	40.462						
4	7	3	10	Linp	-2n	33527.822	38.921	475.195	40.947						
2	6	4	10	Be		12607.487	0.081	6497.631	0.008	B-	556.876	0.082	10 013534.692	0.086	
2	6	4	10	Bei	-p2n	33786.700	20.977	21179.214	20.978						
0	5	5	10	B		12050.611	0.015	6475.083	0.002	B-	-3648.062	0.069	10 012936.862	0.016	
-2	4	6	10	C		15698.673	0.070	6032.043	0.007	B-	-23101.355	400.000	10 016853.217	0.075	
-4	3	7	10	N	--	38800.027	400.000	3643.672	40.000	B-	*		10 041653.540	429.417	
0 5	8	3	11	Li	x	40728.259	0.615	4155.382	0.056	B-	20551.090	0.659	11 043723.581	0.660	
3	7	4	11	Be		20177.169	0.238	5952.540	0.022	B-	11509.461	0.238	11 021661.080	0.255	
3	7	4	11	Bei	-pn	41335.628	20.001	21158.459	20.002						
1	6	5	11	B		8667.708	0.012	6927.732	0.001	B-	-1981.689	0.061	11 009305.166	0.013	
1	6	5	11	Bxi		21228.087	9.150	12560.379	9.150						
1	6	5	11	Bxj	-pp	42232.847	80.000	33565.139	80.000						
-1	5	6	11	C		10649.397	0.060	6676.456	0.005	B-	-13716.247	5.001	11 011432.597	0.064	
-1	5	6	11	Cxi		22810.234	35.355	12160.837	35.355						
-3	4	7	11	N	-p	24365.644	5.000	5358.402	0.455	B-	-23373.269	60.246	11 026157.593	5.368	
-5	3	8	11	O	-pp	47738.913	60.038	3162.437	5.458	B-	*		11 051249.828	64.453	

0 6	9	3	12	Li	-n	49009.577	30.006	3791.600	2.501	B-	23931.815	30.067	12 052613.942	32.213
4	8	4	12	Be		25077.761	1.909	5720.722	0.159	B-	11708.364	2.321	12 026922.082	2.048
2	7	5	12	B		13369.398	1.321	6631.224	0.110	B-	13369.398	1.321	12 014352.638	1.418
2	7	5	12	Bxi		26088.439	18.538	12719.041	18.585					
0	6	6	12	C		0.0	0.0	7680.145	0.000	B-	-17338.068	1.000	12 000000.0	0.0
0	6	6	12	Cxm	IT	0.00000	0.00001	0.000	0.000					
0	6	6	12	Cxi		15108.173	3.328	15108.173	3.328					
0	6	6	12	Cxj	+nn	27594.953	2.400	27594.953	2.400					
-2	5	7	12	N		17338.068	1.000	6170.110	0.083	B-	-14675.267	12.042	12 018613.180	1.073
-2	5	7	12	Nxi	IT	29580.068	4.123	12242.000	4.000					
-4	4	8	12	O	-pp	32013.335	12.000	4881.975	1.000	B-	*		12 034367.726	12.882
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 7	10	3	13	Li	-nn	56980.895	70.003	3507.631	5.385	B-	23321.815	70.739	13 061171.503	75.150
5	9	4	13	Be	-n	33659.080	10.180	5241.436	0.783	B-	17097.132	10.230	13 036134.506	10.929
5	9	4	13	Bep	++	35157.121	50.000	1498.042	51.026					
3	8	5	13	B	-nn	16561.948	1.000	6496.419	0.077	B-	13436.939	1.000	13 017779.981	1.073
1	7	6	13	C		3125.00933	0.00023	7469.849	0.000	B-	-2220.472	0.270	13 003354.83534	0.00025
1	7	6	13	Cxi	-a	18233.797	1.141	15108.788	1.141					
-1	6	7	13	N	-p	5345.481	0.270	7238.863	0.021	B-	-17769.951	9.530	13 005738.609	0.289
-1	6	7	13	Nxi	-p	20410.594	0.184	15065.113	0.327					
-3	5	8	13	O	+3n	23115.432	9.526	5811.764	0.733	B-	-18915#	500#	13 024815.435	10.226
-5	4	9	13	F	x	42030#	500#	4297#	38#	B-	*		13 045121#	537#
0 6	10	4	14	Be	x	39954.502	132.245	4993.897	9.446	B-	16290.817	133.936	14 042892.920	141.970
6	10	4	14	Bep	++	41472.005	60.000	1517.503	145.220					
4	9	5	14	B		23663.686	21.213	6101.645	1.515	B-	20643.793	21.213	14 025404.010	22.773
4	9	5	14	Bxi	-pn	40728.484	20.091	17064.798	29.217					
2	8	6	14	C		3019.89328	0.00375	7520.320	0.000	B-	156.476	0.004	14 003241.98862	0.00403
0	7	7	14	N		2863.41683	0.00022	7475.615	0.000	B-	-5144.364	0.025	14 003074.00425	0.00024
-2	6	8	14	O		8007.781	0.025	7052.278	0.002	B-	-23956.622	41.119	14 008596.706	0.027
-4	5	9	14	F	-p	31964.403	41.119	5285.209	2.937	B-	*		14 034315.196	44.142
0 7	11	4	15	Be	-n	49825.821	165.797	4540.971	11.053	B-	20868.441	167.126	15 053490.215	177.990
5	10	5	15	B		28957.379	21.029	5880.044	1.402	B-	19084.234	21.044	15 031087.023	22.575
3	9	6	15	C	-n	9873.145	0.800	7100.170	0.053	B-	9771.707	0.800	15 010599.256	0.858
1	8	7	15	N		101.43809	0.00058	7699.460	0.000	B-	-2754.184	0.490	15 000108.89827	0.00062
1	8	7	15	Nxi	-p	11716.664	3.500	11615.226	3.500					
-1	7	8	15	O		2855.622	0.490	7463.692	0.033	B-	-13711.130	14.009	15 003065.636	0.526
-3	6	9	15	F	-p	16566.752	14.000	6497.460	0.933	B-	-23648.622	68.138	15 017785.139	15.029
-5	5	10	15	Ne	-pp	40215.374	66.684	4868.728	4.446	B-	*		15 043172.977	71.588
0 8	12	4	16	Be	-nn	57447.139	165.797	4285.285	10.362	B-	20335.440	167.607	16 061672.036	177.990
6	11	5	16	B		37111.699	24.566	5507.353	1.535	B-	23417.566	24.825	16 039841.045	26.373
4	10	6	16	C	-nn	13694.133	3.578	6922.055	0.224	B-	8010.226	4.254	16 014701.255	3.840
2	9	7	16	N	-n	5683.907	2.301	7373.797	0.144	B-	10420.909	2.301	16 006101.925	2.470
2	9	7	16	Nxi	-pn	15613.141	7.000	9929.234	7.369					
0	8	8	16	O		-4737.00217	0.00030	7976.207	0.000	B-	-15412.184	5.364	15 994914.61926	0.00032
0	8	8	16	Oxi		8058.955	4.427	12795.957	4.427					
0	8	8	16	Oxj		17984.096	3.836	22721.098	3.836					
-2	7	9	16	F		10675.182	5.364	6964.049	0.335	B-	-13311.593	21.171	16 011460.278	5.758
-4	6	10	16	Ne	--	23986.775	20.480	6083.178	1.280	B-	*		16 025750.860	21.986
0 7	12	5	17	B	x	43716.322	204.104	5269.668	12.006	B-	22684.442	204.841	17 046931.399	219.114
5	11	6	17	C	2p-n	21031.880	17.365	6558.026	1.021	B-	13161.801	22.946	17 022578.650	18.641
3	10	7	17	N	+p	7870.079	15.000	7286.229	0.882	B-	8678.843	15.000	17 008448.876	16.103
1	9	8	17	O		-808.76421	0.00064	7750.729	0.000	B-	-2760.465	0.248	16 999131.75595	0.00069
1	9	8	17	Oxi	-n	10270.018	0.169	11078.782	0.169					
-1	8	9	17	F		1951.701	0.248	7542.328	0.015	B-	-14548.751	0.432	17 002095.237	0.266
-1	8	9	17	Fxi	-p	13144.727	1.881	11193.025	1.897					
-3	7	10	17	Ne		16500.452	0.354	6640.499	0.021	B-	-18219.128	59.617	17 017713.962	0.380
-5	6	11	17	Na	x	34719.580	59.616	5522.765	3.507	B-	*		17 037273.000	64.000
0 8	13	5	18	B	-n	51792.640	204.165	4976.631	11.342	B-	26873.374	206.357	18 055601.683	219.180
6	12	6	18	C	++	24919.266	30.000	6426.132	1.667	B-	11806.098	35.282	18 026751.930	32.206
4	11	7	18	N	+	13113.167	18.570	7038.563	1.032	B-	13895.984	18.570	18 014077.563	19.935
2	10	8	18	O		-782.81634	0.00064	7767.098	0.000	B-	-1655.929	0.463	17 999159.61214	0.00069
0	9	9	18	F		873.112	0.463	7631.638	0.026	B-	-4444.505	0.589	18 000937.324	0.497
-2	8	10	18	Ne		5317.617	0.363	7341.258	0.020	B-	-19720.374	93.882	18 005708.696	0.390
-4	7	11	18	Na		25037.992	93.881	6202.218	5.216	B-	*		18 026879.388	100.785
0 9	14	5	19	B	x	59770.251	525.363	4719.635	27.651	B-	27356.496	534.496	19 064166.000	564.000
7	13	6	19	C	-n	32413.754	98.389	6118.274	5.178	B-	16557.499	99.748	19 034797.594	105.625

5	12	7	19	N	p-2n	15856.255	16.404	6948.545	0.863	B-	12523.397	16.614	19	017022.389	17.610
3	11	8	19	O	-n	3332.858	2.637	7566.495	0.139	B-	4820.303	2.637	19	003577.969	2.830
1	10	9	19	F		-1487.44512	0.00082	7779.019	0.000	B-	-3239.499	0.160	18	998403.16207	0.00088
-1	9	10	19	Ne	+3n	1752.054	0.160	7567.343	0.008	B-	-11177.331	10.536	19	001880.906	0.171
-1	9	10	19	Nei	-	9252.963	9.000	7500.909	9.001						
-3	8	11	19	Na		12929.384	10.535	6937.886	0.554	B-	-18909.009	60.919	19	013880.264	11.309
-5	7	12	19	Mg	-pp	31838.394	60.001	5901.499	3.158	B-	*		19	034179.920	64.413
0 10	15	5	20	B	-n	69401.569	546.357	4405.653	27.318	B-	31898.002	593.038	20	074505.644	586.538
8	14	6	20	C	x	37503.567	230.625	5961.436	11.531	B-	15737.069	243.746	20	040261.732	247.585
6	13	7	20	N	x	21766.498	78.894	6709.172	3.945	B-	17970.326	78.899	20	023367.295	84.696
4	12	8	20	O	-nn	3796.172	0.885	7568.571	0.044	B-	3813.635	0.885	20	004075.357	0.950
2	11	9	20	F	-n	-17.463	0.030	7720.135	0.002	B-	7024.469	0.030	19	999981.252	0.031
2	11	9	20	Fxi	-pn	6503.431	3.000	6520.895	3.000						
0	10	10	20	Ne		-7041.93217	0.00154	8032.241	0.000	B-	-13892.421	1.109	19	992440.17525	0.00165
0	10	10	20	Nei	IT	3230.521	2.007	10272.453	2.007						
0	10	10	20	Nej	-p	9690.888	2.849	16732.821	2.849						
-2	9	11	20	Na		6850.489	1.109	7298.503	0.055	B-	-10627.205	2.168	20	007354.301	1.190
-2	9	11	20	Nai	IT	13348.889	1.216	6498.400	0.500						
-4	8	12	20	Mg	+t	17477.694	1.863	6728.025	0.093	B-	*		20	018763.075	2.000
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 11	16	5	21	B	-nn	78382.887	558.664	4152.527	26.603	B-	32740#	817#	21	084147.485	599.750
9	15	6	21	C	x	45643#	596#	5674#	28#	B-	20411#	611#	21	049000#	640#
7	14	7	21	N	x	25231.915	134.048	6609.016	6.383	B-	17169.882	134.584	21	027087.573	143.906
5	13	8	21	O	-3n	8062.034	12.000	7389.375	0.571	B-	8109.639	12.134	21	008654.948	12.882
3	12	9	21	F	-nn	-47.605	1.800	7738.293	0.086	B-	5684.171	1.800	20	999948.893	1.932
1	11	10	21	Ne		-5731.776	0.038	7971.714	0.002	B-	-3546.919	0.018	20	993846.685	0.041
-1	10	11	21	Na		-2184.857	0.042	7765.558	0.002	B-	-13088.708	0.756	20	997654.459	0.045
-1	10	11	21	Nai	-p	6790.039	4.000	8974.896	4.000						
-3	9	12	21	Mg	x	10903.851	0.755	7105.032	0.036	B-	-16186#	600#	21	011705.764	0.810
-5	8	13	21	Al	x	27090#	600#	6297#	29#	B-	*		21	029082#	644#
0 10	16	6	22	C	-nn	53611.203	231.490	5421.078	10.522	B-	21846.398	311.063	22	057553.990	248.515
8	15	7	22	N	x	31764.805	207.779	6378.535	9.445	B-	22481.772	215.435	22	034100.918	223.060
6	14	8	22	O	-4n	9283.032	56.921	7364.872	2.587	B-	6489.656	58.256	22	009965.744	61.107
4	13	9	22	F	+	2793.376	12.399	7624.295	0.564	B-	10818.092	12.399	22	002998.812	13.310
2	12	10	22	Ne		-8024.716	0.018	8080.466	0.001	B-	-2843.324	0.132	21	991385.113	0.018
0	11	11	22	Na		-5181.391	0.132	7915.662	0.006	B-	-4781.405	0.163	21	994437.547	0.141
-2	10	12	22	Mg		-399.986	0.159	7662.765	0.007	B-	-18601#	401#	21	999570.597	0.170
-2	10	12	22	Mgi		13644.465	6.207	14044.451	6.209						
-4	9	13	22	Al	x	18201#	401#	6782#	18#	B-	-15439#	641#	22	019540#	430#
-6	8	14	22	Si	x	33640#	500#	6044#	23#	B-	*		22	036114#	537#
0 11	17	6	23	C	x	64171#	997#	5077#	43#	B-	27450#	1082#	23	068890#	1070#
9	16	7	23	N	x	36720.429	420.570	6236.672	18.286	B-	22099.058	437.827	23	039421.000	451.500
7	15	8	23	O	x	14621.371	121.712	7163.486	5.292	B-	11336.107	126.190	23	015696.686	130.663
5	14	9	23	F		3285.263	33.320	7622.345	1.449	B-	8439.308	33.321	23	003526.875	35.770
3	13	10	23	Ne	-n	-5154.045	0.104	7955.256	0.005	B-	4375.809	0.104	22	994466.905	0.112
1	12	11	23	Na		-9529.85352	0.00181	8111.494	0.000	B-	-4056.179	0.032	22	989769.28195	0.00194
1	12	11	23	Naj	-p	10060.555	2.000	19590.409	2.000						
-1	11	12	23	Mg	-	-5473.675	0.032	7901.123	0.001	B-	-12221.746	0.346	22	994123.768	0.034
-3	10	13	23	Al	--	6748.071	0.345	7335.728	0.015	B-	-17202#	500#	23	007244.351	0.370
-3	10	13	23	Ali		18471.101	42.566	11723.030	42.567						
-5	9	14	23	Si	x	23950#	500#	6554#	22#	B-	*		23	025711#	537#
0 10	17	7	24	N	x	46938#	401#	5887#	17#	B-	28438#	433#	24	050390#	430#
8	16	8	24	O	x	18500.404	164.874	7039.686	6.870	B-	10955.888	191.633	24	019861.000	177.000
6	15	9	24	F	x	7544.516	97.670	7463.583	4.070	B-	13496.158	97.672	24	008099.370	104.853
4	14	10	24	Ne	-nn	-5951.642	0.513	7993.325	0.021	B-	2466.258	0.513	23	993610.649	0.550
2	13	11	24	Na	-n	-8417.901	0.017	8063.488	0.001	B-	5515.677	0.021	23	990963.012	0.017
0	12	12	24	Mg		-13933.578	0.013	8260.710	0.001	B-	-13884.766	0.228	23	985041.689	0.013
-2	11	13	24	Al		-48.812	0.228	7649.581	0.009	B-	-10793.998	19.473	23	999947.598	0.244
-2	11	13	24	Ali	-p	5899.993	3.262	5948.806	3.270						
-4	10	14	24	Si	--	10745.186	19.472	7167.233	0.811	B-	-23275#	501#	24	011535.430	20.904
-6	9	15	24	P	x	34020#	500#	6165#	21#	B-	*		24	036522#	537#
0 11	18	7	25	N	x	55983#	503#	5613#	20#	B-	28654#	529#	25	060100#	540#
9	17	8	25	O	-n	27329.030	165.084	6727.806	6.603	B-	15994.863	191.191	25	029338.919	177.225
7	16	9	25	F	x	11334.167	96.442	7336.306	3.858	B-	13369.670	100.721	25	012167.727	103.535
5	15	10	25	Ne		-2035.503	29.045	7839.799	1.162	B-	7322.311	29.070	24	997814.797	31.181
3	14	11	25	Na	-nn	-9357.814	1.200	8101.398	0.048	B-	3834.968	1.201	24	989953.974	1.288

1	13	12	25	Mg		-13192.782	0.047	8223.503	0.002	B-	-4276.808	0.045	24 985836.966	0.050	
-1	12	13	25	Al		-8915.974	0.065	8021.137	0.003	B-	-12743.296	10.000	24 990428.308	0.069	
-1	12	13	25	Ali		-1014.871	1.841	7901.103	1.840						
-3	11	14	25	Si	+3n	3827.322	10.000	7480.111	0.400	B-	-16363#	400#	25 004108.798	10.735	
-5	10	15	25	P	x	20190#	400#	6794#	16#	B-	*		25 021675#	429#	
0 10	18	8	26	O	-nn	34661.041	164.950	6497.479	6.344	B-	15986.386	196.630	26 037210.155	177.081	
8	17	9	26	F		18674.655	107.027	7082.250	4.116	B-	18193.541	108.602	26 020048.065	114.898	
6	16	10	26	Ne	x	481.114	18.429	7751.911	0.709	B-	7341.894	18.758	26 000516.496	19.784	
4	15	11	26	Na	x	-6860.780	3.502	8004.201	0.135	B-	9353.763	3.502	25 992634.649	3.759	
2	14	12	26	Mg		-16214.544	0.029	8333.871	0.001	B-	-4004.404	0.063	25 982592.972	0.031	
0	13	13	26	Al		-12210.139	0.066	8149.765	0.003	B-	-5069.136	0.085	25 986891.876	0.071	
0	13	13	26	Alm		-11981.834	0.067	228.306	0.013						
-2	12	14	26	Si	-	-7141.003	0.108	7924.708	0.004	B-	-18114#	196#	25 992333.818	0.115	
-2	12	14	26	Sii	IT	5873.997	4.001	13015.000	4.000						
-4	11	15	26	P	x	10973#	196#	7198#	8#	B-	-16707#	631#	26 011780#	210#	
-6	10	16	26	S	x	27680#	600#	6525#	23#	B-	*		26 029716#	644#	
0 11	19	8	27	O	x	44670#	500#	6185#	19#	B-	19536#	514#	27 047955#	537#	
9	18	9	27	F		25133.478	120.198	6879.666	4.452	B-	18082.568	150.621	27 026981.897	129.037	
7	17	10	27	Ne	x	7050.910	90.770	7520.415	3.362	B-	12568.701	90.847	27 007569.462	97.445	
5	16	11	27	Na	++	-5517.791	3.726	7956.947	0.138	B-	9068.804	3.727	26 994076.408	4.000	
3	15	12	27	Mg		-14586.594	0.047	8263.853	0.002	B-	2610.269	0.067	26 984340.647	0.050	
1	14	13	27	Al		-17196.864	0.047	8331.553	0.002	B-	-4812.358	0.096	26 981538.408	0.050	
-1	13	14	27	Si	-	-12384.505	0.107	8124.342	0.004	B-	-11725.473	9.001	26 986704.687	0.115	
-1	13	14	27	Sii		-5759.489	2.307	6625.017	2.309						
-3	12	15	27	P	-p	-659.032	9.001	7661.089	0.333	B-	-18150#	400#	26 999292.499	9.662	
-3	12	15	27	Pxi	-pp	12009.316	33.448	12668.348	34.638						
-5	11	16	27	S	-	17491#	400#	6960#	15#	B-	*		27 018777#	430#	
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 12	20	8	28	O	x	52080#	699#	5988#	25#	B-	18676#	709#	28 055910#	750#	
10	19	9	28	F	-n	33403.796	120.347	6626.857	4.298	B-	22104.058	174.289	28 035860.448	129.198	
8	18	10	28	Ne	x	11299.738	126.068	7388.346	4.502	B-	12288.053	126.483	28 012130.767	135.339	
6	17	11	28	Na	x	-988.315	10.246	7799.264	0.366	B-	14031.630	10.250	27 998939.000	11.000	
4	16	12	28	Mg	x	-15019.946	0.261	8272.453	0.009	B-	1830.774	0.265	27 983875.426	0.280	
2	15	13	28	Al	-n	-16850.719	0.049	8309.897	0.002	B-	4642.078	0.049	27 981910.009	0.052	
0	14	14	28	Si		-21492.79711	0.00051	8447.744	0.000	B-	-14344.941	1.147	27 976926.53442	0.00055	
0	14	14	28	Sir	-p	-8951.753	0.053	12541.044	0.053						
-2	13	15	28	P		-7147.856	1.147	7907.484	0.041	B-	-11221.059	160.004	27 992326.460	1.231	
-2	13	15	28	Pxi	-p	-1260.534	20.000	5887.322	20.033						
-4	12	16	28	S	--	4073.203	160.000	7478.791	5.714	B-	-24197#	525#	28 004372.762	171.767	
-6	11	17	28	Cl	-p	28270#	500#	6587#	18#	B-	*		28 030349#	537#	
0 11	20	9	29	F	x	40150.190	525.363	6444.031	18.116	B-	21750.387	546.221	29 043103.000	564.000	
9	19	10	29	Ne	x	18399.803	149.505	7167.067	5.155	B-	15719.809	149.685	29 019753.000	160.500	
7	18	11	29	Na		2679.994	7.337	7682.152	0.253	B-	13292.354	7.345	29 002877.091	7.876	
5	17	12	29	Mg		-10612.360	0.345	8113.532	0.012	B-	7595.402	0.487	28 988607.163	0.369	
3	16	13	29	Al	x	-18207.762	0.345	8348.465	0.012	B-	3687.319	0.345	28 980453.164	0.370	
1	15	14	29	Si		-21895.08154	0.00056	8448.636	0.000	B-	-4942.232	0.359	28 976494.66434	0.00060	
-1	14	15	29	P		-16952.849	0.359	8251.237	0.012	B-	-13858.426	13.046	28 981800.368	0.385	
-1	14	15	29	Pxi		-8571.030	2.458	8381.819	2.445						
-3	13	16	29	S	x	-3094.423	13.041	7746.383	0.450	B-	-17117#	189#	28 996678.000	14.000	
-5	12	17	29	Cl	-p	14022#	189#	7129#	7#	B-	-23947#	478#	29 015053#	203#	
-7	11	18	29	Ar	-pp	37969#	439#	6276#	15#	B-	*		29 040761#	471#	
0 12	21	9	30	F	x	48960#	500#	6205#	17#	B-	25680#	561#	30 052561#	537#	
10	20	10	30	Ne		23280.120	253.250	7034.532	8.442	B-	14805.450	253.295	30 024992.235	271.875	
8	19	11	30	Na		8474.670	4.727	7501.969	0.158	B-	17356.042	4.901	30 009097.931	5.074	
6	18	12	30	Mg		-8881.373	1.295	8054.425	0.043	B-	6982.744	2.329	29 990465.454	1.390	
4	17	13	30	Al		-15864.116	1.936	8261.105	0.065	B-	8568.846	1.936	29 982969.171	2.077	
2	16	14	30	Si	-n	-24432.962	0.022	8520.655	0.001	B-	-4232.107	0.061	29 973770.137	0.023	
0	15	15	30	P	-	-20200.856	0.065	8353.506	0.002	B-	-6141.601	0.196	29 978313.490	0.069	
-2	14	16	30	S	-	-14059.254	0.206	8122.708	0.007	B-	-18733.802	23.877	29 984906.770	0.221	
-4	13	17	30	Cl	-p	4674.548	23.876	7472.170	0.796	B-	-17397#	180#	30 005018.333	25.631	
-6	12	18	30	Ar	-pp	22071#	179#	6866#	6#	B-	*		30 023694#	192#	
0 13	22	9	31	F	-nn	56843#	535#	6011#	17#	B-	25661#	597#	31 061023#	574#	
11	21	10	31	Ne		31181.594	266.195	6813.090	8.587	B-	18935.562	266.562	31 033474.816	285.772	
9	20	11	31	Na	x	12246.031	13.972	7398.678	0.451	B-	15368.183	14.307	31 013146.654	15.000	
7	19	12	31	Mg	x	-3122.152	3.074	7869.189	0.099	B-	11828.557	3.801	30 996648.232	3.300	
5	18	13	31	Al	x	-14950.709	2.236	8225.518	0.072	B-	7998.329	2.236	30 983949.754	2.400	

3	17	14	31	Si	-n	-22949.037	0.043	8458.292	0.001	B-	1491.507	0.043	30 975363.196	0.046	
1	16	15	31	P		-24440.54442	0.00075	8481.168	0.000	B-	-5398.013	0.229	30 973761.99768	0.00080	
-1	15	16	31	S		-19042.531	0.229	8281.801	0.007	B-	-12007.979	3.454	30 979557.002	0.246	
-3	14	17	31	Cl	--	-7034.552	3.447	7869.210	0.111	B-	-18360#	200#	30 992448.097	3.700	
-3	14	17	31	Cli	-pp	5256.093	3.021	12290.645	4.583						
-5	13	18	31	Ar	-	11325#	200#	7252#	6#	B-	-22935#	361#	31 012158#	215#	
-7	12	19	31	K	x	34260#	300#	6487#	10#	B-	*		31 036780#	322#	
0 12	22	10	32	Ne	x	36999#	503#	6671#	16#	B-	18359#	504#	32 039720#	540#	
10	21	11	32	Na	x	18640.152	37.260	7219.882	1.164	B-	19469.052	37.402	32 020011.024	40.000	
8	20	12	32	Mg	x	-828.901	3.260	7803.841	0.102	B-	10270.468	7.879	31 999110.138	3.500	
6	19	13	32	Al	x	-11099.368	7.173	8100.345	0.224	B-	12978.321	7.179	31 988084.338	7.700	
4	18	14	32	Si	x	-24077.689	0.298	8481.469	0.009	B-	227.187	0.301	31 974151.538	0.320	
2	17	15	32	P	-n	-24304.876	0.040	8464.120	0.001	B-	1710.661	0.040	31 973907.643	0.042	
0	16	16	32	S		-26015.53714	0.00131	8493.130	0.000	B-	-12680.831	0.562	31 972071.17354	0.00141	
-2	15	17	32	Cl		-13334.706	0.562	8072.406	0.018	B-	-11134.354	1.857	31 985684.605	0.603	
-4	14	18	32	Ar	x	-2200.352	1.770	7700.009	0.055	B-	-24190#	400#	31 997637.824	1.900	
-6	13	19	32	K	x	21990#	400#	6920#	12#	B-	*		32 023607#	429#	
0 13	23	10	33	Ne	x	46130#	600#	6436#	18#	B-	22350#	750#	33 049523#	644#	
11	22	11	33	Na	x	23780.113	449.912	7089.926	13.634	B-	18817.240	449.920	33 025529.000	483.000	
9	21	12	33	Mg		4962.873	2.663	7636.438	0.081	B-	13460.255	7.477	33 005327.862	2.859	
7	20	13	33	Al	x	-8497.382	6.986	8020.617	0.212	B-	12016.946	7.021	32 990877.685	7.500	
5	19	14	33	Si	x	-20514.328	0.699	8361.060	0.021	B-	5823.022	1.295	32 977976.964	0.750	
3	18	15	33	P	+	-26337.350	1.090	8513.807	0.033	B-	248.508	1.090	32 971725.692	1.170	
1	17	16	33	S		-26585.85830	0.00134	8497.630	0.000	B-	-5582.518	0.391	32 971458.90862	0.00144	
-1	16	17	33	Cl		-21003.340	0.391	8304.756	0.012	B-	-11619.045	0.560	32 977451.988	0.419	
-1	16	17	33	Cli		-15454.897	0.471	5548.443	0.365						
-3	15	18	33	Ar	x	-9384.295	0.401	7928.956	0.012	B-	-16925#	200#	32 989925.545	0.430	
-5	14	19	33	K	x	7540#	200#	7392#	6#	B-	-23489#	447#	33 008095#	215#	
-7	13	20	33	Ca	x	31030#	400#	6657#	12#	B-	*		33 033312#	429#	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 14	24	10	34	Ne	-nn	52842#	513#	6287#	15#	B-	21161#	789#	34 056728#	551#	
12	23	11	34	Na	x	31680.114	599.416	6886.438	17.630	B-	23356.790	599.456	34 034010.000	643.500	
10	22	12	34	Mg	x	8323.324	6.893	7550.392	0.203	B-	11320.943	7.207	34 008935.455	7.400	
8	21	13	34	Al	x	-2997.619	2.105	7860.351	0.062	B-	16994.065	2.252	33 996781.924	2.259	
6	20	14	34	Si	x	-19991.684	0.801	8337.166	0.024	B-	4557.018	1.140	33 978538.045	0.860	
4	19	15	34	P	x	-24548.702	0.810	8448.186	0.024	B-	5382.988	0.812	33 973645.886	0.870	
2	18	16	34	S		-29931.690	0.045	8583.499	0.001	B-	-5491.604	0.038	33 967867.010	0.047	
0	17	17	34	Cl		-24440.086	0.049	8398.971	0.001	B-	-6061.793	0.063	33 973762.489	0.052	
0	17	17	34	Clm		-24293.726	0.053	146.360	0.027						
-2	16	18	34	Ar		-18378.293	0.078	8197.672	0.002	B-	-17158#	196#	33 980270.091	0.083	
-2	16	18	34	Ari	+nn	-10444.382	5.000	7933.911	5.001						
-4	15	19	34	K	x	-1220#	196#	7670#	6#	B-	-16110#	358#	33 998690#	210#	
-6	14	20	34	Ca	x	14890#	300#	7173#	9#	B-	*		34 015985#	322#	
0 13	24	11	35	Na	-n	37831#	670#	6745#	19#	B-	22192#	723#	35 040614#	720#	
11	23	12	35	Mg	x	15639.786	269.668	7356.234	7.705	B-	15863.516	269.768	35 016790.000	289.500	
9	22	13	35	Al	x	-223.730	7.359	7787.124	0.210	B-	14167.753	36.605	34 999759.816	7.900	
7	21	14	35	Si	2p-n	-14391.483	35.857	8169.564	1.024	B-	10466.329	35.905	34 984550.108	38.494	
5	20	15	35	P	+p	-24857.812	1.866	8446.250	0.053	B-	3988.398	1.867	34 973314.042	2.003	
3	19	16	35	S		-28846.211	0.040	8537.851	0.001	B-	167.322	0.026	34 969032.320	0.043	
3	19	16	35	Sxi	+pn	-19690.804	10.000	9155.407	10.000						
1	18	17	35	Cl		-29013.532	0.035	8520.279	0.001	B-	-5966.243	0.679	34 968852.693	0.038	
-1	17	18	35	Ar	-	-23047.290	0.680	8327.462	0.019	B-	-11874.396	0.852	34 975257.718	0.730	
-3	16	19	35	K	4n	-11172.893	0.512	7965.841	0.015	B-	-16363#	200#	34 988005.406	0.550	
-3	16	19	35	Kxi	-pp	-2114.398	40.002	9058.495	40.005						
-5	15	20	35	Ca	x	5190#	200#	7476#	6#	B-	-21910#	447#	35 005572#	215#	
-7	14	21	35	Sc	x	27100#	400#	6828#	11#	B-	*		35 029093#	429#	
0 14	25	11	36	Na	-n	45903#	687#	6557#	19#	B-	25523#	974#	36 049279#	737#	
12	24	12	36	Mg	x	20380.159	690.237	7244.420	19.173	B-	14429.775	706.243	36 021879.000	741.000	
10	23	13	36	Al	x	5950.384	149.505	7623.515	4.153	B-	18386.510	165.851	36 006388.000	160.500	
8	22	14	36	Si	x	-12436.125	71.797	8112.520	1.994	B-	7814.922	72.985	35 986649.271	77.077	
6	21	15	36	P	+	-20251.048	13.114	8307.869	0.364	B-	10413.096	13.112	35 978259.607	14.078	
4	20	16	36	S		-30664.144	0.188	8575.390	0.005	B-	-1142.135	0.189	35 967080.689	0.201	
2	19	17	36	Cl		-29522.009	0.036	8521.932	0.001	B-	709.533	0.045	35 968306.821	0.038	
0	18	18	36	Ar		-30231.542	0.027	8519.910	0.001	B-	-12814.361	0.326	35 967545.106	0.028	
0	18	18	36	Arj	-p	-19379.383	1.167	10852.160	1.167						
-2	17	19	36	K		-17417.182	0.325	8142.223	0.009	B-	-10966.015	40.001	35 981301.887	0.349	

-2	17	19	36	Kxi	-p	-13134.519	2.399	4282.663	2.420						
-4	16	20	36	Ca	4n	-6451.166	40.000	7815.880	1.111	B-	-22601#	303#	35	993074.388	42.941
-6	15	21	36	Sc	x	16150#	300#	7166#	8#	B-	*		36	017338#	322#
0 15	26	11	37	Na	-nn	53134#	687#	6403#	19#	B-	24923#	980#	37	057042#	737#
13	25	12	37	Mg	-n	28211.478	698.947	7055.112	18.890	B-	18401.913	721.814	37	030286.265	750.350
11	24	13	37	Al	x	9809.564	180.244	7531.316	4.871	B-	16381.076	213.168	37	010531.000	193.500
9	23	14	37	Si	x	-6571.512	113.809	7952.903	3.076	B-	12424.503	119.969	36	992945.191	122.179
7	22	15	37	P	p-2n	-18996.015	37.948	8267.556	1.026	B-	7900.414	37.947	36	979606.939	40.738
5	21	16	37	S	-n	-26896.429	0.198	8459.936	0.005	B-	4865.127	0.196	36	971125.497	0.212
3	20	17	37	Cl		-31761.556	0.052	8570.282	0.001	B-	-813.873	0.200	36	965902.568	0.055
3	20	17	37	Cli	-p	-21539.726	0.347	10221.830	0.346						
1	19	18	37	Ar	-	-30947.683	0.207	8527.141	0.006	B-	-6147.482	0.227	36	966776.297	0.221
1	19	18	37	Ari	+pn	-25956.043	6.000	4991.640	6.004						
-1	18	19	37	K	-p	-24800.201	0.094	8339.848	0.003	B-	-11664.131	0.641	36	973375.890	0.100
-1	18	19	37	Kxi	-p	-19749.934	0.779	5050.268	0.783						
-3	17	20	37	Ca	x	-13136.070	0.634	8003.457	0.017	B-	-16916#	300#	36	985897.849	0.680
-5	16	21	37	Sc	x	3780#	300#	7525#	8#	B-	-21390#	500#	37	004058#	322#
-7	15	22	37	Ti	x	25170#	400#	6926#	11#	B-	*		37	027021#	429#
0 16	27	11	38	Na	-n	61905#	715#	6216#	19#	B-	27831#	875#	38	066458#	768#
14	26	12	38	Mg	x	34074#	503#	6928#	13#	B-	17604#	525#	38	036580#	540#
12	25	13	38	Al	x	16470#	150#	7370#	4#	B-	20640#	183#	38	017681#	161#
10	24	14	38	Si	x	-4170.299	104.793	7892.830	2.758	B-	10451.266	127.474	37	995523.000	112.500
8	23	15	38	P	x	-14621.565	72.581	8147.275	1.910	B-	12239.655	72.934	37	984303.105	77.918
6	22	16	38	S	+	-26861.220	7.172	8448.783	0.189	B-	2936.900	7.171	37	971163.295	7.699
4	21	17	38	Cl	-n	-29798.120	0.098	8505.482	0.003	B-	4916.707	0.218	37	968010.403	0.105
4	21	17	38	Cli	+pn	-21590.148	24.000	8207.972	24.000						
2	20	18	38	Ar		-34714.827	0.195	8614.281	0.005	B-	-5914.067	0.045	37	962732.102	0.209
2	20	18	38	Arj	+nn	-15935.740	31.000	18779.087	31.001						
0	19	19	38	K		-28800.760	0.195	8438.059	0.005	B-	-6742.256	0.063	37	969081.114	0.209
0	19	19	38	Kxm		-28670.612	0.196	130.147	0.043						
-2	18	20	38	Ca		-22058.503	0.194	8240.043	0.005	B-	-17809#	200#	37	976319.223	0.208
-4	17	21	38	Sc	x	-4249#	200#	7751#	5#	B-	-15619#	361#	37	995438#	215#
-6	16	22	38	Ti	x	11370#	300#	7319#	8#	B-	*		38	012206#	322#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY			ATOMIC MASS	V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 17	28	11	39	Na	-n	69977#	743#	6056#	19#	B-	27201#	903#	39	075123#	797#
15	27	12	39	Mg	-n	42775#	513#	6734#	13#	B-	21286#	594#	39	045921#	551#
13	26	13	39	Al	x	21490#	300#	7260#	8#	B-	19169#	329#	39	023070#	322#
11	25	14	39	Si	x	2320.352	135.532	7730.979	3.475	B-	15094.987	176.232	39	002491.000	145.500
9	24	15	39	P	x	-12774.636	112.645	8097.970	2.888	B-	10388.036	123.243	38	986285.865	120.929
7	23	16	39	S	2p-n	-23162.672	50.000	8344.270	1.282	B-	6637.551	50.030	38	975133.850	53.677
5	22	17	39	Cl	-nn	-29800.222	1.732	8494.403	0.044	B-	3441.973	5.292	38	968008.147	1.859
3	21	18	39	Ar	+	-33242.195	5.000	8562.599	0.128	B-	565.000	5.000	38	964313.037	5.367
3	21	18	39	Ari	+n	-24160.786	7.373	9081.409	8.909						
1	20	19	39	K		-33807.19535	0.00456	8557.026	0.000	B-	-6524.489	0.596	38	963706.48482	0.00489
-1	19	20	39	Ca		-27282.707	0.596	8369.671	0.015	B-	-13109.980	24.007	38	970710.811	0.640
-3	18	21	39	Sc	2n-p	-14172.726	24.000	8013.458	0.615	B-	-16673#	202#	38	984784.953	25.765
-3	18	21	39	Sci	-pp	-5052.259	40.000	9120.467	46.648						
-5	17	22	39	Ti	x	2500#	200#	7566#	5#	B-	-20070#	447#	39	002684#	215#
-7	16	23	39	V	x	22570#	400#	7031#	10#	B-	*		39	024230#	429#
0 16	28	12	40	Mg	x	49550#	500#	6598#	13#	B-	20729#	583#	40	053194#	537#
14	27	13	40	Al	x	28820#	300#	7097#	7#	B-	23154#	324#	40	030940#	322#
12	26	14	40	Si	x	5666.876	121.991	7655.825	3.050	B-	13806.065	147.891	40	006083.641	130.962
10	25	15	40	P	x	-8139.189	83.607	7981.418	2.090	B-	14698.660	83.702	39	991262.221	89.755
8	24	16	40	S		-22837.850	3.982	8329.326	0.100	B-	4719.969	32.312	39	975482.561	4.274
6	23	17	40	Cl	+	-27557.818	32.066	8427.766	0.802	B-	7482.082	32.066	39	970415.466	34.423
4	22	18	40	Ar		-35039.89997	0.00218	8595.259	0.000	B-	-1504.403	0.056	39	962383.12204	0.00234
2	21	19	40	K		-33535.497	0.056	8538.091	0.001	B-	1310.905	0.060	39	963998.165	0.060
0	20	20	40	Ca		-34846.402	0.020	8551.305	0.001	B-	-14323.049	2.828	39	962590.850	0.022
-2	19	21	40	Sc	-	-20523.353	2.828	8173.670	0.071	B-	-11529.914	68.302	39	977967.275	3.036
-2	19	21	40	Sci	-p	-16163.955	5.766	4359.398	6.422						
-4	18	22	40	Ti		-8993.439	68.244	7865.863	1.706	B-	-21463#	308#	39	990345.146	73.262
-6	17	23	40	V	x	12470#	300#	7310#	7#	B-	*		40	013387#	322#
0 17	29	12	41	Mg	x	58100#	500#	6425#	12#	B-	23510#	640#	41	062373#	537#
15	28	13	41	Al	x	34590#	400#	6980#	10#	B-	21390#	500#	41	037134#	429#
13	27	14	41	Si	x	13200#	300#	7482#	7#	B-	18180#	323#	41	014171#	322#
11	26	15	41	P	x	-4979.767	120.163	7906.551	2.931	B-	14028.812	120.233	40	994654.000	129.000

9	25	16	41	S	x	-19008.580	4.099	8229.636	0.100	B-	8298.612	68.846	40	979593.451	4.400
7	24	17	41	Cl	x	-27307.192	68.723	8412.959	1.676	B-	5760.318	68.724	40	970684.525	73.777
5	23	18	41	Ar	-n	-33067.510	0.347	8534.373	0.008	B-	2492.039	0.347	40	964500.570	0.372
3	22	19	41	K		-35559.54880	0.00376	8576.073	0.000	B-	-421.641	0.138	40	961825.25611	0.00403
3	22	19	41	Kxi	-p	-27210.404	15.000	8349.145	15.000						
1	21	20	41	Ca		-35137.908	0.138	8546.708	0.003	B-	-6495.548	0.155	40	962277.905	0.147
-1	20	21	41	Sc		-28642.360	0.077	8369.198	0.002	B-	-12944.821	27.945	40	969251.163	0.083
-1	20	21	41	Scr		-25760.013	0.082	2882.347	0.049						
-1	20	21	41	Sci	-p	-22703.638	3.200	5938.722	3.201						
-3	19	22	41	Ti	x	-15697.539	27.945	8034.389	0.682	B-	-16008#	202#	40	983148.000	30.000
-5	18	23	41	V	x	310#	200#	7625#	5#	B-	-20100#	447#	41	000333#	215#
-7	17	24	41	Cr	x	20410#	400#	7116#	10#	B-	*		41	021911#	429#
0 16	29	13	42	Al	x	41990#	500#	6829#	12#	B-	25150#	583#	42	045078#	537#
14	28	14	42	Si	x	16840#	300#	7410#	7#	B-	15748#	315#	42	018078#	322#
12	27	15	42	P	x	1091.842	95.009	7765.912	2.262	B-	18729.590	95.050	42	001172.140	101.996
10	26	16	42	S	x	-17637.748	2.794	8193.227	0.067	B-	7194.022	59.681	41	981065.100	3.000
8	25	17	42	Cl	x	-24831.770	59.616	8345.886	1.419	B-	9590.908	59.895	41	973342.000	64.000
6	24	18	42	Ar	x	-34422.678	5.775	8555.614	0.138	B-	599.353	5.776	41	963045.737	6.200
4	23	19	42	K	-n	-35022.031	0.106	8551.257	0.003	B-	3525.263	0.182	41	962402.305	0.113
2	22	20	42	Ca		-38547.293	0.148	8616.565	0.004	B-	-6426.290	0.049	41	958617.780	0.159
0	21	21	42	Sc		-32121.003	0.154	8444.930	0.004	B-	-7016.650	0.224	41	965516.686	0.165
0	21	21	42	Scm		-31504.192	0.159	616.811	0.061						
0	21	21	42	Scr		-26044.800	0.159	6076.203	0.069						
-2	20	22	42	Ti		-25104.353	0.269	8259.240	0.006	B-	-17485#	196#	41	973049.369	0.289
-4	19	23	42	V	x	-7620#	196#	7824#	5#	B-	-14679#	358#	41	991820#	210#
-6	18	24	42	Cr	x	7060#	300#	7456#	7#	B-	*		42	007579#	322#
0 17	30	13	43	Al	x	48270#	600#	6712#	14#	B-	23940#	721#	43	051820#	644#
15	29	14	43	Si	x	24330#	400#	7251#	9#	B-	19289#	500#	43	026119#	429#
13	28	15	43	P	x	5040#	300#	7681#	7#	B-	17236#	300#	43	005411#	322#
11	27	16	43	S	x	-12195.461	4.970	8063.828	0.116	B-	11964.050	62.058	42	986907.635	5.335
9	26	17	43	Cl	x	-24159.510	61.859	8323.867	1.439	B-	7850.300	62.086	42	974063.700	66.407
7	25	18	43	Ar	x	-32009.811	5.310	8488.238	0.123	B-	4565.584	5.325	42	965636.056	5.700
5	24	19	43	K	-4n	-36575.394	0.410	8576.220	0.010	B-	1833.478	0.469	42	960734.701	0.440
3	23	20	43	Ca		-38408.873	0.227	8600.665	0.005	B-	-2220.723	1.865	42	958766.381	0.244
3	23	20	43	Cai		-30414.057	14.438	7994.816	14.437						
1	22	21	43	Sc	-p	-36188.150	1.863	8530.827	0.043	B-	-6872.559	6.015	42	961150.425	1.999
1	22	21	43	Sci		-31956.353	3.273	4231.796	3.760						
-1	21	22	43	Ti		-29315.591	5.719	8352.805	0.133	B-	-11399.233	43.229	42	968528.420	6.139
-3	20	23	43	V	x	-17916.358	42.849	8069.513	0.996	B-	-15946#	205#	42	980766.000	46.000
-3	20	23	43	Vxi		-9705.078	15.076	8211.279	45.423						
-5	19	24	43	Cr	x	-1970#	200#	7680#	5#	B-	-19340#	447#	42	997885#	215#
-7	18	25	43	Mn	x	17370#	400#	7213#	9#	B-	*		43	018647#	429#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A		BETA-DECAY ENERGY			ATOMIC MASS		V/S
						(keV)		(keV)		(keV)			(micro-u)		
0 16	30	14	44	Si	x	29310#	500#	7156#	11#	B-	18200#	640#	44	031466#	537#
14	29	15	44	P	x	11110#	400#	7552#	9#	B-	20314#	400#	44	011927#	429#
12	28	16	44	S	x	-9204.236	5.216	7996.015	0.119	B-	11274.737	85.725	43	990118.846	5.600
10	27	17	44	Cl	x	-20478.973	85.566	8234.479	1.945	B-	12194.287	85.581	43	978014.918	91.859
8	26	18	44	Ar	x	-32673.260	1.584	8493.841	0.036	B-	3108.237	1.638	43	964923.814	1.700
6	25	19	44	K	x	-35781.498	0.419	8546.702	0.010	B-	5687.232	0.530	43	961586.984	0.450
4	24	20	44	Ca		-41468.730	0.325	8658.177	0.007	B-	-3652.695	1.757	43	955481.489	0.348
2	23	21	44	Sc	-p	-37816.035	1.756	8557.381	0.040	B-	-267.449	1.890	43	959402.818	1.884
2	23	21	44	Sci		-35038.290	2.478	2777.745	3.020						
0	22	22	44	Ti	-a	-37548.586	0.700	8533.522	0.016	B-	-13740.507	7.299	43	959689.936	0.751
-2	21	23	44	V		-23808.079	7.265	8203.457	0.165	B-	-10386.180	51.745	43	974440.977	7.799
-2	21	23	44	Vxm	x	-23537.018	5.496	271.061	9.109						
-2	21	23	44	Vxi	-p	-21118.620	12.398	2689.459	14.370						
-4	20	24	44	Cr	x	-13421.899	51.232	7949.626	1.164	B-	-20882#	304#	43	985591.000	55.000
-6	19	25	44	Mn	x	7460#	300#	7457#	7#	B-	*		44	008009#	322#
0 17	31	14	45	Si	x	37090#	600#	7004#	13#	B-	21130#	781#	45	039818#	644#
15	30	15	45	P	x	15960#	500#	7456#	11#	B-	19301#	583#	45	017134#	537#
13	29	16	45	S	x	-3340#	300#	7867#	7#	B-	14922#	329#	44	996414#	322#
11	28	17	45	Cl	x	-18262.544	136.163	8181.599	3.026	B-	11508.257	136.164	44	980394.353	146.177
9	27	18	45	Ar	x	-29770.801	0.512	8419.953	0.011	B-	6844.842	0.731	44	968039.731	0.550
7	26	19	45	K	x	-36615.643	0.522	8554.675	0.012	B-	4196.587	0.637	44	960691.491	0.560
5	25	20	45	Ca		-40812.230	0.365	8630.547	0.008	B-	260.091	0.738	44	956186.270	0.392
3	24	21	45	Sc		-41072.321	0.663	8618.941	0.015	B-	-2062.055	0.509	44	955907.051	0.712

1	23	22	45	Ti		-39010.266	0.836	8555.732	0.019	B-	-7123.825	0.214	44	958120.758	0.897
1	23	22	45	Tii		-34291.126	3.150	4719.140	3.175						
-1	22	23	45	V		-31886.441	0.863	8380.039	0.019	B-	-12371.640	35.407	44	965768.498	0.926
-1	22	23	45	Vxi	-p	-27089.615	9.027	4796.826	9.068						
-3	21	24	45	Cr	x	-19514.801	35.397	8087.729	0.787	B-	-14535#	302#	44	979050.000	38.000
-5	20	25	45	Mn	x	-4980#	300#	7747#	7#	B-	-19388#	412#	44	994654#	322#
-7	19	26	45	Fe	-pp	14408#	283#	7299#	6#	B-	*		45	015467#	304#
0 16	31	15	46	P	x	22840#	500#	7320#	11#	B-	22200#	640#	46	024520#	537#
14	30	16	46	S	x	640#	400#	7785#	9#	B-	14375#	411#	46	000687#	429#
12	29	17	46	Cl	x	-13734.949	97.249	8080.776	2.114	B-	16036.306	97.277	45	985254.926	104.400
10	28	18	46	Ar	x	-29771.255	2.329	8412.383	0.051	B-	5642.675	2.439	45	968039.244	2.500
8	27	19	46	K	x	-35413.929	0.727	8518.043	0.016	B-	7725.680	2.349	45	961981.584	0.780
6	26	20	46	Ca		-43139.610	2.234	8668.985	0.049	B-	-1377.966	2.331	45	953687.726	2.398
4	25	21	46	Sc	-n	-41761.643	0.671	8622.021	0.015	B-	2366.626	0.667	45	955167.034	0.720
4	25	21	46	Sci		-36748.124	3.670	5013.519	3.730						
2	24	22	46	Ti		-44128.269	0.090	8656.462	0.002	B-	-7052.372	0.092	45	952626.356	0.097
2	24	22	46	Tii	+nn	-34961.792	7.000	9166.478	7.000						
2	24	22	46	Tij	+nn	-29976.792	6.000	14151.478	6.000						
0	23	23	46	V		-37075.897	0.134	8486.142	0.003	B-	-7604.326	11.454	45	960197.389	0.143
-2	22	24	46	Cr		-29471.570	11.453	8303.823	0.249	B-	-17053.823	87.383	45	968360.969	12.295
-2	22	24	46	Cri	-p	-20328.470	13.029	9143.100	17.347						
-4	21	25	46	Mn	x	-12417.748	86.629	7916.081	1.883	B-	-13628#	312#	45	986669.000	93.000
-4	21	25	46	Mni	-p	-7385.830	48.394	5031.917	99.230						
-6	20	26	46	Fe	x	1210#	300#	7603#	7#	B-	*		46	001299#	322#
0 17	32	15	47	P	x	28810#	600#	7209#	13#	B-	21610#	721#	47	030929#	644#
15	31	16	47	S	x	7200#	400#	7652#	9#	B-	16781#	447#	47	007730#	429#
13	30	17	47	Cl	x	-9580#	200#	7992#	4#	B-	15787#	200#	46	989715#	215#
11	29	18	47	Ar	x	-25367.274	1.211	8311.425	0.026	B-	10344.708	1.849	46	972767.112	1.300
9	28	19	47	K	x	-35711.982	1.397	8514.880	0.030	B-	6632.684	2.624	46	961661.612	1.500
7	27	20	47	Ca		-42344.665	2.221	8639.355	0.047	B-	1992.177	1.185	46	954541.134	2.384
5	26	21	47	Sc		-44336.842	1.931	8665.096	0.041	B-	600.769	1.929	46	952402.444	2.072
3	25	22	47	Ti		-44937.612	0.080	8661.232	0.002	B-	-2930.542	0.088	46	951757.491	0.085
1	24	23	47	V		-42007.070	0.110	8582.235	0.002	B-	-7443.977	5.198	46	954903.558	0.118
-1	23	24	47	Cr		-34563.093	5.197	8407.207	0.111	B-	-11996.717	32.094	46	962894.995	5.578
-3	22	25	47	Mn	x	-22566.376	31.671	8135.312	0.674	B-	-15437#	501#	46	975774.000	34.000
-3	22	25	47	Mni	-p	-15190.599	17.325	7375.777	36.100						
-5	21	26	47	Fe	x	-7130#	500#	7790#	11#	B-	-17750#	781#	46	992346#	537#
-7	20	27	47	Co	x	10620#	600#	7396#	13#	B-	*		47	011401#	644#
0 16	32	16	48	S	x	12390#	500#	7552#	10#	B-	16670#	707#	48	013301#	537#
14	31	17	48	Cl	x	-4280#	500#	7883#	10#	B-	18075#	500#	47	995405#	537#
12	30	18	48	Ar	x	-22354.927	16.767	8243.666	0.349	B-	9929.555	16.785	47	976001.000	18.000
10	29	19	48	K	x	-32284.482	0.773	8434.232	0.016	B-	11940.386	0.773	47	965341.184	0.830
8	28	20	48	Ca		-44224.868	0.018	8666.692	0.000	B-	279.215	4.950	47	952522.654	0.018
6	27	21	48	Sc		-44504.083	4.950	8656.210	0.103	B-	3988.868	4.950	47	952222.903	5.313
4	26	22	48	Ti		-48492.952	0.074	8723.012	0.002	B-	-4014.947	0.969	47	947940.677	0.079
2	25	23	48	V		-44478.005	0.972	8623.069	0.020	B-	-1656.692	7.375	47	952250.900	1.043
2	25	23	48	Vxi		-41459.155	0.232	3018.850	0.949						
0	24	24	48	Cr	+nn	-42821.313	7.311	8572.255	0.152	B-	-13524.669	9.916	47	954029.431	7.848
0	24	24	48	Crj	+nn	-34061.204	15.000	8760.109	16.687						
-2	23	25	48	Mn		-29296.644	6.699	8274.192	0.140	B-	-11288.068	92.461	47	968548.760	7.191
-2	23	25	48	Mni		-26259.920	6.700	3036.724	0.898						
-4	22	26	48	Fe	x	-18008.575	92.218	8022.725	1.921	B-	-19738#	509#	47	980667.000	99.000
-6	21	27	48	Co	x	1730#	500#	7595#	10#	B-	-16448#	656#	48	001857#	537#
-8	20	28	48	Ni	-pp	18178#	424#	7236#	9#	B-	*		48	019515#	455#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)	V/S
0 17	33	16	49	S	-n	20391#	583#	7400#	12#	B-	19652#	707#	49	021891#	626#
15	32	17	49	Cl	x	740#	400#	7785#	8#	B-	17800#	565#	49	000794#	429#
13	31	18	49	Ar	x	-17060#	400#	8132#	8#	B-	12551#	400#	48	981685#	429#
11	30	19	49	K	x	-29611.496	0.801	8372.275	0.016	B-	11688.507	0.821	48	968210.753	0.860
9	29	20	49	Ca	-n	-41300.003	0.178	8594.850	0.004	B-	5262.444	2.274	48	955662.625	0.190
7	28	21	49	Sc		-46562.447	2.268	8686.281	0.046	B-	2001.565	2.268	48	950013.159	2.434
5	27	22	49	Ti		-48564.012	0.078	8711.163	0.002	B-	-601.856	0.820	48	947864.391	0.084
3	26	23	49	V	-	-47962.157	0.824	8682.913	0.017	B-	-2629.805	2.349	48	948510.509	0.884
3	26	23	49	Vxi	-	-41530.604	4.001	6431.552	4.083						
1	25	24	49	Cr		-45332.352	2.202	8613.278	0.045	B-	-7712.427	0.233	48	951333.720	2.363
-1	24	25	49	Mn		-37619.925	2.214	8439.915	0.045	B-	-12869.196	24.320	48	959613.350	2.377

-1	24	25	49	Mni	-p	-32803.342	17.591	4816.583	17.730						
-3	23	26	49	Fe	x	-24750.730	24.219	8161.312	0.494	B-	-14971#	501#	48	973429.000	26.000
-5	22	27	49	Co	x	-9780#	500#	7840#	10#	B-	-18309#	781#	48	989501#	537#
-7	21	28	49	Ni	x	8530#	600#	7450#	12#	B-	*		49	009157#	644#
0 16	33	17	50	Cl	x	7700#	400#	7651#	8#	B-	20930#	640#	50	008266#	429#
14	32	18	50	Ar	x	-13230#	500#	8054#	10#	B-	12498#	500#	49	985797#	537#
12	31	19	50	K	x	-25727.853	7.731	8288.583	0.155	B-	13861.377	7.892	49	972380.015	8.300
10	30	20	50	Ca	x	-39589.230	1.584	8550.164	0.032	B-	4947.891	2.972	49	957499.215	1.700
8	29	21	50	Sc		-44537.121	2.515	8633.475	0.050	B-	6894.746	2.517	49	952187.436	2.700
6	28	22	50	Ti		-51431.867	0.082	8755.723	0.002	B-	-2208.627	0.058	49	944785.622	0.088
4	27	23	50	V		-49223.240	0.093	8695.903	0.002	B-	1038.124	0.055	49	947156.681	0.099
4	27	23	50	Vxi		-44410.705	0.279	4812.535	0.273						
2	26	24	50	Cr		-50261.364	0.094	8701.019	0.002	B-	-7634.478	0.067	49	946042.209	0.100
2	26	24	50	Cri	+nn	-41836.348	7.001	8425.016	7.001						
2	26	24	50	Crj	+nn	-37039.348	6.001	13222.016	6.001						
0	25	25	50	Mn		-42626.886	0.115	8532.682	0.002	B-	-8150.427	8.384	49	954238.157	0.123
0	25	25	50	Mnm		-42401.572	0.108	225.314	0.069						
-2	24	26	50	Fe	x	-34476.460	8.383	8354.027	0.168	B-	-16887.057	126.031	49	962988.000	9.000
-2	24	26	50	Fei	-p	-25998.954	10.242	8477.505	13.236						
-4	23	27	50	Co	x	-17589.403	125.752	8000.639	2.515	B-	-14130#	516#	49	981117.000	135.000
-4	23	27	50	Coi	-pp	-12746.702	14.624	4842.701	126.599						
-6	22	28	50	Ni	x	-3460#	500#	7702#	10#	B-	*		49	996286#	537#
0 17	34	17	51	Cl	x	14290#	700#	7530#	14#	B-	20780#	806#	51	015341#	751#
15	33	18	51	Ar	x	-6490#	400#	7922#	8#	B-	16026#	400#	50	993033#	429#
13	32	19	51	K	x	-22515.457	13.041	8221.335	0.256	B-	13816.853	13.052	50	975828.664	14.000
11	31	20	51	Ca	x	-36332.310	0.522	8476.914	0.010	B-	6918.043	2.569	50	960995.663	0.560
9	30	21	51	Sc		-43250.353	2.515	8597.221	0.049	B-	6482.612	2.561	50	953568.838	2.700
7	29	22	51	Ti		-49732.965	0.484	8708.991	0.009	B-	2470.140	0.482	50	946609.468	0.519
5	28	23	51	V		-52203.105	0.097	8742.085	0.002	B-	-752.391	0.149	50	943957.664	0.104
3	27	24	51	Cr		-51450.715	0.167	8711.992	0.003	B-	-3207.489	0.326	50	944765.388	0.178
3	27	24	51	Cri	-	-44837.697	5.001	6613.017	5.002						
1	26	25	51	Mn		-48243.225	0.304	8633.760	0.006	B-	-8054.036	1.431	50	948208.770	0.326
1	26	25	51	Mni	-p	-43792.588	1.512	4450.637	1.537						
-1	25	26	51	Fe	x	-40189.190	1.398	8460.498	0.027	B-	-12847.043	48.458	50	956855.132	1.501
-3	24	27	51	Co	x	-27342.146	48.438	8193.255	0.950	B-	-15692#	503#	50	970647.000	52.000
-3	24	27	51	Coi	-p	-20674.489	18.063	6667.658	51.696						
-5	23	28	51	Ni	x	-11650#	500#	7870#	10#	B-	*		50	987493#	537#
0 18	35	17	52	Cl	x	22360#	700#	7386#	13#	B-	23739#	922#	52	024004#	751#
16	34	18	52	Ar	x	-1380#	600#	7827#	12#	B-	15758#	601#	51	998519#	644#
14	33	19	52	K	x	-17137.628	33.534	8115.030	0.645	B-	17128.643	33.540	51	981602.000	36.000
12	32	20	52	Ca	x	-34266.272	0.671	8429.382	0.013	B-	6257.289	3.146	51	963213.646	0.720
10	31	21	52	Sc		-40523.560	3.074	8534.669	0.059	B-	8954.137	4.122	51	956496.170	3.300
8	30	22	52	Ti		-49477.698	2.747	8691.819	0.053	B-	1965.334	2.751	51	946883.509	2.948
6	29	23	52	V	-n	-51443.032	0.159	8714.569	0.003	B-	3976.476	0.160	51	944773.636	0.170
4	28	24	52	Cr		-55419.508	0.112	8775.995	0.002	B-	-4708.121	0.063	51	940504.714	0.120
2	27	25	52	Mn	-	-50711.387	0.129	8670.409	0.002	B-	-2379.291	0.153	51	945559.090	0.138
2	27	25	52	Mni	-	-47785.100	5.001	2926.286	5.000						
0	26	26	52	Fe	--	-48332.095	0.179	8609.608	0.003	B-	-13988.117	5.283	51	948113.364	0.192
0	26	26	52	Fem	--	-41371.431	0.293	6960.664	0.304						
0	26	26	52	Fej	+nn	-39775.792	5.916	8556.303	5.918						
-2	25	27	52	Co		-34343.979	5.282	8325.561	0.102	B-	-11784.123	83.071	51	963130.224	5.669
-2	25	27	52	Com		-33967.701	7.553	376.278	9.216						
-2	25	27	52	Coi	IT	-31419.701	7.814	2924.278	9.431						
-4	24	28	52	Ni	x	-22559.856	82.903	8083.898	1.594	B-	-20680#	606#	51	975781.000	89.000
-6	23	29	52	Cu	x	-1880#	600#	7671#	12#	B-	*		51	997982#	644#
0 17	35	18	53	Ar	x	6791#	699#	7677#	13#	B-	19086#	708#	53	007290#	750#
15	34	19	53	K	x	-12295.722	111.779	8022.849	2.109	B-	17091.985	120.047	52	986800.000	120.000
13	33	20	53	Ca	x	-29387.707	43.780	8330.578	0.826	B-	9381.848	47.222	52	968451.000	47.000
11	32	21	53	Sc		-38769.555	17.698	8492.833	0.334	B-	8111.878	17.932	52	958379.172	19.000
9	31	22	53	Ti	x	-46881.433	2.888	8631.126	0.054	B-	4970.242	4.239	52	949670.714	3.100
7	30	23	53	V	+p	-51851.675	3.103	8710.142	0.059	B-	3435.943	3.102	52	944334.940	3.331
5	29	24	53	Cr		-55287.618	0.116	8760.210	0.002	B-	-597.268	0.343	52	940646.304	0.124
3	28	25	53	Mn		-54690.350	0.346	8734.180	0.007	B-	-3742.866	1.697	52	941287.497	0.371
3	28	25	53	Mni	-	-47717.210	4.002	6973.140	4.015						
1	27	26	53	Fe		-50947.483	1.669	8648.798	0.031	B-	-8288.107	0.443	52	945305.629	1.792
-1	26	27	53	Co		-42659.376	1.727	8477.658	0.033	B-	-13028.549	25.210	52	954203.278	1.854
-1	26	27	53	Com		-39485.123	1.913	3174.253	0.949						

-1	26	27	53	Coi	IT	-38334.376	2.643	4325.000	2.000						
-3	25	28	53	Ni	x	-29630.827	25.150	8217.075	0.475	B-	-16491#	501#	52	968190.000	27.000
-5	24	29	53	Cu	x	-13140#	500#	7891#	9#	B-	*		52	985894#	537#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)	V/S
0 18	36	18	54	Ar	x	12560#	800#	7578#	15#	B-	17710#	894#	54	013484#	859#
16	35	19	54	K	x	-5150#	400#	7891#	7#	B-	20010#	403#	53	994471#	429#
14	34	20	54	Ca	x	-25160.587	48.438	8247.497	0.897	B-	9278.278	51.570	53	972989.000	52.000
12	33	21	54	Sc	x	-34438.865	17.699	8404.829	0.328	B-	11304.947	23.749	53	963028.359	19.000
10	32	22	54	Ti	x	-45743.812	15.835	8599.692	0.293	B-	4154.455	19.384	53	950892.000	17.000
8	31	23	54	V		-49898.267	11.180	8662.138	0.207	B-	7037.112	11.179	53	946432.009	12.001
6	30	24	54	Cr		-56935.379	0.132	8777.967	0.002	B-	-1377.133	1.005	53	938877.359	0.142
4	29	25	54	Mn	-p	-55558.247	1.007	8737.977	0.019	B-	696.369	1.059	53	940355.772	1.080
4	29	25	54	Mni		-49411.889	2.794	6146.358	2.967						
2	28	26	54	Fe		-56254.615	0.343	8736.385	0.006	B-	-8244.548	0.089	53	939608.189	0.368
2	28	26	54	Fej	-pp	-41386.607	20.000	14868.008	20.003						
0	27	27	54	Co		-48010.068	0.355	8569.220	0.007	B-	-8731.756	4.671	53	948459.075	0.380
0	27	27	54	Com		-47812.495	0.352	197.573	0.098						
-2	26	28	54	Ni	x	-39278.312	4.657	8393.033	0.086	B-	-18038#	400#	53	957833.000	5.000
-4	25	29	54	Cu	x	-21240#	400#	8045#	7#	B-	-15538#	454#	53	977198#	429#
-6	24	30	54	Zn	-pp	-5702#	217#	7742#	4#	B-	*		53	993879#	232#
0 17	36	19	55	K	x	470#	500#	7792#	9#	B-	19121#	525#	55	000505#	537#
15	35	20	55	Ca	x	-18650.375	160.217	8125.926	2.913	B-	12191.733	171.608	54	979978.000	172.000
13	34	21	55	Sc	x	-30842.108	61.479	8333.369	1.118	B-	10990.361	67.923	54	966889.637	66.000
11	33	22	55	Ti	x	-41832.469	28.876	8518.970	0.525	B-	7292.667	39.542	54	955091.000	31.000
9	32	23	55	V	x	-49125.136	27.013	8637.339	0.491	B-	5985.188	27.014	54	947262.000	29.000
7	31	24	55	Cr	-n	-55110.324	0.228	8731.936	0.004	B-	2602.218	0.322	54	940836.637	0.245
5	30	25	55	Mn		-57712.542	0.260	8765.025	0.005	B-	-231.120	0.179	54	938043.040	0.279
3	29	26	55	Fe		-57481.422	0.308	8746.598	0.006	B-	-3451.425	0.324	54	938291.158	0.330
3	29	26	55	Fei	-	-49848.134	6.006	7633.288	6.003						
1	28	27	55	Co		-54029.996	0.405	8669.620	0.007	B-	-8694.035	0.578	54	941996.416	0.434
-1	27	28	55	Ni	-	-45335.961	0.705	8497.323	0.013	B-	-13700.558	155.561	54	951329.846	0.757
-3	26	29	55	Cu	x	-31635.403	155.560	8233.997	2.828	B-	-17366#	429#	54	966038.000	167.000
-5	25	30	55	Zn	x	-14270#	400#	7904#	7#	B-	*		54	984681#	429#
0 18	37	19	56	K	x	7980#	600#	7663#	11#	B-	21491#	650#	56	008567#	644#
16	36	20	56	Ca	x	-13510.390	249.640	8033.165	4.458	B-	12005.458	360.203	55	985496.000	268.000
14	35	21	56	Sc	x	-25515.848	259.665	8233.578	4.637	B-	13907.147	278.327	55	972607.611	278.761
12	34	22	56	Ti		-39422.995	100.201	8467.950	1.789	B-	6760.405	188.184	55	957677.675	107.569
10	33	23	56	V		-46183.401	175.884	8574.701	3.141	B-	9101.727	175.885	55	950420.082	188.819
8	32	24	56	Cr	++	-55285.128	0.578	8723.261	0.010	B-	1626.538	0.552	55	940648.977	0.620
6	31	25	56	Mn	-n	-56911.666	0.293	8738.336	0.005	B-	3695.497	0.207	55	938902.816	0.314
4	30	26	56	Fe		-60607.163	0.268	8790.356	0.005	B-	-4566.645	0.410	55	934935.537	0.287
2	29	27	56	Co		-56040.518	0.475	8694.839	0.008	B-	-2132.869	0.373	55	939838.032	0.510
2	29	27	56	Coi	-	-52447.755	9.004	3592.762	9.009						
0	28	28	56	Ni		-53907.649	0.399	8642.781	0.007	B-	-15277.916	6.407	55	942127.761	0.428
0	28	28	56	Nij	+nn	-43963.711	4.015	9943.938	4.015						
-2	27	29	56	Cu	x	-38629.733	6.395	8355.991	0.114	B-	-13240#	400#	55	958529.278	6.864
-2	27	29	56	Cui	-p	-35098.990	10.025	3530.742	11.891						
-4	26	30	56	Zn	x	-25390#	400#	8106#	7#	B-	-21550#	640#	55	972743#	429#
-6	25	31	56	Ga	x	-3840#	500#	7707#	9#	B-	*		55	995878#	537#
0 19	38	19	57	K	x	14130#	600#	7563#	11#	B-	20689#	721#	57	015169#	644#
17	37	20	57	Ca	x	-6560#	400#	7912#	7#	B-	14820#	438#	56	992958#	429#
15	36	21	57	Sc	x	-21379.653	179.778	8158.167	3.154	B-	13022.196	273.325	56	977048.000	193.000
13	35	22	57	Ti	x	-34401.848	205.879	8372.901	3.612	B-	10033.215	222.647	56	963068.098	221.020
11	34	23	57	V	x	-44435.063	84.766	8535.197	1.487	B-	8089.921	84.786	56	952297.000	91.000
9	33	24	57	Cr	x	-52524.985	1.863	8663.400	0.033	B-	4961.295	2.395	56	943612.112	2.000
7	32	25	57	Mn		-57486.279	1.505	8736.715	0.026	B-	2695.737	1.522	56	938285.944	1.615
5	31	26	57	Fe		-60182.017	0.268	8770.283	0.005	B-	-836.359	0.449	56	935391.950	0.287
3	30	27	57	Co		-59345.658	0.516	8741.885	0.009	B-	-3261.697	0.642	56	936289.819	0.553
3	30	27	57	Coi	-p	-52092.336	0.423	7253.322	0.555						
1	29	28	57	Ni		-56083.961	0.566	8670.936	0.010	B-	-8774.947	0.439	56	939791.394	0.608
-1	28	29	57	Cu		-47309.014	0.501	8503.265	0.009	B-	-14759#	200#	56	949211.686	0.537
-1	28	29	57	Cui	-p	-42009.833	25.089	5299.181	25.089						
-3	27	30	57	Zn	x	-32550#	200#	8231#	4#	B-	-17140#	447#	56	965056#	215#
-5	26	31	57	Ga	x	-15410#	400#	7916#	7#	B-	*		56	983457#	429#
0 20	39	19	58	K	x	21930#	700#	7437#	12#	B-	23461#	860#	58	023543#	751#
18	38	20	58	Ca	x	-1530#	500#	7828#	9#	B-	13949#	535#	57	998357#	537#

16	37	21	58	Sc	x	-15479.569	190.025	8054.944	3.276	B-	15438.099	264.051	57 983382.000	204.000
14	36	22	58	Ti	x	-30917.668	183.340	8307.629	3.161	B-	9512.915	206.867	57 966808.519	196.823
12	35	23	58	V	x	-40430.584	95.816	8458.156	1.652	B-	11561.224	95.862	57 956595.985	102.862
10	34	24	58	Cr	x	-51991.808	2.981	8643.999	0.051	B-	3835.761	4.023	57 944184.501	3.200
8	33	25	58	Mn	x	-55827.568	2.701	8696.644	0.047	B-	6327.703	2.720	57 940066.643	2.900
6	32	26	58	Fe		-62155.271	0.316	8792.253	0.005	B-	-2307.979	1.139	57 933273.575	0.339
4	31	27	58	Co		-59847.292	1.153	8738.972	0.020	B-	381.579	1.107	57 935751.292	1.237
4	31	27	58	Coi	-	-54094.863	8.006	5752.429	8.081					
2	30	28	58	Ni		-60228.871	0.349	8732.062	0.006	B-	-8561.020	0.443	57 935341.650	0.374
2	30	28	58	Nii	+nn	-51399.083	40.002	8829.788	40.000					
2	30	28	58	Nij	+nn	-45690.083	7.009	14538.788	7.000					
0	29	29	58	Cu		-51667.851	0.564	8570.970	0.010	B-	-9368.980	50.002	57 944532.283	0.604
-2	28	30	58	Zn	--	-42298.871	50.001	8395.947	0.862	B-	-18759#	304#	57 954590.296	53.678
-4	27	31	58	Ga	x	-23540#	300#	8059#	5#	B-	-15960#	583#	57 974729#	322#
-6	26	32	58	Ge	x	-7580#	500#	7770#	9#	B-	*		57 991863#	537#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 21	40	19	59	K	x	28750#	800#	7332#	14#	B-	22940#	1000#	59 030864#	859#
19	39	20	59	Ca	x	5810#	600#	7708#	10#	B-	16639#	650#	59 006237#	644#
17	38	21	59	Sc	x	-10829.550	249.640	7976.407	4.231	B-	15050#	390#	58 988374.000	268.000
15	37	22	59	Ti	x	-25880#	300#	8218#	5#	B-	11731#	330#	58 972217#	322#
13	36	23	59	V	x	-37610.617	137.400	8403.803	2.329	B-	10505.314	137.402	58 959623.343	147.505
11	35	24	59	Cr	x	-48115.931	0.671	8568.599	0.011	B-	7409.398	2.423	58 948345.426	0.720
9	34	25	59	Mn	x	-55525.328	2.329	8680.922	0.039	B-	5139.629	2.352	58 940391.111	2.500
7	33	26	59	Fe		-60664.957	0.330	8754.775	0.006	B-	1564.880	0.369	58 934873.492	0.354
5	32	27	59	Co		-62229.838	0.397	8768.038	0.007	B-	-1073.005	0.194	58 933193.524	0.426
3	31	28	59	Ni		-61156.833	0.351	8736.591	0.006	B-	-4798.379	0.397	58 934345.442	0.376
3	31	28	59	Nii	+n	-53814.895	2.129	7341.938	2.101					
1	30	29	59	Cu		-56358.454	0.528	8642.003	0.009	B-	-9142.776	0.602	58 939496.713	0.566
-1	29	30	59	Zn		-47215.678	0.759	8473.780	0.013	B-	-13456#	170#	58 949311.887	0.814
-3	28	31	59	Ga	x	-33760#	170#	8232#	3#	B-	-17390#	434#	58 963757#	183#
-5	27	32	59	Ge	x	-16370#	400#	7924#	7#	B-	*		58 982426#	429#
0 20	40	20	60	Ca	x	11000#	700#	7627#	12#	B-	15550#	860#	60 011809#	751#
18	39	21	60	Sc	x	-4550#	500#	7873#	8#	B-	17549#	555#	59 995115#	537#
16	38	22	60	Ti	x	-22099.698	240.325	8152.786	4.005	B-	10987.704	301.431	59 976275.000	258.000
14	37	23	60	V	x	-33087.402	181.946	8322.875	3.032	B-	13821.099	181.950	59 964479.215	195.327
12	36	24	60	Cr	x	-46908.500	1.118	8540.188	0.019	B-	6059.446	2.583	59 949641.656	1.200
10	35	25	60	Mn	x	-52967.946	2.329	8628.139	0.039	B-	8445.228	4.126	59 943136.574	2.500
8	34	26	60	Fe	-nn	-61413.174	3.406	8755.854	0.057	B-	237.263	3.411	59 934070.249	3.656
6	33	27	60	Co	-n	-61650.437	0.403	8746.769	0.007	B-	2822.806	0.212	59 933815.536	0.433
4	32	28	60	Ni		-64473.243	0.353	8780.777	0.006	B-	-6127.981	1.573	59 930785.129	0.378
4	32	28	60	Nii	-p	-53346.867	4.020	11126.376	4.005					
2	31	29	60	Cu	-	-58345.262	1.613	8665.605	0.027	B-	-4170.792	1.629	59 937363.787	1.731
2	31	29	60	Cui		-55804.132	5.157	2541.130	5.380					
0	30	30	60	Zn		-54174.470	0.548	8583.052	0.009	B-	-14584#	200#	59 941841.317	0.588
0	30	30	60	Znj	-pp	-46806.971	24.003	7367.499	24.004					
-2	29	31	60	Ga	x	-39590#	200#	8327#	3#	B-	-12060#	361#	59 957498#	215#
-4	28	32	60	Ge	x	-27530#	300#	8113#	5#	B-	-21890#	500#	59 970445#	322#
-6	27	33	60	As	x	-5640#	400#	7735#	7#	B-	*		59 993945#	429#
0 21	41	20	61	Ca	x	19010#	800#	7503#	13#	B-	18510#	1000#	61 020408#	859#
19	40	21	61	Sc	x	500#	600#	7794#	10#	B-	16870#	671#	61 000537#	644#
17	39	22	61	Ti	x	-16370#	300#	8058#	5#	B-	13807#	381#	60 982426#	322#
15	38	23	61	V	x	-30177.121	234.920	8271.042	3.851	B-	12319.381	234.927	60 967603.529	252.196
13	37	24	61	Cr	x	-42496.502	1.863	8460.173	0.031	B-	9245.628	2.982	60 954378.130	2.000
11	36	25	61	Mn	x	-51742.130	2.329	8598.916	0.038	B-	7178.373	3.497	60 944452.541	2.500
9	35	26	61	Fe	x	-58920.503	2.608	8703.769	0.043	B-	3977.676	2.740	60 936746.241	2.800
7	34	27	61	Co	p2n	-62898.179	0.839	8756.151	0.014	B-	1323.850	0.790	60 932476.031	0.901
5	33	28	61	Ni		-64222.029	0.355	8765.028	0.006	B-	-2237.966	0.962	60 931054.819	0.381
3	32	29	61	Cu	p2n	-61984.063	0.951	8715.515	0.016	B-	-5635.157	15.903	60 933457.375	1.020
3	32	29	61	Cui	-	-55610.621	7.009	6373.442	7.066					
1	31	30	61	Zn		-56348.906	15.899	8610.310	0.261	B-	-9214.244	37.679	60 939506.964	17.068
-1	30	31	61	Ga		-47134.662	37.994	8446.431	0.623	B-	-13345#	302#	60 949398.861	40.787
-1	30	31	61	Gai	-p	-43775.499	30.005	3359.163	48.412					
-3	29	32	61	Ge	x	-33790#	300#	8215#	5#	B-	-16590#	424#	60 963725#	322#
-5	28	33	61	As	x	-17200#	300#	7930#	5#	B-	*		60 981535#	322#
0 20	41	21	62	Sc	x	7310#	600#	7688#	10#	B-	19510#	721#	62 007848#	644#
18	40	22	62	Ti	x	-12200#	400#	7990#	6#	B-	13013#	479#	61 986903#	429#

16	39	23	62	V	x	-25213.164	264.287	8187.756	4.263	B-	15639.448	264.309	61 972932.556	283.723
14	38	24	62	Cr	x	-40852.611	3.447	8427.387	0.056	B-	7671.353	7.395	61 956142.920	3.700
12	37	25	62	Mn	IT	-48523.965	6.542	8538.500	0.106	B-	10354.092	7.114	61 947907.384	7.023
12	37	25	62	Mnm	x	-48180.965	2.608	343.000	6.000					
10	36	26	62	Fe	x	-58878.057	2.794	8692.883	0.045	B-	2546.343	18.783	61 936791.809	3.000
8	35	27	62	Co	+	-61424.399	18.574	8721.335	0.300	B-	5322.040	18.570	61 934058.198	19.940
6	34	28	62	Ni		-66746.440	0.425	8794.556	0.007	B-	-3958.897	0.475	61 928344.753	0.455
4	33	29	62	Cu	-	-62787.543	0.637	8718.084	0.010	B-	-1619.455	0.651	61 932594.803	0.683
4	33	29	62	Cui	-	-58174.032	6.015	4613.511	6.019					
2	32	30	62	Zn		-61168.088	0.615	8679.345	0.010	B-	-9181.067	0.376	61 934333.359	0.660
0	31	31	62	Ga		-51987.022	0.637	8518.645	0.010	B-	-9847#	140#	61 944189.639	0.684
-2	30	32	62	Ge	x	-42140#	140#	8347#	2#	B-	-17720#	331#	61 954761#	150#
-4	29	33	62	As	x	-24420#	300#	8049#	5#	B-	*		61 973784#	322#
0 21	42	21	63	Sc	x	13070#	700#	7603#	11#	B-	18930#	860#	63 014031#	751#
19	41	22	63	Ti	x	-5860#	500#	7891#	8#	B-	15880#	605#	62 993709#	537#
17	40	23	63	V	x	-21740.141	339.995	8130.781	5.397	B-	14438.159	347.672	62 976661.000	365.000
15	39	24	63	Cr	x	-36178.299	72.657	8347.540	1.153	B-	10708.761	72.752	62 961161.000	78.000
13	38	25	63	Mn	x	-46887.061	3.726	8505.102	0.059	B-	8748.568	5.692	62 949664.672	4.000
11	37	26	63	Fe		-55635.629	4.302	8631.550	0.068	B-	6215.924	19.067	62 940272.698	4.618
9	36	27	63	Co		-61851.553	18.575	8717.797	0.295	B-	3661.339	18.570	62 933599.630	19.941
7	35	28	63	Ni		-65512.891	0.426	8763.495	0.007	B-	66.977	0.015	62 929669.021	0.457
5	34	29	63	Cu		-65579.868	0.426	8752.140	0.007	B-	-3366.439	1.545	62 929597.119	0.457
3	33	30	63	Zn		-62213.429	1.560	8686.287	0.025	B-	-5666.329	2.033	62 933211.140	1.674
3	33	30	63	Zni	-	-56723.460	6.015	5489.969	6.196					
1	32	31	63	Ga	x	-56547.100	1.304	8583.927	0.021	B-	-9625.879	37.283	62 939294.194	1.400
-1	31	32	63	Ge	x	-46921.221	37.260	8418.717	0.591	B-	-13421#	204#	62 949628.000	40.000
-3	30	33	63	As	x	-33500#	200#	8193#	3#	B-	-16650#	539#	62 964036#	215#
-5	29	34	63	Se	x	-16850#	500#	7917#	8#	B-	*		62 981911#	537#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 20	42	22	64	Ti	x	-1480#	600#	7826#	9#	B-	14840#	721#	63 998411#	644#
18	41	23	64	V	x	-16320#	400#	8045#	6#	B-	17320#	500#	63 982480#	429#
16	40	24	64	Cr	x	-33639.978	299.941	8303.563	4.687	B-	9349.062	299.962	63 963886.000	322.000
14	39	25	64	Mn	x	-42989.040	3.540	8437.418	0.055	B-	11980.512	6.140	63 953849.369	3.800
12	38	26	64	Fe	x	-54969.552	5.017	8612.389	0.078	B-	4822.890	20.625	63 940987.761	5.386
10	37	27	64	Co	+	-59792.442	20.005	8675.522	0.313	B-	7306.592	20.000	63 935810.176	21.476
10	37	27	64	Com		-59685.675	4.058	106.767	20.413					
8	36	28	64	Ni		-67099.034	0.463	8777.464	0.007	B-	-1674.616	0.205	63 927966.228	0.497
6	35	29	64	Cu		-65424.418	0.427	8739.074	0.007	B-	579.600	0.645	63 929764.001	0.458
4	34	30	64	Zn		-66004.018	0.644	8735.906	0.010	B-	-7171.191	1.482	63 929141.775	0.690
2	33	31	64	Ga		-58832.827	1.429	8611.632	0.022	B-	-4517.324	3.990	63 936840.365	1.533
2	33	31	64	Gai		-56925.790	2.490	1907.037	2.156					
0	32	32	64	Ge	x	-54315.503	3.726	8528.824	0.058	B-	-14783#	203#	63 941689.912	4.000
-2	31	33	64	As	-p	-39532#	203#	8286#	3#	B-	-12673#	540#	63 957560#	218#
-4	30	34	64	Se	x	-26860#	500#	8075#	8#	B-	*		63 971165#	537#
0 21	43	22	65	Ti	x	5210#	700#	7726#	11#	B-	17320#	860#	65 005593#	751#
19	42	23	65	V	x	-12110#	500#	7981#	8#	B-	16200#	539#	64 986999#	537#
17	41	24	65	Cr	x	-28310#	200#	8218#	3#	B-	12657#	200#	64 969608#	215#
15	40	25	65	Mn	x	-40967.344	3.726	8400.682	0.057	B-	10250.558	6.326	64 956019.749	4.000
13	39	26	65	Fe	x	-51217.902	5.112	8546.347	0.079	B-	7967.304	5.520	64 945015.323	5.487
11	38	27	65	Co	x	-59185.205	2.083	8656.885	0.032	B-	5940.591	2.138	64 936462.071	2.235
9	37	28	65	Ni	-n	-65125.796	0.483	8736.242	0.007	B-	2137.881	0.700	64 930084.585	0.518
7	36	29	65	Cu		-67263.677	0.643	8757.097	0.010	B-	-1351.653	0.356	64 927789.475	0.690
5	35	30	65	Zn		-65912.025	0.646	8724.266	0.010	B-	-3254.538	0.630	64 929240.534	0.693
3	34	31	65	Ga		-62657.487	0.791	8662.160	0.012	B-	-6179.263	2.305	64 932734.424	0.849
1	33	32	65	Ge		-56478.223	2.165	8555.058	0.033	B-	-9541.167	84.794	64 939368.136	2.323
-1	32	33	65	As	x	-46937.056	84.766	8396.235	1.304	B-	-13917#	312#	64 949611.000	91.000
-1	32	33	65	Asi	-p	-43451.532	10.672	3485.524	85.435					
-3	31	34	65	Se	x	-33020#	300#	8170#	5#	B-	-16529#	583#	64 964552#	322#
-5	30	35	65	Br	x	-16490#	500#	7904#	8#	B-	*		64 982297#	537#
0 20	43	23	66	V	x	-6300#	500#	7894#	8#	B-	18840#	583#	65 993237#	537#
18	42	24	66	Cr	x	-25140#	300#	8168#	5#	B-	11610#	300#	65 973011#	322#
16	41	25	66	Mn	x	-36750.392	11.178	8331.799	0.169	B-	13317.454	11.906	65 960546.833	12.000
14	40	26	66	Fe	x	-50067.847	4.099	8521.724	0.062	B-	6340.694	14.561	65 946249.958	4.400
12	39	27	66	Co	x	-56408.541	13.972	8605.942	0.212	B-	9597.752	14.042	65 939442.943	15.000
10	38	28	66	Ni	x	-66006.293	1.397	8739.509	0.021	B-	251.996	1.541	65 929139.333	1.500
8	37	29	66	Cu		-66258.289	0.649	8731.473	0.010	B-	2640.939	0.925	65 928868.804	0.696

6	36	30	66	Zn		-68899.229	0.744	8759.633	0.011	B-	-5175.500	0.800	65 926033.639	0.798	
4	35	31	66	Ga	-	-63723.729	1.092	8669.363	0.017	B-	-2116.688	2.638	65 931589.766	1.172	
4	35	31	66	Gai	-	-59873.821	6.046	3849.908	6.053						
2	34	32	66	Ge	x	-61607.041	2.401	8625.438	0.036	B-	-9581.957	6.168	65 933862.124	2.577	
0	33	33	66	As	x	-52025.084	5.682	8468.403	0.086	B-	-10365#	200#	65 944148.778	6.100	
-2	32	34	66	Se	x	-41660#	200#	8300#	3#	B-	-18091#	447#	65 955276#	215#	
-4	31	35	66	Br	x	-23570#	400#	8014#	6#	B-	*		65 974697#	429#	
0 21	44	23	67	V	x	-1744#	600#	7829#	9#	B-	17526#	721#	66 998128#	644#	
19	43	24	67	Cr	x	-19270#	400#	8079#	6#	B-	14311#	447#	66 979313#	429#	
17	42	25	67	Mn	x	-33580#	200#	8281#	3#	B-	12128#	200#	66 963950#	215#	
15	41	26	67	Fe	x	-45708.416	3.819	8449.936	0.057	B-	9613.368	7.490	66 950930.000	4.100	
13	40	27	67	Co	x	-55321.783	6.443	8581.742	0.096	B-	8420.905	7.061	66 940609.625	6.917	
11	39	28	67	Ni	x	-63742.688	2.888	8695.750	0.043	B-	3576.865	3.022	66 931569.413	3.100	
9	38	29	67	Cu		-67319.553	0.892	8737.460	0.013	B-	560.823	0.830	66 927729.490	0.957	
7	37	30	67	Zn		-67880.376	0.755	8734.153	0.011	B-	-1001.220	1.120	66 927127.422	0.810	
5	36	31	67	Ga		-66879.156	1.176	8707.533	0.018	B-	-4205.438	4.407	66 928202.276	1.262	
3	35	32	67	Ge		-62673.718	4.319	8633.088	0.064	B-	-6086.486	4.342	66 932716.999	4.636	
1	34	33	67	As		-56587.232	0.443	8530.569	0.007	B-	-10006.938	67.069	66 939251.110	0.475	
-1	33	34	67	Se	x	-46580.294	67.068	8369.534	1.001	B-	-14051#	307#	66 949994.000	72.000	
-3	32	35	67	Br	x	-32530#	300#	8148#	4#	B-	-16978#	520#	66 965078#	322#	
-5	31	36	67	Kr	-pp	-15552#	424#	7883#	6#	B-	*		66 983305#	455#	
0 20	44	24	68	Cr	x	-15690#	500#	8026#	7#	B-	13230#	583#	67 983156#	537#	
18	43	25	68	Mn	x	-28920#	300#	8209#	4#	B-	14977#	356#	67 968953#	322#	
16	42	26	68	Fe	x	-43897#	193#	8418#	3#	B-	7746#	193#	67 952875#	207#	
14	41	27	68	Co		-51642.591	3.859	8520.130	0.057	B-	11821.232	4.876	67 944559.401	4.142	
12	40	28	68	Ni	x	-63463.822	2.981	8682.467	0.044	B-	2103.221	3.375	67 931868.787	3.200	
10	39	29	68	Cu	x	-65567.043	1.584	8701.891	0.023	B-	4440.111	1.765	67 929610.887	1.700	
8	38	30	68	Zn		-70007.154	0.778	8755.682	0.011	B-	-2921.100	1.200	67 924844.232	0.835	
6	37	31	68	Ga	-	-67086.054	1.430	8701.219	0.021	B-	-107.256	2.359	67 927980.161	1.535	
4	36	32	68	Ge	x	-66978.799	1.876	8688.137	0.028	B-	-8084.271	2.632	67 928095.305	2.014	
2	35	33	68	As		-58894.527	1.846	8557.746	0.027	B-	-4705.079	1.911	67 936774.127	1.981	
0	34	34	68	Se	x	-54189.449	0.496	8477.048	0.007	B-	-15398#	259#	67 941825.236	0.532	
-2	33	35	68	Br	-p	-38791#	259#	8239#	4#	B-	-13165#	563#	67 958356#	278#	
-4	32	36	68	Kr	x	-25626#	500#	8034#	7#	B-	*		67 972489#	537#	
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 21	45	24	69	Cr	x	-9630#	500#	7939#	7#	B-	15730#	640#	68 989662#	537#	
19	44	25	69	Mn	x	-25360#	400#	8155#	6#	B-	13839#	447#	68 972775#	429#	
17	43	26	69	Fe	x	-39199#	200#	8345#	3#	B-	11186#	218#	68 957918#	215#	
15	42	27	69	Co	x	-50385.447	85.697	8495.406	1.242	B-	9593.208	85.778	68 945909.000	92.000	
15	42	27	69	Com		-50213.451	13.463	171.996	86.748						
13	41	28	69	Ni	x	-59978.656	3.726	8623.100	0.054	B-	5757.565	3.979	68 935610.267	4.000	
11	40	29	69	Cu	x	-65736.221	1.397	8695.204	0.020	B-	2681.685	1.607	68 929429.267	1.500	
9	39	30	69	Zn	-n	-68417.906	0.795	8722.731	0.012	B-	909.916	1.423	68 926550.360	0.853	
7	38	31	69	Ga		-69327.823	1.197	8724.580	0.017	B-	-2227.145	0.550	68 925573.524	1.285	
5	37	32	69	Ge		-67100.678	1.317	8680.964	0.019	B-	-3985.908	18.142	68 927964.463	1.414	
3	36	33	69	As		-63114.770	18.119	8611.859	0.263	B-	-6680.054	18.173	68 932243.511	19.452	
1	35	34	69	Se		-56434.715	1.490	8503.708	0.022	B-	-10175.237	42.029	68 939414.844	1.599	
-1	34	35	69	Br	-p	-46259.478	42.003	8344.903	0.609	B-	-14119#	303#	68 950338.410	45.091	
-1	34	35	69	Bri	-p	-42771.344	18.686	3488.133	45.966						
-3	33	36	69	Kr	x	-32140#	300#	8129#	4#	B-	*		68 965496#	322#	
0 22	46	24	70	Cr	x	-5640#	600#	7884#	9#	B-	14810#	781#	69 993945#	644#	
20	45	25	70	Mn	x	-20450#	500#	8084#	7#	B-	16440#	583#	69 978046#	537#	
18	44	26	70	Fe	x	-36890#	300#	8308#	4#	B-	9635#	300#	69 960397#	322#	
16	43	27	70	Co	x	-46524.963	10.992	8434.198	0.157	B-	12688.905	11.199	69 950053.400	11.800	
14	42	28	70	Ni	x	-59213.868	2.144	8604.292	0.031	B-	3762.512	2.401	69 936431.300	2.301	
12	41	29	70	Cu	x	-62976.381	1.082	8646.865	0.015	B-	6588.370	2.202	69 932392.078	1.161	
10	40	30	70	Zn		-69564.751	1.918	8729.809	0.027	B-	-654.598	1.574	69 925319.171	2.058	
8	39	31	70	Ga		-68910.153	1.201	8709.281	0.017	B-	1651.883	1.452	69 926021.911	1.288	
6	38	32	70	Ge		-70562.036	0.820	8721.703	0.012	B-	-6228.063	1.620	69 924248.542	0.880	
4	37	33	70	As	x	-64333.973	1.397	8621.554	0.020	B-	-2405.122	1.945	69 930934.642	1.500	
2	36	34	70	Se		-61928.851	1.354	8576.019	0.019	B-	-10503.224	14.965	69 933516.646	1.453	
0	35	35	70	Br	x	-51425.627	14.904	8414.796	0.213	B-	-10325#	201#	69 944792.321	16.000	
-2	34	36	70	Kr	x	-41100#	200#	8256#	3#	B-	*		69 955877#	215#	
0 21	46	25	71	Mn	x	-16620#	500#	8030#	7#	B-	15310#	640#	70 982158#	537#	
19	45	26	71	Fe	x	-31930#	400#	8235#	6#	B-	12440#	613#	70 965722#	429#	
17	44	27	71	Co	x	-44369.930	465.030	8398.734	6.550	B-	11036.305	465.035	70 952366.923	499.230	

15	43	28	71	Ni	x	-55406.236	2.237	8543.156	0.032	B-	7304.899	2.688	70	940518.962	2.401
13	42	29	71	Cu	x	-62711.134	1.490	8635.023	0.021	B-	4617.652	3.044	70	932676.831	1.600
11	41	30	71	Zn		-67328.786	2.654	8689.042	0.037	B-	2810.340	2.775	70	927719.578	2.849
11	41	30	71	Znm		-67171.117	2.357	157.670	1.290						
9	40	31	71	Ga		-70139.127	0.811	8717.605	0.011	B-	-232.470	0.093	70	924702.554	0.870
7	39	32	71	Ge		-69906.657	0.815	8703.312	0.011	B-	-2013.400	4.082	70	924952.120	0.874
5	38	33	71	As	-	-67893.257	4.163	8663.935	0.059	B-	-4746.742	5.014	70	927113.594	4.469
3	37	34	71	Se	x	-63146.515	2.794	8586.061	0.039	B-	-6644.088	6.082	70	932209.431	3.000
1	36	35	71	Br		-56502.426	5.402	8481.463	0.076	B-	-10175.215	128.845	70	939342.153	5.799
-1	35	36	71	Kr		-46327.211	128.769	8327.131	1.814	B-	-14037#	420#	70	950265.695	138.238
-3	34	37	71	Rb	x	-32290#	400#	8118#	6#	B-	*		70	965335#	429#
0 22	47	25	72	Mn	x	-11170#	600#	7955#	8#	B-	18080#	781#	71	988009#	644#
20	46	26	72	Fe	x	-29250#	500#	8195#	7#	B-	11050#	583#	71	968599#	537#
18	45	27	72	Co	x	-40300#	300#	8338#	4#	B-	13926#	300#	71	956736#	322#
16	44	28	72	Ni	x	-54226.068	2.237	8520.212	0.031	B-	5556.938	2.637	71	941785.924	2.401
14	43	29	72	Cu	x	-59783.006	1.397	8586.526	0.019	B-	8362.488	2.558	71	935820.306	1.500
12	42	30	72	Zn	x	-68145.495	2.142	8691.805	0.030	B-	442.789	2.293	71	926842.806	2.300
10	41	31	72	Ga		-68588.284	0.818	8687.089	0.011	B-	3997.626	0.822	71	926367.452	0.878
8	40	32	72	Ge		-72585.910	0.076	8731.746	0.001	B-	-4356.102	4.082	71	922075.824	0.081
6	39	33	72	As	-	-68229.808	4.083	8660.379	0.057	B-	-361.619	4.528	71	926752.291	4.383
4	38	34	72	Se	x	-67868.189	1.956	8644.490	0.027	B-	-8806.438	2.208	71	927140.506	2.100
2	37	35	72	Br	x	-59061.750	1.025	8511.313	0.014	B-	-5121.168	8.076	71	936594.606	1.100
0	36	36	72	Kr	x	-53940.582	8.011	8429.319	0.111	B-	-15611#	500#	71	942092.406	8.600
-2	35	37	72	Rb	x	-38330#	500#	8202#	7#	B-	*		71	958851#	537#
0 23	48	25	73	Mn	x	-6700#	600#	7895#	8#	B-	17289#	781#	72	992807#	644#
21	47	26	73	Fe	x	-23990#	500#	8121#	7#	B-	13980#	583#	72	974246#	537#
19	46	27	73	Co	x	-37970#	300#	8302#	4#	B-	12139#	300#	72	959238#	322#
17	45	28	73	Ni	x	-50108.159	2.423	8457.653	0.033	B-	8879.286	3.104	72	946206.681	2.601
15	44	29	73	Cu		-58987.445	1.942	8568.570	0.027	B-	6605.966	2.691	72	936674.376	2.084
13	43	30	73	Zn	x	-65593.411	1.863	8648.345	0.026	B-	4105.933	2.506	72	929582.580	2.000
11	42	31	73	Ga	x	-69699.343	1.677	8693.874	0.023	B-	1598.189	1.678	72	925174.680	1.800
9	41	32	73	Ge		-71297.532	0.057	8705.050	0.001	B-	-344.776	3.853	72	923458.954	0.061
7	40	33	73	As		-70952.757	3.853	8689.610	0.053	B-	-2725.360	7.399	72	923829.086	4.136
5	39	34	73	Se		-68227.396	7.424	8641.559	0.102	B-	-4581.610	10.028	72	926754.881	7.969
3	38	35	73	Br		-63645.787	6.741	8568.080	0.092	B-	-7094.029	9.419	72	931673.441	7.237
1	37	36	73	Kr	x	-56551.758	6.578	8460.185	0.090	B-	-10540.147	41.321	72	939289.193	7.061
-1	36	37	73	Rb	-p	-46011.611	40.794	8305.082	0.559	B-	-14061#	403#	72	950604.506	43.794
-1	36	37	73	Rbi	-p	-42808.611	19.600	3203.000	43.818						
-3	35	38	73	Sr	x	-31950#	401#	8102#	5#	B-	*		72	965700#	430#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 22	48	26	74	Fe	x	-20660#	500#	8076#	7#	B-	12881#	640#	73	977821#	537#
20	47	27	74	Co	x	-33540#	400#	8239#	5#	B-	15160#	447#	73	963993#	429#
18	46	28	74	Ni	x	-48700#	200#	8433#	3#	B-	7306#	200#	73	947718#	215#
16	45	29	74	Cu	x	-56006.213	6.148	8521.563	0.083	B-	9750.508	6.642	73	939874.860	6.600
14	44	30	74	Zn	x	-65756.720	2.515	8642.755	0.034	B-	2292.906	3.910	73	929407.260	2.700
12	43	31	74	Ga	x	-68049.626	2.994	8663.168	0.040	B-	5372.825	2.994	73	926945.725	3.214
10	42	32	74	Ge		-73422.451	0.013	8725.201	0.000	B-	-2562.387	1.693	73	921177.760	0.013
8	41	33	74	As		-70860.064	1.693	8680.002	0.023	B-	1353.147	1.693	73	923928.596	1.817
6	40	34	74	Se		-72213.210	0.015	8687.716	0.000	B-	-6925.049	5.835	73	922475.933	0.015
4	39	35	74	Br		-65288.161	5.835	8583.562	0.079	B-	-2956.317	6.173	73	929910.279	6.264
2	38	36	74	Kr		-62331.844	2.013	8533.039	0.027	B-	-10415.828	3.424	73	933084.016	2.161
0	37	37	74	Rb		-51916.016	3.027	8381.712	0.041	B-	-11089#	100#	73	944265.867	3.249
-2	36	38	74	Sr	x	-40827#	100#	8221#	1#	B-	*		73	956170#	107#
0 23	49	26	75	Fe	x	-14700#	600#	7996#	8#	B-	15861#	721#	74	984219#	644#
21	48	27	75	Co	x	-30560#	400#	8197#	5#	B-	13680#	447#	74	967192#	429#
19	47	28	75	Ni	x	-44240#	200#	8369#	3#	B-	10230#	200#	74	952506#	215#
17	46	29	75	Cu		-54470.219	0.718	8495.080	0.010	B-	8088.697	2.084	74	941523.817	0.770
15	45	30	75	Zn	x	-62558.916	1.956	8592.498	0.026	B-	5901.723	2.068	74	932840.244	2.100
13	44	31	75	Ga	x	-68460.639	0.671	8660.756	0.009	B-	3396.334	0.673	74	926504.484	0.720
11	43	32	75	Ge	-n	-71856.973	0.052	8695.610	0.001	B-	1177.230	0.885	74	922858.370	0.055
9	42	33	75	As		-73034.203	0.884	8700.875	0.012	B-	-864.714	0.882	74	921594.562	0.948
7	41	34	75	Se		-72169.489	0.073	8678.914	0.001	B-	-3062.469	4.285	74	922522.870	0.078
5	40	35	75	Br	x	-69107.020	4.285	8627.650	0.057	B-	-4783.388	9.167	74	925810.566	4.600
3	39	36	75	Kr	x	-64323.632	8.104	8553.440	0.108	B-	-7104.930	8.189	74	930945.744	8.700
1	38	37	75	Rb	x	-57218.702	1.180	8448.276	0.016	B-	-10600.000	220.000	74	938573.200	1.266
-1	37	38	75	Sr	-	-46618.702	220.003	8296.512	2.933	B-	-14799#	372#	74	949952.767	236.183

-3	36	39	75 Y	x	-31820#	300#	8089#	4#	B-	*		74 965840#	322#
0 24	50	26	76 Fe	x	-10590#	600#	7943#	8#	B-	15070#	781#	75 988631#	644#
22	49	27	76 Co	x	-25660#	500#	8131#	7#	B-	16530#	583#	75 972453#	537#
20	48	28	76 Ni	x	-42190#	300#	8338#	4#	B-	8791#	300#	75 954707#	322#
18	47	29	76 Cu	x	-50981.627	0.913	8443.602	0.012	B-	11321.396	1.718	75 945268.974	0.980
16	46	30	76 Zn		-62303.024	1.456	8582.274	0.019	B-	3993.624	2.438	75 933114.956	1.562
14	45	31	76 Ga	x	-66296.648	1.956	8624.527	0.026	B-	6916.250	1.956	75 928827.624	2.100
12	44	32	76 Ge		-73212.898	0.018	8705.236	0.000	B-	-921.514	0.886	75 921402.725	0.019
10	43	33	76 As	-n	-72291.384	0.886	8682.817	0.012	B-	2960.576	0.886	75 922392.011	0.951
8	42	34	76 Se		-75251.959	0.016	8711.478	0.000	B-	-4962.881	9.322	75 919213.702	0.017
6	41	35	76 Br	-	-70289.078	9.322	8635.883	0.123	B-	-1275.372	10.149	75 924541.574	10.007
4	40	36	76 Kr		-69013.706	4.013	8608.808	0.053	B-	-8534.617	4.121	75 925910.743	4.308
2	39	37	76 Rb	x	-60479.089	0.938	8486.216	0.012	B-	-6231.443	34.478	75 935073.031	1.006
0	38	38	76 Sr	x	-54247.645	34.465	8393.929	0.453	B-	-15998#	302#	75 941762.760	37.000
-2	37	39	76 Y	x	-38250#	300#	8173#	4#	B-	*		75 958937#	322#
0 23	50	27	77 Co	x	-21910#	600#	8082#	8#	B-	15440#	721#	76 976479#	644#
21	49	28	77 Ni	x	-37350#	400#	8272#	5#	B-	11513#	400#	76 959903#	429#
19	48	29	77 Cu	x	-48862.828	1.211	8411.250	0.016	B-	9926.375	2.315	76 947543.599	1.300
17	47	30	77 Zn		-58789.203	1.973	8530.004	0.026	B-	7203.149	3.124	76 936887.197	2.117
15	46	31	77 Ga	x	-65992.352	2.422	8613.391	0.031	B-	5220.518	2.422	76 929154.299	2.600
13	45	32	77 Ge	-n	-71212.870	0.053	8671.029	0.001	B-	2703.464	1.693	76 923549.843	0.056
11	44	33	77 As		-73916.334	1.692	8695.979	0.022	B-	683.163	1.692	76 920647.555	1.816
9	43	34	77 Se		-74599.497	0.062	8694.691	0.001	B-	-1364.679	2.810	76 919914.150	0.067
7	42	35	77 Br	-	-73234.818	2.811	8666.807	0.037	B-	-3065.366	3.424	76 921379.193	3.017
5	41	36	77 Kr	x	-70169.451	1.956	8616.837	0.025	B-	-5338.952	2.351	76 924669.999	2.100
3	40	37	77 Rb	x	-64830.500	1.304	8537.340	0.017	B-	-7027.057	8.024	76 930401.599	1.400
1	39	38	77 Sr	x	-57803.443	7.918	8435.919	0.103	B-	-11365#	203#	76 937945.454	8.500
-1	38	39	77 Y	-p	-46439#	203#	8278#	3#	B-	-14839#	448#	76 950146#	218#
-3	37	40	77 Zr	x	-31600#	400#	8075#	5#	B-	*		76 966076#	429#
0 24	51	27	78 Co	x	-15320#	700#	7997#	9#	B-	19560#	806#	77 983553#	751#
22	50	28	78 Ni	x	-34880#	400#	8238#	5#	B-	9910#	400#	77 962555#	429#
20	49	29	78 Cu		-44789.474	13.332	8354.669	0.171	B-	12693.768	13.473	77 951916.524	14.312
18	48	30	78 Zn		-57483.242	1.944	8507.380	0.025	B-	6220.843	2.209	77 938289.204	2.086
16	47	31	78 Ga		-63704.085	1.051	8577.104	0.013	B-	8157.973	3.688	77 931610.854	1.127
14	46	32	78 Ge	-nn	-71862.058	3.536	8671.664	0.045	B-	954.910	10.399	77 922852.911	3.795
12	45	33	78 As	+pn	-72816.968	9.779	8673.876	0.125	B-	4208.983	9.780	77 921827.773	10.498
10	44	34	78 Se		-77025.952	0.179	8717.807	0.002	B-	-3573.784	3.575	77 917309.244	0.191
8	43	35	78 Br	-	-73452.168	3.580	8661.959	0.046	B-	726.115	3.584	77 921145.858	3.842
6	42	36	78 Kr		-74178.283	0.307	8661.238	0.004	B-	-7242.856	3.252	77 920366.341	0.329
4	41	37	78 Rb	x	-66935.427	3.237	8558.351	0.042	B-	-3761.478	8.125	77 928141.866	3.475
4	41	37	78 Rbx	IT	-66861.427	12.429	74.000	12.000					
2	40	38	78 Sr	x	-63173.949	7.452	8500.097	0.096	B-	-11001#	298#	77 932179.979	8.000
0	39	39	78 Y	x	-52173#	298#	8349#	4#	B-	-11323#	499#	77 943990#	320#
-2	38	40	78 Zr	x	-40850#	400#	8194#	5#	B-	*		77 956146#	429#
1N-Z	N	Z	A EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 23	51	28	79 Ni	x	-28160#	500#	8150#	6#	B-	14248#	511#	78 969769#	537#
21	50	29	79 Cu	x	-42408.039	104.979	8320.938	1.329	B-	11024.263	105.003	78 954473.100	112.700
19	49	30	79 Zn		-53432.302	2.225	8450.583	0.028	B-	9116.054	2.529	78 942638.067	2.388
17	48	31	79 Ga		-62548.355	1.208	8556.072	0.015	B-	6978.824	37.147	78 932851.582	1.296
15	47	32	79 Ge		-69527.179	37.161	8634.509	0.470	B-	4108.900	37.436	78 925359.506	39.893
13	46	33	79 As		-73636.080	5.325	8676.617	0.067	B-	2281.386	5.328	78 920948.420	5.716
11	45	34	79 Se	-n	-75917.466	0.223	8695.592	0.003	B-	150.600	1.019	78 918499.252	0.238
9	44	35	79 Br		-76068.066	1.001	8687.596	0.013	B-	-1625.778	3.333	78 918337.576	1.074
7	43	36	79 Kr	-	-74442.288	3.480	8657.113	0.044	B-	-3639.510	3.942	78 920082.920	3.736
5	42	37	79 Rb		-70802.778	1.943	8601.140	0.025	B-	-5323.114	7.563	78 923990.095	2.085
3	41	38	79 Sr		-65479.664	7.421	8523.856	0.094	B-	-7676.729	80.452	78 929704.692	7.967
1	40	39	79 Y	x	-57802.935	80.108	8416.779	1.014	B-	-11033#	310#	78 937946.000	86.000
-1	39	40	79 Zr	x	-46770#	300#	8267#	4#	B-	-15120#	583#	78 949790#	322#
-3	38	41	79 Nb	x	-31650#	500#	8066#	6#	B-	*		78 966022#	537#
0 24	52	28	80 Ni	x	-23240#	600#	8088#	7#	B-	13440#	671#	79 975051#	644#
22	51	29	80 Cu	x	-36679#	300#	8246#	4#	B-	14969#	300#	79 960623#	322#
20	50	30	80 Zn		-51648.619	2.585	8423.546	0.032	B-	7575.055	3.877	79 944552.929	2.774
18	49	31	80 Ga	x	-59223.675	2.891	8508.455	0.036	B-	10311.640	3.541	79 936420.773	3.103
16	48	32	80 Ge	x	-69535.314	2.054	8627.571	0.026	B-	2679.287	3.916	79 925350.773	2.205
14	47	33	80 As	x	-72214.601	3.333	8651.282	0.042	B-	5544.885	3.441	79 922474.441	3.578
12	46	34	80 Se		-77759.486	0.947	8710.814	0.012	B-	-1870.462	0.309	79 916521.762	1.016

10	45	35	80	Br		-75889.024	0.993	8677.654	0.012	B-	2004.431	1.141	79	918529.786	1.065
8	44	36	80	Kr		-77893.455	0.695	8692.930	0.009	B-	-5717.978	1.988	79	916377.941	0.745
6	43	37	80	Rb	x	-72175.476	1.863	8611.676	0.023	B-	-1864.009	3.933	79	922516.442	2.000
4	42	38	80	Sr	x	-70311.467	3.464	8578.597	0.043	B-	-9163.305	7.139	79	924517.538	3.718
2	41	39	80	Y	x	-61148.162	6.242	8454.276	0.078	B-	-6388#	300#	79	934354.750	6.701
0	40	40	80	Zr	x	-54760#	300#	8365#	4#	B-	-16339#	500#	79	941213#	322#
-2	39	41	80	Nb	x	-38420#	400#	8151#	5#	B-	*		79	958754#	429#
0 25	53	28	81	Ni	x	-16090#	700#	8000#	9#	B-	15820#	761#	80	982727#	751#
23	52	29	81	Cu	x	-31910#	300#	8185#	4#	B-	14289#	300#	80	965743#	322#
21	51	30	81	Zn	x	-46199.669	5.030	8351.926	0.062	B-	11428.292	5.996	80	950402.617	5.400
19	50	31	81	Ga	x	-57627.962	3.264	8483.358	0.040	B-	8663.733	3.851	80	938133.841	3.503
17	49	32	81	Ge	x	-66291.695	2.055	8580.659	0.025	B-	6241.619	3.344	80	928832.941	2.205
15	48	33	81	As		-72533.314	2.644	8648.057	0.033	B-	3855.704	2.807	80	922132.288	2.838
13	47	34	81	Se		-76389.018	0.977	8686.000	0.012	B-	1588.033	1.379	80	917993.020	1.049
11	46	35	81	Br		-77977.051	0.978	8695.947	0.012	B-	-280.852	0.471	80	916288.197	1.049
9	45	36	81	Kr		-77696.199	1.074	8682.821	0.013	B-	-2239.495	5.019	80	916589.703	1.152
7	44	37	81	Rb		-75456.704	4.904	8645.514	0.061	B-	-3928.569	5.817	80	918993.900	5.265
5	43	38	81	Sr	x	-71528.134	3.128	8587.354	0.039	B-	-5815.216	6.245	80	923211.393	3.358
3	42	39	81	Y	x	-65712.919	5.405	8505.903	0.067	B-	-8188.500	92.376	80	929454.283	5.802
1	41	40	81	Zr	x	-57524.418	92.218	8395.152	1.138	B-	-11164#	410#	80	938245.000	99.000
-1	40	41	81	Nb	x	-46360#	400#	8248#	5#	B-	-14900#	640#	80	950230#	429#
-3	39	42	81	Mo	x	-31460#	500#	8054#	6#	B-	*		80	966226#	537#
0 26	54	28	82	Ni	x	-10720#	800#	7935#	10#	B-	15010#	894#	81	988492#	859#
24	53	29	82	Cu	x	-25730#	400#	8108#	5#	B-	16584#	400#	81	972378#	429#
22	52	30	82	Zn	x	-42313.960	3.074	8301.117	0.037	B-	10616.765	3.916	81	954574.097	3.300
20	51	31	82	Ga	x	-52930.725	2.426	8421.049	0.030	B-	12484.350	3.296	81	943176.531	2.604
18	50	32	82	Ge	x	-65415.075	2.240	8563.757	0.027	B-	4690.352	4.345	81	929774.031	2.405
16	49	33	82	As	x	-70105.427	3.729	8611.415	0.045	B-	7488.468	3.758	81	924738.731	4.003
14	48	34	82	Se		-77593.895	0.466	8693.197	0.006	B-	-95.219	1.077	81	916699.531	0.500
12	47	35	82	Br		-77498.677	0.971	8682.495	0.012	B-	3093.119	0.971	81	916801.752	1.042
10	46	36	82	Kr		-80591.79509	0.00551	8710.675	0.000	B-	-4403.982	3.009	81	913481.15368	0.00591
8	45	37	82	Rb	IT	-76187.813	3.009	8647.427	0.037	B-	-177.750	6.705	81	918209.023	3.230
8	45	37	82	Rbm	+3n	-76118.813	2.608	69.000	1.500						
6	44	38	82	Sr		-76010.062	5.992	8635.719	0.073	B-	-7945.965	8.132	81	918399.845	6.432
4	43	39	82	Y	x	-68064.097	5.499	8529.276	0.067	B-	-4450.034	5.722	81	926930.189	5.902
2	42	40	82	Zr	x	-63614.063	1.584	8465.467	0.019	B-	-11804#	300#	81	931707.497	1.700
0	41	41	82	Nb	x	-51810#	300#	8312#	4#	B-	-11440#	500#	81	944380#	322#
-2	40	42	82	Mo	x	-40370#	400#	8163#	5#	B-	*		81	956661#	429#
0 25	54	29	83	Cu	x	-20390#	500#	8044#	6#	B-	15900#	583#	82	978110#	537#
23	53	30	83	Zn	x	-36290#	300#	8226#	4#	B-	12967#	300#	82	961041#	322#
21	52	31	83	Ga	x	-49257.129	2.612	8372.576	0.031	B-	11719.314	3.559	82	947120.300	2.804
19	51	32	83	Ge	x	-60976.442	2.427	8504.346	0.029	B-	8692.889	3.698	82	934539.100	2.604
17	50	33	83	As	x	-69669.331	2.799	8599.654	0.034	B-	5671.212	4.129	82	925206.900	3.004
15	49	34	83	Se	-n	-75340.543	3.036	8658.556	0.037	B-	3673.178	4.839	82	919118.604	3.259
13	48	35	83	Br		-79013.721	3.795	8693.385	0.046	B-	976.922	3.795	82	915175.285	4.073
11	47	36	83	Kr		-79990.643	0.009	8695.730	0.000	B-	-920.004	2.329	82	914126.516	0.009
9	46	37	83	Rb		-79070.639	2.329	8675.219	0.028	B-	-2273.024	6.424	82	915114.181	2.500
7	45	38	83	Sr		-76797.616	6.834	8638.408	0.082	B-	-4591.944	19.844	82	917554.372	7.336
5	44	39	83	Y	x	-72205.672	18.631	8573.657	0.224	B-	-6294.013	19.707	82	922484.026	20.000
3	43	40	83	Zr	x	-65911.659	6.430	8488.400	0.077	B-	-8298.749	162.207	82	929240.926	6.902
1	42	41	83	Nb	x	-57612.910	162.080	8378.989	1.953	B-	-11273#	432#	82	938150.000	174.000
-1	41	42	83	Mo	x	-46340#	401#	8234#	5#	B-	-15020#	641#	82	950252#	430#
-3	40	43	83	Tc	x	-31320#	500#	8043#	6#	B-	*		82	966377#	537#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)	V/S
0 26	55	29	84	Cu	x	-13720#	500#	7965#	6#	B-	18110#	640#	83	985271#	537#
24	54	30	84	Zn	x	-31830#	400#	8171#	5#	B-	12264#	401#	83	965829#	429#
22	53	31	84	Ga	x	-44094.136	29.808	8307.525	0.355	B-	14054.299	29.976	83	952663.000	32.000
20	52	32	84	Ge	x	-58148.435	3.171	8465.524	0.038	B-	7705.133	4.479	83	937575.090	3.403
18	51	33	84	As	x	-65853.568	3.171	8547.939	0.038	B-	10094.162	3.722	83	929303.290	3.403
16	50	34	84	Se		-75947.731	1.961	8658.793	0.023	B-	1835.364	25.765	83	918466.761	2.105
14	49	35	84	Br		-77783.094	25.730	8671.329	0.306	B-	4656.251	25.730	83	916496.417	27.622
14	49	35	84	Brm	+	-77469.345	100.000	313.749	103.257						
12	48	36	84	Kr		-82439.34527	0.00382	8717.447	0.000	B-	-2680.371	2.194	83	911497.72708	0.00410
10	47	37	84	Rb		-79758.975	2.194	8676.224	0.026	B-	890.606	2.336	83	914375.223	2.355
8	46	38	84	Sr		-80649.580	1.243	8677.513	0.015	B-	-6755.141	4.411	83	913419.118	1.334
6	45	39	84	Y		-73894.439	4.299	8587.781	0.051	B-	-2472.747	6.977	83	920671.060	4.615

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
4	44	40	84	Zr	x	-71421.692	5.499	8549.030	0.065	B-	-10227.850	5.513	83 923325.663	5.903
2	43	41	84	Nb	x	-61193.842	0.401	8417.956	0.005	B-	-7024#	298#	83 934305.711	0.430
0	42	42	84	Mo	x	-54170#	298#	8325#	4#	B-	-16470#	499#	83 941846#	320#
-2	41	43	84	Tc	x	-37700#	400#	8120#	5#	B-	*		83 959527#	429#
0 25	55	30	85	Zn	x	-25100#	500#	8090#	6#	B-	14644#	502#	84 973054#	537#
23	54	31	85	Ga	x	-39744.059	37.260	8253.569	0.438	B-	13379.368	37.446	84 957333.000	40.000
21	53	32	85	Ge	x	-53123.427	3.729	8401.769	0.044	B-	10065.725	4.830	84 942969.658	4.003
19	52	33	85	As	x	-63189.152	3.078	8510.985	0.036	B-	9224.493	4.031	84 932163.658	3.304
17	51	34	85	Se	+3p	-72413.645	2.613	8610.304	0.031	B-	6161.833	4.031	84 922260.758	2.804
15	50	35	85	Br	+n2p	-78575.478	3.078	8673.593	0.036	B-	2904.862	3.671	84 915645.758	3.304
13	49	36	85	Kr	+	-81480.341	2.000	8698.563	0.024	B-	687.000	2.000	84 912527.260	2.147
11	48	37	85	Rb		-82167.34065	0.00500	8697.442	0.000	B-	-1064.051	2.813	84 911789.73604	0.00537
9	47	38	85	Sr		-81103.290	2.813	8675.719	0.033	B-	-3261.158	19.173	84 912932.041	3.020
7	46	39	85	Y	x	-77842.131	18.965	8628.149	0.223	B-	-4666.935	20.026	84 916433.039	20.360
5	45	40	85	Zr	x	-73175.196	6.430	8564.039	0.076	B-	-6895.512	7.625	84 921443.199	6.902
3	44	41	85	Nb	x	-66279.684	4.099	8473.712	0.048	B-	-8769.924	16.357	84 928845.836	4.400
1	43	42	85	Mo	x	-57509.760	15.835	8361.332	0.186	B-	-11660#	400#	84 938260.736	17.000
-1	42	43	85	Tc	x	-45850#	400#	8215#	5#	B-	-15220#	640#	84 950778#	429#
-3	41	44	85	Ru	x	-30630#	500#	8027#	6#	B-	*		84 967117#	537#
0 26	56	30	86	Zn	x	-20062#	500#	8032#	6#	B-	13699#	640#	85 978463#	537#
24	55	31	86	Ga	x	-33760#	400#	8182#	5#	B-	15640#	593#	85 963757#	429#
22	54	32	86	Ge	x	-49399.927	437.802	8354.630	5.091	B-	9562.223	437.816	85 946967.000	470.000
20	53	33	86	As	x	-58962.150	3.450	8456.722	0.040	B-	11541.026	4.267	85 936701.532	3.703
18	52	34	86	Se	x	-70503.175	2.520	8581.822	0.029	B-	5129.086	3.972	85 924311.732	2.705
16	51	35	86	Br	+pp	-75632.261	3.078	8632.366	0.036	B-	7633.415	3.078	85 918805.432	3.304
14	50	36	86	Kr		-83265.67593	0.00372	8712.030	0.000	B-	-518.673	0.200	85 910610.62468	0.00399
12	49	37	86	Rb	-n	-82747.003	0.200	8696.901	0.002	B-	1776.097	0.200	85 911167.443	0.214
10	48	38	86	Sr		-84523.09977	0.00524	8708.457	0.000	B-	-5240.000	14.142	85 909260.72473	0.00563
8	47	39	86	Y	-	-79283.100	14.142	8638.429	0.164	B-	-1314.076	14.585	85 914886.095	15.182
6	46	40	86	Zr		-77969.023	3.566	8614.052	0.041	B-	-8834.963	6.552	85 916296.814	3.827
4	45	41	86	Nb	x	-69134.061	5.499	8502.223	0.064	B-	-5023.134	6.232	85 925781.536	5.903
2	44	42	86	Mo	x	-64110.927	2.932	8434.718	0.034	B-	-12541#	300#	85 931174.092	3.147
0	43	43	86	Tc	x	-51570#	300#	8280#	3#	B-	-11800#	500#	85 944637#	322#
-2	42	44	86	Ru	x	-39770#	400#	8133#	5#	B-	*		85 957305#	429#
0 25	56	31	87	Ga	x	-28870#	500#	8124#	6#	B-	14720#	583#	86 969007#	537#
23	55	32	87	Ge	x	-43590#	300#	8285#	3#	B-	12028#	300#	86 953204#	322#
21	54	33	87	As	x	-55617.914	2.985	8413.852	0.034	B-	10808.219	3.726	86 940291.716	3.204
19	53	34	87	Se	x	-66426.133	2.241	8529.092	0.026	B-	7465.553	3.877	86 928688.616	2.405
17	52	35	87	Br	2p-n	-73891.685	3.171	8605.910	0.036	B-	6817.845	3.181	86 920674.016	3.404
15	51	36	87	Kr	-n	-80709.531	0.246	8675.284	0.003	B-	3888.271	0.246	86 913354.759	0.264
13	50	37	87	Rb		-84597.802	0.006	8710.984	0.000	B-	282.275	0.006	86 909180.529	0.006
11	49	38	87	Sr		-84880.07643	0.00513	8705.236	0.000	B-	-1861.689	1.128	86 908877.49454	0.00550
9	48	39	87	Y	-	-83018.387	1.128	8674.845	0.013	B-	-3671.240	4.296	86 910876.100	1.210
7	47	40	87	Zr		-79347.147	4.146	8623.654	0.048	B-	-5472.654	7.963	86 914817.338	4.450
5	46	41	87	Nb	x	-73874.493	6.802	8551.758	0.078	B-	-6989.676	7.378	86 920692.473	7.302
3	45	42	87	Mo		-66884.817	2.857	8462.424	0.033	B-	-9194.766	5.073	86 928196.198	3.067
1	44	43	87	Tc	x	-57690.052	4.192	8347.745	0.048	B-	-11960#	400#	86 938067.185	4.500
-1	43	44	87	Ru	x	-45730#	400#	8201#	5#	B-	*		86 950907#	429#
0 26	57	31	88	Ga	x	-22390#	500#	8050#	6#	B-	17129#	640#	87 975963#	537#
24	56	32	88	Ge	x	-39520#	400#	8236#	5#	B-	10930#	447#	87 957574#	429#
22	55	33	88	As	x	-50450#	200#	8351#	2#	B-	13434#	200#	87 945840#	215#
20	54	34	88	Se	x	-63884.203	3.357	8495.004	0.038	B-	6831.764	4.613	87 931417.490	3.604
18	53	35	88	Br	++	-70715.967	3.171	8563.748	0.036	B-	8975.328	4.106	87 924083.290	3.404
16	52	36	88	Kr	x	-79691.295	2.608	8656.850	0.030	B-	2917.709	2.613	87 914447.879	2.800
14	51	37	88	Rb		-82609.004	0.159	8681.115	0.002	B-	5312.624	0.159	87 911315.590	0.170
12	50	38	88	Sr		-87921.62876	0.00561	8732.596	0.000	B-	-3622.600	1.500	87 905612.253	0.006
10	49	39	88	Y	-	-84299.029	1.500	8682.540	0.017	B-	-670.155	5.608	87 909501.274	1.610
8	48	40	88	Zr		-83628.874	5.403	8666.034	0.061	B-	-7457.319	57.892	87 910220.715	5.800
6	47	41	88	Nb		-76171.555	57.808	8572.401	0.657	B-	-3485.002	57.935	87 918226.476	62.059
6	47	41	88	Nbm	-	-76038.874	100.146	132.681	115.549					
4	46	42	88	Mo	x	-72686.553	3.819	8523.909	0.043	B-	-11016.251	5.602	87 921967.779	4.100
2	45	43	88	Tc	x	-61670.301	4.099	8389.834	0.047	B-	-7331#	300#	87 933794.211	4.400
2	45	43	88	Tcm	IT	-61599.881	5.237	70.421	3.260					
0	44	44	88	Ru	x	-54340#	300#	8298#	3#	B-	-17479#	500#	87 941664#	322#
-2	43	45	88	Rh	x	-36860#	400#	8090#	5#	B-	*		87 960429#	429#

0 25	57	32	89	Ge	x	-33040#	400#	8161#	4#	B-	13490#	500#	88	964530#	429#
23	56	33	89	As	x	-46530#	300#	8304#	3#	B-	12462#	300#	88	950048#	322#
21	55	34	89	Se	x	-58992.398	3.729	8435.280	0.042	B-	9281.873	4.951	88	936669.058	4.003
19	54	35	89	Br	x	-68274.271	3.264	8530.780	0.037	B-	8261.523	3.904	88	926704.558	3.504
17	53	36	89	Kr	x	-76535.795	2.142	8614.816	0.024	B-	5176.604	5.834	88	917835.449	2.300
15	52	37	89	Rb		-81712.399	5.427	8664.190	0.061	B-	4496.628	5.427	88	912278.136	5.825
13	51	38	89	Sr		-86209.026	0.092	8705.923	0.001	B-	1502.176	0.351	88	907450.808	0.098
11	50	39	89	Y		-87711.202	0.339	8714.011	0.004	B-	-2833.228	2.765	88	905838.156	0.363
9	49	40	89	Zr		-84877.974	2.780	8673.387	0.031	B-	-4252.219	23.720	88	908879.751	2.983
7	48	41	89	Nb		-80625.755	23.630	8616.818	0.266	B-	-5610.811	23.951	88	913444.696	25.367
5	47	42	89	Mo	x	-75014.944	3.912	8544.985	0.044	B-	-7620.088	5.467	88	919468.149	4.200
3	46	43	89	Tc	x	-67394.857	3.819	8450.576	0.043	B-	-9025.433	24.518	88	927648.649	4.100
1	45	44	89	Ru	x	-58369.424	24.219	8340.376	0.272	B-	-12719#	361#	88	937337.849	26.000
-1	44	45	89	Rh	-p	-45651#	361#	8189#	4#	B-	*		88	950992#	387#
0 26	58	32	90	Ge	x	-28470#	500#	8109#	6#	B-	12520#	640#	89	969436#	537#
24	57	33	90	As	x	-40990#	400#	8240#	4#	B-	14810#	518#	89	955995#	429#
22	56	34	90	Se	x	-55800.223	329.749	8395.767	3.664	B-	8200.083	329.766	89	940096.000	354.000
20	55	35	90	Br	x	-64000.306	3.357	8478.187	0.037	B-	10958.953	3.840	89	931292.848	3.604
18	54	36	90	Kr	x	-74959.259	1.863	8591.260	0.021	B-	4406.313	6.716	89	919527.929	2.000
16	53	37	90	Rb		-79365.573	6.452	8631.526	0.072	B-	6585.372	6.481	89	914797.557	6.926
16	53	37	90	Rbx	IT	-79294.573	13.625	71.000	12.000						
14	52	38	90	Sr		-85950.945	1.449	8696.004	0.016	B-	545.967	1.406	89	907727.870	1.555
12	51	39	90	Y		-86496.912	0.354	8693.378	0.004	B-	2275.635	0.373	89	907141.749	0.379
10	50	40	90	Zr		-88772.547	0.118	8709.970	0.001	B-	-6111.017	3.316	89	904698.755	0.126
8	49	41	90	Nb		-82661.531	3.317	8633.377	0.037	B-	-2489.017	3.316	89	911259.201	3.561
6	48	42	90	Mo		-80172.514	3.463	8597.029	0.038	B-	-9447.818	3.611	89	913931.270	3.717
4	47	43	90	Tc	x	-70724.696	1.025	8483.360	0.011	B-	-5840.895	3.869	89	924073.919	1.100
4	47	43	90	Tcm	x	-70580.687	1.304	144.009	1.658						
2	46	44	90	Ru		-64883.801	3.730	8409.768	0.041	B-	-13250#	200#	89	930344.378	4.004
0	45	45	90	Rh	-	-51634#	200#	8254#	2#	B-	-11924#	447#	89	944569#	215#
-2	44	46	90	Pd	x	-39710#	400#	8113#	4#	B-	*		89	957370#	429#
0 25	58	33	91	As	x	-36500#	400#	8189#	4#	B-	14080#	589#	90	960816#	429#
23	57	34	91	Se	x	-50580.130	433.145	8334.838	4.760	B-	10527.172	433.159	90	945700.000	465.000
21	56	35	91	Br	-n2p	-61107.301	3.543	8441.924	0.039	B-	9866.672	4.190	90	934398.617	3.804
19	55	36	91	Kr	x	-70973.974	2.236	8541.752	0.025	B-	6771.075	8.115	90	923806.309	2.400
17	54	37	91	Rb		-77745.049	7.801	8607.562	0.086	B-	5906.901	8.873	90	916537.261	8.375
15	53	38	91	Sr		-83651.950	5.453	8663.876	0.060	B-	2699.371	5.247	90	910195.942	5.853
13	52	39	91	Y		-86351.321	1.843	8684.942	0.020	B-	1544.271	1.840	90	907298.048	1.978
11	51	40	91	Zr		-87895.592	0.095	8693.315	0.001	B-	-1257.564	2.924	90	905640.205	0.101
9	50	41	91	Nb		-86638.028	2.926	8670.898	0.032	B-	-4429.193	6.744	90	906990.256	3.140
7	49	42	91	Mo		-82208.834	6.238	8613.629	0.069	B-	-6222.177	6.671	90	911745.190	6.696
5	48	43	91	Tc		-75986.657	2.363	8536.656	0.026	B-	-7746.825	3.242	90	918424.972	2.536
3	47	44	91	Ru		-68239.833	2.221	8442.929	0.024	B-	-9670#	298#	90	926741.530	2.384
3	47	44	91	Rum	ep	-68583.543	500.012	-343.711	500.017						
1	46	45	91	Rh	x	-58570#	298#	8328#	3#	B-	-12400#	300#	90	937123#	320#
-1	45	46	91	Pd	-	-46170#	423#	8183#	5#	B-	*		90	950435#	454#
0 26	59	33	92	As	x	-30380#	500#	8121#	5#	B-	16344#	640#	91	967386#	537#
24	58	34	92	Se	x	-46724#	400#	8290#	4#	B-	9509#	400#	91	949840#	429#
22	57	35	92	Br	x	-56232.812	6.709	8384.912	0.073	B-	12536.516	7.232	91	939631.595	7.202
20	56	36	92	Kr	x	-68769.329	2.701	8512.675	0.029	B-	6003.121	6.692	91	926173.092	2.900
18	55	37	92	Rb		-74772.450	6.123	8569.423	0.067	B-	8094.921	6.419	91	919728.477	6.573
16	54	38	92	Sr		-82867.371	3.423	8648.907	0.037	B-	1949.124	9.384	91	911038.222	3.675
14	53	39	92	Y		-84816.494	9.127	8661.589	0.099	B-	3642.529	9.127	91	908945.752	9.798
12	52	40	92	Zr		-88459.024	0.094	8692.678	0.001	B-	-2005.733	1.782	91	905035.336	0.101
10	51	41	92	Nb		-86453.290	1.784	8662.373	0.019	B-	355.297	1.791	91	907188.580	1.915
8	50	42	92	Mo		-86808.587	0.157	8657.731	0.002	B-	-7882.884	3.106	91	906807.153	0.168
6	49	43	92	Tc		-78925.703	3.102	8563.544	0.034	B-	-4624.492	4.125	91	915269.777	3.330
4	48	44	92	Ru		-74301.211	2.718	8504.774	0.030	B-	-11302.116	5.153	91	920234.373	2.917
2	47	45	92	Rh	x	-62999.095	4.378	8373.421	0.048	B-	-8220.000	345.000	91	932367.692	4.700
0	46	46	92	Pd	-	-54779.095	345.028	8275.570	3.750	B-	-17249#	528#	91	941192.225	370.402
-2	45	47	92	Ag	x	-37530#	400#	8080#	4#	B-	*		91	959710#	429#
0 25	59	34	93	Se	x	-40860#	400#	8225#	4#	B-	12030#	588#	92	956135#	429#
23	58	35	93	Br	x	-52890.235	430.816	8345.599	4.632	B-	11245.767	430.823	92	943220.000	462.500
21	57	36	93	Kr	x	-64136.002	2.515	8458.108	0.027	B-	8483.898	8.224	92	931147.172	2.700
19	56	37	93	Rb		-72619.900	7.830	8540.921	0.084	B-	7465.943	8.876	92	922039.334	8.406
17	55	38	93	Sr		-80085.844	7.554	8612.787	0.081	B-	4141.312	11.697	92	914024.314	8.109
15	54	39	93	Y		-84227.155	10.488	8648.905	0.113	B-	2894.872	10.483	92	909578.434	11.259

13	53	40	93	Zr		-87122.028	0.456	8671.621	0.005	B-	90.812	1.484	92 906470.661	0.489
11	52	41	93	Nb		-87212.840	1.490	8664.185	0.016	B-	-405.761	1.501	92 906373.170	1.599
9	51	42	93	Mo	-n	-86807.079	0.181	8651.410	0.002	B-	-3200.963	1.004	92 906808.772	0.193
7	50	43	93	Tc	-p	-83606.116	1.012	8608.578	0.011	B-	-6389.393	2.299	92 910245.147	1.086
5	49	44	93	Ru		-77216.723	2.065	8531.463	0.022	B-	-8204.914	3.343	92 917104.442	2.216
3	48	45	93	Rh		-69011.810	2.629	8434.826	0.028	B-	-10030.000	370.000	92 925912.778	2.821
1	47	46	93	Pd	-	-58981.810	370.009	8318.564	3.979	B-	-12582#	545#	92 936680.426	397.221
-1	46	47	93	Ag	x	-46400#	401#	8175#	4#	B-	*		92 950188#	430#

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 26	60	34	94	Se	x	-36803#	500#	8180#	5#	B-	10846#	539#	93 960490#	537#
24	59	35	94	Br	x	-47650#	200#	8287#	2#	B-	13698#	201#	93 948846#	215#
22	58	36	94	Kr	x	-61347.780	12.109	8424.332	0.129	B-	7215.011	12.278	93 934140.452	13.000
20	57	37	94	Rb		-68562.791	2.029	8492.764	0.022	B-	10282.930	2.623	93 926394.819	2.177
18	56	38	94	Sr		-78845.721	1.663	8593.834	0.018	B-	3505.752	6.422	93 915355.641	1.785
16	55	39	94	Y		-82351.473	6.380	8622.807	0.068	B-	4917.859	6.380	93 911592.062	6.849
14	54	40	94	Zr		-87269.332	0.164	8666.802	0.002	B-	-900.268	1.500	93 906312.523	0.175
12	53	41	94	Nb		-86369.063	1.491	8648.901	0.016	B-	2045.016	1.494	93 907279.001	1.600
10	52	42	94	Mo		-88414.079	0.141	8662.334	0.002	B-	-4255.748	4.069	93 905083.586	0.151
8	51	43	94	Tc	-	-84158.332	4.071	8608.737	0.043	B-	-1574.730	5.143	93 909652.319	4.370
6	50	44	94	Ru		-82583.602	3.143	8583.662	0.033	B-	-9675.979	4.615	93 911342.860	3.374
4	49	45	94	Rh		-72907.623	3.379	8472.403	0.036	B-	-6805.343	5.459	93 921730.450	3.627
2	48	46	94	Pd	x	-66102.281	4.287	8391.683	0.046	B-	-13700#	400#	93 929036.286	4.602
0	47	47	94	Ag	-	-52402#	400#	8238#	4#	B-	-11962#	640#	93 943744#	429#
0	47	47	94	Agn	-p	-45903.146	370.383	6499#	545#					
-2	46	48	94	Cd	x	-40440#	500#	8102#	5#	B-	*		93 956586#	537#
0 27	61	34	95	Se	x	-30460#	500#	8112#	5#	B-	13390#	583#	94 967300#	537#
25	60	35	95	Br	x	-43850#	300#	8245#	3#	B-	12309#	301#	94 952925#	322#
23	59	36	95	Kr	x	-56158.920	18.630	8365.996	0.196	B-	9731.387	27.512	94 939710.922	20.000
21	58	37	95	Rb		-65890.307	20.245	8460.197	0.213	B-	9226.977	20.204	94 929263.849	21.733
19	57	38	95	Sr		-75117.284	5.810	8549.088	0.061	B-	6090.653	7.239	94 919358.282	6.237
17	56	39	95	Y		-81207.937	6.779	8604.964	0.071	B-	4452.003	6.772	94 912819.697	7.277
15	55	40	95	Zr		-85659.940	0.869	8643.592	0.009	B-	1126.331	0.985	94 908040.276	0.933
13	54	41	95	Nb		-86786.272	0.508	8647.213	0.005	B-	925.601	0.494	94 906831.110	0.545
11	53	42	95	Mo		-87711.872	0.123	8648.721	0.001	B-	-1690.518	5.078	94 905837.436	0.132
9	52	43	95	Tc		-86021.355	5.080	8622.691	0.053	B-	-2563.596	10.531	94 907652.281	5.453
7	51	44	95	Ru		-83457.759	9.502	8587.471	0.100	B-	-5117.142	10.266	94 910404.415	10.200
5	50	45	95	Rh		-78340.616	3.886	8525.371	0.041	B-	-8374.704	4.928	94 915897.893	4.171
3	49	46	95	Pd	x	-69965.913	3.031	8428.981	0.032	B-	-10060#	400#	94 924888.506	3.253
1	48	47	95	Ag	-	-59906#	400#	8315#	4#	B-	-12850#	400#	94 935688#	429#
-1	47	48	95	Cd	-	-47056#	566#	8171#	6#	B-	*		94 949483#	607#
0 26	61	35	96	Br	x	-38210#	300#	8184#	3#	B-	14872#	301#	95 958980#	322#
24	60	36	96	Kr		-53081.682	19.277	8330.872	0.201	B-	8272.669	19.567	95 943014.473	20.695
22	59	37	96	Rb		-61354.351	3.353	8408.896	0.035	B-	11563.897	9.106	95 934133.398	3.599
20	58	38	96	Sr		-72918.248	8.466	8521.204	0.088	B-	5411.738	9.726	95 921719.045	9.089
18	57	39	96	Y		-78329.986	6.075	8569.427	0.063	B-	7108.874	6.074	95 915909.305	6.521
18	57	39	96	Yxm	+p	-76790.265	6.242	1539.721	8.709					
16	56	40	96	Zr		-85438.860	0.114	8635.328	0.001	B-	163.970	0.100	95 908277.615	0.122
14	55	41	96	Nb		-85602.830	0.147	8628.887	0.002	B-	3192.059	0.107	95 908101.586	0.157
12	54	42	96	Mo		-88794.889	0.120	8653.988	0.001	B-	-2973.241	5.145	95 904674.770	0.128
10	53	43	96	Tc	-	-85821.648	5.146	8614.867	0.054	B-	258.737	5.146	95 907866.675	5.524
8	52	44	96	Ru		-86080.385	0.170	8609.413	0.002	B-	-6392.653	10.000	95 907588.910	0.182
6	51	45	96	Rh	-	-79687.732	10.001	8534.673	0.104	B-	-3504.313	10.844	95 914451.705	10.737
4	50	46	96	Pd	x	-76183.420	4.194	8490.021	0.044	B-	-11671.774	90.181	95 918213.739	4.502
2	49	47	96	Ag	ep	-64511.645	90.084	8360.290	0.938	B-	-8940#	400#	95 930743.903	96.708
0	48	48	96	Cd	-	-55572#	410#	8259#	4#	B-	-17482#	647#	95 940341#	440#
-2	47	49	96	In	x	-38090#	500#	8069#	5#	B-	*		95 959109#	537#
0 27	62	35	97	Br	x	-34000#	400#	8140#	4#	B-	13423#	420#	96 963499#	429#
25	61	36	97	Kr	x	-47423.499	130.409	8269.865	1.344	B-	11095.646	130.423	96 949088.782	140.000
23	60	37	97	Rb		-58519.145	1.912	8376.187	0.020	B-	10061.530	3.887	96 937177.117	2.052
21	59	38	97	Sr		-68580.674	3.385	8471.849	0.035	B-	7534.781	7.513	96 926375.621	3.633
19	58	39	97	Y	+	-76115.455	6.708	8541.462	0.069	B-	6821.238	6.707	96 918286.702	7.201
17	57	40	97	Zr		-82936.693	0.121	8603.718	0.001	B-	2666.104	4.244	96 910963.802	0.130
15	56	41	97	Nb		-85602.797	4.244	8623.138	0.044	B-	1941.904	4.244	96 908101.622	4.556
13	55	42	97	Mo		-87544.700	0.165	8635.093	0.002	B-	-320.264	4.117	96 906016.903	0.176
11	54	43	97	Tc		-87224.436	4.118	8623.725	0.042	B-	-1103.872	4.956	96 906360.720	4.420
9	53	44	97	Ru	-n	-86120.564	2.763	8604.280	0.028	B-	-3523.000	35.355	96 907545.776	2.965

7	52	45	97	Rh	-	-82597.564	35.463	8559.895	0.366	B-	-4791.712	35.792	96	911327.872	38.071
5	51	46	97	Pd	x	-77805.852	4.844	8502.430	0.050	B-	-6901.825	12.956	96	916471.985	5.200
3	50	47	97	Ag	x	-70904.027	12.016	8423.212	0.124	B-	-10170.000	420.000	96	923881.400	12.900
3	50	47	97	Agm	x	-70285.981	35.956	618.046	37.910						
1	49	48	97	Cd	-	-60734.027	420.172	8310.301	4.332	B-	-13344#	580#	96	934799.343	451.073
-1	48	49	97	In	x	-47390#	401#	8165#	4#	B-	*		96	949125#	430#
0 28	63	35	98	Br	x	-28050#	400#	8078#	4#	B-	16070#	500#	97	969887#	429#
26	62	36	98	Kr	x	-44120#	300#	8234#	3#	B-	10249#	300#	97	952635#	322#
24	61	37	98	Rb		-54369.152	16.083	8330.729	0.164	B-	12053.236	16.403	97	941632.317	17.265
24	61	37	98	Rbm	x	-54295.860	20.493	73.293	26.050						
22	60	38	98	Sr		-66422.389	3.226	8445.738	0.033	B-	5866.359	8.550	97	928692.636	3.463
20	59	39	98	Y	p-2n	-72288.748	7.919	8497.616	0.081	B-	8993.010	11.575	97	922394.841	8.501
20	59	39	98	Yxn	IT	-71823.010	7.952	465.738	0.727						
18	58	40	98	Zr		-81281.757	8.445	8581.398	0.086	B-	2242.855	9.813	97	912740.448	9.065
16	57	41	98	Nb	-pn	-83524.612	5.001	8596.302	0.051	B-	4591.368	5.003	97	910332.645	5.369
14	56	42	98	Mo		-88115.980	0.174	8635.169	0.002	B-	-1683.766	3.377	97	905403.609	0.186
12	55	43	98	Tc		-86432.214	3.380	8610.005	0.034	B-	1792.658	7.157	97	907211.206	3.628
10	54	44	98	Ru		-88224.871	6.463	8620.314	0.066	B-	-5049.653	10.000	97	905286.709	6.937
8	53	45	98	Rh	-	-83175.219	11.906	8560.804	0.121	B-	-1854.233	12.816	97	910707.734	12.782
6	52	46	98	Pd		-81320.985	4.742	8533.900	0.048	B-	-8254.561	33.098	97	912698.335	5.090
4	51	47	98	Ag		-73066.425	32.907	8441.687	0.336	B-	-5430.000	40.000	97	921559.970	35.327
2	50	48	98	Cd	-	-67636.425	51.797	8378.295	0.529	B-	-13730#	300#	97	927389.315	55.605
0	49	49	98	In	-	-53906#	304#	8230#	3#	B-	*		97	942129#	327#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 27	63	36	99	Kr	x	-38400#	400#	8175#	4#	B-	12721#	400#	98	958776#	429#
25	62	37	99	Rb	x	-51121.150	4.031	8295.301	0.041	B-	11397.377	6.220	98	945119.190	4.327
23	61	38	99	Sr		-62518.527	4.737	8402.524	0.048	B-	8125.204	8.135	98	932883.604	5.085
21	60	39	99	Y	x	-70643.730	6.615	8476.694	0.067	B-	6972.940	12.408	98	924160.839	7.101
19	59	40	99	Zr		-77616.670	10.499	8539.225	0.106	B-	4718.674	15.947	98	916675.081	11.271
17	58	41	99	Nb	+p	-82335.344	12.004	8578.986	0.121	B-	3634.762	12.006	98	911609.377	12.886
15	57	42	99	Mo		-85970.106	0.229	8607.798	0.002	B-	1357.763	0.890	98	907707.299	0.245
13	56	43	99	Tc		-87327.869	0.908	8613.610	0.009	B-	297.516	0.945	98	906249.681	0.974
11	55	44	99	Ru		-87625.385	0.343	8608.713	0.003	B-	-2040.863	19.453	98	905930.284	0.368
9	54	45	99	Rh		-85584.522	19.451	8580.196	0.196	B-	-3401.660	18.915	98	908121.241	20.881
7	53	46	99	Pd		-82182.861	5.107	8537.933	0.052	B-	-5470.378	8.083	98	911773.073	5.482
5	52	47	99	Ag	x	-76712.483	6.265	8474.774	0.063	B-	-6781.351	6.462	98	917645.766	6.725
3	51	48	99	Cd	x	-69931.132	1.584	8398.373	0.016	B-	-8555#	298#	98	924925.845	1.700
1	50	49	99	In	x	-61376#	298#	8304#	3#	B-	-13400#	500#	98	934110#	320#
-1	49	50	99	Sn	-	-47976#	582#	8161#	6#	B-	*		98	948495#	625#
0 28	64	36	100	Kr	x	-34470#	400#	8134#	4#	B-	11796#	400#	99	962995#	429#
26	63	37	100	Rb		-46265.884	13.124	8244.509	0.131	B-	13551.620	14.836	99	950331.532	14.089
24	62	38	100	Sr		-59817.505	6.918	8372.201	0.069	B-	7503.737	13.145	99	935783.270	7.426
22	61	39	100	Y	x	-67321.241	11.179	8439.415	0.112	B-	9051.495	13.829	99	927727.678	12.000
22	61	39	100	Yxm	x	-67176.859	11.179	144.382	15.808						
20	60	40	100	Zr		-76372.736	8.143	8522.107	0.081	B-	3418.510	11.398	99	918010.499	8.742
18	59	41	100	Nb	IT	-79791.246	7.976	8548.468	0.080	B-	6401.783	7.982	99	914340.578	8.562
18	59	41	100	Nbm	-p2n	-79478.543	1.960	312.703	7.731						
16	58	42	100	Mo		-86193.029	0.301	8604.663	0.003	B-	-172.078	1.370	99	907467.982	0.322
14	57	43	100	Tc	-n	-86020.951	1.351	8595.118	0.014	B-	3206.440	1.376	99	907652.715	1.450
12	56	44	100	Ru		-89227.391	0.342	8619.359	0.003	B-	-3636.261	18.123	99	904210.460	0.367
10	55	45	100	Rh		-85591.130	18.125	8575.173	0.181	B-	-378.458	25.288	99	908114.147	19.458
8	54	46	100	Pd		-85212.672	17.637	8563.565	0.176	B-	-7074.703	18.332	99	908520.438	18.934
6	53	47	100	Ag	x	-78137.969	5.000	8484.995	0.050	B-	-3943.374	5.273	99	916115.443	5.367
4	52	48	100	Cd	x	-74194.595	1.677	8437.737	0.017	B-	-10016.449	2.794	99	920348.829	1.800
2	51	49	100	In	x	-64178.146	2.236	8329.749	0.022	B-	-7030.000	240.000	99	931101.929	2.400
0	50	50	100	Sn	-	-57148.146	240.010	8251.626	2.400	B-	*		99	938648.944	257.661
0 29	65	36	101	Kr	x	-28580#	500#	8075#	5#	B-	13987#	501#	100	969318#	537#
27	64	37	101	Rb	x	-42567.417	20.493	8206.175	0.203	B-	12757.497	22.178	100	954302.000	22.000
25	63	38	101	Sr	x	-55324.914	8.480	8324.741	0.084	B-	9729.872	11.047	100	940606.264	9.103
23	62	39	101	Y	x	-65054.787	7.080	8413.330	0.070	B-	8106.200	10.933	100	930160.817	7.601
21	61	40	101	Zr		-73160.987	8.332	8485.844	0.082	B-	5730.501	9.137	100	921458.454	8.944
19	60	41	101	Nb	x	-78891.488	3.749	8534.835	0.037	B-	4628.464	3.738	100	915306.508	4.024
17	59	42	101	Mo	-n	-83519.952	0.308	8572.916	0.003	B-	2824.641	24.002	100	910337.648	0.331
15	58	43	101	Tc	+	-86344.593	24.004	8593.137	0.238	B-	1613.520	24.000	100	907305.271	25.768
13	57	44	101	Ru		-87958.113	0.413	8601.366	0.004	B-	-545.685	5.852	100	905573.086	0.443
11	56	45	101	Rh		-87412.428	5.841	8588.217	0.058	B-	-1980.283	3.903	100	906158.903	6.270

9	55	46	101	Pd		-85432.145	4.588	8560.864	0.045	B-	-4097.761	6.668	100 908284.824	4.925
7	54	47	101	Ag	x	-81334.384	4.838	8512.547	0.048	B-	-5497.919	5.063	100 912683.951	5.193
5	53	48	101	Cd	x	-75836.466	1.490	8450.366	0.015	B-	-7291.564	11.757	100 918586.209	1.600
3	52	49	101	In	x	-68544.901	11.662	8370.426	0.115	B-	-8239.277	300.231	100 926414.025	12.519
3	52	49	101	Inm	x	-67907.255	35.869	637.647	37.717					
1	51	50	101	Sn	ep	-60305.624	300.005	8281.103	2.970	B-	*		100 935259.252	322.068
0 28	65	37	102	Rb	x	-37252.312	82.903	8152.744	0.813	B-	14906.999	106.635	101 960008.000	89.000
26	64	38	102	Sr	x	-52159.311	67.068	8291.221	0.658	B-	9013.330	67.192	101 944004.679	72.000
24	63	39	102	Y	x	-61172.641	4.081	8371.917	0.040	B-	10408.786	9.662	101 934328.471	4.381
22	62	40	102	Zr		-71581.427	8.758	8466.294	0.086	B-	4716.838	9.053	101 923154.181	9.401
20	61	41	102	Nb		-76298.265	2.511	8504.867	0.025	B-	7262.601	8.675	101 918090.447	2.695
20	61	41	102	Nbm		-76203.879	7.549	94.386	7.165					
18	60	42	102	Mo		-83560.866	8.305	8568.399	0.081	B-	1012.056	12.368	101 910293.725	8.916
16	59	43	102	Tc		-84572.921	9.166	8570.651	0.090	B-	4533.514	9.165	101 909207.239	9.840
14	58	44	102	Ru		-89106.435	0.416	8607.428	0.004	B-	-2323.119	6.396	101 904340.312	0.446
12	57	45	102	Rh	-	-86783.316	6.410	8576.982	0.063	B-	1119.647	6.396	101 906834.282	6.880
10	56	46	102	Pd		-87902.963	0.419	8580.289	0.004	B-	-5656.261	8.182	101 905632.292	0.449
8	55	47	102	Ag	+	-82246.702	8.171	8517.165	0.080	B-	-2587.000	8.000	101 911704.538	8.771
6	54	48	102	Cd		-79659.702	1.662	8484.132	0.016	B-	-8964.806	4.865	101 914481.797	1.784
4	53	49	102	In		-70694.896	4.573	8388.572	0.045	B-	-5760.000	100.000	101 924105.911	4.909
2	52	50	102	Sn	-	-64934.896	100.105	8324.431	0.981	B-	-13835#	412#	101 930289.525	107.466
0	51	51	102	Sb	x	-51100#	400#	8181#	4#	B-	*		101 945142#	429#
0 29	66	37	103	Rb	x	-33160#	400#	8112#	4#	B-	14120#	447#	102 964401#	429#
27	65	38	103	Sr	x	-47280#	200#	8242#	2#	B-	11177#	201#	102 949243#	215#
25	64	39	103	Y	x	-58457.033	11.206	8342.634	0.109	B-	9351.960	14.513	102 937243.796	12.029
23	63	40	103	Zr	x	-67808.993	9.223	8425.834	0.090	B-	7219.674	10.027	102 927204.054	9.900
21	62	41	103	Nb	x	-75028.667	3.935	8488.332	0.038	B-	5925.664	10.027	102 919453.416	4.224
19	61	42	103	Mo	x	-80954.331	9.223	8538.267	0.090	B-	3649.589	13.465	102 913091.954	9.900
17	60	43	103	Tc	+p	-84603.920	9.810	8566.104	0.095	B-	2663.248	9.809	102 909173.960	10.531
15	59	44	103	Ru		-87267.168	0.441	8584.366	0.004	B-	764.538	2.260	102 906314.846	0.473
13	58	45	103	Rh		-88031.705	2.301	8584.193	0.022	B-	-574.725	2.393	102 905494.081	2.470
11	57	46	103	Pd	-n	-87456.980	0.878	8571.017	0.009	B-	-2654.278	4.192	102 906111.074	0.942
9	56	47	103	Ag	x	-84802.702	4.099	8537.652	0.040	B-	-4151.076	4.481	102 908960.558	4.400
7	55	48	103	Cd		-80651.626	1.811	8489.755	0.018	B-	-6019.229	9.124	102 913416.922	1.943
5	54	49	103	In		-74632.397	8.980	8423.720	0.087	B-	-7540#	100#	102 919878.830	9.640
3	53	50	103	Sn	-	-67092#	100#	8343#	1#	B-	-10422#	316#	102 927973#	108#
1	52	51	103	Sb	x	-56670#	300#	8234#	3#	B-	*		102 939162#	322#

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 30	67	37	104	Rb	x	-27450#	500#	8057#	5#	B-	16310#	583#	103 970531#	537#
28	66	38	104	Sr	x	-43760#	300#	8206#	3#	B-	10320#	361#	103 953022#	322#
26	65	39	104	Y	x	-54080#	200#	8298#	2#	B-	11638#	200#	103 941943#	215#
24	64	40	104	Zr	x	-65717.660	9.316	8402.316	0.090	B-	6093.337	9.485	103 929449.193	10.000
22	63	41	104	Nb	x	-71810.997	1.784	8453.383	0.017	B-	8532.751	9.088	103 922907.728	1.915
22	63	41	104	Nbm	x	-71801.216	1.876	9.781	2.570					
20	62	42	104	Mo		-80343.748	8.911	8527.906	0.086	B-	2155.221	24.166	103 913747.443	9.566
18	61	43	104	Tc		-82498.969	24.886	8541.107	0.239	B-	5596.794	24.937	103 911433.718	26.716
16	60	44	104	Ru		-88095.763	2.498	8587.400	0.024	B-	-1136.419	3.364	103 905425.312	2.682
14	59	45	104	Rh	-n	-86959.344	2.303	8568.950	0.022	B-	2435.779	2.660	103 906645.309	2.471
12	58	46	104	Pd	+n	-89395.123	1.336	8584.848	0.013	B-	-4278.653	4.000	103 904030.393	1.434
10	57	47	104	Ag	-	-85116.470	4.217	8536.185	0.041	B-	-1148.079	4.537	103 908623.715	4.527
8	56	48	104	Cd		-83968.391	1.673	8517.623	0.016	B-	-7785.717	6.013	103 909856.228	1.795
6	55	49	104	In	x	-76182.675	5.775	8435.238	0.056	B-	-4555.617	8.146	103 918214.538	6.200
4	54	50	104	Sn		-71627.057	5.745	8383.911	0.055	B-	-12332#	102#	103 923105.195	6.167
2	53	51	104	Sb	+a	-59295#	101#	8258#	1#	B-	-9668#	333#	103 936344#	109#
0	52	52	104	Te	-a	-49626.831	317.609	8157.326	3.054	B-	*		103 946723.408	340.967
0 29	67	38	105	Sr	x	-38190#	500#	8152#	5#	B-	12380#	640#	104 959001#	537#
27	66	39	105	Y	x	-50570#	400#	8262#	4#	B-	10888#	400#	104 945711#	429#
25	65	40	105	Zr	x	-61458.274	12.110	8358.598	0.115	B-	8457.273	12.763	104 934021.832	13.000
23	64	41	105	Nb	x	-69915.547	4.028	8431.693	0.038	B-	7415.241	9.911	104 924942.577	4.324
21	63	42	105	Mo		-77330.788	9.055	8494.863	0.086	B-	4955.516	35.031	104 916981.989	9.721
19	62	43	105	Tc		-82286.303	35.263	8534.607	0.336	B-	3648.239	35.279	104 911662.024	37.856
17	61	44	105	Ru		-85934.543	2.499	8561.902	0.024	B-	1916.727	2.851	104 907745.478	2.683
15	60	45	105	Rh		-87851.270	2.502	8572.705	0.024	B-	566.635	2.346	104 905687.787	2.685
13	59	46	105	Pd		-88417.905	1.138	8570.651	0.011	B-	-1347.056	4.670	104 905079.479	1.222
11	58	47	105	Ag		-87070.848	4.544	8550.371	0.043	B-	-2736.999	4.362	104 906525.604	4.877
9	57	48	105	Cd		-84333.849	1.392	8516.853	0.013	B-	-4693.267	10.341	104 909463.893	1.494

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
7	56	49	105	In	x	-79640.582	10.246	8464.705	0.098	B-	-6302.581	10.989	104 914502.322	11.000	
5	55	50	105	Sn		-73338.001	3.971	8397.229	0.038	B-	-9322.510	22.185	104 921268.421	4.263	
3	54	51	105	Sb	+a	-64015.491	21.827	8300.992	0.208	B-	-11203.982	300.813	104 931276.547	23.431	
1	53	52	105	Te	-a	-52811.509	300.020	8186.837	2.857	B-	*		104 943304.516	322.084	
0 30	68	38	106	Sr	x	-34300#	600#	8114#	6#	B-	11490#	781#	105 963177#	644#	
28	67	39	106	Y	x	-45790#	500#	8215#	5#	B-	12959#	539#	105 950842#	537#	
26	66	40	106	Zr	x	-58749#	200#	8330#	2#	B-	7453#	200#	105 936930#	215#	
24	65	41	106	Nb		-66202.678	1.416	8393.266	0.013	B-	9925.325	9.239	105 928928.505	1.520	
22	64	42	106	Mo	x	-76128.003	9.130	8479.520	0.086	B-	3648.249	15.278	105 918273.231	9.801	
20	63	43	106	Tc	+	-79776.252	12.250	8506.557	0.116	B-	6547.000	11.000	105 914356.674	13.150	
18	62	44	106	Ru		-86323.252	5.391	8560.941	0.051	B-	39.404	0.212	105 907328.181	5.787	
16	61	45	106	Rh		-86362.656	5.390	8553.932	0.051	B-	3544.887	5.335	105 907285.879	5.786	
16	61	45	106	Rhm	+	-86230.543	10.061	132.113	11.334						
14	60	46	106	Pd		-89907.543	1.106	8579.993	0.010	B-	-2965.143	2.817	105 903480.287	1.186	
12	59	47	106	Ag		-86942.399	3.016	8544.640	0.028	B-	189.753	2.819	105 906663.499	3.237	
10	58	48	106	Cd		-87132.153	1.104	8539.049	0.010	B-	-6524.003	12.176	105 906459.791	1.184	
8	57	49	106	In	-	-80608.150	12.226	8470.121	0.115	B-	-3254.452	13.244	105 913463.596	13.125	
6	56	50	106	Sn		-77353.698	5.091	8432.038	0.048	B-	-10880.396	9.025	105 916957.394	5.465	
4	55	51	106	Sb	x	-66473.301	7.452	8322.012	0.070	B-	-8253.542	100.816	105 928637.979	8.000	
2	54	52	106	Te	-a	-58219.759	100.541	8236.768	0.948	B-	-14920#	412#	105 937498.521	107.934	
0	53	53	106	I	x	-43300#	400#	8089#	4#	B-	*		105 953516#	429#	
0 31	69	38	107	Sr	x	-28250#	700#	8057#	7#	B-	13720#	860#	106 969672#	751#	
29	68	39	107	Y	x	-41970#	500#	8178#	5#	B-	12050#	583#	106 954943#	537#	
27	67	40	107	Zr	x	-54020#	300#	8284#	3#	B-	9704#	300#	106 942007#	322#	
25	66	41	107	Nb	x	-63723.805	8.023	8367.090	0.075	B-	8821.170	12.224	106 931589.685	8.612	
23	65	42	107	Mo	x	-72544.975	9.223	8442.219	0.086	B-	6204.992	12.660	106 922119.770	9.901	
21	64	43	107	Tc	x	-78749.967	8.673	8492.898	0.081	B-	5112.599	11.724	106 915458.437	9.310	
19	63	44	107	Ru	-nn	-83862.565	8.673	8533.368	0.081	B-	3001.146	14.847	106 909969.837	9.310	
17	62	45	107	Rh	+p	-86863.711	12.051	8554.104	0.113	B-	1508.943	12.111	106 906747.975	12.937	
15	61	46	107	Pd		-88372.654	1.201	8560.895	0.011	B-	34.046	2.317	106 905128.058	1.289	
13	60	47	107	Ag		-88406.700	2.382	8553.901	0.022	B-	-1416.374	2.565	106 905091.509	2.556	
11	59	48	107	Cd		-86990.325	1.660	8533.352	0.016	B-	-3423.659	9.580	106 906612.049	1.782	
9	58	49	107	In		-83566.667	9.654	8494.044	0.090	B-	-5054.428	11.017	106 910287.497	10.363	
7	57	50	107	Sn	x	-78512.239	5.310	8439.495	0.050	B-	-7858.990	6.738	106 915713.649	5.700	
5	56	51	107	Sb		-70653.248	4.148	8358.734	0.039	B-	-9996#	101#	106 924150.621	4.452	
3	55	52	107	Te	-a	-60657#	101#	8258#	1#	B-	-11227#	316#	106 934882#	108#	
1	54	53	107	I	x	-49430#	300#	8146#	3#	B-	*		106 946935#	322#	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 30	69	39	108	Y	x	-36780#	600#	8129#	6#	B-	14170#	721#	107 960515#	644#	
28	68	40	108	Zr	x	-50950#	400#	8253#	4#	B-	8595#	400#	107 945303#	429#	
26	67	41	108	Nb	x	-59545.198	8.239	8325.660	0.076	B-	11204.100	12.367	107 936075.604	8.844	
24	66	42	108	Mo	x	-70749.297	9.223	8422.158	0.085	B-	5173.533	12.726	107 924047.508	9.901	
22	65	43	108	Tc	x	-75922.830	8.769	8462.817	0.081	B-	7738.574	11.790	107 918493.493	9.413	
20	64	44	108	Ru	-3n	-83661.404	8.680	8527.227	0.080	B-	1369.752	16.470	107 910185.793	9.318	
18	63	45	108	Rh	x	-85031.156	13.997	8532.666	0.130	B-	4493.060	14.041	107 908715.304	15.026	
18	63	45	108	Rhm	x	-84916.582	12.138	114.574	18.490						
16	62	46	108	Pd		-89524.215	1.108	8567.024	0.010	B-	-1917.424	2.632	107 903891.806	1.189	
14	61	47	108	Ag	-n	-87606.792	2.388	8542.026	0.022	B-	1645.631	2.639	107 905950.245	2.563	
12	60	48	108	Cd		-89252.423	1.123	8550.020	0.010	B-	-5132.594	8.584	107 904183.588	1.205	
10	59	49	108	In		-84119.828	8.641	8495.252	0.080	B-	-2049.879	9.836	107 909693.654	9.276	
8	58	50	108	Sn		-82069.949	5.382	8469.027	0.050	B-	-9624.608	7.692	107 911894.290	5.778	
6	57	51	108	Sb	x	-72445.341	5.496	8372.667	0.051	B-	-6663.665	7.712	107 922226.731	5.900	
4	56	52	108	Te		-65781.676	5.411	8303.722	0.050	B-	-13011#	101#	107 929380.469	5.808	
2	55	53	108	I	-p	-52771#	101#	8176#	1#	B-	-10139#	393#	107 943348#	109#	
0	54	54	108	Xe	-a	-42632.357	379.497	8074.889	3.514	B-	*		107 954232.285	407.406	
0 31	70	39	109	Y	x	-32480#	700#	8089#	6#	B-	13250#	860#	108 965131#	751#	
29	69	40	109	Zr	x	-45730#	500#	8204#	5#	B-	10960#	660#	108 950907#	537#	
27	68	41	109	Nb	x	-56689.800	430.816	8297.131	3.952	B-	9969.485	430.961	108 939141.000	462.500	
25	67	42	109	Mo	x	-66659.285	11.179	8381.416	0.103	B-	7623.544	14.780	108 928438.318	12.000	
23	66	43	109	Tc	x	-74282.828	9.669	8444.180	0.089	B-	6455.627	12.657	108 920254.107	10.380	
21	65	44	109	Ru	-4n	-80738.455	8.954	8496.228	0.082	B-	4260.796	9.823	108 913323.707	9.612	
19	64	45	109	Rh		-84999.251	4.040	8528.140	0.037	B-	2607.233	4.187	108 908749.555	4.336	
17	63	46	109	Pd		-87606.484	1.114	8544.882	0.010	B-	1112.947	1.402	108 905950.576	1.195	
15	62	47	109	Ag		-88719.431	1.287	8547.916	0.012	B-	-215.100	1.780	108 904755.778	1.381	
13	61	48	109	Cd		-88504.330	1.536	8538.765	0.014	B-	-2014.805	4.066	108 904986.697	1.649	
11	60	49	109	In		-86489.526	3.969	8513.103	0.036	B-	-3859.345	8.887	108 907149.679	4.261	

9	59	50	109	Sn		-82630.180	7.949	8470.518	0.073	B-	-6379.194	8.807	108	911292.857	8.533
7	58	51	109	Sb		-76250.986	5.265	8404.816	0.048	B-	-8535.587	6.850	108	918141.203	5.652
5	57	52	109	Te		-67715.399	4.382	8319.330	0.040	B-	-10042.894	8.030	108	927304.532	4.704
3	56	53	109	I	-p	-57672.505	6.729	8220.016	0.062	B-	-11502.959	300.183	108	938086.022	7.223
1	55	54	109	Xe	-a	-46169.546	300.108	8107.307	2.753	B-	*		108	950434.955	322.178
0 30	70	40	110	Zr	x	-42220#	500#	8171#	5#	B-	10090#	976#	109	954675#	537#
28	69	41	110	Nb	x	-52309.914	838.345	8255.261	7.621	B-	12225.900	838.694	109	943843.000	900.000
26	68	42	110	Mo	x	-64535.814	24.219	8359.293	0.220	B-	6498.749	26.015	109	930717.956	26.000
24	67	43	110	Tc	x	-71034.563	9.497	8411.260	0.086	B-	9038.065	12.509	109	923741.263	10.195
22	66	44	110	Ru		-80072.629	8.924	8486.312	0.081	B-	2756.064	19.404	109	914038.501	9.580
20	65	45	110	Rh		-82828.693	17.805	8504.255	0.162	B-	5502.212	17.797	109	911079.745	19.114
18	64	46	110	Pd		-88330.904	0.612	8547.163	0.006	B-	-873.598	1.378	109	905172.878	0.657
16	63	47	110	Ag		-87457.306	1.286	8532.109	0.012	B-	2890.663	1.277	109	906110.724	1.380
14	62	48	110	Cd		-90347.969	0.380	8551.275	0.003	B-	-3878.000	11.547	109	903007.470	0.407
12	61	49	110	In	-	-86469.969	11.553	8508.909	0.105	B-	-627.977	17.980	109	907170.674	12.402
10	60	50	110	Sn	x	-85841.993	13.777	8496.088	0.125	B-	-8392.248	15.012	109	907844.835	14.790
8	59	51	110	Sb	x	-77449.745	5.962	8412.682	0.054	B-	-5219.924	8.875	109	916854.283	6.400
6	58	52	110	Te		-72229.821	6.575	8358.116	0.060	B-	-11761.977	62.288	109	922458.102	7.058
4	57	53	110	I	-a	-60467.844	61.940	8244.077	0.563	B-	-8545.207	118.470	109	935085.102	66.494
2	56	54	110	Xe	-a	-51922.636	100.988	8159.281	0.918	B-	*		109	944258.759	108.415
0 31	71	40	111	Zr	x	-36480#	600#	8118#	5#	B-	12480#	671#	110	960837#	644#
29	70	41	111	Nb	x	-48960#	300#	8223#	3#	B-	10980#	300#	110	947439#	322#
27	69	42	111	Mo	+	-59939.813	12.578	8315.293	0.113	B-	9084.862	6.800	110	935651.966	13.503
25	68	43	111	Tc	x	-69024.675	10.582	8390.091	0.095	B-	7760.650	13.848	110	925898.966	11.359
23	67	44	111	Ru	x	-76785.325	9.682	8452.958	0.087	B-	5518.546	11.862	110	917567.566	10.394
21	66	45	111	Rh		-82303.871	6.853	8495.627	0.062	B-	3682.015	6.890	110	911643.164	7.356
19	65	46	111	Pd	-n	-85985.886	0.731	8521.750	0.007	B-	2229.561	1.572	110	907690.358	0.785
17	64	47	111	Ag	+	-88215.447	1.459	8534.788	0.013	B-	1036.800	1.414	110	905296.827	1.565
15	63	48	111	Cd		-89252.247	0.357	8537.080	0.003	B-	-860.197	3.417	110	904183.776	0.383
13	62	49	111	In		-88392.050	3.424	8522.282	0.031	B-	-2453.469	6.337	110	905107.236	3.675
11	61	50	111	Sn	+n	-85938.581	5.336	8493.131	0.048	B-	-5101.834	10.334	110	907741.143	5.728
9	60	51	111	Sb	x	-80836.747	8.849	8440.120	0.080	B-	-7249.260	10.937	110	913218.187	9.500
7	59	52	111	Te	x	-73587.487	6.427	8367.763	0.058	B-	-8633.692	7.994	110	921000.587	6.900
5	58	53	111	I		-64953.795	4.754	8282.934	0.043	B-	-10434#	116#	110	930269.236	5.103
3	57	54	111	Xe	-a	-54520#	115#	8182#	1#	B-	-11620#	231#	110	941470#	124#
1	56	55	111	Cs	x	-42900#	200#	8070#	2#	B-	*		110	953945#	215#
0 32	72	40	112	Zr	x	-32420#	700#	8081#	6#	B-	11650#	761#	111	965196#	751#
30	71	41	112	Nb	x	-44070#	300#	8178#	3#	B-	13410#	361#	111	952689#	322#
28	70	42	112	Mo	x	-57480#	200#	8291#	2#	B-	7779#	200#	111	938293#	215#
26	69	43	112	Tc	x	-65258.932	5.515	8353.622	0.049	B-	10371.941	11.060	111	929941.658	5.920
24	68	44	112	Ru	x	-75630.873	9.600	8439.243	0.086	B-	4100.179	45.119	111	918806.922	10.305
22	67	45	112	Rh		-79731.052	44.085	8468.867	0.394	B-	6589.987	43.927	111	914405.199	47.327
22	67	45	112	Rhm	+	-79392.039	56.381	339.013	71.173						
20	66	46	112	Pd		-86321.039	6.546	8520.721	0.058	B-	262.690	6.980	111	907330.557	7.027
18	65	47	112	Ag	x	-86583.729	2.422	8516.081	0.022	B-	3991.128	2.435	111	907048.548	2.600
16	64	48	112	Cd		-90574.857	0.250	8544.731	0.002	B-	-2584.731	4.243	111	902763.896	0.268
14	63	49	112	In		-87990.127	4.251	8514.667	0.038	B-	664.922	4.243	111	905538.718	4.563
12	62	50	112	Sn		-88655.049	0.294	8513.619	0.003	B-	-7056.076	17.832	111	904824.894	0.315
10	61	51	112	Sb	x	-81598.973	17.829	8443.633	0.159	B-	-4031.455	19.702	111	912399.903	19.140
8	60	52	112	Te	x	-77567.518	8.383	8400.653	0.075	B-	-10504.180	13.239	111	916727.848	9.000
6	59	53	112	I	x	-67063.339	10.246	8299.880	0.091	B-	-7036.991	13.175	111	928004.548	11.000
4	58	54	112	Xe	-a	-60026.348	8.283	8230.065	0.074	B-	-13612#	116#	111	935559.068	8.891
2	57	55	112	Cs	-p	-46415#	116#	8102#	1#	B-	*		111	950172#	124#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 33	73	40	113	Zr	x	-26340#	300#	8027#	3#	B-	13870#	500#	112	971723#	322#
31	72	41	113	Nb	x	-40210#	400#	8143#	4#	B-	12440#	500#	112	956833#	429#
29	71	42	113	Mo	x	-52650#	300#	8246#	3#	B-	10162#	300#	112	943478#	322#
27	70	43	113	Tc	x	-62811.549	3.353	8329.465	0.030	B-	9056.267	38.428	112	932569.032	3.600
25	69	44	113	Ru		-71867.816	38.282	8402.686	0.339	B-	6899.128	38.941	112	922846.730	41.097
23	68	45	113	Rh	x	-78766.944	7.132	8456.817	0.063	B-	4823.556	9.881	112	915440.212	7.656
21	67	46	113	Pd	x	-83590.500	6.947	8492.579	0.061	B-	3436.325	18.034	112	910261.912	7.458
19	66	47	113	Ag	+	-87026.825	16.643	8516.066	0.147	B-	2016.462	16.641	112	906572.865	17.866
17	65	48	113	Cd		-89043.286	0.245	8526.987	0.002	B-	323.837	0.265	112	904408.105	0.262
15	64	49	113	In		-89367.123	0.188	8522.930	0.002	B-	-1038.994	1.573	112	904060.451	0.202
13	63	50	113	Sn		-88328.129	1.575	8506.812	0.014	B-	-3911.164	17.121	112	905175.857	1.690
11	62	51	113	Sb	-	-84416.965	17.193	8465.276	0.152	B-	-6069.928	32.810	112	909374.664	18.457

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
9	61	52	113	Te	x	-78347.037	27.945	8404.637	0.247	B-	-7227.521	29.070	112 915891.000	30.000	
7	60	53	113	I	x	-71119.517	8.011	8333.753	0.071	B-	-8915.890	10.533	112 923650.062	8.600	
5	59	54	113	Xe		-62203.626	6.840	8247.928	0.061	B-	-10439.088	10.970	112 933221.663	7.342	
3	58	55	113	Cs	-p	-51764.539	8.577	8148.623	0.076	B-	-12055#	300#	112 944428.484	9.207	
1	57	56	113	Ba	x	-39710#	300#	8035#	3#	B-	*		112 957370#	322#	
0 32	73	41	114	Nb	x	-34960#	500#	8097#	4#	B-	14720#	583#	113 962469#	537#	
30	72	42	114	Mo	x	-49680#	300#	8219#	3#	B-	8920#	527#	113 946666#	322#	
28	71	43	114	Tc	x	-58600.294	433.145	8290.260	3.800	B-	11620.919	433.159	113 937090.000	465.000	
28	71	43	114	Tcm	+	-58436.881	12.621	163.413	433.329						
26	70	44	114	Ru	x	-70221.213	3.556	8385.335	0.031	B-	5489.062	71.643	113 924614.431	3.817	
24	69	45	114	Rh		-75710.275	71.561	8426.622	0.628	B-	7780.071	71.891	113 918721.680	76.824	
22	68	46	114	Pd	x	-83490.346	6.948	8488.006	0.061	B-	1440.464	8.313	113 910369.431	7.459	
20	67	47	114	Ag	x	-84930.811	4.564	8493.779	0.040	B-	5084.123	4.573	113 908823.029	4.900	
18	66	48	114	Cd		-90014.934	0.276	8531.513	0.002	B-	-1445.127	0.382	113 903364.998	0.296	
16	65	49	114	In		-88569.807	0.301	8511.974	0.003	B-	1989.928	0.302	113 904916.405	0.323	
14	64	50	114	Sn		-90559.735	0.029	8522.567	0.000	B-	-6063.119	19.772	113 902780.130	0.031	
12	63	51	114	Sb		-84496.616	19.772	8462.519	0.173	B-	-2606.940	31.427	113 909289.155	21.226	
10	62	52	114	Te	x	-81889.676	24.428	8432.789	0.214	B-	-9250.742	31.588	113 912087.820	26.224	
8	61	53	114	I	x	-72638.935	20.027	8344.779	0.176	B-	-5553.036	22.935	113 922018.900	21.500	
6	60	54	114	Xe	x	-67085.899	11.178	8289.205	0.098	B-	-12399.971	85.799	113 927980.329	12.000	
4	59	55	114	Cs	-a	-54685.928	85.068	8173.571	0.746	B-	-8780.492	133.337	113 941292.244	91.323	
2	58	56	114	Ba	-a	-45905.437	102.676	8089.687	0.901	B-	*		113 950718.489	110.227	
0 33	74	41	115	Nb	x	-30880#	500#	8061#	4#	B-	13670#	640#	114 966849#	537#	
31	73	42	115	Mo	x	-44550#	400#	8173#	3#	B-	11247#	445#	114 952174#	429#	
29	72	43	115	Tc	x	-55796#	196#	8264#	2#	B-	10309#	197#	114 940100#	210#	
27	71	44	115	Ru	x	-66105.295	25.166	8346.814	0.219	B-	8123.933	26.179	114 929033.049	27.016	
25	70	45	115	Rh	x	-74229.228	7.319	8410.654	0.064	B-	6196.594	15.350	114 920311.649	7.857	
23	69	46	115	Pd		-80425.822	13.547	8457.734	0.118	B-	4556.765	21.650	114 913659.333	14.543	
21	68	47	115	Ag		-84982.587	18.268	8490.555	0.159	B-	3101.893	18.274	114 908767.445	19.611	
19	67	48	115	Cd		-88084.479	0.651	8510.725	0.006	B-	1451.877	0.651	114 905437.426	0.699	
17	66	49	115	In		-89536.357	0.012	8516.547	0.000	B-	497.489	0.010	114 903878.772	0.012	
15	65	50	115	Sn		-90033.846	0.015	8514.070	0.000	B-	-3030.434	16.025	114 903344.695	0.016	
13	64	51	115	Sb	x	-87003.412	16.025	8480.916	0.139	B-	-4940.645	32.214	114 906598.000	17.203	
11	63	52	115	Te	x	-82062.767	27.945	8431.150	0.243	B-	-5724.963	40.184	114 911902.000	30.000	
9	62	53	115	I	x	-76337.805	28.876	8374.565	0.251	B-	-7681.047	31.313	114 918048.000	31.000	
7	61	54	115	Xe	x	-68656.757	12.109	8300.970	0.105	B-	-8957#	103#	114 926293.943	13.000	
5	60	55	115	Cs	x	-59699#	102#	8216#	1#	B-	-10779#	225#	114 935910#	110#	
3	59	56	115	Ba	x	-48920#	200#	8116#	2#	B-	*		114 947482#	215#	
0 34	75	41	116	Nb	x	-25230#	300#	8012#	3#	B-	15980#	583#	115 972914#	322#	
32	74	42	116	Mo	x	-41210#	500#	8143#	4#	B-	10003#	582#	115 955759#	537#	
30	73	43	116	Tc	x	-51214#	298#	8223#	3#	B-	12855#	298#	115 945020#	320#	
28	72	44	116	Ru	x	-64068.917	3.726	8326.884	0.032	B-	6666.825	73.926	115 931219.191	4.000	
26	71	45	116	Rh		-70735.742	73.832	8377.612	0.636	B-	9095.284	74.169	115 924062.061	79.261	
24	70	46	116	Pd	x	-79831.026	7.135	8449.276	0.062	B-	2711.638	7.845	115 914297.872	7.659	
22	69	47	116	Ag	x	-82542.664	3.260	8465.907	0.028	B-	6169.825	3.264	115 911386.809	3.500	
20	68	48	116	Cd		-88712.489	0.160	8512.351	0.001	B-	-462.731	0.272	115 904763.230	0.172	
18	67	49	116	In	-n	-88249.758	0.220	8501.618	0.002	B-	3276.220	0.240	115 905259.992	0.236	
16	66	50	116	Sn		-91525.979	0.096	8523.117	0.001	B-	-4703.959	5.154	115 901742.825	0.103	
14	65	51	116	Sb		-86822.020	5.154	8475.821	0.044	B-	-1558.227	24.749	115 906792.732	5.533	
14	65	51	116	Sbn	-	-86435.979	40.000	386.041	40.331						
12	64	52	116	Te		-85263.793	24.206	8455.643	0.209	B-	-7843.139	75.323	115 908465.558	25.986	
10	63	53	116	I		-77420.654	75.037	8381.286	0.647	B-	-4373.776	75.844	115 916885.513	80.555	
8	62	54	116	Xe		-73046.877	13.017	8336.837	0.112	B-	-11004#	101#	115 921580.955	13.974	
6	61	55	116	Cs	ea	-62043#	100#	8235#	1#	B-	-7663#	224#	115 933395#	108#	
4	60	56	116	Ba	x	-54380#	200#	8162#	2#	B-	-14330#	379#	115 941621#	215#	
2	59	57	116	La	-a	-40050#	321#	8032#	3#	B-	*		115 957005#	345#	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 33	75	42	117	Mo	x	-35689#	500#	8096#	4#	B-	12450#	640#	116 961686#	537#	
31	74	43	117	Tc	x	-48140#	400#	8195#	3#	B-	11350#	589#	116 948320#	429#	
29	73	44	117	Ru	x	-59489.871	433.145	8285.563	3.702	B-	9406.887	433.236	116 936135.000	465.000	
27	72	45	117	Rh	x	-68896.758	8.895	8359.277	0.076	B-	7527.131	11.411	116 926036.291	9.548	
25	71	46	117	Pd		-76423.889	7.255	8416.924	0.062	B-	5758.028	14.767	116 917955.584	7.788	
23	70	47	117	Ag		-82181.918	13.572	8459.451	0.116	B-	4236.479	13.610	116 911774.086	14.570	
21	69	48	117	Cd	-n	-86418.397	1.013	8488.974	0.009	B-	2524.638	4.983	116 907226.039	1.087	
19	68	49	117	In		-88943.035	4.881	8503.865	0.042	B-	1454.707	4.857	116 904515.729	5.239	
17	67	50	117	Sn		-90397.742	0.483	8509.612	0.004	B-	-1758.179	8.445	116 902954.036	0.518	

15	66	51	117	Sb		-88639.564	8.437	8487.898	0.072	B-	-3544.063	13.079	116 904841.519	9.057
13	65	52	117	Te		-85095.500	13.455	8450.920	0.115	B-	-4656.932	28.128	116 908646.227	14.444
11	64	53	117	I		-80438.568	25.558	8404.431	0.218	B-	-6253.221	27.585	116 913645.649	27.437
9	63	54	117	Xe	x	-74185.347	10.378	8344.298	0.089	B-	-7692.246	63.267	116 920358.758	11.141
7	62	55	117	Cs	x	-66493.101	62.410	8271.865	0.533	B-	-9035.194	258.001	116 928616.723	67.000
7	62	55	117	Csx	IT	-66443.101	79.969	50.000	50.000					
5	61	56	117	Ba	ep	-57457.906	250.339	8187.955	2.140	B-	-11187#	321#	116 938316.403	268.749
3	60	57	117	La	-p	-46271#	200#	8086#	2#	B-	*		116 950326#	215#
0 34	76	42	118	Mo	x	-32370#	500#	8067#	4#	B-	10920#	640#	117 965249#	537#
32	75	43	118	Tc	x	-43290#	400#	8153#	3#	B-	13710#	447#	117 953526#	429#
30	74	44	118	Ru	x	-57000#	200#	8263#	2#	B-	7887#	202#	117 938808#	215#
28	73	45	118	Rh	x	-64886.839	24.236	8322.854	0.205	B-	10501.518	24.342	117 930341.116	26.018
26	72	46	118	Pd		-75388.358	2.494	8405.220	0.021	B-	4165.444	3.542	117 919067.273	2.677
24	71	47	118	Ag	x	-79553.802	2.515	8433.890	0.021	B-	7147.847	20.158	117 914595.484	2.700
22	70	48	118	Cd	-nn	-86701.649	20.001	8487.835	0.169	B-	526.528	21.450	117 906921.955	21.471
20	69	49	118	In		-87228.177	7.752	8485.667	0.066	B-	4424.666	7.740	117 906356.705	8.322
20	69	49	118	Inm	+	-87128#	50#	100#	51#					
18	68	50	118	Sn		-91652.843	0.499	8516.534	0.004	B-	-3656.639	2.975	117 901606.630	0.536
16	67	51	118	Sb	-	-87996.204	3.016	8478.916	0.026	B-	-305.450	18.552	117 905532.194	3.237
16	67	51	118	Sbn	-	-87745.843	5.025	250.361	5.818					
14	66	52	118	Te	+nn	-87690.754	18.306	8469.697	0.155	B-	-6719.697	26.936	117 905860.108	19.652
12	65	53	118	I	x	-80971.056	19.760	8406.120	0.167	B-	-2891.989	22.320	117 913074.000	21.213
10	64	54	118	Xe	x	-78079.067	10.378	8374.982	0.088	B-	-9669.690	16.442	117 916178.678	11.141
8	63	55	118	Cs	IT	-68409.377	12.753	8286.405	0.108	B-	-6210#	201#	117 926559.517	13.690
8	63	55	118	Csm	IT	-68309#	61#	100#	60#					
8	63	55	118	Csx	x	-68404.377	12.109	5.000	4.000					
6	62	56	118	Ba	x	-62200#	200#	8227#	2#	B-	-12580#	361#	117 933226#	215#
4	61	57	118	La	x	-49620#	300#	8114#	3#	B-	*		117 946731#	322#
0 35	77	42	119	Mo	x	-26580#	300#	8019#	3#	B-	13590#	583#	118 971465#	322#
33	76	43	119	Tc	x	-40170#	500#	8126#	4#	B-	11910#	583#	118 956876#	537#
31	75	44	119	Ru	x	-52080#	300#	8220#	3#	B-	10743#	300#	118 944090#	322#
29	74	45	119	Rh	x	-62822.802	9.315	8303.395	0.078	B-	8584.475	12.442	118 932556.951	10.000
27	73	46	119	Pd	x	-71407.277	8.248	8368.959	0.069	B-	7238.482	16.857	118 923341.138	8.854
25	72	47	119	Ag		-78645.759	14.703	8423.213	0.124	B-	5331.180	35.926	118 915570.309	15.783
23	71	48	119	Cd		-83976.939	37.695	8461.438	0.317	B-	3721.720	38.088	118 909847.052	40.467
21	70	49	119	In		-87698.658	7.310	8486.139	0.061	B-	2366.326	7.338	118 905851.622	7.847
19	69	50	119	Sn		-90064.985	0.725	8499.449	0.006	B-	-589.445	6.994	118 903311.266	0.778
17	68	51	119	Sb		-89475.539	6.998	8487.922	0.059	B-	-2293.000	2.000	118 903944.062	7.512
15	67	52	119	Te	-	-87182.539	7.278	8462.079	0.061	B-	-3404.808	22.894	118 906405.698	7.813
13	66	53	119	I	x	-83777.731	21.706	8426.892	0.182	B-	-4983.243	24.060	118 910060.910	23.302
11	65	54	119	Xe		-78794.488	10.378	8378.442	0.087	B-	-6489.427	17.379	118 915410.641	11.141
9	64	55	119	Cs	IT	-72305.061	13.940	8317.335	0.117	B-	-7714.965	200.754	118 922377.327	14.965
9	64	55	119	Csm	IT	-72255#	33#	50#	30#					
9	64	55	119	Csx	x	-72289.061	8.563	16.000	11.000					
7	63	56	119	Ba	ep	-64590.096	200.269	8245.929	1.683	B-	-9570#	361#	118 930659.683	214.997
5	62	57	119	La	x	-55020#	300#	8159#	3#	B-	-11199#	583#	118 940934#	322#
3	61	58	119	Ce	x	-43820#	500#	8058#	4#	B-	*		118 952957#	537#
0 34	77	43	120	Tc	x	-35000#	500#	8083#	4#	B-	14720#	640#	119 962426#	537#
32	76	44	120	Ru	x	-49720#	400#	8199#	3#	B-	8899#	447#	119 946623#	429#
30	75	45	120	Rh	x	-58620#	200#	8266#	2#	B-	11660#	200#	119 937069#	215#
28	74	46	120	Pd		-70279.604	2.296	8357.082	0.019	B-	5371.908	5.026	119 924551.745	2.464
26	73	47	120	Ag	x	-75651.512	4.471	8395.328	0.037	B-	8305.853	5.820	119 918784.765	4.800
24	72	48	120	Cd	x	-83957.365	3.726	8458.024	0.031	B-	1770.375	40.184	119 909868.065	4.000
22	71	49	120	In	+	-85727.741	40.011	8466.258	0.333	B-	5370.000	40.000	119 907967.489	42.953
22	71	49	120	Inm	+	-85678#	50#	50#	64#					
20	70	50	120	Sn		-91097.741	0.920	8504.488	0.008	B-	-2680.608	7.140	119 902202.557	0.987
18	69	51	120	Sb	-	-88417.133	7.199	8475.630	0.060	B-	945.023	7.353	119 905080.308	7.728
16	68	52	120	Te		-89362.156	1.751	8476.986	0.015	B-	-5615.000	15.000	119 904065.784	1.880
14	67	53	120	I	-	-83747.156	15.102	8423.674	0.126	B-	-1574.722	19.176	119 910093.734	16.212
12	66	54	120	Xe	x	-82172.434	11.817	8404.032	0.098	B-	-8283.786	15.461	119 911784.267	12.686
10	65	55	120	Cs	IT	-73888.649	9.970	8328.481	0.083	B-	-5000.000	300.000	119 920677.277	10.702
10	65	55	120	Csm	IT	-73789#	61#	100#	60#					
10	65	55	120	Csx	x	-73883.649	9.132	5.000	4.000					
8	64	56	120	Ba	-	-68888.649	300.166	8280.295	2.501	B-	-11319#	424#	119 926044.997	322.241
6	63	57	120	La	x	-57570#	300#	8179#	2#	B-	-7840#	583#	119 938196#	322#
4	62	58	120	Ce	x	-49730#	500#	8108#	4#	B-	*		119 946613#	537#

1N-Z N Z A EL O MASS EXCESS BINDING ENERGY/A BETA-DECAY ENERGY ATOMIC MASS V/S

							(keV)		(keV)			(keV)			(micro-u)	
0	35	78	43	121	Tc	x	-31540#	500#	8054#	4#	B-	13080#	640#	120	966140#	537#
	33	77	44	121	Ru	x	-44620#	400#	8156#	3#	B-	11630#	737#	120	952098#	429#
	31	76	45	121	Rh	x	-56250.134	619.444	8245.240	5.119	B-	9932.203	619.453	120	939613.000	665.000
	29	75	46	121	Pd	x	-66182.337	3.353	8320.858	0.028	B-	8220.493	12.565	120	928950.342	3.600
	27	74	47	121	Ag	x	-74402.831	12.109	8382.331	0.100	B-	6671.006	12.264	120	920125.279	13.000
	25	73	48	121	Cd	x	-81073.837	1.942	8430.997	0.016	B-	4760.756	27.488	120	912963.660	2.085
	23	72	49	121	In	+p	-85834.593	27.419	8463.877	0.227	B-	3362.033	27.410	120	907852.779	29.435
	21	71	50	121	Sn		-89196.626	0.978	8485.196	0.008	B-	402.530	2.524	120	904243.488	1.050
	19	70	51	121	Sb		-89599.156	2.506	8482.057	0.021	B-	-1056.047	25.759	120	903811.354	2.690
	17	69	52	121	Te		-88543.109	25.835	8466.864	0.214	B-	-2297.464	25.986	120	904945.067	27.734
	15	68	53	121	I		-86245.645	4.723	8441.411	0.039	B-	-3764.648	11.279	120	907411.496	5.070
	13	67	54	121	Xe		-82480.997	10.243	8403.833	0.085	B-	-5378.655	13.979	120	911453.012	10.995
	11	66	55	121	Cs		-77102.342	14.290	8352.915	0.118	B-	-6357.495	141.176	120	917227.235	15.340
	11	66	55	121	Csx	IT	-77056.342	16.377	46.000	8.000						
	9	65	56	121	Ba	-	-70744.847	141.898	8293.908	1.173	B-	-8555#	332#	120	924052.286	152.333
	7	64	57	121	La	x	-62190#	300#	8217#	2#	B-	-9500#	500#	120	933236#	322#
	5	63	58	121	Ce	x	-52690#	401#	8132#	3#	B-	-11139#	641#	120	943435#	430#
	3	62	59	121	Pr	-p	-41551#	500#	8033#	4#	B-	*		120	955393#	537#
0	36	79	43	122	Tc	x	-26305#	300#	8011#	2#	B-	15475#	583#	121	971760#	322#
	34	78	44	122	Ru	x	-41780#	500#	8132#	4#	B-	10099#	583#	121	955147#	537#
	32	77	45	122	Rh	x	-51880#	300#	8208#	2#	B-	12737#	301#	121	944305#	322#
	30	76	46	122	Pd	x	-64616.169	19.561	8305.975	0.160	B-	6489.949	42.909	121	930631.693	21.000
	28	75	47	122	Ag	x	-71106.118	38.191	8352.759	0.313	B-	9506.266	38.260	121	923664.446	41.000
	26	74	48	122	Cd		-80612.384	2.299	8424.267	0.019	B-	2958.976	50.113	121	913459.050	2.468
	24	73	49	122	In	+	-83571.360	50.060	8442.108	0.410	B-	6368.592	50.000	121	910282.458	53.741
	24	73	49	122	Inn	+	-83284.616	133.815	286.745	142.831						
	22	72	50	122	Sn		-89939.953	2.448	8487.897	0.020	B-	-1605.748	3.213	121	903445.494	2.627
	20	71	51	122	Sb		-88334.204	2.503	8468.322	0.021	B-	1979.077	2.127	121	905169.336	2.687
	18	70	52	122	Te		-90313.281	1.357	8478.131	0.011	B-	-4234.000	5.000	121	903044.709	1.456
	16	69	53	122	I	-	-86079.281	5.181	8437.014	0.042	B-	-724.293	12.260	121	907590.095	5.561
	14	68	54	122	Xe	x	-85354.988	11.111	8424.664	0.091	B-	-7210.220	35.472	121	908367.655	11.928
	12	67	55	122	Cs		-78144.769	33.687	8359.152	0.276	B-	-3535.817	43.769	121	916108.144	36.164
	12	67	55	122	Csn	x	-78004.759	9.132	140.010	34.903						
	12	67	55	122	Csx	IT	-78130.769	34.407	14.000	7.000						
	10	66	56	122	Ba	x	-74608.952	27.945	8323.757	0.229	B-	-10066#	299#	121	919904.000	30.000
	8	65	57	122	La	x	-64543#	298#	8235#	2#	B-	-6669#	499#	121	930710#	320#
	6	64	58	122	Ce	x	-57874#	401#	8174#	3#	B-	-13094#	641#	121	937870#	430#
	4	63	59	122	Pr	x	-44780#	500#	8060#	4#	B-	*		121	951927#	537#
0	35	79	44	123	Ru	x	-36550#	500#	8089#	4#	B-	12640#	640#	122	960762#	537#
	33	78	45	123	Rh	x	-49190#	400#	8185#	3#	B-	11239#	885#	122	947192#	429#
	31	77	46	123	Pd	x	-60429.748	789.441	8270.032	6.418	B-	9138.832	790.114	122	935126.000	847.500
	29	76	47	123	Ag	x	-69568.581	32.602	8337.971	0.265	B-	7845.603	32.714	122	925315.060	35.000
	27	75	48	123	Cd		-77414.183	2.696	8395.396	0.022	B-	6014.850	19.898	122	916892.460	2.894
	27	75	48	123	Cdm	x	-77270.841	3.074	143.342	4.089						
	25	74	49	123	In		-83429.033	19.832	8437.936	0.161	B-	4385.649	19.839	122	910435.253	21.290
	23	73	50	123	Sn		-87814.682	2.479	8467.231	0.020	B-	1408.208	2.420	122	905727.065	2.661
	21	72	51	123	Sb		-89222.890	1.356	8472.320	0.011	B-	-51.913	0.066	122	904215.292	1.456
	19	71	52	123	Te		-89170.977	1.355	8465.537	0.011	B-	-1228.390	3.445	122	904271.023	1.454
	17	70	53	123	I		-87942.587	3.686	8449.190	0.030	B-	-2694.330	9.683	122	905589.754	3.956
	15	69	54	123	Xe		-85248.258	9.534	8420.924	0.078	B-	-4204.601	15.412	122	908482.235	10.234
	13	68	55	123	Cs	x	-81043.657	12.109	8380.380	0.098	B-	-5388.693	17.125	122	912996.060	13.000
	13	68	55	123	Csx	IT	-81036.657	12.753	7.000	4.000						
	11	67	56	123	Ba	x	-75654.963	12.109	8330.209	0.098	B-	-7004#	196#	122	918781.060	13.000
	9	66	57	123	La	x	-68651#	196#	8267#	2#	B-	-8365#	357#	122	926300#	210#
	7	65	58	123	Ce	x	-60286#	298#	8193#	2#	B-	-10056#	499#	122	935280#	320#
	5	64	59	123	Pr	x	-50230#	400#	8104#	3#	B-	*		122	946076#	429#
0	36	80	44	124	Ru	x	-33590#	600#	8065#	5#	B-	11120#	721#	123	963940#	644#
	34	79	45	124	Rh	x	-44710#	400#	8148#	3#	B-	13690#	500#	123	952002#	429#
	32	78	46	124	Pd	x	-58400#	300#	8252#	2#	B-	7830#	391#	123	937305#	322#
	30	77	47	124	Ag	x	-66229.951	251.503	8308.896	2.028	B-	10469.486	251.517	123	928899.227	270.000
	28	76	48	124	Cd		-76699.436	2.609	8387.018	0.021	B-	4168.342	30.536	123	917659.772	2.800
	26	75	49	124	In		-80867.778	30.561	8414.324	0.246	B-	7363.697	30.567	123	913184.873	32.808
	26	75	49	124	Inm	+	-80890.475	51.017	-22.697	59.459						
	24	74	50	124	Sn		-88231.475	1.314	8467.400	0.011	B-	-612.407	0.410	123	905279.620	1.410
	22	73	51	124	Sb	-n	-87619.068	1.358	8456.152	0.011	B-	2905.073	0.132	123	905937.066	1.457
	20	72	52	124	Te		-90524.141	1.352	8473.270	0.011	B-	-3159.587	1.859	123	902818.342	1.451

18	71	53	124	I	-	-87364.554	2.299	8441.481	0.019	B-	302.850	1.864	123	906210.298	2.467
16	70	54	124	Xe		-87667.404	1.358	8437.614	0.011	B-	-5926.344	9.251	123	905885.175	1.457
14	69	55	124	Cs	x	-81741.060	9.151	8383.511	0.074	B-	-2651.275	15.489	123	912247.366	9.823
14	69	55	124	Csx	IT	-81711.060	21.994	30.000	20.000						
12	68	56	124	Ba	x	-79089.786	12.497	8355.821	0.101	B-	-8831.169	58.030	123	915093.627	13.416
10	67	57	124	La	x	-70258.617	56.669	8278.293	0.457	B-	-5343#	303#	123	924574.275	60.836
8	66	58	124	Ce	x	-64916#	298#	8229#	2#	B-	-11765#	499#	123	930310#	320#
6	65	59	124	Pr	x	-53151#	401#	8128#	3#	B-	-8321#	641#	123	942940#	430#
4	64	60	124	Nd	x	-44830#	500#	8054#	4#	B-	*		123	951873#	537#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 37	81	44	125	Ru	x	-28370#	300#	8023#	2#	B-	13460#	583#	124	969544#	322#
35	80	45	125	Rh	x	-41830#	500#	8124#	4#	B-	12130#	640#	124	955094#	537#
33	79	46	125	Pd	x	-53960#	400#	8215#	3#	B-	10560#	589#	124	942072#	429#
31	78	47	125	Ag	x	-64519.939	433.145	8293.315	3.465	B-	8828.151	433.154	124	930735.000	465.000
29	77	48	125	Cd	x	-73348.090	2.888	8357.682	0.023	B-	7064.218	3.387	124	921257.590	3.100
29	77	48	125	Cdm	x	-73161.791	3.167	186.299	4.286						
27	76	49	125	In	x	-80412.308	1.770	8407.937	0.014	B-	5481.349	2.213	124	913673.841	1.900
27	76	49	125	Inm	x	-80060.203	12.109	352.105	12.238						
25	75	50	125	Sn	-n	-85893.657	1.329	8445.529	0.011	B-	2361.437	2.166	124	907789.371	1.426
23	74	51	125	Sb	+	-88255.093	2.515	8458.161	0.020	B-	766.700	2.121	124	905254.265	2.700
21	73	52	125	Te		-89021.793	1.352	8458.036	0.011	B-	-185.770	0.060	124	904431.178	1.451
19	72	53	125	I	-	-88836.023	1.353	8450.291	0.011	B-	-1636.663	0.426	124	904630.611	1.452
17	71	54	125	Xe		-87199.360	1.415	8430.939	0.011	B-	-3109.618	7.788	124	906387.641	1.518
15	70	55	125	Cs		-84089.742	7.736	8399.803	0.062	B-	-4420.766	13.441	124	909725.953	8.304
13	69	56	125	Ba		-79668.976	10.992	8358.178	0.088	B-	-5909.484	27.631	124	914471.840	11.800
11	68	57	125	La		-73759.492	25.997	8304.644	0.208	B-	-7102#	197#	124	920815.931	27.909
9	67	58	125	Ce	x	-66658#	196#	8242#	2#	B-	-8587#	358#	124	928440#	210#
7	66	59	125	Pr	x	-58070#	300#	8167#	2#	B-	-10001#	500#	124	937659#	322#
5	65	60	125	Nd	x	-48070#	400#	8080#	3#	B-	*		124	948395#	429#
0 36	81	45	126	Rh	x	-37200#	500#	8087#	4#	B-	14590#	640#	125	960064#	537#
34	80	46	126	Pd	x	-51790#	400#	8197#	3#	B-	8930#	447#	125	944401#	429#
32	79	47	126	Ag	x	-60720#	200#	8261#	2#	B-	11535#	200#	125	934814#	215#
30	78	48	126	Cd		-72255.727	2.304	8346.739	0.018	B-	5553.650	4.783	125	922430.290	2.473
28	77	49	126	In	x	-77809.377	4.192	8384.607	0.033	B-	8205.758	11.480	125	916468.202	4.500
28	77	49	126	Inm	x	-77719.488	5.123	89.889	6.620						
26	76	50	126	Sn	-nn	-86015.135	10.688	8443.523	0.085	B-	378.000	30.000	125	907658.959	11.473
24	75	51	126	Sb	-	-86393.135	31.847	8440.314	0.253	B-	3671.032	31.822	125	907253.159	34.189
22	74	52	126	Te		-90064.167	1.354	8463.240	0.011	B-	-2153.671	3.672	125	903312.144	1.453
20	73	53	126	I		-87910.496	3.778	8439.938	0.030	B-	1235.891	3.778	125	905624.205	4.055
18	72	54	126	Xe		-89146.38687	0.00562	8443.537	0.000	B-	-4795.704	10.359	125	904297.422	0.006
16	71	55	126	Cs		-84350.683	10.359	8399.267	0.082	B-	-1680.770	16.232	125	909445.821	11.120
14	70	56	126	Ba	x	-82669.913	12.497	8379.719	0.099	B-	-7696.438	91.366	125	911250.202	13.416
12	69	57	126	La	x	-74973.476	90.508	8312.427	0.718	B-	-4152.911	94.723	125	919512.667	97.163
12	69	57	126	Lam	-	-74759.913	400.195	213.562	410.302						
10	68	58	126	Ce	x	-70820.565	27.945	8273.258	0.222	B-	-10497#	198#	125	923971.000	30.000
8	67	59	126	Pr	x	-60324#	196#	8184#	2#	B-	-6943#	358#	125	935240#	210#
6	66	60	126	Nd	x	-53380#	300#	8122#	2#	B-	-13631#	583#	125	942694#	322#
4	65	61	126	Pm	x	-39750#	500#	8008#	4#	B-	*		125	957327#	537#
0 37	82	45	127	Rh	x	-33730#	600#	8060#	5#	B-	13490#	781#	126	963789#	644#
35	81	46	127	Pd	x	-47220#	500#	8160#	4#	B-	11429#	539#	126	949307#	537#
33	80	47	127	Ag	x	-58650#	200#	8244#	2#	B-	10092#	200#	126	937037#	215#
31	79	48	127	Cd	x	-68741.199	6.200	8316.897	0.049	B-	8138.698	11.767	126	926203.291	6.656
31	79	48	127	Cdm	x	-68455.890	4.374	285.309	7.588						
29	78	49	127	In		-76879.897	10.001	8374.821	0.079	B-	6589.681	12.026	126	917466.040	10.736
29	78	49	127	Inm	x	-76486.264	14.904	393.632	17.949						
29	78	49	127	Inn		-75114.412	36.847	1765.484	37.952						
27	77	50	127	Sn		-83469.577	9.226	8420.548	0.073	B-	3228.716	10.167	126	910391.727	9.904
25	76	51	127	Sb		-86698.293	5.083	8439.811	0.040	B-	1582.203	4.910	126	906925.558	5.457
23	75	52	127	Te		-88280.496	1.365	8446.109	0.011	B-	702.720	3.565	126	905226.993	1.465
21	74	53	127	I		-88983.216	3.621	8445.482	0.029	B-	-662.334	2.044	126	904472.592	3.887
19	73	54	127	Xe		-88320.883	4.088	8434.107	0.032	B-	-2080.856	6.411	126	905183.637	4.388
17	72	55	127	Cs		-86240.027	5.578	8411.562	0.044	B-	-3422.072	12.653	126	907417.527	5.987
15	71	56	127	Ba		-82817.955	11.357	8378.456	0.089	B-	-4921.839	27.740	126	911091.272	12.192
13	70	57	127	La		-77896.116	26.000	8333.541	0.205	B-	-5916.773	38.857	126	916375.083	27.912
11	69	58	127	Ce	x	-71979.344	28.876	8280.792	0.227	B-	-7436#	198#	126	922727.000	31.000
9	68	59	127	Pr	x	-64543#	196#	8216#	2#	B-	-8633#	358#	126	930710#	210#

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   7   67   60  127 Nd    x  -55910#        300#        8142#       2#    B- -10600#      500#      126 939978#         322#
   5   66   61  127 Pm    x  -45310#        400#        8052#       3#    B-       *                126 951358#         429#
0 38   83   45  128 Rh    x  -27340#        300#        8010#       2#    B-  17050#      583#      127 970649#         322#
  36   82   46  128 Pd    x  -44390#        500#        8137#       4#    B-  10320#      583#      127 952345#         537#
  34   81   47  128 Ag    x  -54710#        300#        8211#       2#    B-  12528#      300#      127 941266#         322#
  32   80   48  128 Cd       -67238.245       6.432     8303.237    0.050 B-    6951.870     6.567 127 927816.778        6.905
  30   79   49  128 In    x  -74190.115       1.322     8351.436    0.010 B-    9171.314    17.719 127 920353.639        1.419
  30   79   49  128 Inn   x  -73904.985       1.992      285.130    2.173
  30   79   49  128 Inp   x  -72392.518       1.402     1797.597    1.648
  28   78   50  128 Sn       -83361.429      17.682     8416.975    0.138 B-    1268.422    13.317 127 910507.829       18.982
  26   77   51  128 Sb    IT -84629.851      18.788     8420.772    0.147 B-    4363.941    18.786 127 909146.122       20.169
  26   77   51  128 Sbm      -84619.851      17.804       10.000    6.000
  24   76   52  128 Te       -88993.792       0.706     8448.754    0.006 B-   -1255.762     3.681 127 904461.239        0.758
  22   75   53  128 I        -87738.030       3.621     8432.831    0.028 B-    2122.504     3.621 127 905809.355        3.887
  20   74   54  128 Xe       -89860.53427     0.00520   8443.301    0.000 B-   -3928.762     5.376 127 903530.75340      0.00558
  18   73   55  128 Cs       -85931.773       5.376     8406.495    0.042 B-    -562.621     5.612 127 907748.452        5.771
  16   72   56  128 Ba       -85369.151       1.610     8395.988    0.013 B-   -6743.713    54.472 127 908352.451        1.728
  14   71   57  128 La    x  -78625.439      54.448     8337.190    0.425 B-   -3091.514    61.200 127 915592.123       58.452
  12   70   58  128 Ce    x  -75533.925      27.945     8306.926    0.218 B-   -9203.162    40.859 127 918911.000       30.000
  10   69   59  128 Pr    x  -66330.764      29.808     8228.914    0.233 B-   -5800#      202#      127 928791.000       32.000
   8   68   60  128 Nd    x  -60530#        200#        8177#       2#    B- -12311#      361#      127 935018#         215#
   6   67   61  128 Pm    x  -48220#        300#        8075#       2#    B-  -9070#      583#      127 948234#         322#
   4   66   62  128 Sm    x  -39150#        500#        7998#       4#    B-       *                127 957971#         537#
1N-Z    N    Z    A  EL    O     MASS EXCESS        BINDING ENERGY/A        BETA-DECAY ENERGY          ATOMIC MASS           V/S
                                   (keV)                (keV)                    (keV)                  (micro-u)
0 37   83   46  129 Pd    x  -37880#        600#        8086#       5#    B-  13990#      721#      128 959334#         644#
  35   82   47  129 Ag    x  -51870#        400#        8188#       3#    B-  11252#      400#      128 944315#         429#
  33   81   48  129 Cd    x  -63122.142       5.310     8269.531    0.041 B-    9712.747     5.664 128 932235.597        5.700
  33   81   48  129 Cdm   x  -62779.072       5.589      343.069    7.709
  31   80   49  129 In       -72834.889       1.971     8338.759    0.015 B-    7755.708    17.238 128 921808.534        2.116
  31   80   49  129 Inm      -72384.158       1.973      450.731    0.160
  31   80   49  129 Inp   +  -71180.597      52.899     1654.292   52.888
  29   79   50  129 Sn       -80590.597      17.270     8392.816    0.134 B-    4038.786    27.363 128 913482.440       18.540
  27   78   51  129 Sb    +  -84629.383      21.225     8418.060    0.165 B-    2375.500    21.213 128 909146.625       22.786
  25   77   52  129 Te       -87004.883       0.711     8430.410    0.006 B-    1502.293     3.136 128 906596.421        0.763
  23   76   53  129 I        -88507.175       3.153     8435.991    0.024 B-     188.895     3.153 128 904983.644        3.385
  21   75   54  129 Xe       -88696.06975     0.00505   8431.390    0.000 B-   -1197.020     4.553 128 904780.85742      0.00542
  19   74   55  129 Cs       -87499.050       4.553     8416.046    0.035 B-   -2438.184    10.563 128 906065.910        4.888
  17   73   56  129 Ba       -85060.866      10.504     8391.081    0.081 B-   -3737.325    21.628 128 908683.409       11.276
  15   72   57  129 La       -81323.541      21.343     8356.045    0.165 B-   -5036.037    35.163 128 912695.592       22.913
  13   71   58  129 Ce    x  -76287.504      27.945     8310.941    0.217 B-   -6513.938    40.859 128 918102.000       30.000
  11   70   59  129 Pr    x  -69773.566      29.808     8254.381    0.231 B-   -7399#      204#      128 925095.000       32.000
   9   69   60  129 Nd    ep -62375#        202#        8191#       2#    B-  -9195#      362#      128 933038#         217#
   7   68   61  129 Pm    x  -53180#        300#        8114#       2#    B- -10850#      583#      128 942909#         322#
   5   67   62  129 Sm    x  -42330#        500#        8023#       4#    B-       *                128 954557#         537#
0 38   84   46  130 Pd    x  -32730#        300#        8046#       2#    B-  13168#      520#      129 964863#         322#
  36   83   47  130 Ag   -nn -45898#        424#        8142#       3#    B-  15220#      425#      129 950727#         455#
  34   82   48  130 Cd    x  -61117.598      22.356     8252.587    0.172 B-    8788.932    22.427 129 934387.563       24.000
  32   81   49  130 In       -69906.530       1.790     8314.176    0.014 B-   10225.687     2.590 129 924952.257        1.921
  32   81   49  130 Inm      -69840.001       1.992       66.528    2.661
  32   81   49  130 Inn      -69521.140       2.072      385.390    2.599
  30   80   50  130 Sn       -80132.217       1.873     8386.817    0.014 B-    2153.470    14.113 129 913974.531        2.010
  28   79   51  130 Sb       -82285.687      14.212     8397.364    0.109 B-    5067.273    14.212 129 911662.686       15.257
  26   78   52  130 Te       -87352.960       0.011     8430.325    0.000 B-    -416.773     3.154 129 906222.745        0.011
  24   77   53  130 I     -n -86936.187       3.154     8421.101    0.024 B-    2944.287     3.154 129 906670.169        3.385
  22   76   54  130 Xe       -89880.474       0.009     8437.731    0.000 B-   -2980.720     8.357 129 903509.346        0.010
  20   75   55  130 Cs       -86899.755       8.357     8408.785    0.064 B-     357.022     8.362 129 906709.281        8.971
  20   75   55  130 Csx   IT -86872.755      17.171       27.000   15.000
  18   74   56  130 Ba       -87256.776       0.287     8405.513    0.002 B-   -5629.402    25.948 129 906326.002        0.308
  16   73   57  130 La    x  -81627.374      25.946     8356.192    0.200 B-   -2204.461    38.133 129 912369.413       27.854
  14   72   58  130 Ce    x  -79422.913      27.945     8333.216    0.215 B-   -8247.449    70.085 129 914736.000       30.000
  12   71   59  130 Pr    x  -71175.464      64.273     8263.756    0.494 B-   -4579.225    70.085 129 923590.000       69.000
  10   70   60  130 Nd    x  -66596.239      27.945     8222.514    0.215 B- -11127#      202#      129 928506.000       30.000
   8   69   61  130 Pm    x  -55470#        200#        8131#       2#    B-  -7770#      447#      129 940451#         215#
   6   68   62  130 Sm    x  -47700#        400#        8065#       3#    B- -14187#      671#      129 948792#         429#
   4   67   63  130 Eu   -p  -33513#        539#        7950#       4#    B-       *                129 964022#         578#
0 39   85   46  131 Pd    x  -25740#        300#        7993#       2#    B-  15010#      583#      130 972367#         322#
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37	84	47	131	Ag	x	-40750#	500#	8102#	4#	B-	14462#	501#	130	956253#	537#
35	83	48	131	Cd		-55211.760	19.238	8206.120	0.147	B-	12812.609	19.364	130	940727.740	20.653
33	82	49	131	In		-68024.369	2.205	8297.954	0.017	B-	9240.209	4.240	130	926972.839	2.367
33	82	49	131	Inm		-67648.400	2.451	375.969	3.297						
33	82	49	131	Inn	+	-64278.578	86.076	3745.791	86.104						
31	81	50	131	Sn		-77264.578	3.621	8362.518	0.028	B-	4716.833	3.962	130	917053.067	3.887
29	80	51	131	Sb		-81981.412	2.084	8392.553	0.016	B-	3229.610	2.085	130	911989.339	2.236
27	79	52	131	Te	-n	-85211.022	0.061	8411.234	0.001	B-	2231.706	0.608	130	908522.210	0.065
25	78	53	131	I	+	-87442.727	0.605	8422.298	0.005	B-	970.848	0.605	130	906126.375	0.649
23	77	54	131	Xe		-88413.57492	0.00512	8423.737	0.000	B-	-358.001	0.177	130	905084.12808	0.00549
21	76	55	131	Cs	+nn	-88055.574	0.177	8415.032	0.001	B-	-1376.616	0.452	130	905468.457	0.190
19	75	56	131	Ba	-n	-86678.958	0.415	8398.551	0.003	B-	-2909.693	27.948	130	906946.315	0.445
17	74	57	131	La	x	-83769.265	27.945	8370.368	0.213	B-	-4060.817	43.092	130	910070.000	30.000
15	73	58	131	Ce		-79708.448	32.802	8333.397	0.250	B-	-5407.784	55.446	130	914429.465	35.214
13	72	59	131	Pr		-74300.664	46.995	8286.144	0.359	B-	-6532.623	53.081	130	920234.960	50.451
11	71	60	131	Nd		-67768.040	27.517	8230.304	0.210	B-	-7998#	202#	130	927248.020	29.541
9	70	61	131	Pm	x	-59770#	200#	8163#	2#	B-	-9490#	447#	130	935834#	215#
7	69	62	131	Sm	x	-50280#	400#	8085#	3#	B-	-10816#	565#	130	946022#	429#
5	68	63	131	Eu	-p	-39464#	400#	7996#	3#	B-	*		130	957634#	429#
0 38	85	47	132	Ag	x	-34400#	500#	8053#	4#	B-	16065#	504#	131	963070#	537#
36	84	48	132	Cd	x	-50465.429	60.068	8169.142	0.455	B-	11946.124	84.924	131	945823.136	64.485
34	83	49	132	In	+	-62411.554	60.033	8253.716	0.455	B-	14135.000	60.000	131	932998.444	64.447
32	82	50	132	Sn		-76546.554	1.976	8354.873	0.015	B-	3088.728	3.161	131	917823.898	2.121
30	81	51	132	Sb		-79635.282	2.467	8372.345	0.019	B-	5552.915	4.271	131	914508.013	2.648
28	80	52	132	Te		-85188.197	3.486	8408.486	0.026	B-	515.305	3.483	131	908546.713	3.742
26	79	53	132	I		-85703.502	4.065	8406.463	0.031	B-	3575.473	4.065	131	907993.511	4.364
26	79	53	132	Ixm	+	-85593.975	10.000	109.527	10.795						
24	78	54	132	Xe		-89278.97451	0.00507	8427.623	0.000	B-	-2126.281	1.036	131	904155.08346	0.00544
22	77	55	132	Cs		-87152.693	1.036	8405.588	0.008	B-	1282.213	1.477	131	906437.740	1.112
20	76	56	132	Ba		-88434.906	1.053	8409.375	0.008	B-	-4711.327	36.354	131	905061.227	1.130
18	75	57	132	La		-83723.580	36.359	8367.756	0.275	B-	-1254.902	41.702	131	910119.044	39.032
16	74	58	132	Ce		-82468.677	20.407	8352.322	0.155	B-	-7241.214	35.359	131	911466.237	21.907
14	73	59	132	Pr	x	-75227.464	28.876	8291.538	0.219	B-	-3801.649	37.679	131	919240.000	31.000
12	72	60	132	Nd	x	-71425.815	24.205	8256.810	0.183	B-	-9798#	151#	131	923321.237	25.985
10	71	61	132	Pm	x	-61628#	149#	8177#	1#	B-	-6488#	335#	131	933840#	160#
8	70	62	132	Sm	x	-55140#	300#	8122#	2#	B-	-12939#	500#	131	940805#	322#
6	69	63	132	Eu	x	-42200#	400#	8018#	3#	B-	*		131	954696#	429#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 39	86	47	133	Ag	x	-29080#	500#	8013#	4#	B-	15059#	539#	132	968781#	537#
37	85	48	133	Cd	x	-44140#	200#	8121#	2#	B-	13550#	283#	132	952614#	215#
35	84	49	133	In	x	-57690#	200#	8217#	2#	B-	13184#	200#	132	938067#	215#
33	83	50	133	Sn		-70873.890	1.904	8310.089	0.014	B-	8049.623	3.662	132	923913.753	2.043
31	82	51	133	Sb		-78923.513	3.128	8364.730	0.024	B-	4013.620	3.518	132	915272.128	3.357
29	81	52	133	Te		-82937.133	2.066	8389.025	0.016	B-	2920.169	6.253	132	910963.330	2.218
27	80	53	133	I		-85857.302	5.902	8405.099	0.044	B-	1786.281	6.371	132	907828.399	6.335
25	79	54	133	Xe	+	-87643.583	2.400	8412.648	0.018	B-	427.360	2.400	132	905910.748	2.576
23	78	55	133	Cs		-88070.943	0.008	8409.979	0.000	B-	-517.428	0.992	132	905451.958	0.008
21	77	56	133	Ba		-87553.515	0.992	8400.206	0.007	B-	-2059.123	27.962	132	906007.440	1.064
19	76	57	133	La	x	-85494.392	27.945	8378.841	0.210	B-	-3076.169	32.379	132	908218.000	30.000
17	75	58	133	Ce	x	-82418.223	16.354	8349.830	0.123	B-	-4480.632	20.583	132	911520.402	17.557
15	74	59	133	Pr	x	-77937.591	12.497	8310.259	0.094	B-	-5605.211	48.222	132	916330.558	13.416
13	73	60	133	Nd	x	-72332.380	46.575	8262.232	0.350	B-	-6924.727	68.552	132	922348.000	50.000
11	72	61	133	Pm	x	-65407.653	50.301	8204.284	0.378	B-	-8177#	302#	132	929782.000	54.000
9	71	62	133	Sm	x	-57231#	298#	8137#	2#	B-	-9995#	422#	132	938560#	320#
7	70	63	133	Eu	x	-47236#	298#	8056#	2#	B-	-11176#	582#	132	949290#	320#
5	69	64	133	Gd	x	-36060#	500#	7966#	4#	B-	*		132	961288#	537#
0 38	86	48	134	Cd	x	-39460#	300#	8086#	2#	B-	12510#	361#	133	957638#	322#
36	85	49	134	In	x	-51970#	200#	8173#	1#	B-	14464#	200#	133	944208#	215#
34	84	50	134	Sn	x	-66433.759	3.167	8275.172	0.024	B-	7585.245	4.414	133	928680.430	3.400
32	83	51	134	Sb	x	-74019.004	3.074	8325.940	0.023	B-	8514.748	4.122	133	920537.334	3.300
30	82	52	134	Te		-82533.752	2.746	8383.644	0.020	B-	1509.687	4.933	133	911396.376	2.948
28	81	53	134	I		-84043.440	4.857	8389.072	0.036	B-	4082.395	4.857	133	909775.660	5.213
26	80	54	134	Xe		-88125.83443	0.00577	8413.699	0.000	B-	-1234.669	0.016	133	905393.030	0.006
24	79	55	134	Cs		-86891.165	0.016	8398.647	0.000	B-	2058.837	0.251	133	906718.501	0.017
22	78	56	134	Ba		-88950.003	0.251	8408.173	0.002	B-	-3731.344	19.931	133	904508.249	0.269
20	77	57	134	La	x	-85218.659	19.930	8374.489	0.149	B-	-385.761	28.510	133	908514.011	21.395

18	76	58	134	Ce	x	-84832.898	20.387	8365.772	0.152	B-	-6304.899	28.781	133	908928.142	21.886
16	75	59	134	Pr	x	-78528.000	20.316	8312.882	0.152	B-	-2881.557	23.503	133	915696.729	21.810
14	74	60	134	Nd	x	-75646.443	11.817	8285.539	0.088	B-	-8882.534	43.551	133	918790.207	12.686
12	73	61	134	Pm	x	-66763.908	41.917	8213.413	0.313	B-	-5388#	200#	133	928326.000	45.000
10	72	62	134	Sm	x	-61376#	196#	8167#	1#	B-	-11576#	358#	133	934110#	210#
8	71	63	134	Eu	x	-49800#	300#	8075#	2#	B-	-8271#	500#	133	946537#	322#
6	70	64	134	Gd	x	-41530#	400#	8008#	3#	B-	*		133	955416#	429#
0 39	87	48	135	Cd	x	-32820#	400#	8036#	3#	B-	14290#	500#	134	964766#	429#
37	86	49	135	In	x	-47110#	300#	8136#	2#	B-	13522#	300#	134	949425#	322#
35	85	50	135	Sn	x	-60632.252	3.074	8230.688	0.023	B-	9058.080	4.052	134	934908.603	3.300
33	84	51	135	Sb		-69690.332	2.640	8291.989	0.020	B-	8038.458	3.152	134	925184.354	2.834
31	83	52	135	Te		-77728.790	1.722	8345.738	0.013	B-	6050.389	2.685	134	916554.715	1.848
29	82	53	135	I		-83779.180	2.060	8384.761	0.015	B-	2634.185	3.828	134	910059.355	2.211
27	81	54	135	Xe		-86413.365	3.668	8398.478	0.027	B-	1168.592	3.662	134	907231.441	3.938
25	80	55	135	Cs		-87581.957	0.364	8401.339	0.003	B-	268.698	0.286	134	905976.906	0.390
23	79	56	135	Ba		-87850.655	0.245	8397.535	0.002	B-	-1207.197	9.430	134	905688.447	0.263
21	78	57	135	La		-86643.458	9.432	8382.797	0.070	B-	-2027.150	4.610	134	906984.426	10.126
19	77	58	135	Ce		-84616.308	10.266	8361.986	0.076	B-	-3680.436	15.654	134	909160.661	11.021
17	76	59	135	Pr	x	-80935.872	11.817	8328.928	0.088	B-	-4722.252	22.484	134	913111.772	12.686
15	75	60	135	Nd	x	-76213.620	19.128	8288.154	0.142	B-	-6151.291	85.081	134	918181.318	20.534
13	74	61	135	Pm	x	-70062.329	82.903	8236.793	0.614	B-	-7205.107	175.450	134	924785.000	89.000
13	74	61	135	Pmm	-	-69828#	54#	235#	99#						
11	73	62	135	Sm	x	-62857.222	154.628	8177.627	1.145	B-	-8709#	249#	134	932520.000	166.000
9	72	63	135	Eu	x	-54148#	196#	8107#	1#	B-	-9898#	445#	134	941870#	210#
7	71	64	135	Gd	x	-44250#	400#	8028#	3#	B-	-11197#	565#	134	952496#	429#
5	70	65	135	Tb	-p	-33053#	400#	7939#	3#	B-	*		134	964516#	429#
0 38	87	49	136	In	x	-40970#	300#	8091#	2#	B-	15200#	361#	135	956017#	322#
36	86	50	136	Sn	x	-56170#	200#	8197#	1#	B-	8337#	200#	135	939699#	215#
34	85	51	136	Sb		-64506.890	5.830	8252.253	0.043	B-	9918.390	6.260	135	930749.009	6.258
32	84	52	136	Te		-74425.279	2.281	8319.430	0.017	B-	5119.945	14.188	135	920101.180	2.448
30	83	53	136	I		-79545.225	14.188	8351.324	0.104	B-	6883.945	14.188	135	914604.693	15.231
30	83	53	136	Ixm	+	-79339.382	4.564	205.842	14.904						
28	82	54	136	Xe		-86429.170	0.007	8396.189	0.000	B-	-90.315	1.873	135	907214.474	0.007
26	81	55	136	Cs	+	-86338.855	1.873	8389.772	0.014	B-	2548.224	1.857	135	907311.430	2.010
24	80	56	136	Ba		-88887.080	0.245	8402.757	0.002	B-	-2849.592	53.172	135	904575.799	0.262
22	79	57	136	La	x	-86037.488	53.171	8376.051	0.391	B-	471.063	53.172	135	907634.962	57.081
20	78	58	136	Ce		-86508.551	0.324	8373.762	0.002	B-	-5168.130	11.456	135	907129.255	0.348
18	77	59	136	Pr		-81340.421	11.455	8330.009	0.084	B-	-2141.124	16.458	135	912677.470	12.296
16	76	60	136	Nd	x	-79199.297	11.817	8308.513	0.087	B-	-8029.375	70.076	135	914976.061	12.686
14	75	61	136	Pm	x	-71169.923	69.073	8243.721	0.508	B-	-4359.024	70.194	135	923595.949	74.152
14	75	61	136	Pmm	x	-71067.082	93.149	102.841	115.965						
12	74	62	136	Sm	x	-66810.899	12.497	8205.916	0.092	B-	-10567#	196#	135	928275.553	13.416
10	73	63	136	Eu	x	-56244#	196#	8122#	1#	B-	-7154#	357#	135	939620#	210#
8	72	64	136	Gd	x	-49090#	298#	8064#	2#	B-	-13190#	582#	135	947300#	320#
6	71	65	136	Tb	x	-35900#	500#	7961#	4#	B-	*		135	961460#	537#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY			ATOMIC MASS	V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 39	88	49	137	In	x	-35830#	400#	8053#	3#	B-	14320#	500#	136	961535#	429#
37	87	50	137	Sn	x	-50150#	300#	8152#	2#	B-	9911#	304#	136	946162#	322#
35	86	51	137	Sb	x	-60060.392	52.164	8218.476	0.381	B-	9243.370	52.206	136	935522.519	56.000
33	85	52	137	Te		-69303.762	2.100	8280.236	0.015	B-	7052.506	8.643	136	925599.354	2.254
31	84	53	137	I	p-2n	-76356.268	8.383	8326.003	0.061	B-	6027.146	8.384	136	918028.178	9.000
29	83	54	137	Xe	-n	-82383.414	0.104	8364.287	0.001	B-	4162.359	0.319	136	911557.771	0.111
27	82	55	137	Cs	+	-86545.773	0.302	8388.958	0.002	B-	1175.629	0.172	136	907089.296	0.324
25	81	56	137	Ba		-87721.401	0.248	8391.829	0.002	B-	-580.535	1.623	136	905827.207	0.266
23	80	57	137	La	+	-87140.866	1.640	8381.881	0.012	B-	-1222.100	1.600	136	906450.437	1.760
21	79	58	137	Ce		-85918.766	0.360	8367.250	0.003	B-	-2716.952	8.133	136	907762.415	0.386
19	78	59	137	Pr		-83201.814	8.135	8341.707	0.059	B-	-3617.845	14.271	136	910679.183	8.733
17	77	60	137	Nd		-79583.969	11.725	8309.589	0.086	B-	-5511.111	17.537	136	914563.099	12.586
15	76	61	137	Pm	x	-74072.858	13.041	8263.652	0.095	B-	-6081.203	31.446	136	920479.519	14.000
15	76	61	137	Pmm		-73913.633	44.998	159.225	46.850						
13	75	62	137	Sm		-67991.655	28.614	8213.553	0.209	B-	-7845.752	28.947	136	927007.959	30.718
11	74	63	137	Eu	x	-60145.904	4.378	8150.574	0.032	B-	-8932#	298#	136	935430.719	4.700
9	73	64	137	Gd	x	-51214#	298#	8080#	2#	B-	-10246#	499#	136	945020#	320#
7	72	65	137	Tb	x	-40967#	401#	7999#	3#	B-	*		136	956020#	430#
0 38	88	50	138	Sn	x	-45510#	400#	8118#	3#	B-	9140#	500#	137	951143#	429#
36	87	51	138	Sb	x	-54650#	300#	8178#	2#	B-	11046#	300#	137	941331#	322#

34	86	52	138	Te		-65695.995	3.787	8252.579	0.027	B-	6283.915	7.063	137	929472.452	4.065
32	85	53	138	I	x	-71979.910	5.962	8292.445	0.043	B-	7992.335	6.588	137	922726.392	6.400
30	84	54	138	Xe		-79972.244	2.804	8344.691	0.020	B-	2914.784	9.578	137	914146.268	3.010
28	83	55	138	Cs		-82887.028	9.158	8360.144	0.066	B-	5374.778	9.158	137	911017.119	9.831
28	83	55	138	Csx	IT	-82847.028	24.756	40.000	23.000						
26	82	56	138	Ba		-88261.806	0.249	8393.422	0.002	B-	-1748.398	0.338	137	905247.058	0.267
24	81	57	138	La		-86513.408	0.416	8375.083	0.003	B-	1052.458	0.402	137	907124.040	0.446
22	80	58	138	Ce		-87565.867	0.499	8377.041	0.004	B-	-4437.000	10.000	137	905994.180	0.536
20	79	59	138	Pr	-	-83128.867	10.012	8339.219	0.073	B-	-1111.685	15.326	137	910757.495	10.748
20	79	59	138	Prm		-82778.833	16.267	350.034	19.093						
18	78	60	138	Nd		-82017.182	11.603	8325.495	0.084	B-	-7102.812	16.100	137	911950.938	12.456
16	77	61	138	Pm		-74914.370	11.603	8268.356	0.084	B-	-3416.598	16.561	137	919576.119	12.456
14	76	62	138	Sm	x	-71497.772	11.817	8237.929	0.086	B-	-9748.097	30.341	137	923243.988	12.686
12	75	63	138	Eu	x	-61749.676	27.945	8161.621	0.202	B-	-6090#	202#	137	933709.000	30.000
10	74	64	138	Gd	x	-55660#	200#	8112#	1#	B-	-12059#	361#	137	940247#	215#
8	73	65	138	Tb	x	-43600#	300#	8019#	2#	B-	-8669#	586#	137	953193#	322#
6	72	66	138	Dy	x	-34931#	503#	7950#	4#	B-	*		137	962500#	540#
0 39	89	50	139	Sn	x	-39310#	400#	8073#	3#	B-	10740#	565#	138	957799#	429#
37	88	51	139	Sb	x	-50050#	400#	8144#	3#	B-	10155#	400#	138	946269#	429#
35	87	52	139	Te	x	-60205.080	3.540	8211.772	0.025	B-	8265.884	5.345	138	935367.191	3.800
33	86	53	139	I	x	-68470.964	4.005	8265.610	0.029	B-	7173.622	4.542	138	926493.400	4.300
31	85	54	139	Xe	x	-75644.586	2.142	8311.590	0.015	B-	5056.503	3.796	138	918792.200	2.300
29	84	55	139	Cs	+	-80701.089	3.134	8342.340	0.023	B-	4212.829	3.123	138	913363.822	3.364
27	83	56	139	Ba	-n	-84913.918	0.253	8367.019	0.002	B-	2308.462	0.657	138	908841.164	0.271
25	82	57	139	La		-87222.380	0.607	8377.999	0.004	B-	-264.640	1.999	138	906362.927	0.651
23	81	58	139	Ce		-86957.741	2.089	8370.466	0.015	B-	-2129.089	2.996	138	906647.030	2.242
21	80	59	139	Pr		-84828.652	3.649	8349.521	0.026	B-	-2811.722	27.617	138	908932.701	3.917
19	79	60	139	Nd		-82016.930	27.521	8323.664	0.198	B-	-4515.901	25.870	138	911951.208	29.545
17	78	61	139	Pm		-77501.028	13.588	8285.547	0.098	B-	-5120.799	17.410	138	916799.228	14.587
15	77	62	139	Sm	x	-72380.229	10.884	8243.079	0.078	B-	-6982.178	17.071	138	922296.631	11.684
13	76	63	139	Eu	x	-65398.051	13.151	8187.219	0.095	B-	-7767#	196#	138	929792.307	14.117
11	75	64	139	Gd	x	-57632#	196#	8126#	1#	B-	-9501#	357#	138	938130#	210#
9	74	65	139	Tb	x	-48130#	298#	8052#	2#	B-	-10430#	582#	138	948330#	320#
7	73	66	139	Dy	x	-37700#	500#	7971#	4#	B-	*		138	959527#	537#
0 40	90	50	140	Sn	x	-34490#	300#	8038#	2#	B-	9900#	671#	139	962973#	322#
38	89	51	140	Sb	x	-44390#	600#	8103#	4#	B-	11977#	600#	139	952345#	644#
36	88	52	140	Te		-56367.449	14.377	8183.357	0.103	B-	7238.773	18.798	139	939487.057	15.434
34	87	53	140	I	x	-63606.223	12.109	8229.474	0.086	B-	9380.239	12.331	139	931715.914	13.000
32	86	54	140	Xe	x	-72986.461	2.329	8290.888	0.017	B-	4063.277	8.523	139	921645.814	2.500
30	85	55	140	Cs		-77049.738	8.199	8314.323	0.059	B-	6218.167	9.867	139	917283.708	8.801
28	84	56	140	Ba		-83267.905	7.900	8353.150	0.056	B-	1044.154	7.905	139	910608.231	8.480
26	83	57	140	La		-84312.059	0.607	8355.020	0.004	B-	3762.163	1.336	139	909487.286	0.651
24	82	58	140	Ce		-88074.222	1.313	8376.304	0.009	B-	-3388.000	6.000	139	905448.438	1.409
22	81	59	140	Pr	-	-84686.222	6.142	8346.516	0.044	B-	-428.976	6.954	139	909085.605	6.593
20	80	60	140	Nd	x	-84257.246	3.260	8337.864	0.023	B-	-6045.200	24.000	139	909546.130	3.500
18	79	61	140	Pm	-	-78212.046	24.220	8289.096	0.173	B-	-2756.101	27.255	139	916035.918	26.001
18	79	61	140	Pmm		-77782.794	13.151	429.252	27.560						
16	78	62	140	Sm	x	-75455.945	12.497	8263.821	0.089	B-	-8470.000	50.000	139	918994.714	13.416
14	77	63	140	Eu	-	-66985.945	51.538	8197.733	0.368	B-	-5203.668	58.627	139	928087.633	55.328
12	76	64	140	Gd	x	-61782.278	27.945	8154.976	0.200	B-	-11300.000	800.000	139	933674.000	30.000
10	75	65	140	Tb	-	-50482.278	800.488	8068.673	5.718	B-	-7652#	895#	139	945805.048	859.359
8	74	66	140	Dy	x	-42830#	401#	8008#	3#	B-	-13513#	641#	139	954020#	430#
6	73	67	140	Ho	-p	-29317#	500#	7906#	4#	B-	*		139	968526#	537#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A		BETA-DECAY ENERGY			ATOMIC MASS		V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 39	90	51	141	Sb	x	-39540#	500#	8069#	4#	B-	11129#	640#	140	957552#	537#
37	89	52	141	Te	x	-50670#	400#	8142#	3#	B-	9257#	400#	140	945604#	429#
35	88	53	141	I	x	-59926.666	15.835	8202.256	0.112	B-	8270.643	16.097	140	935666.081	17.000
33	87	54	141	Xe	x	-68197.309	2.888	8255.365	0.020	B-	6280.042	9.638	140	926787.181	3.100
31	86	55	141	Cs		-74477.351	9.195	8294.355	0.065	B-	5255.141	9.617	140	920045.279	9.871
29	85	56	141	Ba		-79732.492	5.318	8326.077	0.038	B-	3197.347	6.551	140	914403.653	5.709
27	84	57	141	La		-82929.839	4.127	8343.205	0.029	B-	2501.214	3.928	140	910971.160	4.430
25	83	58	141	Ce		-85431.053	1.315	8355.396	0.009	B-	583.473	1.178	140	908285.997	1.411
23	82	59	141	Pr		-86014.526	1.497	8353.985	0.011	B-	-1823.014	2.809	140	907659.613	1.607
21	81	60	141	Nd	-	-84191.512	3.183	8335.507	0.023	B-	-3668.580	14.330	140	909616.698	3.417
19	80	61	141	Pm	x	-80522.932	13.972	8303.941	0.099	B-	-4588.981	16.373	140	913555.081	15.000
17	79	62	141	Sm		-75933.951	8.535	8265.846	0.061	B-	-6008.306	14.283	140	918481.554	9.162

15	78	63	141	Eu		-69925.645	12.639	8217.685	0.090	B-	-6701.414	23.456	140	924931.736	13.568
13	77	64	141	Gd	x	-63224.231	19.760	8164.609	0.140	B-	-8683.388	107.098	140	932126.000	21.213
11	76	65	141	Tb	x	-54540.843	105.259	8097.476	0.747	B-	-9158#	316#	140	941448.000	113.000
9	75	66	141	Dy	x	-45382#	298#	8027#	2#	B-	-11018#	499#	140	951280#	320#
7	74	67	141	Ho	-p	-34364#	401#	7943#	3#	B-	*		140	963108#	430#
0 40	91	51	142	Sb	x	-33610#	300#	8027#	2#	B-	12939#	583#	141	963918#	322#
38	90	52	142	Te	x	-46550#	500#	8113#	4#	B-	8253#	500#	141	950027#	537#
36	89	53	142	I	x	-54802.969	4.937	8165.252	0.035	B-	10426.679	5.628	141	941166.595	5.300
34	88	54	142	Xe	x	-65229.648	2.701	8233.170	0.019	B-	5284.908	7.565	141	929973.095	2.900
32	87	55	142	Cs		-70514.556	7.067	8264.878	0.050	B-	7327.700	8.363	141	924299.514	7.586
30	86	56	142	Ba		-77842.256	5.920	8310.972	0.042	B-	2181.683	8.375	141	916432.904	6.355
28	85	57	142	La		-80023.940	6.286	8320.826	0.044	B-	4508.945	5.845	141	914090.771	6.748
26	84	58	142	Ce		-84532.885	2.443	8347.070	0.017	B-	-746.526	2.487	141	909250.220	2.622
24	83	59	142	Pr		-83786.359	1.498	8336.303	0.011	B-	2163.684	1.366	141	910051.648	1.607
22	82	60	142	Nd		-85950.043	1.255	8346.031	0.009	B-	-4808.509	23.622	141	907728.838	1.347
20	81	61	142	Pm		-81141.533	23.596	8306.659	0.166	B-	-2159.625	23.652	141	912890.985	25.330
18	80	62	142	Sm		-78981.908	1.865	8285.941	0.013	B-	-7673.000	30.000	141	915209.438	2.002
16	79	63	142	Eu	-	-71308.908	30.058	8226.396	0.212	B-	-4349.386	41.041	141	923446.742	32.268
16	79	63	142	Eum	x	-70856.190	12.497	452.719	32.552						
14	78	64	142	Gd	x	-66959.522	27.945	8190.257	0.197	B-	-10400.000	700.000	141	928116.000	30.000
12	77	65	142	Tb	-	-56559.522	700.558	8111.508	4.934	B-	-6440#	200#	141	939280.858	752.079
10	76	66	142	Dy	-	-50120#	729#	8061#	5#	B-	-12869#	831#	141	946194#	782#
8	75	67	142	Ho	x	-37250#	401#	7965#	3#	B-	-9321#	641#	141	960010#	430#
6	74	68	142	Er	x	-27930#	500#	7893#	4#	B-	*		141	970016#	537#
0 39	91	52	143	Te	x	-40530#	500#	8070#	3#	B-	10259#	539#	142	956489#	537#
37	90	53	143	I	x	-50790#	200#	8137#	1#	B-	9413#	200#	142	945475#	215#
35	89	54	143	Xe	x	-60202.882	4.657	8196.886	0.033	B-	7472.636	8.891	142	935369.550	5.000
33	88	55	143	Cs		-67675.519	7.573	8243.671	0.053	B-	6261.687	9.730	142	927347.346	8.130
31	87	56	143	Ba		-73937.205	6.756	8281.988	0.047	B-	4234.260	9.968	142	920625.149	7.253
29	86	57	143	La		-78171.465	7.329	8306.127	0.051	B-	3434.902	7.581	142	916079.484	7.868
27	85	58	143	Ce		-81606.367	2.442	8324.676	0.017	B-	1461.820	1.865	142	912391.965	2.621
25	84	59	143	Pr		-83068.188	1.816	8329.428	0.013	B-	934.110	1.367	142	910822.637	1.949
23	83	60	143	Nd		-84002.298	1.254	8330.489	0.009	B-	-1041.648	2.683	142	909819.828	1.346
21	82	61	143	Pm		-82960.650	2.944	8317.734	0.021	B-	-3443.532	3.560	142	910938.083	3.160
19	81	62	143	Sm		-79517.118	2.749	8288.182	0.019	B-	-5275.807	11.324	142	914634.867	2.951
17	80	63	143	Eu	x	-74241.311	10.986	8245.818	0.077	B-	-6010.000	200.000	142	920298.678	11.793
15	79	64	143	Gd	-	-68231.311	200.301	8198.319	1.401	B-	-7812.118	206.750	142	926750.678	215.032
13	78	65	143	Tb	x	-60419.192	51.232	8138.218	0.358	B-	-8250.243	52.866	142	935137.332	55.000
11	77	66	143	Dy	x	-52168.949	13.041	8075.053	0.091	B-	-10121#	298#	142	943994.332	14.000
9	76	67	143	Ho	x	-42048#	298#	7999#	2#	B-	-10887#	499#	142	954860#	320#
7	75	68	143	Er	x	-31160#	400#	7917#	3#	B-	*		142	966548#	429#
0 40	92	52	144	Te	x	-36220#	300#	8040#	2#	B-	9110#	500#	143	961116#	322#
38	91	53	144	I	x	-45330#	400#	8098#	3#	B-	11542#	400#	143	951336#	429#
36	90	54	144	Xe	x	-56872.301	5.310	8172.884	0.037	B-	6399.061	20.820	143	938945.076	5.700
34	89	55	144	Cs		-63271.362	20.132	8211.889	0.140	B-	8495.768	20.416	143	932075.402	21.612
32	88	56	144	Ba		-71767.130	7.136	8265.455	0.050	B-	3082.530	14.774	143	922954.821	7.661
30	87	57	144	La	x	-74849.660	12.937	8281.428	0.090	B-	5582.270	13.243	143	919645.589	13.888
28	86	58	144	Ce	+	-80431.929	2.833	8314.761	0.020	B-	318.646	0.832	143	913652.776	3.041
26	85	59	144	Pr	+	-80750.576	2.708	8311.541	0.019	B-	2997.440	2.400	143	913310.695	2.907
24	84	60	144	Nd		-83748.016	1.254	8326.924	0.009	B-	-2331.914	2.646	143	910092.811	1.346
22	83	61	144	Pm		-81416.102	2.912	8305.297	0.020	B-	549.507	2.668	143	912596.223	3.125
20	82	62	144	Sm		-81965.609	1.459	8303.680	0.010	B-	-6346.441	10.809	143	912006.304	1.566
18	81	63	144	Eu		-75619.168	10.787	8254.174	0.075	B-	-3859.657	29.955	143	918819.488	11.580
16	80	64	144	Gd	x	-71759.511	27.945	8221.938	0.194	B-	-9391.324	39.520	143	922963.000	30.000
14	79	65	144	Tb	x	-62368.188	27.945	8151.288	0.194	B-	-5798.097	28.851	143	933045.000	30.000
12	78	66	144	Dy	x	-56570.091	7.173	8105.590	0.050	B-	-11960.571	11.104	143	939269.512	7.700
10	77	67	144	Ho	x	-44609.521	8.477	8017.098	0.059	B-	-8002#	196#	143	952109.712	9.100
8	76	68	144	Er	x	-36608#	196#	7956#	1#	B-	-14448#	445#	143	960700#	210#
6	75	69	144	Tm	-p	-22159#	400#	7850#	3#	B-	*		143	976211#	429#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY			ATOMIC MASS	V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 41	93	52	145	Te	x	-30010#	300#	7998#	2#	B-	11120#	583#	144	967783#	322#
39	92	53	145	I	x	-41130#	500#	8069#	3#	B-	10363#	500#	144	955845#	537#
37	91	54	145	Xe	x	-51493.337	11.178	8135.088	0.077	B-	8561.087	14.393	144	944719.631	12.000
35	90	55	145	Cs		-60054.424	9.067	8188.734	0.063	B-	7461.759	12.412	144	935528.927	9.733
33	89	56	145	Ba	x	-67516.183	8.477	8234.799	0.058	B-	5319.142	14.912	144	927518.400	9.100
31	88	57	145	La		-72835.325	12.269	8266.087	0.085	B-	4231.725	35.298	144	921808.066	13.170

	29	87	58	145	Ce		-77067.050	33.900	8289.876	0.234	B-	2558.928	33.635	144	917265.122	36.393
	27	86	59	145	Pr		-79625.978	7.149	8302.128	0.049	B-	1806.014	7.037	144	914518.001	7.674
	25	85	60	145	Nd		-81431.992	1.270	8309.188	0.009	B-	-164.500	2.536	144	912579.165	1.363
	23	84	61	145	Pm		-81267.491	2.805	8302.658	0.019	B-	-616.101	2.539	144	912755.763	3.011
	21	83	62	145	Sm		-80651.390	1.485	8293.014	0.010	B-	-2659.908	2.722	144	913417.175	1.593
	19	82	63	145	Eu		-77991.482	3.059	8269.274	0.021	B-	-5064.857	19.952	144	916272.704	3.283
	17	81	64	145	Gd		-72926.626	19.716	8228.949	0.136	B-	-6526.933	109.714	144	921710.051	21.165
	15	80	65	145	Tb		-66399.693	110.896	8178.540	0.765	B-	-8157.085	111.087	144	928717.001	119.051
	15	80	65	145	Tbm	+	-65542.607	200.106	857.085	228.780						
	13	79	66	145	Dy	x	-58242.607	6.520	8116.888	0.045	B-	-9122.494	9.902	144	937473.992	7.000
	11	78	67	145	Ho	x	-49120.113	7.452	8048.579	0.051	B-	-9880#	200#	144	947267.392	8.000
	9	77	68	145	Er	x	-39240#	200#	7975#	1#	B-	-11657#	280#	144	957874#	215#
	9	77	68	145	Erm	+p	-39035#	200#	204.800	4.123						
	7	76	69	145	Tm	-p	-27583#	196#	7889#	1#	B-	*		144	970389#	210#
0	40	93	53	146	I	x	-35540#	300#	8031#	2#	B-	12415#	301#	145	961846#	322#
	38	92	54	146	Xe	x	-47954.950	24.219	8110.415	0.166	B-	7355.430	24.391	145	948518.245	26.000
	36	91	55	146	Cs	x	-55310.380	2.893	8155.437	0.020	B-	9555.888	3.392	145	940621.867	3.106
	34	90	56	146	Ba	x	-64866.269	1.770	8215.529	0.012	B-	4354.905	2.437	145	930363.200	1.900
	32	89	57	146	La		-69221.174	1.675	8239.999	0.011	B-	6404.694	14.715	145	925688.017	1.797
	32	89	57	146	Lam	x	-69079.696	1.677	141.478	2.370						
	30	88	58	146	Ce		-75625.868	14.665	8278.508	0.100	B-	1047.615	32.484	145	918812.295	15.743
	28	87	59	146	Pr		-76673.483	34.356	8280.325	0.235	B-	4252.420	34.369	145	917687.634	36.882
	26	86	60	146	Nd		-80925.904	1.272	8304.093	0.009	B-	-1471.557	4.119	145	913122.473	1.365
	24	85	61	146	Pm	+	-79454.347	4.275	8288.655	0.029	B-	1542.000	3.000	145	914702.254	4.588
	22	84	62	146	Sm		-80996.347	3.045	8293.858	0.021	B-	-3878.755	5.868	145	913046.849	3.268
	20	83	63	146	Eu		-77117.591	6.009	8261.933	0.041	B-	-1031.788	7.075	145	917210.864	6.451
	18	82	64	146	Gd		-76085.803	4.075	8249.507	0.028	B-	-8322.175	44.749	145	918318.535	4.375
	16	81	65	146	Tb		-67763.628	44.860	8187.147	0.307	B-	-5208.700	45.158	145	927252.757	48.159
	14	80	66	146	Dy		-62554.927	6.695	8146.113	0.046	B-	-11316.701	9.392	145	932844.526	7.187
	12	79	67	146	Ho		-51238.227	6.587	8063.243	0.045	B-	-6916.207	9.399	145	944993.503	7.071
	10	78	68	146	Er		-44322.019	6.705	8010.513	0.046	B-	-13267#	200#	145	952418.357	7.197
	8	77	69	146	Tm	-p	-31055#	200#	7914#	1#	B-	*		145	966661#	215#
	8	77	69	146	Tmm	-p	-30752#	200#	303.600	5.745						
	8	77	69	146	Tmn	-p	-30619#	200#	436.900	7.071						
0	41	94	53	147	I	x	-31200#	300#	8001#	2#	B-	11199#	361#	146	966505#	322#
	39	93	54	147	Xe	x	-42400#	200#	8072#	1#	B-	9520#	200#	146	954482#	215#
	37	92	55	147	Cs	x	-51920.073	8.383	8131.801	0.057	B-	8343.963	21.454	146	944261.512	9.000
	35	91	56	147	Ba	x	-60264.036	19.748	8183.241	0.134	B-	6414.362	22.466	146	935303.900	21.200
	33	90	57	147	La	x	-66678.397	10.712	8221.554	0.073	B-	5335.504	13.725	146	928417.800	11.500
	31	89	58	147	Ce		-72013.901	8.580	8252.527	0.058	B-	3430.186	15.532	146	922689.901	9.211
	29	88	59	147	Pr		-75444.087	15.855	8270.540	0.108	B-	2702.695	15.857	146	919007.445	17.020
	27	87	60	147	Nd		-78146.782	1.274	8283.604	0.009	B-	895.190	0.566	146	916105.983	1.368
	25	86	61	147	Pm		-79041.971	1.287	8284.371	0.009	B-	224.064	0.294	146	915144.957	1.381
	23	85	62	147	Sm		-79266.035	1.262	8280.573	0.009	B-	-1721.438	2.283	146	914904.415	1.354
	21	84	63	147	Eu		-77544.597	2.569	8263.541	0.017	B-	-2187.687	2.527	146	916752.454	2.757
	19	83	64	147	Gd		-75356.911	1.887	8243.336	0.013	B-	-4614.246	8.141	146	919101.032	2.025
	17	82	65	147	Tb		-70742.665	8.096	8206.625	0.055	B-	-6546.618	11.994	146	924054.629	8.691
	15	81	66	147	Dy	x	-64196.047	8.849	8156.768	0.060	B-	-8438.946	10.164	146	931082.712	9.500
	13	80	67	147	Ho		-55757.101	5.001	8094.038	0.034	B-	-9149.287	38.517	146	940142.293	5.368
	11	79	68	147	Er	x	-46607.814	38.191	8026.476	0.260	B-	-10633.407	38.799	146	949964.456	41.000
	9	78	69	147	Tm		-35974.407	6.839	7948.818	0.047	B-	*		146	961379.887	7.341
	9	78	69	147	Tmm	-p	-35912.707	7.460	61.700	4.578						
0	40	94	54	148	Xe	x	-38650#	300#	8047#	2#	B-	8261#	300#	147	958508#	322#
	38	93	55	148	Cs	x	-46910.950	13.041	8097.547	0.088	B-	10633.961	13.126	147	949639.026	14.000
	36	92	56	148	Ba	x	-57544.911	1.490	8164.112	0.010	B-	5163.831	19.525	147	938223.000	1.600
	34	91	57	148	La	x	-62708.742	19.468	8193.716	0.132	B-	7689.681	22.457	147	932679.400	20.900
	32	90	58	148	Ce		-70398.423	11.195	8240.388	0.076	B-	2137.026	12.566	147	924424.188	12.017
	30	89	59	148	Pr		-72535.449	15.041	8249.541	0.102	B-	4872.607	15.086	147	922129.996	16.147
	28	88	60	148	Nd		-77408.056	2.053	8277.178	0.014	B-	-542.190	5.876	147	916899.037	2.203
	26	87	61	148	Pm	+p	-76865.867	5.690	8268.228	0.038	B-	2470.187	5.641	147	917481.102	6.108
	24	86	62	148	Sm		-79336.054	1.246	8279.633	0.008	B-	-3038.582	9.966	147	914829.247	1.337
	22	85	63	148	Eu		-76297.472	9.961	8253.815	0.067	B-	-28.070	9.963	147	918091.298	10.693
	20	84	64	148	Gd		-76269.402	1.459	8248.340	0.010	B-	-5734.325	12.426	147	918121.433	1.566
	18	83	65	148	Tb		-70535.077	12.368	8204.308	0.084	B-	-2675.626	9.456	147	924277.484	13.277
	16	82	66	148	Dy		-67859.451	8.722	8180.943	0.059	B-	-9868.285	84.287	147	927149.886	9.363
	14	81	67	148	Ho	x	-57991.166	83.834	8108.980	0.566	B-	-6512.169	84.458	147	937743.925	90.000
	14	81	67	148	Hom	IT	-57741#	130#	250#	100#						

12	80	68	148	Er	x	-51478.997	10.246	8059.692	0.069	B-	-12713.963	14.491	147 944735.026	11.000	
10	79	69	148	Tm	x	-38765.034	10.246	7968.501	0.069	B-	-8535#	400#	147 958384.026	11.000	
8	78	70	148	Yb	x	-30230#	400#	7906#	3#	B-	*		147 967547#	429#	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 41	95	54	149	Xe	x	-33000#	300#	8009#	2#	B-	10300#	500#	148 964573#	322#	
39	94	55	149	Cs	x	-43300#	400#	8073#	3#	B-	9531#	400#	148 953516#	429#	
37	93	56	149	Ba	x	-52830.620	2.515	8131.850	0.017	B-	7389.301	200.278	148 943284.000	2.700	
35	92	57	149	La	+	-60219.921	200.262	8176.191	1.344	B-	6450.000	200.000	148 935351.259	214.990	
33	91	58	149	Ce	x	-66669.921	10.246	8214.229	0.069	B-	4369.453	14.230	148 928426.900	11.000	
31	90	59	149	Pr	x	-71039.373	9.874	8238.304	0.066	B-	3336.152	10.085	148 923736.100	10.600	
29	89	60	149	Nd	-n	-74375.525	2.054	8255.444	0.014	B-	1688.869	2.459	148 920154.593	2.205	
27	88	61	149	Pm		-76064.394	2.183	8261.528	0.015	B-	1071.493	1.875	148 918341.517	2.344	
25	87	62	149	Sm		-77135.888	1.156	8263.468	0.008	B-	-694.584	3.788	148 917191.222	1.241	
23	86	63	149	Eu		-76441.303	3.903	8253.556	0.026	B-	-1314.148	4.136	148 917936.889	4.189	
21	85	64	149	Gd		-75127.155	3.310	8239.485	0.022	B-	-3638.572	4.338	148 919347.685	3.553	
19	84	65	149	Tb		-71488.583	3.626	8209.815	0.024	B-	-3795.230	9.028	148 923253.853	3.893	
17	83	66	149	Dy		-67693.353	9.058	8179.093	0.061	B-	-6047.570	12.758	148 927328.199	9.724	
15	82	67	149	Ho		-61645.784	11.971	8133.255	0.080	B-	-7904.163	30.401	148 933820.532	12.850	
13	81	68	149	Er	x	-53741.621	27.945	8074.956	0.188	B-	-9801#	202#	148 942306.000	30.000	
11	80	69	149	Tm	x	-43940#	200#	8004#	1#	B-	-10611#	361#	148 952828#	215#	
9	79	70	149	Yb	x	-33330#	300#	7927#	2#	B-	*		148 964219#	322#	
0 42	96	54	150	Xe	x	-28990#	300#	7983#	2#	B-	9180#	500#	149 968878#	322#	
40	95	55	150	Cs	x	-38170#	400#	8039#	3#	B-	11720#	400#	149 959023#	429#	
38	94	56	150	Ba	x	-49889.799	5.682	8111.841	0.038	B-	6421.348	6.214	149 946441.100	6.100	
36	93	57	150	La	x	-56311.147	2.515	8149.434	0.017	B-	8535.715	11.964	149 939547.500	2.700	
34	92	58	150	Ce		-64846.863	11.697	8201.123	0.078	B-	3453.645	14.291	149 930384.033	12.556	
32	91	59	150	Pr		-68300.508	9.015	8218.932	0.060	B-	5379.433	9.068	149 926676.392	9.677	
30	90	60	150	Nd		-73679.941	1.128	8249.579	0.008	B-	-82.616	20.001	149 920901.333	1.211	
28	89	61	150	Pm	+	-73597.326	20.031	8243.812	0.134	B-	3454.000	20.000	149 920990.025	21.504	
26	88	62	150	Sm		-77051.326	1.111	8261.623	0.007	B-	-2258.967	6.180	149 917282.003	1.192	
24	87	63	150	Eu		-74792.358	6.231	8241.348	0.042	B-	971.681	3.543	149 919707.104	6.688	
22	86	64	150	Gd		-75764.040	6.055	8242.610	0.040	B-	-4658.263	8.378	149 918663.961	6.500	
20	85	65	150	Tb		-71105.777	7.371	8206.340	0.049	B-	-1796.180	8.388	149 923664.812	7.912	
20	85	65	150	Tbm		-70644.954	26.399	460.823	27.370						
18	84	66	150	Dy		-69309.597	4.318	8189.149	0.029	B-	-7363.915	14.106	149 925593.090	4.635	
16	83	67	150	Ho		-61945.682	13.783	8134.841	0.092	B-	-4114.752	13.269	149 933498.578	14.796	
16	83	67	150	Hom	-	-61949.597	50.186	-3.915	51.952						
14	82	68	150	Er		-57830.930	16.030	8102.194	0.107	B-	-11340#	196#	149 937915.946	17.209	
12	81	69	150	Tm	x	-46491#	196#	8021#	1#	B-	-7856#	201#	149 950090#	210#	
10	80	70	150	Yb	x	-38634.565	44.920	7963.787	0.299	B-	-13863#	303#	149 958524.090	48.223	
8	79	71	150	Lu	-p	-24771#	300#	7866#	2#	B-	*		149 973407#	322#	
8	79	71	150	Lum	-p	-24749#	300#	21.824	5.327						
0 41	96	55	151	Cs	x	-34280#	500#	8013#	3#	B-	10660#	640#	150 963199#	537#	
39	95	56	151	Ba	x	-44940#	400#	8079#	3#	B-	8370#	591#	150 951755#	429#	
37	94	57	151	La	x	-53310.339	435.473	8129.044	2.884	B-	7914.719	435.833	150 942769.000	467.500	
35	93	58	151	Ce	x	-61225.058	17.698	8176.278	0.117	B-	5554.621	21.188	150 934272.200	19.000	
33	92	59	151	Pr		-66779.679	11.650	8207.882	0.077	B-	4163.494	11.679	150 928309.069	12.506	
31	91	60	151	Nd		-70943.173	1.132	8230.274	0.008	B-	2443.077	4.473	150 923839.374	1.215	
29	90	61	151	Pm		-73386.250	4.610	8241.272	0.031	B-	1190.220	4.476	150 921216.624	4.949	
27	89	62	151	Sm		-74576.470	1.109	8243.973	0.007	B-	76.617	0.537	150 919938.870	1.191	
25	88	63	151	Eu		-74653.087	1.165	8239.300	0.008	B-	-464.178	2.779	150 919856.618	1.250	
23	87	64	151	Gd		-74188.909	2.993	8231.045	0.020	B-	-2565.381	3.761	150 920354.934	3.212	
21	86	65	151	Tb		-71623.528	4.094	8208.874	0.027	B-	-2871.157	4.945	150 923108.983	4.395	
19	85	66	151	Dy	-a	-68752.371	3.247	8184.679	0.022	B-	-5129.634	8.751	150 926191.297	3.485	
17	84	67	151	Ho	-a	-63622.737	8.298	8145.527	0.055	B-	-5354.502	17.525	150 931698.185	8.908	
15	83	68	151	Er		-58268.235	15.439	8104.885	0.102	B-	-7497.011	23.939	150 937446.479	16.574	
13	82	69	151	Tm		-50771.224	18.329	8050.055	0.121	B-	-9444.878	106.918	150 945494.852	19.676	
13	82	69	151	Tmm	+a	-50678.692	18.928	92.531	5.686						
11	81	70	151	Yb		-41326.346	105.637	7982.325	0.700	B-	-11221.717	114.801	150 955634.345	113.406	
11	81	70	151	Ybm	--	-40619.216	49.067	707.130	114.665						
9	80	71	151	Lu	-p	-30104.628	44.957	7902.828	0.298	B-	*		150 967681.353	48.262	
9	80	71	151	Lum	-p	-30048.052	45.028	56.576	3.616						
0 42	97	55	152	Cs	x	-29130#	500#	7980#	3#	B-	12480#	640#	151 968728#	537#	
40	96	56	152	Ba	x	-41610#	400#	8057#	3#	B-	7680#	500#	151 955330#	429#	
38	95	57	152	La	x	-49290#	300#	8102#	2#	B-	9690#	361#	151 947085#	322#	
36	94	58	152	Ce	x	-58980#	200#	8161#	1#	B-	4778#	201#	151 936682#	215#	

34	93	59	152	Pr	x	-63758.070	18.537	8187.105	0.122	B-	6391.584	30.704	151 931552.900	19.900
32	92	60	152	Nd		-70149.654	24.476	8224.008	0.161	B-	1104.805	18.501	151 924691.252	26.276
30	91	61	152	Pm		-71254.459	25.904	8226.129	0.170	B-	3508.510	25.886	151 923505.195	27.809
30	91	61	152	Pmm	+	-71113.815	83.211	140.644	87.139					
28	90	62	152	Sm		-74762.969	1.016	8244.064	0.007	B-	-1874.480	0.686	151 919738.655	1.090
26	89	63	152	Eu		-72888.489	1.166	8226.585	0.008	B-	1818.806	0.700	151 921750.992	1.251
24	88	64	152	Gd		-74707.295	1.007	8233.404	0.007	B-	-3990.000	40.000	151 919798.423	1.081
22	87	65	152	Tb	-	-70717.295	40.013	8202.007	0.263	B-	-599.350	40.258	151 924081.864	42.955
20	86	66	152	Dy	-a	-70117.946	4.593	8192.917	0.030	B-	-6515.217	13.225	151 924725.292	4.930
18	85	67	152	Ho		-63602.729	12.429	8144.907	0.082	B-	-3102.405	9.665	151 931719.664	13.343
16	84	68	152	Er		-60500.325	8.827	8119.349	0.058	B-	-8805.039	51.468	151 935050.233	9.476
14	83	69	152	Tm		-51695.285	50.706	8056.274	0.334	B-	-5616.810	63.093	151 944502.831	54.434
14	83	69	152	Tmm	-	-51820.325	240.162	-125.039	245.457					
12	82	70	152	Yb		-46078.475	43.660	8014.175	0.287	B-	-12656#	200#	151 950532.724	46.871
10	81	71	152	Lu	x	-33422#	196#	7926#	1#	B-	*		151 964120#	210#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 41	97	56	153	Ba	x	-36470#	400#	8023#	3#	B-	9590#	500#	152 960848#	429#
39	96	57	153	La	x	-46060#	300#	8081#	2#	B-	8850#	361#	152 950553#	322#
37	95	58	153	Ce	x	-54910#	200#	8134#	1#	B-	6659#	201#	152 941052#	215#
35	94	59	153	Pr		-61568.490	11.882	8172.037	0.078	B-	5761.890	12.190	152 933903.511	12.755
33	93	60	153	Nd		-67330.379	2.747	8204.583	0.018	B-	3317.622	9.352	152 927717.868	2.949
31	92	61	153	Pm		-70648.001	9.063	8221.154	0.059	B-	1912.050	9.083	152 924156.254	9.729
29	91	62	153	Sm	-n	-72560.051	1.025	8228.537	0.007	B-	807.405	0.706	152 922103.585	1.100
27	90	63	153	Eu		-73367.456	1.170	8228.701	0.008	B-	-484.520	0.715	152 921236.800	1.256
25	89	64	153	Gd		-72882.936	1.002	8220.421	0.007	B-	-1569.339	3.844	152 921756.954	1.075
23	88	65	153	Tb		-71313.597	3.947	8205.050	0.026	B-	-2170.414	1.933	152 923441.708	4.236
21	87	66	153	Dy		-69143.182	4.001	8185.751	0.026	B-	-4131.165	6.156	152 925771.744	4.295
19	86	67	153	Ho	-a	-65012.017	5.065	8153.637	0.033	B-	-4545.987	9.788	152 930206.732	5.437
17	85	68	153	Er		-60466.030	9.156	8118.811	0.060	B-	-6493.486	12.844	152 935087.050	9.829
15	84	69	153	Tm		-53972.543	11.964	8071.257	0.078	B-	-6870.374	47.344	152 942058.094	12.844
13	83	70	153	Yb	x	-47102.169	45.818	8021.239	0.299	B-	-8918.618	64.017	152 949433.744	49.187
11	82	71	153	Lu	+a	-38183.551	44.708	7957.834	0.292	B-	-10883#	303#	152 959008.273	47.996
11	82	71	153	Lum	IT	-38103.551	44.987	80.000	5.000					
9	81	72	153	Hf	x	-27300#	300#	7882#	2#	B-	*		152 970692#	322#
0 42	98	56	154	Ba	x	-32920#	500#	8001#	3#	B-	8610#	583#	153 964659#	537#
40	97	57	154	La	x	-41530#	300#	8051#	2#	B-	10690#	361#	153 955416#	322#
38	96	58	154	Ce	x	-52220#	200#	8116#	1#	B-	5640#	224#	153 943940#	215#
36	95	59	154	Pr	+	-57859.602	100.005	8147.299	0.649	B-	7720.000	100.000	153 937885.165	107.360
34	94	60	154	Nd	x	-65579.602	1.025	8192.349	0.007	B-	2687.000	25.000	153 929597.404	1.100
32	93	61	154	Pm	-	-68266.602	25.021	8204.717	0.162	B-	4188.956	25.055	153 926712.791	26.861
32	93	61	154	Pmm	+	-68492.358	44.740	-225.756	51.262					
30	92	62	154	Sm		-72455.558	1.304	8226.838	0.008	B-	-717.202	1.102	153 922215.762	1.400
28	91	63	154	Eu		-71738.356	1.188	8217.100	0.008	B-	1967.995	0.753	153 922985.711	1.275
26	90	64	154	Gd		-73706.350	0.993	8224.800	0.006	B-	-3549.651	45.298	153 920872.982	1.066
24	89	65	154	Tb	-	-70156.699	45.309	8196.670	0.294	B-	237.306	45.901	153 924683.689	48.641
22	88	66	154	Dy		-70394.004	7.431	8193.130	0.048	B-	-5754.638	10.178	153 924428.931	7.977
20	87	67	154	Ho	-a	-64639.367	8.216	8150.682	0.053	B-	-2034.413	9.462	153 930606.789	8.820
20	87	67	154	Hom		-64396.728	26.709	242.638	27.906					
18	86	68	154	Er		-62604.953	4.960	8132.392	0.032	B-	-8178.020	14.565	153 932790.821	5.324
16	85	69	154	Tm	-a	-54426.933	14.034	8074.208	0.091	B-	-4495.229	13.626	153 941570.287	15.066
16	85	69	154	Tmm	-a	-54352.854	50.212	74.078	52.044					
14	84	70	154	Yb		-49931.703	16.099	8039.938	0.105	B-	-10322.562	50.526	153 946396.114	17.283
12	83	71	154	Lu	+a	-39609.141	47.897	7967.828	0.311	B-	-6879#	304#	153 957477.840	51.419
12	83	71	154	Lum	+a	-39546.909	47.831	62.232	12.103					
10	82	72	154	Hf	x	-32730#	300#	7918#	2#	B-	*		153 964863#	322#
0 41	98	57	155	La	x	-37930#	400#	8028#	3#	B-	9850#	500#	154 959280#	429#
39	97	58	155	Ce	x	-47780#	300#	8087#	2#	B-	7635#	300#	154 948706#	322#
37	96	59	155	Pr		-55415.335	17.198	8131.040	0.111	B-	6868.461	19.472	154 940509.193	18.462
35	95	60	155	Nd		-62283.796	9.154	8170.305	0.059	B-	4656.210	10.278	154 933135.598	9.826
33	94	61	155	Pm		-66940.006	4.719	8195.298	0.030	B-	3251.194	4.902	154 928136.951	5.065
31	93	62	155	Sm	-n	-70191.200	1.332	8211.226	0.009	B-	1627.125	1.202	154 924646.651	1.429
29	92	63	155	Eu		-71818.325	1.251	8216.676	0.008	B-	251.965	0.868	154 922899.860	1.343
27	91	64	155	Gd		-72070.290	0.983	8213.254	0.006	B-	-819.858	9.788	154 922629.364	1.055
25	90	65	155	Tb	+	-71250.432	9.830	8202.917	0.063	B-	-2094.500	1.897	154 923509.518	10.552
23	89	66	155	Dy		-69155.932	9.645	8184.357	0.062	B-	-3116.138	16.589	154 925758.056	10.354
21	88	67	155	Ho		-66039.794	17.470	8159.205	0.113	B-	-3830.639	18.473	154 929103.368	18.754

19	87	68	155	Er	-a	-62209.155	6.074	8129.444	0.039	B-	-5583.243	11.511	154	933215.728	6.520
17	86	69	155	Tm	-a	-56625.912	9.921	8088.376	0.064	B-	-6121.333	18.438	154	939209.585	10.651
15	85	70	155	Yb		-50504.579	15.545	8043.836	0.100	B-	-7959.913	23.903	154	945781.106	16.688
13	84	71	155	Lu		-42544.667	18.192	7987.434	0.117	B-	-8235#	300#	154	954326.424	19.529
13	84	71	155	Lum	IT	-42523.217	18.712	21.450	4.384						
13	84	71	155	Lun		-40764.366	18.285	1780.300	1.849						
11	83	72	155	Hf	x	-34310#	300#	7929#	2#	B-	-10322#	424#	154	963167#	322#
9	82	73	155	Ta	-p	-23988#	300#	7858#	2#	B-	*		154	974248#	322#
0 42	99	57	156	La	x	-33050#	400#	7997#	3#	B-	11769#	500#	155	964519#	429#
40	98	58	156	Ce	x	-44820#	300#	8068#	2#	B-	6630#	300#	155	951884#	322#
38	97	59	156	Pr	x	-51449.307	1.025	8105.234	0.007	B-	8752.823	1.659	155	944766.900	1.100
36	96	60	156	Nd	x	-60202.130	1.304	8156.326	0.008	B-	3964.718	1.764	155	935370.358	1.400
34	95	61	156	Pm		-64166.847	1.188	8176.726	0.008	B-	5193.878	8.604	155	931114.059	1.275
34	95	61	156	Pmm		-64016.547	1.187	150.301	0.100						
32	94	62	156	Sm		-69360.726	8.522	8205.005	0.055	B-	722.108	7.902	155	925538.202	9.148
30	93	63	156	Eu		-70082.834	3.532	8204.619	0.023	B-	2452.491	3.408	155	924762.986	3.791
28	92	64	156	Gd		-72535.325	0.982	8215.325	0.006	B-	-2444.321	3.677	155	922130.129	1.054
26	91	65	156	Tb		-70091.005	3.768	8194.641	0.024	B-	438.374	3.679	155	924754.215	4.044
24	90	66	156	Dy		-70529.379	0.988	8192.437	0.006	B-	-4990.984	38.411	155	924283.601	1.060
22	89	67	156	Ho	-	-65538.395	38.424	8155.428	0.246	B-	-1327.422	45.635	155	929641.642	41.249
22	89	67	156	Hon	x	-65304.257	27.945	234.138	47.511						
20	88	68	156	Er		-64210.973	24.622	8141.904	0.158	B-	-7379.537	26.643	155	931066.688	26.432
18	87	69	156	Tm		-56831.436	14.062	8089.584	0.090	B-	-3565.540	12.223	155	938988.946	15.095
16	86	70	156	Yb		-53265.897	9.300	8061.713	0.060	B-	-9591.340	51.651	155	942816.710	9.983
14	85	71	156	Lu	-a	-43674.556	50.807	7995.215	0.326	B-	-6046.953	63.250	155	953113.437	54.543
14	85	71	156	Lum	-a	-43684.992	240.172	-10.436	245.487						
12	84	72	156	Hf		-37627.604	43.769	7951.437	0.281	B-	-11627#	303#	155	959605.108	46.987
12	84	72	156	Hfm		-35668.783	43.772	1958.820	0.988						
10	83	73	156	Ta	-p	-26001#	300#	7872#	2#	B-	*		155	972087#	322#
10	83	73	156	Tam	-p	-25907#	300#	93.864	7.908						
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY			ATOMIC MASS	V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 43	100	57	157	La	x	-29070#	300#	7972#	2#	B-	10860#	500#	156	968792#	322#
41	99	58	157	Ce	x	-39930#	400#	8037#	3#	B-	8504#	400#	156	957133#	429#
39	98	59	157	Pr	x	-48434.806	3.167	8085.817	0.020	B-	8059.311	3.821	156	948003.100	3.400
37	97	60	157	Nd		-56494.117	2.137	8132.167	0.014	B-	5802.999	7.325	156	939351.074	2.294
35	96	61	157	Pm		-62297.116	7.006	8164.146	0.045	B-	4380.538	8.265	156	933121.298	7.521
33	95	62	157	Sm		-66677.653	4.434	8187.064	0.028	B-	2781.472	6.119	156	928418.598	4.759
31	94	63	157	Eu		-69459.125	4.234	8199.797	0.027	B-	1364.763	4.197	156	925432.565	4.545
29	93	64	157	Gd		-70823.888	0.977	8203.507	0.006	B-	-60.047	0.297	156	923967.432	1.048
27	92	65	157	Tb		-70763.841	1.018	8198.142	0.006	B-	-1339.177	5.130	156	924031.896	1.092
25	91	66	157	Dy		-69424.664	5.154	8184.629	0.033	B-	-2591.803	23.784	156	925469.561	5.532
23	90	67	157	Ho		-66832.861	23.469	8163.137	0.149	B-	-3419.214	33.667	156	928251.976	25.194
21	89	68	157	Er		-63413.648	26.505	8136.376	0.169	B-	-4698.047	35.843	156	931922.652	28.454
19	88	69	157	Tm		-58715.601	24.129	8101.469	0.154	B-	-5296.613	25.219	156	936966.213	25.903
17	87	70	157	Yb		-53418.988	10.691	8062.749	0.068	B-	-6979.230	14.151	156	942652.360	11.477
15	86	71	157	Lu		-46439.758	12.060	8013.312	0.077	B-	-7642.512	47.467	156	950144.871	12.946
15	86	71	157	Lum		-46418.817	11.951	20.941	1.996						
13	85	72	157	Hf	-a	-38797.246	45.920	7959.651	0.292	B-	-9393.209	64.171	156	958349.445	49.297
11	84	73	157	Ta	IT	-29404.037	44.825	7894.838	0.286	B-	-9714#	402#	156	968433.469	48.121
11	84	73	157	Tam	+a	-29382.037	44.545	22.000	5.000						
11	84	73	157	Tan	IT	-27811.037	45.092	1593.000	8.602						
9	83	74	157	W	x	-19690#	400#	7828#	3#	B-	*		156	978862#	429#
9	83	74	157	Wxp	+a	-19369#	401#	320.903	32.525						
0 42	100	58	158	Ce	x	-36540#	400#	8015#	3#	B-	7610#	500#	157	960773#	429#
40	99	59	158	Pr	x	-44150#	300#	8059#	2#	B-	9685#	300#	157	952603#	322#
38	98	60	158	Nd	x	-53835.123	1.304	8114.953	0.008	B-	5271.017	1.578	157	942205.620	1.400
36	97	61	158	Pm		-59106.140	0.888	8143.362	0.006	B-	6145.709	4.863	157	936546.952	0.952
34	96	62	158	Sm		-65251.849	4.782	8177.308	0.030	B-	2018.612	5.115	157	929949.262	5.133
32	95	63	158	Eu		-67270.461	2.032	8185.132	0.013	B-	3419.501	2.255	157	927782.192	2.181
30	94	64	158	Gd		-70689.962	0.976	8201.823	0.006	B-	-1219.084	0.980	157	924111.208	1.047
28	93	65	158	Tb		-69470.878	1.268	8189.156	0.008	B-	936.271	2.475	157	925419.948	1.360
26	92	66	158	Dy		-70407.149	2.337	8190.130	0.015	B-	-4219.755	27.005	157	924414.820	2.509
24	91	67	158	Ho	-	-66187.394	27.106	8158.471	0.172	B-	-883.578	37.024	157	928944.914	29.099
22	90	68	158	Er		-65303.815	25.219	8147.927	0.160	B-	-6600.615	31.341	157	929893.474	27.074
20	89	69	158	Tm		-58703.200	25.219	8101.199	0.160	B-	-2693.598	26.450	157	936979.525	27.074
18	88	70	158	Yb		-56009.602	7.973	8079.200	0.050	B-	-8797.611	16.556	157	939871.222	8.559

16	87	71	158	Lu	-a	-47211.991	14.765	8018.567	0.093	B-	-5109.981	14.632	157 949315.845	15.851	
14	86	72	158	Hf		-42102.010	16.327	7981.274	0.103	B-	-11041.389	50.412	157 954801.635	17.527	
12	85	73	158	Ta	+a	-31060.621	47.699	7906.440	0.302	B-	-7368#	304#	157 966655.053	51.206	
12	85	73	158	Tam	+a	-30919.144	47.774	141.476	11.050						
12	85	73	158	Tan	-a	-28252.989	49.145	2807.632	15.967						
10	84	74	158	W	-a	-23693#	300#	7855#	2#	B-	*		157 974565#	322#	
10	84	74	158	Wxm	-a	-21803#	300#	1889.213	7.652						
0 43	101	58	159	Ce	x	-31340#	500#	7983#	3#	B-	9430#	640#	158 966355#	537#	
41	100	59	159	Pr	x	-40770#	400#	8037#	3#	B-	8954#	401#	158 956232#	429#	
39	99	60	159	Nd	x	-49724.007	29.808	8088.822	0.187	B-	6830.344	31.453	158 946619.085	32.000	
37	98	61	159	Pm		-56554.351	10.039	8126.860	0.063	B-	5653.498	11.644	158 939286.409	10.777	
35	97	62	159	Sm		-62207.849	5.934	8157.496	0.037	B-	3835.533	7.321	158 933217.130	6.370	
33	96	63	159	Eu		-66043.382	4.320	8176.699	0.027	B-	2518.468	4.366	158 929099.516	4.637	
31	95	64	159	Gd		-68561.850	0.979	8187.618	0.006	B-	970.727	0.750	158 926395.830	1.051	
29	94	65	159	Tb		-69532.576	1.103	8188.802	0.007	B-	-365.360	1.157	158 925353.712	1.184	
27	93	66	159	Dy		-69167.216	1.439	8181.584	0.009	B-	-1837.600	2.683	158 925745.943	1.544	
25	92	67	159	Ho	-	-67329.616	3.045	8165.107	0.019	B-	-2768.500	2.000	158 927718.687	3.268	
23	91	68	159	Er	-	-64561.116	3.643	8142.774	0.023	B-	-3990.712	28.181	158 930690.794	3.910	
21	90	69	159	Tm	x	-60570.404	27.945	8112.755	0.176	B-	-4736.911	33.015	158 934975.000	30.000	
19	89	70	159	Yb	x	-55833.493	17.582	8078.043	0.111	B-	-6124.884	41.565	158 940060.282	18.874	
17	88	71	159	Lu	x	-49708.609	37.663	8034.601	0.237	B-	-6854.038	40.832	158 946635.615	40.433	
15	87	72	159	Hf	-a	-42854.571	15.772	7986.573	0.099	B-	-8415.804	24.408	158 953993.727	16.932	
13	86	73	159	Ta	IT	-34438.767	18.660	7928.723	0.117	B-	-9005#	301#	158 963028.464	20.032	
13	86	73	159	Tam		-34375.067	17.921	63.700	5.200						
11	85	74	159	W	-a	-25434#	300#	7867#	2#	B-	-10629#	427#	158 972696#	322#	
9	84	75	159	Re	IT	-14805#	305#	7795#	2#	B-	*		158 984106#	327#	
9	84	75	159	Rem	-p	-14595#	300#	210#	50#						
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 42	101	59	160	Pr	x	-36200#	400#	8009#	2#	B-	10525#	402#	159 961138#	429#	
40	100	60	160	Nd	x	-46724.515	46.575	8069.966	0.291	B-	6170.124	46.620	159 949839.172	50.000	
38	99	61	160	Pm	x	-52894.639	2.049	8103.640	0.013	B-	7338.534	2.833	159 943215.272	2.200	
38	99	61	160	Pmm	x	-52703.776	11.178	190.863	11.364						
36	98	62	160	Sm	x	-60233.172	1.956	8144.616	0.012	B-	3260.276	2.155	159 935337.032	2.100	
34	97	63	160	Eu	x	-63493.449	0.904	8160.103	0.006	B-	4448.606	1.442	159 931836.982	0.970	
34	97	63	160	Eum	x	-63400.402	0.801	93.047	1.208						
32	96	64	160	Gd		-67942.055	1.123	8183.017	0.007	B-	-105.587	1.021	159 927061.207	1.205	
30	95	65	160	Tb		-67836.468	1.110	8177.468	0.007	B-	1835.955	1.101	159 927174.559	1.191	
28	94	66	160	Dy		-69672.424	0.700	8184.053	0.004	B-	-3290.000	15.000	159 925203.580	0.751	
26	93	67	160	Ho	-	-66382.424	15.016	8158.600	0.094	B-	-318.247	28.520	159 928735.540	16.120	
24	92	68	160	Er		-66064.176	24.246	8151.722	0.152	B-	-5763.140	39.133	159 929077.193	26.029	
22	91	69	160	Tm		-60301.037	32.686	8110.812	0.204	B-	-2137.810	33.145	159 935264.177	35.089	
20	90	70	160	Yb	x	-58163.227	5.496	8092.561	0.034	B-	-7893.285	57.086	159 937559.210	5.900	
18	89	71	160	Lu	x	-50269.942	56.821	8038.339	0.355	B-	-4330.846	57.615	159 946033.000	61.000	
16	88	72	160	Hf		-45939.096	9.532	8006.381	0.060	B-	-10140.390	51.897	159 950682.354	10.233	
14	87	73	160	Ta	-a	-35798.706	51.014	7938.114	0.319	B-	-6661.544	63.582	159 961568.509	54.765	
14	87	73	160	Tam	-a	-35711.624	240.191	87.082	245.548						
12	86	74	160	W		-29137.162	44.008	7891.590	0.275	B-	-12259#	303#	159 968719.971	47.244	
10	85	75	160	Re	-a	-16878#	300#	7810#	2#	B-	*		159 981880#	322#	
10	85	75	160	Rem	+a	-16701#	300#	177.496	15.285						
0 43	102	59	161	Pr	x	-32490#	500#	7986#	3#	B-	9741#	640#	160 965121#	537#	
41	101	60	161	Nd	x	-42230#	400#	8042#	2#	B-	7856#	400#	160 954664#	429#	
39	100	61	161	Pm	x	-50086.589	9.035	8085.998	0.056	B-	6585.454	11.319	160 946229.837	9.700	
37	99	62	161	Sm		-56672.043	6.817	8122.042	0.042	B-	5119.558	12.415	160 939160.062	7.318	
35	98	63	161	Eu		-61791.601	10.400	8148.981	0.065	B-	3714.536	10.507	160 933663.991	11.164	
33	97	64	161	Gd	-n	-65506.137	1.504	8167.193	0.009	B-	1955.636	1.440	160 929676.273	1.614	
31	96	65	161	Tb		-67461.773	1.218	8174.481	0.008	B-	593.720	1.201	160 927576.811	1.307	
29	95	66	161	Dy		-68055.493	0.697	8173.309	0.004	B-	-859.200	2.137	160 926939.427	0.748	
27	94	67	161	Ho		-67196.293	2.151	8163.113	0.013	B-	-1994.996	9.004	160 927861.816	2.309	
25	93	68	161	Er	+n	-65201.297	8.774	8145.863	0.054	B-	-3302.582	29.290	160 930003.532	9.419	
23	92	69	161	Tm	x	-61898.715	27.945	8120.491	0.174	B-	-4064.491	31.764	160 933549.000	30.000	
21	91	70	161	Yb	x	-57834.224	15.101	8090.386	0.094	B-	-5271.875	31.764	160 937912.409	16.211	
19	90	71	161	Lu	x	-52562.349	27.945	8052.782	0.174	B-	-6246.699	36.478	160 943572.000	30.000	
17	89	72	161	Hf		-46315.650	23.447	8009.123	0.146	B-	-7536.906	33.727	160 950278.107	25.171	
15	88	73	161	Ta	+a	-38778.744	24.378	7957.451	0.151	B-	-8329.296	52.110	160 958369.307	26.170	
15	88	73	161	Tam		-38717.487	12.251	61.257	23.315						
13	87	74	161	W	-a	-30449.448	46.063	7900.857	0.286	B-	-9798.539	63.930	160 967311.174	49.450	

11	86	75	161	Re		-20650.909	44.331	7835.137	0.275	B-	-10455#	402#	160	977830.338	47.591
11	86	75	161	Rem		-20527.213	44.342	123.696	1.294						
9	85	76	161	Os	-a	-10196#	400#	7765#	2#	B-	*		160	989054#	429#
0 42	102	60	162	Nd	x	-39010#	400#	8022#	2#	B-	7030#	500#	161	958121#	429#
40	101	61	162	Pm	x	-46040#	300#	8061#	2#	B-	8339#	300#	161	950574#	322#
38	100	62	162	Sm		-54379.053	3.523	8107.574	0.022	B-	4343.890	3.760	161	941621.687	3.782
36	99	63	162	Eu		-58722.944	1.314	8129.559	0.008	B-	5557.771	4.175	161	936958.329	1.410
36	99	63	162	Eum		-58564.988	1.289	157.956	1.651						
34	98	64	162	Gd	-nn	-64280.715	3.963	8159.037	0.024	B-	1598.833	4.461	161	930991.817	4.253
32	97	65	162	Tb	x	-65879.548	2.049	8164.077	0.013	B-	2301.620	2.164	161	929275.400	2.200
32	97	65	162	Tbm	x	-65594.045	2.515	285.503	3.244						
30	96	66	162	Dy		-68181.168	0.695	8173.456	0.004	B-	-2140.606	3.093	161	926804.509	0.746
28	95	67	162	Ho		-66040.562	3.102	8155.413	0.019	B-	293.647	3.107	161	929102.544	3.330
26	94	68	162	Er		-66334.209	0.756	8152.396	0.005	B-	-4856.728	26.047	161	928787.301	0.811
24	93	69	162	Tm	-	-61477.481	26.058	8117.587	0.161	B-	-1656.342	30.113	161	934001.213	27.974
22	92	70	162	Yb	x	-59821.139	15.103	8102.533	0.093	B-	-6989.380	76.541	161	935779.368	16.213
20	91	71	162	Lu	x	-52831.759	75.036	8054.560	0.463	B-	-3663.351	75.568	161	943282.776	80.554
18	90	72	162	Hf		-49168.408	8.951	8027.117	0.055	B-	-9387.213	63.813	161	947215.545	9.609
16	89	73	162	Ta	-a	-39781.195	63.238	7964.342	0.390	B-	-5782.368	63.252	161	957293.132	67.888
14	88	74	162	W		-33998.827	16.503	7923.819	0.102	B-	-11603.492	50.208	161	963500.759	17.716
12	87	75	162	Re	+a	-22395.335	47.423	7847.363	0.293	B-	-7895#	304#	161	975957.620	50.910
12	87	75	162	Rem	+a	-22220.117	47.659	175.218	9.209						
10	86	76	162	Os	-a	-14500#	300#	7794#	2#	B-	*		161	984434#	322#
0 43	103	60	163	Nd	x	-34080#	500#	7992#	3#	B-	8880#	640#	162	963414#	537#
41	102	61	163	Pm	x	-42960#	400#	8042#	2#	B-	7640#	400#	162	953881#	429#
39	101	62	163	Sm	x	-50599.612	7.359	8084.165	0.045	B-	5974.207	7.414	162	945679.085	7.900
37	100	63	163	Eu	x	-56573.819	0.904	8116.017	0.006	B-	4814.772	1.205	162	939265.510	0.970
35	99	64	163	Gd		-61388.591	0.797	8140.756	0.005	B-	3207.161	4.137	162	934096.640	0.855
35	99	64	163	Gdm		-61250.376	0.797	138.215	0.198						
33	98	65	163	Tb	+p	-64595.752	4.060	8155.632	0.025	B-	1785.104	4.001	162	930653.611	4.358
31	97	66	163	Dy		-66380.856	0.693	8161.784	0.004	B-	-2.831	0.022	162	928737.223	0.744
29	96	67	163	Ho		-66378.025	0.693	8156.967	0.004	B-	-1210.614	4.575	162	928740.262	0.744
27	95	68	163	Er		-65167.411	4.628	8144.740	0.028	B-	-2439.000	3.000	162	930039.909	4.967
25	94	69	163	Tm	-	-62728.411	5.515	8124.977	0.034	B-	-3434.557	16.069	162	932658.283	5.920
23	93	70	163	Yb	x	-59293.854	15.104	8099.107	0.093	B-	-4502.439	31.766	162	936345.432	16.215
21	92	71	163	Lu	x	-54791.415	27.945	8066.685	0.171	B-	-5522.080	37.961	162	941179.000	30.000
19	91	72	163	Hf		-49269.335	25.693	8028.007	0.158	B-	-6734.701	45.922	162	947107.196	27.582
17	90	73	163	Ta	-a	-42534.634	38.061	7981.890	0.234	B-	-7624.230	69.486	162	954337.194	40.860
17	90	73	163	Tam	+a	-42397#	42#	138#	18#						
15	89	74	163	W	-a	-34910.404	58.135	7930.316	0.357	B-	-8908.541	60.684	162	962522.141	62.410
13	88	75	163	Re	+a	-26001.863	17.437	7870.863	0.107	B-	-9665#	301#	162	972085.853	18.719
13	88	75	163	Rem		-25882.054	17.586	119.809	4.620						
11	87	76	163	Os	-a	-16336#	300#	7807#	2#	B-	-11026#	500#	162	982462#	322#
9	86	77	163	Ir	x	-5310#	400#	7734#	2#	B-	*		162	994299#	429#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)		BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)		V/S
0 42	103	61	164	Pm	x	-38360#	400#	8014#	2#	B-	9565#	400#	163	958819#	429#
40	102	62	164	Sm	x	-47925.314	4.099	8067.780	0.025	B-	5306.832	4.591	163	948550.061	4.400
38	101	63	164	Eu		-53232.146	2.068	8095.369	0.013	B-	6461.542	2.297	163	942852.943	2.219
36	100	64	164	Gd		-59693.688	1.000	8129.998	0.006	B-	2411.296	2.114	163	935916.193	1.073
34	99	65	164	Tb	x	-62104.983	1.863	8139.930	0.011	B-	3862.664	1.988	163	933327.561	2.000
34	99	65	164	Tbm	x	-61959.670	12.109	145.313	12.252						
32	98	66	164	Dy		-65967.647	0.695	8158.713	0.004	B-	-987.131	1.371	163	929180.821	0.746
30	97	67	164	Ho		-64980.516	1.390	8147.923	0.008	B-	962.056	1.376	163	930240.550	1.492
28	96	68	164	Er		-65942.572	0.704	8149.019	0.004	B-	-4033.629	25.011	163	929207.741	0.755
26	95	69	164	Tm		-61908.943	25.006	8119.653	0.152	B-	-896.796	29.213	163	933538.019	26.845
24	94	70	164	Yb	x	-61012.146	15.106	8109.415	0.092	B-	-6369.771	31.767	163	934500.770	16.217
22	93	71	164	Lu	x	-54642.376	27.945	8065.804	0.170	B-	-2823.696	32.107	163	941339.000	30.000
20	92	72	164	Hf		-51818.679	15.810	8043.816	0.096	B-	-8535.874	32.107	163	944370.362	16.972
18	91	73	164	Ta	x	-43282.805	27.945	7986.998	0.170	B-	-5046.907	29.569	163	953534.000	30.000
16	90	74	164	W		-38235.898	9.665	7951.454	0.059	B-	-10788.450	52.171	163	958952.077	10.376
14	89	75	164	Re	-a	-27447.448	51.268	7880.900	0.313	B-	-7214.636	64.002	163	970533.954	55.038
14	89	75	164	Rem	-a	-27522.862	240.409	-75.415	245.815						
12	88	76	164	Os		-20232.812	44.321	7832.138	0.270	B-	-12749#	319#	163	978279.183	47.580
10	87	77	164	Ir	-a	-7483#	316#	7750#	2#	B-	*		163	991966#	339#
10	87	77	164	Irm	-p	-7224#	300#	260#	101#						
0 43	104	61	165	Pm	x	-34670#	500#	7992#	3#	B-	8840#	640#	164	962780#	537#

41	103	62	165	Sm	x	-43510#	400#	8041#	2#	B-	7219#	400#	164	953290#	429#
39	102	63	165	Eu		-50729.103	5.213	8080.053	0.032	B-	5796.679	5.373	164	945540.070	5.596
37	101	64	165	Gd		-56525.782	1.304	8110.443	0.008	B-	4063.067	2.019	164	939317.080	1.400
35	100	65	165	Tb		-60588.849	1.541	8130.326	0.009	B-	3023.438	1.691	164	934955.198	1.654
33	99	66	165	Dy	-n	-63612.287	0.697	8143.908	0.004	B-	1285.729	0.750	164	931709.404	0.748
31	98	67	165	Ho		-64898.016	0.786	8146.959	0.005	B-	-376.665	0.958	164	930329.117	0.844
29	97	68	165	Er		-64521.351	0.918	8139.935	0.006	B-	-1591.328	1.489	164	930733.483	0.985
27	96	69	165	Tm		-62930.023	1.658	8125.549	0.010	B-	-2634.635	26.591	164	932441.844	1.779
25	95	70	165	Yb		-60295.388	26.539	8104.840	0.161	B-	-3853.140	35.432	164	935270.241	28.490
23	94	71	165	Lu		-56442.248	26.539	8076.746	0.161	B-	-4806.735	38.539	164	939406.758	28.490
21	93	72	165	Hf	x	-51635.513	27.945	8042.873	0.169	B-	-5787.577	31.067	164	944567.000	30.000
19	92	73	165	Ta		-45847.935	13.573	8003.055	0.082	B-	-6986.648	29.113	164	950780.219	14.571
19	92	73	165	Tam	+a	-45823.559	16.743	24.377	18.044						
17	91	74	165	W		-38861.287	25.755	7955.970	0.156	B-	-8201.765	34.910	164	958280.694	27.649
15	90	75	165	Re	+a	-30659.522	23.589	7901.521	0.143	B-	-8970.483	52.053	164	967085.650	25.324
15	90	75	165	Rem		-30631.679	12.290	27.844	22.375						
13	89	76	165	Os	-a	-21689.039	46.408	7842.413	0.281	B-	-10286#	81#	164	976715.859	49.821
11	88	77	165	Ir	IT	-11403#	67#	7775#	0#	B-	-11085#	406#	164	987758#	72#
11	88	77	165	Irm		-11223.322	44.496	180#	50#						
9	87	78	165	Pt	-a	-318#	400#	7703#	2#	B-	*		164	999658#	429#
0 42	104	62	166	Sm	x	-40450#	400#	8023#	2#	B-	6299#	412#	165	956575#	429#
40	103	63	166	Eu	+	-46749#	100#	8056#	1#	B-	7622#	100#	165	949813#	107#
38	102	64	166	Gd	x	-54370.926	1.584	8097.226	0.010	B-	3437.852	2.156	165	941630.413	1.700
36	101	65	166	Tb		-57808.778	1.463	8113.223	0.009	B-	4775.692	1.669	165	937939.727	1.570
34	100	66	166	Dy	-n	-62584.469	0.804	8137.279	0.005	B-	485.869	0.850	165	932812.812	0.862
32	99	67	166	Ho		-63070.338	0.786	8135.493	0.005	B-	1853.807	0.779	165	932291.210	0.844
30	98	68	166	Er		-64924.144	0.334	8141.948	0.002	B-	-3037.667	11.547	165	930301.067	0.358
28	97	69	166	Tm	-	-61886.478	11.552	8118.936	0.070	B-	-292.771	13.507	165	933562.136	12.401
26	96	70	166	Yb	+nn	-61593.706	7.001	8112.459	0.042	B-	-5572.720	30.619	165	933876.439	7.515
24	95	71	166	Lu	x	-56020.987	29.808	8074.176	0.180	B-	-2161.998	40.859	165	939859.000	32.000
22	94	72	166	Hf	x	-53858.989	27.945	8056.439	0.168	B-	-7761.209	39.520	165	942180.000	30.000
20	93	73	166	Ta	x	-46097.780	27.945	8004.971	0.168	B-	-4210.326	29.504	165	950512.000	30.000
18	92	74	166	W		-41887.454	9.463	7974.895	0.057	B-	-10050.328	88.649	165	955031.970	10.158
16	91	75	166	Re	-a	-31837.126	88.181	7909.638	0.531	B-	-6405.989	88.253	165	965821.441	94.665
16	91	75	166	Rep	+a	-31563#	102#	275#	51#						
14	90	76	166	Os		-25431.137	16.832	7866.335	0.101	B-	-12183.069	50.006	165	972698.553	18.070
12	89	77	166	Ir	-p	-13248.068	47.093	7788.230	0.284	B-	-8465#	304#	165	985777.614	50.556
12	89	77	166	Irm	IT	-13076.568	47.486	171.500	6.100						
10	88	78	166	Pt	-a	-4783#	300#	7733#	2#	B-	*		165	994866#	322#
0 43	105	62	167	Sm	x	-35330#	500#	7992#	3#	B-	8440#	640#	166	962072#	537#
41	104	63	167	Eu	x	-43770#	400#	8038#	2#	B-	7006#	400#	166	953011#	429#
39	103	64	167	Gd		-50775.732	5.213	8075.543	0.031	B-	5107.351	5.558	166	945490.012	5.596
37	102	65	167	Tb		-55883.082	1.929	8101.441	0.012	B-	4028.369	4.446	166	940007.046	2.071
35	101	66	167	Dy	x	-59911.451	4.005	8120.878	0.024	B-	2368.007	6.555	166	935682.415	4.300
33	100	67	167	Ho	p2n	-62279.458	5.189	8130.373	0.031	B-	1009.797	5.189	166	933140.254	5.570
31	99	68	167	Er		-63289.256	0.286	8131.735	0.002	B-	-746.138	1.263	166	932056.192	0.306
29	98	69	167	Tm		-62543.117	1.258	8122.583	0.008	B-	-1953.216	3.797	166	932857.205	1.350
27	97	70	167	Yb		-60589.901	3.960	8106.202	0.024	B-	-3063.620	37.470	166	934954.069	4.251
25	96	71	167	Lu	x	-57526.281	37.260	8083.172	0.223	B-	-4058.520	46.575	166	938243.000	40.000
23	95	72	167	Hf	x	-53467.761	27.945	8054.185	0.167	B-	-5116.697	39.520	166	942600.000	30.000
21	94	73	167	Ta	x	-48351.064	27.945	8018.861	0.167	B-	-6257.765	33.626	166	948093.000	30.000
19	93	74	167	W		-42093.300	18.703	7976.705	0.112	B-	-7260#	44#	166	954810.986	20.078
17	92	75	167	Re	+a	-34834#	40#	7929#	0#	B-	-8333#	90#	166	962604#	43#
17	92	75	167	Rem	-a	-34702.686	38.169	131#	13#						
15	91	76	167	Os	-a	-26500.826	80.682	7873.967	0.483	B-	-9428.767	82.496	166	971550.194	86.615
13	90	77	167	Ir		-17072.059	17.237	7812.823	0.103	B-	-10319#	307#	166	981672.392	18.504
13	90	77	167	Irm		-16896.596	17.303	175.463	2.130						
11	89	78	167	Pt	-a	-6753#	306#	7746#	2#	B-	*		166	992750#	329#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 44	106	62	168	Sm	x	-31640#	300#	7971#	2#	B-	7610#	500#	167	966033#	322#
42	105	63	168	Eu	x	-39250#	400#	8012#	2#	B-	8899#	500#	167	957863#	429#
40	104	64	168	Gd	x	-48150#	300#	8060#	2#	B-	4631#	300#	167	948309#	322#
38	103	65	168	Tb	x	-52781.181	4.192	8082.798	0.025	B-	5777.216	140.070	167	943337.074	4.500
36	102	66	168	Dy	+pp	-58558.398	140.007	8112.529	0.833	B-	1500.833	143.185	167	937134.977	150.303
34	101	67	168	Ho	+	-60059.231	30.001	8116.806	0.179	B-	2930.000	30.000	167	935523.766	32.207
32	100	68	168	Er		-62989.231	0.262	8129.590	0.002	B-	-1676.852	1.686	167	932378.282	0.280

	30	99	69	168	Tm		-61312.379	1.677	8114.952	0.010	B-	267.487	1.678	167	934178.456	1.800
	28	98	70	168	Yb		-61579.867	0.093	8111.887	0.001	B-	-4507.035	37.973	167	933891.297	0.100
	26	97	71	168	Lu		-57072.832	37.973	8080.403	0.226	B-	-1712.274	47.148	167	938729.798	40.766
	26	97	71	168	Lum	x	-56908.214	5.775	164.618	38.410						
	24	96	72	168	Hf	x	-55360.557	27.945	8065.554	0.166	B-	-6966.644	39.520	167	940568.000	30.000
	22	95	73	168	Ta	x	-48393.913	27.945	8019.429	0.166	B-	-3500.597	30.929	167	948047.000	30.000
	20	94	74	168	W		-44893.316	13.255	7993.935	0.079	B-	-9098.427	33.550	167	951805.045	14.229
	18	93	75	168	Re	-a	-35794.889	30.821	7935.121	0.183	B-	-5799.563	32.370	167	961572.607	33.087
	16	92	76	168	Os		-29995.327	9.896	7895.943	0.059	B-	-11354.089	52.905	167	967798.694	10.623
	14	91	77	168	Ir	-a	-18641.237	51.972	7823.702	0.309	B-	-7823.070	64.640	167	979987.809	55.793
	14	91	77	168	Irm	-a	-18621.632	240.495	19.605	246.046						
	12	90	78	168	Pt	-a	-10818.167	44.428	7772.479	0.264	B-	-13348#	402#	167	988386.220	47.695
	10	89	79	168	Au	x	2530#	400#	7688#	2#	B-	*		168	002716#	429#
0	43	106	63	169	Eu	x	-35660#	500#	7991#	3#	B-	8230#	640#	168	961717#	537#
	41	105	64	169	Gd	x	-43890#	400#	8035#	2#	B-	6590#	500#	168	952882#	429#
	39	104	65	169	Tb	x	-50480#	300#	8069#	2#	B-	5116#	425#	168	945807#	322#
	37	103	66	169	Dy	+	-55596.009	300.669	8094.757	1.779	B-	3200.000	300.000	168	940315.231	322.781
	35	102	67	169	Ho	+p	-58796.009	20.048	8109.062	0.119	B-	2125.154	20.048	168	936879.890	21.522
	33	101	68	169	Er	-n	-60921.163	0.304	8117.008	0.002	B-	353.492	0.773	168	934598.444	0.326
	31	100	69	169	Tm		-61274.655	0.738	8114.470	0.004	B-	-899.128	0.756	168	934218.955	0.792
	29	99	70	169	Yb	-n	-60375.527	0.178	8104.521	0.001	B-	-2293.000	3.000	168	935184.208	0.191
	27	98	71	169	Lu	-	-58082.527	3.005	8086.323	0.018	B-	-3365.632	28.106	168	937645.845	3.226
	25	97	72	169	Hf	x	-54716.895	27.945	8061.779	0.165	B-	-4426.460	39.520	168	941259.000	30.000
	23	96	73	169	Ta	x	-50290.435	27.945	8030.958	0.165	B-	-5372.393	31.924	168	946011.000	30.000
	21	95	74	169	W		-44918.042	15.435	7994.539	0.091	B-	-6508.719	19.170	168	951778.501	16.570
	19	94	75	169	Re	+a	-38409.323	11.369	7951.397	0.067	B-	-7686.367	28.322	168	958765.897	12.204
	19	94	75	169	Rem		-38234.287	13.385	175.036	12.952						
	17	93	76	169	Os	-a	-30722.956	25.940	7901.286	0.153	B-	-8629.371	34.854	168	967017.552	27.847
	15	92	77	169	Ir	+a	-22093.585	23.303	7845.595	0.138	B-	-9687.072	52.176	168	976281.562	25.016
	15	92	77	169	Irm		-21940.275	12.321	153.310	21.944						
	13	91	78	169	Pt	-a	-12406.513	46.690	7783.646	0.276	B-	-10618#	302#	168	986681.061	50.123
	11	90	79	169	Au	x	-1788#	298#	7716#	2#	B-	*		168	998080#	320#
0	44	107	63	170	Eu	x	-30860#	500#	7963#	3#	B-	9989#	707#	169	966870#	537#
	42	106	64	170	Gd	x	-40850#	500#	8017#	3#	B-	5860#	583#	169	956146#	537#
	40	105	65	170	Tb	x	-46710#	300#	8047#	2#	B-	7000#	361#	169	949855#	322#
	38	104	66	170	Dy	x	-53710#	200#	8084#	1#	B-	2528#	206#	169	942340#	215#
	36	103	67	170	Ho	+	-56237.514	50.019	8093.790	0.294	B-	3870.000	50.000	169	939626.549	53.697
	36	103	67	170	Hom	+	-56137.514	60.016	100.000	78.102						
	34	102	68	170	Er		-60107.514	1.387	8111.953	0.008	B-	-312.199	1.785	169	935471.933	1.488
	32	101	69	170	Tm		-59795.315	0.732	8105.514	0.004	B-	968.614	0.732	169	935807.092	0.785
	30	100	70	170	Yb		-60763.929	0.010	8106.610	0.000	B-	-3457.695	16.843	169	934767.242	0.011
	28	99	71	170	Lu	-	-57306.234	16.843	8081.669	0.099	B-	-1052.373	32.628	169	938479.230	18.081
	26	98	72	170	Hf	x	-56253.860	27.945	8070.876	0.164	B-	-6116.190	39.520	169	939609.000	30.000
	24	97	73	170	Ta	x	-50137.670	27.945	8030.297	0.164	B-	-2846.342	30.900	169	946175.000	30.000
	22	96	74	170	W		-47291.328	13.188	8008.951	0.078	B-	-8387.332	17.450	169	949230.673	14.157
	20	95	75	170	Re		-38903.996	11.427	7955.012	0.067	B-	-4978.322	15.027	169	958234.844	12.267
	20	95	75	170	Rem	+a	-38831.223	12.106	72.773	16.648						
	18	94	76	170	Os		-33925.675	9.759	7921.126	0.057	B-	-10743#	102#	169	963579.292	10.476
	16	93	77	170	Ir	-a	-23182#	101#	7853#	1#	B-	-6883#	101#	169	975113#	109#
	16	93	77	170	Irm	-a	-23139.810	88.746	42#	51#						
	14	92	78	170	Pt		-16298.813	17.131	7808.234	0.101	B-	-12652.971	51.157	169	982502.505	18.390
	12	91	79	170	Au	-p	-3645.842	48.208	7729.203	0.284	B-	-9061#	305#	169	996086.028	51.752
	12	91	79	170	Aum	-p	-3366.186	46.973	279.656	13.056						
	10	90	80	170	Hg	-a	5415#	302#	7671#	2#	B-	*		170	005814#	324#
0	43	107	64	171	Gd	x	-36210#	500#	7990#	3#	B-	7560#	640#	170	961127#	537#
	41	106	65	171	Tb	x	-43770#	400#	8030#	2#	B-	6240#	447#	170	953011#	429#
	39	105	66	171	Dy	x	-50010#	200#	8062#	1#	B-	4508#	633#	170	946312#	215#
	37	104	67	171	Ho	+	-54517.822	600.002	8083.602	3.509	B-	3200.000	600.000	170	941472.713	644.128
	35	103	68	171	Er		-57717.822	1.408	8097.740	0.008	B-	1492.449	1.079	170	938037.372	1.511
	33	102	69	171	Tm		-59210.271	0.972	8101.893	0.006	B-	96.547	0.971	170	936435.162	1.043
	31	101	70	171	Yb		-59306.818	0.013	8097.883	0.000	B-	-1478.328	1.862	170	936331.515	0.013
	29	100	71	171	Lu		-57828.490	1.862	8084.662	0.011	B-	-2397.139	28.936	170	937918.565	1.998
	27	99	72	171	Hf	x	-55431.351	28.876	8066.069	0.169	B-	-3711.073	40.184	170	940492.000	31.000
	25	98	73	171	Ta	x	-51720.279	27.945	8039.791	0.163	B-	-4634.183	39.520	170	944476.000	30.000
	23	97	74	171	W	x	-47086.095	27.945	8008.116	0.163	B-	-5835.811	39.520	170	949451.000	30.000
	21	96	75	171	Re	x	-41250.285	27.945	7969.413	0.163	B-	-6952.959	33.375	170	955716.000	30.000
	19	95	76	171	Os		-34297.326	18.247	7924.177	0.107	B-	-7885.296	42.575	170	963180.307	19.589

17	94	77	171	Ir	-a	-26412.030	38.466	7873.489	0.225	B-	-8943.496	89.436	170	971645.520	41.295	
17	94	77	171	Irm	+a	-26248#	40#	164#	11#							
15	93	78	171	Pt	-a	-17468.534	80.741	7816.613	0.472	B-	-9906.620	83.111	170	981246.758	86.678	
13	92	79	171	Au	-p	-7561.914	19.738	7754.105	0.115	B-	-10901#	307#	170	991881.952	21.189	
13	92	79	171	Aum		-7307.349	17.368	254.565	10.484							
11	91	80	171	Hg	-a	3339#	307#	7686#	2#	B-	*		171	003585#	329#	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)		V/S
0 44	108	64	172	Gd	x	-32970#	300#	7972#	2#	B-	6720#	583#	171	964605#	322#	
42	107	65	172	Tb	x	-39690#	500#	8006#	3#	B-	8070#	583#	171	957391#	537#	
40	106	66	172	Dy	x	-47760#	300#	8049#	2#	B-	3724#	358#	171	948728#	322#	
38	105	67	172	Ho	x	-51484#	196#	8066#	1#	B-	4999#	196#	171	944730#	210#	
36	104	68	172	Er		-56482.578	3.962	8090.405	0.023	B-	890.976	4.542	171	939363.461	4.253	
34	103	69	172	Tm		-57373.554	5.481	8091.037	0.032	B-	1881.903	5.481	171	938406.959	5.884	
32	102	70	172	Yb		-59255.456	0.014	8097.429	0.000	B-	-2519.345	2.336	171	936386.654	0.014	
30	101	71	172	Lu		-56736.111	2.336	8078.234	0.014	B-	-333.880	24.540	171	939091.282	2.507	
28	100	72	172	Hf	x	-56402.232	24.428	8071.744	0.142	B-	-5072.249	37.117	171	939449.716	26.224	
26	99	73	172	Ta	x	-51329.983	27.945	8037.706	0.162	B-	-2232.791	39.520	171	944895.000	30.000	
24	98	74	172	W	x	-49097.191	27.945	8020.176	0.162	B-	-7530.353	45.232	171	947292.000	30.000	
22	97	75	172	Re		-41566.839	35.568	7971.846	0.207	B-	-4322.765	37.787	171	955376.165	38.183	
20	96	76	172	Os		-37244.074	12.760	7942.165	0.074	B-	-9864.700	34.824	171	960016.844	13.698	
18	95	77	172	Ir	-a	-27379.373	32.402	7880.264	0.188	B-	-6272.397	34.021	171	970607.035	34.785	
18	95	77	172	Irm	-a	-27240.726	30.928	138.647	10.326							
16	94	78	172	Pt		-21106.976	10.369	7839.248	0.060	B-	-11813.959	53.976	171	977340.729	11.131	
14	93	79	172	Au	-a	-9293.017	52.971	7766.013	0.308	B-	-8423.567	65.738	171	990023.535	56.866	
14	93	79	172	Aum	-a	-9162.899	240.561	130.118	246.324							
12	92	80	172	Hg	-a	-869.450	44.857	7712.491	0.261	B-	*		171	999066.606	48.155	
0 43	108	65	173	Tb	x	-36510#	500#	7988#	3#	B-	7230#	640#	172	960805#	537#	
41	107	66	173	Dy	x	-43740#	400#	8026#	2#	B-	5610#	499#	172	953043#	429#	
39	106	67	173	Ho	x	-49351#	298#	8054#	2#	B-	4304#	357#	172	947020#	320#	
37	105	68	173	Er	x	-53654#	196#	8074#	1#	B-	2602#	196#	172	942400#	210#	
35	104	69	173	Tm	p2n	-56256.067	4.400	8084.463	0.025	B-	1295.167	4.400	172	939606.630	4.723	
33	103	70	173	Yb		-57551.234	0.011	8087.428	0.000	B-	-670.185	1.567	172	938216.211	0.012	
31	102	71	173	Lu		-56881.050	1.567	8079.031	0.009	B-	-1469.260	27.989	172	938935.684	1.682	
29	101	72	173	Hf	x	-55411.790	27.945	8066.016	0.162	B-	-3015.246	39.520	172	940513.000	30.000	
27	100	73	173	Ta	x	-52396.543	27.945	8044.065	0.162	B-	-3669.155	39.520	172	943750.000	30.000	
25	99	74	173	W	x	-48727.388	27.945	8018.334	0.162	B-	-5173.518	39.520	172	947689.000	30.000	
23	98	75	173	Re	x	-43553.870	27.945	7983.907	0.162	B-	-6115.437	31.696	172	953243.000	30.000	
21	97	76	173	Os		-37438.433	14.958	7944.035	0.086	B-	-7169.904	18.300	172	959808.190	16.058	
19	96	77	173	Ir		-30268.529	10.541	7898.068	0.061	B-	-8331.799	64.301	172	967505.399	11.316	
19	96	77	173	Irm	+a	-30042.563	11.088	225.966	8.646							
17	95	78	173	Pt	-a	-21936.730	63.431	7845.385	0.367	B-	-9104.544	67.389	172	976449.953	68.096	
15	94	79	173	Au	+a	-12832.186	22.779	7788.236	0.132	B-	-10228.614	52.135	172	986224.082	24.454	
15	94	79	173	Aum		-12618.310	12.344	213.876	21.235							
13	93	80	173	Hg	-a	-2603.572	46.903	7724.589	0.271	B-	*		172	997204.950	50.351	
0 44	109	65	174	Tb	x	-31970#	500#	7963#	3#	B-	9160#	707#	173	965679#	537#	
42	108	66	174	Dy	x	-41130#	500#	8011#	3#	B-	4739#	583#	173	955845#	537#	
40	107	67	174	Ho	x	-45870#	300#	8034#	2#	B-	6080#	423#	173	950757#	322#	
38	106	68	174	Er	x	-51949#	298#	8064#	2#	B-	1915#	301#	173	944230#	320#	
36	105	69	174	Tm	+	-53864.521	44.721	8070.643	0.257	B-	3080.000	44.721	173	942174.061	48.010	
34	104	70	174	Yb		-56944.521	0.011	8083.848	0.000	B-	-1374.193	1.567	173	938867.545	0.011	
32	103	71	174	Lu		-55570.327	1.567	8071.454	0.009	B-	274.295	2.169	173	940342.802	1.682	
30	102	72	174	Hf		-55844.623	2.259	8068.534	0.013	B-	-4103.851	28.036	173	940048.334	2.425	
28	101	73	174	Ta	x	-51740.771	27.945	8040.453	0.161	B-	-1513.678	39.520	173	944454.000	30.000	
26	100	74	174	W	x	-50227.093	27.945	8027.257	0.161	B-	-6553.993	39.520	173	946079.000	30.000	
24	99	75	174	Re	x	-43673.101	27.945	7985.094	0.161	B-	-3677.123	29.762	173	953115.000	30.000	
22	98	76	174	Os		-39995.978	10.241	7959.465	0.059	B-	-9210.041	15.192	173	957062.554	10.994	
20	97	77	174	Ir	+a	-30785.937	11.221	7902.038	0.064	B-	-5468.346	15.258	173	966949.939	12.046	
20	97	77	174	Irm		-30661.729	11.049	124.208	15.748							
18	96	78	174	Pt	-a	-25317.591	10.338	7866.114	0.059	B-	-11260#	102#	173	972820.449	11.098	
16	95	79	174	Au	-a	-14058#	102#	7797#	1#	B-	-7417#	102#	173	984908#	109#	
16	95	79	174	Aum	-a	-13931.313	89.105	127#	52#							
14	94	80	174	Hg	-a	-6640.628	18.155	7749.783	0.104	B-	*		173	992870.993	19.490	
0 43	109	66	175	Dy	x	-36730#	500#	7986#	3#	B-	6570#	640#	174	960569#	537#	
41	108	67	175	Ho	x	-43300#	400#	8019#	2#	B-	5352#	566#	174	953516#	429#	
39	107	68	175	Er	x	-48652#	401#	8045#	2#	B-	3659#	404#	174	947770#	430#	
37	106	69	175	Tm	+	-52310.557	50.000	8061.767	0.286	B-	2385.000	50.000	174	943842.310	53.677	

35	105	70	175	Yb		-54695.557	0.071	8070.925	0.000	B-	470.157	1.206	174 941281.907	0.076
33	104	71	175	Lu		-55165.714	1.207	8069.141	0.007	B-	-683.911	1.952	174 940777.173	1.295
31	103	72	175	Hf		-54481.803	2.282	8060.763	0.013	B-	-2073.150	28.038	174 941511.382	2.450
29	102	73	175	Ta	x	-52408.653	27.945	8044.446	0.160	B-	-2775.852	39.520	174 943737.000	30.000
27	101	74	175	W	x	-49632.800	27.945	8024.113	0.160	B-	-4344.488	39.520	174 946717.000	30.000
25	100	75	175	Re	x	-45288.312	27.945	7994.817	0.160	B-	-5182.622	30.323	174 951381.000	30.000
23	99	76	175	Os		-40105.689	11.772	7960.731	0.067	B-	-6711.179	17.086	174 956944.773	12.637
21	98	77	175	Ir		-33394.511	12.384	7917.911	0.071	B-	-7685.734	22.357	174 964149.519	13.295
19	97	78	175	Pt		-25708.776	18.614	7869.522	0.106	B-	-8305.090	42.820	174 972400.494	19.982
17	96	79	175	Au	-a	-17403.686	38.563	7817.594	0.220	B-	-9432.278	89.599	174 981316.375	41.399
17	96	79	175	Aum	+a	-17239#	40#	164#	11#					
15	95	80	175	Hg	-a	-7971.408	80.875	7759.225	0.462	B-	*		174 991442.341	86.823

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 44	110	66	176	Dy	x	-33610#	500#	7969#	3#	B-	5780#	707#	175 963918#	537#
42	109	67	176	Ho	x	-39390#	500#	7997#	3#	B-	7241#	641#	175 957713#	537#
40	108	68	176	Er	x	-46631#	401#	8034#	2#	B-	2741#	413#	175 949940#	430#
38	107	69	176	Tm	+	-49371.322	100.000	8045.121	0.568	B-	4120.000	100.000	175 946997.707	107.354
36	106	70	176	Yb		-53491.322	0.014	8064.085	0.000	B-	-108.954	1.212	175 942574.706	0.015
34	105	71	176	Lu		-53382.369	1.212	8059.021	0.007	B-	1194.100	0.874	175 942691.672	1.301
32	104	72	176	Hf		-54576.468	1.482	8061.361	0.008	B-	-3211.089	30.775	175 941409.754	1.590
30	103	73	176	Ta	x	-51365.379	30.739	8038.671	0.175	B-	-723.771	41.543	175 944857.000	33.000
28	102	74	176	W	x	-50641.608	27.945	8030.113	0.159	B-	-5578.718	39.520	175 945634.000	30.000
26	101	75	176	Re	x	-45062.890	27.945	7993.971	0.159	B-	-2931.101	30.009	175 951623.000	30.000
24	100	76	176	Os		-42131.790	10.937	7972.872	0.062	B-	-8249.867	13.601	175 954769.665	11.741
22	99	77	176	Ir		-33881.923	8.085	7921.552	0.046	B-	-4947.567	15.061	175 963626.261	8.679
20	98	78	176	Pt		-28934.355	12.707	7888.996	0.072	B-	-10413.389	35.534	175 968937.693	13.641
18	97	79	176	Au	-a	-18520.967	33.185	7825.384	0.189	B-	-6736.071	34.995	175 980116.925	35.625
18	97	79	176	Aum	-a	-18382.372	31.167	138.595	13.145					
16	96	80	176	Hg		-11784.896	11.111	7782.665	0.063	B-	-12367.659	83.596	175 987348.394	11.928
14	95	81	176	Tl	-p	582.763	82.854	7707.949	0.471	B-	*		176 000625.621	88.947
0 43	110	67	177	Ho	x	-36280#	500#	7980#	3#	B-	6578#	709#	176 961052#	537#
41	109	68	177	Er	x	-42858#	503#	8013#	3#	B-	4711#	541#	176 953990#	540#
39	108	69	177	Tm	x	-47570#	200#	8035#	1#	B-	3417#	200#	176 948932#	215#
37	107	70	177	Yb	-n	-50986.404	0.220	8049.974	0.001	B-	1397.535	1.240	176 945263.846	0.236
35	106	71	177	Lu		-52383.939	1.220	8053.450	0.007	B-	496.858	0.792	176 943763.531	1.310
33	105	72	177	Hf		-52880.797	1.410	8051.837	0.008	B-	-1166.000	3.000	176 943230.132	1.513
31	104	73	177	Ta	-	-51714.797	3.315	8040.829	0.019	B-	-2013.066	28.141	176 944481.884	3.558
29	103	74	177	W	x	-49701.731	27.945	8025.036	0.158	B-	-3432.556	39.520	176 946643.000	30.000
27	102	75	177	Re	x	-46269.175	27.945	8001.223	0.158	B-	-4312.438	31.534	176 950328.000	30.000
25	101	76	177	Os	+a	-41956.737	14.611	7972.439	0.083	B-	-5909.312	24.575	176 954957.592	15.685
23	100	77	177	Ir	x	-36047.425	19.760	7934.633	0.112	B-	-6676.801	24.801	176 961301.500	21.213
21	99	78	177	Pt		-29370.623	14.987	7892.491	0.085	B-	-7824.813	17.999	176 968469.340	16.089
19	98	79	177	Au		-21545.811	9.967	7843.863	0.056	B-	-8770.016	85.306	176 976869.622	10.700
19	98	79	177	Aum	+a	-21355.839	10.485	189.972	6.874					
17	97	80	177	Hg	-a	-12775.794	84.722	7789.895	0.479	B-	-9435.522	87.431	176 986284.621	90.952
15	96	81	177	Tl	IT	-3340.272	21.624	7732.166	0.122	B-	*		176 996414.070	23.213
15	96	81	177	Tlm		-2533.272	11.982	807.000	18.000					
0 44	111	67	178	Ho	x	-32130#	500#	7957#	3#	B-	8130#	778#	177 965507#	537#
42	110	68	178	Er	x	-40260#	596#	7999#	3#	B-	3980#	667#	177 956779#	640#
40	109	69	178	Tm	x	-44240#	300#	8017#	2#	B-	5437#	300#	177 952506#	322#
38	108	70	178	Yb		-49677.139	6.588	8042.739	0.037	B-	660.778	6.962	177 946669.400	7.072
36	107	71	178	Lu		-50337.917	2.251	8042.056	0.013	B-	2097.501	2.057	177 945960.026	2.416
36	107	71	178	Lum		-50214.108	3.167	123.809	2.621					
34	106	72	178	Hf		-52435.418	1.414	8049.444	0.008	B-	-1837#	52#	177 943708.266	1.518
32	105	73	178	Ta	IT	-50598#	52#	8035#	0#	B-	-191#	50#	177 945680#	56#
32	105	73	178	Tam	-	-50498.418	15.067	100#	50#					
30	104	74	178	W	-	-50407.118	15.199	8029.259	0.085	B-	-4753.660	31.811	177 945885.735	16.316
28	103	75	178	Re	x	-45653.457	27.945	7998.158	0.157	B-	-2108.706	31.089	177 950989.000	30.000
26	102	76	178	Os		-43544.752	13.625	7981.916	0.077	B-	-7290.438	23.235	177 953252.788	14.627
24	101	77	178	Ir		-36254.314	18.821	7936.563	0.106	B-	-4256.227	21.369	177 961079.395	20.204
22	100	78	178	Pt		-31998.087	10.120	7908.256	0.057	B-	-9695.058	14.402	177 965648.642	10.864
20	99	79	178	Au	x	-22303.029	10.246	7849.395	0.058	B-	-5987.700	14.856	177 976056.714	11.000
20	99	79	178	Aun		-22117.038	9.575	185.990	14.024					
20	99	79	178	Auq	+a	-21938.342	23.699	364.687	21.369					
18	98	80	178	Hg	-a	-16315.329	10.758	7811.361	0.060	B-	-11702#	103#	177 982484.775	11.548
16	97	81	178	Tl	-a	-4613#	102#	7741#	1#	B-	-8187#	103#	177 995048#	110#

14	96	82	178	Pb	-a	3573.761	22.317	7690.834	0.125	B-	*		178	003836.589	23.958
0 43	111	68	179	Er	x	-36080#	500#	7976#	3#	B-	5821#	640#	178	961267#	537#
41	110	69	179	Tm	x	-41900#	400#	8004#	2#	B-	4739#	447#	178	955018#	429#
39	109	70	179	Yb	x	-46640#	200#	8026#	1#	B-	2419#	200#	178	949930#	215#
37	108	71	179	Lu		-49059.049	5.150	8035.075	0.029	B-	1404.039	5.067	178	947332.946	5.528
35	107	72	179	Hf		-50463.088	1.415	8038.548	0.008	B-	-105.578	0.409	178	945825.649	1.519
33	106	73	179	Ta		-50357.510	1.466	8033.587	0.008	B-	-1062.215	14.520	178	945938.991	1.573
31	105	74	179	W		-49295.295	14.573	8023.282	0.081	B-	-2710.972	26.802	178	947079.326	15.644
29	104	75	179	Re		-46584.324	24.639	8003.767	0.138	B-	-3563.915	29.111	178	949989.674	26.450
27	103	76	179	Os		-43020.408	15.504	7979.486	0.087	B-	-4938.689	18.326	178	953815.694	16.643
25	102	77	179	Ir		-38081.719	9.771	7947.525	0.055	B-	-5813.221	12.609	178	959117.594	10.489
23	101	78	179	Pt		-32268.498	7.970	7910.678	0.045	B-	-7279.927	14.153	178	965358.343	8.556
21	100	79	179	Au		-24988.572	11.696	7865.637	0.065	B-	-8054.738	30.446	178	973173.666	12.555
19	99	80	179	Hg		-16933.834	28.110	7816.268	0.157	B-	-8664.202	47.794	178	981820.782	30.177
17	98	81	179	Tl	-a	-8269.632	38.653	7763.494	0.216	B-	-10319.275	89.768	178	991122.185	41.495
17	98	81	179	Tlm	IT	-7445#	40#	825#	10#						
15	97	82	179	Pb	-a	2049.643	81.021	7701.474	0.453	B-	*		179	002200.382	86.979
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)	V/S
0 44	112	68	180	Er	x	-33180#	500#	7960#	3#	B-	4990#	640#	179	964380#	537#
42	111	69	180	Tm	x	-38170#	400#	7983#	2#	B-	6550#	500#	179	959023#	429#
40	110	70	180	Yb	x	-44720#	300#	8016#	2#	B-	1956#	308#	179	951991#	322#
38	109	71	180	Lu	+	-46676.528	70.725	8022.040	0.393	B-	3103.000	70.711	179	949890.688	75.926
36	108	72	180	Hf		-49779.528	1.421	8034.932	0.008	B-	-845.552	2.334	179	946559.481	1.525
34	107	73	180	Ta	+n	-48933.976	2.047	8025.888	0.011	B-	702.318	2.346	179	947467.218	2.197
34	107	73	180	Tam	+n	-48858.643	1.560	75.333	1.351						
32	106	74	180	W		-49636.295	1.438	8025.444	0.008	B-	-3798.931	21.440	179	946713.248	1.544
30	105	75	180	Re	x	-45837.364	21.392	7999.992	0.119	B-	-1481.061	26.548	179	950791.568	22.965
28	104	76	180	Os		-44356.303	15.722	7987.418	0.087	B-	-6378.773	26.802	179	952381.552	16.878
26	103	77	180	Ir	x	-37977.530	21.706	7947.634	0.121	B-	-3547.029	23.915	179	959229.446	23.302
24	102	78	180	Pt		-34430.501	10.037	7923.582	0.056	B-	-8804.854	11.108	179	963037.339	10.775
22	101	79	180	Au		-25625.646	4.759	7870.319	0.026	B-	-5374.691	13.505	179	972489.738	5.108
20	100	80	180	Hg		-20250.955	12.639	7836.114	0.070	B-	-10860.517	71.050	179	978259.706	13.568
18	99	81	180	Tl	-a	-9390.438	69.917	7771.431	0.388	B-	-7449.112	71.006	179	989918.950	75.058
16	98	82	180	Pb	-a	-1941.326	12.388	7725.701	0.069	B-	*		179	997915.900	13.299
0 43	112	69	181	Tm	x	-35440#	500#	7969#	3#	B-	5649#	582#	180	961954#	537#
41	111	70	181	Yb	x	-41088#	298#	7996#	2#	B-	3709#	324#	180	955890#	320#
39	110	71	181	Lu	x	-44797.414	125.752	8011.930	0.695	B-	2605.596	125.760	180	951908.000	135.000
37	109	72	181	Hf	-n	-47403.010	1.422	8022.003	0.008	B-	1036.400	1.914	180	949110.778	1.527
35	108	73	181	Ta		-48439.410	1.549	8023.407	0.009	B-	-205.413	1.933	180	947998.157	1.662
33	107	74	181	W	-n	-48233.997	1.447	8017.950	0.008	B-	-1716.531	12.629	180	948218.677	1.553
31	106	75	181	Re	4n	-46517.466	12.549	8004.144	0.069	B-	-2967.498	28.276	180	950061.448	13.471
29	105	76	181	Os		-43549.968	25.338	7983.426	0.140	B-	-4086.933	25.876	180	953247.188	27.201
27	104	77	181	Ir	+a	-39463.035	5.245	7956.524	0.029	B-	-5081.249	14.658	180	957634.691	5.631
25	103	78	181	Pt		-34381.786	13.687	7924.129	0.076	B-	-6510.646	24.215	180	963089.636	14.693
23	102	79	181	Au	-a	-27871.140	19.976	7883.836	0.110	B-	-7209.814	25.212	180	970079.102	21.445
21	101	80	181	Hg		-20661.326	15.381	7839.680	0.085	B-	-7862.501	17.873	180	977819.155	16.512
21	101	80	181	Hgm	IT	-20449.326	52.312	212.000	50.000						
19	100	81	181	Tl		-12798.825	9.102	7791.919	0.050	B-	-9688.223	85.523	180	986259.896	9.771
17	99	82	181	Pb	-a	-3110.602	85.037	7734.070	0.470	B-	*		180	996660.631	91.290
0 44	113	69	182	Tm	x	-31490#	500#	7948#	3#	B-	7410#	640#	181	966194#	537#
42	112	70	182	Yb	x	-38900#	400#	7984#	2#	B-	2870#	447#	181	958239#	429#
40	111	71	182	Lu	x	-41770#	200#	7996#	1#	B-	4280#	200#	181	955158#	215#
38	110	72	182	Hf	-nn	-46049.688	6.166	8014.838	0.034	B-	381.342	6.298	181	950563.628	6.619
36	109	73	182	Ta		-46431.030	1.550	8012.635	0.009	B-	1815.185	1.510	181	950154.241	1.663
34	108	74	182	W		-48246.215	0.742	8018.310	0.004	B-	-2800.000	101.980	181	948205.560	0.796
32	107	75	182	Re	IT	-45446.215	101.983	7998.627	0.560	B-	-837.106	104.276	181	951211.483	109.483
32	107	75	182	Rem	-	-45386.215	20.014	60.000	100.000						
30	106	76	182	Os		-44609.109	21.745	7989.729	0.119	B-	-5557.427	30.207	181	952110.154	23.344
28	105	77	182	Ir		-39051.682	20.967	7954.895	0.115	B-	-2882.736	24.716	181	958076.296	22.509
26	104	78	182	Pt		-36168.946	13.087	7934.757	0.072	B-	-7864.970	22.877	181	961171.041	14.049
24	103	79	182	Au		-28303.976	18.764	7887.244	0.103	B-	-4726.439	21.157	181	969614.433	20.143
24	103	79	182	Aum	+a	-28181.758	32.072	122.218	37.158						
22	102	80	182	Hg		-23577.537	9.775	7856.976	0.054	B-	-10250.323	15.459	181	974688.474	10.493
20	101	81	182	Tl	-a	-13327.213	11.976	7796.357	0.066	B-	-6502.674	17.015	181	985692.649	12.856
20	101	81	182	Tlp	IT	-12827#	101#	500#	100#						
18	100	82	182	Pb	-a	-6824.539	12.086	7756.330	0.066	B-	*		181	992673.555	12.975

0 43	113	70	183	Yb	x	-35000#	400#	7963#	2#	B-	4716#	408#	182	962426#	429#	
41	112	71	183	Lu	x	-39716.114	80.108	7984.812	0.438	B-	3567.778	85.556	182	957363.000	86.000	
39	111	72	183	Hf	+	-43283.892	30.041	8000.033	0.164	B-	2010.000	30.000	182	953532.833	32.249	
37	110	73	183	Ta	-n	-45293.892	1.563	8006.742	0.009	B-	1071.842	1.523	182	951375.009	1.677	
35	109	74	183	W		-46365.734	0.741	8008.324	0.004	B-	-556.000	8.000	182	950224.339	0.795	
33	108	75	183	Re	-	-45809.734	8.034	8001.010	0.044	B-	-2145.974	50.413	182	950821.230	8.625	
31	107	76	183	Os		-43663.760	49.769	7985.009	0.272	B-	-3461.622	52.806	182	953125.028	53.428	
29	106	77	183	Ir		-40202.138	24.672	7961.818	0.135	B-	-4428.642	28.473	182	956841.231	26.486	
27	105	78	183	Pt		-35773.497	14.213	7933.342	0.078	B-	-5582.009	17.053	182	961595.573	15.258	
25	104	79	183	Au		-30191.488	9.423	7898.564	0.051	B-	-6386.455	11.785	182	967588.106	10.116	
23	103	80	183	Hg		-23805.033	7.077	7859.391	0.039	B-	-7217.772	11.711	182	974444.247	7.597	
23	103	80	183	Hgm	+a	-23601.158	13.085	203.875	13.549							
21	102	81	183	Tl		-16587.261	9.331	7815.674	0.051	B-	-9006.343	30.434	182	982192.843	10.017	
21	102	81	183	Tlm		-15958.550	9.340	628.711	0.500							
19	101	82	183	Pb	-a	-7580.918	28.968	7762.184	0.158	B-	*		182	991861.550	31.098	
19	101	82	183	Pbm	-a	-7486.806	28.407	94.112	8.111							
0 44	114	70	184	Yb	x	-32600#	503#	7951#	3#	B-	3700#	541#	183	965002#	540#	
42	113	71	184	Lu	x	-36300#	200#	7967#	1#	B-	5199#	204#	183	961030#	215#	
40	112	72	184	Hf	+	-41499.523	39.706	7990.723	0.216	B-	1340.000	30.000	183	955448.432	42.625	
38	111	73	184	Ta	+	-42839.523	26.010	7993.754	0.141	B-	2866.000	26.000	183	954009.883	27.923	
36	110	74	184	W		-45705.523	0.736	8005.078	0.004	B-	-1485.631	4.197	183	950933.105	0.789	
34	109	75	184	Re		-44219.892	4.276	7992.752	0.023	B-	32.727	4.139	183	952527.995	4.590	
32	108	76	184	Os		-44252.619	0.828	7988.678	0.005	B-	-4641.764	27.957	183	952492.861	0.888	
30	107	77	184	Ir	x	-39610.855	27.945	7959.199	0.152	B-	-2278.254	31.596	183	957476.000	30.000	
28	106	78	184	Pt		-37332.601	14.743	7942.566	0.080	B-	-7013.887	26.712	183	959921.806	15.827	
26	105	79	184	Au	-a	-30318.714	22.275	7900.195	0.121	B-	-3973.271	24.223	183	967451.523	23.912	
24	104	80	184	Hg		-26345.443	9.518	7874.349	0.052	B-	-9462.088	13.814	183	971717.005	10.218	
22	103	81	184	Tl		-16883.355	10.012	7818.673	0.054	B-	-5831.335	16.248	183	981874.973	10.747	
22	103	81	184	Tlm	+a	-16929.417	32.196	-46.062	30.600							
22	103	81	184	Tln	+a	-16431.022	32.147	452.333	30.549							
20	102	82	184	Pb		-11052.020	12.797	7782.729	0.070	B-	-12306#	123#	183	988135.169	13.737	
18	101	83	184	Bi	-a	1254#	122#	7712#	1#	B-	*		184	001347#	131#	
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A		BETA-DECAY ENERGY			ATOMIC MASS			V/S
						(keV)		(keV)		(keV)			(micro-u)			
0 45	115	70	185	Yb	x	-28480#	500#	7929#	3#	B-	5480#	583#	184	969425#	537#	
43	114	71	185	Lu	x	-33960#	300#	7955#	2#	B-	4359#	307#	184	963542#	322#	
41	113	72	185	Hf	x	-38319.804	64.273	7973.971	0.347	B-	3074.637	65.815	184	958862.000	69.000	
39	112	73	185	Ta	+	-41394.441	14.161	7986.362	0.077	B-	1993.500	14.142	184	955561.242	15.202	
37	111	74	185	W		-43387.941	0.737	7992.909	0.004	B-	431.161	0.661	184	953421.131	0.790	
35	110	75	185	Re		-43819.102	0.818	7991.010	0.004	B-	-1013.140	0.419	184	952958.261	0.878	
33	109	76	185	Os		-42805.962	0.831	7981.305	0.004	B-	-2470.404	27.957	184	954045.912	0.892	
31	108	77	185	Ir	x	-40335.558	27.945	7963.723	0.151	B-	-3647.414	38.055	184	956698.000	30.000	
29	107	78	185	Pt		-36688.144	25.832	7939.778	0.140	B-	-4829.994	25.963	184	960613.659	27.731	
27	106	79	185	Au	x	-31858.150	2.608	7909.441	0.014	B-	-5674.195	13.883	184	965798.871	2.800	
25	105	80	185	Hg		-26183.955	13.636	7874.541	0.074	B-	-6426.210	24.766	184	971890.369	14.639	
23	104	81	185	Tl	IT	-19757.745	20.674	7835.576	0.112	B-	-8216.334	26.249	184	978789.189	22.194	
23	104	81	185	Tlm	-a	-19302.945	20.619	454.800	1.500							
21	103	82	185	Pb	-a	-11541.410	16.174	7786.934	0.087	B-	-9305#	83#	184	987609.787	17.363	
21	103	82	185	Pbm	-a	-11474.527	52.561	66.884	50.509							
19	102	83	185	Bi	IT	-2236#	81#	7732#	0#	B-	*		184	997600#	87#	
19	102	83	185	Bim		-2156.036	13.391	80#	80#							
0 44	115	71	186	Lu	x	-30320#	400#	7936#	2#	B-	6104#	403#	185	967450#	429#	
42	114	72	186	Hf	x	-36424.214	51.232	7964.303	0.275	B-	2183.439	78.906	185	960897.000	55.000	
40	113	73	186	Ta	+	-38607.653	60.012	7971.836	0.323	B-	3901.000	60.000	185	958552.981	64.425	
38	112	74	186	W		-42508.653	1.213	7988.603	0.007	B-	-581.279	1.239	185	954365.086	1.301	
36	111	75	186	Re		-41927.374	0.819	7981.272	0.004	B-	1072.696	0.834	185	954989.114	0.879	
34	110	76	186	Os		-43000.071	0.760	7982.833	0.004	B-	-3827.720	16.543	185	953837.527	0.815	
32	109	77	186	Ir	x	-39172.350	16.526	7958.047	0.089	B-	-1307.903	27.312	185	957946.754	17.740	
30	108	78	186	Pt		-37864.447	21.745	7946.809	0.117	B-	-6149.591	30.207	185	959350.845	23.344	
28	107	79	186	Au		-31714.856	20.967	7909.541	0.113	B-	-3175.116	23.980	185	965952.703	22.509	
26	106	80	186	Hg		-28539.740	11.636	7888.264	0.063	B-	-8656.800	23.790	185	969361.330	12.491	
24	105	81	186	Tl		-19882.940	20.751	7837.516	0.112	B-	-5201.391	23.481	185	978654.787	22.276	
24	105	81	186	Tlm	IT	-19864.894	31.671	18.046	37.863							
24	105	81	186	Tln	x	-19490.734	31.671	392.206	37.863							
22	104	82	186	Pb	-a	-14681.549	10.990	7805.345	0.059	B-	-11536.051	20.204	185	984238.710	11.798	
20	103	83	186	Bi	-a	-3145.497	16.954	7739.118	0.091	B-	-7247.045	24.930	185	996623.169	18.200	
20	103	83	186	Bim	-a	-2979#	101#	166#	101#							

18	102	84	186	Po	-a	4101.548	18.278	7695.949	0.098	B-	*		186	004403.192	19.622
0 45	116	71	187	Lu	x	-27770#	400#	7923#	2#	B-	5230#	447#	186	970188#	429#
43	115	72	187	Hf	x	-33000#	200#	7947#	1#	B-	3896#	208#	186	964573#	215#
41	114	73	187	Ta	x	-36895.550	55.890	7963.212	0.299	B-	3008.544	55.903	186	960391.000	60.000
39	113	74	187	W		-39904.094	1.213	7975.117	0.006	B-	1312.490	1.122	186	957161.194	1.301
37	112	75	187	Re		-41216.584	0.736	7977.952	0.004	B-	2.469	0.001	186	955752.179	0.790
35	111	76	187	Os		-41219.053	0.736	7973.782	0.004	B-	-1669.677	27.955	186	955749.528	0.790
33	110	77	187	Ir	x	-39549.377	27.945	7960.669	0.149	B-	-2864.015	36.880	186	957542.000	30.000
31	109	78	187	Pt		-36685.361	24.067	7941.170	0.129	B-	-3656.581	27.448	186	960616.646	25.837
29	108	79	187	Au		-33028.780	22.499	7917.432	0.120	B-	-4909.697	25.913	186	964542.147	24.153
27	107	80	187	Hg		-28119.083	12.855	7886.994	0.069	B-	-5674.491	15.167	186	969812.923	13.800
27	107	80	187	Hgm		-28060.597	14.543	58.486	14.303						
25	106	81	187	Tl		-22444.592	8.048	7852.465	0.043	B-	-7457.495	9.524	186	975904.740	8.640
25	106	81	187	Tlm		-22110.907	7.783	333.685	3.342						
23	105	82	187	Pb		-14987.097	5.092	7808.402	0.027	B-	-8603.822	11.226	186	983910.690	5.466
23	105	82	187	Pbm		-14967.875	11.335	19.222	10.127						
21	104	83	187	Bi	-a	-6383.275	10.005	7758.208	0.054	B-	-9206.173	34.121	186	993147.272	10.740
21	104	83	187	Bim	-a	-6274.851	11.535	108.424	7.687						
19	103	84	187	Po	-a	2822.898	32.622	7704.794	0.174	B-	*		187	003030.505	35.020
19	103	84	187	Pom	-a	2827.177	34.995	4.279	26.618						
0 46	117	71	188	Lu	x	-23820#	400#	7903#	2#	B-	7009#	500#	187	974428#	429#
44	116	72	188	Hf	x	-30830#	300#	7936#	2#	B-	3080#	361#	187	966903#	322#
42	115	73	188	Ta	x	-33910#	200#	7948#	1#	B-	4758#	200#	187	963596#	215#
40	114	74	188	W	+	-38667.916	3.089	7969.053	0.016	B-	349.000	3.000	187	958488.286	3.316
38	113	75	188	Re	-n	-39016.916	0.737	7966.748	0.004	B-	2120.423	0.152	187	958113.620	0.791
36	112	76	188	Os		-41137.339	0.734	7973.866	0.004	B-	-2792.339	9.416	187	955837.252	0.787
34	111	77	188	Ir		-38345.000	9.423	7954.851	0.050	B-	-523.984	8.686	187	958834.951	10.116
32	110	78	188	Pt		-37821.016	5.304	7947.903	0.028	B-	-5449.702	5.953	187	959397.470	5.694
30	109	79	188	Au	x	-32371.315	2.701	7914.754	0.014	B-	-2172.731	7.302	187	965247.966	2.900
28	108	80	188	Hg		-30198.584	6.784	7899.035	0.036	B-	-7862.181	30.664	187	967580.488	7.282
26	107	81	188	Tl	x	-22336.403	29.904	7853.054	0.159	B-	-4524.723	31.566	187	976020.886	32.103
26	107	81	188	Tlm	+a	-22308.357	9.457	28.045	31.364						
24	106	82	188	Pb	-a	-17811.680	10.109	7824.825	0.054	B-	-10616.880	15.072	187	980878.375	10.852
22	105	83	188	Bi	-a	-7194.800	11.179	7764.190	0.059	B-	-6649.989	22.883	187	992276.064	12.001
22	105	83	188	Bim	+a	-7128.414	31.806	66.386	29.776						
22	105	83	188	Bin	+a	-7041.601	31.806	153.199	29.776						
20	104	84	188	Po	-a	-544.811	19.966	7724.657	0.106	B-	*		187	999415.121	21.434
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)	V/S
0 45	117	72	189	Hf	x	-27150#	300#	7917#	2#	B-	4809#	361#	188	970853#	322#
43	116	73	189	Ta	x	-31960#	200#	7938#	1#	B-	3850#	283#	188	965690#	215#
41	115	74	189	W	+	-35809#	200#	7954#	1#	B-	2170#	200#	188	961557#	215#
39	114	75	189	Re	+p	-37979.131	8.191	7961.811	0.043	B-	1007.705	8.167	188	959227.727	8.793
37	113	76	189	Os		-38986.836	0.666	7963.003	0.004	B-	-537.150	12.563	188	958145.911	0.714
35	112	77	189	Ir		-38449.686	12.576	7956.022	0.067	B-	-1980.247	13.636	188	958722.566	13.500
33	111	78	189	Pt		-36469.439	10.090	7941.405	0.053	B-	-2887.481	22.474	188	960848.448	10.832
31	110	79	189	Au	x	-33581.958	20.081	7921.988	0.106	B-	-3955.154	37.399	188	963948.286	21.558
29	109	80	189	Hg		-29626.805	31.551	7896.921	0.167	B-	-5010.699	32.641	188	968194.318	33.870
29	109	80	189	Hgm		-29549.142	17.876	77.663	32.746						
27	108	81	189	Tl		-24616.105	8.368	7866.270	0.044	B-	-6771.788	16.362	188	973573.525	8.983
27	108	81	189	Tlm	+a	-24330.628	8.305	285.477	5.969						
25	107	82	189	Pb		-17844.318	14.060	7826.301	0.074	B-	-7779.654	25.149	188	980843.338	15.094
25	107	82	189	Pbm		-17803.865	14.410	40.452	3.761						
23	106	83	189	Bi	-a	-10064.664	20.851	7781.000	0.110	B-	-8642.469	30.354	188	989195.139	22.384
23	106	83	189	Bim	-a	-9880.654	21.021	184.010	4.670						
21	105	84	189	Po	-a	-1422.194	22.059	7731.133	0.117	B-	*		188	998473.211	23.681
0 46	118	72	190	Hf	x	-24800#	400#	7905#	2#	B-	3920#	447#	189	973376#	429#
44	117	73	190	Ta	x	-28720#	200#	7922#	1#	B-	5649#	203#	189	969168#	215#
42	116	74	190	W		-34368.842	35.391	7947.503	0.186	B-	1214.211	35.554	189	963103.532	37.993
40	115	75	190	Re		-35583.052	4.869	7949.776	0.026	B-	3124.807	4.786	189	961800.023	5.227
38	114	76	190	Os		-38707.859	0.649	7962.105	0.003	B-	-1954.211	1.213	189	958445.405	0.696
36	113	77	190	Ir	+n	-36753.649	1.370	7947.702	0.007	B-	552.889	1.282	189	960543.337	1.470
34	112	78	190	Pt		-37306.538	0.656	7946.494	0.003	B-	-4472.998	3.508	189	959949.786	0.704
32	111	79	190	Au	x	-32833.540	3.447	7918.835	0.018	B-	-1461.675	16.242	189	964751.746	3.700
30	110	80	190	Hg		-31371.865	15.872	7907.024	0.084	B-	-7005.629	17.450	189	966320.919	17.039
28	109	81	190	Tl	+a	-24366.236	7.252	7866.035	0.038	B-	-3948.947	14.452	189	973841.771	7.784
28	109	81	190	Tlm		-24296.239	5.135	69.997	7.351						

	26	108	82	190	Pb	-a	-20417.288	12.501	7841.133	0.066	B-	-9821.383	24.416	189	978081.140	13.419
	24	107	83	190	Bi	-a	-10595.906	20.973	7785.324	0.110	B-	-6032.546	24.755	189	988624.828	22.515
	24	107	83	190	Bim	-a	-10473.562	31.792	122.343	38.087						
	22	106	84	190	Po	-a	-4563.359	13.151	7749.456	0.069	B-	*		189	995101.032	14.118
0	45	118	73	191	Ta	x	-26520#	300#	7911#	2#	B-	4657#	303#	190	971530#	322#
	43	117	74	191	W	x	-31176.176	41.917	7931.436	0.219	B-	3174.266	43.156	190	966531.000	45.000
	41	116	75	191	Re	+p	-34350.442	10.264	7943.959	0.054	B-	2044.831	10.244	190	963123.285	11.019
	39	115	76	191	Os		-36395.273	0.658	7950.569	0.003	B-	313.587	1.141	190	960928.068	0.706
	37	114	77	191	Ir		-36708.861	1.310	7948.115	0.007	B-	-1010.487	3.636	190	960591.419	1.406
	35	113	78	191	Pt		-35698.373	4.126	7938.728	0.022	B-	-1900.459	6.426	190	961676.222	4.429
	33	112	79	191	Au		-33797.915	4.926	7924.682	0.026	B-	-3205.229	22.699	190	963716.448	5.288
	31	111	80	191	Hg		-30592.686	22.269	7903.805	0.117	B-	-4309.735	23.450	190	967157.402	23.906
	29	110	81	191	Tl	+a	-26282.951	7.349	7877.144	0.038	B-	-5991.707	9.886	190	971784.093	7.889
	29	110	81	191	Tlm	+a	-25985.722	6.985	297.229	6.849						
	27	109	82	191	Pb		-20291.243	6.613	7841.678	0.035	B-	-7051.892	9.990	190	978216.455	7.099
	27	109	82	191	Pbm		-20233.712	7.524	57.531	10.017						
	25	108	83	191	Bi		-13239.351	7.487	7800.661	0.039	B-	-8170.478	10.319	190	985786.972	8.037
	25	108	83	191	Bim	-a	-12997.170	8.658	242.181	4.408						
	23	107	84	191	Po		-5068.873	7.102	7753.788	0.037	B-	-8932.786	17.599	190	994558.341	7.623
	23	107	84	191	Pom	-a	-5007.960	12.389	60.913	11.469						
	21	106	85	191	At	-a	3863.913	16.103	7702.923	0.084	B-	*		191	004148.081	17.287
	21	106	85	191	Atm	-a	3921.984	18.299	58.071	20.496						
0	46	119	73	192	Ta	x	-23100#	400#	7894#	2#	B-	6520#	447#	191	975201#	429#
	44	118	74	192	W	x	-29620#	200#	7924#	1#	B-	1969#	212#	191	968202#	215#
	42	117	75	192	Re	x	-31588.828	70.794	7930.239	0.369	B-	4293.509	70.831	191	966088.000	76.000
	40	116	76	192	Os		-35882.337	2.314	7948.526	0.012	B-	-1046.672	2.396	191	961478.728	2.484
	38	115	77	192	Ir		-34835.665	1.314	7939.000	0.007	B-	1452.895	2.274	191	962602.377	1.410
	36	114	78	192	Pt		-36288.559	2.570	7942.493	0.013	B-	-3516.341	15.617	191	961042.630	2.758
	34	113	79	192	Au	-	-32772.218	15.827	7920.104	0.082	B-	-759.498	22.154	191	964817.578	16.991
	32	112	80	192	Hg	x	-32012.720	15.501	7912.073	0.081	B-	-6140.471	35.261	191	965632.933	16.641
	30	111	81	192	Tl	x	-25872.249	31.671	7876.017	0.165	B-	-3320.262	32.184	191	972225.000	34.000
	30	111	81	192	Tlp	+a	-25694.511	24.956	177.738	40.322						
	28	110	82	192	Pb		-22551.987	5.725	7854.649	0.030	B-	-9017.450	30.652	191	975789.447	6.146
	26	109	83	192	Bi	-a	-13534.537	30.112	7803.608	0.157	B-	-5467.398	31.930	191	985470.077	32.326
	26	109	83	192	Bim	x	-13398.492	8.942	136.045	31.412						
	24	108	84	192	Po	-a	-8067.139	10.620	7771.058	0.055	B-	-10992.881	29.828	191	991339.570	11.400
	22	107	85	192	At	-a	2925.742	27.873	7709.728	0.145	B-	*		192	003140.912	29.922
	22	107	85	192	Atm	-a	2925.742	27.873	0.000	36.109						
1N-Z		N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0	47	120	73	193	Ta	x	-20810#	400#	7883#	2#	B-	5380#	447#	192	977660#	429#
	45	119	74	193	W	x	-26190#	200#	7907#	1#	B-	4042#	204#	192	971884#	215#
	43	118	75	193	Re	x	-30231.641	39.123	7923.938	0.203	B-	3162.794	39.191	192	967545.000	42.000
	41	117	76	193	Os		-33394.435	2.319	7936.272	0.012	B-	1141.904	2.400	192	964149.601	2.489
	39	116	77	193	Ir		-34536.339	1.327	7938.135	0.007	B-	-56.628	0.300	192	962923.717	1.424
	37	115	78	193	Pt		-34479.711	1.358	7933.788	0.007	B-	-1074.737	8.767	192	962984.509	1.458
	35	114	79	193	Au		-33404.974	8.673	7924.166	0.045	B-	-2342.361	14.368	192	964138.286	9.311
	33	113	80	193	Hg		-31062.613	15.501	7907.975	0.080	B-	-3585.394	16.889	192	966652.915	16.640
	31	112	81	193	Tl	x	-27477.218	6.707	7885.345	0.035	B-	-5247.964	12.281	192	970501.994	7.200
	29	111	82	193	Pb		-22229.255	10.288	7854.099	0.053	B-	-6344.691	12.776	192	976135.914	11.044
	29	111	82	193	Pbm	+a	-22136.739	6.845	92.515	12.357						
	27	110	83	193	Bi		-15884.563	7.576	7817.172	0.039	B-	-7558.963	16.385	192	982947.220	8.132
	27	110	83	193	Bim		-15579.881	8.786	304.682	6.353						
	25	109	84	193	Po	-a	-8325.600	14.529	7773.953	0.075	B-	-8258.277	26.058	192	991062.100	15.597
	25	109	84	193	Pom	-a	-8225.213	14.816	100.387	6.280						
	23	108	85	193	At	-a	-67.323	21.632	7727.110	0.112	B-	-9110.045	33.144	192	999927.725	23.222
	23	108	85	193	Atm	-a	-59.348	21.442	7.975	8.537						
	23	108	85	193	Atn	-a	-25.448	21.442	41.875	8.537						
	21	107	86	193	Rn	-a	9042.721	25.112	7675.854	0.130	B-	*		193	009707.760	26.958
0	48	121	73	194	Ta	x	-17130#	500#	7865#	3#	B-	7280#	583#	193	981610#	537#
	46	120	74	194	W	x	-24410#	300#	7899#	2#	B-	2850#	361#	193	973795#	322#
	44	119	75	194	Re	x	-27260#	200#	7909#	1#	B-	5175#	200#	193	970735#	215#
	42	118	76	194	Os	+	-32435.210	2.403	7932.023	0.012	B-	96.600	2.000	193	965179.371	2.579
	40	117	77	194	Ir	-n	-32531.810	1.332	7928.489	0.007	B-	2228.322	1.257	193	965075.666	1.429
	40	117	77	194	Irn	+	-32160.132	70.002	371.678	70.011						
	38	116	78	194	Pt		-34760.132	0.496	7935.942	0.003	B-	-2548.127	2.117	193	962683.465	0.532
	36	115	79	194	Au	+3n	-32212.005	2.117	7918.775	0.011	B-	-28.053	3.581	193	965418.991	2.272

34	114	80	194	Hg	x	-32183.952	2.888	7914.597	0.015	B-	-5246.454	14.268	193	965449.108	3.100
32	113	81	194	Tl	x	-26937.498	13.972	7883.521	0.072	B-	-2728.375	22.318	193	971081.408	15.000
32	113	81	194	Tlm	x	-26677.238	3.819	260.259	14.485						
30	112	82	194	Pb		-24209.123	17.402	7865.425	0.090	B-	-8186.103	18.178	193	974010.438	18.682
28	111	83	194	Bi	+a	-16023.020	5.252	7819.195	0.027	B-	-5017.722	13.926	193	982798.581	5.638
28	111	83	194	Bim	x	-15877.868	50.301	145.152	50.574						
28	111	83	194	Bin		-15859.812	5.273	163.208	3.924						
26	110	84	194	Po	-a	-11005.298	12.898	7789.298	0.066	B-	-10288.809	26.809	193	988185.326	13.846
24	109	85	194	At	-a	-716.490	23.502	7732.230	0.121	B-	-6440.462	28.802	193	999230.816	25.230
24	109	85	194	Atm	-a	-739.459	32.159	-22.970	39.832						
22	108	86	194	Rn	-a	5723.972	16.650	7694.999	0.086	B-	*		194	006144.936	17.874
0 47	121	74	195	W	x	-20740#	300#	7881#	2#	B-	4820#	424#	194	977735#	322#
45	120	75	195	Re	x	-25560#	300#	7901#	2#	B-	3951#	305#	194	972560#	322#
43	119	76	195	Os	x	-29511.596	55.890	7917.745	0.287	B-	2180.756	55.906	194	968318.000	60.000
41	118	77	195	Ir	-n	-31692.352	1.333	7924.916	0.007	B-	1101.557	1.264	194	965976.862	1.431
39	117	78	195	Pt		-32793.910	0.502	7926.553	0.003	B-	-226.817	1.000	194	964794.291	0.539
37	116	79	195	Au		-32567.093	1.119	7921.378	0.006	B-	-1552.754	23.142	194	965037.789	1.201
35	115	80	195	Hg		-31014.338	23.126	7909.403	0.119	B-	-2858.816	25.662	194	966704.740	24.826
33	114	81	195	Tl		-28155.522	11.124	7890.730	0.057	B-	-4417.445	12.232	194	969773.804	11.942
31	113	82	195	Pb		-23738.077	5.088	7864.065	0.026	B-	-5712.511	7.337	194	974516.127	5.461
31	113	82	195	Pbm		-23535.200	5.044	202.878	0.700						
29	112	83	195	Bi		-18025.567	5.287	7830.758	0.027	B-	-6908.912	8.028	194	980648.759	5.675
29	112	83	195	Bim	-a	-17626.304	8.099	399.262	6.135						
27	111	84	195	Po		-11116.655	6.042	7791.316	0.031	B-	-7646.355	11.320	194	988065.781	6.486
27	111	84	195	Pom		-10968.189	7.038	148.466	9.276						
25	110	85	195	At	-a	-3470.299	9.573	7748.091	0.049	B-	-8520.442	52.565	194	996274.480	10.276
25	110	85	195	Atm	-a	-3440.935	8.489	29.364	7.219						
25	110	85	195	Atp	IT	-3371#	41#	99#	41#						
23	109	86	195	Rn	-a	5050.143	51.686	7700.385	0.265	B-	*		195	005421.551	55.487
23	109	86	195	Rnm	-a	5130.479	16.722	80.336	53.653						
0 48	122	74	196	W	x	-18740#	400#	7872#	2#	B-	3620#	500#	195	979882#	429#
46	121	75	196	Re	x	-22360#	300#	7886#	2#	B-	5918#	303#	195	975996#	322#
44	120	76	196	Os	+pp	-28277.170	40.055	7912.230	0.204	B-	1158.384	55.495	195	969643.210	43.000
42	119	77	196	Ir	+	-29435.554	38.414	7914.149	0.196	B-	3209.016	38.411	195	968399.634	41.239
42	119	77	196	Irm	+	-29226.570	20.006	208.984	43.306						
40	118	78	196	Pt		-32644.570	0.509	7926.530	0.003	B-	-1505.799	2.960	195	964954.614	0.546
38	117	79	196	Au		-31138.771	2.962	7914.856	0.015	B-	687.230	3.118	195	966571.156	3.179
36	116	80	196	Hg		-31826.001	2.946	7914.370	0.015	B-	-4329.403	12.463	195	965833.384	3.162
34	115	81	196	Tl	x	-27496.598	12.109	7888.290	0.062	B-	-2147.059	14.312	195	970481.189	13.000
32	114	82	196	Pb		-25349.540	7.629	7873.344	0.039	B-	-7340.507	25.592	195	972786.151	8.190
30	113	83	196	Bi	x	-18009.032	24.428	7831.901	0.125	B-	-4540.181	25.014	195	980666.509	26.224
30	113	83	196	Bim	+a	-17842.614	24.605	166.418	2.947						
30	113	83	196	Bin	+a	-17737.438	24.647	271.594	3.279						
28	112	84	196	Po		-13468.852	5.382	7804.745	0.027	B-	-9555.677	30.710	195	985540.593	5.777
26	111	85	196	At	-a	-3913.175	30.235	7752.000	0.154	B-	-5887.688	33.337	195	995799.034	32.458
26	111	85	196	Atm	-a	-3949.968	17.733	-36.793	35.052						
24	110	86	196	Rn	-a	1974.513	14.043	7717.969	0.072	B-	*		196	002119.727	15.075
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 49	123	74	197	W	x	-14870#	400#	7853#	2#	B-	5480#	500#	196	984036#	429#
47	122	75	197	Re	x	-20350#	300#	7877#	2#	B-	4729#	361#	196	978153#	322#
45	121	76	197	Os	x	-25080#	200#	7897#	1#	B-	3185#	201#	196	973076#	215#
43	120	77	197	Ir	+p	-28264.170	20.110	7909.001	0.102	B-	2155.641	20.106	196	969657.166	21.588
41	119	78	197	Pt		-30419.811	0.535	7915.972	0.003	B-	719.997	0.502	196	967342.991	0.574
39	118	79	197	Au		-31139.808	0.540	7915.655	0.003	B-	-599.517	3.202	196	966570.042	0.579
37	117	80	197	Hg		-30540.291	3.206	7908.641	0.016	B-	-2187.273	13.939	196	967213.650	3.442
35	116	81	197	Tl	+a	-28353.019	13.565	7893.566	0.069	B-	-3607.284	14.388	196	969561.784	14.562
33	115	82	197	Pb		-24745.735	4.795	7871.284	0.024	B-	-5058.539	9.614	196	973434.362	5.147
33	115	82	197	Pbm		-24426.426	4.795	319.309	0.110						
31	114	83	197	Bi	+a	-19687.196	8.333	7841.635	0.042	B-	-6294.117	12.910	196	978864.927	8.946
31	114	83	197	Bim	-a	-19154.664	8.113	532.532	11.630						
29	113	84	197	Po		-13393.078	9.861	7805.714	0.050	B-	-7037.824	12.687	196	985621.939	10.585
29	113	84	197	Pom	x	-13197.077	6.520	196.001	11.822						
27	112	85	197	At		-6355.255	7.983	7766.017	0.041	B-	-7865.325	18.052	196	993177.353	8.570
27	112	85	197	Atm		-6310.547	9.035	44.708	7.885						
25	111	86	197	Rn	-a	1510.070	16.191	7722.121	0.082	B-	-8743.898	58.710	197	001621.126	17.381
25	111	86	197	Rnm	-a	1708.860	16.136	198.790	11.460						

23	110	87	197	Fr	-a	10253.968	56.434	7673.764	0.286	B-	*		197	011008.086	60.584
0 48	123	75	198	Re	x	-16990#	400#	7861#	2#	B-	6610#	447#	197	981760#	429#
46	122	76	198	Os	x	-23600#	200#	7890#	1#	B-	2110#	283#	197	974664#	215#
44	121	77	198	Ir	x	-25710#	200#	7897#	1#	B-	4194#	200#	197	972399#	215#
42	120	78	198	Pt		-29904.065	2.100	7914.151	0.011	B-	-323.215	2.059	197	967896.667	2.254
40	119	79	198	Au		-29580.850	0.538	7908.568	0.003	B-	1373.507	0.490	197	968243.653	0.577
38	118	80	198	Hg		-30954.357	0.457	7911.553	0.002	B-	-3425.604	7.559	197	966769.132	0.490
36	117	81	198	Tl	x	-27528.753	7.545	7890.301	0.038	B-	-1460.485	11.532	197	970446.669	8.100
34	116	82	198	Pb		-26068.268	8.721	7878.974	0.044	B-	-6694.417	28.917	197	972014.564	9.362
32	115	83	198	Bi		-19373.851	27.571	7841.212	0.139	B-	-3899.316	32.598	197	979201.316	29.598
32	115	83	198	Bim	IT	-19085.174	27.949	288.677	39.260						
32	115	83	198	Bin	x	-18836.674	27.945	537.177	39.256						
30	114	84	198	Po		-15474.535	17.391	7817.567	0.088	B-	-8765.788	18.070	197	983387.404	18.670
28	113	85	198	At		-6708.747	4.904	7769.345	0.025	B-	-5477.746	14.276	197	992797.864	5.265
28	113	85	198	Atm		-6442.109	5.167	266.637	2.747						
26	112	86	198	Rn	-a	-1231.001	13.407	7737.728	0.068	B-	-10808.699	33.894	197	998678.466	14.393
24	111	87	198	Fr	-a	9577.698	31.130	7679.187	0.157	B-	*		198	010282.081	33.419
24	111	87	198	Frm	-a	9575.142	38.091	-2.556	49.193						
0 49	124	75	199	Re	x	-14730#	400#	7850#	2#	B-	5541#	447#	198	984187#	429#
47	123	76	199	Os	x	-20270#	200#	7874#	1#	B-	4128#	204#	198	978239#	215#
45	122	77	199	Ir	p-2n	-24398.582	41.054	7891.207	0.206	B-	2990.166	41.003	198	973807.046	44.072
43	121	78	199	Pt	-n	-27388.747	2.158	7902.301	0.011	B-	1705.062	2.120	198	970596.972	2.317
41	120	79	199	Au		-29093.810	0.540	7906.938	0.003	B-	452.413	0.607	198	968766.512	0.579
39	119	80	199	Hg		-29546.222	0.510	7905.280	0.003	B-	-1486.825	27.949	198	968280.827	0.547
37	118	81	199	Tl	x	-28059.397	27.945	7893.877	0.140	B-	-2827.662	28.765	198	969877.000	30.000
35	117	82	199	Pb	+a	-25231.734	6.821	7875.737	0.034	B-	-4433.847	12.616	198	972912.620	7.322
33	116	83	199	Bi		-20797.888	10.613	7849.525	0.053	B-	-5559.021	11.921	198	977672.550	11.393
33	116	83	199	Bim		-20131.129	10.786	666.759	3.491						
31	115	84	199	Po	-a	-15238.866	5.429	7817.658	0.027	B-	-6415.489	7.646	198	983640.404	5.828
31	115	84	199	Pom		-14927.136	4.761	311.731	2.665						
29	114	85	199	At		-8823.377	5.384	7781.488	0.027	B-	-7263.531	9.069	198	990527.715	5.780
29	114	85	199	Atm	IT	-8579.377	5.477	244.000	1.000						
27	113	86	199	Rn	-a	-1559.846	7.297	7741.057	0.037	B-	-8331.235	15.545	198	998325.435	7.833
27	113	86	199	Rnm	-a	-1339.978	8.141	219.869	10.933						
25	112	87	199	Fr	-a	6771.388	13.726	7695.260	0.069	B-	*		199	007269.384	14.734
25	112	87	199	Frm	-a	6816.613	10.217	45.225	13.461						
25	112	87	199	Frn	-a	7022#	46#	251#	47#						
0 48	124	76	200	Os	x	-18550#	300#	7867#	1#	B-	3020#	358#	199	980086#	322#
46	123	77	200	Ir	x	-21570#	196#	7878#	1#	B-	5030#	197#	199	976844#	210#
44	122	78	200	Pt	-nn	-26599.225	20.110	7899.199	0.101	B-	640.914	33.439	199	971444.558	21.588
42	121	79	200	Au		-27240.139	26.717	7898.492	0.134	B-	2263.285	26.719	199	970756.509	28.681
42	121	79	200	Aum		-26233.325	26.187	1006.814	37.410						
40	120	80	200	Hg		-29503.424	0.513	7905.896	0.003	B-	-2456.040	5.735	199	968326.773	0.551
38	119	81	200	Tl	-	-27047.384	5.758	7889.704	0.029	B-	-795.412	11.507	199	970963.440	6.180
36	118	82	200	Pb		-26251.972	9.963	7881.816	0.050	B-	-5881.398	24.791	199	971817.350	10.695
34	117	83	200	Bi	+a	-20370.574	22.701	7848.497	0.114	B-	-3427.584	23.907	199	978131.290	24.370
32	116	84	200	Po		-16942.989	7.496	7827.447	0.037	B-	-7955.096	25.588	199	981810.953	8.047
30	115	85	200	At	-a	-8987.894	24.465	7783.760	0.122	B-	-4987.319	25.141	199	990351.099	26.264
30	115	85	200	Atm	-a	-8874.997	24.569	112.897	2.947						
30	115	85	200	Atn	IT	-8644.097	24.570	343.797	2.954						
28	114	86	200	Rn	-a	-4000.575	5.791	7754.912	0.029	B-	-10134.153	31.069	199	995705.206	6.216
26	113	87	200	Fr	-a	6133.578	30.524	7700.329	0.153	B-	*		200	006584.666	32.769
26	113	87	200	Frm	-a	6179.348	55.131	45.769	63.017						
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY			ATOMIC MASS	V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 49	125	76	201	Os	x	-14840#	300#	7849#	1#	B-	5000#	361#	200	984069#	322#
47	124	77	201	Ir	x	-19840#	200#	7870#	1#	B-	3901#	206#	200	978701#	215#
45	123	78	201	Pt	+	-23741.043	50.103	7885.835	0.249	B-	2660.000	50.000	200	974512.942	53.787
43	122	79	201	Au		-26401.043	3.205	7895.177	0.016	B-	1261.838	3.147	200	971657.315	3.440
41	121	80	201	Hg		-27662.882	0.646	7897.562	0.003	B-	-480.950	14.165	200	970302.676	0.693
39	120	81	201	Tl		-27181.932	14.151	7891.277	0.070	B-	-1910.765	18.509	200	970818.997	15.191
37	119	82	201	Pb		-25271.167	13.747	7877.879	0.068	B-	-3843.364	18.357	200	972870.287	14.757
35	118	83	201	Bi	+a	-21427.803	12.166	7854.865	0.061	B-	-4906.254	13.127	200	976996.308	13.060
33	117	84	201	Po		-16521.549	4.931	7826.564	0.025	B-	-5732.107	9.555	200	982263.388	5.293
33	117	84	201	Pom	-a	-16097.716	5.093	423.833	2.418						
31	116	85	201	At	+a	-10789.441	8.184	7794.154	0.041	B-	-6682.029	13.016	200	988417.058	8.786
29	115	86	201	Rn	-a	-4107.413	10.121	7757.017	0.050	B-	-7695.986	13.597	200	995590.511	10.865

29	115	86	201	Rnm	-a	-3862.649	6.845	244.764	12.219						
27	114	87	201	Fr	-a	3588.573	9.080	7714.837	0.045	B-	-8347.945	22.238	201	003852.491	9.747
27	114	87	201	Frm	-a	3717.586	10.272	129.013	10.236						
25	113	88	201	Ra	-a	11936.518	20.299	7669.412	0.101	B-	*		201	012814.378	21.792
25	113	88	201	Ram	-a	12199.590	26.016	263.072	26.414						
0 50	126	76	202	Os	x	-12530#	400#	7839#	2#	B-	4110#	500#	201	986548#	429#
48	125	77	202	Ir	x	-16640#	300#	7855#	1#	B-	6052#	301#	201	982136#	322#
46	124	78	202	Pt	x	-22692.128	25.150	7881.561	0.125	B-	1660.854	34.276	201	975639.000	27.000
44	123	79	202	Au	x	-24352.982	23.287	7885.910	0.115	B-	2992.688	23.296	201	973856.000	25.000
42	122	80	202	Hg		-27345.670	0.636	7896.852	0.003	B-	-1364.336	1.772	201	970643.217	0.682
40	121	81	202	Tl		-25981.334	1.663	7886.225	0.008	B-	-40.535	4.140	201	972107.892	1.785
38	120	82	202	Pb		-25940.799	3.793	7882.151	0.019	B-	-5190.582	14.504	201	972151.408	4.071
36	119	83	202	Bi		-20750.217	14.000	7852.582	0.069	B-	-2807.827	16.452	201	977723.726	15.029
34	118	84	202	Po		-17942.390	8.642	7834.809	0.043	B-	-7347.284	28.923	201	980738.052	9.277
32	117	85	202	At		-10595.106	27.601	7794.564	0.137	B-	-4319.289	32.675	201	988625.686	29.631
32	117	85	202	Atm	-a	-10401.297	27.980	193.810	39.303						
32	117	85	202	Atn	IT	-10009.597	27.980	585.510	39.303						
30	116	86	202	Rn	-a	-6275.817	17.487	7769.308	0.087	B-	-9377.355	18.499	201	993262.633	18.773
28	115	87	202	Fr	-a	3101.538	6.033	7719.012	0.030	B-	-5972.681	16.174	202	003329.637	6.476
28	115	87	202	Frm		3358.904	6.169	257.366	5.505						
26	114	88	202	Ra	-a	9074.219	15.006	7685.572	0.074	B-	*		202	009741.573	16.109
0 51	127	76	203	Os	x	-7270#	400#	7814#	2#	B-	7100#	565#	202	992195#	429#
49	126	77	203	Ir	x	-14370#	400#	7845#	2#	B-	5140#	447#	202	984573#	429#
47	125	78	203	Pt	x	-19510#	200#	7867#	1#	B-	3633#	200#	202	979055#	215#
45	124	79	203	Au		-23143.507	3.082	7880.865	0.015	B-	2126.892	3.315	202	975154.424	3.308
43	123	80	203	Hg		-25270.400	1.270	7887.489	0.006	B-	492.206	1.222	202	972871.111	1.363
41	122	81	203	Tl		-25762.606	0.381	7886.059	0.002	B-	-974.816	6.461	202	972342.706	0.408
39	121	82	203	Pb		-24787.790	6.457	7877.403	0.032	B-	-3263.415	14.315	202	973389.214	6.931
37	120	83	203	Bi	+a	-21524.375	12.776	7857.474	0.063	B-	-4213.556	13.592	202	976892.634	13.715
35	119	84	203	Po		-17310.819	4.640	7832.863	0.023	B-	-5147.939	11.590	202	981416.072	4.981
33	118	85	203	At		-12162.880	10.621	7803.650	0.052	B-	-5978.797	12.108	202	986942.612	11.401
31	117	86	203	Rn	-a	-6184.082	5.815	7770.344	0.029	B-	-7060.495	8.523	202	993361.114	6.242
31	117	86	203	Rnm		-5821.635	4.998	362.447	3.728						
29	116	87	203	Fr		876.412	6.232	7731.709	0.031	B-	-7724.918	11.519	203	000940.867	6.689
29	116	87	203	Frm	-a	1237.468	7.484	361.056	6.308						
27	115	88	203	Ra	-a	8601.331	9.688	7689.801	0.048	B-	*		203	009233.907	10.400
27	115	88	203	Ram	-a	8847.686	9.979	246.355	13.908						
0 50	127	77	204	Ir	x	-9570#	400#	7823#	2#	B-	8050#	447#	203	989726#	429#
48	126	78	204	Pt	x	-17620#	200#	7859#	1#	B-	2770#	283#	203	981084#	215#
46	125	79	204	Au	+	-20390#	200#	7868#	1#	B-	4300#	200#	203	978110#	215#
44	124	80	204	Hg		-24690.233	0.492	7885.546	0.002	B-	-342.846	0.550	203	973493.945	0.528
42	123	81	204	Tl		-24347.387	0.254	7880.030	0.001	B-	763.754	0.177	203	973862.005	0.272
40	122	82	204	Pb		-25111.141	0.185	7879.939	0.001	B-	-4465.437	9.181	203	973042.082	0.198
38	121	83	204	Bi	+a	-20645.704	9.179	7854.215	0.045	B-	-2303.548	13.594	203	977835.925	9.854
36	120	84	204	Po		-18342.156	10.026	7839.088	0.049	B-	-6466.905	24.787	203	980308.886	10.763
34	119	85	204	At		-11875.252	22.668	7803.552	0.111	B-	-3903.830	23.833	203	987251.393	24.335
32	118	86	204	Rn		-7971.422	7.361	7780.581	0.036	B-	-8578.730	25.660	203	991442.327	7.901
30	117	87	204	Fr	-a	607.308	24.581	7734.693	0.120	B-	-5453.668	26.151	204	000651.972	26.389
30	117	87	204	Frm	-a	657.567	24.652	50.259	4.303						
30	117	87	204	Frn	IT	933.667	24.657	326.359	4.332						
28	116	88	204	Ra	-a	6060.977	8.924	7704.124	0.044	B-	*		204	006506.725	9.580
0 51	128	77	205	Ir	x	-5600#	500#	7805#	2#	B-	7220#	583#	204	993988#	537#
49	127	78	205	Pt	x	-12820#	300#	7836#	1#	B-	5750#	361#	204	986237#	322#
47	126	79	205	Au	x	-18570#	200#	7860#	1#	B-	3718#	200#	204	980064#	215#
45	125	80	205	Hg		-22288.223	3.629	7874.735	0.018	B-	1533.888	3.659	204	976072.610	3.896
43	124	81	205	Tl		-23822.111	0.523	7878.401	0.003	B-	-50.619	0.503	204	974425.913	0.561
41	123	82	205	Pb		-23771.492	0.150	7874.338	0.001	B-	-2705.315	4.780	204	974480.255	0.161
39	122	83	205	Bi		-21066.177	4.780	7857.325	0.023	B-	-3544.710	11.136	204	977384.530	5.131
37	121	84	205	Po		-17521.466	10.058	7836.217	0.049	B-	-4538.150	15.692	204	981189.933	10.798
35	120	85	205	At	+a	-12983.316	12.044	7810.264	0.059	B-	-5273.130	13.067	204	986061.837	12.930
33	119	86	205	Rn		-7710.186	5.067	7780.725	0.025	B-	-6400.369	9.322	204	991722.775	5.440
31	118	87	205	Fr	x	-1309.816	7.824	7745.687	0.038	B-	-7113.669	24.078	204	998593.854	8.399
29	117	88	205	Ra	-a	5803.853	22.772	7707.170	0.111	B-	-8302.836	63.540	205	006230.692	24.446
29	117	88	205	Ram	-a	6066.975	11.405	263.122	25.468						
27	116	89	205	Ac	-a	14106.689	59.320	7662.852	0.289	B-	*		205	015144.152	63.682
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)	V/S

0	50	128	78	206	Pt	x	-9240#	300#	7820#	1#	B-	4950#	424#	205	990080#	322#
	48	127	79	206	Au	x	-14190#	300#	7840#	1#	B-	6757#	301#	205	984766#	322#
	46	126	80	206	Hg	+a	-20946.999	20.410	7869.178	0.099	B-	1307.600	20.410	205	977512.472	21.911
	44	125	81	206	Tl		-22254.599	0.626	7871.728	0.003	B-	1532.238	0.612	205	976108.706	0.672
	42	124	82	206	Pb		-23786.837	0.138	7875.368	0.001	B-	-3757.306	7.546	205	974463.781	0.147
	40	123	83	206	Bi	-	-20029.531	7.547	7853.331	0.037	B-	-1840.673	8.545	205	978497.414	8.102
	38	122	84	206	Po	-a	-18188.859	4.008	7840.598	0.019	B-	-5750.128	14.107	205	980473.457	4.303
	36	121	85	206	At		-12438.731	13.526	7808.887	0.066	B-	-3304.996	16.008	205	986646.474	14.520
	34	120	86	206	Rn		-9133.735	8.563	7789.046	0.042	B-	-7886.876	29.099	205	990194.532	9.192
	32	119	87	206	Fr		-1246.859	27.811	7746.962	0.135	B-	-4811.215	33.114	205	998661.441	29.856
	32	119	87	206	Frm	IT	-1047.739	28.278	199.120	39.662						
	32	119	87	206	Frn	-a	-516.739	28.207	730.120	39.612						
	32	119	87	206	Frx	IT	-1146.859	103.795	100.000	100.000						
	30	118	88	206	Ra	-a	3564.356	17.976	7719.809	0.087	B-	-9920.397	67.524	206	003826.493	19.298
	28	117	89	206	Ac	-a	13484.754	65.088	7667.854	0.316	B-	*		206	014476.477	69.874
	28	117	89	206	Acm	-a	13687.578	31.211	202.824	71.877						
0	51	129	78	207	Pt	x	-4140#	400#	7797#	2#	B-	6501#	500#	206	995556#	429#
	49	128	79	207	Au	x	-10640#	300#	7824#	1#	B-	5847#	301#	206	988577#	322#
	47	127	80	207	Hg	x	-16487.446	29.808	7848.611	0.144	B-	4546.844	30.289	206	982300.000	32.000
	45	126	81	207	Tl		-21034.290	5.376	7866.797	0.026	B-	1419.018	5.375	206	977418.762	5.771
	43	125	82	207	Pb		-22453.308	0.100	7869.873	0.001	B-	-2397.469	2.117	206	975895.383	0.107
	41	124	83	207	Bi		-20055.839	2.120	7854.511	0.010	B-	-2908.833	6.614	206	978469.172	2.275
	39	123	84	207	Po		-17147.006	6.563	7836.680	0.032	B-	-3920.043	14.034	206	981591.933	7.046
	37	122	85	207	At	+a	-13226.963	12.404	7813.963	0.060	B-	-4592.222	13.280	206	985800.271	13.316
	35	121	86	207	Rn		-8634.742	4.742	7787.999	0.023	B-	-5785.696	18.186	206	990730.223	5.090
	33	120	87	207	Fr		-2849.046	17.557	7756.269	0.085	B-	-6362.996	60.873	206	996941.423	18.847
	31	119	88	207	Ra	-a	3513.950	58.286	7721.750	0.282	B-	-7632.278	81.000	207	003772.380	62.572
	31	119	88	207	Ram	-a	4071.247	9.847	557.297	58.731						
	29	118	89	207	Ac	-a	11146.228	56.248	7681.100	0.272	B-	*		207	011965.967	60.384
0	52	130	78	208	Pt	x	-500#	400#	7780#	2#	B-	5410#	500#	207	999463#	429#
	50	129	79	208	Au	x	-5910#	300#	7803#	1#	B-	7355#	302#	207	993655#	322#
	48	128	80	208	Hg	x	-13265.408	30.739	7834.191	0.148	B-	3484.894	30.782	207	985759.000	33.000
	46	127	81	208	Tl	+a	-16750.301	1.619	7847.184	0.008	B-	4999.560	1.617	207	982017.812	1.738
	44	126	82	208	Pb		-21749.861	0.086	7867.459	0.000	B-	-2878.427	2.013	207	976650.565	0.092
	42	125	83	208	Bi	+n	-18871.434	2.014	7849.860	0.010	B-	-1400.970	2.378	207	979740.683	2.162
	40	124	84	208	Po		-17470.465	1.282	7839.363	0.006	B-	-5000.786	9.012	207	981244.685	1.376
	38	123	85	208	At	+a	-12469.679	8.921	7811.559	0.043	B-	-2813.183	13.490	207	986613.250	9.576
	36	122	86	208	Rn		-9656.495	10.119	7794.273	0.049	B-	-6991.567	15.437	207	989633.326	10.863
	34	121	87	208	Fr		-2664.928	11.657	7756.899	0.056	B-	-4391.555	14.699	207	997139.082	12.514
	32	120	88	208	Ra	-a	1726.627	8.954	7732.024	0.043	B-	-9034.227	65.102	208	001853.610	9.612
	30	119	89	208	Ac	-a	10760.854	64.483	7684.829	0.310	B-	-5927.066	71.926	208	011552.251	69.225
	30	119	89	208	Acm	-a	11257.626	28.293	496.772	61.360						
	28	118	90	208	Th	-a	16687.921	31.864	7652.572	0.153	B-	*		208	017915.218	34.207
0	51	130	79	209	Au	x	-2230#	400#	7786#	2#	B-	6380#	427#	208	997606#	429#
	49	129	80	209	Hg	x	-8610#	150#	7813#	1#	B-	5034#	150#	208	990757#	161#
	47	128	81	209	Tl	+a	-13643.559	6.045	7833.392	0.029	B-	3972.272	6.123	208	985353.037	6.489
	45	127	82	209	Pb		-17615.831	1.347	7848.655	0.006	B-	644.041	1.146	208	981088.628	1.445
	43	126	83	209	Bi		-18259.872	0.781	7847.993	0.004	B-	-1892.528	1.563	208	980397.222	0.837
	41	125	84	209	Po	-a	-16367.344	1.369	7835.195	0.007	B-	-3483.024	4.915	208	982428.933	1.469
	39	124	85	209	At		-12884.320	4.722	7814.786	0.023	B-	-3943.205	11.022	208	986168.113	5.069
	37	123	86	209	Rn		-8941.115	9.959	7792.176	0.048	B-	-5160.174	15.207	208	990401.318	10.691
	35	122	87	209	Fr		-3780.941	11.492	7763.743	0.055	B-	-5638.760	12.844	208	995940.992	12.337
	33	121	88	209	Ra	-a	1857.819	5.735	7733.020	0.027	B-	-6987.068	56.140	209	001994.450	6.157
	31	120	89	209	Ac	-a	8844.887	55.846	7695.845	0.267	B-	-7550#	117#	209	009495.375	59.953
	29	119	90	209	Th	IT	16395#	103#	7656#	0#	B-	*		209	017601#	111#
	29	119	90	209	Thm	-a	16764.926	25.492	370#	100#						
0	52	131	79	210	Au	x	2680#	400#	7764#	2#	B-	7980#	447#	210	002877#	429#
	50	130	80	210	Hg	x	-5300#	200#	7799#	1#	B-	3947#	201#	209	994310#	215#
	48	129	81	210	Tl	+a	-9247.222	11.569	7813.590	0.055	B-	5482.479	11.555	209	990072.699	12.420
	46	128	82	210	Pb		-14729.700	0.922	7835.972	0.004	B-	63.488	0.499	209	984187.017	0.989
	44	127	83	210	Bi		-14793.188	0.778	7832.548	0.004	B-	1161.202	0.766	209	984118.860	0.834
	42	126	84	210	Po		-15954.390	0.155	7834.353	0.001	B-	-3980.960	7.610	209	982872.258	0.166
	40	125	85	210	At	-a	-11973.430	7.611	7811.670	0.036	B-	-2368.475	8.869	209	987145.994	8.170
	38	124	86	210	Rn	-a	-9604.955	4.554	7796.666	0.022	B-	-6262.147	14.169	209	989688.657	4.889
	38	124	86	210	Rnm	+a	-7896.266	30.455	1708.689	30.113						
	36	123	87	210	Fr		-3342.808	13.417	7763.121	0.064	B-	-3784.829	16.249	209	996411.348	14.403
	34	122	88	210	Ra	-a	442.022	9.166	7741.373	0.044	B-	-8322.057	62.879	210	000474.529	9.840

32	121	89	210	Ac		8764.079	62.208	7698.018	0.296	B-	-5294.185	65.009	210 009408.625	66.782
30	120	90	210	Th	-a	14058.264	18.879	7669.082	0.090	B-	*		210 015092.166	20.267

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 51	131	80	211	Hg	x	-390#	200#	7777#	1#	B-	5688#	205#	210 999581#	215#	
49	130	81	211	Tl	x	-6077.999	41.917	7799.791	0.199	B-	4412.960	41.969	210 993475.000	45.000	
47	129	82	211	Pb		-10490.959	2.091	7816.998	0.010	B-	1368.004	5.428	210 988737.492	2.244	
45	128	83	211	Bi		-11858.963	5.379	7819.774	0.025	B-	574.869	5.403	210 987268.880	5.774	
43	127	84	211	Po	-a	-12433.832	0.519	7818.790	0.002	B-	-785.357	2.538	210 986651.733	0.557	
43	127	84	211	Pom	-a	-10971.334	5.098	1462.498	5.122						
41	126	85	211	At	-a	-11648.475	2.489	7811.361	0.012	B-	-2891.840	6.894	210 987494.848	2.671	
39	125	86	211	Rn	-a	-8756.635	6.720	7793.947	0.032	B-	-4616.839	13.743	210 990599.365	7.214	
37	124	87	211	Fr		-4139.796	11.989	7768.359	0.057	B-	-4971.666	12.977	210 995555.746	12.870	
35	123	88	211	Ra		831.870	4.966	7741.089	0.024	B-	-6311.597	53.982	211 000893.049	5.331	
33	122	89	211	Ac		7143.467	53.753	7707.468	0.255	B-	-6732.892	101.476	211 007668.826	57.706	
31	121	90	211	Th	-a	13876.359	86.070	7671.851	0.408	B-	-8175.867	110.609	211 014896.882	92.399	
29	120	91	211	Pa	-a	22052.226	69.472	7629.395	0.329	B-	*		211 023674.036	74.581	
0 52	132	80	212	Hg	x	3020#	300#	7762#	1#	B-	4571#	361#	212 003242#	322#	
50	131	81	212	Tl	+a	-1551#	200#	7780#	1#	B-	5997#	200#	211 998335#	215#	
48	130	82	212	Pb		-7547.542	1.641	7804.314	0.008	B-	570.582	1.736	211 991897.380	1.762	
46	129	83	212	Bi		-8118.124	1.619	7803.315	0.008	B-	2252.623	1.615	211 991284.836	1.737	
46	129	83	212	Bim	-a	-7867.301	30.621	250.822	30.578						
46	129	83	212	Bin	x	-6638.758	29.808	1479.365	29.852						
44	128	84	212	Po		-10370.746	0.143	7810.250	0.001	B-	-1741.314	2.106	211 988866.546	0.153	
44	128	84	212	Pom	-a	-7447.651	4.449	2923.095	4.450						
42	127	85	212	At	-a	-8629.432	2.105	7798.346	0.010	B-	31.045	3.592	211 990735.924	2.259	
42	127	85	212	Atm	-a	-8406.515	2.105	222.917	0.865						
40	126	86	212	Rn	-a	-8660.477	2.919	7794.802	0.014	B-	-5144.701	9.247	211 990702.596	3.133	
38	125	87	212	Fr		-3515.776	8.774	7766.844	0.041	B-	-3315.912	13.463	211 996225.659	9.419	
36	124	88	212	Ra		-199.864	10.211	7747.513	0.048	B-	-7499.463	24.148	211 999785.437	10.961	
34	123	89	212	Ac		7299.600	21.883	7708.448	0.103	B-	-4809.980	24.080	212 007836.442	23.492	
32	122	90	212	Th	-a	12109.580	10.047	7682.069	0.047	B-	-9486.943	88.179	212 013000.168	10.786	
30	121	91	212	Pa	-a	21596.523	87.604	7633.629	0.413	B-	*		212 023184.819	94.047	
0 53	133	80	213	Hg	x	8200#	300#	7739#	1#	B-	6416#	301#	213 008803#	322#	
51	132	81	213	Tl	x	1783.811	27.013	7765.431	0.127	B-	4986.008	27.827	213 001915.000	29.000	
49	131	82	213	Pb	+a	-3202.196	6.680	7785.167	0.031	B-	2028.241	8.266	212 996562.300	7.171	
47	130	83	213	Bi		-5230.437	5.004	7791.016	0.023	B-	1424.179	5.402	212 994384.895	5.371	
45	129	84	213	Po		-6654.616	2.859	7794.029	0.013	B-	-73.811	5.464	212 992855.976	3.069	
43	128	85	213	At	-a	-6580.805	4.768	7790.010	0.022	B-	-883.526	5.724	212 992935.215	5.118	
41	127	86	213	Rn	-a	-5697.279	3.173	7782.189	0.015	B-	-2142.557	5.658	212 993883.720	3.406	
39	126	87	213	Fr		-3554.722	4.686	7768.457	0.022	B-	-3900.216	10.879	212 996183.849	5.030	
37	125	88	213	Ra		345.494	9.818	7746.473	0.046	B-	-5796.674	15.239	213 000370.902	10.540	
37	125	88	213	Ram	-a	2113.589	10.580	1768.095	4.233						
35	124	89	213	Ac		6142.167	11.655	7715.585	0.055	B-	-5977.519	14.855	213 006593.887	12.511	
33	123	90	213	Th	-a	12119.686	9.210	7683.849	0.043	B-	-7534.508	57.907	213 013011.017	9.887	
33	123	90	213	Thp	IT	12380#	51#	260#	50#						
31	122	91	213	Pa	-a	19654.194	57.170	7644.803	0.268	B-	*		213 021099.644	61.374	
0 54	134	80	214	Hg	x	11770#	400#	7724#	2#	B-	5306#	445#	214 012636#	429#	
52	133	81	214	Tl	x	6465#	196#	7745#	1#	B-	6645#	196#	214 006940#	210#	
50	132	82	214	Pb		-180.923	1.762	7772.386	0.008	B-	1020.083	11.225	213 999805.771	1.891	
48	131	83	214	Bi		-1201.006	11.174	7773.497	0.052	B-	3270.237	11.159	213 998710.667	11.995	
46	130	84	214	Po		-4471.243	0.924	7785.122	0.004	B-	-1090.809	3.775	213 995199.923	0.991	
44	129	85	214	At		-3380.435	3.821	7776.369	0.018	B-	940.560	9.883	213 996370.954	4.102	
44	129	85	214	Atm	-a	-3321.831	8.190	58.604	8.970						
44	129	85	214	Atn		-3148.383	4.436	232.052	5.019						
42	128	86	214	Rn	-a	-4320.995	9.116	7777.108	0.043	B-	-3361.337	12.424	213 995361.221	9.786	
40	127	87	214	Fr	-a	-959.658	8.443	7757.745	0.039	B-	-1052.208	9.940	213 998969.764	9.063	
40	127	87	214	Frm	-a	-838.303	8.283	121.355	4.903						
38	126	88	214	Ra	-a	92.550	5.247	7749.173	0.025	B-	-6341.417	14.529	214 000099.356	5.633	
36	125	89	214	Ac		6433.967	13.548	7715.884	0.063	B-	-4260.148	17.226	214 006907.147	14.544	
34	124	90	214	Th	-a	10694.115	10.638	7692.321	0.050	B-	-8765.780	81.902	214 011480.603	11.420	
32	123	91	214	Pa	-a	19459.895	81.208	7647.704	0.379	B-	*		214 020891.055	87.180	
0 55	135	80	215	Hg	x	17110#	400#	7701#	2#	B-	7079#	500#	215 018368#	429#	
53	134	81	215	Tl	x	10030#	300#	7730#	1#	B-	5688#	305#	215 010768#	322#	
51	133	82	215	Pb	+a	4342.245	52.685	7752.738	0.245	B-	2711.395	52.981	215 004661.591	56.560	
49	132	83	215	Bi		1630.850	5.586	7761.710	0.026	B-	2170.548	5.526	215 001750.789	5.996	
47	131	84	215	Po		-539.698	1.937	7768.167	0.009	B-	716.733	6.613	214 999420.610	2.079	

45	130	85	215	At	-a	-1256.430	6.577	7767.862	0.031	B-	-86.101	8.890	214	998651.166	7.060	
43	129	86	215	Rn	-a	-1170.329	5.982	7763.823	0.028	B-	-1487.183	9.189	214	998743.599	6.422	
41	128	87	215	Fr	-a	316.853	6.976	7753.267	0.032	B-	-2213.836	9.769	215	000340.156	7.489	
39	127	88	215	Ra	-a	2530.689	7.113	7739.331	0.033	B-	-3500.379	14.298	215	002716.806	7.635	
37	126	89	215	Ac	-a	6031.069	12.404	7719.411	0.058	B-	-4890.365	13.928	215	006474.618	13.316	
35	125	90	215	Th	-a	10921.434	6.335	7693.027	0.029	B-	-6883.086	82.693	215	011724.640	6.800	
33	124	91	215	Pa	-a	17804.519	82.450	7657.373	0.383	B-	-7084.755	132.825	215	019113.936	88.513	
31	123	92	215	U	-a	24889.274	104.136	7620.782	0.484	B-	*		215	026719.733	111.794	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)		V/S
0 56	136	80	216	Hg	x	20920#	400#	7685#	2#	B-	6050#	500#	216	022459#	429#	
54	135	81	216	Tl	x	14870#	300#	7709#	1#	B-	7361#	361#	216	015964#	322#	
52	134	82	216	Pb	x	7510#	200#	7740#	1#	B-	1636#	201#	216	008062#	215#	
50	133	83	216	Bi	x	5873.988	11.178	7743.500	0.052	B-	4090.183	11.293	216	006305.985	12.000	
50	133	83	216	Bim	+a	5897.573	15.250	23.585	18.908							
48	132	84	216	Po		1783.805	1.609	7758.814	0.007	B-	-472.692	3.522	216	001914.993	1.727	
46	131	85	216	At	-a	2256.497	3.459	7753.003	0.016	B-	2004.523	6.625	216	002422.449	3.713	
46	131	85	216	Atm	-a	2417.282	10.317	160.785	10.638							
44	130	86	216	Rn	-a	251.975	5.654	7758.662	0.026	B-	-2717.764	6.937	216	000270.505	6.069	
42	129	87	216	Fr	-a	2969.739	4.021	7742.457	0.019	B-	-320.470	8.890	216	003188.145	4.316	
42	129	87	216	Frm	-a	3188.566	5.512	218.827	6.200							
40	128	88	216	Ra	-a	3290.209	7.932	7737.352	0.037	B-	-4859.750	12.169	216	003532.184	8.515	
38	127	89	216	Ac		8149.959	9.229	7711.231	0.043	B-	-2147.477	14.408	216	008749.340	9.907	
38	127	89	216	Acm	-a	8188.177	9.704	38.218	5.038							
36	126	90	216	Th	-a	10297.436	11.064	7697.667	0.051	B-	-7526.362	27.016	216	011054.751	11.878	
36	126	90	216	Thm	-a	12338.708	12.327	2041.272	8.115							
34	125	91	216	Pa	-a	17823.799	24.647	7659.201	0.114	B-	-5241.324	37.355	216	019134.633	26.459	
32	124	92	216	U	-a	23065.123	28.071	7631.313	0.130	B-	*		216	024761.426	30.135	
32	124	92	216	Uxm	-a	25316.580	32.176	2251.457	40.266							
0 55	136	81	217	Tl	x	18660#	400#	7693#	2#	B-	6399#	500#	217	020032#	429#	
53	135	82	217	Pb	x	12260#	300#	7719#	1#	B-	3530#	300#	217	013162#	322#	
51	134	83	217	Bi	x	8729.963	17.698	7731.849	0.082	B-	2845.109	18.770	217	009372.000	19.000	
49	133	84	217	Po	+a	5884.854	6.252	7741.355	0.029	B-	1488.987	7.870	217	006317.649	6.711	
47	132	85	217	At		4395.867	4.921	7744.611	0.023	B-	738.398	6.070	217	004719.156	5.282	
45	131	86	217	Rn	-a	3657.469	4.059	7744.409	0.019	B-	-655.911	7.538	217	003926.454	4.357	
43	130	87	217	Fr	-a	4313.380	6.434	7737.781	0.030	B-	-1574.826	9.472	217	004630.603	6.907	
41	129	88	217	Ra	-a	5888.206	6.955	7726.918	0.032	B-	-2813.593	13.195	217	006321.248	7.466	
39	128	89	217	Ac	-a	8701.799	11.214	7710.347	0.052	B-	-3503.918	15.440	217	009341.764	12.038	
39	128	89	217	Acm	-a	10714.008	17.943	2012.209	20.094							
37	127	90	217	Th	-a	12205.717	10.614	7690.595	0.049	B-	-4850.169	16.390	217	013103.375	11.394	
35	126	91	217	Pa	-a	17055.886	12.489	7664.639	0.058	B-	-5914#	81#	217	018310.246	13.407	
35	126	91	217	Pam	-a	18916.183	12.682	1860.297	6.719							
33	125	92	217	U	-a	22970#	81#	7634#	0#	B-	*		217	024660#	86#	
0 56	137	81	218	Tl	x	23710#	400#	7672#	2#	B-	8081#	500#	218	025454#	429#	
54	136	82	218	Pb	x	15630#	300#	7705#	1#	B-	2414#	301#	218	016779#	322#	
52	135	83	218	Bi	x	13216.038	27.013	7712.828	0.124	B-	4857.291	27.071	218	014188.000	29.000	
50	134	84	218	Po		8358.748	1.759	7731.520	0.008	B-	258.756	11.519	218	008973.484	1.888	
48	133	85	218	At	-a	8099.992	11.469	7729.119	0.053	B-	2883.698	11.601	218	008695.698	12.312	
46	132	86	218	Rn		5216.294	2.050	7738.758	0.009	B-	-1841.863	4.441	218	005599.921	2.200	
44	131	87	218	Fr	-a	7058.157	4.084	7726.720	0.019	B-	413.931	10.560	218	007577.242	4.384	
44	131	87	218	Frm		7145.375	4.679	87.218	3.668							
42	130	88	218	Ra	-a	6644.226	9.741	7725.030	0.045	B-	-4205.288	58.422	218	007132.869	10.457	
40	129	89	218	Ac	-a	10849.514	57.605	7702.151	0.264	B-	-1517.042	58.557	218	011647.431	61.841	
40	129	89	218	Acm	+a	10902.033	87.639	52.519	66.048							
38	128	90	218	Th	-a	12366.556	10.515	7691.603	0.048	B-	-6283.707	20.711	218	013276.043	11.288	
36	127	91	218	Pa	-a	18650.263	17.844	7659.190	0.082	B-	-3243.575	22.494	218	020021.880	19.155	
36	127	91	218	Pam	-a	18731.283	20.213	81.019	18.969							
34	126	92	218	U	-a	21893.838	13.696	7640.723	0.063	B-	*		218	023504.000	14.703	
34	126	92	218	Uxm	-a	24002.743	18.445	2108.905	17.362							
0 55	137	82	219	Pb	x	20620#	400#	7684#	2#	B-	4300#	447#	219	022136#	429#	
53	136	83	219	Bi	x	16320#	200#	7700#	1#	B-	3638#	201#	219	017520#	215#	
51	135	84	219	Po	x	12681.361	15.835	7713.334	0.072	B-	2283.577	16.146	219	013614.000	17.000	
49	134	85	219	At		10397.783	3.154	7720.189	0.014	B-	1566.370	2.944	219	011162.478	3.385	
47	133	86	219	Rn		8831.413	1.915	7723.769	0.009	B-	214.321	6.858	219	009480.911	2.055	
45	132	87	219	Fr	-a	8617.092	6.825	7721.175	0.031	B-	-775.421	9.575	219	009250.828	7.326	
43	131	88	219	Ra	-a	9392.513	6.717	7714.062	0.031	B-	-2175.756	51.902	219	010083.277	7.211	
41	130	89	219	Ac	-a	11568.269	51.465	7700.555	0.235	B-	-2893.205	76.363	219	012419.047	55.250	

39	129	90	219	Th	-a	14461.475	56.448	7683.771	0.258	B-	-4122.267	89.694	219	015525.030	60.599
37	128	91	219	Pa	-a	18583.742	69.704	7661.376	0.318	B-	-4712.211	70.969	219	019950.466	74.830
35	127	92	219	U	-a	23295.953	13.338	7636.287	0.061	B-	-6140.980	92.931	219	025009.233	14.319
33	126	93	219	Np	-a	29436.933	91.969	7604.673	0.420	B-	*		219	031601.845	98.732
0 56	138	82	220	Pb	x	24130#	400#	7670#	2#	B-	3171#	500#	220	025905#	429#
54	137	83	220	Bi	x	20960#	300#	7681#	1#	B-	5696#	300#	220	022501#	322#
52	136	84	220	Po	x	15263.462	17.698	7703.224	0.080	B-	887.714	22.549	220	016386.000	19.000
50	135	85	220	At	x	14375.748	13.972	7703.703	0.064	B-	3762.283	14.065	220	015433.000	15.000
48	134	86	220	Rn		10613.466	1.608	7717.248	0.007	B-	-868.685	3.982	220	011394.023	1.726
46	133	87	220	Fr	-a	11482.151	3.926	7709.744	0.018	B-	1211.398	8.471	220	012326.595	4.214
44	132	88	220	Ra	-a	10270.753	7.508	7711.694	0.034	B-	-3471.719	9.627	220	011026.106	8.060
42	131	89	220	Ac	-a	13742.472	6.026	7692.357	0.027	B-	-945.808	14.914	220	014753.149	6.469
40	130	90	220	Th	-a	14688.280	13.644	7684.502	0.062	B-	-5590.339	20.023	220	015768.516	14.647
38	129	91	220	Pa	-a	20278.620	14.655	7655.535	0.067	B-	-2734#	102#	220	021769.992	15.732
38	129	91	220	Pam		20304.623	21.923	26.003	22.913						
38	129	91	220	Pan		20572.972	47.608	294.353	48.072						
36	128	92	220	U	-a	23012#	101#	7640#	0#	B-	-7463#	105#	220	024705#	108#
34	127	93	220	Np	-a	30475.022	30.718	7602.076	0.140	B-	*		220	032716.280	32.977
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)	V/S
0 55	138	83	221	Bi	x	24200#	300#	7668#	1#	B-	4426#	301#	221	025980#	322#
53	137	84	221	Po	x	19773.757	19.561	7684.481	0.089	B-	2991.028	24.039	221	021228.000	21.000
51	136	85	221	At	x	16782.729	13.972	7694.475	0.063	B-	2309.974	14.971	221	018017.000	15.000
49	135	86	221	Rn	+a	14472.755	5.377	7701.388	0.024	B-	1194.189	7.113	221	015537.141	5.772
47	134	87	221	Fr		13278.566	4.802	7703.251	0.022	B-	315.786	6.305	221	014255.126	5.155
45	133	88	221	Ra	-a	12962.780	4.505	7701.140	0.020	B-	-1566.985	57.059	221	013916.115	4.835
43	132	89	221	Ac	-a	14529.765	56.890	7690.510	0.257	B-	-2409.217	57.364	221	015598.343	61.074
41	131	90	221	Th	-a	16938.982	7.362	7676.068	0.033	B-	-3435.433	59.833	221	018184.744	7.903
39	130	91	221	Pa	-a	20374.415	59.378	7656.983	0.269	B-	-4145.518	93.430	221	021872.832	63.744
37	129	92	221	U	-a	24519.933	72.135	7634.685	0.326	B-	-5390#	213#	221	026323.228	77.440
35	128	93	221	Np	x	29910#	200#	7607#	1#	B-	-6019#	361#	221	032110#	215#
33	127	94	221	Pu	x	35930#	300#	7576#	1#	B-	*		221	038572#	322#
0 56	139	83	222	Bi	x	28950#	300#	7648#	1#	B-	6464#	303#	222	031079#	322#
54	138	84	222	Po	x	22486.268	40.054	7674.005	0.180	B-	1533.239	43.071	222	024140.000	43.000
52	137	85	222	At	x	20953.028	15.835	7677.388	0.071	B-	4578.975	15.930	222	022494.000	17.000
50	136	86	222	Rn		16374.054	1.733	7694.490	0.008	B-	-4.050	7.651	222	017578.268	1.860
48	135	87	222	Fr	x	16378.103	7.452	7690.947	0.034	B-	2057.917	8.639	222	017582.615	8.000
46	134	88	222	Ra		14320.186	4.371	7696.693	0.020	B-	-2300.328	6.257	222	015373.350	4.691
44	133	89	222	Ac	-a	16620.514	4.564	7682.807	0.021	B-	-581.194	11.129	222	017842.854	4.899
44	133	89	222	Acm	-a	16698.974	20.898	78.460	20.795						
42	132	90	222	Th	-a	17201.708	10.152	7676.665	0.046	B-	-4861.322	87.192	222	018466.792	10.898
40	131	91	222	Pa	-a	22063.030	86.599	7651.243	0.390	B-	-2209.613	101.008	222	023685.635	92.967
38	130	92	222	U	-a	24272.643	51.994	7637.766	0.234	B-	-7002.693	64.429	222	026057.752	55.817
36	129	93	222	Np	-a	31275.336	38.050	7602.698	0.171	B-	-3784#	302#	222	033575.452	40.848
34	128	94	222	Pu	x	35060#	300#	7582#	1#	B-	*		222	037638#	322#
0 57	140	83	223	Bi	x	32240#	400#	7636#	2#	B-	5161#	445#	223	034611#	429#
55	139	84	223	Po	x	27079#	196#	7655#	1#	B-	3651#	196#	223	029070#	210#
53	138	85	223	At	x	23428.008	13.972	7668.056	0.063	B-	3038.270	16.013	223	025151.000	15.000
51	137	86	223	Rn		20389.738	7.822	7678.172	0.035	B-	2005.312	8.010	223	021889.283	8.397
49	136	87	223	Fr		18384.426	1.726	7683.656	0.008	B-	1149.105	0.848	223	019736.492	1.853
47	135	88	223	Ra		17235.322	1.904	7685.301	0.009	B-	-589.886	6.931	223	018502.878	2.043
45	134	89	223	Ac	-a	17825.208	6.898	7679.147	0.031	B-	-1558.855	10.457	223	019136.146	7.404
43	133	90	223	Th	-a	19384.062	7.861	7668.649	0.035	B-	-2952.268	76.031	223	020809.645	8.438
41	132	91	223	Pa	-a	22336.330	75.623	7651.901	0.339	B-	-3707.642	95.923	223	023979.035	81.184
39	131	92	223	U	-a	26043.973	59.043	7631.767	0.265	B-	-4615.129	101.746	223	027959.353	63.385
37	130	93	223	Np	-a	30659.101	82.863	7607.563	0.372	B-	-5461#	311#	223	032913.897	88.956
35	129	94	223	Pu	x	36121#	300#	7580#	1#	B-	-6579#	424#	223	038777#	322#
33	128	95	223	Am	x	42700#	300#	7547#	1#	B-	*		223	045840#	322#
0 58	141	83	224	Bi	x	37070#	400#	7616#	2#	B-	7159#	445#	224	039796#	429#
56	140	84	224	Po	x	29910#	196#	7644#	1#	B-	2199#	197#	224	032110#	210#
54	139	85	224	At	x	27711.018	22.356	7650.735	0.100	B-	5265.920	24.415	224	029749.000	24.000
52	138	86	224	Rn		22445.098	9.814	7670.751	0.044	B-	696.484	14.875	224	024095.802	10.536
50	137	87	224	Fr	x	21748.614	11.178	7670.368	0.050	B-	2921.302	11.293	224	023348.096	12.000
50	137	87	224	Frx	IT	21849#	101#	100#	100#						
48	136	88	224	Ra		18827.312	1.605	7679.917	0.007	B-	-1406.655	4.043	224	020211.949	1.722
46	135	89	224	Ac	-a	20233.967	3.988	7670.145	0.018	B-	239.724	10.335	224	021722.055	4.281
44	134	90	224	Th	-a	19994.243	9.536	7667.722	0.043	B-	-3866.825	12.134	224	021464.701	10.237

42	133	91	224	Pa	-a	23861.068	7.504	7646.967	0.034	B-	-1880.365	16.971	224	025615.908	8.055
40	132	92	224	U	-a	25741.433	15.223	7635.080	0.068	B-	-6291.037	32.687	224	027634.563	16.342
38	131	93	224	Np		32032.470	28.925	7603.502	0.129	B-	-3248#	301#	224	034388.269	31.052
36	130	94	224	Pu	x	35280#	300#	7586#	1#	B-	-7980#	500#	224	037875#	322#
34	129	95	224	Am	x	43260#	400#	7546#	2#	B-	*		224	046442#	429#
0 57	141	84	225	Po	x	34580#	300#	7626#	1#	B-	4280#	424#	225	037123#	322#
55	140	85	225	At	x	30300#	300#	7641#	1#	B-	3765#	300#	225	032528#	322#
53	139	86	225	Rn		26534.143	11.140	7654.358	0.050	B-	2713.319	16.346	225	028485.572	11.958
51	138	87	225	Fr		23820.825	11.963	7662.940	0.053	B-	1826.380	12.048	225	025572.705	12.842
49	137	88	225	Ra		21994.445	1.731	7667.580	0.008	B-	355.776	4.838	225	023612.006	1.858
47	136	89	225	Ac		21638.668	4.670	7665.685	0.021	B-	-670.427	6.577	225	023230.064	5.013
45	135	90	225	Th	-a	22309.096	4.979	7659.228	0.022	B-	-2046.261	82.004	225	023949.798	5.345
43	134	91	225	Pa	-a	24355.357	81.859	7646.656	0.364	B-	-3015.700	82.400	225	026146.549	87.879
41	133	92	225	U	-a	27371.057	9.432	7629.776	0.042	B-	-4246.518	92.101	225	029384.037	10.126
39	132	93	225	Np	-a	31617.576	91.617	7607.425	0.407	B-	-4683#	314#	225	033942.861	98.354
37	131	94	225	Pu	x	36300#	300#	7583#	1#	B-	-6090#	500#	225	038970#	322#
35	130	95	225	Am	x	42390#	400#	7553#	2#	B-	*		225	045508#	429#
0 58	142	84	226	Po	x	37549#	401#	7614#	2#	B-	2889#	500#	226	040310#	430#
56	141	85	226	At	x	34660#	300#	7624#	1#	B-	5913#	300#	226	037209#	322#
54	140	86	226	Rn		28747.194	10.477	7646.411	0.046	B-	1226.654	12.190	226	030861.380	11.247
52	139	87	226	Fr		27520.539	6.230	7648.377	0.028	B-	3850.867	6.462	226	029544.512	6.688
50	138	88	226	Ra		23669.673	1.714	7661.954	0.008	B-	-641.260	3.270	226	025410.437	1.840
48	137	89	226	Ac		24310.932	2.985	7655.655	0.013	B-	1113.259	4.522	226	026098.858	3.205
46	136	90	226	Th		23197.674	4.399	7657.119	0.019	B-	-2834.643	11.961	226	024903.725	4.723
44	135	91	226	Pa	-a	26032.316	11.157	7641.115	0.049	B-	-1295.150	15.675	226	027946.839	11.977
42	134	92	226	U	-a	27327.467	11.012	7631.923	0.049	B-	-5488.079	102.649	226	029337.240	11.822
40	133	93	226	Np	-a	32815.546	102.056	7604.177	0.452	B-	-2814#	225#	226	035228.935	109.561
38	132	94	226	Pu	x	35630#	200#	7588#	1#	B-	-7340#	361#	226	038250#	215#
36	131	95	226	Am	x	42970#	300#	7552#	1#	B-	*		226	046130#	322#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY			ATOMIC MASS	V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 59	143	84	227	Po	x	42281#	401#	7596#	2#	B-	4850#	500#	227	045390#	430#
57	142	85	227	At	x	37430#	300#	7613#	1#	B-	4544#	300#	227	040183#	322#
55	141	86	227	Rn		32885.835	14.091	7630.051	0.062	B-	3203.389	15.276	227	035304.393	15.127
53	140	87	227	Fr		29682.445	5.898	7640.716	0.026	B-	2502.884	6.148	227	031865.413	6.332
51	139	88	227	Ra	-n	27179.561	1.735	7648.296	0.008	B-	1327.948	2.262	227	029178.457	1.862
49	138	89	227	Ac		25851.613	1.721	7650.699	0.008	B-	44.776	0.830	227	027752.846	1.847
47	137	90	227	Th		25806.836	1.901	7647.450	0.008	B-	-1023.687	7.248	227	027704.776	2.040
45	136	91	227	Pa	-a	26830.524	7.217	7639.494	0.032	B-	-2213.171	11.099	227	028803.750	7.747
43	135	92	227	U	-a	29043.694	8.433	7626.298	0.037	B-	-3534.040	77.442	227	031179.686	9.053
41	134	93	227	Np	-a	32577.734	76.981	7607.283	0.339	B-	-4192#	126#	227	034973.634	82.642
39	133	94	227	Pu	x	36770#	100#	7585#	0#	B-	-5410#	224#	227	039474#	107#
37	132	95	227	Am	x	42180#	200#	7558#	1#	B-	*		227	045282#	215#
0 58	143	85	228	At	x	41880#	400#	7596#	2#	B-	6637#	400#	228	044960#	429#
56	142	86	228	Rn		35243.466	17.677	7621.646	0.078	B-	1859.245	18.916	228	037835.415	18.977
54	141	87	228	Fr		33384.221	6.732	7626.369	0.030	B-	4441.332	6.952	228	035839.433	7.226
52	140	88	228	Ra	+a	28942.889	1.736	7642.417	0.008	B-	45.540	0.634	228	031071.467	1.864
50	139	89	228	Ac	-	28897.349	1.849	7639.185	0.008	B-	2124.954	2.606	228	031022.578	1.984
48	138	90	228	Th		26772.395	1.598	7645.074	0.007	B-	-2151.023	4.298	228	028741.346	1.715
46	137	91	228	Pa	-a	28923.418	4.245	7632.208	0.019	B-	-295.245	14.080	228	031050.564	4.557
44	136	92	228	U	-a	29218.663	13.426	7627.482	0.059	B-	-4605#	101#	228	031367.523	14.413
42	135	93	228	Np	-a	33824#	100#	7604#	0#	B-	-2283#	103#	228	036312#	108#
40	134	94	228	Pu	-a	36106.551	23.328	7590.409	0.102	B-	-6743#	202#	228	038761.975	25.043
38	133	95	228	Am	x	42850#	200#	7557#	1#	B-	*		228	046001#	215#
0 59	144	85	229	At	x	44890#	400#	7585#	2#	B-	5527#	400#	229	048191#	429#
57	143	86	229	Rn	x	39362.400	13.041	7605.623	0.057	B-	3693.338	13.965	229	042257.272	14.000
55	142	87	229	Fr		35669.061	4.996	7618.334	0.022	B-	3107.099	16.229	229	038292.310	5.363
53	141	88	229	Ra	x	32561.963	15.441	7628.486	0.067	B-	1872.027	19.623	229	034956.703	16.576
51	140	89	229	Ac	x	30689.936	12.109	7633.245	0.053	B-	1103.016	12.191	229	032947.000	13.000
49	139	90	229	Th		29586.920	1.408	7634.645	0.006	B-	-311.865	3.400	229	031762.863	1.512
47	138	91	229	Pa		29898.785	3.162	7629.867	0.014	B-	-1310.738	6.561	229	032097.664	3.394
45	137	92	229	U	-a	31209.523	5.841	7620.727	0.026	B-	-2590.572	101.334	229	033504.799	6.270
43	136	93	229	Np	-a	33800.094	101.171	7605.998	0.442	B-	-3593.886	117.908	229	036285.891	108.611
43	136	93	229	Npp	IT	33960#	113#	160#	50#						
41	135	94	229	Pu	-a	37393.980	60.553	7586.888	0.264	B-	-4785.911	122.378	229	040144.086	65.006
39	134	95	229	Am	-a	42179.891	106.347	7562.572	0.464	B-	*		229	045281.973	114.168
39	134	95	229	Amp	IT	42440#	227#	260#	200#						

0 58	144	86	230	Rn	x	42170#	200#	7595#	1#	B-	2683#	200#	230	045271#	215#
56	143	87	230	Fr		39486.769	6.541	7603.705	0.028	B-	4970.463	12.198	230	042390.787	7.022
54	142	88	230	Ra	x	34516.306	10.296	7621.914	0.045	B-	677.920	18.888	230	037054.776	11.053
52	141	89	230	Ac	x	33838.386	15.835	7621.460	0.069	B-	2973.740	15.856	230	036327.000	17.000
50	140	90	230	Th		30864.647	0.815	7630.988	0.004	B-	-1310.650	2.830	230	033134.559	0.874
48	139	91	230	Pa		32175.296	2.920	7621.888	0.013	B-	560.255	4.550	230	034541.599	3.135
46	138	92	230	U	-a	31615.041	4.428	7620.923	0.019	B-	-3620.291	55.166	230	033940.141	4.753
44	137	93	230	Np	-a	35235.332	54.995	7601.781	0.239	B-	-1695.507	56.850	230	037826.682	59.039
42	136	94	230	Pu	-a	36930.839	14.407	7591.007	0.063	B-	-5940#	144#	230	039646.884	15.466
40	135	95	230	Am	-a	42870#	143#	7562#	1#	B-	*		230	046023#	153#
0 59	145	86	231	Rn	x	46550#	300#	7579#	1#	B-	4469#	300#	231	049973#	322#
57	144	87	231	Fr	x	42080.575	7.731	7594.501	0.033	B-	3864.087	13.749	231	045175.353	8.300
55	143	88	231	Ra		38216.488	11.370	7607.842	0.049	B-	2453.635	17.301	231	041027.085	12.206
53	142	89	231	Ac	x	35762.853	13.041	7615.077	0.056	B-	1944.898	13.067	231	038393.000	14.000
51	141	90	231	Th		33817.955	0.825	7620.109	0.004	B-	391.474	1.460	231	036305.066	0.885
49	140	91	231	Pa		33426.481	1.537	7618.417	0.007	B-	-381.548	2.032	231	035884.801	1.650
47	139	92	231	U	-a	33808.029	2.527	7613.379	0.011	B-	-1815.811	51.179	231	036294.409	2.712
45	138	93	231	Np	-a	35623.839	51.148	7602.131	0.221	B-	-2683.398	55.690	231	038243.762	54.909
43	137	94	231	Pu	-a	38307.237	22.031	7587.128	0.095	B-	-4103#	301#	231	041124.508	23.651
41	136	95	231	Am	x	42410#	300#	7566#	1#	B-	-4860#	424#	231	045529#	322#
39	135	96	231	Cm	x	47270#	300#	7542#	1#	B-	*		231	050746#	322#
0 58	145	87	232	Fr	x	46072.834	13.972	7579.348	0.060	B-	5575.879	16.702	232	049461.219	15.000
56	144	88	232	Ra		40496.955	9.151	7600.010	0.039	B-	1342.532	15.931	232	043475.267	9.823
54	143	89	232	Ac	x	39154.423	13.041	7602.425	0.056	B-	3705.018	13.081	232	042034.000	14.000
52	142	90	232	Th		35449.405	1.027	7615.022	0.004	B-	-498.639	7.721	232	038056.499	1.102
50	141	91	232	Pa	+	35948.044	7.598	7609.501	0.033	B-	1337.103	7.428	232	038591.810	8.157
48	140	92	232	U		34610.941	1.600	7611.892	0.007	B-	-2750#	100#	232	037156.371	1.718
46	139	93	232	Np	-	37361#	100#	7597#	0#	B-	-999#	101#	232	040109#	107#
44	138	94	232	Pu	-a	38359.577	16.846	7588.990	0.073	B-	-5060#	300#	232	041180.697	18.085
42	137	95	232	Am	x	43420#	300#	7564#	1#	B-	-2912#	361#	232	046613#	322#
40	136	96	232	Cm	-a	46331#	201#	7548#	1#	B-	*		232	049739#	216#
0 59	146	87	233	Fr	x	48920.052	19.561	7569.240	0.084	B-	4585.991	21.369	233	052517.833	21.000
57	145	88	233	Ra		44334.062	8.603	7585.564	0.037	B-	3026.024	15.623	233	047594.570	9.235
55	144	89	233	Ac	x	41308.037	13.041	7595.194	0.056	B-	2573.700	13.082	233	044346.000	14.000
53	143	90	233	Th		38734.337	1.031	7602.882	0.004	B-	1242.461	1.114	233	041583.019	1.106
51	142	91	233	Pa		37491.876	0.898	7604.857	0.004	B-	571.420	1.147	233	040249.182	0.964
49	141	92	233	U		36920.456	0.855	7603.952	0.004	B-	-1030.012	50.978	233	039635.737	0.917
47	140	93	233	Np	-a	37950.468	50.973	7596.173	0.219	B-	-2100.271	74.373	233	040741.500	54.721
47	140	93	233	Npp	IT	38000#	59#	50#	30#						
45	139	94	233	Pu	-a	40050.739	54.167	7583.802	0.232	B-	-3233#	126#	233	042996.234	58.151
43	138	95	233	Am	-a	43284#	114#	7567#	0#	B-	-4009#	140#	233	046467#	123#
41	137	96	233	Cm	-a	47292.396	81.035	7546.006	0.348	B-	-5478#	247#	233	050770.472	86.994
39	136	97	233	Bk	-a	52771#	233#	7519#	1#	B-	*		233	056652#	250#

1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY			ATOMIC MASS	V/S
						(keV)		(keV)			(keV)			(micro-u)	
0 58	146	88	234	Ra	x	46930.629	8.383	7576.544	0.036	B-	2089.435	16.294	234	050382.100	9.000
56	145	89	234	Ac	x	44841.195	13.972	7582.130	0.060	B-	4223.300	14.147	234	048139.000	15.000
54	144	90	234	Th	+a	40617.895	2.216	7596.835	0.009	B-	274.088	3.172	234	043605.101	2.378
52	143	91	234	Pa	IT	40343.807	3.869	7594.663	0.017	B-	2196.308	3.896	234	043310.855	4.153
52	143	91	234	Pam	-	40422.807	2.443	79.000	3.000						
50	142	92	234	U		38147.499	0.588	7600.705	0.003	B-	-1809.846	8.321	234	040953.022	0.631
48	141	93	234	Np	-	39957.345	8.341	7589.627	0.036	B-	-392.666	10.716	234	042895.972	8.954
46	140	94	234	Pu	-a	40350.011	6.744	7584.606	0.029	B-	-4110#	160#	234	043317.516	7.240
44	139	95	234	Am	-a	44460#	160#	7564#	1#	B-	-2261#	161#	234	047730#	172#
42	138	96	234	Cm	-a	46721.080	17.040	7550.692	0.073	B-	-6673#	154#	234	050157.140	18.293
40	137	97	234	Bk	-a	53394#	153#	7519#	1#	B-	*		234	057321#	164#
0 59	147	88	235	Ra	x	51130#	300#	7561#	1#	B-	3773#	300#	235	054890#	322#
57	146	89	235	Ac	x	47357.160	13.972	7573.505	0.059	B-	3339.406	19.113	235	050840.000	15.000
55	145	90	235	Th	x	44017.754	13.041	7584.386	0.055	B-	1728.853	19.113	235	047255.000	14.000
53	144	91	235	Pa	x	42288.901	13.972	7588.414	0.059	B-	1367.552	13.983	235	045399.000	15.000
51	143	92	235	U		40921.349	0.554	7590.904	0.002	B-	-124.191	0.852	235	043930.872	0.595
49	142	93	235	Np		41045.540	1.009	7587.047	0.004	B-	-1138.884	20.499	235	044064.197	1.083
47	141	94	235	Pu	-a	42184.424	20.503	7578.871	0.087	B-	-2440.332	56.589	235	045286.839	22.011
45	140	95	235	Am	-a	44624.755	52.774	7565.158	0.225	B-	-3387#	115#	235	047906.642	56.655
43	139	96	235	Cm	-a	48012#	102#	7547#	0#	B-	-4758#	413#	235	051543#	110#
41	138	97	235	Bk	x	52770#	401#	7524#	2#	B-	*		235	056651#	430#
0 58	147	89	236	Ac	x	51220.998	38.191	7559.242	0.162	B-	4965.795	40.667	236	054988.000	41.000

56	146	90	236	Th	x	46255.203	13.972	7576.969	0.059	B-	921.248	19.760	236	049657.000	15.000
54	145	91	236	Pa	x	45333.955	13.972	7577.557	0.059	B-	2886.807	13.983	236	048668.000	15.000
52	144	92	236	U		42447.148	0.550	7586.475	0.002	B-	-932.441	50.414	236	045568.884	0.590
50	143	93	236	Np	IT	43379.589	50.414	7579.208	0.214	B-	476.585	50.389	236	046569.901	54.121
50	143	93	236	Npm	+	43439.589	6.449	60.000	50.000						
50	143	93	236	Npp	+a	43618.835	13.836	239.246	52.275						
48	142	94	236	Pu		42903.004	1.602	7577.913	0.007	B-	-3139#	119#	236	046058.266	1.720
46	141	95	236	Am	-a	46042#	119#	7561#	1#	B-	-1809#	120#	236	049428#	127#
44	140	96	236	Cm	-a	47851.482	17.597	7550.315	0.075	B-	-5690#	361#	236	051370.676	18.891
42	139	97	236	Bk	-a	53542#	361#	7523#	2#	B-	*		236	057479#	387#
0 59	148	89	237	Ac	x	54020#	400#	7550#	2#	B-	4065#	400#	237	057993#	429#
57	147	90	237	Th	x	49955.097	15.835	7563.443	0.067	B-	2427.474	20.514	237	053629.000	17.000
55	146	91	237	Pa	x	47527.624	13.041	7570.385	0.055	B-	2134.925	13.060	237	051023.000	14.000
53	145	92	237	U		45392.698	0.715	7576.092	0.003	B-	518.554	0.520	237	048731.063	0.767
51	144	93	237	Np		44874.145	0.570	7574.979	0.002	B-	-219.983	1.290	237	048174.373	0.612
49	143	94	237	Pu		45094.128	1.387	7570.750	0.006	B-	-1477#	59#	237	048410.534	1.488
47	142	95	237	Am	-a	46572#	59#	7561#	0#	B-	-2674#	95#	237	049997#	64#
45	141	96	237	Cm	-a	49246.054	74.392	7546.629	0.314	B-	-3963#	242#	237	052867.811	79.862
45	141	96	237	Cmp	IT	49446#	167#	200#	150#						
43	140	97	237	Bk	-a	53209#	230#	7527#	1#	B-	-4729#	250#	237	057122#	247#
41	139	98	237	Cf	-a	57937.312	97.297	7503.355	0.411	B-	*		237	062198.259	104.452
0 58	148	90	238	Th	+a	52521#	283#	7555#	1#	B-	1627#	284#	238	056384#	304#
56	147	91	238	Pa	x	50894.043	15.835	7558.345	0.067	B-	3581.374	15.849	238	054637.000	17.000
54	146	92	238	U		47312.669	0.658	7570.105	0.003	B-	-144.474	0.807	238	050792.236	0.706
52	145	93	238	Np	-n	47457.143	0.604	7566.211	0.003	B-	1291.450	0.455	238	050947.335	0.648
50	144	94	238	Pu		46165.692	0.604	7568.350	0.003	B-	-2258.268	58.900	238	049560.906	0.648
48	143	95	238	Am	-a	48423.961	58.903	7555.575	0.247	B-	-1021.267	60.152	238	051985.257	63.235
46	142	96	238	Cm	-a	49445.228	12.204	7547.996	0.051	B-	-4770#	256#	238	053081.632	13.101
44	141	97	238	Bk	-a	54215#	256#	7525#	1#	B-	-3062#	393#	238	058202#	275#
42	140	98	238	Cf	x	57278#	298#	7509#	1#	B-	*		238	061490#	320#
0 59	149	90	239	Th	x	56500#	400#	7540#	2#	B-	3162#	445#	239	060655#	429#
57	148	91	239	Pa	x	53337#	196#	7550#	1#	B-	2760#	196#	239	057260#	210#
55	147	92	239	U	-n	50577.605	0.680	7558.542	0.003	B-	1263.354	1.045	239	054297.289	0.730
53	146	93	239	Np		49314.251	0.850	7560.554	0.004	B-	723.469	0.807	239	052941.022	0.912
51	145	94	239	Pu		48590.781	0.545	7560.308	0.002	B-	-802.074	1.663	239	052164.346	0.585
49	144	95	239	Am	-a	49392.856	1.738	7553.679	0.007	B-	-1756.184	150.074	239	053025.409	1.865
47	143	96	239	Cm	-a	51149.039	150.068	7543.057	0.628	B-	-3101#	256#	239	054910.749	161.104
47	143	96	239	Cmp	+a	51387.678	12.142	238.639	150.558						
45	142	97	239	Bk	-a	54250#	207#	7527#	1#	B-	-3951#	239#	239	058239#	222#
45	142	97	239	Bkp	+a	54291#	207#	41.175	10.579						
43	141	98	239	Cf	-a	58201#	120#	7507#	1#	B-	-5430#	323#	239	062481#	129#
41	140	99	239	Es	x	63630#	300#	7481#	1#	B-	*		239	068310#	322#
0 58	149	91	240	Pa	x	57010#	200#	7537#	1#	B-	4304#	200#	240	061203#	215#
56	148	92	240	U		52705.997	1.211	7551.810	0.005	B-	391.303	17.013	240	056582.212	1.300
54	147	93	240	Np		52314.694	16.999	7550.181	0.071	B-	2186.813	16.996	240	056162.131	18.249
54	147	93	240	Npm		52331.648	13.045	16.953	13.668						
52	146	94	240	Pu		50127.882	0.537	7556.033	0.002	B-	-1384.775	13.788	240	053814.491	0.576
50	145	95	240	Am	+n	51512.657	13.798	7547.003	0.057	B-	-213.059	13.891	240	055301.108	14.813
48	144	96	240	Cm		51725.716	1.710	7542.855	0.007	B-	-3940#	150#	240	055529.837	1.835
46	143	97	240	Bk	-	55666#	150#	7523#	1#	B-	-2322#	151#	240	059760#	161#
46	143	97	240	Bkp	IT	55906#	180#	240#	100#						
44	142	98	240	Cf	-a	57987.382	17.998	7510.246	0.075	B-	-6238#	366#	240	062252.011	19.321
42	141	99	240	Es	-a	64225#	366#	7481#	2#	B-	*		240	068949#	393#
1N-Z	N	Z	A	EL	O	MASS EXCESS		BINDING ENERGY/A			BETA-DECAY ENERGY		ATOMIC MASS		V/S
						(keV)		(keV)			(keV)		(micro-u)		
0 59	150	91	241	Pa	x	59740#	300#	7528#	1#	B-	3543#	358#	241	064134#	322#
57	149	92	241	U	x	56197#	196#	7539#	1#	B-	1879#	220#	241	060330#	210#
55	148	93	241	Np	+	54317.678	100.001	7544.032	0.415	B-	1360.000	100.000	241	058312.422	107.355
53	147	94	241	Pu		52957.678	0.537	7546.429	0.002	B-	20.795	0.166	241	056852.402	0.576
51	146	95	241	Am		52936.883	0.558	7543.269	0.002	B-	-767.368	1.165	241	056830.078	0.599
49	145	96	241	Cm		53704.250	1.280	7536.839	0.005	B-	-2276#	165#	241	057653.881	1.373
47	144	97	241	Bk	+a	55981#	165#	7524#	1#	B-	-3345#	235#	241	060098#	178#
47	144	97	241	Bkp	+a	56032#	165#	50.832	3.215						
45	143	98	241	Cf	-a	59326#	167#	7507#	1#	B-	-4566#	285#	241	063689#	180#
45	143	98	241	Cfp	IT	59476#	195#	150#	100#						
43	142	99	241	Es	-a	63892#	231#	7485#	1#	B-	-5328#	379#	241	068591#	248#
43	142	99	241	Esp	IT	64122#	252#	230#	100#						

	41	141	100	241	Fm	x	69220#	300#	7459#	1#	B-	*		241	074311#	322#
0	58	150	92	242	U	+a	58616#	201#	7532#	1#	B-	1196#	283#	242	062927#	215#
	56	149	93	242	Np	+	57420.238	200.001	7533.390	0.826	B-	2700.000	200.000	242	061643.158	214.710
	54	148	94	242	Pu		54720.238	0.676	7541.315	0.003	B-	-750.323	0.626	242	058744.588	0.725
	52	147	95	242	Am	-n	55470.561	0.567	7534.981	0.002	B-	664.317	0.412	242	059550.093	0.608
	50	146	96	242	Cm		54806.244	0.609	7534.493	0.003	B-	-3024#	104#	242	058836.919	0.653
	48	145	97	242	Bk	IT	57830#	104#	7519#	0#	B-	-1557#	105#	242	062083#	112#
	48	145	97	242	Bkp	+a	57980.086	28.668	150#	100#						
	46	144	98	242	Cf	-a	59387.006	12.864	7509.099	0.053	B-	-5413#	257#	242	063754.570	13.810
	44	143	99	242	Es	-a	64800#	257#	7483#	1#	B-	-3599#	476#	242	069566#	276#
	42	142	100	242	Fm	x	68400#	401#	7465#	2#	B-	*		242	073430#	430#
0	59	151	92	243	U	x	62480#	300#	7518#	1#	B-	2684#	302#	243	067075#	322#
	57	150	93	243	Np	IT	59796#	32#	7526#	0#	B-	2042#	32#	243	064194#	34#
	57	150	93	243	Npp	+p	59916.398	10.022	120#	30#						
	55	149	94	243	Pu		57754.595	2.332	7531.009	0.010	B-	575.660	2.393	243	062002.105	2.503
	53	148	95	243	Am		57178.936	0.671	7530.158	0.003	B-	-5.562	1.267	243	061384.109	0.719
	51	147	96	243	Cm	-a	57184.497	1.139	7526.916	0.005	B-	-1507.628	4.506	243	061390.079	1.222
	51	147	96	243	Cmp	+a	57284.863	15.202	100.366	15.244						
	49	146	97	243	Bk	-a	58692.125	4.423	7517.492	0.018	B-	-2298.469	8.185	243	063008.584	4.747
	49	146	97	243	Bkp	+a	58690.273	5.851	-1.852	7.335						
	47	145	98	243	Cf	+a	60990.594	6.887	7504.814	0.028	B-	-3756#	207#	243	065476.092	7.393
	45	144	99	243	Es	-a	64747#	207#	7486#	1#	B-	-4568#	245#	243	069508#	222#
	43	143	100	243	Fm	-a	69315#	130#	7464#	1#	B-	*		243	074412#	140#
0	58	151	93	244	Np	x	63240#	100#	7514#	0#	B-	3444#	100#	244	067891#	107#
	56	150	94	244	Pu		59796.503	0.661	7524.854	0.003	B-	-85.195	1.304	244	064194.183	0.709
	54	149	95	244	Am	+	59881.697	1.136	7521.299	0.005	B-	1427.300	1.000	244	064285.643	1.219
	54	149	95	244	Amm	-n	59972.354	0.674	90.656	1.270						
	52	148	96	244	Cm	-a	58454.397	0.538	7523.942	0.002	B-	-2261.975	14.357	244	062753.373	0.577
	50	147	97	244	Bk	-a	60716.372	14.367	7511.465	0.059	B-	-763.205	14.567	244	065181.703	15.423
	50	147	97	244	Bkp	IT	60856#	52#	140#	50#						
	48	146	98	244	Cf		61479.578	2.481	7505.131	0.010	B-	-4547#	181#	244	066001.038	2.663
	46	145	99	244	Es	-a	66027#	181#	7483#	1#	B-	-2935#	271#	244	070883#	195#
	44	144	100	244	Fm	-a	68962#	201#	7468#	1#	B-	-6635#	425#	244	074034#	216#
	42	143	101	244	Md	-a	75597#	374#	7438#	2#	B-	*		244	081157#	402#
0	59	152	93	245	Np	x	65850#	200#	7506#	1#	B-	2681#	201#	245	070693#	215#
	57	151	94	245	Pu	-n	63168.655	13.433	7513.321	0.055	B-	1266.279	13.524	245	067814.336	14.420
	55	150	95	245	Am	+a	61902.375	1.577	7515.296	0.006	B-	895.591	1.538	245	066454.929	1.692
	53	149	96	245	Cm		61006.784	0.594	7515.758	0.002	B-	-809.539	1.485	245	065493.473	0.637
	51	148	97	245	Bk	-a	61816.323	1.511	7509.261	0.006	B-	-1571.303	2.584	245	066362.549	1.622
	51	148	97	245	Bkp	IT	61866#	30#	50#	30#						
	49	147	98	245	Cf		63387.626	2.231	7499.654	0.009	B-	-2927#	165#	245	068049.411	2.394
	47	146	99	245	Es	IT	66315#	165#	7485#	1#	B-	-3876#	256#	245	071192#	178#
	47	146	99	245	Esp	+a	66597.956	164.676	283#	15#						
	47	146	99	245	Esq	+a	66644#	194#	329#	104#						
	45	145	100	245	Fm	-a	70191#	195#	7466#	1#	B-	-5133#	325#	245	075353#	210#
	43	144	101	245	Md	-a	75323#	260#	7441#	1#	B-	*		245	080863#	279#
0	58	152	94	246	Pu		65390.962	14.919	7506.556	0.061	B-	399#	14#	246	070200.081	16.016
	56	151	95	246	Am	IT	64992#	18#	7505#	0#	B-	2371#	18#	246	069771#	19#
	56	151	95	246	Amm		65021.617	14.921	30#	10#						
	54	150	96	246	Cm		62620.237	1.019	7511.458	0.004	B-	-1350.000	60.000	246	067225.585	1.093
	52	149	97	246	Bk	-	63970.237	60.009	7502.790	0.244	B-	-122.582	60.017	246	068674.870	64.421
	50	148	98	246	Cf		64092.819	1.166	7499.111	0.005	B-	-3804.214	28.402	246	068806.467	1.252
	48	147	99	246	Es		67897.033	28.378	7480.467	0.115	B-	-2294.178	31.488	246	072890.459	30.465
	48	147	99	246	Esp	+a	68089.503	41.558	192.470	48.907						
	46	146	100	246	Fm	-a	70191.211	13.644	7467.961	0.055	B-	-5923#	260#	246	075353.360	14.647
	44	145	101	246	Md	-a	76114#	260#	7441#	1#	B-	*		246	081712#	279#
	44	145	101	246	Mdm	-a	76170#	262#	55.710	64.447						
0	59	153	94	247	Pu	x	69210#	200#	7493#	1#	B-	2058#	224#	247	074300#	215#
	57	152	95	247	Am	+	67152#	100#	7499#	0#	B-	1620#	100#	247	072091#	107#
	55	151	96	247	Cm		65532.090	3.635	7501.936	0.015	B-	38.638	6.208	247	070351.588	3.902
	53	150	97	247	Bk	-a	65493.451	5.045	7498.925	0.020	B-	-615.941	15.189	247	070310.108	5.415
	51	149	98	247	Cf	+a	66109.392	14.327	7493.264	0.058	B-	-2449.550	15.442	247	070971.348	15.380
	49	148	99	247	Es	+a	68558.943	5.762	7480.179	0.023	B-	-3115.771	7.167	247	073601.048	6.186
	47	147	100	247	Fm	+a	71674.714	4.261	7464.397	0.017	B-	-4261#	207#	247	076945.966	4.574
	47	147	100	247	Fmm	+a	71722.268	4.648	47.555	6.269						
	45	146	101	247	Md	-a	75936#	207#	7444#	1#	B-	*		247	081521#	223#
	45	146	101	247	Mdm	-a	76200#	211#	263.500	41.231						

1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 58	153	95	248	Am	+	70553#	200#	7487#	1#	B-	3170#	200#	248 075742#	215#	
56	152	96	248	Cm		67383.193	0.645	7496.768	0.003	B-	-738.305	50.003	248 072338.829	0.692	
54	151	97	248	Bk	+a	68121.498	50.007	7490.636	0.202	B-	880.984	50.259	248 073131.431	53.684	
54	151	97	248	Bkm	+	68110.513	20.623	-10.984	54.092						
54	151	97	248	Bkp	IT	68171#	71#	50#	50#						
52	150	98	248	Cf	-a	67240.513	5.029	7491.034	0.020	B-	-3061#	53#	248 072185.656	5.398	
50	149	99	248	Es	-a	70302#	52#	7476#	0#	B-	-1597#	53#	248 075472#	56#	
48	148	100	248	Fm		71898.951	8.472	7465.940	0.034	B-	-5050#	184#	248 077186.695	9.095	
46	147	101	248	Md	-a	76949#	184#	7442#	1#	B-	-3738#	290#	248 082608#	198#	
44	146	102	248	No	-a	80687#	224#	7424#	1#	B-	*		248 086621#	241#	
0 59	154	95	249	Am	x	73104#	298#	7479#	1#	B-	2363#	298#	249 078480#	320#	
57	153	96	249	Cm	-n	70741.141	0.692	7485.589	0.003	B-	892.850	0.971	249 075943.734	0.742	
55	152	97	249	Bk	+	69848.291	0.698	7486.033	0.003	B-	123.600	0.400	249 074985.220	0.748	
53	151	98	249	Cf		69724.691	0.572	7483.388	0.002	B-	-1453#	30#	249 074852.530	0.613	
51	150	99	249	Es	-a	71177#	30#	7474#	0#	B-	-2344#	31#	249 076412#	32#	
49	149	100	249	Fm		73521.542	6.151	7461.855	0.025	B-	-3659.410	164.540	249 078928.617	6.603	
47	148	101	249	Md		77180.952	164.425	7444.017	0.660	B-	-4605#	324#	249 082857.155	176.516	
47	148	101	249	Mdm	IT	77281#	192#	100#	100#						
45	147	102	249	No	-a	81786#	279#	7422#	1#	B-	*		249 087800#	300#	
0 58	154	96	250	Cm	-nn	72980.033	10.021	7478.977	0.040	B-	24.702	10.368	250 078347.283	10.757	
56	153	97	250	Bk	+a	72955.330	2.666	7475.946	0.011	B-	1781.670	2.456	250 078320.764	2.861	
56	153	97	250	Bkn	+a	73040.929	3.107	85.599	1.596						
54	152	98	250	Cf	-a	71173.661	1.037	7479.943	0.004	B-	-2055#	100#	250 076408.063	1.112	
52	151	99	250	Es	-	73229#	100#	7469#	0#	B-	-850#	100#	250 078614#	107#	
50	150	100	250	Fm		74078.327	6.330	7462.066	0.025	B-	-4403.793	10.703	250 079526.351	6.795	
48	149	101	250	Md		78482.121	8.630	7441.321	0.035	B-	-3084#	201#	250 084254.017	9.264	
48	149	101	250	Mdm	-a	78599.949	39.866	117.828	39.030						
46	148	102	250	No	-a	81566#	200#	7426#	1#	B-	*		250 087565#	215#	
0 59	155	96	251	Cm	+	76646.965	22.672	7466.727	0.090	B-	1420.000	20.000	251 082283.897	24.339	
57	154	97	251	Bk	+	75226.965	10.678	7469.268	0.043	B-	1093.000	10.000	251 080759.465	11.463	
55	153	98	251	Cf	-a	74133.965	3.744	7470.505	0.015	B-	-381.512	6.354	251 079586.081	4.019	
53	152	99	251	Es	-a	74515.477	5.146	7465.869	0.021	B-	-1443.331	15.190	251 079995.651	5.524	
51	151	100	251	Fm		75958.808	14.292	7457.001	0.057	B-	-2988.490	14.747	251 081545.130	15.342	
49	150	101	251	Md		78947.299	3.634	7441.978	0.014	B-	-3904.045	3.852	251 084753.406	3.901	
49	150	101	251	Mdp	+a	79005.388	3.914	58.089	5.294						
47	149	102	251	No		82851.343	1.278	7423.307	0.005	B-	-4978#	200#	251 088944.571	1.372	
47	149	102	251	Nom		82955.807	2.253	104.464	2.500						
45	148	103	251	Lr	x	87830#	200#	7400#	1#	B-	*		251 094289#	215#	
0 60	156	96	252	Cm	x	79056#	298#	7460#	1#	B-	531#	359#	252 084870#	320#	
58	155	97	252	Bk	+	78525#	200#	7459#	1#	B-	2500#	200#	252 084300#	215#	
56	154	98	252	Cf	-a	76025.055	0.646	7465.385	0.003	B-	-1260.000	50.000	252 081616.249	0.693	
54	153	99	252	Es	-	77285.055	50.004	7457.281	0.198	B-	465.883	50.266	252 082968.915	53.681	
52	152	100	252	Fm	-a	76819.173	5.131	7456.025	0.020	B-	-3647.945	91.430	252 082468.769	5.507	
50	151	101	252	Md	x	80467.118	91.286	7438.444	0.362	B-	-2405.297	91.756	252 086385.000	98.000	
50	151	101	252	Mdp	+a	80540.897	11.295	73.779	91.983						
48	150	102	252	No		82872.415	9.273	7425.795	0.037	B-	-5666#	185#	252 088967.192	9.955	
46	149	103	252	Lr	-a	88538#	185#	7400#	1#	B-	*		252 095050#	198#	
46	149	103	252	Lrp	+a	88706#	188#	167.626	33.694						
0 59	156	97	253	Bk	-a	80929#	359#	7451#	1#	B-	1637#	359#	253 086880#	385#	
57	155	98	253	Cf	-a	79292.007	3.603	7454.867	0.014	B-	279.562	3.667	253 085123.466	3.867	
55	154	99	253	Es	-a	79012.445	0.699	7452.880	0.003	B-	-335.062	1.078	253 084823.343	0.750	
53	153	100	253	Fm	-a	79347.507	1.152	7448.463	0.005	B-	-1828#	31#	253 085183.048	1.236	
51	152	101	253	Md	-a	81175#	31#	7438#	0#	B-	-3186#	32#	253 087145#	34#	
51	152	101	253	Mdp	IT	81235#	43#	60.000	30.000						
49	151	102	253	No		84361.060	6.854	7422.463	0.027	B-	-4162.411	164.677	253 090565.318	7.358	
47	150	103	253	Lr		88523.471	164.534	7402.918	0.650	B-	-5117#	442#	253 095033.850	176.634	
47	150	103	253	Lrm	-a	88556#	194#	33#	104#						
45	149	104	253	Rf	-a	93640#	410#	7380#	2#	B-	*		253 100527#	440#	
0 60	157	97	254	Bk	x	84393#	298#	7440#	1#	B-	3062#	298#	254 090600#	320#	
58	156	98	254	Cf	-a	81331.840	11.235	7449.264	0.044	B-	-665.636	11.555	254 087313.317	12.061	
56	155	99	254	Es	-a	81997.476	2.708	7443.563	0.011	B-	1091.630	2.286	254 088027.906	2.906	
56	155	99	254	Esm	+	82077.846	2.471	80.370	1.107						
54	154	100	254	Fm	-a	80905.846	1.451	7444.780	0.006	B-	-2550#	100#	254 086855.993	1.558	
52	153	101	254	Md	-	83456#	100#	7432#	0#	B-	-1277#	100#	254 089594#	107#	
50	152	102	254	No		84733.303	0.817	7423.552	0.003	B-	-4996.281	2.113	254 090964.937	0.876	

48	151	103	254	Lr		89729.584	1.949	7400.801	0.008	B-	-3471#	283#	254 096328.665	2.092
48	151	103	254	Lrm		89844.763	3.679	115.180	4.141					
46	150	104	254	Rf	-a	93201#	283#	7384#	1#	B-	*		254 100055#	304#
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)	V/S
0 59	157	98	255	Cf	+	84808#	200#	7438#	1#	B-	720#	200#	255 091045#	215#
57	156	99	255	Es	-a	84088.221	10.762	7437.826	0.042	B-	288.772	10.102	255 090272.414	11.553
55	155	100	255	Fm	-a	83799.450	3.778	7435.890	0.015	B-	-1046.549	6.608	255 089962.404	4.056
53	154	101	255	Md	-a	84845.999	5.433	7428.718	0.021	B-	-1965.935	15.061	255 091085.921	5.832
53	154	101	255	Mdp	IT	84856#	70#	10#	70#					
51	153	102	255	No		86811.934	14.047	7417.940	0.055	B-	-3121.204	14.077	255 093196.439	15.079
51	153	102	255	Nop	IT	86912#	71#	100#	70#					
49	152	103	255	Lr		89933.137	0.925	7402.632	0.004	B-	-4398.583	4.228	255 096547.189	0.993
49	152	103	255	Lrm		89967.091	1.812	33.953	2.011					
47	151	104	255	Rf	-a	94331.721	4.125	7382.315	0.016	B-	-5263#	283#	255 101269.262	4.428
47	151	104	255	Rfm	+a	94481.681	22.054	149.961	21.664					
45	150	105	255	Db	-a	99595#	283#	7359#	1#	B-	*		255 106919#	304#
0 60	158	98	256	Cf	-a	87041#	314#	7432#	1#	B-	-134#	330#	256 093442#	338#
58	157	99	256	Es	+	87175#	100#	7428#	0#	B-	1700#	100#	256 093586#	107#
56	156	100	256	Fm	-a	85475.242	1.994	7431.826	0.008	B-	-1971#	124#	256 091761.441	2.140
54	155	101	256	Md	IT	87447#	124#	7421#	0#	B-	-379#	124#	256 093878#	133#
54	155	101	256	Mdm	-a	87606.571	72.501	160#	100#					
54	155	101	256	Mdp	IT	87687#	124#	240#	141#					
52	154	102	256	No	-a	87825.608	7.486	7416.533	0.029	B-	-3911.401	7.715	256 094284.663	8.036
50	153	103	256	Lr	x	91737.009	1.863	7398.198	0.007	B-	-2486.028	17.935	256 098483.724	2.000
50	153	103	256	Lrp	IT	91967#	40#	230#	40#					
48	152	104	256	Rf	-a	94223.037	17.838	7385.431	0.070	B-	-6076#	188#	256 101152.585	19.150
46	151	105	256	Db	-a	100300#	187#	7359#	1#	B-	*		256 107676#	201#
0 59	158	99	257	Es	-a	89403#	411#	7422#	2#	B-	823#	411#	257 095979#	441#
57	157	100	257	Fm	-a	88580.582	3.712	7422.231	0.014	B-	-413.848	3.892	257 095095.161	3.984
55	156	101	257	Md	-a	88994.430	1.179	7417.577	0.005	B-	-1254.592	6.169	257 095539.445	1.265
53	155	102	257	No	-a	90249.023	6.110	7409.651	0.024	B-	-2419#	45#	257 096886.306	6.558
53	155	102	257	Nop	+a	90550#	121#	301#	120#					
51	154	103	257	Lr	-a	92668#	44#	7397#	0#	B-	-3202#	45#	257 099483#	47#
51	154	103	257	Lrp	IT	92818#	109#	150#	100#					
49	153	104	257	Rf		95869.751	10.695	7381.692	0.042	B-	-4284.535	164.981	257 102920.405	11.482
49	153	104	257	Rfm	-a	95941.865	9.628	72.114	10.686					
49	153	104	257	Rfn	IT	97023.865	10.426	1154.114	11.410					
47	152	105	257	Db		100154.285	164.634	7361.977	0.641	B-	*		257 107520.042	176.741
47	152	105	257	Dbm	-a	100294#	195#	140#	108#					
0 60	159	99	258	Es	x	92702#	401#	7412#	2#	B-	2286#	448#	258 099520#	430#
58	158	100	258	Fm	-a	90417#	200#	7418#	1#	B-	-1277#	200#	258 097066#	215#
56	157	101	258	Md	-a	91693.675	3.283	7409.649	0.013	B-	213#	100#	258 098437.203	3.524
54	156	102	258	No	-a	91481#	100#	7407#	0#	B-	-3304#	143#	258 098209#	107#
52	155	103	258	Lr	-a	94785#	102#	7392#	0#	B-	-1569#	103#	258 101756#	109#
52	155	103	258	Lrp	IT	95025#	143#	240#	100#					
50	154	104	258	Rf	-a	96354.329	12.913	7382.487	0.050	B-	-5238.601	15.851	258 103440.621	13.862
48	153	105	258	Db		101592.930	9.194	7359.150	0.036	B-	-3703#	413#	258 109064.490	9.870
48	153	105	258	Dbm	-a	101644.000	10.188	51.070	13.495					
46	152	106	258	Sg	-a	105296#	413#	7342#	2#	B-	*		258 113040#	443#
0 59	159	100	259	Fm	-a	93703#	283#	7407#	1#	B-	140#	300#	259 100594#	304#
57	158	101	259	Md	-a	93563#	101#	7405#	0#	B-	-515#	101#	259 100444#	108#
55	157	102	259	No	-a	94078.365	6.267	7399.975	0.024	B-	-1776#	71#	259 100997.274	6.727
55	157	102	259	Nop	IT	94308#	150#	230#	150#					
53	156	103	259	Lr	-a	95855#	71#	7390#	0#	B-	-2512#	101#	259 102904#	76#
53	156	103	259	Lrp	IT	96205#	166#	350#	150#					
51	155	104	259	Rf	-a	98367#	72#	7377#	0#	B-	-3610#	90#	259 105601#	78#
51	155	104	259	Rfp	+a	98431#	97#	63.963	65.084					
51	155	104	259	Rfq	+a	98572#	112#	205.127	86.166					
49	154	105	259	Db	-a	101976.853	53.860	7360.417	0.208	B-	-4544.861	54.625	259 109476.649	57.820
47	153	106	259	Sg	-a	106521.714	9.113	7339.849	0.035	B-	*		259 114355.757	9.783
47	153	106	259	Sgm	-a	106609.067	20.729	87.352	21.879					
0 60	160	100	260	Fm	-a	95766#	435#	7402#	2#	B-	-774#	537#	260 102809#	467#
58	159	101	260	Md	-a	96540#	316#	7396#	1#	B-	940#	374#	260 103640#	339#
56	158	102	260	No	-a	95600#	200#	7397#	1#	B-	-2667#	236#	260 102631#	215#
54	157	103	260	Lr	-a	98267#	125#	7383#	0#	B-	-883#	236#	260 105494#	134#
52	156	104	260	Rf	-a	99151#	200#	7377#	1#	B-	-4513#	205#	260 106442#	215#

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   50  155  105  260 Db   -a  103663#        42#        7357#      0#   B-  -2885#      47#     260 111287#        45#
   50  155  105  260 Dbp  IT  103763#       156#         100#    150#
   48  154  106  260 Sg   -a  106548.540     20.527     7342.559    0.079 B-  -6576#     197#     260 114384.556     22.036
   46  153  107  260 Bh   -a  113125#       196#        7314#      1#   B-     *                260 121444#       211#
0  59  160  101  261 Md   -a   98578#       509#        7391#      2#   B-    133#      547#     261 105828#       546#
   57  159  102  261 No   -a   98445#       200#        7388#      1#   B-  -1114#      283#     261 105686#       215#
   55  158  103  261 Lr   -a   99559#       200#        7381#      1#   B-  -1761#      211#     261 106881#       215#
   53  157  104  261 Rf   -a  101320.191     65.655     7371.378    0.252 B-  -2991#      128#     261 108771.693     70.483
   53  157  104  261 Rfm  IT  101390#       120#          70#    100#
   53  157  104  261 Rfp  IT  101550#       120#         230#    100#
   51  156  105  261 Db   -a  104311#       110#        7357#      0#   B-  -3698#      112#     261 111982#       118#
   51  156  105  261 Dbp  IT  104591#       228#         280#    200#
   49  155  106  261 Sg   -a  108008.367     18.423     7339.758    0.071 B-  -5071.043  180.745 261 115951.745     19.777
   47  154  107  261 Bh   -a  113079.410    179.803     7317.331    0.689 B-     *                261 121395.733    193.026
1N-Z    N    Z    A  EL    O     MASS EXCESS        BINDING ENERGY/A        BETA-DECAY ENERGY         ATOMIC MASS          V/S
                                    (keV)                (keV)                    (keV)               (micro-u)
0  60  161  101  262 Md   -a  101667#       448#        7382#      2#   B-   1576#      575#     262 109144#       481#
   58  160  102  262 No   -a  100092#       361#        7385#      1#   B-  -2017#      412#     262 107453#       387#
   56  159  103  262 Lr   -a  102109#       200#        7374#      1#   B-   -287#      300#     262 109618#       215#
   54  158  104  262 Rf   -a  102396#       224#        7370#      1#   B-  -3861#      265#     262 109926#       240#
   52  157  105  262 Db   -a  106256#       143#        7352#      1#   B-  -2123#      144#     262 114071#       154#
   52  157  105  262 Dbp  IT  106306#       159#          50#     70#
   50  156  106  262 Sg   -a  108379.064     19.969     7341.135    0.076 B-  -5958.282   26.614 262 116349.704     21.438
   50  156  106  262 Sgp  +a  109235.550    107.917      856.487  106.053
   48  155  107  262 Bh   -a  114337.346     17.593     7315.408    0.067 B-     *                262 122746.183     18.887
   48  155  107  262 Bhm  -a  114554.466     68.091      217.120   69.115
0  59  161  102  263 No   -a  103128#       490#        7376#      2#   B-   -540#      539#     263 110713#       526#
   57  160  103  263 Lr   -a  103668#       224#        7371#      1#   B-  -1087#      271#     263 111292#       240#
   55  159  104  263 Rf   -a  104755#       153#        7364#      1#   B-  -2358#      227#     263 112460#       164#
   55  159  104  263 Rfp  IT  105055#       252#         300#    200#
   53  158  105  263 Db   -a  107114#       168#        7352#      1#   B-  -3081#      193#     263 114992#       180#
   53  158  105  263 Dbp  IT  107374#       261#         260#    200#
   51  157  106  263 Sg   -a  110195#        95#        7337#      0#   B-  -4287#      319#     263 118299#       101#
   51  157  106  263 Sgm  +a  110246#        96#          50.753   18.610
   51  157  106  263 Sgp  +a  110292#       101#          96.840   34.215
   49  156  107  263 Bh   -a  114482#       305#        7318#      1#   B-  -5198#      315#     263 122901#       327#
   47  155  108  263 Hs   -a  119680.130     78.632     7294.993    0.299 B-     *                263 128481.897     84.415
   47  155  108  263 Hsm  -a  120005.130     78.632      325.000  110.454
0  60  162  102  264 No   -a  105011#       591#        7371#      2#   B-  -1354#      734#     264 112734#       634#
   58  161  103  264 Lr   -a  106365#       436#        7363#      2#   B-    300#      566#     264 114188#       468#
   56  160  104  264 Rf   -a  106065#       361#        7361#      1#   B-  -3187#      431#     264 113866#       387#
   54  159  105  264 Db   -a  109252#       236#        7346#      1#   B-  -1533#      368#     264 117287#       253#
   52  158  106  264 Sg   -a  110785#       283#        7338#      1#   B-  -5163#      323#     264 118933#       304#
   50  157  107  264 Bh   -a  115948#       157#        7315#      1#   B-  -3616#      159#     264 124475#       168#
   50  157  107  264 Bhp  IT  116278#       217#         330#    150#
   48  156  108  264 Hs   -a  119564.210     28.875     7298.372    0.109 B-     *                264 128357.452     30.998
0  59  162  103  265 Lr   -a  108233#       547#        7359#      2#   B-   -447#      655#     265 116193#       587#
   57  161  104  265 Rf   -a  108680#       361#        7354#      1#   B-  -1704#      424#     265 116673#       387#
   55  160  105  265 Db   -a  110384#       224#        7345#      1#   B-  -2412#      263#     265 118502#       240#
   53  159  106  265 Sg   -a  112796#       139#        7333#      1#   B-  -3602#      277#     265 121091#       149#
   53  159  106  265 Sgm  -a  112790#       127#          -6#    164#
   51  158  107  265 Bh   -a  116398#       239#        7316#      1#   B-  -4506#      240#     265 124958#       257#
   49  157  108  265 Hs   -a  120903.607     23.903     7296.235    0.090 B-  -5721#      439#     265 129795.354     25.660
   49  157  108  265 Hsm  -a  121133.080     23.903      229.473   21.539
   47  156  109  265 Mt   -a  126624#       439#        7272#      2#   B-     *                265 135937#       471#
0  60  163  103  266 Lr   -a  111662#       539#        7349#      2#   B-   1536#      679#     266 119874#       579#
   58  162  104  266 Rf   -a  110127#       412#        7351#      2#   B-  -2617#      500#     266 118226#       443#
   56  161  105  266 Db   -a  112744#       283#        7339#      1#   B-   -877#      374#     266 121035#       304#
   54  160  106  266 Sg   -a  113621#       245#        7332#      1#   B-  -4487#      294#     266 121977#       263#
   52  159  107  266 Bh   -a  118107#       163#        7313#      1#   B-  -3042#      165#     266 126794#       175#
   50  158  108  266 Hs   -a  121149.666     25.340     7298.224    0.095 B-  -6608.243   39.949 266 130059.509     27.203
   50  158  108  266 Hsm  +a  122253.066     93.521     1103.400   90.022
   48  157  109  266 Mt   -a  127757.909     30.884     7270.439    0.116 B-     *                266 137153.749     33.154
   48  157  109  266 Mtm  -a  128897.947     84.932     1140.038   89.433
0  59  163  104  267 Rf   -a  113443#       575#        7342#      2#   B-   -570#      686#     267 121786#       617#
   59  163  104  267 Rfp  IT  113523#       583#          80#    100#
   57  162  105  267 Db   -a  114013#       374#        7337#      1#   B-  -1792#      457#     267 122398#       402#
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55	161	106	267	Sg	-a	115805#	261#	7327#	1#	B-	-2963#	371#	267 124322#	281#	
55	161	106	267	Sgp	IT	115825#	266#	20#	50#						
53	160	107	267	Bh	-a	118769#	263#	7313#	1#	B-	-3889#	279#	267 127503#	282#	
51	159	108	267	Hs	-a	122658#	95#	7295#	0#	B-	-5119#	512#	267 131678#	102#	
51	159	108	267	Hsm	+a	122697#	98#	39.105	24.274						
49	158	109	267	Mt	-a	127777#	503#	7273#	2#	B-	-6105#	512#	267 137174#	540#	
47	157	110	267	Ds	-a	133881.805	93.594	7247.573	0.351	B-	*		267 143728.021	100.477	
0 60	164	104	268	Rf	-a	115476#	662#	7337#	2#	B-	-1574#	848#	268 123968#	711#	
58	163	105	268	Db	-a	117050#	529#	7328#	2#	B-	260#	707#	268 125658#	568#	
58	163	105	268	Dbp	+a	117196#	536#	146.150	84.333						
56	162	106	268	Sg	-a	116790#	469#	7326#	2#	B-	-3907#	605#	268 125379#	504#	
54	161	107	268	Bh	-a	120697#	382#	7309#	1#	B-	-2273#	486#	268 129574#	410#	
52	160	108	268	Hs	-a	122970#	300#	7297#	1#	B-	-6171#	371#	268 132014#	322#	
50	159	109	268	Mt	-a	129141#	218#	7271#	1#	B-	-4508#	372#	268 138639#	234#	
48	158	110	268	Ds	-a	133649#	301#	7252#	1#	B-	*		268 143478#	324#	
0 59	164	105	269	Db	-a	119148#	624#	7323#	2#	B-	-535#	724#	269 127911#	669#	
57	163	106	269	Sg	-a	119683#	368#	7318#	1#	B-	-1796#	525#	269 128485#	395#	
55	162	107	269	Bh	-a	121479#	374#	7309#	1#	B-	-3016#	396#	269 130413#	402#	
53	161	108	269	Hs	-a	124495#	131#	7294#	0#	B-	-4807#	338#	269 133651#	141#	
51	160	109	269	Mt	-a	129302#	312#	7274#	1#	B-	-5536#	313#	269 138812#	335#	
49	159	110	269	Ds	-a	134838.033	31.361	7250.143	0.117	B-	*		269 144754.575	33.667	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)			BETA-DECAY ENERGY (keV)		ATOMIC MASS (micro-u)		V/S
0 60	165	105	270	Db	-a	122397#	575#	7314#	2#	B-	976#	735#	270 131399#	617#	
58	164	106	270	Sg	-a	121422#	458#	7314#	2#	B-	-2811#	547#	270 130351#	492#	
56	163	107	270	Bh	-a	124233#	299#	7301#	1#	B-	-882#	388#	270 133370#	320#	
56	163	107	270	Bhp	IT	124923#	359#	690#	200#						
54	162	108	270	Hs	-a	125115#	248#	7295#	1#	B-	-5597#	313#	270 134317#	266#	
52	161	109	270	Mt	-a	130712#	191#	7271#	1#	B-	-3979#	195#	270 140325#	205#	
50	160	110	270	Ds	-a	134691.575	38.078	7253.726	0.141	B-	*		270 144597.346	40.878	
50	160	110	270	Dsm	-a	136083.182	59.516	1391.607	60.892						
0 59	165	106	271	Sg	-a	124616#	591#	7305#	2#	B-	-1242#	705#	271 133781#	634#	
57	164	107	271	Bh	-a	125858#	384#	7298#	1#	B-	-1832#	473#	271 135114#	412#	
55	163	108	271	Hs	-a	127690#	276#	7288#	1#	B-	-3414#	430#	271 137081#	296#	
53	162	109	271	Mt	-a	131104#	330#	7273#	1#	B-	-4849#	344#	271 140746#	354#	
51	161	110	271	Ds	-a	135952#	97#	7252#	0#	B-	*		271 145951#	104#	
51	161	110	271	Dsm	-a	136020#	98#	67.757	26.884						
0 60	166	106	272	Sg	-a	126520#	692#	7301#	3#	B-	-2257#	873#	272 135825#	743#	
58	165	107	272	Bh	-a	128778#	532#	7290#	2#	B-	-217#	737#	272 138249#	571#	
56	164	108	272	Hs	-a	128995#	510#	7286#	2#	B-	-4477#	704#	272 138482#	547#	
54	163	109	272	Mt	-a	133472#	485#	7267#	2#	B-	-2613#	645#	272 143288#	521#	
52	162	110	272	Ds	-a	136085#	424#	7255#	2#	B-	-6678#	477#	272 146094#	456#	
50	161	111	272	Rg	-a	142764#	218#	7227#	1#	B-	*		272 153263#	234#	
0 61	167	106	273	Sg	x	129920#	400#	7292#	1#	B-	-763#	767#	273 139475#	429#	
59	166	107	273	Bh	-a	130683#	655#	7286#	2#	B-	-1075#	754#	273 140294#	703#	
57	165	108	273	Hs	-a	131758#	374#	7279#	1#	B-	-3026#	565#	273 141448#	401#	
57	165	108	273	Hsp	IT	131958#	387#	200#	100#						
55	164	109	273	Mt	-a	134784#	424#	7265#	2#	B-	-3503#	447#	273 144697#	455#	
53	163	110	273	Ds	-a	138287#	142#	7250#	1#	B-	-4600#	424#	273 148457#	152#	
51	162	111	273	Rg	-a	142887#	400#	7230#	1#	B-	*		273 153396#	429#	
0 60	167	107	274	Bh	-a	133762#	578#	7278#	2#	B-	366#	744#	274 143599#	620#	
58	166	108	274	Hs	-a	133396#	469#	7276#	2#	B-	-3856#	602#	274 143207#	504#	
56	165	109	274	Mt	-a	137253#	377#	7259#	1#	B-	-1948#	542#	274 147347#	404#	
54	164	110	274	Ds	-a	139200#	389#	7249#	1#	B-	-5415#	442#	274 149438#	418#	
52	163	111	274	Rg	-a	144615#	209#	7227#	1#	B-	*		274 155251#	225#	
0 61	168	107	275	Bh	x	135780#	600#	7273#	2#	B-	-711#	844#	275 145766#	644#	
59	167	108	275	Hs	-a	136491#	593#	7268#	2#	B-	-2275#	709#	275 146529#	637#	
59	167	108	275	Hsp	IT	136751#	602#	260#	100#						
57	166	109	275	Mt	-a	138766#	387#	7257#	1#	B-	-2899#	516#	275 148971#	416#	
55	165	110	275	Ds	-a	141665#	340#	7243#	1#	B-	-3734#	561#	275 152083#	366#	
53	164	111	275	Rg	-a	145399#	446#	7227#	2#	B-	*		275 156092#	479#	
0 62	169	107	276	Bh	x	138950#	600#	7265#	2#	B-	765#	937#	276 149169#	644#	
60	168	108	276	Hs	-a	138185#	720#	7265#	3#	B-	-3117#	895#	276 148348#	773#	
58	167	109	276	Mt	-a	141303#	532#	7250#	2#	B-	-1227#	764#	276 151695#	571#	
56	166	110	276	Ds	-a	142530#	548#	7243#	2#	B-	-4847#	834#	276 153012#	588#	
54	165	111	276	Rg	-a	147377#	629#	7223#	2#	B-	-2983#	804#	276 158216#	675#	
52	164	112	276	Cn	x	150360#	500#	7209#	2#	B-	*		276 161418#	537#	

0 63	170	107	277	Bh	x	141100#	600#	7260#	2#	B-	-275#	748#	277	151477#	644#	
61	169	108	277	Hs	-a	141375#	447#	7256#	2#	B-	-1633#	799#	277	151772#	480#	
61	169	108	277	Hsm	IT	141475#	458#	100#	100#							
61	169	108	277	Hsp	IT	141995#	490#	620#	200#							
59	168	109	277	Mt	-a	143008#	662#	7247#	2#	B-	-2075#	770#	277	153525#	711#	
57	167	110	277	Ds	-a	145083#	392#	7237#	1#	B-	-3326#	611#	277	155753#	421#	
55	166	111	277	Rg	-a	148409#	469#	7222#	2#	B-	-3925#	493#	277	159324#	504#	
53	165	112	277	Cn	-a	152334#	153#	7205#	1#	B-	*		277	163538#	165#	
0 64	171	107	278	Bh	x	144370#	400#	7251#	1#	B-	1150#	500#	278	154988#	429#	
62	170	108	278	Hs	x	143220#	300#	7252#	1#	B-	-2547#	652#	278	153753#	322#	
60	169	109	278	Mt	-a	145767#	579#	7240#	2#	B-	-474#	771#	278	156487#	621#	
60	169	109	278	Mtp	IT	146157#	587#	390#	100#							
58	168	110	278	Ds	-a	146241#	510#	7236#	2#	B-	-4283#	641#	278	156997#	548#	
56	167	111	278	Rg	-a	150524#	389#	7217#	1#	B-	-2321#	585#	278	161594#	417#	
54	166	112	278	Cn	-a	152845#	438#	7206#	2#	B-	-6188#	491#	278	164086#	470#	
52	165	113	278	Nh	-a	159033#	224#	7181#	1#	B-	*		278	170729#	240#	
0 63	171	108	279	Hs	x	146500#	600#	7243#	2#	B-	-1085#	900#	279	157274#	644#	
61	170	109	279	Mt	-a	147585#	671#	7237#	2#	B-	-1438#	903#	279	158439#	720#	
59	169	110	279	Ds	-a	149023#	605#	7229#	2#	B-	-2697#	737#	279	159983#	649#	
59	169	110	279	Dsp	IT	149253#	613#	230#	100#							
57	168	111	279	Rg	-a	151720#	422#	7216#	2#	B-	-3299#	578#	279	162879#	453#	
57	168	111	279	Rgp	IT	151760#	434#	40#	100#							
55	167	112	279	Cn	-a	155020#	395#	7202#	1#	B-	-4440#	718#	279	166421#	424#	
53	166	113	279	Nh	x	159460#	600#	7183#	2#	B-	*		279	171187#	644#	
0 64	172	108	280	Hs	x	148420#	600#	7239#	2#	B-	-2090#	848#	280	159335#	644#	
62	171	109	280	Mt	x	150510#	600#	7229#	2#	B-	190#	958#	280	161579#	644#	
60	170	110	280	Ds	-a	150320#	748#	7227#	3#	B-	-3556#	918#	280	161375#	803#	
58	169	111	280	Rg	-a	153877#	532#	7212#	2#	B-	-1768#	789#	280	165193#	571#	
56	168	112	280	Cn	-a	155645#	583#	7203#	2#	B-	-5595#	707#	280	167091#	626#	
54	167	113	280	Nh	x	161240#	400#	7180#	1#	B-	*		280	173098#	429#	
1N-Z	N	Z	A	EL	O	MASS EXCESS (keV)		BINDING ENERGY/A (keV)		BETA-DECAY ENERGY (keV)			ATOMIC MASS (micro-u)			V/S
0 63	172	109	281	Mt	x	152400#	600#	7225#	2#	B-	-873#	776#	281	163608#	644#	
61	171	110	281	Ds	-a	153273#	493#	7220#	2#	B-	-2060#	918#	281	164545#	529#	
61	171	110	281	Dsm	-a	153350#	461#	77#	237#							
61	171	110	281	Dsp	IT	153343#	503#	70#	100#							
59	170	111	281	Rg	-a	155333#	774#	7209#	3#	B-	-2605#	870#	281	166757#	831#	
57	169	112	281	Cn	-a	157938#	397#	7197#	1#	B-	-3872#	498#	281	169553#	427#	
55	168	113	281	Nh	x	161810#	300#	7181#	1#	B-	*		281	173710#	322#	
0 64	173	109	282	Mt	-a	155455#	447#	7218#	2#	B-	665#	538#	282	166888#	480#	
62	172	110	282	Ds	x	154790#	300#	7217#	1#	B-	-2952#	660#	282	166174#	322#	
60	171	111	282	Rg	-a	157742#	588#	7204#	2#	B-	-1074#	804#	282	169343#	631#	
58	170	112	282	Cn	-a	158816#	548#	7197#	2#	B-	-4916#	678#	282	170496#	588#	
56	169	113	282	Nh	-a	163732#	400#	7177#	1#	B-	*		282	175773#	430#	
0 63	173	110	283	Ds	x	157830#	500#	7210#	2#	B-	-1550#	843#	283	169437#	537#	
61	172	111	283	Rg	-a	159380#	678#	7201#	2#	B-	-1956#	916#	283	171101#	728#	
59	171	112	283	Cn	-a	161336#	615#	7192#	2#	B-	-3226#	754#	283	173201#	660#	
57	170	113	283	Nh	-a	164562#	437#	7177#	2#	B-	*		283	176665#	469#	
0 64	174	110	284	Ds	x	159460#	500#	7207#	2#	B-	-2510#	707#	284	171187#	537#	
62	173	111	284	Rg	x	161970#	500#	7195#	2#	B-	-445#	912#	284	173882#	537#	
60	172	112	284	Cn	-a	162415#	762#	7191#	3#	B-	-4166#	931#	284	174360#	819#	
58	171	113	284	Nh	-a	166581#	533#	7173#	2#	B-	-2188#	845#	284	178833#	573#	
56	170	114	284	Fl	-a	168770#	656#	7163#	2#	B-	*		284	181182#	704#	
0 63	174	111	285	Rg	x	163730#	600#	7192#	2#	B-	-1357#	785#	285	175771#	644#	
61	173	112	285	Cn	-a	165086#	507#	7185#	2#	B-	-2682#	926#	285	177227#	544#	
61	173	112	285	Cnm	-a	165620#	464#	534#	269#							
59	172	113	285	Nh	-a	167768#	775#	7172#	3#	B-	-3155#	874#	285	180106#	832#	
57	171	114	285	Fl	-a	170922#	404#	7159#	1#	B-	*		285	183493#	433#	
0 64	175	111	286	Rg	-a	166510#	458#	7185#	2#	B-	61#	836#	286	178756#	492#	
62	174	112	286	Cn	x	166450#	700#	7183#	2#	B-	-3507#	915#	286	178691#	751#	
60	173	113	286	Nh	-a	169957#	590#	7168#	2#	B-	-1640#	806#	286	182456#	634#	
58	172	114	286	Fl	-a	171596#	549#	7159#	2#	B-	*		286	184216#	590#	
0 63	175	112	287	Cn	x	169370#	700#	7176#	2#	B-	-2085#	995#	287	181826#	751#	
61	174	113	287	Nh	-a	171455#	707#	7166#	2#	B-	-2473#	939#	287	184064#	759#	
59	173	114	287	Fl	-a	173928#	617#	7155#	2#	B-	-3819#	759#	287	186719#	663#	
57	172	115	287	Mc	-a	177747#	443#	7139#	2#	B-	*		287	190819#	475#	
0 64	176	112	288	Cn	x	170930#	700#	7174#	2#	B-	-3039#	989#	288	183501#	751#	

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   62  175  113  288 Nh    x  173970#       700#       7160#       2#    B-   -947#    1035#    288 186764#       751#
   60  174  114  288 Fl   -a  174917#       763#       7154#       3#    B-  -4740#     932#    288 187781#       819#
   58  173  115  288 Mc   -a  179656#       536#       7135#       2#    B-      *              288 192869#       575#
0 63  176  113  289 Nh    x  175550#       500#       7158#       2#    B-  -1915#     715#    289 188461#       537#
   61  175  114  289 Fl   -a  177465#       511#       7149#       2#    B-  -3217#     929#    289 190517#       548#
   61  175  114  289 Flm  -a  178215#       467#        750#     282#
   59  174  115  289 Mc   -a  180683#       776#       7135#       3#    B-  -3765#     925#    289 193971#       834#
   57  173  116  289 Lv   -a  184447#       503#       7119#       2#    B-      *              289 198012#       540#
0 64  177  113  290 Nh   -a  178315#       469#       7152#       2#    B-   -416#     843#    290 191429#       503#
   62  176  114  290 Fl   -a  178731#       700#       7147#       2#    B-  -4061#     917#    290 191875#       752#
   60  175  115  290 Mc   -a  182792#       592#       7131#       2#    B-  -2226#     809#    290 196235#       635#
   58  174  116  290 Lv   -a  185018#       552#       7120#       2#    B-      *              290 198625#       593#
0 63  177  114  291 Fl    x  181500#       700#       7141#       2#    B-  -2680#    1015#    291 194848#       751#
   61  176  115  291 Mc   -a  184180#       735#       7129#       3#    B-  -3063#     964#    291 197725#       789#
   59  175  116  291 Lv   -a  187243#       623#       7116#       2#    B-  -4409#     863#    291 201013#       669#
   57  174  117  291 Ts   -a  191652#       597#       7098#       2#    B-      *              291 205747#       640#
0 62  177  115  292 Mc    x  186600#       700#       7124#       2#    B-  -1533#    1035#    292 200323#       751#
   60  176  116  292 Lv   -a  188133#       763#       7116#       3#    B-  -5479#    1014#    292 201969#       819#
   58  175  117  292 Ts   -a  193611#       669#       7095#       2#    B-      *              292 207850#       718#
0 61  177  116  293 Lv   -a  190568#       515#       7111#       2#    B-  -3860#     933#    293 204583#       553#
   61  177  116  293 Lvm  -a  191287#       470#        720#     294#
   59  176  117  293 Ts   -a  194428#       778#       7095#       3#    B-  -4365#    1053#    293 208727#       835#
   57  175  118  293 Og   -a  198792#       709#       7078#       2#    B-      *              293 213412#       761#
0 60  177  117  294 Ts   -a  196397#       593#       7092#       2#    B-  -2914#     811#    294 210840#       637#
   58  176  118  294 Og   -a  199310#       553#       7079#       2#    B-      *              294 213968#       594#
0 59  177  118  295 Og   -a  201368#       655#       7076#       2#    B-      *              295 216177#       703#
1 High Precision Masses:
       1  n          8071.318062   0.000440     1008664.915904    0.000473
       1 H           7288.971064   0.000013     1007825.031898    0.000014
       2 H          13135.722895   0.000015     2014101.777844    0.000015
       3 H          14949.810898   0.000075     3016049.281320    0.000081
       3 He         14931.218878   0.000056     3016029.321967    0.000060
       4 He          2424.915869   0.000147     4002603.254130    0.000158
       6 Li         14086.880440   0.001444     6015122.887416    0.001550
      12 Cxm            0.000000   0.000010    12000000.000000    0.000000
      13 C           3125.009331   0.000235    13003354.835337    0.000252
      14 N           2863.416831   0.000224    14003074.004251    0.000241
      15 N            101.438093   0.000582    15000108.898266    0.000625
      16 O          -4737.002171   0.000297    15994914.619257    0.000319
      17 O           -808.764209   0.000645    16999131.755954    0.000692
      18 O           -782.816339   0.000642    17999159.612136    0.000690
      19 F          -1487.445117   0.000823    18998403.162068    0.000883
      20 Ne         -7041.932166   0.001537    19992440.175255    0.001650
      23 Na         -9529.853522   0.001811    22989769.281955    0.001944
      28 Si        -21492.797108   0.000514    27976926.534422    0.000552
      29 Si        -21895.081543   0.000562    28976494.664340    0.000604
      31 P         -24440.544423   0.000746    30973761.997677    0.000800
      32 S         -26015.537138   0.001314    31972071.173537    0.001411
      33 S         -26585.858301   0.001344    32971458.908616    0.001443
1
 USE of ARRAYS :
     4065 / 4450 masses (total)           0 /    50 stand. added in Ph4
        5 /   20 option cards            18 /    29 secondaries in CHAIN
    16719 /17500 data in N4            2747 /  3300 secondaries in CHAIN
 NORMAL END OF PHASE 4                                   time is    0.


 Programs used  ph1cd   ph2bs   ph3bs   ph4dk
     Data used  qflgy.data
                mflgy.data

 Inverted Matrix Saved in: a0dsskgy.inv

 Ending Job  a0dsskgy.output  on
The current date is: Wed 06/23/2021
Enter the new date: (mm-dd-yy)
```

```
The current time is:  9:04:49.73
Enter the new time:
```

a0p4kqgy.output:

```
1BEGINNING PHASE 4 OF ATOMIC MASS ADJUSTMENT              time is    0.
0OPTIONS FOR PHASE 4
                     PHASE 4 OPTIONS
                     START FROM INVERTED
                     PUBLICATION 30
                     LINES 64
                     C INPUTAB,COMBINED
                     C INPUTAB,COMBINED,N
                     C MASSTAB,SAVE
                     C MASSTAB,80
                     C MASSTAB
                     C TABLE 1
                     C TABLE 2
                     C TABLE 5
                     C TABLE 6
                     C TABLE 7
                     C ------------------
                     LINES 85
                     ANALYSIS
                     C INVERSION ERROR
                     C MASSTAB
                     INPUTAB,COMBINED
                     C TABLE 1
                     C TABLE 2
                     C TABLE 3
                     C TABLE 4
                     C TABLE 6
                     C TABLE 7
                     C FILIATIONS
                     END OPTIONS
0READING FILES FROM TAPE
 FILE  1     20984 RECORDS
 FILE  2      2750 RECORDS
 FILE  3    869221 RECORDS
 FILE  4      1318 RECORDS
 FILE  8         2 RECORDS
0SYSTEM THAT HAS BEEN SOLVED:
    2240 equations in1318 unknowns
 LENGTH OF INVERTED MATRIX  869221
           should be within 1005000 (dimension statement)
0  Xo  0.9314941024
       0.0000000003
0  Standard Masses              keV                                micro-u
    120060                 0.00000     0.000                 0.00000     0.000
0 Inversion Error     0.3542D-10  for nucl 1870750


    Origins not Used :
              14
              28
              29
              31
              34
              35
              39
0
 Total experimental ground states   exp.gs = 2569
 Total systematical ground states   sys.gs =  988
 Total experimental excited isomers exp.m  =  420
 Total systematical excited isomers sys.m  =   88
0Starting next table                                      time is    0.
0Developping K-Matrix  start                              time is    0.
```

```
 Developping K-Matrix  end                               time is    0.
 Develop. invA-Matrix  start                             time is    0.
0

 Variances and Covariances (in nano-amu**2)

              n              H              D              3H             3He             4He

           0.223271
          -0.000128       0.000196
           0.000161       0.000068       0.000229
          -0.000064       0.000339       0.000275       0.006483
          -0.000088       0.000358       0.000270       0.003050       0.003656
          -0.000000       0.000000       0.000000       0.000000       0.000000       0.025069


0

 Variances and Covariances (in nano-amu**2)   (extended version)

          n              H              D             4He            28Si            40Ar           107Ag           109Ag           133Cs

      0.223271
     -0.000128       0.000196
      0.000161       0.000068       0.000229
     -0.000000       0.000000       0.000000       0.025069
     -0.000469       0.000781       0.000313       0.000000       0.304901
      0.000342       0.000701       0.001040       0.000000       0.012927       5.476979
      0.145964       0.001985       0.000958       0.000048       0.204749       0.412610 6538069.000000
     -0.267245       0.002270       0.000643       0.000001       0.200178       0.267100      14.112388 1907676.875000
     -0.002353       0.003462       0.001345       0.000000       0.299195       0.244267       4.776086      13.343480      73.914391

  0.22327100
 -0.12807564E-03 0.19583639E-03
  0.16123008E-03 0.67755122E-04 0.22912765E-03
 -0.86099945E-08 0.97790484E-10 0.29770190E-10 0.25069432E-01
 -0.46876646E-03 0.78095536E-03 0.31332503E-03 0.91564791E-08 0.30490100
  0.34243325E-03 0.70083450E-03 0.10400431E-02 0.46643507E-08 0.12927094E-01  5.4769793
  0.14596391      0.19854798E-02 0.95766503E-03 0.48458594E-04 0.20474884      0.41260985      6538069.0
 -0.26724502      0.22695153E-02 0.64289069E-03 0.67136784E-06 0.20017818      0.26709974      14.112388      1907676.9
 -0.23528764E-02 0.34623174E-02 0.13448374E-02 0.18968557E-06 0.29919472      0.24426657      4.7760859      13.343480      73.914391


0

 Variances and Covariances (in nano-amu**2)   (extended version 2)

          n              H              D             4He             13C             14N             15N             16O            28Si

      0.223271
     -0.000128       0.000196
      0.000161       0.000068       0.000229
     -0.000000       0.000000       0.000000       0.025069
     -0.000123       0.000214       0.000091       0.000000       0.063406
     -0.000251       0.000409       0.000159       0.000000       0.055803       0.058042
     -0.000128       0.000393       0.000265       0.000000       0.009958       0.009448       0.390416
     -0.000501       0.000821       0.000322       0.000000       0.045852       0.047347       0.011367       0.101771
     -0.000469       0.000781       0.000313       0.000000       0.072213       0.066225       0.041849       0.075974       0.304901


0

 Variances and Covariances (in nano-amu**2)   (extended version 3)

          n              H              D              3H             3He             16O            20Ne            23Na            28Si

      0.223271
```

```
   -0.000128    0.000196
    0.000161    0.000068    0.000229
   -0.000064    0.000339    0.000275    0.006483
   -0.000088    0.000358    0.000270    0.003050    0.003656
   -0.000501    0.000821    0.000322    0.001449    0.001525    0.101771
    0.000315    0.000326    0.000641    0.000970    0.000970    0.004583    2.722009
    0.000046    0.000001    0.000000    0.000002    0.000002    0.000017    0.000027    3.780717
   -0.000469    0.000781    0.000313    0.001384    0.001456    0.075974    0.004877    0.000057    0.304901


0Calc. invA*tK         start                          time is    0.
 Calc. R = invA*tK*W   start                          time is   27.
 Calc. F = R(*)tK      start                          time is   27.
 Calc. Sig.=Proj(F)    start                          time is   27.
 End of Signif Routine                                time is   27.
1                                            A T O M I C   M A S S   A D J U S T M E N T
0                                                     DATE 23 Jun 2021 TIME 09:05
0                                                            A=   0 TO 295
0
```

```
                                              ADJUSTED INPUT DATA LIST
                                                    for analysis

  pi+                          140078.55     0.33   140081.390    0.180    8.6  Z                          88PaDG
  pi+                          140078.9      0.7    140081.390    0.180    3.6  Z                          92PaDG
  pi+                          140080.95     0.35   140081.390    0.180    1.3  Z                    m     94PaDG
  pi+                          140080.95     0.35   140081.390    0.180    1.3  Z                    m     98PaDG,W
  pi+                          140081.18     0.35   140081.390    0.180     .6  Z                    h     02PaDG,W
  pi+                          140081.18     0.35   140081.390    0.180     .6  Z                    g     06PaDG,*
  pi+                          140081.39     0.18   140081.390    0.180     .0  1   100 100   pi+G       20PaDG,*
  pi+(2B+)pi-                    1021.998    0.001    1021.99800  0.00100  -.0  Z                    g     88CoTa
  pi+(2B+)pi-                    1021.998    0.001    1021.99800  0.00100  -.0  1   100 100   pi-G       20PaDG,*
 *pi+                         Conventionally! This is M=139569.95(0.35) + m(e-)                m     AHW973*W
 *pi+                         Conventionally! This is M=139570.18(0.35) + m(e- )               h     GAu031*W
 *pi+                         By convention! This is M=139570.18(0.35) keV + m(e- )            g     GAu06a**
 *pi+                         By convention! This is M=139570.39(0.18) keV + m(e- )            G     WgM20a**
 *pi+(2B+)pi-                 By convention = 2*m(e-).                                         G     WgM20a**
 *pi+(2B+)pi-                 pi+, pi- should have same mass, with relative difference determined   G     20PaDG**
 *                             ~ as $2(5)*10^{-4}$                                               G     20PaDG**


  H12-C                         93902.7      0.4      93900.38277  0.00017  -2.3  U                hM17 2.5 66Be10
  H12-C                         93900.66     0.48     93900.38277  0.00017   -.2  U                hA2  2.5 70St25
  H12-C                         93900.32     0.12     93900.38277  0.00017    .3  U                hB07 1.5 71Sm01
  H12-C                         93900.391    0.012    93900.38277  0.00017   -.3  U                MWA1 2.5 95Va38
  H12-C                         93900.3804   0.0084   93900.38277  0.00017    .3  U                mMI1 1.0 95Di08,W
  H12-C                         93900.369    0.005    93900.38277  0.00017   2.8  Z                mST1 1.0 95Be.C,W
  H12-C                         93900.381    0.008    93900.38277  0.00017    .2  Z                MST2 1.0 99Ca.B,W
  H12-C                         93900.3865   0.0017   93900.38277  0.00017   -.9  U                GWA1 2.5 01Va33
```

```
 H12-C                               93900.3860    0.0042  93900.38277   0.00017   -.8   U                HST2 1.0 02Be64,G
 H12-C                               93900.38272   0.00040 93900.38277   0.00017    .1o  o                GMZ3 1.0 17He14
 H12-C                               93900.38292   0.00036 93900.38277   0.00017   -.4   1     22  22   1H GMZ3 1.0 19He19
 n-H                                   839.8837  999.9       839.88401   0.00047    .0   1      0   0   1 n h    2.5 ******,G
 n(B-)1H                               782        13         782.34700   0.00044    .0   U                h        51Ro50
*H12-C                             From ratio CH4+/C+       =1.335957033780(230)                                   AHW932*W
*H12-C                             Fig. 6: M(H+)=7276.46548(0.00040); provisional                     m        AHW966*W
*H12-C                             M(H+)=7276.46645(0.00070)                                          M        99Ca.B*W
*H12-C                             M(H+)=7276.46686(0.00035) + 548.57991 - 0.0146                     h        GAu104*G
*n-H                               Important: for drawing the connection 1H(n,g)2H Delete from publ.****   m        GAu115*G


 D6-C                                84610.56      0.12    84610.66706   0.00009    .4   U                hA2  2.5 70St25
 D6-C                                84610.62      0.09    84610.66706   0.00009    .3   U                hB07 1.5 71Sm01
 D6-C                                84611.60      0.34    84610.66706   0.00009  -1.1   U                hJ5  2.5 72Ka57,*
 D6-C                                84611.47      0.40    84610.66706   0.00009   -.8   U                hJ6  2.5 76Ka50
 D6-C                                84610.644     0.005   84610.66706   0.00009   1.8C  C                hWA1 2.5 92Va.A
 D6-C                                84610.584     0.078   84610.66706   0.00009    .4   U                hOH1 2.5 93Ma.A
 D6-C                                84610.662     0.007   84610.66706   0.00009    .3o  o                hWA1 2.5 93Va.C
 D6-C                                84610.6616    0.0067  84610.66706   0.00009    .3o  o                HWA1 2.5 95Va38
 D6-C                                84610.6710    0.0054  84610.66706   0.00009   -.7   U                GMI1 1.0 95Di08,W
 D6-C                                84610.6656    0.0036  84610.66706   0.00009    .4   U                GMI1 1.0 95Di08,W
 D6-C                                84610.66897   0.00086 84610.66706   0.00009   -.9   U                GWA1 2.5 06Va22
 D6-C                                84610.66834   0.00024 84610.66706   0.00009  -2.1F  F                KWA1 2.5 15Za13,*
 D6-C                                84610.66705   0.00010 84610.66706   0.00009    .1   1     82  82   2H GMZ3 1.0 20Ra.1,*
 n2-D                                 3228.063     9.4      3228.05396   0.00094   -.0   Z                     2.5 Correl
 H2-D                                 1547.77      0.28     1548.28595   0.00003    .7   U                hC1  2.5 64Mo.A
 H2-D                                 1548.22      0.05     1548.28595   0.00003    .5o  o                hM19 2.5 67Jo18
 H2-D                                 1548.08      0.08     1548.28595   0.00003   1.0o  o                hJ2  2.5 69Na21
 H2-D                                 1548.286     0.004    1548.28595   0.00003   -.0o  o                hB07 1.5 71Sm01
 H2-D                                 1548.222     0.063    1548.28595   0.00003    .4o  o                hJ5  2.5 72Ka57
 H2-D                                 1548.176     0.133    1548.28595   0.00003    .3o  o                hJ5  2.5 72Ka57
 H2-D                                 1548.298     0.008    1548.28595   0.00003  -1.0   U                hB08 1.5 75Sm02
 H2-D                                 1548.301     0.005    1548.28595   0.00003  -2.0   U                hB08 1.5 75Sm02
 H2-D                                 1548.190     0.023    1548.28595   0.00003   1.7   U                hJ6  2.5 76Ka50
 H2-D                                 1548.28      0.05     1548.28595   0.00003    .0   U                hM25 2.5 78Ha14
 H2-D                                 1548.302     0.012    1548.28595   0.00003   -.5   U                NOH1 2.5 93Go37
 H2-D                                 1548.2836    0.0018   1548.28595   0.00003   1.3   U                mMI1 1.0 95Di08,W
 H2-D                                 1548.290     9.4      1548.28595   0.00003   -.0   Z                     2.5 Correl
 H2-D                                 1548.28649   0.00035  1548.28595   0.00003  -1.5   U                GST2 1.0 08So20
 H2-D                                 1548.28588   0.00006  1548.28595   0.00003   1.2  -1-               GFS1 1.0 18Sm03,*
 H2-D                                 1548.28597   0.00004  1548.28595   0.00003   -.5  -1-               GFS1 1.0 20Fi05,*
 H2-D                            ave  1548.28594   0.00003  1548.28595   0.00003    .3   1     67  58   1H          average
 1H(n,g)2H                            2224.564     0.017    2224.56623   0.00044    .1   U                hBNL     80Gr02
 1H(n,g)2H                            2224.5       0.12     2224.56623   0.00044    .6   U                hMMn     80Is02
 1H(n,g)2H                            2224.561     0.009    2224.56623   0.00044    .6   U                MUtr     82Va13,Z
 1H(n,g)2H                            2224.549     0.009    2224.56623   0.00044   1.9   U                M        82Vy10,Z
 1H(n,g)2H                            2224.560     0.009    2224.56623   0.00044    .7   U                M        83Ad05,Z
 1H(n,g)2H                            2224.5756    0.008    2224.56623   0.00044  -1.2   U                HNBS     86Gr01,*
 1H(n,g)2H                            2224.5727    0.0500   2224.56623   0.00044   -.1   U                hPTc     97Ro26,*
 1H(n,g)2H                            2224.5660    0.0004   2224.56623   0.00044    .6o  o                HNBS     99Ke05,*
 1H(n,g)2H                            2224.58      0.05     2224.56623   0.00044   -.3   U                MBdn     06Fi.A,*
 1H(n,g)2H                            2224.56624   0.00044  2224.56623   0.00044   -.0   1    100 100   1 n GNBS     06De21,*
*D6-C                              For all 72*Ka*57 doublets, see also ref.                           h        72Og03**
*D6-C                              From ratio CD4+/C+       =1.671397950390(310)                               AHW932*W
*D6-C                              From ratio CD3+/C+       =1.503548462350(200)                               AHW932*W
*D6-C                              F : the other result from same paper is not trusted within error bar    K        GAu153**
*D6-C                              From freq. ratio D+/(12C6+)=1.0070527379117(85)                    G        20Ra.1**
*H2-D                              From ratio CD3+/CD2H2+    =0.999914190780(100)                              AHW932*W
*H2-D                              Uncorrected frequency ratio H3+/(HD+)=0.999487821168(19); Reconstructed  G        HWJ201**
*                                   ~ from upper limit for the mass difference between ions           G        HWJ201**
*H2-D                              From frequency ratio H2+/(2H+)=0.999231660004(19)                  G        HWJ201**
*1H(n,g)2H                         Original 2224.5890(0.0022) revised in ref.; error increased by evaluator H   90Wa22**
*1H(n,g)2H                         Original error 0.0005 increased for calibration                    M        GAu036**
*1H(n,g)2H                         More precisely, H+n-D=2388170.07(0.42) nu corr to 2388169.95(0.42) nu   k        99Ke05**
*1H(n,g)2H                         All errors in ref. increased by 20 ppm for calibration             h        06Fi.A**
*1H(n,g)2H                         AME2016=2224.56600(0.00044) recalibrated with 2010 Codata (see text)    h        WgM129**
```

*1H(n,g)2H Original 2224.56610(0.00044) recalibrated with 2018 Codata G WgM211**

3H4-C	64197.0690	0.0062	64197.12528	0.00032	3.6B	B				MWA1	2.5	93Va04,*
3H4-C	64197.1136	0.0116	64197.12528	0.00032	1.0o	o				HST2	1.0	02Bf02
3H4-C	64197.1148	0.0100	64197.12528	0.00032	1.0	U				KST2	1.0	06Na49
H D-C	21926.80973	0.00006	21926.80974	0.00002	.2	1	16	8	2H	GMZ3	1.0	20Ra.1
3He4-C	64117.2399	0.0039	64117.28787	0.00024	4.9B	B				MWA1	2.5	93Va04
3He4-C	64117.252	0.030	64117.28787	0.00024	.5	U				KWA1	2.5	93Va04,*
3He4-C	64117.294	0.011	64117.28787	0.00024	-.6o	o				HST2	1.0	01Fr18,W
3He4-C	64117.2868	0.0100	64117.28787	0.00024	.1o	o				HST2	1.0	06Na49,*
3He4-C	64117.28668	0.00017	64117.28787	0.00024	2.8B	B				KWA1	2.5	15Za13
n3-3H	9945.493	9.4	9945.46639	0.00142	-.0	Z					2.5	Correl
H3-3H	7425.834	9.4	7425.81437	0.00008	-.0	Z					2.5	Correl
n3-3He	9965.458	9.4	9965.42574	0.00142	-.0	Z					2.5	Correl
H3-3He	7445.858	0.012	7445.77373	0.00006	-2.8	U				hMZ1	2.5	91Ha31,*
H3-3He	7445.799	9.4	7445.77373	0.00006	-.0	Z					2.5	Correl
H3-3He	7445.7737	0.0001	7445.77373	0.00006	.3	1	33	26	3He	GFS1	1.0	18Sm03,*
D2-H 3H	4329.257	0.003	4329.24247	0.00008	-3.2B	B				kB08	1.5	75Sm02
3H-H D	-5877.2	0.7	-5877.52842	0.00008	-.2	U				kC1	2.5	64Mo.A
3H-H D	-5877.52837	0.00014	-5877.52842	0.00008	-.4	1	30	30	3H	GFS1	1.0	15My03
D3-3H2	10206.798	9.4	10206.77089	0.00016	-.0	Z					2.5	Correl
3He-H D	-5896.84	0.42	-5897.48777	0.00005	-.6	U				kC1	2.5	64Mo.A
3He-H D	-5897.512	0.005	-5897.48777	0.00005	3.2B	B				kB08	1.5	75Sm02
3He-H D	-5897.495	0.006	-5897.48777	0.00005	.8	U				kB09	1.5	81Sm02
3He-H D	-5897.48771	0.00014	-5897.48777	0.00005	-.5o	o				GFS1	1.0	15My03
3He-H D	-5897.48780	0.00007	-5897.48777	0.00005	.4	1	60	62	3He	GFS1	1.0	17Ha33,*
D3-3He2	10246.728	9.4	10246.68960	0.00012	-.0	Z					2.5	Correl
3H-3He	19.83	0.18	19.95935	0.00006	.3	U				hC1	2.5	64Mo.A
3H-3He	19.951	0.004	19.95935	0.00006	.8o	o				h	2.5	84Ni16,*
3H-3He	19.967	0.003	19.95935	0.00006	-1.0o	o				h	2.5	84Li24
3H-3He	19.967	0.002	19.95935	0.00006	-1.5	U				h	2.5	85Li02
3H-3He	19.948	0.003	19.95935	0.00006	1.5	U				m	2.5	85Ta.A
3H-3He	19.9570	0.0013	19.95935	0.00006	1.8	U				KST2	1.0	06Na49,G
3H-3He	19.965	9.4	19.95935	0.00006	-.0	Z					2.5	Correl
3H-3He	19.95934	0.00007	19.95935	0.00006	.2	1	82	70	3H	KFS1	1.0	15My03,G
3Li(2p)1H	6800#	2000#				2				m		S-u036
2H(n,g)3H	6257.6	0.3	6257.23006	0.00045	-1.2	U				h		69Pr06
2H(n,g)3H	6256.96	0.25	6257.23006	0.00045	1.1	U				hILn		79Br25,Z
2H(d,p)3H	4029	12	4032.66383	0.00008	.3	U				hCIT		49To23,Y
2H(d,p)3H	4034	6	4032.66383	0.00008	-.2	U				hMIT		64Sp12
2H(d,p)3H	4033.7	1.7	4032.66383	0.00008	-.6	U				hNDm		67Od01
2H(d,n)3He	3260	9	3268.90885	0.00044	1.0	U				hCIT		49To23,Y
2H(d,n)3He	3269	11	3268.90885	0.00044	-.0	U				hWis		56Do41,Y
3H(B-)3He	18.645	0.016	18.59202	0.00006	-3.3B	B				h		72Be11,*
3H(B-)3He	18.619	0.040	18.59202	0.00006	-.7	U				h		73Pi01,*
3H(B-)3He	18.607	0.013	18.59202	0.00006	-1.2o	o				h		76Tr07,G
3H(B-)3He	18.614	0.013	18.59202	0.00006	-1.7	U				h		81Lu07,*
3H(B-)3He	18.562	0.020	18.59202	0.00006	1.5	U				h		83De47,*
3H(B-)3He	18.590	0.008	18.59202	0.00006	.3	U				h		85Si07,*
3H(B-)3He	18.604	0.006	18.59202	0.00006	-2.0o	o				h		85Bo34
3H(B-)3He	18.603	0.010	18.59202	0.00006	-1.1o	o				h		86Fr09,*
3H(B-)3He	18.600	0.004	18.59202	0.00006	-2.0	U				h		87Bo07
3H(B-)3He	18.598	0.015	18.59202	0.00006	-.4o	o				h		87Bu.A
3H(B-)3He	18.603	0.004	18.59202	0.00006	-2.7B	B				k		88Ka32
3H(B-)3He	18.589	0.003	18.59202	0.00006	1.0o	o				h		89St05
3H(B-)3He	18.595	0.006	18.59202	0.00006	-.5o	o				h		91Bu12
3H(B-)3He	18.592	0.003	18.59202	0.00006	.0	U				K		91Ka41,*
3H(B-)3He	18.591	0.002	18.59202	0.00006	.5	U				K		91Ro07,*
3H(B-)3He	18.595	0.006	18.59202	0.00006	-.5	U				h		92Bu13,*
3H(B-)3He	18.589	0.003	18.59202	0.00006	1.0o	o				h		92Ot.A
3H(B-)3He	18.593	0.003	18.59202	0.00006	-.3	U				K		92Ho09,*
3H(B-)3He	18.589	0.002	18.59202	0.00006	1.5	Z				n		92St.A
3H(B-)3He	18.591	0.003	18.59202	0.00006	.3	U				K		93We03
3H(B-)3He	18.597	0.014	18.59202	0.00006	-.4	U				N		95Hi14
3H(B-)3He	18.5895	0.0025	18.59202	0.00006	1.0	U				K		95St26
3H(p,n)3He	-764.08	0.15	-763.75498	0.00044	2.1o	o				hZur		61Ry05

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 3H(p,n)3He                         -764.39      0.37      -763.75498   0.00044   1.7   U                 hNRL      64Bo10
 3H(p,n)3He                         -763.82      0.08      -763.75498   0.00044    .8   U                 hZur      64Sa12
*3H4-C                            Item preliminarily disregarded                                          M         AHW00c**
*3He4-C                           Original changed after discussion with authors                          h         AHW024**
*3He4-C                           Error estimated by ref.                                                 h         AHW024*W
*3He4-C                           Original error 0.011 replaced <-- was replaced by 0.030 in Ame2003      h         AHW024*W
*3He4-C                           Use instead the most precise difference between 3H and 3He (see below)  H         GAu104**
*H3-3He                           From 3He+/H2+=1.496441095(6) +3eV ionization                            h         AHW92c**
*H3-3He                           Uncorrected frequency ratio H3+/(3He+)=0.997536905902(14); Reconstructed G         HWJ201**
*                                  ~ from upper limit for the mass difference between ions                G         HWJ201**
*H3-3He                           We use already the 3He and 3H-3He results; only two data are independent k         GAu151**
*H3-3He                           Since 3He is superseded by 17Ha33, we can retrive this input            g         HWJ197**
*3He-H D                          Other data are related to a metastable state in 3H, not used            G         HWJ183**
*3H-3He                           Atom mass difference=ion mass difference 18.573 + 0.011 keV                       AHW   **
*                                  ~ required correction cannot be estimated                                        85Au07**
*3H-3He                           Q-=18.5898  0.0012 keV                                                  h         GAu104*G
*3H-3He                           Q-=18.59201 0.00007 keV                                                 k         GAu151*G
*3H(B-)3He                        For corrections to 72*Be*11 see ref.                                    h         82Di01**
*3H(B-)3He                        (Value to be recalibrated, error possibly reduced)                      h         AHW   *W
*3H(B-)3He                        For corrections to 73*Pi*01 and 81*Lu*07 see ref.                       h         85Au07**
*3H(B-)3He                        Result is included in 81*Lu*07                                                    76Tr07*G
*3H(B-)3He                        Error for 83*De*47 increased, see ref.                                  h         85Au07**
*3H(B-)3He                        Original value 18580(7) corr in ref.                                    h         89Re04**
*3H(B-)3He                         Finds 17 keV neutrino                                                  m         AHW96c*W
*3H(B-)3He                        As calculated from their data in ref.                                   h         89Re04**
*3H(B-)3He                        E-=18.5721(0.0030), SFS and recoil as in ref.                                     88Ka32**
*3H(B-)3He                        Replaces original 18.603(0.004)                                                   88Ka32*W
*3H(B-)3He                        E-=18.5705(0.0020), SFS and recoil as in ref.                                     89St05**
*3H(B-)3He                         Replaces Q-=18.589(0.003) of ref.                                                89St05*W
*3H(B-)3He                        E-=18.556(0.006), corrections as in ref.                                h         91Bu12**
*3H(B-)3He                        E-=18.5733(0.0002+syst), SFS and recoil as in ref.                                88Ka32**


 4He3-C                             7809.706     0.009     7809.76239   0.00047   2.5B  B                 hWA1 2.5 92Va.A
 4He3-C                             7809.7493    0.0030    7809.76239   0.00047   1.7B  B                 hWA1 2.5 95Va38
 4He3-C                             7809.7704    0.0039    7809.76239   0.00047  -2.1   U                 MST2 1.0 01Fr18
 4He3-C                             7809.7620    0.0003    7809.76239   0.00047    .5o  o                 MWA1 2.5 01Va.A
 4He3-C                             7809.7467    0.0066    7809.76239   0.00047   1.0   U                 MMZ2 2.5 01Br27
 4He3-C                             7809.76246   0.00019   7809.76239   0.00047   -.1o  o                 HWA1 2.5 04Va14
 4He3-C                             7809.76239   0.00019   7809.76239   0.00047   -.0   1    100 100   4He HWA1 2.5 06Va22
 n4-4He                            32056.449     9.4      32056.40948   0.00190   -.0   Z                      2.5 Correl
 4He-H4                           -28696.903     9.4     -28696.87346   0.00017    .0   Z                 h    2.5 Correl
 4He-H4                           -28696.8747    0.0026  -28696.87346   0.00017    .5o  o                 HST2 1.0 06Na49
 4He-H4                           -28696.8750    0.0026  -28696.87346   0.00017    .6   U                 HST2 1.0 06Na13
 D2-4He                            25600.315     0.014    25600.30156   0.00016   -.6   U                 hB08 1.5 75Sm02
 D2-4He                            25600.331     0.005    25600.30156   0.00016  -2.4   U                 hMZ1 2.5 90Ge12,*
 D2-4He                            25600.328     0.005    25600.30156   0.00016  -2.1   U                 hMZ1 2.5 92Ke06,*
 D2-4He                            25600.308     0.005    25600.30156   0.00016   -.3   U                 kBL1 4.0 01He36
 D2-4He                            25600.323     9.4      25600.30156   0.00016   -.0   Z                      2.5 Correl
 H 3H-4He                          21271.075     0.012    21271.05909   0.00018   -.9   U                 hB08 1.5 75Sm02
 3H4-4He3                          56387.373     9.4      56387.36289   0.00057   -.0   Z                      2.5 Correl
 3He4-4He3                         56307.513     9.4      56307.52548   0.00053    .0   Z                      2.5 Correl
 4H(g,n)3H                          5200      1700         1600.000   100.000   -2.1   U                 h         62Ar05
 4H(g,n)3H                          2900       500         1600.000   100.000   -2.6   U                 h         69Mi10,*
 4H(g,n)3H                          8000      3000         1600.000   100.000   -2.1   U                 h         79Me13,*
 4H(g,n)3H                          2700       600         1600.000   100.000   -1.8   U                 n         81Se11
 4H(g,n)3H                          2600       200         1600.000   100.000   -5.0B  B                 H         85Fr01,*
 4H(g,n)3H                          3500       500         1600.000   100.000   -3.8B  B                 h         86Be35,*
 4H(g,n)3H                          2600       400         1600.000   100.000   -2.5   U                 h         86Mi14,*
 4H(g,n)3H                          3000       200         1600.000   100.000   -7.0B  B                 H         87Go25,*
 4H(g,n)3H                          3800       300         1600.000   100.000   -7.3B  B                 H         90Am04,*
 4H(g,n)3H                          3100       300         1600.000   100.000   -5.0B  B                 H         91Bl05,*
 4H(g,n)3H                          2300       300         1600.000   100.000   -2.3   U                 H         95Al31,*
 4H(g,n)3H                          2670       310         1600.000   100.000   -3.5B  B                 H         03Me11
 4H(g,n)3H                          1600       100                                    2                 H         09Gu17,*
 3H(n,g)4H-1H()2H                  -5324      1600        -3824.566   100.000     .9   Z                  Tst      Test  ,G
 3He(d,p)4He                       18380        10        18353.05484   0.00016  -2.7   U                 hMex      64Ma.B
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 3He(d,p)4He               18382       15      18353.05484   0.00016  -1.9  U              hMex    64Ma.B
 3He(d,p)4He               18350.1      3.9    18353.05484   0.00016    .8  U              hNDm    67Od01
 4Li(p)3He                  3300      300       3103.000   212.132     -.7  -2-                    87Br.B
 4Li(p)3He                  2906      300       3103.000   212.132      .7  -2- q-q= -197.000  M      6Li-2
 4Li(p)3He            ave   3103.000  212.132                               2                      average
*D2-4He                   Error has to be confirmed                                                GAu936**
*4H(g,n)3H                From 7Li(pi-,t)4H reaction                                               69Mi10**
*4H(g,n)3H                From 7Li(pi-,t)4H reaction                                  h            AHW   **
*4H(g,n)3H                From 7Li(3He,3He 3He)4H reaction                                         85Fr01**
*4H(g,n)3H                From 9Be(11B,16O)4H reaction                                             86Be35**
*4H(g,n)3H                From 7Li(n,a)4H reaction                                                 86Mi14**
*4H(g,n)3H                From 9Be(pi-,dt)4H, same data in ref.                                    91Go19**
*4H(g,n)3H                From 7Li(pi-,t)4H                                                        90Am04**
*4H(g,n)3H                From 2D(t,n)4H                                                           91Bl05**
*4H(g,n)3H                From 6Li(6Li,8B)                                            h            95Al31**
*4H(g,n)3H                Fit with 3 resonances 1.6(0.1), 3.4(0.1), 6.0(0.1) MeV                   09Gu17**
*3H(n,g)4H-1H()2H         To test pre-averagings with normal data                                  GAu928*G


 5Be-u                     39870#    2150#                                  2              h   1.0 S-u103
 5H(g,2n)3H                 1800      800       1800.000    89.443      .0  U              h       68Yo06,W
 5H(g,2n)3H                11000     1500       1800.000    89.443    -6.1F F              h       81Se.A,*
 5H(g,2n)3H                 7400      700       1800.000    89.443    -8.0F F              M       87Go25,*
 5H(g,2n)3H                 5200      400       1800.000    89.443    -8.5F F              M       95Al31,*
 5H(g,2n)3H                 4200      400       1800.000    89.443    -6.0  Z              h       95Se.A,W
 5H(g,2n)3H                 1700      300       1800.000    89.443      .3  U              M       01Ko52,*
 5H(g,2n)3H                 1800      100       1800.000    89.443      .0  -2-            M       03Go11,*
 5H(g,2n)3H                 1800      200       1800.000    89.443      .0  -2-            H       04St18
 5H(g,2n)3H           ave   1800.000   89.443                               2                      average
 4He(n,g)5He                -890       50       -735.000    20.000     3.1B B              H       66La04,*
 4He(n,g)5He                -735       20                               3              H       09Ak03
 4He(p,g)5Li               -1965       50                               3                      65Ma56,*
*5H(g,2n)3H               From 3H(t,p)5H                                                           AHW   *W
*5H(g,2n)3H               From 6Li(pi-,p)5H. F : private communication by author      h            AHW   **
*5H(g,2n)3H               From 9Be(pi-,pt)5H, same data in ref.                                    91Go19**
*5H(g,2n)3H               F : probably higher state                                   h            01Ko52**
*5H(g,2n)3H               From 7Li(6Li,8B)                                            m            95Al31**
*5H(g,2n)3H               F : probably higher state                                   M            01Ko52**
*5H(g,2n)3H               From 11B+pi; PrvCom by author; without error                m            AHW956*W
*                          ~ No evidence of bound state of 5H                         m            86Be35*W
*                          ~ Theory says 3750(700, approx.)                           m            90Po.A*W
*5H(g,2n)3H               From p(6He,2He)                                             M            01Ko52**
*5H(g,2n)3H               From t(t,p)                                                 M            03Go11**
*4He(n,g)5He              Average of many reactions leading to 5He                                 AHW   **
*4He(p,g)5Li              Average of many reactions leading to 5Li                                 AHW   **


 6Li2-C                    30246.152    0.119  30245.77483   0.00310   -.8F F              kBL1 4.0 98He.B,*
 6Li2-C                    30245.575    0.034  30245.77483   0.00310   1.5  U              kBL1 4.0 01He36
 6Li2-C                    30245.7748   0.0031 30245.77483   0.00310    .0  1   100 100  6Li HFS1 1.0 10Mo30
 6B-u                      50800#    2150#                                  2              h   1.0 S-u103
 6Li-H6                   -31827.302    0.040 -31827.30397   0.00155   -.0  U              HST2 1.0 06Na13
 6Li-D3                   -27182.500    0.040 -27182.44612   0.00155    .3  U              kBL1 4.0 01He36
 4He-6Li.667               -7483.694    0.046  -7483.71171   0.00105   -.4  U              HTT1 1.0 09Br10
 6He-7Li.857                5170.947    0.057   5170.947     0.057     -.0  1   100 100  6He HTT1 1.0 12Br03,G
 6H(g,3n)3H                 2700      400       2711.959   254.127      .0  -2-                    84Al08,*
 6H(g,3n)3H                 2600      500       2711.959   254.127      .2  -2-                    86Be35,*
 6H(g,3n)3H                 2800      500       2711.959   254.127     -.2  -2-                    92Al.A,*
 6H(g,3n)3H                 2850      900       2711.959   254.127     -.2  -2-            H       08Ca22,*
 6H(g,3n)3H           ave   2711.959  254.127                               2                      average
 6Li(n,a)3H                 4794        6       4783.47174   0.00152  -1.8  U              hWin    67De15
 6Li(p,a)3He                4017       12       4019.71676   0.00145    .2  U              hCIT    49To16,Y
 6Li(p,a)3He                4021        5       4019.71676   0.00145   -.3  U              hWis    51Wi26,Y
 6Li(p,a)3He                4023        2       4019.71676   0.00145  -1.6  U              hBir    53Co02,Y
 6Li(p,a)3He                4025        6       4019.71676   0.00145   -.9o o              hMIT    64Sp12
 6Li(p,a)3He                4018.2      1.1     4019.71676   0.00145   1.4  U              MMIT    81Ro02
 6Li(d,a)4He               22396       12      22372.77160   0.00147  -1.9  U              hBir    53Co02,Y
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 6Li(d,a)4He                  22376        14        22372.77160   0.00147   -.2  U               hRic     53Ph28,Y
 6Li(d,a)4He                  22403        12        22372.77160   0.00147  -2.5  U               hMex     64Ma.B
 6Li(p,t)4Li                 -18700       300       -18897.149   212.132    -.7R  R  q-q=  197.149  Brk     65Ce02
 6He(B-)6Li                    3509.8       3.8       3505.215     0.053   -1.2  U               h        63Jo04
 6Li(p,n)6Be                  -5074        13        -5070.500     5.448     .3  -2-               CIT     67Ho01
 6Li(3He,t)6Be                -4306         6        -4306.745     5.448    -.1  -2-               CIT     66Wh01
 6Li(p,n)6Be             ave  -5070.500     5.448                               2                        average
*6Li2-C                      F : leak during the measurement                                   H        98He.B**
*6He-7Li.857                 Including electron binding energies 5.3, 24.6 eV for Li, He        h        GAu124*G
*6H(g,3n)3H                  From 7Li(7Li,8B)6H                                                         84Al08**
*6H(g,3n)3H                  From 9Be(11B,14O)6H                                                        86Be35**
*                             ~ 6H not observed in 6Li(pi-,pi+)                                         87Se.A**
*6H(g,3n)3H                  From 7Li(7Li,8B)6H                                                         92Al.A**
*                             ~ Theory says 9050(900, approx.)                                          90Po.A*W
*6H(g,3n)3H                  Symmetrized from 2910(+850--950) keV                                       08Ca22**


 7Li-H7                      -38771.7889    0.0045  -38771.78902   0.00450   -.0  1   100 100   7Li HST2 1.0 06Na13,*
 7B-u                          29712        27                                      2                 H1.0 1.0 11Ch32,*
 7Li-6Li1.167                 -1644.991     0.079    -1644.97619   0.00485    .2o  o               HTT1 1.0 09Br10
 6Li-7Li.857                   1407.954     0.013     1407.94436   0.00415   -.7  U               HTT1 1.0 09Br.A
 3He(a,g)7Be                   1586.3       0.6       1587.137     0.071     1.4  U               M        82Kr05
 7Li(p,a)4He                  17364        11        17346.24396   0.00420  -1.6  U               hCIT     51Wh05,Y
 7Li(p,a)4He                  17352         9        17346.24396   0.00420   -.6  U               hBir     53Co02,Y
 7Li(p,a)4He                  17345        13        17346.24396   0.00420    .1  U               hRic     53Fa18,Y
 7Li(p,a)4He                  17373         6        17346.24396   0.00420  -4.5C  C               hMex     64Ma.B
 7Li(p,a)4He                  17357        14        17346.24396   0.00420   -.8  U               hMIT     64Sp12
 7H(g,2n)5H                   -1100       340          100#     1000#        3.5F  F               H        08Ca22,*
 7H(g,2n)5H                     100#     1000#                                      3               h        S-u033
 7He(g,n)6He                    450        20          409.714     7.559    -2.0  -3-               HMSU     01Ch31
 7He(g,n)6He                    430        20          409.714     7.559    -1.0  -3-               M        02Me07
 7He(g,n)6He                    360        50          409.714     7.559     1.0  U               H        06Sk03
 7He(g,n)6He                    400        10          409.714     7.559     1.0  -3-               H        08De29
 7He(g,n)6He                    388        20          409.714     7.559     1.1  -3-               H        09Ak03
 7He(g,n)6He                    380        28          409.714     7.559     1.1  U               K        16Re14
 7He(g,n)6He             ave    409.714     7.559                               3                        average
 7Li(t,a)6He                   9788        30         9839.905     0.053     1.7  U               hChR     54Al35,Y
 7Li(d,3He)6He-19F()18O       -1981.09      0.42     -1980.362     0.053     1.7  U               HMSU     78Ro01,*
 6Li(n,g)7Li                   7250.0       0.5       7251.09387   0.00445   2.2  U               hUtr     68Sp01
 6Li(n,g)7Li                   7250.3       0.9       7251.09387   0.00445    .9  U               h        72Op01
 6Li(n,g)7Li                   7250.98      0.09      7251.09387   0.00445   1.3  U               hPtn     85Ko47,*
 6Li(n,g)7Li                   7249.94      0.15      7251.09387   0.00445   7.7C  C               hBdn     06Fi.A
 6Li(d,p)7Li                   5028         2         5026.52764   0.00443   -.7  U               hBir     53Co02,Y
 6Li(d,p)7Li                   5035         5         5026.52764   0.00443  -1.7  U               hMex     61Ja23
 6Li(d,p)7Li                   5024         7         5026.52764   0.00443    .4  U               hMIT     64Sp12
 6Li(t,d)7Li                    986         7          993.86381   0.00443   1.1  U               hChR     54Al35
 7Li(3He,a)6Li                13322        10        13326.52720   0.00443    .5  U               hMex     64Ma.B
 6Li(n,g)7Lii                 -3947        50        -3995.783    31.235    -1.0  1    39  39   7LiiH        69Pr04,*
 6Li(3He,d)7Be                  136         3          113.379     0.071    -7.5C  C               hMex     64Ma.B
 7Li(t,3He)7He               -11184        30       -11147.431     7.559     1.2  U               HLAl     69St02
 7Lii(IT)7Li                  11300        50        11246.877    31.235    -1.1  Z               hBrk     65De08,W
 7Lii(IT)7Li                  11280        40        11246.877    31.235     -.8  Z               hBrk     67Mc14,W
 7Lii(IT)7Li                  11200        50        11246.877    31.235      .9  Z               h        69Pr04
 7Be(e)7Li                      866         7          861.893     0.071     -.6  U               h        72Pe05
 7Li(p,n)7Be                  -1644.04      0.22     -1644.240     0.071     -.9  U               hZur     61Ry05,Z
 7Li(p,n)7Be                  -1643.68      0.26     -1644.240     0.071    -2.2  U               hWis     63Ga09,Y
 7Li(p,n)7Be                  -1644.30      0.10     -1644.240     0.071      .6  -1-               MMar     70Ro07,*
 7Li(p,n)7Be                  -1644.18      0.10     -1644.240     0.071     -.6  -1-               Auc     85Wh03,*
 7Li(p,n)7Be             ave  -1644.240     0.071    -1644.240     0.071      .0  1   100 100   7Be          average
 7Li(pi+,pi-)7B              -11870       100       -11747.450    25.150     1.2  U               H        81Se.A
 7Li(pi+,pi-)7B              -12070       120       -11747.450    25.150     2.7  Z                        IMME-4,W
 7Bei(IT)7Be                  11000        50        10981.707    31.235     -.4  -3-               H        67Ha08,W
 7Bei(IT)7Be                  10970        40        10981.707    31.235      .3  -3-               H        67Mc14,W
 7Bei(IT)7Be             ave  10981.707    31.235                               3                        average
*7Li-H7                      D_M=7016003.4256(45)--7 X 1007825.03207(10) using Ame*2003        H        06Na13**
*7B-u                        Represents 7B -> 3p + 4He, yielding M-A=27677(25) keV              H        GAu11c**
*                             ~  would best be written as : 7B(3p)4He                          h        GAu11c*G
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*7H(g,2n)5H	From 7H(g,4n)3H = 704(323), and 5H(g,2n)3H = 1800(100) keV	H	08Ca22**
*7H(g,2n)5H	F : not confirmed in later work of ref. with higher statistics	H	10Ni10**
*7H(g,2n)5H	if unstable, (g,2n) should be positive	h	GAu127*G
*7Li(d,3He)6He-19F()18O	Q-Q=0.98(0.41) to 2^+ level at 1982.07(0.09) keV in 18O	h	Ens967**
*6Li(n,g)7Li	Original 7251.02 recalibrated using 35Cl(n,g) of ref.	H	82Kr12**
*6Li(n,g)7Li	Typo 7250.02 in Ame*1986 recalib. 7249.97 in Ame*1993, 7249.98 Ame*2003	H	GAu062**
*	~ Smiletrap equiv. to 7251.10(0.04)	h	GAu062*G
*6Li(n,g)7Lii	IT=11200(50); Q rebuilt with Ame*1965	H	MMC128**
*6Li(n,g)7Lii	In 6Li+n Er=4600(50) Q=-3983(42); MMC121 yielding 11188(42) why ???	h	AHW944*W
*7Lii(IT)7Li	via 9Be(p,3He)	h	MMC121*W
*7Lii(IT)7Li	~150keV error in analysis	h	67Mc14*W
*7Lii(IT)7Li	In 9Be(p,3He)7Lii	h	AHW944*W
*7Li(p,n)7Be	T=1880.64(0.09,Z); error in Q increased	M	AHW039**
*7Li(p,n)7Be	Original T=1880.65(0.12)	h	MMC128*W
*7Li(p,n)7Be	T=1880.43(0.02,Z); error in Q increased	M	AHW039**
*7Li(pi+,pi-)7B	T=3/2, from He, Lii, Bei		AHW92c*W
*7Bei(IT)7Be	From 4He+3He	h	AHW944*W
*7Bei(IT)7Be	From 9Be(p,t)	h	AHW944*W

8Li-u		22488.2	4.0	22486.245	0.051	-.5	U				KRI1	1.0	13It01
8C-u		37606	32	37643.039	19.585	1.2	1	37	37	8C	H1.0	1.0	11Ch32,*
8He-6Li1.333		13776.88	0.72	13775.581	0.095	-1.8o	o				HTT1	1.0	08Ry03
8He-6Li1.333		13775.50	0.19	13775.581	0.095	.4	1	25	25	8He	HTT1	1.0	08Br.D
8Li-6Li1.333		2327.426	0.034	2327.437	0.051	.3o	o				HTT1	1.0	08Sm.A
8Li-6Li1.333		2327.42	0.11	2327.437	0.051	.2o	o				HTT1	1.0	08Sm03
8Li-6Li1.333		2327.42	0.11	2327.437	0.051	.2	1	21	21	8Li	HTT1	1.0	09Br10
8He-7Li1.143		15642.49	0.11	15642.463	0.095	-.2	1	75	75	8He	HTT1	1.0	12Br03,G
4He(18O,14O)8He		-37967	25	-37975.365	0.092	-.3	U				hMIT		75Ja10
4He(26Mg,22Mg)8He		-44962	30	-44999.324	0.185	-1.2	U				hBrk		74Ce05
4He(64Ni,60Ni)8He		-31818	15	-31810.558	0.379	.5	U				HPri		75Ko18
4He(64Ni,60Ni)8He		-31796	8	-31810.558	0.379	-1.8	U				HTex		77Tr07
8Be(a)4He		91.88	0.05	91.840	0.035	-.8	-3-				Zur		68Be02,*
8Be(a)4He		91.80	0.05	91.840	0.035	.8	-3-						92Wu09,*
8Be(a)4He		92.2	0.4	91.840	0.035	-.9	U				K		16Re14
8Be(a)4He	ave	91.840	0.035				3						average
6Li(t,p)8Li		790	11	801.916	0.047	1.1	U				hChR		54Al35
6Li(3He,p)8Be		16824	12	16787.457	0.035	-3.0C	C				kMex		64Ma.B
6Li(d,g)8Bej		-5216.5	3.0	-5213.384	1.965	1.0	1	43	43	8Bej	H		76No07,*
6Li(3He,n)8B		-1974.8	1.0	-1974.788	1.000	.0	1	100	100	8B	Nvl		58Du78,Y
7Li(n,g)8Li		2032.78	0.15	2032.618	0.047	-1.1	-1-				N		74Ju.A,*
7Li(n,g)8Li		2032.77	0.18	2032.618	0.047	-.8	-1-				mORn		91Ly01,Z
7Li(n,g)8Li		2032.57	0.06	2032.618	0.047	.8	-1-				MBdn		06Fi.A
7Li(d,p)8Li		-192	1	-191.948	0.047	.1	U				hWis		51Wi26,Y
7Li(d,p)8Li		-188	7	-191.948	0.047	-.6	U				hMIT		64Sp12
7Li(n,g)8Li	ave	2032.614	0.053	2032.618	0.047	.1	1	79	79	8Li			average
7Li(3He,d)8Be		11795	13	11760.929	0.036	-2.6	U				hMex		64Ma.B
8Bej(IT)8Be		27491.0	2.6	27494.316	1.966	1.3	Z						75Ro01,W
8Bej(IT)8Be		27495.2	2.4	27494.316	1.966	-.4	Z						76No07,W

*8C-u	Represents 8C -> 4p + 4He, yielding M-A=35030(30) keV	H	GAu11c**
*	~ would best be written as : 8C(4p)4He	h	GAu11c*G
*8He-7Li1.143	Including electron binding energies 5.3, 24.6 eV for Li, He	h	GAu124*G
*8Be(a)4He	AHW has 91.95(0.07), why?		GAu936*G
*8Be(a)4He	For atomic binding energy correction see ref.		67St30**
*6Li(d,g)8Bej	E(d)=6962.8(3.0) keV	H	76No07**
*7Li(n,g)8Li	PrvCom to ref.	N	74Aj01**
*8Bej(IT)8Be	From 10Be(p,t) Q=-27586.8(2.6,Z) (orig -27487.6(2.6) recal.)		AHW944*W
*8Bej(IT)8Be	From 6Li+d, Er=6962.8(3.0)		AHW944*W

9Li-6Li1.500	4105.867	0.092	4105.860	0.200	-.1o	o				HTT1	1.0	08Sm.A
9Li-6Li1.500	4105.86	0.20				2				HTT1	1.0	08Sm03
9Be-7Li1.286	-8397.39	0.10	-8397.354	0.082	.4	1	67	67	9Be	HTT1	1.0	09Ri03
9Be(p,a)6Li	2117	7	2125.626	0.077	1.2	U				hCIT		49To16,Y
9Be(p,a)6Li	2130	10	2125.626	0.077	-.4	U				hChi		51Ca37,Y
9Be(p,a)6Li	2125	4	2125.626	0.077	.2	U				hWis		51Wi26,Y
9Be(p,a)6Li	2126	2	2125.626	0.077	-.2	U				hBir		53Co02,Y

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 9Be(p,a)6Li               2144       6       2125.626    0.077   -3.1B  B             hMIT    64Sp12
 9Be(p,a)6Li               2125.4     1.8     2125.626    0.077     .1   U             mNDm    67Od01
 6Li(a,p)9Be              -2125.6     1.2    -2125.626    0.077    -.0   U             HNDm    65Br28
 6Li(a,n)9B               -3974      12      -3976.008    0.903    -.2   U             hTal    63Me08
 7Li(t,p)9Li              -2397      20      -2386.961    0.186     .5   U             h       64Mi04
 7Li(t,p)9Li              -2385.7     3.0    -2386.961    0.186    -.4   U             HMSU    75Ka18
 9Be(15N,17F)7He         -16610      30     -16574.940    7.564    1.2   U             GBer    99Bo26
 9Be(d,a)7Li               7162      10       7152.153    0.076   -1.0   U             hCIT    51Wh05,Y
 9Be(d,a)7Li               7153       3       7152.153    0.076    -.3   U             hBir    53Co02,Y
 9Be(d,a)7Li               7162       4       7152.153    0.076   -2.5   U             hMex    64Ma.B
 9Be(d,a)7Li               7157       8       7152.153    0.076    -.6   U             hMIT    64Sp12
 7Li(3He,p)9Be            11215      15      11200.902    0.076    -.9   U             hMex    64Ma.B
 9Be(p,3He)7Lii          -22499      50     -22447.779   31.235    1.0o  o             HBrk    65De08
 9Be(p,3He)7Lii          -22479      40     -22447.779   31.235     .8   1   61  61   7LiiHBrk    67Mc14
 7Be(3He,n)9C             -6287       5      -6282.073    2.135    1.0  -3-            mCIT    67Ba.A,Z
 7Be(3He,n)9C             -6275.2     3.5    -6282.073    2.135   -2.0  -3-            mCIT    71Mo01,Z
 7Be(3He,n)9C             -6285.8     3.2    -6282.073    2.135    1.2  -3- q-q=   -3.727  H        12C-3
 7Be(3He,n)9C         ave  -6282.073  2.135                              3                     average
 9He(g,n)8He                100      60       1254.825   46.816   19.2B  B             HMSU    01Ch31,*
 9He(g,n)8He               1270     100       1254.825   46.816    -.2  -1-            HBer    99Bo26
 9He(g,n)8He               2000     200       1254.825   46.816   -3.7B  B             H       07Go24
 9He(g,n)8He               1330      80       1254.825   46.816    -.9  -1-            H       10Jo06,*
 9He(g,n)8He          ave  1306.585  62.469   1254.825   46.816    -.8   1   56  56   9He          average
 9Be(g,n)8Be              -1665       1      -1664.539    0.084     .5   U             HWis    50Mo56,Y
 9Be(p,d)8Be                557       3        560.027    0.084    1.0   U             hCIT    49To16,Y
 9Be(p,d)8Be                558       5        560.027    0.084     .4   U             hChi    51Ca37,Y
 9Be(p,d)8Be                557.5     1.       560.027    0.084    2.5   U             HWis    51Wi26,Y
 9Be(p,d)8Be                560       2        560.027    0.084     .0   U             nBir    53Co02,Y
 9Be(p,d)8Be                562       4        560.027    0.084    -.5   U             hMIT    64Sp12
 9Be(p,d)8Be                559.0     1.1      560.027    0.084     .9   U             HZur    66Re02
 9Be(p,d)8Be                559.6     0.6      560.027    0.084     .7   U             HNDm    67Od01,Z
 9Be(d,t)8Be               4602      13       4592.691    0.084    -.7   U             hMIT    64Sp12
 9Be(d,t)8Be               4591.7     3.1     4592.691    0.084     .3   U             hNDm    67Od01
 9Be(3He,a)8Be            18931      13      18913.082    0.084   -1.4   U             hMex    64Ma.B
 9Be(pi-,pi+)9He         -30472     100     -30609.373   46.817   -1.4  -1-            H       87Se05
 9Be(13C,13O)9He         -50200     600     -49577.798   47.776    1.0o  o             hBer    88Bo20
 9Be(13C,13O)9He         -49470      80     -49577.798   47.776   -1.3o  o             hBer    91Bo.B
 9Be(14C,14O)9He         -34580     100     -34575.263   46.817     .0  -1-            HBer    95Bo.B
 9Be(pi-,pi+)9He      ave -30543.056  70.711 -30609.373   46.817    -.9   1   44  44   9He          average
 9Be(p,n)9B               -1850.4     1.0                                2             mWis    50Ri59,Z
 9Be(p,n)9B               -1852       3      -1850.382    0.899     .5   U             hRic    55Ma84,Z
*9He(g,n)8He          From scattering length as=-10 fm; questioned in ref.              H       10Jo06**
*9He(g,n)8He          Scattering length as=-3.17(66) fm                                 H       10Jo06**


 10B 37Cl-C 35Cl           9987.21    0.56    9986.738    0.070    -.3   U             mH38 2.5 84El05
 10Be-7Li1.429            -9334.16    0.13   -9334.215    0.087    -.4   1   44  44  10Be HTT1 1.0 09Ri03
 10B-u                    12936.862   0.016  12936.862    0.016     .0   1  100 100  10B  KMS1 1.0 16Gu02
 10C-10B                   3916.413   0.090   3916.356    0.074    -.6   1   67  67  10C  kJY1 1.0 11Er02
 7Li(t,g)10Bei            -3929.8    21.0                                2             k       73Ab10,W
 10B(n,a)7Li               2801       4       2789.908    0.015   -2.8   U             h       67De15
 7Li(a,n)10B              -2787       4      -2789.908    0.015    -.7   U             hRic    57Bi84,Y
 10B(p,a)7Be               1147       5       1145.668    0.072    -.3   U             hCIT    49Ch35,Y
 10B(p,a)7Be               1146       6       1145.668    0.072    -.1   U             hCIT    51Br10,Y
 10B(p,a)7Be               1146       2       1145.668    0.072    -.2   U             hWis    52Cr30,Y
 10B(p,a)7Be               1153       4       1145.668    0.072   -1.8   U             hMIT    64Sp12
 10B(3He,6He)7B          -18550     100     -18286.818   25.150    2.6   U             HBrk    67Mc14
 10He(g,2n)8He             1200     300       1444.828   92.848     .8   U             N       94Ko16,W
 10He(g,2n)8He             1420     100       1444.828   92.848     .2  -2-            H       10Jo06
 10He(g,2n)8He             2100     200       1444.828   92.848   -3.3B  B             H       12Si07
 10He(g,2n)8He             1600     250       1444.828   92.848    -.6  -2-            K       12Ko43
 10He(g,2n)8He             1400     300       1444.828   92.848     .1   U             k       15Ma54
 10He(g,2n)8He        ave  1444.828  92.848                              2                     average
 10Be(p,3He)8Lii         -26802.3     5.4                                2             HMSU    75Ro01,*
 10Be(p,t)8Bej           -27487.0     2.6    -27489.341    1.965    -.9   1   57  57   8BejHMSU    75Ro01,*
 10B(d,a)8Be              17829      10      17819.746    0.038    -.9   U             hBir    54El10,Y
 10B(d,a)8Be              17830       6      17819.746    0.038   -1.7   U             hMex    64Ma.B
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 10B(d,a)8Be                 17818.6      4.1     17819.746     0.038      .3  U                hNDm     67Od01
 10B(p,3He)8Be                -535.5      2.5      -533.309     0.038      .9  U                hWis     52Cr30,Y
 10Li(g,n)9Li                  150      150          26.405    12.720     -.8  U                N        90Am05,*
 10Li(g,n)9Li                   25       15          26.405    12.720      .1  -3-              N        95Zi03,*
 10Li(g,n)9Li                   30       24          26.405    12.720     -.1  -3-              H        08Ak03,*
 10Li(g,n)9Li           ave     26.404   12.720                                3                         average
 10Lim(g,n)9Li                 240       60         222.295    38.411     -.3  -3-              N        97Bo10,*
 10Lim(g,n)9Li                 210       50         222.295    38.411      .2  -3-              M        97Zi04,*
 10Lim(g,n)9Li          ave    222.295   38.411                                3                         average
 9Be(9Be,8B)10Lin            -33770      260     -33752.490    38.934      .1  U                MBrk     75Wi26,*
 9Be(13C,12N)10Lin           -36370       50     -36392.430    38.933     -.4  -2-              mBer     93Bo03,*
 9Be(13C,12N)10Lin           -36427       62     -36392.430    38.933      .6  -2- q-q=  -34.570  h          11B-1
 9Be(13C,12N)10Lin      ave  -36392.462   38.921                               2                         average
 10Be(d,3He)9Li              -14142.8      2.5   -14142.914     0.203     -.0  U                HMSU     75Ka18
 9Be(n,g)10Be                  6812.33     0.06    6812.282     0.052     -.8  -1-               MMn     86Ke14,Z
 9Be(n,g)10Be                  6812.10     0.14    6812.282     0.052     1.3  -1-              MBdn     06Fi.A
 9Be(d,p)10Be                  4583        8       4587.716     0.052      .6  U                hRic     51Kl55,Y
 9Be(d,p)10Be                  4595        4       4587.716     0.052    -1.8  U                hMex     64Ma.B
 9Be(d,p)10Be                  4590        8       4587.716     0.052     -.3  U                hMIT     64Sp12
 9Be(n,g)10Be           ave    6812.294    0.055   6812.282     0.052     -.2  1    88  56  10Be         average
 9Be(3He,d)10B                 1123        5       1093.336     0.078    -5.9C  C                hMex     64Ma.B
 10B(d,t)9B                   -2189       10      -2179.963     0.903      .9  U                hMIT     64Sp12
 10B(3He,a)9B                 12130       15      12140.428     0.903      .7  U                hRic     60Sp08
 10B(3He,a)9B                 12171       15      12140.428     0.903    -2.0  U                hMex     64Ma.B
 10Be(14C,14O)10He           -41190       70     -41577.548    92.848    -5.5B  B                HBer     94Os04
 10Be(B-)10B                    560        5        556.876     0.082     -.6  U                h        50Hu27
 10Be(B-)10B                    555        5        556.876     0.082      .4  U                h        52Fe16
 10C(B+)10B                    3604       16       3648.062     0.069     2.8  U                h        63Ba52
 10B(p,n)10C                  -4433.7      1.5    -4430.409     0.069     2.2  U                hHar     75Fr.A
 10B(p,n)10C                  -4430.17     0.34   -4430.409     0.069     -.7o  o                hAuc     84Ba12,*
 10B(p,n)10C                  -4430.17     0.09   -4430.409     0.069    -2.7o  o                hAuc     89Ba28,*
 10B(p,n)10C                  -4430.30     0.12   -4430.409     0.069     -.9  1    33  33  10C  MAuc     98Ba83,*
 10B(3He,t)10C                -3667       10      -3666.654     0.069      .0  U                hBrk     68Br23
 10B(14N,14B)10N             -47550      400                                   2                M        02Le16
 10N(e)10C                    24000      400      23101.355   400.000    -2.2  Z                m        IMME
*7Li(t,g)10Bei              My error estimate, based on resulting Sn(10Bei); MMC122 error not given  h   AHW944*W
*10He(g,2n)8He              Predicted 1180(140) keV   WgM12b: not relevant                          h   88St16*W
*10Be(p,3He)8Lii            Original value --26804.1(5.4) recalibrated                              H   AHW944**
*10Be(p,3He)8Lii            calibrant +1.8; => Q=-26802.3                                           h   MMC121*W
*10Be(p,t)8Bej              Original --27487.6(2.6) recalibrated                                    H   GAu121**
*10Li(g,n)9Li               From 11B(pi-,p)10Li                                                     N   GAu936**
*10Li(g,n)9Li               Resonance less than 50 above the one neutron threshold, but             N   95Zi03**
*                            ~ could also be final state interaction; then 10Li would be 200 higher N   97Bo10**
*10Li(g,n)9Li               Deduced from s-state scattering length as=-22.4(4.8) fm                 H   08Ak03**
*10Li(g,n)9Li               interpolation of Es=22-76 keV corresponds to 13-24 fm                   h   06Je09*W
*10Li(g,n)9Li               13-24 fm corresponds to 30-137 keV according to E=(h/(2pi*as))^2/2u ??  h   WgM124*W
*10Li(g,n)9Li               s-state scattering length of -30(+12-31)fm obtained                     h   07Si24*W
*10Lim(g,n)9Li              From 10Be(12C,12N)10Lim (1^+ level)                                     N   GAu955**
*10Lim(g,n)9Li              Theoretical work: 1^+ level above 1^- gs                                M   02Ga12**
*9Be(9Be,8B)10Lin           Q=-34060(250) to 2^+ level 290(80) above 1^+ level                      M   93Bo03**
*                            ~ revised with Breit-Wigner line shape. Probably 2^+ level             M   97Bo10**
*9Be(13C,12N)10Lin          Revised with Breit-Wigner line shape (probably 2^+ level)               N   97Bo10**
*10B(p,n)10C                T=4876.90(0.37); withdrawn by author                                    H   89Ba28**
*10B(p,n)10C                T=4876.88(0.10,Z); original T=4876.95(0.10) keV                         H   MMC126**
*10B(p,n)10C                Average of two datasets; withdrawn by author                            H   98Ba83**
*10B(p,n)10C                T=4877.03(0.13); this is the second 89*Ba*28 dataset, rclbtd by author  H   98Ba83**


 11B 37Cl-13C 35Cl             2998.15     1.30    3000.207     0.070      .6  U                hH38 2.5 84El05
 11Li-6Li1.833                16003.5      1.2    16003.330     0.660     -.1o  o                HTT1 1.0 08Sm.A
 11Li-6Li1.833                16003.33     0.66                                2                HTT1 1.0 08Sm03
 11Be-6Li1.833                -6059.27     0.28   -6059.171     0.255      .4  1    83  83  11Be HTT1 1.0 08Br.C
 11Be-7Li1.571                -3479.83     0.62   -3480.314     0.255     -.8  1    17  17  11Be HTT1 1.0 09Ri03
 11C-14N.786                   9016.430    0.064   9016.430     0.064      .0  1   100 100  11C  KMS1 1.0 16Gu02
 11Li-u                       43780      130      43723.582     0.660     -.3  U                MTO2 1.5 88Wo09,G
 11Li-u                       43805       28      43723.582     0.660    -2.9  U                hP40 1.0 03Ba.A
 11Li-u                       43715.4      5.0    43723.582     0.660     1.6o  o                HP40 1.0 04Ba.A
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11Li-u		43714.5	5.1	43723.582	0.660	1.8	U				HP40	1.0	09Ga24
11Be-u		21654.0	3.6	21661.081	0.255	2.0o	o				HP40	1.0	04Ba.A
11Be-u		21653.5	3.5	21661.081	0.255	2.2	U				HP40	1.0	09Ga24
11Be-u		21658.5	3.8	21661.081	0.255	.7	U				HP40	1.0	09Ga24,*
11B-u		9305.167	0.013	9305.167	0.013	-.0	1	100	100	11B	KMS1	1.0	16Gu02
9Li-11Li.491 6Li.600		-3949	175	-3494.798	0.355	1.0	U				hP12	2.5	75Th08
9Li-11Li.409 7Li.643		-1250	86	-1288.221	0.313	-.3	U				hP11	1.5	75Th08,*
9Li-11Li.409 7Li.643		-1223	195	-1288.221	0.313	-.3	U				hP13	1.0	75Th08
9Li-11Li.273 8Li.750		-1928	31	-1873.263	0.253	.7	U				hP12	2.5	75Th08
9Li-11Li.273 8Li.750		-1923	31	-1873.263	0.253	1.6	U				MP13	1.0	75Th08
7Li(a,g)11Bxi		-3885.6	20.0	-3896.067	9.150	-.5	1	21	21	11Bxi	H		66Cu02,*
11B(p,a)8Be		8583	15	8590.092	0.037	.5	U				hCIT		51Li26,Y
11B(p,a)8Be		8589	4	8590.092	0.037	.3	U				hBir		53Co02,Y
11B(p,a)8Be		8597	6	8590.092	0.037	-1.2	U				hMex		61Ja23
11B(p,a)8Be		8575	11	8590.092	0.037	1.4	U				hMIT		64Sp12
11B(3He,6He)8Bxi		-27539	8				2				HMSU		75Ro01,*
11Bei(g,d)9Li		3245	20				3				K		97Te07,*
9Be(t,p)11Be		-1164	15	-1167.878	0.250	-.3	U				HAld		62Pu01
11Bxj(2p)9Li		2700	80				3				K		12Ch40,W
11B(d,a)9Be		8029	4	8030.064	0.077	.3	U				nBir		54El10,Y
11B(d,a)9Be		8035	9	8030.064	0.077	-.5	U				hMex		64Ma.B
11B(d,a)9Be		8024	7	8030.064	0.077	.9	U				nMIT		64Sp12
11B(d,a)9Be		8029.7	2.8	8030.064	0.077	.1	U				nNDm		67Od01
9Be(3He,p)11B		10344	13	10322.991	0.077	-1.6	U				hMex		64Ma.B
9Be(3He,p)11B		10322.1	2.3	10322.991	0.077	.4	U				nNDm		67Od01
11B(p,3He)9Bei		-24713.3	1.7				2				HMSU		74Ka15,*
9Be(3He,p)11Bxi		-2240	12	-2237.388	9.150	.2	-1-				H		63Gr.A,*
9Be(3He,p)11Bxi		-2240.6	20.	-2237.388	9.150	.2	-1-				HMSU		82Zw02,*
9Be(3He,p)11Bxi	ave	-2240.159	10.290	-2237.388	9.150	.3	1	79	79	11Bxi			average
11B(p,t)9Bxi		-26064.1	2.3				2				HMSU		74Ka15,*
9Be(3He,n)11Cxi		-4612	50	-4601.882	35.355	.2	1	50	50	11CxiH			71Wa21,*
11O(2p)9C		4160	200	4250.000	60.000	.4	Z				g		19We03,*
11O(2p)9C		4250	60				4				G		20We08
10Be(d,p)11Be		-1721	7	-1722.930	0.251	-.3	U				HCIT		70Go11
11B(7Li,8B)10Li		-32431	80	-32399.384	12.761	.4	U				NMSU		94Yo01,*
11B(7Li,8B)10Lin		-32908	62	-32874.579	38.934	.5R	R	q-q=	-33.421		mMSU		94Yo01
10Be(p,g)11Bxi		-1322	30	-1331.629	9.150	-.3	U				H		70Go04,*
10B(n,g)11B		11454.1	0.2	11454.221	0.019	.6	U				KPtn		86Ko19,Z
10B(n,g)11B		11454.15	0.27	11454.221	0.019	.3	U				KBdn		06Fi.A
10B(d,p)11B		9227	5	9229.654	0.019	.5	U				hBir		54El10,Y
10B(d,p)11B		9234	6	9229.654	0.019	-.7	U				hMex		64Ma.B
10B(d,p)11B		9244	11	9229.654	0.019	-1.3	U				hMIT		64Sp12
10B(d,p)11B		9232.9	2.	9229.654	0.019	-1.6	U				hNDm		66Br18
11B(3He,a)10B		9101	20	9123.400	0.019	1.1	U				hMan		60Ta12
10B(3He,d)11C		3174	15	3196.710	0.061	1.5	U				hMan		60Fo01
10B(3He,d)11C		3226	10	3196.710	0.061	-2.9C	C				kMex		64Ma.B
11N(p)10C		1973	180	1378.000	5.000	-3.3B	B				hMSU		74Be20,*
11N(p)10C		1300	40	1378.000	5.000	1.9o	o				MLis		96Ax01
11N(p)10C		1450	400	1378.000	5.000	-.2	U				MMSU		98Az01,*
11N(p)10C		1630	50	1378.000	5.000	-5.0B	B				MSpe		00Ol01,*
11N(p)10C		1350	120	1378.000	5.000	.2	U				GLis		00Ma62,*
11N(p)10C		1310	50	1378.000	5.000	1.4	U				GINS		03Gu06
11N(p)10C		1540	20	1378.000	5.000	-8.1B	B				H		06Ca05
11N(p)10C		1378	5				2				G		19We11
11B(pi-,pi+)11Li		-33120	50	-33082.548	0.615	.7	U				H		91Ko.B
11B(14C,14O)11Li		-37120	35	-37048.438	0.615	2.0	U				HMSU		93Yo07
11Bxi(IT)11B		12565	12	12560.379	9.150	-.4	Z						63Gr.A,W
11Bxi(IT)11B		12550	30	12560.379	9.150	.3	Z						66Cu02,W
11Bxi(IT)11B		12550	30	12560.379	9.150	.3	Z						70Go04,W
11Bxi(IT)11B		12510	50	12560.379	9.150	1.0	U				H		71Wa21,*
11Bxi(IT)11B		12563	20	12560.379	9.150	-.1	Z						82Zw02,W
11C(B+)11B		1982.8	2.6	1981.689	0.061	-.4	U				K		75Be28
11B(p,n)11C		-2759.7	3.	-2764.036	0.061	-1.4	U				mWis		50Ri59,Z
11B(p,n)11C		-2763.2	1.4	-2764.036	0.061	-.6	U				KRic		61Be13,Z
11B(3He,t)11C		-2002.1	1.2	-2000.281	0.061	1.5	U				KStr		65Go05,Z
11B(3He,t)11Cxi		-14151	50	-14161.118	35.355	-.2	1	50	50	11CxiH			71Wa21,*
11Cxi(IT)11C		12160	50	12160.837	35.355	.0	Z						71Wa21,W

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*11Li-u                           11Li must be FORCED to primary for the program not to collapse                GAu033*G
*11Be-u                           Result from the ‘‘cooling" experiment                               H         09Ga24**
*9Li-11Li.409 7Li.643             Symmetric double-doublet 6-9 8-11 included                          h         GAu   **
*7Li(a,g)11Bxi                    IT=12550(30); Q rebuilt with Ame*1964                               H         GAu121**
*11B(3He,6He)8Bxi                 IT=10619(9); rebuilt Q=-27538.9(8.2) keV                            H         GAu121**
*                                  ~ still to be recalibrated                                         h         MMC121*W
*                                  ~ IT=10614(20) keV by a different method                           K         14Br15**
*11Bei(g,d)9Li                    Q(d)=Q(p+n)+2224.5660(0.0004)  Q(p+n)=1020(20) keV                  K         MMC162**
*11Bxj(2p)9Li                     Q (total decay energy) measured                                     k         MMC123*W
*11B(p,3He)9Bei                   IT=14392.2(1.8); rebuilt Q=-24715.2(1.7); recalibrated +1.87 keV    h         MMC121**
*9Be(3He,p)11Bxi                  IT=12565(12); Q rebuilt with Ame*1961                               H         MMC121**
*9Be(3He,p)11Bxi                  IT=12563(20), Q rebuilt with Ame*1977                               h         MMC121**
*11B(p,t)9Bxi                     IT=14655.4(2.5); rebuilt Q=-26064.3; recalibrated +0.16 keV         h         MMC121**
*9Be(3He,n)11Cxi                  IT=12170(40); Q rebuilt; possibly not pure T=3/2                    h         MMC121**
*11O(2p)9C                        two-proton unbound by 3210(840) keV estimated IMME                  g         HWJ201**
*11O(2p)9C                        uncertainty estimated, waiting for author’s answer                  g         WgM204*W
*11B(7Li,8B)10Li                  Original (>-32471) re-evaluated                                     N         GAu955**
*                                  ~ existence of this level not completely certain                   N         94Yo01**
*10Be(p,g)11Bxi                   IT=12550(30); Q rebuilt with Ame*1964                               H         MMC121**
*11N(p)10C                        From 14N(3He,6He)11N Q=-25010(100) to 250(150) level                          90Aj01**
*11N(p)10C                        From 9Be(12N,10Be)11N                                               M         98Az01**
*11N(p)10C                        From 10B(14N,13B)11N                                                M         00Ol01**
*11N(p)10C                        From scattering 10C on H; precisely, 1270(+180--50) keV             M         00Ma62**
*11Bxi(IT)11B                     From 9Be(3He,p)                                                               AHW944*W
*11Bxi(IT)11B                     From 7Li(a,g)                                                                 AHW944*W
*11Bxi(IT)11B                     From 10Be(p,g)                                                                AHW944*W
*11Bxi(IT)11B                     From 11B(3He,3He’)                                                  H         AHW944**
*11Bxi(IT)11B                     From 9Be(3He,p)                                                               AHW944*W
*11B(3He,t)11Cxi                  IT=12150(50); Q rebuilt; possibly not pure T=3/2                    H         MMC121**
*11Cxi(IT)11C                     From several reactions. Not certainly T=3/2                                   AHW944*W
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 12Be-u                          26911.3      14.2     26922.083     2.049      .8   U                    HP40 1.0 09Ga24
 12Be-C                          26922.4       2.3     26922.083     2.049     -.1   1    79  79  12Be HTT1 1.0 10Et01
 C14-12Cxm12                         1.2       4.9       0.00000   0.00013     -.2   U                    HTG1 1.5 09Ke.A
 C14-12Cxm15                         2.1       2.7       0.00000   0.00016     -.5   U                    HTG1 1.5 11Ke03
 C15-12Cxm14                        -4.0       4.7       0.00000   0.00015      .6   U                    HTG1 1.5 11Ke03
 C15-12Cxm14                        -0.5       6.2       0.00000   0.00015      .1   U                    HTG1 1.5 11Ke03
 C15-12Cxm16                        -1.6       2.1       0.00000   0.00017      .5   U                    HTG1 1.5 10Ke09
 C15-12Cxm16                         4.7       4.2       0.00000   0.00017     -.7   U                    HTG1 1.5 11Ke03
 C15-12Cxm16                         3.7       4.1       0.00000   0.00017     -.6   U                    HTG1 1.5 11Ke03
 C16-12Cxm12                        -0.3       6.1       0.00000   0.00013      .0   U                    HTG1 1.5 09Ke.A
 C16-12Cxm12                         2.6       5.0       0.00000   0.00013     -.3   U                    HTG1 1.5 09Ke.A
 C16-12Cxm15                        -1.3       3.9       0.00000   0.00016      .2   U                    HTG1 1.5 11Ke03
 C16-12Cxm15                        -0.7       1.3       0.00000   0.00016      .4   U                    KTG1 1.5 12Sm07
 C21-12Cxm22                         1.6       1.3       0.00000   0.00024     -.8   U                    KTG1 1.5 14Ei01
 C23-12Cxm22                         1.2       1.7       0.00000   0.00024     -.5   U                    KTG1 1.5 14Ei01
 C23-12Cxm21                         2.2       1.8       0.00000   0.00023     -.8   U                    KTG1 1.5 14Ei01
 7Li(7Li,2p)12Be                   -9710     100       -9841.494     1.909    -1.3   U                    hLAl     71Ho26
 12C(a,8He)8C                     -64520     200      -64249.036    18.243     1.4   U                    H        74Ro17,W
 12C(a,8He)8C                     -64278      26      -64249.036    18.243     1.1  -1-                    Tex     76Tr01
 12C(a,8He)8C                     -64239      50      -64249.036    18.243     -.2  -1- q-q=   10.036 H           14N-6
 12C(a,8He)8C                ave  -64269.699  23.068  -64249.036    18.243      .9   1    63  63   8C           average
 9Be(7Li,a)12Bxi                 -2308.4      50.      -2257.800    18.538     1.0   1    14  14  12BxiHPhi     75Aj03,*
 12C(3He,6He)9C                   -31578       8      -31571.848     2.137      .8   U                    nMSU     71Tr03
 12C(3He,6He)9C                 -31575.6       3.2    -31571.848     2.137     1.2R  R  q-q=   -3.752  MSU     79Ka.A,G
 10Be(t,p)12Be                     -4809      15       -4809.435     1.910     -.0   U                    HBrk     78Al29
 10Be(t,p)12Be                   -4808.3       4.2     -4809.435     1.910     -.3   1    21  21  12Be HPhi     94Fo08
 10B(t,p)12B                        6346       6        6342.053     1.321     -.7   U                    hMan     60Ja17
 10B(a,d)12C                      1340.3       0.8      1339.804     0.015     -.6   U                    KWis     56Do41,Z
 10B(a,d)12C                      1340.6       1.5      1339.804     0.015     -.5   U                    hNDm     65Br28
 12C(d,a)10B                     -1340.1       1.2     -1339.804     0.015      .2   U                    hNDm     65Br28
 10B(3He,p)12C                   19694.5       3.6     19692.858     0.015     -.5   U                    hNDm     67Od01
 10B(3He,p)12C                   19692.86      0.44    19692.858     0.015     -.0   U                    KMun     83Ch08,*
 10B(3He,p)12Cxi                    4585       6        4584.685     3.328     -.1   1    31  31  12CxiH        62Br10,W
 12C(p,t)10C                    -23360.5       0.5    -23359.513     0.070     2.0   Z                     MSU     77Ba.A,G
 10B(3He,n)12N                      1570      25        1572.443     1.000      .1   U                    hCIT     64Fi02
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 10B(3He,n)12N              1561        9         1572.443     1.000     1.3  U                  hCIT    64Ka08
 10B(3He,n)12N              1568       20         1572.443     1.000      .2  U                  hLAl    66Za01
 10B(3He,n)12N              1574        7         1572.443     1.000     -.2  U                  hHar    68Ad03
 12Nxi(2p)10B               2905       29         2951.515     4.123     1.6  U                  G       12Ja11,*
 12O(2p)10C                 1770       20         1736.720    12.000    -1.7 -2-                 G       95Kr03
 12O(2p)10C                 1638       24         1736.720    12.000     4.1B B                  G       12Ja11
 12O(2p)10C                 1688       29         1736.720    12.000     1.7o o                  G       19We03
 12O(2p)10C                 1718       15         1736.720    12.000     1.2 -2-                 G       19We11
 12O(2p)10C           ave   1736.720   12.000                                2                           average
 12Li(g,n)11Li               120       15          210.000    30.000     6.0B B                  K       08Ak03,*
 12Li(g,n)11Li               210       30                                    3                   K       13Ko03
 11B(d,p)12B                1141        4         1145.062     1.321     1.0  1    11  11  12B  HMex    61Ja23
 11B(d,p)12B                1137        5         1145.062     1.321     1.6  U                  hMIT    64Sp12
 11B(3He,d)12C             10436       17        10463.204     0.012     1.6  U                  hMan    60Fo01
 11B(3He,d)12C             10469.7      5.7      10463.204     0.012    -1.1  U                  hNDm    67Od01
 11B(d,n)12Cxi             -1376.2      4.0      -1376.060     3.328      .0  1    69  69  12CxiH       55Ma76,*
 12Bxi(IT)12B              12710       20        12719.041    18.585      .5  Z                  h       71Ne.A,W
 12Bxi(IT)12B              12770       30        12719.041    18.585    -1.7  Z                          71Aj.A
 12Bxi(IT)12B              12770       50        12719.041    18.585    -1.0  Z                  hPhi    75Aj03,W
 12Cxm(IT)12C                  0.00000  0.00001                              2                   H       GAu090,G
 12Cxi(IT)12C              15107.7      3.6      15108.173     3.328      .1  Z                          55Ma76,W
 12Cxi(IT)12C              15108        6        15108.173     3.328      .0  Z                          62Br10,W
 12Cxj(IT)12C              27595.0      2.4      27594.953     2.400     -.0  Z                   MSU    78Ro08,W
 12N(B+)12C                17406       15        17338.068     1.000    -4.5B B                  h       63Gl04
 12C(p,n)12N              -18119.9      4.4     -18120.415     1.000     -.1  U                  hYal    69Ov01,Z
 12C(pi+,pi-)12O          -31037       48       -30991.337    12.000     1.0B B                  k       80Bu15
 12C(pi+,pi-)12O          -31014       24       -30991.337    12.000      .9B B                  K       92Iv.A,W
 12Nxi(IT)12N              12242        4                                    3                   G       19We11
*12C(a,8He)8C             using 8He=31650(120), no deconvolution                                h       WgM11c*W
*9Be(7Li,a)12Bxi          IT=12770(50) using Q(gs)=10461.6(1.6)keV                               H       75Aj03**
*                          ~ energy and resolution arguments for T=1, not an IAS                 H       08Ch28**
*12C(3He,6He)9C           Original Q=-31576.2 recalibrated to Q=-18589.3                                 GAu92c*G
*                          ~ for 13C(3He,6He)10C 3353.6(0.7) level                                       88Aj01*W
*10B(3He,p)12C            Original Q=15305.45(0.3) revised by authors to 15253.95(31) keV       N       83Vo.A**
*                          ~ to 2^+ level at 4438.91(0.31) keV                                   h       Ens006**
*10B(3He,p)12Cxi          Calibration checked OK                                                h       MMC121*W
*12C(p,t)10C              "Ignore this number"                                                           88Ba.B*G
*12Nxi(2p)10B             Q(2p)=1165(29) to 10Bxi at 1740.05(0.04)                               g       Nub211**
*12Li(g,n)11Li            E(res) derived in ref. from scattering length as=-13.7(1.6) fm        H       10Ha04**
*11B(d,n)12Cxi            E(res)=1627(4) Q=-1376(4); recalibrated Q=-1376.16(4.00) keV          H       MMC121**
*12Bxi(IT)12B             from 14C(p,3He)12Bxi                                                  h       MMC121*W
*12Bxi(IT)12B             from 9Be(7Li,a)12Bxi                                                  h       MMC121*W
*12Bxi(IT)12B             AHW gave error 30; wrong ref to 71Aj.A                                h       GAu122*G
*12Cxm(IT)12C             Added to allow checking data comparing carbon clusters                h       GAu090*G
*12Cxi(IT)12C             From 11B(d,n(th)) Er=1627(4) Q=-1375.3(3.6)                                    AHW944*W
*12Cxi(IT)12C             From 10B(3He,p) Q=4585(6)                                                      AHW944*W
*12Cxj(IT)12C             From 14C(p,t)                                                                  AHW944*W
*12C(pi+,pi-)12O          Given in ref. are 2 values : m=32036(24) and 32016(22)                k       13Fo10*W


 C H-13C                    4500       36         4470.19656   0.00025   -.6  U                  hR08 1.5 69De19
 C H-13C                    4470.185    0.008     4470.19656   0.00025   1.0  U                  mB08 1.5 75Sm02
 C H-13C                    4470.10     0.05      4470.19656   0.00025    .8  U                  hM25 2.5 78Ha14
 C D-13C H                  2921.923    0.008     2921.91061   0.00025  -1.0  U                  mB08 1.5 75Sm02
 C D-13C H                  2921.87     0.05      2921.91061   0.00025    .3  U                  hM25 2.5 78Ha14
 C D-13C H                  2921.9086   0.0012    2921.91061   0.00025   1.7  U                  HMI1 1.0 95Di08,G
 C D-13C H                  2921.9074   0.0015    2921.91061   0.00025   2.1  U                  HMI1 1.0 95Di08,G
 13C-u                      3354.8404   0.0041    3354.83534   0.00025   -.5  U                  HWA1 2.5 95Va38
 13F-u                     45121#     537#                                   2                   g    1.0 S-u211
 9Be(a,g)13Cxi             -4458.4      2.0      -4460.430     1.139    -1.0 -2-                 H       73Ad02,W
 9Be(a,g)13Cxi             -4461.4      1.4      -4460.430     1.139      .7 -2-                 H       78Hi06
 9Be(a,g)13Cxi        ave  -4460.430    1.139                                2                           average
 10B(a,p)13C                4068       12         4061.546     0.015     -.5  U                  hMIT    64Sp12
 10B(a,p)13C                4063.4      2.4       4061.546     0.015     -.8  U                  hNDm    67Od01
 13Li(g,2n)11Li             1470      310          110.000    70.000    -4.4B B                  K       08Ak03,*
 13Li(g,2n)11Li             1470      350          110.000    70.000    -3.9B B                  K       10Jo07,*
 13Li(g,2n)11Li              110       70                                    3                   K       13Ko03,*
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11B(t,p)13B		-233	4	-233.400	1.000	-.1	U	hMan	60Mu07
11B(t,p)13B		-233.4	1.0				2	Str	83An15
13C(d,a)11B		5169	6	5168.108	0.012	-.1	U	hCIT	51Li29,Y
13C(d,a)11B		5166	5	5168.108	0.012	.4	U	hRic	53Ph28,Y
13C(d,a)11B		5165	10	5168.108	0.012	.3	U	hMIT	64Sp12
13C(d,a)11B		5166.6	2.5	5168.108	0.012	.6	U	hNDm	70Br23
11B(3He,p)13C		13221	10	13184.947	0.012	-3.6C	C	hMex	64Ma.B
11B(3He,p)13C		13185.4	4.0	13184.947	0.012	-.1	U	hNDm	67Od01
11B(3He,n)13N		10183	11	10182.128	0.270	-.1	U	h	71Hs03
13Be(g,n)12Be		100	70	510.000	10.000	5.9B	B	H	01Th01,*
13Be(g,n)12Be		60	10	510.000	10.000	45.0B	B	H	08Ch07,*
13Be(g,n)12Be		510	10				2	H	10Ko17
13Be(g,n)12Be		400	30	510.000	10.000	3.7B	B	K	14Ra07
12C(n,g)13C		4946.47	0.17	4946.30873	0.00050	-.9	U	h	67Pr10
12C(n,g)13C		4946.03	0.15	4946.30873	0.00050	1.9	U	hUtr	68Sp01
12C(n,g)13C		4946.51	0.31	4946.30873	0.00050	-.6	U	hILn	79Br25,Z
12C(n,g)13C		4946.321	0.024	4946.30873	0.00050	-.5	U	h	80Wa24,*
12C(n,g)13C		4946.337	0.031	4946.30873	0.00050	-.9	U	hUtr	81Va.B,*
12C(n,g)13C		4946.31	0.10	4946.30873	0.00050	-.0	U	MBdn	06Fi.A
12C(d,p)13C		2727	6	2721.74250	0.00024	-.9o	o	hRic	51Kl55,Y
12C(d,p)13C		2722	4	2721.74250	0.00024	-.1	U	hRic	53Fa18,Y
12C(d,p)13C		2720	2	2721.74250	0.00024	.9	U	hBir	54El10,Y
12C(d,p)13C		2725	5	2721.74250	0.00024	-.7	U	hMex	61Ja23
12C(d,p)13C		2722	4	2721.74250	0.00024	-.1	U	hMIT	64Sp12
12C(d,p)13C		2722.3	0.6	2721.74250	0.00024	-.9o	o	hNDm	67Od01
12C(d,p)13C		2721.9	0.8	2721.74250	0.00024	-.2	U	hNDm	74Jo14
12C(d,p)13C		2721.80	0.50	2721.74250	0.00024	-.1	U	hRez	90Pi05,*
13C(p,d)12C		-2722	7	-2721.74250	0.00024	.0o	o	hMIT	64Sp12
13C(d,t)12C		1311	3	1310.92133	0.00024	-.0	U	hCIT	51Li29,Y
13C(d,t)12C		1311	6	1310.92133	0.00024	-.0	U	hMex	64Ma.B
13C(d,t)12C		1311	6	1310.92133	0.00024	-.0	U	hMIT	64Sp12
13C(d,t)12C		1310.9	0.7	1310.92133	0.00024	.0	U	hNDm	67Od01
12C(p,g)13N		1943.24	0.32	1943.490	0.270	.8	-2-	m	77Fr20,Z
12C(p,g)13N		1944.1	0.5	1943.490	0.270	-1.2	-2-	m	77He26,Z
12C(d,n)13N		-280.5	3.	-281.076	0.270	-.2	U	hRic	49Bo67,Y
12C(p,g)13N	ave	1943.490	0.270				2		average
12C(p,g)13Nxi		-13121.62	0.18				2	H	73Hu07
13C(14C,14O)13Bep		-37020	50				2	NBer	92Os04
13N(B+)13C		2222.3	3.8	2220.472	0.270	-.5	U	h	54Ki23
13C(p,n)13N		-3002.3	1.0	-3002.819	0.270	-.5o	o	hRic	61Be13,Z
13C(p,n)13N		-3004.1	1.5	-3002.819	0.270	.9	U	hNRL	64Bo10,Z
13C(p,n)13N		-3002.4	1.0	-3002.819	0.270	-.4	U	hRic	66Bo20
13O(B+)13N		17500	200	17769.951	9.530	1.3	U	h	65Mc09
*C D-13C H		From ratio 13C2H4+/C2D2H2+=0.999805486870(77)						n	95Di08*G
*C D-13C H		From ratio 13CH4+/CDH3+ =0.999828496650(90)						n	95Di08*G
*C D-13C H		2921.9082(0.0011) is their LstSqrs adjusted value						n	95Di08*W
*9Be(a,g)13Cxi		From Eexc=15106(2) from earlier unpbl. CalTech work						h	AHW944*W
*13Li(g,2n)11Li		Corresponds to excited state						K	13Ko03**
*13Li(g,2n)11Li		Symmetrized from 120(+60--80)						K	GAu14a**
*13Be(g,n)12Be		From scattering length as<-10 fm; questioned in ref.						H	10Ko17**
*13Be(g,n)12Be		From scattering length as=-20 fm; questioned in ref.						H	10Ko17**
*		~ as=-3.4(0.6) fm in 10*Ko*17; as=-3.2(+.9--1.1) fm in 07*Si*24						H	07Si24**
*13Be(g,n)12Be		-3.4fm 1900 keV ; -20 fm 60 keV						h	WgM124*W
*12C(n,g)13C		Q(g)=1261.844(0.006,Z) to 3684.477(0.023,Z) level						h	81Va.B**
*12C(n,g)13C		Q(g)=1261.844(0.006,Z) to 3684.493(0.030,Z) level						h	81Va.B**
*12C(d,p)13C		Estimated systematic error 0.5 added to statistical error 0.038 keV						h	AHW **

14Be-u		42660	150	42892.921	141.971	1.0	-2-				TO2	1.5	88Wo09
14Be-u		43047	183	42892.921	141.971	-.8	-2-	q-q=	143.524		1.0	1.0	14C-0
14Be-u	ave	42892.921	141.971				2						average
C D2-14C H2		9311.498	0.006	9311.50327	0.00403	.6	1	20	20	14C	B08	1.5	75Sm02
C H2-N		12576.22	0.10	12576.05954	0.00024	-.6	U				hJ2	2.5	69Na21
C H2-N		12576.086	0.009	12576.05954	0.00024	-2.0	U				hB07	1.5	71Sm01
C H2-N		12576.0598	0.0008	12576.05954	0.00024	-.3	U				HMI1	1.0	95Di08,W
C D-N		11027.815	0.018	11027.77359	0.00024	-1.5o	o				hB07	1.5	71Sm01
C D-N		11027.773	0.007	11027.77359	0.00024	.1	U				hB08	1.5	75Sm02

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 C H4-N D                       14124.17     0.14     14124.34550   0.00024    .5   U                hJ6  2.5 76Ka50
 C D2-N H2                       9479.68     0.13      9479.48764   0.00025   -.6   U                hJ6  2.5 76Ka50
 14N-u                           3074.014    0.019     3074.00425   0.00024   -.2   U                hOH1 2.5 93Ma.A
 14N-u                           3074.0056   0.0018    3074.00425   0.00024   -.3   U                HWA1 2.5 95Va38
 13C H-14N                       8105.86299  0.00010   8105.86298   0.00010   -.1   1   96  78  13C  KMI3 1.0 04Ra33,*
 14C H2-N D                      1716.269    0.003     1716.27032   0.00403    .3   1   80  80  14C   B08 1.5 75Sm02
 14O-14N                         5522.702    0.027     5522.702     0.027      .0   1  100 100  14O  KMS1 1.0 15Va08
 14N(3He,9Li)8C                -42214       50       -42224.538    18.244     -.2R  R  q-q=    10.538  MSU      76Ro04
 11B(a,p)14C                      789       17          783.760     0.013     -.3   U                hMIT     64Sp12
 14Bxi(g,d)12Be                  2515       20                                      2                K        01Ta23,*
 14C(18O,20Ne)12Be             -15770       50       -15798.752     1.909     -.6   U                hChR     74Ba15
 14C(d,a)12B                      361.8      1.4        361.302     1.321     -.4   1   89  89  12B  mWis     56Do41,Z
 14C(p,3He)12Bxi               -30702.73    19.96    -30710.794    18.538     -.4   1   86  86  12BxiH        71Ne.A,*
 14C(p,t)12Cxj                 -32235.9      2.4                                    2                HMSU     78Ro08,*
 14N(d,a)12C                    13579        6        13574.22386   0.00027   -.8   U                hMex     64Ma.B
 14N(d,a)12C                    13588        6        13574.22386   0.00027  -2.3   U                hMIT     64Sp12
 12C(3He,p)14N                   4779.0      1.4       4778.83098   0.00023   -.1   U                hCIT     62Ba26,Y
 12C(3He,p)14N                   4806        9         4778.83098   0.00023  -3.0C  C                kMex     64Ma.B
 12C(3He,p)14N                   4776.3      1.5       4778.83098   0.00023   1.7   U                hNDm     67Od01
 14N(p,t)12N                   -22135.5      1.0     -22135.491     1.000      .0   1  100 100  12N   MSU     75No.A
 12C(3He,n)14O                  -1146.86     0.72     -1147.880     0.025    -1.4   U                hNvl     61Bu04,*
 12C(3He,n)14O                  -1148.61     0.56     -1147.880     0.025     1.3   U                hCIT     62Ba26,*
 12C(3He,n)14O                  -1149.01     0.48     -1147.880     0.025     2.4   U                kMar     70Ro07,*
 14C(7Li,8B)13Be               -39990      500       -38653.651    10.229     2.7   U                hDbn     83Al20
 14C(11B,12N)13Be              -39600       90       -39309.546    10.229     3.2B  B                HDbn     98Be28
 13C(n,g)14C                     8177        2         8176.43411   0.00378   -.3   U                h        67Th05
 13C(n,g)14C                     8176.61     0.24      8176.43411   0.00378   -.7   U                MBdn     06Fi.A
 13C(d,p)14C                     5946        4         5951.86788   0.00375   1.5   U                hCIT     51Li29,Y
 13C(d,p)14C                     5952       10         5951.86788   0.00375   -.0   U                hNob     54Ah47,Y
 13C(d,p)14C                     5951       10         5951.86788   0.00375    .1   U                hMex     64Ma.B
 13C(d,p)14C                     5951        8         5951.86788   0.00375    .1   U                hMIT     64Sp12
 13C(d,p)14C                     5951.85     0.54      5951.86788   0.00375    .0   U                hRez     90Pi05,*
 13C(p,g)14N                     7551.0      0.8       7550.56356   0.00009   -.5   U                h        56Ma87,Z
 13C(p,g)14N                     7551.1      0.5       7550.56356   0.00009  -1.1   U                h        63Bo07,*
 13C(3He,d)14N                   2048       14         2057.08848   0.00010    .6   U                hMIT     64Sp12
 14N(3He,a)13N                  10015       10        10024.239     0.270      .9   U                hRic     59Yo25
 14F(p)13O                       1560       40                                      3                H        10Go16
 14C(pi-,pi+)14Be              -38100      170       -37956.607   132.245      .8R  R  q-q= -143.393          84Gi09,*
 14C(14C,14O)14Bep             -43440       60                                      2                NBer     95Bo10,G
 14C(7Li,7Be)14B               -21499       30       -21505.686    21.213     -.2  -1-                ChR     73Ba34
 14C(14C,14N)14B               -20494       30       -20487.316    21.213      .2  -1-                Ors     81Na.A
 14C(7Li,7Be)14B          ave  -21505.686   21.213   -21505.686    21.213      .0   1  100 100  14B           average
 14C(B-)14N                       155.2      0.5        156.47645   0.00375   2.6   U                h        54Ki23
 14C(B-)14N                       155.74     0.08       156.47645   0.00375   9.2F  F                h        91Su09,*
 14C(B-)14N                       155.95     0.22       156.47645   0.00375   2.4   U                h        95Wi20
 14C(B-)14N                       156.27     0.14       156.47645   0.00375   1.5   U                H        00Ku25
 14C(p,n)14N                     -626.15     0.3       -625.87055   0.00378    .9   U                hWis     56Sa06
 14C(p,n)14N                     -625.88     0.09      -625.87055   0.00378    .1   U                hZur     73Hi.A
 14N(p,n)14O                    -5930.7      2.8      -5926.711     0.025     1.4   U                hRic     65Ku02
 14N(p,n)14O                    -5927.6      1.5      -5926.711     0.025      .6   U                hHar     73Cl12
 14N(p,n)14O                    -5925.6      0.4      -5926.711     0.025    -2.8F  F                HAuc     77Wh01,*
 14N(p,n)14O                    -5925.41     0.08     -5926.711     0.025   -16.3F  F                MAuc     81Wh03,*
 14N(p,n)14O                    -5925.41     0.11     -5926.711     0.025   -11.8F  F                MAuc     98Ba83,*
 14N(p,n)14O                    -5926.68     0.17     -5926.711     0.025     -.2   U                KAuc     03To03
 14N(3He,t)14O                  -5161.3      0.8      -5162.956     0.025    -2.1F  F                HMun     77Vo02,*
 14O(B+)14Nxi                    2843        7              *                       Z                m        63Fr10
*C H2-N                     From ratio N2+/C2H4+     =0.999102696201( 55)                            n        95Di08*W
*13C H-14N                  Original 8105.86288(10) uu recalculated for molecular and ionization     K        HWJ153**
*14Bxi(g,d)12Be             Q(d)=Q(p+n)+2224.5660(0.0004)  Q(p+n)=290(20) keV                        K        MMC162**
*14C(p,3He)12Bxi            IT=12710(20); Q rebuilt with Ame*1964                                    H        MMC129**
*                            ~ energy and resolution arguments for T=1, not an IAS                   H        08Ch28**
*14C(p,t)12Cxj              IT=27595.0(2.4); Q rebuilt                                               H        MMC121**
*12C(3He,n)14O              Originals T=1436.2(0.9,Bu) 1437.5(0.7,Ba) 1437.9(0.6,Ro) resp, rclbtd   H        MMC126**
*13C(d,p)14C                Estimated systematic error 0.5 added to statistical error 0.20           h        AHW   **
*13C(p,g)14N                E(p)=1747.06(0.53) to 2^+ level at 9172.25 keV                           h        Ens01a**
*14C(pi-,pi+)14Be           Original error 160 increased with 60 calibration uncertainty                      GAu   **
*14C(14C,14O)14Bep          Determines exc. energy of the first 2+ level                             n        GAu959*G
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*14C(B-)14N                    F : find 17 keV neutrino. See also ref.                                     91No07**
*14N(p,n)14O                   F : withdrawn by author                                           H         81Wh03**
*14N(p,n)14O                   Authors recalibrated 77*Wh*01 for atomic effects                  H         81Wh03**
*14N(p,n)14O                   F : withdrawn by author                                           H         98Ba83**
*14N(p,n)14O                   Original T=6353.08(0.07) recalibrated to T=6352.99(0.12) by author h        98Ba83**
*14N(p,n)14O                   F : withdrawn by author                                           h         03To03**
*14N(3He,t)14O                 F : rejected in ref. of same group                                H         09Fa15**

 C D H-15N                       21817.9119    0.0008   21817.91148   0.00062   -.5   1    61  61  15N  NMI1 1.0 95Di08,G
 C H3-15N                        23366.1979    0.0017   23366.19743   0.00062   -.3   1    13  13  15N  NMI1 1.0 95Di08,G
 15F-u                           17477        86        17785.139    15.030     1.4F  F                 k    2.5 01Ze.A,*
 15Ne-u                          44430       540        43172.977    71.588     -.9   Z                      2.5 IMME  ,G
 14N D-15N H                      9242.29      0.11      9241.85193   0.00066  -1.6   U                 hC5  2.5 71Ke01
 14N D-15N H                      9241.780     0.008     9241.85193   0.00066   6.0B  B                 hB08 1.5 75Sm02
 14N D-15N H                      9241.8527    0.0009    9241.85193   0.00066   -.9   Z                 nMI1 1.0 95Di08,W
 15N(p,a)12C                      4966         6         4965.49329   0.00060   -.1   U                 hCIT     51Li26,Y
 15N(p,a)12C                      4962         4         4965.49329   0.00060    .9   U                 hBir     53Co02,Y
 15N(p,a)12C                      4954         8         4965.49329   0.00060   1.4   U                 hMex     64Ma.B
 15N(p,a)12C                      4965         7         4965.49329   0.00060    .1   U                 hMIT     64Sp12
 12C(a,n)15O                     -8503        12        -8502.024     0.490      .1   U                 hTal     63Ne05
 15N(d,a)13C                      7675         9         7687.23579   0.00063   1.4   U                 hMex     64Ma.B
 15N(d,a)13C                      7689         6         7687.23579   0.00063   -.3   U                 hMIT     64Sp12
 15Ne(2p)13O                      2522        66                                      3                 K        14Wa09
 15Be(g,n)14Be                    1800       100                                      3                 K        13Sn02,W
 14C(d,p)15C                     -1006.5       0.8                                    2                  Wis     56Do41,Y
 14C(p,g)15Nxi                   -1407.8       3.5                                    2                 H        59Fe99,*
 14N(n,g)15N                     10833.2       0.6      10833.29680   0.00075    .2   U                 h        68Gr14
 14N(n,g)15N                     10833.1       0.7      10833.29680   0.00075    .3   U                 h        74Sp04
 14N(n,g)15N                     10833.5       0.05     10833.29680   0.00075  -4.1B  B                 hMMn     80Is02
 14N(n,g)15N                     10833.314     0.012    10833.29680   0.00075  -1.4   U                 M        97Ju02
 14N(n,g)15N                     10833.2339    0.0500   10833.29680   0.00075   1.3   U                 hPTc     97Ro26,*
 14N(n,g)15N                     10833.32      0.22     10833.29680   0.00075   -.1   U                 MBdn     06Fi.A
 14N(n,g)15N                     10833.3       0.5      10833.29680   0.00075   -.0   U                 H        06Be33
 14N(d,p)15N                      8629        11         8608.73057   0.00061  -1.8   U                 hCIT     52Mi54,Y
 14N(d,p)15N                      8614         6         8608.73057   0.00061   -.9   U                 hMex     64Ma.B
 14N(d,p)15N                      8623         3         8608.73057   0.00061  -4.8B  B                 hMIT     64Sp12
 14N(d,p)15N                      8608.83      0.50      8608.73057   0.00061   -.2   U                 hRez     90Pi05,*
 14N(p,g)15O                      7297.1       0.9       7296.766     0.490     -.4   1    30  30  15O  hCIT     72Ne05
 14N(3He,d)15O                    1803        10         1803.291     0.490      .0   U                 hRic     59Yo25,Y
 14N(3He,d)15O                    1802        15         1803.291     0.490      .1   U                 hMan     60Fo01
 15F(p)14O                        1410       150         1270.000    14.000     -.9o  o                 H        03Le26
 15F(p)14O                        1510       110         1270.000    14.000    -2.2   U                 K        03Pe23
 15F(p)14O                        1490       130         1270.000    14.000    -1.7   U                 K        04Go15,*
 15F(p)14O                        1560       130         1270.000    14.000    -2.2   U                 K        04Le12
 15F(p)14O                        1230        50         1270.000    14.000      .8   U                 k        05Gu25
 15F(p)14O                        1560       130         1270.000    14.000    -2.2   Z                 h        08Mu13,G
 15F(p)14O                        1270        14                                      3                 K        16De15
 15C(B-)15N                       9810        30         9771.707     0.800    -1.3   U                 h        59Al06
 15O(B+)15N                       2745         5         2754.184     0.490     1.8   U                 h        57Ki22
 15N(p,n)15O                     -3541.7       0.9      -3536.531     0.490     5.7B  B                 h        58Jo28,Y
 15N(p,n)15O                     -3535.1       1.0      -3536.531     0.490    -1.5  -1-                mCIT     72Je02,Z
 15N(p,n)15O                     -3537.6       0.8      -3536.531     0.490     1.4  -1-                m        72Sh08,Z
 15N(p,n)15O                 ave -3536.647     0.585    -3536.531     0.490      .2   1    70  70  15O           average
*C D H-15N                     From ratio 15N2+/C2D2H2+  =0.998547569780( 50)                    n         95Di08*G
*C H3-15N                      From ratio 15N+/CH3+      =0.998444631990(110)                    n         95Di08*G
*15F-u                         F : results distrusted (see also 18Na and 19Mg)                   K         GAu158**
*15Ne-u                        15Ne out of contour of chart. Keep for the future                           S-fut *G
*14N D-15N H                   This is their LstSqrs adjusted value                              n         95Di08*W
*15Be(g,n)14Be                  15Be is neutron unbound by more than 1.54 MeV                    g         11Sp01*W
*14C(p,g)15Nxi                 From a parametrized fit                                           H         MMC122**
*14N(n,g)15N                   Original error 0.0005 increased for calibration                   M         GAu036**
*14N(d,p)15N                   Estimated systematic error 0.5 added to statistical error 0.061 keV h       AHW   **
*15F(p)14O                     Symmetrized from 1450(+160--100) keV                              H         04Go15**
*15F(p)14O                     This is the result of ref., do not use                            h         04Le12*G
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16O-H16		-130285.89116	0.00069	-130285.89111	0.00035	.1	1	26	19	16O	GMZ3	1.0	19He19,*
C H2 D-O		34837.406	0.033	34837.22238	0.00031	-3.7B	B				hB07	1.5	71Sm01
C H2 D-O		34837.202	0.020	34837.22238	0.00031	.7	U				hB08	1.5	75Sm02
C D2-O		33289.129	0.033	33288.93643	0.00032	-3.9B	B				hB07	1.5	71Sm01
C D2-O		33289.061	0.038	33288.93643	0.00032	-2.2	U				kB07	1.5	71Sm01
C D2-O		33288.940	0.019	33288.93643	0.00032	-.1	U				hB08	1.5	75Sm02
C4-O3		15256.131	0.018	15256.14223	0.00096	.2o	o				hWA1	2.5	92Va.A
C4-O3		15256.086	0.081	15256.14223	0.00096	.3	U				hOH1	2.5	93Ma.A
C4-O3		15256.121	0.009	15256.14223	0.00096	.9o	o				hWA1	2.5	95Va38
C4-O3		15256.1425	0.0008	15256.14223	0.00096	-.1o	o				MWA1	2.5	01Va33
C4-O3		15256.1415	0.0005	15256.14223	0.00096	.6o	o				HWA1	2.5	03Va.A
C4-O3		15256.14129	0.00054	15256.14223	0.00096	.7	1	50	50	16O	HWA1	2.5	06Va22
C H4-O		36387.55	0.8	36385.50833	0.00031	-1.0	U				hJ1	2.5	68Ma45
C H4-O		36386.01	0.24	36385.50833	0.00031	-.8	U				hJ2	2.5	69Na21
C H4-O		36385.644	0.036	36385.50833	0.00031	-2.5	U				hB07	1.5	71Sm01
C H4-O		36385.5062	0.0013	36385.50833	0.00031	1.6	U				HMI1	1.0	95Di08,W
C H4-O		36385.5073	0.0019	36385.50833	0.00031	.5	U				HMI1	1.0	95Di08,W
C H4-O		36385.5060	0.0022	36385.50833	0.00031	1.1	U				HMI1	1.0	95Di08,W
16O-u		-5085.362	0.027	-5085.38074	0.00032	-.3	U				hOH1	2.5	93Ma.A
16O-u		-5085.3798	0.0011	-5085.38074	0.00032	-.3	U				K	2.5	16Ho.A
14C H2-O		23977.413	0.014	23977.43316	0.00403	1.0	U				mB08	1.5	75Sm02
N D-O		22261.160	0.013	22261.16284	0.00025	.1	U				hB08	1.5	75Sm02
N2-C O		11233.57	0.20	11233.38925	0.00038	-.4	U				hJ2	2.5	69Na21
N2-C O		11233.543	0.025	11233.38925	0.00038	-4.1B	B				hB07	1.5	71Sm01
N2-C O		11233.43	0.21	11233.38925	0.00038	-.1	U				hJ6	2.5	76Ka50
N2-C O		11259	27	11233.38925	0.00038	-.4	U				hCR1	2.5	89Sh10
N2-C O		11233.3909	0.0022	11233.38925	0.00038	-.8	U				HMI1	1.0	95Di08,W
N2-C O		11233.38932	0.00042	11233.38925	0.00038	-.2	1	82	78	14N	HMI1	1.0	04Th17
16O(a,8He)12O		-66020	120	-65935.104	12.001	.7	U				nBrk		78Ke06
16O(p,a)13N		-5211	10	-5218.428	0.270	-.7	U				hMIT		64Sp12
16O(3He,6He)13O		-30516	14	-30513.310	9.526	.2	-2-				Brk		70Me11,*
16O(3He,6He)13O		-30511	13	-30513.310	9.526	-.2	-2-				mMSU		71Tr03,*
16O(3He,6He)13O		-30496	20	-30513.310	9.526	-.9	Z				h		IMME ,W
16O(3He,6He)13O	ave	-30513.315	9.526				2						average
16Be(g,2n)14Be		1350	100				3				H		12Sp01
14C(14C,12N)16B		-48380	60	-48409.980	24.580	-.5o	o				HBer		95Bo10
14C(14C,12N)16B		-48378	60	-48409.980	24.580	-.5	1	17	17	16B	HBer		00Ka21
14C(t,p)16C		-3015	8	-3013.400	3.578	.2	-2-				MSU		77Fo09
14C(t,p)16C		-3013	4	-3013.400	3.578	-.1	-2-				LAl		78Se04
14C(t,p)16C	ave	-3013.400	3.578				2						average
14C(3He,p)16N		4983	4	4978.234	2.301	-1.2R	R	q-q=	4.766		BNL		66Ga08
14C(3He,p)16Nxi		-4951	7				2				k		68He03,*
14N(t,p)16N		4853	10	4840.349	2.301	-1.3	U				hAld		66He10
14C(3He,n)16Oxj		-8100	8	-8104.301	3.836	-.5	1	23	23	16Oxj	H		70Ad01,*
16O(d,a)14N		3110.	3.5	3110.38802	0.00028	.1	U				hWis		52Cr30,Y
16O(d,a)14N		3119	5	3110.38802	0.00028	-1.7	U				hRic		53Fa18,Y
16O(d,a)14N		3110	6	3110.38802	0.00028	.1	U				hMex		64Ma.B
16O(d,a)14N		3113	6	3110.38802	0.00028	-.4	U				hMIT		64Sp12
14N(3He,p)16Oxi		2444	6	2446.709	4.427	.5	1	54	54	16Oxi	H		64Br08,*
14N(d,g)16Oxj		-1986.3	4.4	-1984.956	3.836	.3	1	77	77	16Oxj	H		72Ne10
14N(3He,n)16F		-963	40	-951.864	5.364	.3	U				hLAl		65Za01
14N(3He,n)16F		-970	15	-951.864	5.364	1.2R	R	q-q=	-18.136		Har		68Ad03
16Ne(2p)14O		1350	80	1401.052	20.480	.6	U				H		08Mu13
16B(g,n)15B		85	15	83.001	14.605	-.1	1	95	83	16B	H		09Le02
15N(d,p)16N		286	12	264.283	2.301	-1.8	U				nCIT		55Pa50,Y
15N(d,p)16N		269	10	264.283	2.301	-.5	U				nPit		57Wa01,Y
15N(d,p)16N		259	6	264.283	2.301	.9	-2-				HMex		64Ma.B
15N(d,p)16N		267	8	264.283	2.301	-.3	-2-				HMIT		64Sp12
15N(d,p)16N		270	10	264.283	2.301	-.6	U				nPen		66He10
15N(d,p)16N		269	4	264.283	2.301	-1.2	-2-	q-q=	4.717				14C+2
15N(d,p)16N		255.2	7.	264.283	2.301	1.3	-2-	q-q=	-9.083		H		18O-2
15N(d,p)16N		264.2	4.	264.283	2.301	.0	-2-	q-q=	-0.083		H		18O-2
15N(d,p)16N	ave	264.283	2.301				2						average
15N(p,g)16Oxi		-665.3	6.6	-668.546	4.427	-.5	1	46	46	16Oxi	H		57Ha99
16O(3He,a)15O		4920	10	4913.679	0.490	-.6	U				hAld		59Hi68,Y
16O(3He,a)15O		4907	7	4913.679	0.490	1.0	U				hRic		59Yo25,Y
16F(p)15O		527	7	530.589	5.360	.5	1	59	58	16F	G		18Ch25

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 16N(B-)16O                    10400       20        10420.909     2.301    1.0  U                  h      59Al06
 16O(3He,t)16F                -15430       10       -15430.776     5.364    -.1  -1-                 KVI   80Ja.A
 16O(3He,t)16F                -15449       15       -15430.776     5.364    1.2  -1- q-q=  -18.224          14N+2
 16O(3He,t)16F            ave -15435.846    8.320   -15430.776     5.364     .6  1    42  42  16F           average
 16O(pi+,pi-)16Ne             -27766       45       -27701.779    20.480    1.4  -2-                k      80Bu15
 16O(pi+,pi-)16Ne             -27685       23       -27701.779    20.480    -.7  -2- q-q=   16.779  H        20Ne-4
 16O(pi+,pi-)16Ne         ave -27701.777   20.480                              2                           average
*16O-H16                       M-A=-4737.00153(79) keV; frequency ratio 16O8+/(p)=0.503936558253(22)  g      HWJ205**
*C H4-O                       From ratio O+/CH4+        =0.997730269420( 80)  Tab93:924(8) was typo           AHW932*W
*C H4-O                       From ratio CO+/C2H4+      =0.998701943805( 66)                           n      95Di08*W
*C H4-O                       From ratio CO2+/C3H8+     =0.998348443160(100)                           n      95Di08*W
*N2-C O                       From ratio CO+/N2+        =0.999598887572( 77)                           n      95Di08*W
*                              ~ updates value          0.9995988876 (4) of ref.                              89Co21*G
*16O(3He,6He)13O              M-A increased by 7 for more recent calibrator M-A(9C)=28913(2)                  AHW   **
*16O(3He,6He)13O              Recalibrated using their 12C(3He,6He) result                         m      AHW968**
*16O(3He,6He)13O              T=3/2, from 13B, Cxi, Nxi (error 4+20)                               m      AHW968*W
*14C(3He,p)16Nxi              IT=9928(7), Q rebuilt with Ame*1965                                  H      MMC121**
*14C(3He,p)16Nxi              This is indeed T=2 ;the correct label is 16Nxi, not 16Nxj            k      MMC151*W
*14C(3He,n)16Oxj              IT=22717(8), Q rebuilt with Ame*1964                                 H      MMC121**
*14C(3He,n)16Oxj              recalibration -0.45141 keV using AME2011; negligible                 h      MMC121*W
*14N(3He,p)16Oxi              IT=12798(6), Q rebuilt                                               H      MMC121**


 17O2-28Si D3                 -20968.3557    0.0014 -20968.35605   0.00129   -.2  1    84  83  17O  HFS1 1.0 10Mo29
 17B-u                         45970      860        46931.399   219.114      .7  U                  hGA1 1.5 87Gi05
 17B-u                         46830      180        46931.399   219.114      .4  -2-                 TO2 1.5 88Wo09
 17B-u                         47127      250        46931.399   219.114     -.5  -2-                 GA3 1.5 91Or01
 17B-u                    ave  46931.399  219.114                              2                           average
 17Ne-22Ne.773                 24373.27     0.38     24373.270     0.380      .0  1   100 100  17Ne HMA8 1.0 08Ge07
 17Na-u                        37760      430        37273.000    64.000     -.5  Z                  k    2.5 S-u148
 17Na-u                        37273       64                                  2                  G1.0 1.0 17Br07,*
 17O-16O H                     -3607.8961    0.0016  -3607.89520   0.00070     .6  1    19  17  17O  HFS1 1.0 10Mo29
 17O(n,a)14C                    1817.2       3.5      1817.74470   0.00383     .2  U                  M        01Wa50
 14C(a,n)17O                   -1819.07      2.0     -1817.74470   0.00383     .7  U                  hWis     56Sa06,Y
 17O(p,a)14N                    1200        17        1191.87416   0.00065    -.5  U                  hMIT     64Sp12
 17O(d,a)15N                    9818        12        9800.60472   0.00086   -1.4  U                  hNob     54Pa39,Y
 16O(n,g)17O                    4143.24      0.23     4143.08010   0.00078    -.7  U                  H        77Mc05,Z
 16O(n,g)17O                    4143.06      0.13     4143.08010   0.00078     .2  U                  HBdn     06Fi.A
 16O(d,p)17O                    1915         8        1918.51387   0.00065     .4  U                  hRic     51Kl55,Y
 16O(d,p)17O                    1918         4        1918.51387   0.00065     .1  U                  hMIT     57Br82
 16O(d,p)17O                    1918         3        1918.51387   0.00065     .2  U                  hMex     61Ja23
 16O(d,p)17O                    1920         3        1918.51387   0.00065    -.5  U                  hMIT     64Sp12
 16O(d,p)17O                    1918.74      0.5      1918.51387   0.00065    -.5  U                  HRez     90Pi05,*
 16O(n,g)17Oxi                 -6935.70      0.17                              2                  H        81Hi01,*
 16O(p,g)17F                     600.35      0.28      600.268     0.248     -.3  -1-                 CIT     75Ro05
 16O(d,n)17F                   -1626         4       -1624.299     0.248      .4  U                  hRic     51Bo49,Y
 16O(d,n)17F                   -1624.6       0.5     -1624.299     0.248      .6  -1-                hNvl     60Bo21,Z
 16O(p,g)17F              ave    600.268     0.248     600.268     0.248     -.0  1   100 100  17F           average
 16O(p,g)17Fxi                -10592.8       1.9                               2                  H        76Hi09,W
 16O(3He,2n)17Ne              -22420       190      -22448.871     0.354     -.2  U                  hBNL     67Es02
 17F(B+)17O                     2770         6        2760.465     0.248    -1.6  U                  h        54Wo23
*17Na-u                       Authors says this is an upper limit M-A<34720(60) keV                G        17Br07**
*17Na-u                       Represents 17Na -> 3p + 14O, yielding M-A<34720(60) keV              G        GAu177**
*                              ~  would best be written as : 17Na(3p)14O                           g        GAu177*G
*16O(d,p)17O                  Estimated systematic error 0.5 added to statistical error 0.062 keV          AHW   **
*16O(n,g)17Oxi                Original Q=-6934.41(0.17) does not match original T=7373.31(0.18)    H        MMC129**
*16O(p,g)17Fxi                Ref. itself says c.m.Ep=10592.6(1.9)                                 h        AHW944*W


 C D3-18O                      43145.72216   0.00088 43145.72140   0.00069   -.9  -1-                HFS1 1.0 09Re15,*
 C D3-18O                      43145.72116   0.00136 43145.72140   0.00069    .2  -1-                HFS1 1.0 09Re15,*
 C D3-18O                 ave  43145.72186   0.00074 43145.72140   0.00069   -.6  1    87  87  18O           average
 C3-18O2                        1680.7695    0.0038   1680.77573   0.00138   1.6  1    13  13  18O  HFS1 1.0 09Re15
 18F-u                           943        85         937.325     0.497     -.0  U                  h    2.5 92Ge08
 18Na-u                        27180       430       26879.388   100.786     -.3  Z                  m    2.5 IMME
 18Na-u                        25969        54       26879.388   100.786    6.7F  F                  k    2.5 01Ze.A,*
 18Na-u                        26882       183       26879.388   100.786     -.0  1    30  30  18Na K1.0 1.0 04Ze05,*
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 18Ne-22Ne.818                12755.19      0.30     12755.674     0.390     1.6    Z                     hMA8 1.0 03Bl.A
 18Ne-22Ne.818                12755.68      0.39     12755.674     0.390     -.0    1    100 100   18Ne HMA8 1.0 04Bl20
 14C(7Li,3He)18N             -10170        60       -10117.388    18.570      .9    U                     hStr     80Kr.A,W
 18O(48Ca,51V)15B            -21760        50       -21761.958    21.029     -.0   -1-                     Hei     78Bh02
 18O(48Ca,51V)15B            -21768        25       -21761.958    21.029      .2   -1-                     Can     83Ho08
 18O(48Ca,51V)15B        ave  -21766.400    22.361   -21761.958    21.029      .2    1     88  88   15B           average
 18O(p,a)15N                   3954         9         3979.80076   0.00088   2.9    U                     hNob     54Mi60,Y
 18O(p,a)15N                   3964        10         3979.80076   0.00088   1.6    U                     hMex     64Ma.B
 18O(d,a)16N                   4235         7         4244.083     2.301     1.3R   R  q-q=    -9.083   mCIT     55Pa50,Z
 18O(d,a)16N                   4219        20         4244.083     2.301     1.3    U                     hMex     64Ma.B
 18O(d,a)16N                   4249        15         4244.083     2.301     -.3    U                     hPhi     66He10
 18O(d,a)16N                   4244         4         4244.083     2.301      .0R   R  q-q=    -0.083   mMIT     67Sp09,Z
 16O(3He,p)18F                 2033         5         2032.133     0.463     -.2    U                     hRic     59Yo25
 16O(3He,p)18F                 2055         5         2032.133     0.463    -4.6C   C                     hMex     64Ma.B
 16O(3He,n)18Ne               -3205        13        -3194.719     0.363      .8    U                     nNvl     61Du02,Y
 16O(3He,n)18Ne               -3198         6        -3194.719     0.363      .5    U                     nAld     61To03,Y
 16O(3He,n)18Ne               -3194.0       1.5      -3194.719     0.363     -.5    U                     M        94Ma14,W
 18B(g,n)17B                      5         5                                        3                     H        10Sp02,*
 18O(48Ca,49Ti)17C           -17465        35       -17475.551    17.365     -.3   -2-                     Hei     77No08
 18O(48Ca,49Ti)17C           -17479        20       -17475.551    17.365      .2   -2-                     Can     82Fi10
 18O(207Pb,208Po)17C         -26870       220       -26797.539    17.412      .3    U                     hChR     79Ba31
 18O(48Ca,49Ti)17C       ave  -17475.554    17.365                                   2                              average
 18O(t,a)17N                   3872        15                                        2                      LAl     60Ja13
 17O(n,g)18O                   8043.5       1.0       8045.37019   0.00101   1.9    U                     HBdn     06Fi.A
 17O(d,p)18O                   5820        10         5820.80396   0.00091    .1    U                     hNob     54Ah37,Y
 17O(d,p)18O                   5820        10         5820.80396   0.00091    .1    U                     hMan     65Mo16
 17O(p,g)18F                   5603        3          5607.094     0.463     1.4    U                     HStr     73Se03
 17O(p,g)18F                   5606.2       0.6       5607.094     0.463     1.5    1     60  60   18F  mCIT     75Ro05,Z
 18Na(p)17Ne                   1270       170         1248.569    93.881     -.1   -1-                    H        04Ze05
 18Na(p)17Ne                   1230       150         1248.569    93.881      .1   -1-                    H        12Mu05
 18Na(p)17Ne             ave    1247.510   112.476     1248.569    93.881      .0    1     70  70   18Na           average
 18O(pi-,pi+)18C             -26712       150       -26724.080    30.000     -.1    U                     h        78Se07
 18O(48Ca,48Ti)18C           -21434        30                                        2                      Can     82Fi10
 18O(48Ca,48Ti)18C           -21331       300       -21433.998    30.000     -.3    U                     hOrs     82Na04
 18N(B-)18O                   13860       400        13895.984    18.570      .1    U                     h        64Ch19
 18O(d,2p)18N                -15270       100       -15338.203    18.570     -.7    U                     hBrk     78De.A
 18O(t,3He)18N               -13917        60       -13877.392    18.570      .7    U                     hLAl     69St07,*
 18O(7Li,7Be)18N             -14761        20       -14757.877    18.570      .2   -2-                     Can     83Pu01
 18O(14C,14N)18N             -13720        50       -13739.507    18.570     -.4   -2-                    MOrs     80Na14,W
 18O(7Li,7Be)18N         ave  -14757.879    18.570                                   2                              average
 18Oxi(IT)18O                 16278        20              *                        Z                     m        AHW930,W
 18F(B+)18O                    1657         2         1655.929     0.463     -.5    U                     H        64Ho28
 18O(p,n)18F                  -2451         4        -2438.276     0.463     3.2B   B                     hWis     50Ri59,Y
 18O(p,n)18F                  -2436.97      0.73     -2438.276     0.463    -1.8    1     40  40   18F  mNvl     64Bo13,Z
 18O(p,n)18F                  -2440.2       2.8      -2438.276     0.463      .7    U                     h        67Pr04
 18Ne(B+)18F                   4438         9         4444.505     0.589      .7    U                     n        63Fr10
*C D3-18O                    Respectively CD3+/18O^+, C2D6+/18O$^{2+}$ considered independent        H        GAu101**
*18Na-u                      F : results distrusted (see also 15F and 19Mg)                          K        GAu158**
*18Na-u                      Other interpretation : D_M=25969(172) uu, M-A=24190(160) keV             K        04Ze05**
*                              ~ both from 18Na(p)17Ne                                                h        GAu123*G
*14C(7Li,3He)18N             From M=A=13290(60), is 121 level                                                  83Pu01*W
*16O(3He,n)18Ne              Typo: was -3183.9 in Ame'95; MMC126 to 1887.3±0.2 level                  m        GAu99b*W
*18B(g,n)17B                 Decay energy <10 keV, derived from scattering length as<-50 fm           H        10Sp02**
*18O(t,3He)18N               From Q=14038(30), reinterpreted as mainly to (2^-) level at 114.90 keV   h        Ens967**
*18O(14C,14N)18N             Assuming M-A=13217(40) to be mainly to (2-) level at 114.90 keV          m        95Ti07*W
*18Oxi(IT)18O                Assuming 16399(5), 17025(10) levels to be IBA's                          m        95Ti07*W
*18Oxi(IT)18O                  of 114.90(0.18), 747(10) levels in 18N                                 m        95Ti07*W


 28Si H3-C 19F                 1998.4687    0.0022    1998.46805   0.00093    -.3    1     18  14   19F  HFS1 1.0 09Re15
 19B-u                        63100       430        64166.000   564.000     1.0    Z                     k    2.5 S-u111,G
 19B-u                        64166       376        64166.000  \564.000            2                     KGA8 1.5 12Ga45
 19C-u                        34680       260        34797.595   105.625      .3o   o                     hTO1 1.5 86Vi09
 19C-u                        35370       450        34797.595   105.625     -.8    U                     hGA1 1.5 87Gi05
 19C-u                        35180       130        34797.595   105.625    -2.0o   o                     hTO2 1.5 88Wo09
 19C-u                        35506       253        34797.595   105.625    -1.9    U                     hGA3 1.5 91Or01
 C D4-H 19F                  50178.88       0.05     50178.91741   0.00088    .5    U                     HB08 1.5 75Sm02
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 19Mg-u                          34300        320        34179.920     64.414      -.2   Z                   2.5 IMME   ,W
 19Mg-u                          35470        270        34179.920     64.414     -1.9F  F                k  2.5 01Ze.A,*
 13C D3-19F                      47257.00669   0.00091  47257.00680    0.00084     .1   1     86  86  19F  HFS1 1.0 09Re15
 19Ne-22Ne.864                    9323.95      0.36      9324.169      0.171       .6   Z                hMA8 1.0 03Bl.A
 19Ne-22Ne.864                    9323.92      0.33      9324.169      0.171       .8  -2-               HMA8 1.0 04Bl20
 19Ne-22Ne.864                    9324.26      0.20      9324.169      0.171      -.5  -2-               HMA8 1.0 08Ge07
 19Ne-22Ne.864             ave    9324.169     0.171                                    2                         average
 19F(p,a)16O                      8115        10         8113.61225    0.00084    -.1   U                hCIT     50Ch53,Y
 19F(p,a)16O                      8115        10         8113.61225    0.00084    -.1   U                hCIT     57Yo04,Y
 19F(p,a)16O                      8122         9         8113.61225    0.00084    -.9   U                hMIT     64Sp12
 17O(t,p)19O                      3524         7         3519.218      2.637      -.7R  R  q-q=    4.782   Man     65Mo19
 19F(d,a)17O                     10060        12        10032.12612    0.00101   -2.3   U                hMIT     64Sp12
 19Mg(2p)17Ne                      750        50          760.000     60.000      .2o  o                G        07Mu15
 19Mg(2p)17Ne                      760        60                                         2                G        12Mu05
 19Mg(2p)17Ne                      980       170          760.000     60.000     -1.3   U *              G        18Xu04,*
 18C(n,g)19C                       530       120          576.829     93.704      .4  -3-               M        99Na27,*
 18C(n,g)19C                       650       150          576.829     93.704     -.5  -3-               M        01Ma08,*
 18C(n,g)19C               ave     576.829    93.704                                     3                         average
 18O(18O,17F)19N                -19374        50       -19373.589     16.406      .0  -2-                Ors     81Na.A
 18O(18O,17F)19N                -19334        35       -19373.589     16.406     -1.1  -2-                Can     89Ca25
 18O(48Ca,47Sc)19N              -16540        20       -16527.097     16.517      .6  -2-                Can     83Ho08
 18O(208Pb,207Bi)19N            -18440       150       -18333.094     16.540      .7   U                hChR     79Ba31
 18O(18O,17F)19N           ave  -19373.588    16.404                                    2                         average
 18O(d,p)19O                      1727         8         1731.078      2.637      .5o  o                HNob     54Mi89,Y
 18O(d,p)19O                      1732         8         1731.078      2.637      -.1  -2-                CIT     54Th30
 18O(d,p)19O                      1731         5         1731.078      2.637      .0  -2-                Nob     57Ah19,Y
 18O(d,p)19O                      1733         6         1731.078      2.637      -.3  -2-               HMex     64Ma.B
 18O(d,p)19O                      1727         5         1731.078      2.637      .8  -2-               mMIT     64Sp12,Z
 18O(d,p)19O                      1734        10         1731.078      2.637      -.3   U                nMan     65Mo16
 18O(d,p)19O                      1735.9       7.        1731.078      2.637      -.7  -2- q-q=    4.822  H          17O+2
 18O(d,p)19O               ave    1731.078     2.637                                    2                         average
 19F(3He,a)18F                   10166        15        10145.745      0.463     -1.4   U                hAld     59Hi67,Y
 19Na(p)18Ne                       160       110          322.796     10.539      1.5   U                H        04Ze05
 19Na(p)18Ne                       328        22          322.796     10.539      -.2   1     23  23  19Na H        10Mu12
 19O(B-)19F                       4800        12         4820.303      2.637      1.7   U                n        59Al06
 19Ne(B+)19F                      3262        10         3239.499      0.160     -2.3   U                h        60Wa04
 19F(p,n)19Ne                    -4021.3       4.7      -4021.846      0.160      -.1   U                hRic     55Ma84
 19F(p,n)19Ne                    -4019.6       1.4      -4021.846      0.160     -1.6   U                hRic     61Be13,Z
 19F(p,n)19Ne                    -4021.1       1.0      -4021.846      0.160      -.7   U                HZur     61Ry04,Z
 19F(p,n)19Ne                    -4020.7       0.8      -4021.846      0.160     -1.4   U                h        66Ma60
 19F(p,n)19Ne                    -4019.6       0.7      -4021.846      0.160     -3.2B  B                H        69Ov01,Z
 19F(3He,t)19Nei                -10759         9                                         2                K        98Ut02,*
*19B-u                          17B, 19B n-stable, 18B not                                                        84Mu27*G
*19Mg-u                         19Mg last p-unstable even Z I=-5 nucleus below 35Ca                               86La17*W
*19Mg-u                         F : results distrusted (see also 15F and 18Na)                        K        GAu158**
*19Mg(2p)17Ne                   Symmetrized from 870(+240--70); Confirmed previous result in 12Mu05   G        HWJ192**
*18C(n,g)19C                    From Coulomb dissociation cross sections and angular distribution     M        99Na27**
*18C(n,g)19C                     S(n)=162(112)                                                        m        Ame95 *W
*18C(n,g)19C                    From momentum distribution following one neutron removal              M        01Ma08**
*19F(3He,t)19Nei                rebuilt from Ex=7500(9); with ref.s from Ame*1995; recalibrated +1keV  K        MMC141**
*19F(3He,t)19Nei                Calibrated on 27Al(3He,t)27Si   {**** check value **** approx}        k        MMC141*W

 20C-u                           39940       1210        40261.733    247.586      .2   U                hGA1 1.5 87Gi05
 20C-u                           40360        240        40261.733    247.586     -.3  -2-                TO2 1.5 88Wo09
 20C-u                           40165        491        40261.733    247.586      .1  -2-                GA3 1.5 91Or01
 20C-u                           40420        550        40261.733    247.586     -.2  -2-               MGA5 1.5 99Sa.A
 20C-u                           40108        290        40261.733    247.586      .4  -2-               KGA8 1.5 12Ga45
 20C-u                     ave   40261.733    247.586                                    2                         average
 20N-u                           23230        280        23367.295     84.696      .3   U                hTO1 1.5 86Vi09
 20N-u                           23210        150        23367.295     84.696      .7  -2-                GA1 1.5 87Gi05
 20N-u                           23380        130        23367.295     84.696     -.1  -2-                TO2 1.5 88Wo09
 20N-u                           23397         69        23367.295     84.696     -.3  -2-                GA3 1.5 91Or01
 20N-u                     ave   23367.295     84.696                                    2                         average
 C D4-20Ne                       63966.9329     0.0026  63966.93612    0.00165    1.2   1     40  40  20Ne NMI1 1.0 95Di08,W
 20Ne-u                          -7559.309      0.090   -7559.82475    0.00165   -2.3   U                hOH1 2.5 93Ma.A
 20Ne-u                          -7559.814      0.014   -7559.82475    0.00165    -.8   U                MST2 1.0 02Bf02
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 O D2-20Ne                       30677.497     0.067    30677.99969    0.00168   3.0B  B                kOH1 2.5 93Go38,G
 20Mg-23Na.870                   27663.8       2.0                                     2                KTT1 1.0 14Ga20
 20Ne-22Ne.909                     270.94      0.33        271.107     0.017      .5   Z                hMA8 1.0 03Bl.A
 20Ne-22Ne.909                     270.89      0.43        271.107     0.017      .5   U                HMA8 1.0 04Bl20
 20Ne-22Ne.909                     271.16      0.20        271.107     0.017     -.3   U                HMA8 1.0 08Ge07
 20Ne(3He,8Li)15F               -29960       200        -29623.270    14.000     1.7   U                KMSU     78Be26
 20Ne(3He,8Li)15F               -29730       180        -29623.270    14.000      .6   U                KBrk     78Ke06
 20Ne(3He,8Li)15F               -29840       110        -29623.270    14.000     2.0   Z                m        IMME-4,W
 20Nei(a)16O                      5548.8       6.3       5542.607      2.007    -1.0   U                H        73To08,W
 20Ne(a,8He)16Ne                -60150        80        -60213.474    20.480     -.8   U                nBrk     78Ke06
 20Ne(a,8He)16Ne                -60197        23        -60213.474    20.480     -.7R  R  q-q=    16.474   Tex     83Wo01
 20Ne(3He,6He)17Ne              -26188        50        -26203.260     0.358     -.3   U                HBrk     70Me11,*
 20Ne(3He,6He)17Ne              -26158        32        -26203.260     0.358    -1.4F  F                H        98Gu10,*
 20Ne(3He,6He)17Ne              -26204        26        -26203.260     0.358      .0   Z                h        IMME  ,W
 18O(48Ca,46Sc)20N              -25873        60        -25012.539    78.897    14.3B  B                 Can     89Or03,*
 18O(t,p)20O                      3086        15          3081.852     0.885     -.3   U                hLAl     60Ja13
 18O(t,p)20O                      3076        10          3081.852     0.885      .6   U                hAld     62Hi06
 18O(t,p)20O                      3082.4       1.9        3081.852     0.885     -.3  -2-                Str     82An12
 18O(t,p)20O                      3081.7       1.0        3081.852     0.885      .2  -2-                Str     85An17
 18O(t,p)20O               ave    3081.852     0.885                                   2                         average
 18O(3He,p)20F                    6875.2       1.5        6876.895     0.030     1.1   U                HNDm     70Ro06
 18O(3He,p)20Fxi                   356.0       3.0                                     2                H        76Mi01,*
 20Ne(d,a)18F                     2795         9          2795.762     0.463      .1   U                hNob     54Mi61,Y
 20Ne(d,a)18F                     2766        20          2795.762     0.463     1.5   U                hMex     64Ma.B
 20Ne(d,a)18F                     2790        10          2795.762     0.463      .6   U                h        75Bo59
 20B(g,n)19B                      1560       150                                       3                G        18Le18
 19F(n,g)20F                      6601.1       0.3        6601.336     0.030      .8   U                hUtr     68Sp01
 19F(n,g)20F                      6601.29      0.14       6601.336     0.030      .3  -2-                ILn     83Hu12,Z
 19F(n,g)20F                      6601.32      0.05       6601.336     0.030      .3  -2-                MMn     87Ke09,Z
 19F(n,g)20F                      6601.35      0.04       6601.336     0.030     -.3  -2-               MORn     96Ra04
 19F(n,g)20F                      6601.34      0.13       6601.336     0.030     -.0  -2-               MBdn     06Fi.A
 19F(d,p)20F                      4377         7          4376.770     0.030     -.0   U                hMIT     64Sp12
 19F(d,p)20F                      4377.7       0.9        4376.770     0.030    -1.0   U                hNDm     70Ro06
 19F(n,g)20F               ave    6601.336     0.030                                   2                         average
 19F(p,g)20Nej                   -3889.4       2.7                                     2                H        67Bl19
 20Ne(3He,a)19Ne                  3750        13          3712.317     0.160    -2.9   U                hMIT     64Sp12
 20Nai(p)19Ne                     4381        50          4307.864     1.227    -1.5   U                KBrk     79Mo02,G
 20Nai(p)19Ne                     4332        16          4307.864     1.227    -1.5   U                KMSU     92Go10,W
 20Nai(p)19Ne                     4326        30          4307.864     1.227     -.6   U                KLis     95Pi03,W
 20Nai(p)19Ne                     4344        20          4307.864     1.227    -1.8   Z                         IMME-5,W
 20Fxi(IT)20F                     6519         3          6520.895     3.000      .6   Z                         76Mi01,W
 20F(B-)20Ne                      7053        13          7024.469     0.030    -2.2   U                h        54Wo23,*
 20F(B-)20Ne                      7050        15          7024.469     0.030    -1.7   U                h        59Al06,*
 20F(B-)20Ne                      7032         6          7024.469     0.030    -1.3   U                h        76Ge08,*
 20F(B-)20Ne                      7026.9       1.8        7024.469     0.030    -1.4   U                h        87Va20,*
 20F(B-)20Ne                      7019.8       1.7        7024.469     0.030     2.7   U                h        89He11,*
 20Nei(IT)20Ne                   10278         5         10272.453     2.007    -1.1   Z                         73To08
 20Nei(IT)20Ne                   10274         3         10272.453     2.007     -.5  -2-               H        76In06
 20Nei(IT)20Ne                   10271.2       2.7       10272.453     2.007      .5  -2-               H        77Fi08
 20Nei(IT)20Ne             ave   10272.453     2.007                                   2                         average
 20Na(B+)20Ne                    13906        40         13892.421     1.109     -.3   U                h        67Su05
 20Ne(p,n)20Na                  -14672.1       7.       -14674.768     1.109     -.4   U                H        71Wi07,Z
 20Ne(3He,t)20Na-36Ar()36K       -1078.06      1.06      -1078.060     1.060      .0   1   100 100  20Na HMun     10Wr01
 20Nai(IT)20Na                    6498.4       0.5                                     2                K        15Gl03
*C D4-20Ne                      From ratio Ne+/CD4+      =0.996810562610(130)                           n        95Di08*W
*O D2-20Ne                      From O D2 in Tab83 and their 20Ne in eq.16                              n        GAu955*G
*20Ne(3He,8Li)15F               T=3/2, from 15C, 15Nxi, 15F and including data on                       m        AHW968*W
*                                ~ lowest 3/2;5/2+ level in C, N and F (no extra error)                 m        91Aj01*W
*20Nei(a)16O                    deduced IT=10278(5)                                                     h        73To08*W
*20Ne(3He,6He)17Ne              Original M-A=16479(50) but revised calibrator M(9C)=28910.2(2.1)        m        AHW986**
*20Ne(3He,6He)17Ne              F : calibrated with 24Mg(3He,6He) from ref. for excitation energies     H        92Ku02**
*                                ~ no details given. No correction possible                             H        GAu052**
*20Ne(3He,6He)17Ne              T=2, from 17N, Oxi, Fxi (error 16+20)                                   h        AHW968*W
*18O(48Ca,46Sc)20N              Probably to excited levels in 20N and 46Sc                                       GAu   **
*                                ~ gs better corresponds to one count 1MeV higher Q                              GAu   *G
*                                ~ Three mass determinations -> M-A=21750(60)                           n        AHW955*W
*18O(3He,p)20Fxi                IT=6519.4(3.0), Q rebuilt with Ame*1971                                 H        MMC122**
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*20Nai(p)19Ne                Ep=4160(50) to gs; 3950(60) to 238.27 level may be mixture, not used     h         95Pi03*G
*20Nai(p)19Ne                Qp=4098(19) to 238.27 level may be mixture, not used                     h         95Pi03*W
*20Nai(p)19Ne                Qp=4071(30) to 238.27 level may be mixture, not used                     h         95Pi03*W
*20Nai(p)19Ne                T=2, from 20O, Fxi, Nej, (error 12+20)                                             AHW92c*W
*20Fxi(IT)20F                From 18O(3He,pg)                                                                   AHW944*W
*20F(B-)20Ne                 E-=5419(13) 5416(15) 5398(6) 5392.3(1.8) 5386.1(1.7) resp,               h         GAu12a**
*                             ~ to 2^+ level at 1633.674 keV                                          k         Ens992**

 21C-u                          49000#    640#                                    2                   k    1.0 S-u169,G
 21N-u                          26580     200         27087.574   143.906    1.7  U                   hTO1 1.5 86Vi09
 21N-u                          27060     190         27087.574   143.906     .1  -2-                  GA1 1.5 87Gi05
 21N-u                          26930     210         27087.574   143.906     .5  -2-                  TO2 1.5 88Wo09
 21N-u                          27162     131         27087.574   143.906    -.4  -2-                  GA3 1.5 91Or01
 21N-u                     ave  27087.574 143.906                                 2                             average
 21Na-39K.538                   17180.51    0.29      17180.370     0.046   -.5o  o                   hMA8 1.0 04Mu26
 21Na-39K.538                   17180.51    0.29      17180.370     0.046   -.3   U                   KMa8 1.5 08Mu05,*
 21Al-u                         29082#    644#                                    2                   g    1.0 S-u211
 H3 18O-21Ne                    28787.76    0.25      28788.023     0.041    1.1  U                   HCP1 1.0 04Sa53,*
 21Na-23Na.913                   6995.25    0.32       6995.105     0.046   -.5o  o                   hMA8 1.0 04Mu26
 21Na-23Na.913                   6995.25    0.32       6995.105     0.046   -.3   U                   KMa8 1.5 08Mu05
 21Mg-23Na.913                  21046.41    0.81                                  2                   KTT1 1.0 14Ga20
 21Ne-22Ne.955                   2073.85    0.39       2073.902     0.045     .1  Z                   hMA8 1.0 03Bl.A
 21Ne-22Ne.955                   2073.82    0.40       2073.902     0.045     .2  U                   HMA8 1.0 04Bl20
 21Ne-22Ne.955                   2074.04    0.26       2073.902     0.045    -.5  U                   HMA8 1.0 08Ge07
 21Na-21Ne                       3808.017   0.097      3807.774     0.019   -2.5  U                   GMS1 1.0 15Ei01
 21Na-21Ne                       3807.774   0.019      3807.774     0.019    -.0  1   100 100   21Na GMA8 1.0 19Ka30,*
 21Na-20Na                      -9732      50         -9699.842     1.191     .3  U                   hCR1 2.5 89Sh10
 18O(18O,15O)21O               -12574      70        -12483.289    12.010    1.3  U                   hOrs     78Na02
 18O(18O,15O)21O               -12499      20        -12483.289    12.010     .8  -2-                  Can     89Ca25
 18O(64Ni,61Ni)21O             -11713      15        -11721.855    12.006    -.6  -2-                  Dar     85Wo01
 18O(208Pb,205Pb)21O             -6860     75         -6823.219    12.001     .5  U                   hChR     79Ba31
 18O(18O,15O)21O           ave -12483.266  12.000                                 2                             average
 21B(g,2n)19B                    2470     190                                     3                   G         18Le18
 19F(t,p)21F                     6221.0     1.8                                   2                    Str      84An17
 19F(3He,p)21Ne                 11911      15         11886.579     0.039   -1.6  U                   hAld      59Hi75,Y
 20Ne(n,g)21Ne                   6760.8     1.5        6761.162     0.038     .2  U                   h         70Se14
 20Ne(n,g)21Ne                   6761.16    0.04       6761.162     0.038     .1  -1-                  mMMn     86Pr05,Z
 20Ne(n,g)21Ne                   6761.19    0.14       6761.162     0.038    -.2  -1-                  MBdn     06Fi.A
 20Ne(d,p)21Ne                   4531       9          4536.596     0.038     .6  U                   hNob      55Ah41,Y
 20Ne(d,p)21Ne                   4532       6          4536.596     0.038     .8  U                   hMex      64Ma.B
 20Ne(d,p)21Ne                   4534       7          4536.596     0.038     .4  U                   hMIT      64Sp12
 20Ne(n,g)21Ne             ave   6761.162   0.038      6761.162     0.038     .0  1   100 100   21Ne           average
 20Ne(p,g)21Na                   2431.2     0.7        2431.896     0.042    1.0  U                   K         69Bl03,Z
 20Ne(p,g)21Nai                 -6547.9    14.3       -6543.000     4.000     .3  U                   H         81Fe05,G
 21Nai(p)20Ne                    6543       4                                     2                   H         73Se08,*
 21O(B-)21F                      8150     175          8109.639    12.134    -.2  U                   h         81Al07
 21Na(B+)21Ne                    3522      30          3546.919     0.018     .8  U                   h         52Sc15
 21Na(B+)21Ne                    3532      20          3546.919     0.018     .7  U                   h         60Wa04
 21Nai(IT)21Na                   8969.2     4.         8974.896     4.000    1.4  Z                             73Se08,W
 21Nai(IT)21Na                   8977       5          8974.896     4.000    -.4  Z                             81Fe05,W
*21C-u                       n-unstable 21C                                                                     85La03*G
*21Na-39K.538                CF=1.5 for prelim. results; not trusted within given uncertainties       H         GAu071**
*H3 18O-21Ne                 D_M=28787.78(0.25) corr --0.02 keV for molecular and ionization          H         04Sa53**
*21Na-21Ne                   Electron binding energies not considered by authors                      G         HWJ201**
*20Ne(p,g)21Nai              deduced IT=8981(15)                                                      h         81Fe05*G
*21Nai(p)20Ne                Q(p)=6548(4), 4904(4) to gs and 2^+ level at 1633.674 keV                H         Ens992**
*21Nai(IT)21Na               From 21Na(p) Qp=6548(4), 4904(4) to gs, 1633.67 level                              AHW944*W
*21Nai(IT)21Na               From (p,p'); orig. 8981(15) revised in ref.                                        90En08*W

 22C-u                          57585     408         57553.991   248.515    -.1  U                   KGA8 1.5 12Ga45
 22N-u                          32990     790         34100.919   223.060     .9  U                   hGA1 1.5 87Gi05
 22N-u                          34340     250         34100.919   223.060    -.6  -2-                  TO2 1.5 88Wo09
 22N-u                          34683     389         34100.919   223.060   -1.0  -2-                  GA3 1.5 91Or01
 22N-u                          34240     320         34100.919   223.060    -.3  -2-                 MGA5 1.5 99Sa.A
 22N-u                          33398     279         34100.919   223.060    1.7  -2-                 KGA8 1.5 12Ga45
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 22N-u                      ave   34100.919   223.060                                 2                            average
 22O-u                              9842       81        9965.744    61.107     1.0R  R  q-q= -123.744   GA3 1.5 91Or01
 22Ne-u                           -8614.900     0.019   -8614.886     0.019      .7   Z                     MST2 1.0 99Ca.B
 22Ne-u                           -8614.885     0.019   -8614.886     0.019     -.1   1   100 100  22Ne HST2 1.0 02Bf02
 22Na-39K.564                     14907.33      0.30    14907.091     0.141     -.8o  o                     hMA8 1.0 04Mu26
 22Na-39K.564                     14907.33      0.30    14907.091     0.141     -.5   1    10  10  22Na HMa8 1.5 08Mu05
 22Mg-39K.564                     20040.33      0.35    20040.140     0.171     -.5o  o                     HMA8 1.0 04Mu26
 22Mg-39K.564                     20040.33      0.35    20040.140     0.171     -.4   1    11  11  22Mg HMa8 1.5 08Mu05
 22Al-u                           19520       100       19540#      430#         .2   Z                     h1.0 1.0 IMME-5,W
 22Al-u                           19540#      430#                                    2                     h    1.0 S-u10c,G
 22Si-u                           34530       215       36114#      537#        2.9   Z                     h    2.5 IMME
 22Si-u                           36114#      537#                                    2                     g    1.0 S-u211
 0 H-22Ne.773                      9398.87      0.19     9398.958     0.015      .5   U                     HMA8 1.0 08Ge07
 22Na-24Mg.917                     8153.64      0.31     8154.319     0.142     2.2o  o                     hMA8 1.0 04Mu26
 22Na-24Mg.917                     8153.64      0.31     8154.319     0.142     1.5   1     9   9  22Na HMa8 1.5 08Mu05
 22Na-23Na.957                     4228.11      0.29     4228.345     0.141      .8o  o                     hMA8 1.0 04Mu26
 22Na-23Na.957                     4228.11      0.29     4228.345     0.141      .5  -1-                    HMa8 1.5 08Mu05
 22Na-23Na.957                     4228.35      0.25     4228.345     0.141     -.0  -1-                    GTT1 1.0 17Re10
 22Na-23Na.957              ave    4228.290     0.217    4228.345     0.141      .3   1    43  43  22Na           average
 22Mg-23Na.957                     9361.33      0.25     9361.394     0.171      .3   1    47  47  22Mg GTT1 1.0 17Re10
 22Na-22Ne                         3052.75      0.33     3052.434     0.142    -1.0   1    19  18  22Na kCP1 1.0 04Sa53,*
 22Mg-22Ne                         8185.79      0.73     8185.483     0.172     -.4   1     6   5  22Mg kCP1 1.0 04Sa53,*
 22Mg-22Na                         5132.99      0.34     5133.049     0.175      .2o  o                     hMA8 1.0 04Mu26
 22Mg-22Na                         5132.99      0.34     5133.049     0.175      .1  -1-                    HMa8 1.5 08Mu05
 22Mg-22Na                         5133.05      0.26     5133.049     0.175     -.0  -1-                    GTT1 1.0 17Re10
 22Mg-22Na                  ave    5133.038     0.232    5133.049     0.175      .1   1    57  37  22Mg           average
 22Ne-20Ne                        -1056.415     0.290   -1055.062     0.019     1.9   U                     mOH1 2.5 93Go38,W
 18O(18O,14O)22O                 -19060       100      -18856.446    56.921     2.0  -2-                     Can     76Hi10
 18O(18O,14O)22O                 -18741        75      -18856.446    56.921    -1.5  -2- q-q=  123.936  H          22O-C
 18O(208Pb,204Pb)22O              -6710       180       -6704.568    56.921      .0  -2-                     ChR     79Ba31
 18O(18O,14O)22O            ave  -18856.446    56.921                                 2                            average
 22Mgi(a)18Ne                      5885        40        5901.932     6.205      .4   U                     KBor     97Bl03,*
 22Mgi(a)18Ne                      5904         8        5901.932     6.205     -.3   1    60  60  22MgiKBor     06Ac04,*
 19F(a,p)22Ne                      1674        11        1673.215     0.018     -.1   U                     hMIT     64Sp12
 19F(a,n)22Na                     -1958        10       -1952.456     0.132      .6   U                     hDuk     60Wi07,Y
 22C(g,2n)20C                      -200       120         -35.000    20.000     1.4o  o                     H        11Ya25,*
 22C(g,2n)20C                      -110        60         -35.000    20.000     1.3   U                     K        12Fo04,*
 22C(g,2n)20C                       -35        20                                     3                     K        13Mo12,*
 20Ne(3He,n)22Mg                    197        25         217.955     0.159      .8   U                     hHar     68Ad03
 20Ne(3He,n)22Mg                    209        11         217.955     0.159      .8   U                     hCIT     70Mc06
 22Mgi(2p)20Ne                     6098        13        6108.455     6.207      .8   1    23  23  22MgiK        06Ac04,*
 22Ne(t,a)21F                      4545        10        4547.784     1.800      .3   U                     hLAl     61Si03,Y
 21Ne(n,g)22Ne                    10364.4       0.3     10364.257     0.042     -.5   U                     MMMn     86Pr05,Z
 21Ne(n,g)22Ne                    10363.9       0.5     10364.257     0.042      .7   U                     MBdn     06Fi.A
 21Ne(d,p)22Ne                     8152        11        8139.691     0.042    -1.1   U                     hCIT     52Mi54,Y
 21Ne(p,g)22Na                     6739.0       0.7      6738.586     0.137     -.6   U                     K        70An06,*
 22Mgi(p)21Na                      8547        15        8540.351     6.207     -.4   1    17  17  22MgiHBrk     82Ca16,*
 22F(B-)22Ne                      11000       150       10818.092    12.399    -1.2   U                     h        73Gu05
 22F(B-)22Ne                      10950       120       10818.092    12.399    -1.1   U                     hANB     74Da02,G
 22Ne(t,3He)22F                  -10788        33      -10799.500    12.399     -.3  -2-                             69St07,*
 22Ne(t,3He)22F                  -10794        18      -10799.500    12.399     -.3  -2-                     Dar      88Cl04,*
 22Ne(7Li,7Be)22F                -11691        20      -11679.985    12.399      .6  -2-                     Can      89Or04,*
 22Ne(t,3He)22F             ave  -10799.500    12.399                                 2                            average
 22Nei(IT)22Ne                    13990        40             *                       Z                              90En08,W
 22Na(B+)22Ne                      2842.2       0.5      2843.324     0.132     2.2   U                     G        68Be35,*
 22Na(B+)22Ne                      2840.4       1.5      2843.324     0.132     1.9   U                     n        68We02,*
 22Na(B+)22Ne                      2841.5       1.0      2843.324     0.132     1.8   U                     H        72Gi17,*
*22Al-u                          T=2, from 22F, Nei, Mgi; (error 86+20)                                     h        AHW   *W
*22Al-u                          Ref. calculates 17932(99) keV                                              h        06Ac04*G
*22Na-22Ne                       D_M=3052.79(0.33) uu, M-A=-5181.06(0.31) keV; corr --0.04 keV for          k        04Sa53**
*                                 ~ ion-ion interaction                                                     k        04Sa53**
*22Na-22Ne                       -0.01 keV for ionization   <- GAu153: no more needed when using ptrap17.fk          04Sa53*G
*22Mg-22Ne                       D_M=8185.84(0.73) uu, M-A=-399.65(0.68) keV; corr --0.05 keV for           k        04Sa53**
*                                 ~ ion-ion interaction                                                     k        04Sa53**
*22Mg-22Ne                       -0.01 keV for ionization   <- GAu153: no more needed when using ptrap17.fk          04Sa53*G
*22Ne-20Ne                       Rather different from 93AMA -1054.676(0.250)                                        AHW953*W
*22Mgi(a)18Ne                    E(a)=3270(40) to 2^+ level at 1887.3 keV                                   H        Ens967**
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*22Mgi(a)18Ne	Q(a)=4017(8) to 2^+ level at 1887.3 keV	K	Ens967**
*22C(g,2n)20C	From upper limit S(2n)<400	H	GAu124**
*22C(g,2n)20C	From upper limit S(2n)<220	H	GAu124**
*22C(g,2n)20C	The two items are estimates derived from the experimental result of ref.	H	10Ta04**
*22C(g,2n)20C	From upper limit S(2n)<70	K	GAu147**
*22Mgi(2p)20Ne	Original Q(2p)=4464(8) to 1633.674(0.015) level	K	06Ac04**
*22Mgi(2p)20Ne	Estimated systematic 10 keV uncertainty added	K	16Ma.A**
*21Ne(p,g)22Na	T=701.8(0.5) to 1^+ level at 7408.6(0.5) keV	K	Ens157**
*21Ne(p,g)22Na	Reanalysis using E(exc) for lower levels of ref.	M	90En08**
*22Mgi(p)21Na	E(p)=8149(21), 7839(15) to 3/2^+ gs, 5/2^+ level at 331.90 keV	H	Ens04c**
*22F(B-)22Ne	Lab ANB, since same procedure as in following litterature		GAu935*G
*22Ne(t,3He)22F	Original value --10834(30) re-calculated from Q to		GAu **
*	~ (2^+) level at 709.1, 1^+ at 1627.1 and 1^+ at 2571.7 keV	k	Ens157**
*22Ne(t,3He)22F	Original value --10836(12) re-calculated		GAu **
*22Ne(7Li,7Be)22F	Q=-12400(20) to (2^+) level at 709.1 keV	k	Ens157**
*22Nei(IT)22Ne	Derived from higher IAS levels		AHW930*W
*22Na(B+)22Ne	E+=545.7(0.5) 543.9(1.5) 545(1) resp, to 2^+ level at 1274.537 keV	k	Ens157**

23C-u		68890#	1070#				2				h	1.0	S-u127
23N-u		37110	2000	39421.000	451.500	.8o	o				HGA5	1.5	99Sa.A
23N-u		39378	923	39421.000	451.500	.0	U				KGA7	1.5	07Ju03
23N-u		39421	301	39421.000	\451.500		2				KGA8	1.5	12Ga45
23O-u		15700	320	15696.686	130.663	-.0o	o				hTO1	1.5	86Vi09
23O-u		15860	320	15696.686	130.663	-.3o	o				HGA1	1.5	87Gi05
23O-u		15700	150	15696.686	130.663	-.0	-2-				TO2	1.5	88Wo09
23O-u		15621	186	15696.686	130.663	.3o	o				HGA3	1.5	91Or01
23O-u		15695	107	15696.686	130.663	.0	-2-				HGA7	1.5	07Ju03
23O-u	ave	15696.686	130.663				2						average
23F-u		3530	210	3526.875	35.771	-.0	U				hTO1	1.5	86Vi09
23F-u		3553	43	3526.875	35.771	-.4	-1-				HGT1	1.5	04Ma.A
23F-u		3503	48	3526.875	35.771	.5	-1-				KLZ1	1.0	15Xu14
23F-u	ave	3520.821	38.507	3526.875	35.771	.2	1	86	86	23F			average
23Na-u		-10225	7	-10230.71805	0.00194	-.8	Z				mP40	1.0	99To.A
23Na-u		-10230.721	0.0037	-10230.71805	0.00194	.8	-1-				MMI2	1.0	99Br47
23Na-u		-10230.716	0.0048	-10230.71805	0.00194	-.4	-1-				MMI2	1.0	99Br47
23Na-u		-10230.7172	0.0026	-10230.71805	0.00194	-.3	-1-				HFS1	1.0	10Mo30
23Na-u	ave	-10230.71805	0.00194	-10230.71805	0.00194	.0	1	100	100	23Na			average
23Si-u		25090	210	25711#	537#	1.2	Z					2.5	IMME
23Si-u		25711#	537#				2				g	1.0	S-u211
23Ne-22Ne1.045		3469.58	0.37	3469.461	0.110	-.3	Z				hMA8	1.0	03Bl.A
23Ne-22Ne1.045		3469.59	0.37	3469.461	0.110	-.3	U				HMA8	1.0	04Bl20
23Mg-23Na		4354.80	0.83	4354.487	0.034	-.4	U				KJY1	1.0	09Sa38
23Mg-23Na		4354.66	0.17	4354.487	0.034	-1.0	U				GTT1	1.0	14Sc09
23Mg-23Na		4354.487	0.034				2				GMA8	1.0	19Ka30
23Al-23Na		17475.07	0.37				2				HJY1	1.0	09Sa38
23Na(p,a)20Ne		2377	3	2376.13384	0.00238	-.3	U				hWis		53Do04,Y
23Na(p,a)20Ne		2373	8	2376.13384	0.00238	.4	U				hMIT		64Sp12
23Na(d,a)21Ne		6911	9	6912.730	0.039	.2	U				hMex		64Ma.B
23Na(d,a)21Ne		6909	10	6912.730	0.039	.4	U				hMIT		64Sp12
23Ali(2p)21Na		6000	64	6078.016	42.566	1.2	1	44	44	23Ali	G		18Wa05,*
22Ne(18O,17F)23F		-14080	90	-14044.497	33.321	.4	1	14	14	23F	HCan		89Or04
22Ne(n,g)23Ne		5200.2	2.0	5200.647	0.103	.2	U				h		70Se14
22Ne(n,g)23Ne		5200.65	0.12	5200.647	0.103	-.0	-2-				mMMn		86Pr05,Z
22Ne(n,g)23Ne		5200.64	0.20	5200.647	0.103	.0	-2-				MBdn		06Fi.A
22Ne(d,p)23Ne		2967	8	2976.081	0.103	1.1	U				hNob		54Ah20,Y
22Ne(d,p)23Ne		2971	9	2976.081	0.103	.6o	o				hMIT		60Fr04
22Ne(d,p)23Ne		2974	6	2976.081	0.103	.3	U				hMex		64Ma.B
22Ne(d,p)23Ne		2968	7	2976.081	0.103	1.2	U				hMIT		64Sp12
22Ne(n,g)23Ne	ave	5200.647	0.103				2						average
22Ne(p,g)23Na		8794.0	1.5	8794.109	0.018	.1	U				h		71Pi08,Z
22Ne(p,g)23Na		8794.26	0.17	8794.109	0.018	-.9	U				m		89Ba42,Z
22Ne(p,g)23Naj		-10796.3	2.0				2				K		85Ev01,*
23Mgi(p)22Na		223	20	*			Z				Brk		98Ro.A
23Mgi(p)22Na		200	20	*			Z						00Pe28,G
23Ali(p)22Mg		11644	57	11582.116	42.566	-1.1	1	56	56	23Ali	HBor		97Bl04,*
23F(B-)23Ne		8510	170	8439.308	33.321	-.4	U				H		74Go17

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 23Ne(B-)23Na                     4383         8         4375.809     0.104     -.9  U                 h        63Ca06
 23Mg(B+)23Na                     4121        12         4056.179     0.032    -5.4B B                 h        63Fr10
 23Na(p,n)23Mg                   -4832        10        -4838.526     0.032     -.7  U                 hOak     55Ki28,Z
 23Na(p,n)23Mg                   -4836.5       6.       -4838.526     0.032     -.3  U                 mRic     58Bi41,Y
 23Na(p,n)23Mg                   -4848.0       7.       -4838.526     0.032     1.4  U                 mChR     58Go77,Y
 23Na(p,n)23Mg                   -4835.8       2.5      -4838.526     0.032    -1.1  U                 HHar     62Fr09,Z
 23Na(p,n)23Mg                   -4843.2       5.1      -4838.526     0.032      .9  U                 mTkm     63Ok01,Z
 23Mgi(IT)23Mg                    7795         6             *                       Z                  MSU     81Na01,W
 23Mgi(IT)23Mg                    7801         2             *                       Z                          00Pe28
*23Ali(2p)21Na                 Also Q(2p)=5857(66) keV to 5/2^+ level at 331.9 keV                     G        18Wa05**
*22Ne(p,g)23Naj                Original E(res)=-10793.6(2.0) is a typo                                 K        16Ma.A**
*23Mgi(p)22Na                  23Mgi exc. known now from gamma's, see Nubase                           h        GAu123*G
*23Mgi(p)22Na                  11Sa15 no protons in coincidence. p-emission from 16keV below the IAS   h        MMC129*W
*23Mgi(p)22Na                  Not an IAS                                                              h        MMC129*W
*23Ali(p)22Mg                  Q(p)=11620(100), 10410(70) to gs and 2^+ level at 1247.02 keV           k        Ens157**
*                               ~ also Q(2p)=6180(100), 5860(100) to gs and 331.90 level in 21Na       H        97Bl04**
*23Ali(p)22Mg                  Previously error. G given in place of level.                            h        MMC129*G
*23Ali(p)22Mg                  97Bl04 and 97Cz02(conf) same group, same data.                          h        MMC129*G
*23Mgi(IT)23Mg                 From 25Mg(p,t)                                                                   AHW944*W
*23Mgi(IT)23Mg                 Mg IAS not directly discussed                                           h        MMC121*W


 24N-u                          50390#      430#                                     2                 h    1.0 S-u127
 24O-u                          20080      1070       19861.000   177.000     -.1o  o                 HGA1 1.5 87Gi05
 24O-u                          20000       500       19861.000   177.000     -.2   U                 HTO2 1.5 88Wo09
 24O-u                          20659       442       19861.000   177.000    -1.2o  o                 HGA3 1.5 91Or01
 24O-u                          20460       340       19861.000   177.000    -1.2o  o                 HGA5 1.5 99Sa.A
 24O-u                          19861       118       19861.000  \177.000           2                 HGA7 1.5 07Ju03
 24F-u                           8070       170        8099.371   104.853      .1   U                 hTO1 1.5 86Vi09
 24F-u                           8450       240        8099.371   104.853    -1.0   U                 hGA1 1.5 87Gi05
 24F-u                           8135        86        8099.371   104.853     -.3  -2-                 GA3 1.5 91Or01
 24F-u                           8030       120        8099.371   104.853      .4  -2-                 TO4 1.5 91Zh24
 24F-u                    ave    8099.371   104.853                                 2                          average
 24Na-u                         -9039        13       -9036.988     0.018      .2   Z                 mP40 1.0 99To.A
 24Mg-u                        -14958.310     0.014  -14958.311     0.014     -.0   Z                 hST2 1.0 03Be02
 24Mg-H24                     -202759.080     0.014 -202759.076     0.014      .3   1    98   98 24Mg hST2 1.0 03Be02
 24P-u                          35060       540       36522#      537#        1.1   Z                      2.5 IMME
 24P-u                          36522#      537#                                    2                 g    1.0 S-u211
 24Ne-22Ne1.091                  3009.62      0.42     3009.490     0.550     -.3   Z                 hMA8 1.0 03Bl.A
 24Ne-22Ne1.091                  3009.49      0.55                                  2                 HMA8 1.0 04Bl20
 24Mg-23Na1.043                 -4287.23      0.32    -4287.672     0.014     -.9   U                 HMa8 1.5 08Mu05
 24Al-23Na1.043                 10618.18      0.25    10618.237     0.245      .2   1    96   96 24Al KTT1 1.0 15Ch58
 24Mg(p,6He)19Na               -37213        70      -37166.087    10.535      .7   U                 hBrk     69Ce01
 24Mg(3He,8Li)19Na             -32876        12      -32877.548    10.535     -.1   1    77   77 19Na  MSU     75Be38
 24Mg(a,8He)20Mg               -60900       210      -60596.039     1.865     1.4   U                 H        74Ro17
 24Mg(a,8He)20Mg               -60677        27      -60596.039     1.865     3.0B  B                 KTex     76Tr03
 24Mg(a,8He)20Mg               -60655        28      -60596.039     1.865     2.1   Z                          IMME-5,W
 24Mg(3He,6He)21Mg             -27488        40      -27498.305     0.756     -.3   U                 KBrk     70Me11
 24Mg(3He,6He)21Mg             -27512        18      -27498.305     0.756      .8   U                 KMSU     71Tr03
 24Mg(3He,6He)21Mg             -27532        24      -27498.305     0.756     1.4   Z                          IMME-4,W
 22Ne(t,p)24Ne                   5587        10        5587.766     0.512      .1   U                 MLAl     61Si03,Z
 24Mg(d,a)22Na                   1955        12        1958.620     0.132      .3   U                 hMIT     64Sp12
 24Mg(p,t)22Mg                 -21194         3      -21194.432     0.160     -.1   U                 HMSU     74Ha02
 24Mg(p,t)22Mg                 -21198.3       1.5    -21194.432     0.160     2.6   U                 HMSU     74No07
 24Mg(p,t)22Mg                 -21193.9       1.0    -21194.432     0.160     -.5   U                 HYal     05Pa31
 24Mg(6Li,8He)22Al             -49630       130      -49658#      401#        -.2   Z                  Tex     84Ga.A,G
 23Na(n,g)24Na                   6959.50      0.12     6959.365     0.016    -1.1o  o                 HBNn     74Gr37,Z
 23Na(n,g)24Na                   6959.42      0.07     6959.365     0.016     -.8  -2-                HBNn     80Gr12,*
 23Na(n,g)24Na                   6959.67      0.14     6959.365     0.016    -2.2   U                 HILn     83Hu11,Z
 23Na(n,g)24Na                   6959.38      0.08     6959.365     0.016     -.2   U                 KPtn     83Ti02,W
 23Na(n,g)24Na                   6959.44      0.05     6959.365     0.016    -1.5  -2-                HORn     04To03
 23Na(n,g)24Na                   6959.59      0.14     6959.365     0.016    -1.6o  o                 HBdn     06Fi.A
 23Na(n,g)24Na                   6959.352     0.018    6959.365     0.016      .7  -2-                KBdn     14Fi01
 23Na(d,p)24Na                   4735         7        4734.799     0.016     -.0   U                 hCIT     52Mi54,Y
 23Na(d,p)24Na                   4736         5        4734.799     0.016     -.2   U                 hMex     64Ma.B
 23Na(d,p)24Na                   4736         7        4734.799     0.016     -.2   U                 hMIT     64Sp12
 23Na(n,g)24Na            ave    6959.365     0.016                                 2                          average
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23Na(p,g)24Mg		11692.95	0.17	11692.696	0.013	-1.5	U				MWis		67Mo17,Z
23Na(p,g)24Mg		11691.2	1.1	11692.696	0.013	1.4	U				h		72Me09
23Na(p,g)24Mg		11692.43	0.31	11692.696	0.013	.9	U				M		85Uh01,Z
24Mg(p,d)23Mg		-14307.5	1.5	-14306.655	0.034	.6	U				KMSU		74No07
24Mg(3He,a)23Mg		4051	15	4046.399	0.034	-.3	U				hMan		59Ba13,Y
24Mg(7Li,8He)23Al		-37397	27	-37384.228	0.356	.5	U				H		01Ca37
24Ali(p)23Mg		4086	9	4084.697	3.262	-.1	-3-				HBrk		79Ay01
24Ali(p)23Mg		4084.5	3.5	4084.697	3.262	.1	-3-				HMSU		80Le18
24Ali(p)23Mg		4093	20	4084.697	3.262	-.4	U				HBor		98Cz01
24Ali(p)23Mg	ave	4084.697	3.262				3						average
24Ne(B-)24Na		2449	50	2466.258	0.513	.3	U				h		56Dr11
24Na(B-)24Mg		5511.8	2.	5515.677	0.021	1.9	U				h		61De25,*
24Na(B-)24Mg		5515.8	2.	5515.677	0.021	-.1	U				h		64Le09,*
24Na(B-)24Mg		5516.8	2.	5515.677	0.021	-.6	U				h		65Be24,*
24Na(B-)24Mg		5511.5	1.0	5515.677	0.021	4.2B	B						69Bo48,*
24Na(B-)24Mg		5511.8	2.	5515.677	0.021	1.9	U				h		72Gi17,*
24Na(B-)24Mg		5512.5	1.2	5515.677	0.021	2.6	U				h		76Ge06,*
24Al(B+)24Mg		13880	50	13884.766	0.228	.1	U				h		68Ar03
24Mg(p,n)24Al		-14659.0	2.8	-14667.113	0.228	-2.9B	B				HYal		69Ov01,Z
24Mg(3He,t)24Al		-13880	60	-13903.358	0.228	-.4	U				hBrk		66Ma18
24Mg(3He,t)24Al-36Ar()36K		-1071.48	1.05	-1070.405	0.385	1.0	1	13	9	36K	GMun		10Wr01
24Mg(pi+,pi-)24Si		-23594	52	-23656.766	19.472	-1.2	-2-				k		80Bu15
24Mg(pi+,pi-)24Si		-23667	21	-23656.766	19.472	.5	-2-	q-q=	-10.234		H		28Si-4
24Mg(pi+,pi-)24Si		-23655	22	-23656.766	19.472	-.1	Z						IMME-5,W
24Mg(pi+,pi-)24Si	ave	-23656.764	19.472				2						average
*24Mg(a,8He)20Mg		T=2, from 20O, Fxi, Nei; (error 18+20)											AHW *W
*24Mg(3He,6He)21Mg		T=3/2, from 21F, 21Nei, 21Nai; (error 13+20)											AHW92c*W
*24Mg(6Li,8He)22Al		Author say to ref. measurement is unworthy											89Vi.A*G
*23Na(n,g)24Na		Original value (,Z) increased by 0.037 for better recoil correction									h		AHW **
*23Na(n,g)24Na		Not independent									m		AHW994*W
*24Na(B-)24Mg		E-=1389(2) 1393(2) 1394(2) 1388.7(1.0) 1389(2) 1389.7(1.2) resp,									h		GAu127**
*		~ to 4^+ level at 4122.889 keV									h		Ens07a**
*24Mg(pi+,pi-)24Si		T=2, from 24Nai, Mgj, Ali; (error 10+20)											AHW92c*W

25N-u		60100#	540#				2				h	1.0	S-u127
25F-u		12010	220	12167.728	103.535	.5o	o				hTO1	1.5	86Vi09
25F-u		12010	290	12167.728	103.535	.4o	o				hGA1	1.5	87Gi05
25F-u		12210	150	12167.728	103.535	-.2	-2-				TO2	1.5	88Wo09
25F-u		12120	151	12167.728	103.535	.2o	o				HGA3	1.5	91Or01
25F-u		11990	130	12167.728	103.535	.9	-2-				TO4	1.5	91Zh24
25F-u		12249	97	12167.728	103.535	-.6	-2-				HGA7	1.5	07Ju03
25F-u	ave	12167.728	103.535				2						average
25Ne-u		-2293	32	-2185.202	31.181	3.4F	F				HP40	1.0	01Lu20,*
25Ne-u		-2166	41	-2185.202	31.181	-.5	1	58	58	25Ne	KLZ1	1.0	15Xu14
25Na-u		-10044	10	-10046.026	1.288	-.2	Z				mP40	1.0	99To.A
25P-u		21675#	429#				2				g	1.0	S-u211,G
25Al-25Mg		4591.342	0.048	4591.342	0.048	.0	1	100	100	25Al	KJY1	1.0	16Ca22
25Mg(p,a)22Na		-3151	8	-3147.335	0.140	.5	U				hMIT		59Br74,Y
23Na(t,p)25Na		7488.8	1.2				2				Str		84An17
25Mg(d,a)23Na		7026	13	7047.879	0.047	1.7	U				hMIT		64Sp12
25Mg(d,a)23Na		7048	10	7047.879	0.047	-.0	U				h		67Ha17
25O(g,n)24O		776	15	757.308	8.321	-1.2	-3-				H		08Ho03,*
25O(g,n)24O		740	40	757.308	8.321	.4	U				K		13Ca18,*
25O(g,n)24O		749	10	757.308	8.321	.8	-3-				K		16Ko11
25O(g,n)24O	ave	757.308	8.320				3						average
24Mg(n,g)25Mg		7330.5	9.99	7330.522	0.047	.0	U				h		69Ha.A
24Mg(n,g)25Mg		7330.5	0.3	7330.522	0.047	.1	U				hMMn		80Is02,Z
24Mg(n,g)25Mg		7330.78	0.14	7330.522	0.047	-1.8	U				hILn		82Hu02,Z
24Mg(n,g)25Mg		7330.4	0.2	7330.522	0.047	.6	U				hMMn		85Ke.A
24Mg(n,g)25Mg		7330.64	0.08	7330.522	0.047	-1.5	-1-				MMMn		90Pr02,Z
24Mg(n,g)25Mg		7330.69	0.05	7330.522	0.047	-3.4B	B				HORn		92Wa06
24Mg(n,g)25Mg		7330.53	0.15	7330.522	0.047	-.1	-1-				MBdn		06Fi.A
24Mg(d,p)25Mg		5098	12	5105.956	0.047	.7	U				hHar		61Hi11,Y
24Mg(d,p)25Mg		5112	12	5105.956	0.047	-.5	U				hMex		61Ja23
24Mg(d,p)25Mg		5102	7	5105.956	0.047	.6	U				hMIT		64Sp12
24Mg(n,g)25Mg	ave	7330.616	0.071	7330.522	0.047	-1.3	1	45	43	25Mg			average

24Mg(p,g)25Al		2271.6	1.1	2271.367	0.065	-.2	U				K		71Ev01,Z
24Mg(p,g)25Al		2271.7	0.7	2271.367	0.065	-.5	U				K		72Pi07,Z
24Mg(p,g)25Al		2271.4	0.8	2271.367	0.065	-.0	U				K		85Uh01,Z
24Mg(3He,d)25Al		-3218.0	4.5	-3222.108	0.065	-.9	U				hNDm		73Br27
24Mg(p,g)25Ali		-5629.3	5.8	-5629.736	1.841	-.1	U				H		68Te01,*
25Ne(B-)25Na		7380	300	7322.311	29.070	-.2	U				h		73Go11
25Na(B-)25Mg		3650	250	3834.968	1.201	.7	U				h		54Na18
25Na(B-)25Mg		4000	200	3834.968	1.201	-.8	U				h		55Ma63
25Al(B+)25Mg		4292	30	4276.808	0.045	-.5	U				h		60Wa04
25Mg(p,n)25Al		-5058	6	-5059.155	0.045	-.2	U				hHar		69Fr08
25Ali(IT)25Al		7904	5	7901.103	1.840	-.6	Z						73Be14,W
25Ali(IT)25Al		7901	2	7901.103	1.840	.1	1	85	85	25Ali	H		77Ro03,W
*25Ne-u		F : rejected by authors: ‘‘unreliable double peak"									H		06Ga04**
*25P-u		p-unstable 25P (T<200ns)											86La17*G
*25O(g,n)24O		Symmetrized from 770(+20--10)									H		08Ho03**
*25O(g,n)24O		Symmetrized from 725(+54--29)									K		13Ca18**
*24Mg(p,g)25Ali		IT=7916(6), Q rebuilt with Ame*1964, error estimated by evaluator									H		GAu122**
*25Ali(IT)25Al		From 27Al(p,t)											AHW944*W
*25Ali(IT)25Al		From 24Mg(p,g) GAu122: measured gamma									h		AHW944*W

26F-u		19800	1000	20048.066	114.898	.2o	o				hT01	1.5	86Vi09
26F-u		20940	640	20048.066	114.898	-.9o	o				hGA1	1.5	87Gi05
26F-u		19820	210	20048.066	114.898	.7	-1-				T02	1.5	88Wo09
26F-u		19544	300	20048.066	114.898	1.1o	o				HGA3	1.5	91Or01
26F-u		19490	210	20048.066	114.898	1.8	U				HT04	1.5	91Zh24
26F-u		20054	86	20048.066	114.898	-.0	-1-				HGA7	1.5	07Ju03
26F-u	ave	20020.392	119.377	20048.066	114.898	.2	1	93	93	26F			average
26Ne-u		448	90	516.497	19.784	.5	-2-				mGA3	1.5	91Or01
26Ne-u		461	33	516.497	19.784	1.7o	o				hP40	1.0	01Lu20
26Ne-u		518	20	516.497	19.784	-.1	-2-				HP40	1.0	06Ga04
26Ne-u	ave	516.497	19.784				2						average
26Na-u		-7370	9	-7365.350	3.759	.5	Z				mP40	1.0	99To.A
26Na-u		-7367	7	-7365.350	3.759	.2o	o				hP40	1.0	01Lu17
26Na-u		-7365	4	-7365.350	3.759	-.1	-2-				HP40	1.0	06Ga04,*
26Na-u		-7368	11	-7365.350	3.759	.2	-2-				HP40	1.0	06Ga04
26Na-u	ave	-7365.350	3.759				2						average
26Mg-u		-17407.014	0.034	-17407.028	0.031	-.4	Z				hST2	1.0	03Be02
26Mg-H26		-220857.848	0.034	-220857.857	0.031	-.3	1	85	85	26Mg	hST2	1.0	03Be02
26P-u		11780#	210#				2					1.0	S-stab
26S-u		29670	320	29716#	644#	.1	Z					2.5	IMME
26S-u		29716#	644#				2				g	1.0	S-u211
26Al-23Na1.130		-1547.46	0.24	-1547.412	0.071	.2	U				HMA8	1.0	08Ge08
26Si-23Na1.13		3895.1	2.1	3894.529	0.116	-.3	U				HMS1	1.0	10Kw02
26Al-25Mg1.040		1621.46	0.48	1621.431	0.061	-.1	U				HJY1	1.0	06Er08
26Alm-25Mg1.040		1867.09	0.53	1866.527	0.062	-1.1	U				HJY1	1.0	06Er08
26Al-26Mg		4299.14	0.17	4298.904	0.068	-1.4	1	16	15	26Al	HJY1	1.0	06Er08
26Alm-26Mg		4544.09	0.17	4544.001	0.069	-.5	1	16	15	26Alm	HJY1	1.0	06Er08
26Alm-26Al		245.09	0.17	245.096	0.014	.0	U				HJY1	1.0	06Er08
26Alm-26Al		244.91	0.14	245.096	0.014	1.3	U				HJY1	1.0	09Er02
26Alm-26Al		245.114	0.049	245.096	0.014	-.4	U				HJY1	1.0	09Er07
26Si-26Al		5441.97	0.14	5441.941	0.091	-.2	-2-				HJY1	1.0	09Er02
26Si-26Al		5441.92	0.12	5441.941	0.091	.2	-2-				HJY1	1.0	09Er02,*
26Si-26Al	ave	5441.941	0.091				2						average
25Na-26Na.721 22Na.284		-2881	33	-2939.676	2.796	-1.8	U				MP13	1.0	75Th08
25Na-26Na.721 22Na.284		-2921	22	-2939.676	2.796	-.8	U				MP13	1.0	75Th08
26Al(n,a)23Na		2966.5	2.5	2966.116	0.066	-.2	U				M		01Wa50
23Na(a,n)26Al		-2968	4	-2966.116	0.066	.5	U				hDuk		60Wi07,Y
26O(g,2n)24O		120	100	18.000	5.000	-1.0	Z				h		S-u118
26O(g,2n)24O		90	110	18.000	5.000	-.7	U				K		12Lu07,*
26O(g,2n)24O		18	5				3				K		16Ko11
24Mg(t,p)26Mg		9940	12	9941.805	0.031	.2	U				hHar		61Hi11,Y
24Mg(3He,p)26Al		5932	15	5918.809	0.067	-.9	U				hAld		59Hi66,Y
24Mg(3He,p)26Al		5922	8	5918.809	0.067	-.4	U				hPhi		72Be51
24Mg(3He,n)26Si		85	18	67.326	0.108	-1.0	U				hCIT		67Mi02
24Mg(3He,n)26Si		75	30	67.326	0.108	-.3	U				H		67Mc03
24Mg(3He,n)26Si		95	15	67.326	0.108	-1.8	U				hHar		68Ad03

24Mg(3He,n)26Si		65	30	67.326	0.108	.1	U				HBer		68Ha09
26Mg(7Li,8B)25Ne		-22050	100	-22193.505	29.048	-1.4	-1-				HBrk		73Wi06
26Mg(13C,14O)25Ne		-19067	50	-19061.812	29.045	.1	-1-				hCan		85Wo04
26Mg(7Li,8B)25Ne	ave	-22168.979	44.721	-22193.505	29.048	-.5	1	42	42	25Ne			average
26Mg(d,3He)25Na		-8653	10	-8652.226	1.200	.1	U				hMSU		73Be14
26Mg(t,a)25Na		5664	12	5668.165	1.200	.3	U				hAld		62Hi01
25Mg(n,g)26Mg		11092.9	0.3	11093.080	0.044	.6	U				hMMn		80Is02
25Mg(n,g)26Mg		11091.84	0.44	11093.080	0.044	2.8	U				hILn		82Hu02,Z
25Mg(n,g)26Mg		11093.10	0.06	11093.080	0.044	-.3	1	54	46	25Mg	MMMn		90Pr02,Z
25Mg(n,g)26Mg		11093.17	0.06	11093.080	0.044	-1.5o	o				hORn		91Ki04,Z
25Mg(n,g)26Mg		11093.23	0.05	11093.080	0.044	-3.0B	B				HORn		92Wa06,Z
25Mg(n,g)26Mg		11093.16	0.22	11093.080	0.044	-.4	U				MBdn		06Fi.A
25Mg(d,p)26Mg		8865	12	8868.513	0.044	.3	U				hAld		61Hi11,Y
25Mg(d,p)26Mg		8876	12	8868.513	0.044	-.6	U				hMex		61Ja23
25Mg(d,p)26Mg		8889	12	8868.513	0.044	-1.7	U				hMIT		64Sp12
25Mg(p,g)26Al		6305.0	1.2	6306.328	0.056	1.1	U				h		74De37
25Mg(p,g)26Al		6304.9	1.1	6306.328	0.056	1.3	U				h		79El11
25Mg(p,g)26Al		6306.39	0.11	6306.328	0.056	-.6	-1-				m		85Be17,Z
25Mg(p,g)26Al		6306.38	0.08	6306.328	0.056	-.6	-1-				Utr		91Ki04,Z
25Mg(p,g)26Al	ave	6306.383	0.065	6306.328	0.056	-.8	1	75	64	26Al			average
26Sii(p)25Al		7563	15	7501.000	4.002	-4.1B	B				GBrk		83Ca06
26Sii(p)25Al		7544	15	7501.000	4.002	-2.9B	B				GBrk		83Ho23,*
26Mg(pi-,pi+)26Ne		-17676	72	-17717.655	18.429	-.6	U				H		80Na12
26Na(B-)26Mg		9210	200	9353.763	3.502	.7	U				h		73Al13
26Mg(t,3He)26Na		-9292	20	-9335.171	3.502	-2.2	U				hLAl		74Fl01
26Mg(7Li,7Be)26Na		-10182	40	-10215.656	3.502	-.8	U				mChR		72Ba35,*
26Al(B+)26Mg		3991	8	4004.404	0.063	1.7	U				h		58Fe16,*
26Mg(p,n)26Al		-4786.7	10.	-4786.751	0.063	-.0	U				hOak		55Ki28,*
26Mg(p,n)26Al		-4787.04	0.48	-4786.751	0.063	.6	U				hUtr		69De27,W
26Mg(p,n)26Al		-4786.1	1.6	-4786.751	0.063	-.4	U				hHar		69Fr08,*
26Mg(p,n)26Al		-4785.66	0.22	-4786.751	0.063	-5.0C	C				hAuc		84Ba.B,*
26Mg(p,n)26Al		-4786.57	0.05	-4786.751	0.063	-3.6C	C				hAuc		92Ba.A,*
26Mg(p,n)26Al		-4786.25	0.12	-4786.751	0.063	-4.2B	B				HAuc		94Br11,*
26Mg(3He,t)26Al		-4023.0	0.6	-4022.996	0.063	.0F	F				HMun		77Vo02,*
26Mg(3He,t)26Al-27Al()27Si		808.2	2.0	807.954	0.115	-.1	U				HChR		74Ha35
26Mg(3He,t)26Al-14N()14O		1139.43	0.13	1139.960	0.068	4.1B	B				KChR		87Ko34,*
26Alm(IT)26Al		228.305	0.013	228.306	0.013	.0	1	99	85	26Alm	k		Ens164
26Si(B+)26Al		5079	13	5069.136	0.085	-.8	U				h		63Fr10
26Sii(IT)26Si		13015	4				3				G		04Th09

*26Na-u	Result from the ‘‘Thermo" experiment. ~ Next item from ‘‘Rilis"	H	06Ga04**
*26Si-26Al	D_M=5196.82(0.12) uu for 26Alm at 228.306(0.013); M-A=-7141.05(0.13) keV	g	Nub211**
*26O(g,2n)24O	Symmetrized from 150(+50--150) keV	H	12Lu07**
*26O(g,2n)24O	less than 40 keV	K	13Ca18**
*26Sii(p)25Al	E(p)=3699(15) to 3695.5 level; different from preceeding data	H	Ens098**
*26Sii(p)25Al	Erecoil = 148.9; Qtot = Ep+Erecoil+Eex = 3699+148.9+3695.7 = 7543.6	h	MMC122*W
*26Sii(p)25Al	Exact kinematics: Erecoil= M(25Al*) - sqrt[M(25Al*)**2 + Mp**2 -2*Ep-Mp)]	h	MMC122*W
*26Mg(7Li,7Be)26Na	Q=-10222(30) corr for contribution of unresolved 82.2 level	k	Ens164**
*26Al(B+)26Mg	E+=1160(8) to 2^+ level at 1808.74 level	k	Ens164**
*26Mg(p,n)26Al	T=5191(10,Z) to 26Alm at 228.306 keV	g	Nub211**
*26Mg(p,n)26Al	From 1430.67(0.45) difference in E(gamma) at 434.85 25Mg+p		AHW *W
*	~ resonance with 25Mg(n,gamma) to 2+ level at 2938.33 level	k	Ens164*W
*26Mg(p,n)26Al	T=5209.3(1.6,Z) to 26Alm at 228.306 keV	g	Nub211**
*26Mg(p,n)26Al	T=5208.86(0.23) to 26Alm at 228.306 keV	g	Nub211**
*26Mg(p,n)26Al	T=5209.71(0.05) to 26Alm at 228.306 keV	g	Nub211**
*	~ provisional; not yet fully corr		92Ba.A*W
*26Mg(p,n)26Al	T=5209.46(0.12) to 26Alm at 228.306 keV	g	Nub211**
*26Mg(p,n)26Al	From (n,g) and (p,g), 4786.80(0.08)	m	AHW99c*W
*26Mg(3He,t)26Al	Q=-4251.3(0.6,Z) to 26Alm at 228.306 keV	g	Nub211**
*26Mg(3He,t)26Al	F : rejected in ref. of same group	H	09Fa15**
*26Mg(3He,t)26Al-14N()1	Q(to 1057.740(0.023) level)-14N()14O=81.69(0.13)		82Al19**

27O-u		47955#	537#				2				k	1.0	S-u169
27F-u		27500	700	26981.897	129.038	-.5	U				HT02	1.5	88Wo09
27F-u		26005	770	26981.897	129.038	.8	U				HGA3	1.5	91Or01
27F-u		27100	900	26981.897	129.038	-.1	U				HT04	1.5	91Zh24
27F-u		26900	580	26981.897	129.038	.1o	o				HGA5	1.5	99Sa.A

27F-u		26441	204	26981.897	129.038	1.8B	B				KGA7	1.5	07Ju03
27F-u		27322	279	26981.897	129.038	-.8	1	10	10	27F	KGA8	1.5	12Ga45
27Ne-u		6010	640	7569.463	97.446	1.6F	F				hT01	1.5	86Vi09,*
27Ne-u		7470	300	7569.463	97.446	.2	U				HGA1	1.5	87Gi05
27Ne-u		7567	172	7569.463	97.446	.0o	o				HGA3	1.5	91Or01
27Ne-u		7670	130	7569.463	97.446	-.5	-2-				T04	1.5	91Zh24
27Ne-u		7536	75	7569.463	97.446	.3	-2-				HGA7	1.5	07Ju03
27Ne-u	ave	7569.463	97.446				2						average
27Na-u		-5920	16	-5923.591	4.000	-.2	Z				mP40	1.0	99To.A
27Na-u		-5922	11	-5923.591	4.000	-.1o	o				hP40	1.0	01Lu17,*
27Na-u		-5922	4	-5923.591	4.000	-.4o	o				hP40	1.0	06Ga04,*
27Al-u		-18457	16	-18461.591	0.051	-.3	Z				mP40	1.0	99To.A
27P-u		-735	45	-707.500	9.663	.6	U				GLZ1	1.0	18Fu11
27Mg-23Na1.174		-3648.27	0.15	-3648.489	0.051	-1.5	1	11	11	27Mg	GTT1	1.0	17Br14
27Al-23Na1.174		-6450.79	0.25	-6450.728	0.051	.2	U				KMA8	1.0	08Ge08
27Al-23Na1.174		-6450.754	0.054	-6450.728	0.051	.5	1	89	89	27Al	KTT1	1.0	16Kw.A
27Na-27Al		12538	4				2				MP40	1.0	01Lu17
24Na-27Na.356 22Na.655		-3006	38	-3059.756	1.329	-.9	U				hP10	1.5	75Th08
26Na-27Na.770 22Na.236		-1437	86	-1389.273	4.527	.6	U				MP13	1.0	75Th08
26Na-27Na.481 25Na.520		676	66	659.340	3.983	-.2	U				hP10	1.5	75Th08
26Na-27Na.481 25Na.520		734	86	659.340	3.983	-.6	U				hP11	1.5	75Th08
23Na(a,g)27Al		10090.0	1.3	10091.926	0.047	1.5	U				hUtr		78Ma23
27Al(p,a)24Mg		1601.7	0.7	1600.770	0.049	-1.3o	o				hZur		63Ry04
27Al(p,a)24Mg		1598.4	1.0	1600.770	0.049	2.4	U				hNDm		65Br28
27Al(p,a)24Mg		1601.3	0.5	1600.770	0.049	-1.1	U				mZur		67St30,Z
27Al(p,a)24Mg		1600.06	0.21	1600.770	0.049	3.4B	B				MUtr		78Ma23,Z
24Mg(a,p)27Al		-1598.9	1.0	-1600.770	0.049	-1.9	U				hNDm		65Br28
25Mg(t,p)27Mg		9055	11	9054.652	0.058	-.0	U				hTal		61Hi11,Y
27Al(d,a)25Mg		6699	12	6706.725	0.067	.6	U				hAld		61Hi11,Y
27Al(d,a)25Mg		6691	11	6706.725	0.067	1.4	U				hTal		62Sh01,Y
27Al(d,a)25Mg		6700	10	6706.725	0.067	.7	U				hMIT		64Sp12
27Al(p,t)25Ali		-23843.4	4.7	-23842.832	1.842	.1	1	15	15	25Ali	HMSU		73Be14,*
27Pxi(2p)25Al		6410	45	6347.348	33.448	-1.4	-2-				HLis		91Bo32
27Pxi(2p)25Al		6270	50	6347.348	33.448	1.5	-2-				H		01Ca60,*
27Pxi(2p)25Al		6690	110	6347.348	33.448	-3.1	Z						IMM246,W
27Pxi(2p)25Al	ave	6347.348	33.448				2						average
27F(g,n)26F		-1620	60	-1612.495	59.353	.1	1	98	90	27F	G		20Re06
26Mg(18O,17F)27Na		-13295	55	-13431.271	3.735	-2.5F	F				MMun		78Pa12,*
26Mg(18O,17F)27Na		-13433	60	-13431.271	3.735	.0	U				MCan		85Fi08
26Mg(n,g)27Mg		6444.4	1.5	6443.369	0.039	-.7	Z						70Se07
26Mg(n,g)27Mg		6443.35	0.55	6443.369	0.039	.0	U				hILn		82Hu02
26Mg(n,g)27Mg		6443.56	0.25	6443.369	0.039	-.8o	o				hMMn		85Ke.A
26Mg(n,g)27Mg		6443.26	0.08	6443.369	0.039	1.4	-1-				mMMn		90Pr02,Z
26Mg(n,g)27Mg		6443.44	0.05	6443.369	0.039	-1.4	-1-				mORn		92Wa06,Z
26Mg(n,g)27Mg		6443.35	0.13	6443.369	0.039	.1	-1-				MBdn		06Fi.A
26Mg(d,p)27Mg		4214	12	4218.802	0.039	.4	U				hAld		61Hi11,Y
26Mg(d,p)27Mg		4215	10	4218.802	0.039	.4	U				hMex		61Ja23
26Mg(d,p)27Mg		4211	6	4218.802	0.039	1.3	U				hMIT		64Sp12
26Mg(n,g)27Mg	ave	6443.386	0.040	6443.369	0.039	-.4	1	93	89	27Mg			average
26Mg(p,g)27Al		8270.8	0.5	8271.291	0.056	1.0	U				KUtr		59An33,*
26Mg(p,g)27Al		8271.2	0.5	8271.291	0.056	.2	U				K		63Va24,Z
26Mg(p,g)27Al		8271.3	0.5	8271.291	0.056	-.0	U				KUtr		78Ma24,*
27Al(t,a)26Mg		11541	12	11542.575	0.056	.1	U				hAld		61Hi11
27Al(3He,a)26Al		7523	15	7519.579	0.081	-.2	U				hAld		59Hi66
27Al(3He,a)26Al		7519	15	7519.579	0.081	.0	U				hMan		60Ta12
26Al(p,g)27Si		7464.9	0.9	7463.337	0.126	-1.7	U				h		84Bu09,Z
27P(p)26Si		-788	31	-807.000	9.000	-.6	U				GDbp		17Ja05,*
27P(p)26Si		-807	9				3				G		19Su14,*
27Na(B-)27Mg		8930	150	9068.804	3.727	.9	U				h		73Al13
27Mg(B-)27Al		2600	11	2610.269	0.067	.9	U				h		54Da22
27Si(B+)27Al		4872	20	4812.358	0.096	-3.0B	B				k		60Wa04
27Al(p,n)27Si		-5573	10	-5594.705	0.096	-2.2	U				hOak		55Ki28,Z
27Al(p,n)27Si		-5597.5	6.0	-5594.705	0.096	.5	U				hTkm		63Ok01
27Al(p,n)27Si		-5593.6	4.3	-5594.705	0.096	-.3	U				hRic		65Ku02
27Al(p,n)27Si		-5585.1	2.3	-5594.705	0.096	-4.2B	B				hRic		66Bo20,Z
27Al(p,n)27Si		-5592.0	1.0	-5594.705	0.096	-2.7	U				hYal		69Ov01,Z
27Al(p,n)27Si		-5594.1	3.2	-5594.705	0.096	-.2	U				hHar		76Fr13

27Al(p,n)27Si		-5593.8	0.26	-5594.705	0.096	-3.5F	F				mAuc		77Na24,*
27Al(p,n)27Si		-5594.27	0.11	-5594.705	0.096	-4.0F	F				mAuc		85Wh03,*
27Al(p,n)27Si		-5594.72	0.10				2				mAuc		94Br37,Z
27Sii(IT)27Si		6626	3	6625.017	2.309	-.3	Z						86Sc21
27Sii(IT)27Si		6638	1	6625.017	2.309	-13.0F	F				G		16Mc09,*
27S(B+)27P		18150#	400#				4				g		S-u211
27S(B+)27Pxi		5435	200	5482#	401#	.2	Z						S-Cb ,W
*27Ne-u		F : contaminated by 27Na									h		91Zh24**
*27Na-u		Not independent of 27Na-27Al from isobaric method, do not use									H		01Lu17**
*27Al(p,t)25Ali		IT=7904(5), rebuilt Q=-23847.9(4.7); recalib +4.5 keV									H		GAu122**
*27Pxi(2p)25Al		And E(2p)=5315(60) to 3/2^+ level at 944.9 keV									h		Ens098**
*27Pxi(2p)25Al		T=5/2;3/2;1/2, from 27Na;Mg,Ali,Sii;Al,Si; (error 40+100)											AHW92c*W
*26Mg(18O,17F)27Na		F : shape of peak raises doubt on centroid determination									M		GAu995**
*26Mg(p,g)27Al		E(p)=338.65(0.12) to 8596.8(0.5) level									M		78Ma24**
*26Mg(p,g)27Al		E(p)=338.21(0.30) to 8596.8(0.5) level									M		78Ma24**
*26Mg(p,g)27Al		E(p)=809.90(0.05,Z) to 9050.7(0.5,Z) level											78Ma24**
*27P(p)26Si		Qp=332(30) keV from 3/2+ level at 1120(8) keV from 08Ga10									G		17Ja05**
*27P(p)26Si		Qp=318(8) keV from 3/2+ level at 1125(2) keV									G		19Su14**
*27P(p)26Si		same result given in 20Su05									g		FGK205*W
*27Al(p,n)27Si		F : rejected by same group ‘‘measurement contains error"									h		94Br37**
*27Al(p,n)27Si		"Completely independent measurements"											88Ba.B*G
*27Sii(IT)27Si		F : Very weak peak, evaluator thinks this is not the IAS of 27P									G		GAu177**
*27S(B+)27Pxi		p-stable 27S											86La17*W
*		~ Cb-(n-H)=6418(90)-782.3=5635(90)											86An07*W
*		~ Syst diff -200keV with Cb-(n-H)											92Bo37*W
28O-u		55910#	750#				2				h	1.0	S-u127
28Ne-u		11490	430	12130.767	135.339	1.0o	o				hTO1	1.5	86Vi09
28Ne-u		12270	560	12130.767	135.339	-.2o	o				hGA1	1.5	87Gi05
28Ne-u		11958	238	12130.767	135.339	.5o	o				HGA3	1.5	91Or01
28Ne-u		12160	140	12130.767	135.339	-.1	-2-				TO4	1.5	91Zh24
28Ne-u		12110	118	12130.767	135.339	.1	-2-				HGA7	1.5	07Ju03
28Ne-u	ave	12130.767	135.339				2						average
28Na-u		-1220	190	-1061.000	11.000	.6o	o				hTO1	1.5	86Vi09
28Na-u		-1097	96	-1061.000	11.000	.2	U				MGA3	1.5	91Or01
28Na-u		-1064	18	-1061.000	11.000	.2	Z				mP40	1.0	99To.A
28Na-u		-1062	14	-1061.000	11.000	.1o	o				hP40	1.0	01Lu17
28Na-u		-1061	11				2				HP40	1.0	06Ga04
28Si-u		-23073.43	0.30	-23073.46558	0.00055	-.1	U				NST1	1.0	93Je06
28Si-u		-23073.4676	0.0020	-23073.46558	0.00055	1.0	U				hMI1	1.0	95Di08,W
28Si-u		-23073.00	0.27	-23073.46558	0.00055	-.7	U				NOH1	2.5	94Go.A
28Si-u		-23073.479	0.026	-23073.46558	0.00055	.5	Z				MST2	1.0	99Ca.B
28Si-u		-23073.466	0.008	-23073.46558	0.00055	.1	U				KST2	1.0	02Be64,*
C2 D2-28Si		51277.0224	0.0024	51277.02127	0.00055	-.5	U				HMI1	1.0	95Di08,G
15N2-28Si H2		7641.2007	0.0024	7641.19832	0.00130	-1.0	1	30	26	15N	NMI1	1.0	95Di08,G
C2 H4-28Si		54373.59360	0.00079	54373.59317	0.00055	-.5	1	48	48	28Si	HFS1	1.0	08Re16
13C2 H2-28Si		45433.19986	0.00071	45433.20005	0.00052	.3	1	53	32	28Si	HFS1	1.0	08Re16
28Cl-u		30060	540	30349#	537#	.2	Z					2.5	IMME
28Cl-u		29540	640	30349#	537#	.5	Z				g	2.5	S-u104
28Si2 16O-35Cl 37Cl		14013.07	0.70	14012.426	0.066	-.6	U				mH46	1.5	93Nx02
28Mg-23Na1.217		-3673.79	0.28				2				GTT1	1.0	17Br14
25Na-28Na.446 22Na.568		-5869	75	-5973.995	4.725	-.9	U				hP10	1.5	75Th08,*
26Na-28Na.619 22Na.394		-4229	613	-4207.545	7.245	.0	U				hP11	1.5	75Th08
26Na-28Na.619 22Na.394		-4205	128	-4207.545	7.245	-.0	U				hP12	2.5	75Th08
26Na-28Na.619 22Na.394		-4203	87	-4207.545	7.245	-.1	U				MP13	1.0	75Th08
28Si(p,6He)23Al		-38569	80	-38543.992	0.349	.3	U				hBrk		69Ce01
28Si(3He,8Li)23Al		-34274	25	-34255.454	0.348	.7	U				HMSU		75Be38
28Si(3He,8Li)23Al		-34236	27	-34255.454	0.348	-.7	Z						IMME-4,W
24Mg(a,g)28Sii		-5240.1	2.6	*			Z				Sta		69Sn01
24Mg(a,g)28Sii		-5241.8	4.3	*			Z				Oxf		72Je04
28Si(a,8He)24Si		-61433	21	-61422.750	19.472	.5R	R	q-q=	-10.250		Tex		80Tr04
28Si(p,a)25Al		-7709.3	2.6	-7712.768	0.065	-1.3	U				hNDm		73Br27
28Si(3He,6He)25Si		-27976	50	-27980.995	10.000	-.1	U				hBrk		70Me11
28Si(3He,6He)25Si		-27981	10				2				MSU		72Be12
28Si(3He,6He)25Si		-27971	22	-27980.995	10.000	-.5	Z						IMME-4,W
26Mg(t,p)28Mg		6474	12	6466.242	0.262	-.6	U				hHar		61Hi11,Y

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 26Mg(3He,p)28Al           8285        5         8278.424     0.057    -1.3   U                  hPhi     74Be07
 28Si(d,a)26Al             1429        4         1428.149     0.066     -.2   U                  hMIT     64Sp12
 28Si(p,t)26Si           -22009        3       -22012.634     0.108    -1.2   U                  HMSU     74Ha02
 28Si(p,t)26Si           -22014.1      1.0     -22012.634     0.108     1.5   U                  HYal     05Pa31
 28F(g,n)27F                220       50          199.000     6.000     -.4   U                  GMSU     12Ch02
 28F(g,n)27F                199        6                                      2                  G        20Re06
 27Al(n,g)28Al             7725.02     0.20      7725.174     0.011      .8   U                  MBNn     78St25,Z
 27Al(n,g)28Al             7725.07     0.30      7725.174     0.011      .3   U                  hILn     79Br25,Z
 27Al(n,g)28Al             7725.13     0.3       7725.174     0.011      .1   U                  hMMn     80Is02,Z
 27Al(n,g)28Al             7725.02     0.10      7725.174     0.011     1.5   U                  G        81Su.A,Z
 27Al(n,g)28Al             7725.14     0.09      7725.174     0.011      .4o  o                  GILn     82Sc14,Z
 27Al(n,g)28Al             7725.17     0.15      7725.174     0.011      .0   U                  GBdn     06Fi.A
 27Al(n,g)28Al             7725.174    0.011                                  2                  GILn     18Rz01
 27Al(d,p)28Al             5511        5         5500.608     0.011    -2.1   U                  hMex     61Ja23
 27Al(d,p)28Al             5503       10         5500.608     0.011     -.2   U                  hMIT     64Sp12
 27Al(p,g)28Si            11584.89     0.30     11584.905     0.047      .0   U                  KUtr     78Ma23,Z
 27Al(p,g)28Si            11585.09     0.14     11584.905     0.047    -1.3   1    11  11  27Al h         28Sir-0
 27Al(3He,d)28Si           6049       18         6091.430     0.047     2.4   U                  h        60Fo01
 27Al(p,g)28Sir            -956.15     0.03      -956.139     0.025      .3  -2-                  Utr     78Ma23,Z
 27Al(p,g)28Sir            -956.025    0.020     -956.139     0.025    -5.7B  B                  MAuc     94Br37,Z
 27Al(p,g)28Sir            -956.13     0.05      -956.139     0.025     -.4  -2-                 M        98Wa.A,Z
 27Al(p,g)28Sir       ave  -956.139    0.025                                  2                           average
 28Si(3He,a)27Si           3407       15         3398.011     0.107     -.6   U                  hAld     59Hi68,Y
 28Si(3He,a)27Sii         -3225.5      2.6      -3227.005     2.307     -.6   1    79  79  27SiiH         86Sc21,*
 28Si(7Li,8He)27P        -37513       40       -37536.343     9.001     -.6   U                  G        01Ca37
 28Pxi(p)27Si              3835       20                                      3                  HLis     89Po10
 28Pxi(p)27Si              3848       21         3835.000    20.000     -.6   Z                           IMME  ,W
 28Cl(p)27S                1600       80         3490#      300#       23.6D  D                  G        18Mu18,*
 28Cl(p)27S                3490#     300#                                     5                  g        S-u212
 28Mg(B-)28Al              1791       10         1830.774     0.265     4.0B  B                  h        53Ma23,*
 28Mg(B-)28Al              1831.8      2.0       1830.774     0.265     -.5   U                  G        54Ol03,*
 28Al(B-)28Si              4644       10         4642.078     0.049     -.2   U                  h        52Mo22,*
 28Al(B-)28Si              4657       14         4642.078     0.049    -1.1   U                  h        54Ol03,*
 28Sir(IT)28Si            12541.23     0.14     12541.044     0.053    -1.3R  R  q-q=     0.186   Utr     90En02,Z
 28Sir(IT)28Si            12541.237    0.140    12541.044     0.053    -1.4   Z                           90En02,Z
 28P(B+)28Si              14290       40        14344.941     1.147     1.4   U                  h        68Ar03,*
 28Si(p,n)28P             -15118.3     4.1     -15127.288     1.147    -2.2   U                  HYal     69Ov01,Z
 28Si(p,n)28P             -15112.5     5.8     -15127.288     1.147    -2.5   U                  HBNL     71Go18,Z
 28Si(3He,t)28P           -14380      60       -14363.533     1.147      .3   U                  hBrk     66Ma18
 28Si(3He,t)28P-36Ar()36K  -1530.58    1.10     -1530.580     1.100     -.0   1   100 100  28P  HMun     10Wr01
 28Si(pi+,pi-)28S         -24544     160                                      2                           82Mo12,*
 28Si(pi+,pi-)28S         -24670      24       -24544.002   160.000     5.2   Z                  m        IMME-5,W
*28Si-u                     This is their LstSqrs adjusted value                                h        95Di08*W
*28Si-u                     Unc. was erroneously 0.0008 in Ame*2012, was correct in Ame*2003    K        GAu14c**
*28Si-u                     p.206 "Mav24 = 27.976 926 533.9 (8)"                                k        GAu14c*G
*C2 D2-28Si                 From ratio SiH2+/C2D2H2+  =0.998293230200( 80)                      n        95Di08*G
*15N2-28Si H2               From ratio SiH2+/15N2+    =0.999745290400( 80)                      n        95Di08*G
*25Na-28Na.446 22Na.568     Symmetric double-doublet 22-24 26-28 included                       h        GAu   **
*28Si(3He,8Li)23Al          T=3/2, from 23Ne, Nai, Mgi; (error 18+20)                                    AHW92c*W
*28Si(3He,6He)25Si          T=3/2, from 25Na, Mgi, Ali; (error 7+20)                                     AHW92c*W
*28Si(3He,a)27Sii           IT=6626(3), Q rebuilt with Ame*1977                                 H        GAu122**
*28Pxi(p)27Si               T=2, from 28Mg, Ali, Sij (error 8+20)                                        AHW967*W
*28Cl(p)27S                 Trends from Mass Surface TMS suggest  28Cl  1890 keV less bound     G        GAu212**
*28Mg(B-)28Al               E-=418(10) 459(2) resp, to 1^+ level at 1372.917 keV                k        Ens13a**
*28Al(B-)28Si               E-=2865(10) 2878(14) resp, to 2^+ level at 1779.030 keV             k        Ens13a**
*28P(B+)28Si                E+=11490(40) to 2^+ level at 1779.030 keV                           k        Ens13a**
*28Si(pi+,pi-)28S           Original --24603(160) recalibrated to 16O(pi+,pi-)16Ne Q=-27704(20) keV  m   GAu930**
*28Si(pi+,pi-)28S           T=2, from 28Mg, Ali, Sij, Pxi; (error 14+20)                        m        AHW968*W


 29F-u                    42540      540        43103.000   564.000      .4   Z                  h    2.5 S-u118,G
 29F-u                    43103      376        43103.000  \564.000           2                  KGA8 1.5 12Ga45
 29Ne-u                   19433      551        19753.000   160.500      .4o  o                  HGA3 1.5 91Or01
 29Ne-u                   19300      400        19753.000   160.500      .8   U                  HTO4 1.5 91Zh24
 29Ne-u                   19920      350        19753.000   160.500     -.3   Z                  mGA5 1.5 99Sa.A
 29Ne-u                   19400      410        19753.000   160.500      .6o  o                  HGA5 1.5 00Sa21
 29Ne-u                   19753      107        19753.000  \160.500           2                  HGA7 1.5 07Ju03
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29Na-u		2820	230	2877.092	7.876	.2	U				hTO1	1.5	86Vi09
29Na-u		2838	143	2877.092	7.876	.2	U				MGA3	1.5	91Or01
29Na-u		2868	17	2877.092	7.876	.5	Z				mP40	1.0	99To.A
29Na-u		2861	14	2877.092	7.876	1.1o	o				hP40	1.0	01Lu17
29Na-u		2866	13	2877.092	7.876	.9	1	37	37	29Na	HP40	1.0	06Ga04
29Na-39K.744		29885.9	9.9	29879.468	7.876	-.6	1	63	63	29Na	kTT1	1.0	13Ch49
29Mg-u		-11375	19	-11392.836	0.370	-.9	-1-				HP40	1.0	06Ga04,*
29Mg-u		-11388	16	-11392.836	0.370	-.3	-1-				HP40	1.0	06Ga04
29Mg-u	ave	-11382.606	12.239	-11392.836	0.370	-.8	1	0	0	29Mg			average
29Al-O1.812		-10328.8	1.0	-10332.126	0.370	-3.3C	C				KTT1	1.0	12Ch.A
29Al-O1.812		-10333.5	1.7	-10332.126	0.370	.8	U				KTT1	1.0	16Kw.A
29P 40Ar-u		-55816.80	0.50	-55816.509	0.385	.6	1	59	59	29P	KMS1	1.0	15Ei01
29S-u		-3322	14				2				GLZ1	1.0	18Fu11
29Mg-23Na1.261		1508.09	0.37	1508.099	0.370	.0	1	100	100	29Mg	GTT1	1.0	17Br14
29Al-23Na1.261		-6645.90	0.37				2				GTT1	1.0	17Ga20
29Si-28Si H		-8256.90198	0.00024	-8256.90198	0.00024	-.0	1	100	100	29Si	HMI3	1.0	05Ra34
26Na-29Na.512 22Na.506		-5763	91	-5611.153	5.136	1.1	U				MP10	1.5	75Th08
26Na-29Na.512 22Na.506		-6379	293	-5611.153	5.136	1.7	U				hP11	1.5	75Th08
26Na-29Na.512 22Na.506		-5252	277	-5611.153	5.136	-.5	U				hP12	2.5	75Th08
26Na-29Na.512 22Na.506		-5576	66	-5611.153	5.136	-.5	U				MP13	1.0	75Th08
27Na-29Na.466 25Na.540		-1708	124	-1713.448	5.098	-.0	U				hP10	1.5	75Th08
18O(13C,2p)29Mg		-1456	50	-1623.389	0.345	-3.3B	B						81Pa17
26Mg(11B,8B)29Mg		-19720	50	-19856.044	1.058	-2.7	U				hBrk		74Sc26
26Mg(18O,15O)29Mg		-9207	55	-9240.622	0.600	-.6	U				MMun		78Pa12
26Mg(18O,15O)29Mg		-9250	45	-9240.622	0.600	.2	U				MCan		85Fi08
26Mg(a,p)29Al		-2880	40	-2870.836	0.346	.2	U				hYal		57Gr47,Y
26Mg(a,p)29Al		-2874	10	-2870.836	0.346	.3	U				hANL		68Be13
29Si(n,a)26Mg		-21	21	-34.136	0.029	-.6	U				hHam		62An05
27Al(t,p)29Al		8679.5	1.2	8671.739	0.348	-6.5B	B				HStr		84An17
29Si(d,a)27Al		6000	11	6012.589	0.047	1.1	U				hMIT		64Sp12
29Si(p,t)27Sii		-23802	5	-23796.433	2.307	1.1	1	21	21	27Sii	HMSU		77Be13,W
27Al(3He,n)29P		6616	30	6615.886	0.362	-.0	U				hOak		72Gr39
29Ar(2p)27S		5500	180	5900#	180#	2.2D	D				G		18Mu18,*
29Ar(2p)27S		5900#	180#				5				g		S-u212
28Si(n,g)29Si		8473.6	0.3	8473.60250	0.00049	.0o	o				mMMn		80Is02,Z
28Si(n,g)29Si		8473.944	0.012	8473.60250	0.00049	-28.5	Z				MMn		83Ke11
28Si(n,g)29Si		8473.61	0.04	8473.60250	0.00049	-.2	U				hMMn		90Is02,Z
28Si(n,g)29Si		8473.55	0.04	8473.60250	0.00049	1.3	U				hORn		92Ra19,Z
28Si(n,g)29Si		8473.5509	0.0500	8473.60250	0.00049	1.0o	o				hPTc		97Ro26,*
28Si(n,g)29Si		8473.54	0.17	8473.60250	0.00049	.4	U				MBdn		06Fi.A
28Si(n,g)29Si		8473.551	0.030	8473.60250	0.00049	1.7	U				HPTc		01Pa52,*
28Si(n,g)29Si		8473.5957	0.0050	8473.60250	0.00049	1.4	U				HNBS		06De21
28Si(d,p)29Si		6252	10	6249.03627	0.00023	-.3	U				hMex		64Ma.B
28Si(d,p)29Si		6252	10	6249.03627	0.00023	-.3	U				hMIT		64Sp12
28Si(d,p)29Si		6249.35	0.5	6249.03627	0.00023	-.6	U				hRez		90Pi05,*
28Si(p,g)29P		2747.1	1.7	2749.023	0.359	1.1	-1-				H		73Ba35,Z
28Si(p,g)29P		2748.8	0.6	2749.023	0.359	.4	-1-				m		74By01,Z
28Si(d,n)29P		560	30	524.457	0.359	-1.2	U				hAld		60Ma21
28Si(3He,d)29P		-2733	12	-2744.452	0.359	-1.0	U				hAld		60Hi03,Y
28Si(p,g)29P	ave	2748.612	0.566	2749.023	0.359	.7	1	40	40	29P			average
28Si(p,g)29Pxi		-5630	10	-5632.796	2.458	-.3	U				HANL		66Yo01
28Si(p,g)29Pxi		-5631.9	5.0	-5632.796	2.458	-.2	1	24	24	29Pxi	H		68Te01,*
29Cl(p)28S		1800	100	2660#	100#	8.6D	D				G		15Mu13
29Cl(p)28S		1800	100	2660#	100#	8.6D	D				G		18Xu04,*
29Cl(p)28S		2660#	100#				3				g		S-u212
29Mg(B-)29Al		7624	400	7595.402	0.487	-.1	U				h		73Go34
29Al(B-)29Si		3850	100	3687.319	0.345	-1.6	U				h		54Na14,*
29Sii(IT)29Si		8290	5	*			Z						82Be52
29P(B+)29Si		4967	20	4942.232	0.359	-1.2	U				h		55Ro05
29Pxi(IT)29P		8374	5	8381.819	2.445	1.6	Z				hANL		68Mo17,G
29Pxi(IT)29P		8376	6	8381.819	2.445	1.0	Z						68Te01
29Pxi(IT)29P		8382.1	2.8	8381.819	2.445	-.1	1	76	76	29Pxi	H		72Ba26
*29F-u		n-stable, 28F n-unstable									h		89Gu03*W
*29Mg-u		Result from the ‘‘Plasma" experiment. ~ Next item from ‘‘Rilis"									H		06Ga04**
*29Si(p,t)27Sii		Original Q=-23798(5) calibrated with 12C(p,t)10C; recalibr +4.2keV									h		MMC122*W
*29Ar(2p)27S		Trends from Mass Surface TMS suggest 29Ar 400 keV less bound									G		GAu212**
*28Si(n,g)29Si		Original error 0.0005 increased for calibration									M		GAu036**

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*28Si(n,g)29Si           Original error 0.005  increased for calibration                   H       GAu092**
*28Si(d,p)29Si           Estimated systematic error 0.5 added to statistical error 0.037 keV  h    AHW   **
*28Si(p,g)29Pxi          IT=8376(6), Q rebuilt with Ame*1964, error estimated by evaluator  H      GAu122**
*29Cl(p)28S              Trends from Mass Surface TMS suggest  29Cl   860 keV less bound     G       GAu212**
*29Al(B-)29Si            E-=1550(100) to 5/2^+ level at 2028.16 and 3/2^+ at 2425.97 keV    k       Ens125**
*29Pxi(IT)29P            original reference is 1966Youngblood01                            h       GAu122*G

 30F-u                     52561#     537#                                    2                g    1.0 S-u20c
 30Ne-u                    23872      884      24992.235   271.876     .8o  o                  HGA3 1.5 91Or01
 30Ne-u                    25370      740      24992.235   271.876    -.3   Z                  mGA5 1.5 99Sa.A
 30Ne-u                    25660      850      24992.235   271.876    -.5o  o                  HGA5 1.5 00Sa21
 30Ne-u                    24734      301      24992.235   271.876     .6  -1-                 HGA7 1.5 07Ju03
 30Ne-u                    25024      301      24992.235   271.876    -.1  -1-                 KGA8 1.5 12Ga45
 30Ne-u               ave  24879.000  319.259  24992.235   271.876     .4   1     73  73  30Ne          average
 30Na-u                     7620      540       9097.932     5.075    1.8F  F                  hTO1 1.5 86Vi09,*
 30Na-u                     9200      370       9097.932     5.075    -.2   U                  hGA1 1.5 87Gi05
 30Na-u                     9126      218       9097.932     5.075    -.1   U                  MGA3 1.5 91Or01
 30Na-u                     9330      130       9097.932     5.075   -1.2   U                  MTO4 1.5 91Zh24
 30Na-u                     9041       22       9097.932     5.075    2.6   Z                  mP40 1.0 99To.A
 30Na-u                     8976       27       9097.932     5.075    4.5B  B                  hP40 1.0 01Lu17
 30Na-u                     8990       25       9097.932     5.075    4.3B  B                  HP40 1.0 06Ga04
 30Na-O1.876               18638.9      5.6    18638.106     5.075    -.1   1     82  82  30Na HTT1 1.0 13Ch49
 30Na-39K.769              37004       12      37007.645     5.075     .3   1     18  18  30Na HTT1 1.0 13Ch49
 30Mg-O1.876                   3.0      3.7        5.629     1.390     .7   1     14  14  30Mg kTT1 1.0 13Ch49
 30Mg-u                    -9700      230      -9534.545     1.390     .5o  o                  mTO1 1.5 86Vi09
 30Mg-u                    -9597       98      -9534.545     1.390     .4   U                  MGA3 1.5 91Or01
 30Mg-u                    -9490      110      -9534.545     1.390    -.3   U                  MTO4 1.5 91Zh24
 30Mg-u                    -9546       14      -9534.545     1.390     .8   U                  HP40 1.0 06Ga04
 30Mg-39K.769              18375.6      1.5    18375.168     1.390    -.3   1     86  86  30Mg GTT1 1.0 20Le06
 30Al-O1.875               -7495.1      2.8    -7495.740     2.078    -.2   1     55  55  30Al GTT1 1.0 20Le06
 30Al-39K.769              10878.1      3.1    10878.884     2.078     .3   1     45  45  30Al KTT1 1.0 16Kw.A
 30Cl-u                     4770      210       5018.333    25.632     .5   Z                  g    2.5 S     ,G
 30Ar-u                    23790      320      23694#      192#       -.1   Z                       2.5 IMME
 30P-30Si                   4543.353    0.066                                 3                KJY1 1.0 16Ca22
 30S-30P                    6593.28     0.21                                  4                HJY1 1.0 11So11
 26Na-30Na.433 22Na.591    -7454      287      -7468.110     4.057    -.0   U                  hP10 1.5 75Th08
 26Na-30Na.433 22Na.591    -8060      641      -7468.110     4.057     .6   U                  hP11 1.5 75Th08
 26Na-30Na.433 22Na.591    -7045      225      -7468.110     4.057    -.8   U                  hP12 2.5 75Th08
 26Na-30Na.433 22Na.591    -7515      117      -7468.110     4.057     .4   U                  MP13 1.0 75Th08
 27Na-30Na.360 25Na.648    -2750      213      -2504.809     4.170     .8   U                  hP10 1.5 75Th08
 26Mg(18O,14O)30Mg        -16234       55     -16123.769     1.295    2.0   U                  hMun     78Pa12,*
 30Si(n,a)27Mg             -4193       21      -4199.966     0.052    -.3   U                  hHam     62An05
 30Si(p,a)27Al             -2368       10      -2372.044     0.052    -.4   U                  hMIT     64Sp12
 27Al(a,p)30Si              2375        8       2372.044     0.052    -.4   U                  hMan     59Ba13,Y
 30Si(d,a)28Al              3123       10       3128.564     0.053     .6   U                  hMIT     64Sp12
 28Si(3He,n)30S             -573       15       -573.642     0.206    -.0   U                  hCIT     67Mi02
 30Ar(2p)28S                2280      130       3420#       80#       8.8B  B                  G        15Mu13,*
 30Ar(2p)28S                2420       80       3420#       80#      12.5D  D                  G        18Xu04,*
 30Ar(2p)28S                3420#      80#                                    3                g        S-u212
 29Si(n,g)30Si             10609.6      0.3    10609.199     0.022   -1.3o  o                  mMMn     80Is02,Z
 29Si(n,g)30Si             10609.53     0.03   10609.199     0.022  -11.0   Z                   MMn     83Ke11
 29Si(n,g)30Si             10609.21     0.04   10609.199     0.022    -.3  -2-                 mMMn     90Is02,Z
 29Si(n,g)30Si             10609.24     0.05   10609.199     0.022    -.8  -2-                 mORn     92Ra19,Z
 29Si(n,g)30Si             10609.1776   0.0500 10609.199     0.022     .4o  o                  HPTc     97Ro26,*
 29Si(n,g)30Si             10609.178    0.030  10609.199     0.022     .7  -2-                 HPTc     01Pa52,*
 29Si(n,g)30Si             10609.23     0.21   10609.199     0.022    -.1   U                  MBdn     06Fi.A
 29Si(d,p)30Si              8413       10       8384.633     0.022   -2.8   U                  hMex     61Ja23
 29Si(d,p)30Si              8396       13       8384.633     0.022    -.9   U                  hMIT     64Sp12
 29Si(d,p)30Si              8384.92     0.53    8384.633     0.022    -.5   U                  hRez     90Pi05,*
 29Si(n,g)30Si        ave  10609.199    0.022                                 2                         average
 29Si(p,g)30P               5594.5      0.4     5594.745     0.065     .6   U                  K        85Re02
 29Si(p,g)30P               5594.5      0.5     5594.745     0.065     .5   U                  K        96Wa33
 30Cl(p)29S                  480       20                                     3                G        18Mu18
 30Na(B-)30Mg              17167      330      17356.042     4.901     .6   U                  M        83De04,*
 30Mg(B-)30Al               6690      240       6982.744     2.329    1.2   U                  h        83De04,*
 30Al(B-)30Si               8550      250       8568.846     1.936     .1   U                  h        61Ro12,*
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 30Si(t,3He)30Al                   -8520        40        -8550.254     1.936     -.8   U                  K        69Aj03
 30Si(t,3He)30Al                   -8545        15        -8550.254     1.936     -.4   U                  K        87Pe06
 30P(B+)30Si                        4262        40         4232.107     0.061     -.7   U                  h        56Gr07
 30P(B+)30Si                        4267        25         4232.107     0.061    -1.4   U                  h        63Fr10
 30Si(p,n)30P                      -5012.1       5.       -5014.454     0.061     -.5   U                  hHar     75Fr.A,Z
 30S(B+)30P                         6118        22         6141.601     0.196     1.1   U                  h        63Fr10,*
*30Na-u                          F : contaminated by 30Mg                                                h        91Zh24**
*30Cl-u                          AHW gets M=4867#, 30Cl 430 lb                                                    GAu92b*G
*                                 ~ p-unstable 30Cl (T<200ns)                                                     86La17*W
*26Mg(18O,14O)30Mg               Tentative, say authors; four counts only                                         AHW   **
*30Ar(2p)28S                     Symmetrized from 2250(+150--100)                                        K        GAu161**
*30Ar(2p)28S                     Symmetrized from 2450(+50--100), supersedes 15Mu13                      G        HWJ192**
*30Ar(2p)28S                     Trends from Mass Surface TMS suggest  30Ar  1000 keV less bound         G        GAu212**
*29Si(n,g)30Si                   Original error 0.0005 increased for calibration                         M        GAu036**
*29Si(n,g)30Si                   Original error 0.005  increased for calibration                         H        GAu092**
*29Si(d,p)30Si                   Estimated systematic error 0.5 added to statistical error 0.16 keV      h        AHW   **
*30Na(B-)30Mg                    Calculated from 3 values used for calibration                                    GAu   **
*30Mg(B-)30Al                    Calculated from value used for calibration                              h        GAu   **
*30Al(B-)30Si                    E-=5050(250) to 2^+ level at 3498.49 keV                                h        Ens109**
*30S(B+)30P                      E+=4422(22) to 0^+ level at 677.01 keV                                  h        Ens109**


 31Ne-u                            33087      1739        33474.816   285.772      .1   U                  KGA7 1.5 07Ju03
 31Ne-u                            33752       333        33474.816   285.772     -.6   1    33   33  31Ne KGA8 1.5 12Ga45
 31Na-u                            13440      1000        13146.655    15.000     -.2o  o                  HGA1 1.5 87Gi05
 31Na-u                            13559       327        13146.655    15.000     -.8o  o                  HGA3 1.5 91Or01
 31Na-u                            13610       210        13146.655    15.000    -1.5   U                  HT04 1.5 91Zh24
 31Na-u                            13441       118        13146.655    15.000    -1.7   U                  HGA7 1.5 07Ju03
 31Mg-O1.938                        6503.7       3.3                                    2                  kTT1 1.0 13Ch49
 31Mg-u                            -3830       220        -3351.768     3.300     1.4o  o                  MT01 1.5 86Vi09
 31Mg-u                            -3520       180        -3351.768     3.300      .6o  o                  MGA1 1.5 87Gi05
 31Mg-u                            -3458       149        -3351.768     3.300      .5   U                  MGA3 1.5 91Or01
 31Mg-u                            -3370       120        -3351.768     3.300      .1   U                  MT04 1.5 91Zh24
 31Mg-u                            -3425        18        -3351.768     3.300     4.1B  B                  HP40 1.0 06Ga04
 O2-31P H                           8242.20819   0.00086   8242.20894   0.00069    .9   1    64   48  31P  HFS1 1.0 08Re16
 31K-u                             32783       275        36780#      322#       14.5D  D                  G1.0 1.0 19Ko18,*
 31K-u                             36780#      322#                                     2                  g    1.0 S-u212
 31Na-39K.795                      42017        25        42000.000    15.000     -.7o  o                  KTT1 1.0 13Ch49
 31Na-39K.795                      42000        15                                      2                  GTT1 1.0 17Ga20
 31Al-39K.795                      12803.1       2.4                                    2                  KTT1 1.0 16Kw.A
 31P-28Si H3                      -26639.6290    0.0056  -26639.63244   0.00070    -.6   U                  HFS1 1.0 06Re19
 31P-28Si H3                      -26639.63324   0.00089 -26639.63244   0.00070     .9   1    62   52  31P  HFS1 1.0 08Re16
 29Na H2-31Na                       5800       400         5380.501    16.942     -.4   Z                   P15 2.5 79Th.A
 31S-31P                            5794.98      0.25      5795.005     0.246      .1   1    97   97  31S  HJY1 1.0 10Ka30
 31Cl-31P                          18686.1       3.7                                    2                  KJY1 1.0 16Ka15
 O2-31P                            16067.228     0.096    16067.24084   0.00069     .1   U                  HMS1 1.0 09Kw02,*
 26Na-31Na.373 22Na.657            -7457       286        -8024.375     6.279     -.8   U                  hP12 2.5 75Th08
 18O(15N,2p)31Al                    -170        90         -308.612     2.236    -1.5   U                  h        81Pa11
 27Al(a,g)31P                       9667.4       1.3       9668.597     0.047      .9   U                  hUtr     78Ma23
 31P(p,a)28Si                       1912         5         1916.30788   0.00067    .9   U                  hBar     56Va14,Y
 31P(p,a)28Si                       1919         4         1916.30788   0.00067   -.7   U                  hVUn     64Sm03
 31P(p,a)28Si                       1911        10         1916.30788   0.00067    .5   U                  hMIT     64Sp12
 31P(p,a)28Si                       1915.8       0.2       1916.30788   0.00067   2.5   U                  hZur     67St30
 28Si(a,n)31S                      -8135        44        -8096.668     0.229      .9   U                  hTal     63Ne05
 31F(g,2n)29F                        550#      100#                                     3                  g        S-u212
 31P(d,a)29Si                       8166        11         8165.34415   0.00071   -.1   U                  hMIT     64Sp12
 31Cli(2p)29P                       7700       100         7631.000     3.000     -.7   U                  H        90Bo24,*
 31Cli(2p)29P                       7610        60         7631.000     3.000      .3   U                  HLis     91Bo32
 31Cli(2p)29P                       7643        50         7631.000     3.000     -.2   U                  HLis     92Ba01,*
 31Cli(2p)29P                       7627        15         7631.000     3.000      .3o  o                  h        98Ax02,W
 31Cli(2p)29P                       7631         3                                      2                  H        00Fy01,*
 31Cli(2p)29P                       7940       110         7631.000     3.000    -2.8   Z                           IMM246,W
 30Ne(n,g)31Ne                       190       130          169.844   126.541     -.2   1    95   67  31Ne K        14Na10,*
 30Si(18O,17F)31Al                -12200        25       -12216.771     2.249     -.7   U                  K        88Wo02
 30Si(18O,17F)31Al                -12237        35       -12216.771     2.249      .6   U                  KBer     89Bo.A
 30Si(n,g)31Si                      6589.1       0.7       6587.393     0.038    -2.4   U                  h        70Be48
 30Si(n,g)31Si                      6587.5       0.8       6587.393     0.038     -.1   U                  h        70Sp02
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 30Si(n,g)31Si                   6588.4      0.3       6587.393      0.038     -3.4B  B                 h        72Dz13
 30Si(n,g)31Si                   6587.32     0.20      6587.393      0.038      .4    U                  MMn     90Is02,Z
 30Si(n,g)31Si                   6587.39     0.05      6587.393      0.038      .1   -3-                mORn     92Ra19,Z
 30Si(n,g)31Si                   6587.3970   0.0500    6587.393      0.038     -.1o   o                 HPTc     97Ro26,*
 30Si(n,g)31Si                   6587.39     0.14      6587.393      0.038      .0    U                 MBdn     06Fi.A
 30Si(n,g)31Si                   6587.397    0.057     6587.393      0.038     -.1   -3-                HPTc     01Pa52
 30Si(d,p)31Si                   4368        7         4362.827      0.038     -.7    U                 hMIT     64Sp12
 30Si(d,p)31Si                   4364.18     0.55      4362.827      0.038     -2.5   U                 hRez     90Pi05,*
 30Si(n,g)31Si              ave  6587.393    0.038                                    3                          average
 30Si(p,g)31P                    7297.4      1.2       7296.553      0.022     -.7    U                 h        68Wo01
 31Cli(p)30S                    12033       10        12026.376      3.028     -.7o   o                 h        98Ax02,*
 31Cli(p)30S                    12033       14        12026.376      3.028     -.5    U                 H        00Fy01,*
 31Mg(B-)31Al                   10150      700        11828.557      3.801     2.4    U                 h        83De04
 31Al(B-)31Si                    7940      100         7998.329      2.236      .6    U                 h        73Go22
 31Si(B-)31P                     1471        8         1491.507      0.043     2.6    U                 h        52Mo12
 31Si(B-)31P                     1486       12         1491.507      0.043      .5    U                 h        52Wa12
 31S(B+)31P                      5412       30         5398.013      0.229     -.5    U                 h        60Wa04
 31P(p,n)31S                    -6212.3     20.       -6180.360      0.229     1.6o   o                 hChR     58Go77,Y
 31P(p,n)31S                    -6250       20        -6180.360      0.229     3.5B   B                 hChR     59Br06,Y
 31Ar(B+)31Cl                   18360#     200#                                       3                 m        S     ,G
 31Ar(B+)31Cli                   6018      200         6069#       200#         .3    Z                          S-Cb  ,W
*31K-u                          from three-proton separation energy -4600(200) keV                      G        HWJ201**
*31K-u                          Trends from Mass Surface TMS suggest  31K   3720 keV less bound         G        GAu212**
*O2-31P                         For original doublet 31P-O1.938,            ~ D_M=-16382.522(0.096) uu  H        GAu101**
*31Cli(2p)29P                   Large error in Ecm due to sequential decay kinematics                   H        MMC122**
*31Cli(2p)29P                   ref. also finds 3p emission at 4870 keV                                 H        92Ba01**
*31Cli(2p)29P                   Average of 3 branches; but use (p)                                      m        AHW983*W
*31Cli(2p)29P                   Same authors as ref.                                                    h        00Fy01*W
*31Cli(2p)29P                   Q(2p)=7620(5), 6245(2), 5679(3), 5223(5) keV                            H        00Fy01**
*                                ~ to gs and levels 3/2^+ at 1383.55, 5/2^+ at 1953,91, 3/2^+ 2422.7 keV k       Ens125**
*31Cli(2p)29P                   T=5/2;3/2;1/2,from 31Al;Si,Pxi,Sxi;P,S; (error 21+100)                           AHW92c*W
*30Ne(n,g)31Ne                  Symmetrized from 150(+160--100) keV                                     K        14Na10**
*30Si(n,g)31Si                  Original error 0.0005 increased for calibration                         M        GAu036**
*30Si(d,p)31Si                  Estimated systematic error 0.5 added to statistical error 0.23 keV      h        AHW   **
*31Cli(p)30S                    Average of 3 branches                                                   h        AHW983**
*31Cli(p)30S                    E(p)=11654(28), 9493(20), 8347(15), 8092(14) keV                        H        00Fy01**
*31Ar(B+)31Cl                   Q=18490(100) by combining IAS with estim. Cb=6950(90)                   m        00Fy01*G
*31Ar(B+)31Cli                  p-stable 31Ar                                                                    86La17*W
*                                ~ Cb-(n-H)=7000(70)-782.3=6218(70)                                              86An07*W
*                                ~ Syst diff -200keV with Cb-(n-H)                                               92Bo37*W


 32Ne-u                         39720#     540#                                       2                 h    1.0 S-u095
 32Na-u                         19720      636        20011.025     40.000      .3o   o                 HGA3 1.5 91Or01
 32Na-u                         19900     1100        20011.025     40.000      .1    U                 HTO4 1.5 91Zh24
 32Na-u                         20840      400        20011.025     40.000     -1.4   Z                 mGA5 1.5 99Sa.A
 32Na-u                         20980      500        20011.025     40.000     -1.3o  o                 HGA5 1.5 00Sa21
 32Na-u                         20193      129        20011.025     40.000     -.9    U                 HGA7 1.5 07Ju03
 32Mg-O2                         9280.9      3.5                                      2                 kTT1 1.0 13Ch49
 32Mg-u                          -800      260         -889.861      3.500     -.2o   o                 mTO1 1.5 86Vi09
 32Mg-u                          -890      270         -889.861      3.500      .0    U                 MGA1 1.5 87Gi05
 32Mg-u                          -924      214         -889.861      3.500      .1    U                 MGA3 1.5 91Or01
 32Mg-u                          -820      130         -889.861      3.500     -.4    U                 MTO4 1.5 91Zh24
 32Mg-u                         -1142      113         -889.861      3.500     2.2o   o                 MP40 1.0 01Lu20
 32Mg-u                          -966       38         -889.861      3.500     2.0    U                 HP40 1.0 06Ga04,*
 32Mg-u                          -983       22         -889.861      3.500     4.2B   B                 HP40 1.0 06Ga04
 32Al-O2                        -1744       13        -1744.900      7.700     -.1o   o                 KTT1 1.0 12Ch.A
 32Al-O2                        -1744.9      7.7                                      2                 KTT1 1.0 16Kw.A
 32Al-u                        -12160      220       -11915.661      7.700      .7    U                 hTO1 1.5 86Vi09
 32Al-u                        -11870      200       -11915.661      7.700     -.2    U                 HGA1 1.5 87Gi05
 32Al-u                        -11877      104       -11915.661      7.700     -.2    U                 HGA3 1.5 91Or01
 32Si O2-C5 H4                 -67319.35     0.32                                     2                 HMS1 1.0 09Kw02,*
 O2-32S                         17754.2      1.0       17758.06498   0.00142   1.5    U                 hJ1  2.5 68Ma45
 C2 H8-32S                      90531.3      1.4       90529.08164   0.00141   -.6    U                 hJ1  2.5 68Ma45
 32S-O2                        -17758.0663   0.0020  -17758.06498    0.00142    .7    1     50   45  32S  HFS1 1.0 05Sh38
 32S-C2 D4                     -84335.9367   0.0019  -84335.93784    0.00141   -.6    1     55   55  32S  HFS1 1.0 05Sh38
 32S-H C F                     -34156.50     0.57    -34157.02043    0.00163   -.9    U                 HMS1 1.0 09Kw02,*
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Item	Input value		Adjusted value		v_i	Dg	Sig	Main flux		Lab	F	Reference
32K-u	23530	540	23607#	429#	.1	Z					2.5	IMME
32K-u	23607#	429#				2				g	1.0	S-u211
32Na-39K.821	49808	40				2				GTT1	1.0	17Ga20
32Ar-39K.821	27434.8	1.9				2				MMA8	1.0	03B117
30Na H2-32Na	6700	500	4736.971	40.321	-1.6	Z				P15	2.5	79Th.A
C F3-32S O2 H	25483.43	0.34	25484.04225	0.00298	1.8	U				HMS1	1.0	09Kw02,*
C F3-32S O2	33310.02	0.59	33309.07415	0.00298	-1.6	U				HMS1	1.0	09Kw02,*
26Na-32Na.325 22Na.709	-8569	354	-9245.223	12.606	-.8	U				hP12	2.5	75Th08
32S(3He,8Li)27P	-31277	35	-31371.090	9.001	-2.7B	B				GMSU		77Be13
32S(3He,8Li)27P	-31319	22	-31371.090	9.001	-2.4	Z						IMME-4,W
32S(p,a)29P	-4171	20	-4198.633	0.359	-1.4	U				hTky		64Ej05
32S(3He,6He)29S	-25520	50	-25581.990	13.041	-1.2	U				GMSU		73Be09
32S(3He,6He)29S	-25560	25	-25581.990	13.041	-.9	Z						IMME-4,W
30Si(t,p)32Si	7307	1	7305.567	0.299	-1.4	U				mStr		80An.A
32S(d,a)30P	4892	10	4896.126	0.065	.4	U				hMIT		64Sp12
32S(p,t)30S	-19614	3	-19617.123	0.206	-1.0	U				HMSU		74Ha02
31Si(n,g)32Si	9203.2180	0.0500	9199.970	0.301	-65.0B	B				HPTc		97Ro26,*
31Si(n,g)32Si	9203.22	0.76	9199.970	0.301	-4.3B	B				HPTc		01Pa52,G
31P(n,g)32P	7935.73	0.16	7935.650	0.040	-.5	U				MMMn		85Ke11,Z
31P(n,g)32P	7935.65	0.04				2				MILn		89Mi16,Z
31P(n,g)32P	7935.60	0.16	7935.650	0.040	.3	U				MBdn		06Fi.A
31P(d,p)32P	5712	8	5711.084	0.040	-.1	U				hMIT		64Sp12
31P(p,g)32S	8864.9	0.9	8863.96378	0.00143	-1.0	U				H		72Co13
31P(p,g)32S	8862.7	3.	8863.96378	0.00143	.4	U				h		73Ve06,*
31P(p,g)32S	8865.6	1.0	8863.96378	0.00143	-1.6	U				H		73Ve08,Z
31P(p,g)32S	8865.1	0.9	8863.96378	0.00143	-1.3	U				H		74Vi02
31P(3He,d)32S	3356	13	3370.48870	0.00143	1.1	U				hMIT		68Gr17
32S(p,d)31S	-12817.8	1.5	-12819.758	0.229	-1.3	U				HMSU		73Mo23
32S(3He,a)31S	5415	15	5533.297	0.229	7.9B	B				h		66Gr26
32S(3He,a)31S	5515	15	5533.297	0.229	1.2	U				hMIT		67Sp09
32S(3He,a)31S	5486	20	5533.297	0.229	2.4	U				hOrs		67Ro17
32S(3He,a)31S	5538	6	5533.297	0.229	-.8	U				hCIT		70Mo08
32Cl(p)31S	-1583.5	3.1	-1581.145	0.534	.8	U				H		85Bj01,*
32Cl(p)31S	-1581.9	2.1	-1581.145	0.534	.4	U				H		93Sc16,*
32Cl(p)31S	-1581.3	0.6	-1581.145	0.534	.3	1	79	76	32Cl	H		08Ga.A,*
32Cl(p)31S	-1581.2	2.1	-1581.145	0.534	.0	U				G		20Ar04,*
32Na(B-)32Mg	18300	1400	19469.052	37.402	.8	U				M		83De04
32Si(B-)32P	213	7	227.187	0.301	2.0	U				h		64Br09
32Si(B-)32P	221.4	1.2	227.187	0.301	4.8B	B				h		84Po09
32Pxi(IT)32P	5072.39	0.06	*			Z						85Ke11,Z
32Pxi(IT)32P	5072.50	0.12	*			Z						89Mi16,Z
32P(B-)32S	1707.6	0.7	1710.661	0.040	4.4B	B				h		61Ni02
32P(B-)32S	1710.1	0.7	1710.661	0.040	.8	U				H		68Fi04
32Sxi(IT)32S	7003.7	1.0	*			Z						72Co13,W
32Sxi(IT)32S	7000.8	1.4	*			Z						73Ve08
32Sxi(IT)32S	7000.5	2.5	*			Z						73De08
32Sxi(IT)32S	7004.4	1.6	*			Z						74Vi02
32Cl(B+)32S	12720	30	12680.831	0.562	-1.3	U				h		68Ar03,*
32S(p,n)32Cl	-13470	14	-13463.178	0.562	.5	U				HYal		69Ov01,Z
32S(p,n)32Cl	-13470	9	-13463.178	0.562	.8	U				HBNL		71Go18,Z
32S(3He,t)32Cl	-12699	15	-12699.423	0.562	-.0	U				H		89Je07
32S(3He,t)32Cl-36Ar()36K	133.01	1.10	133.529	0.606	.5	1	30	24	32Cl	HMun		10Wr01
32S(pi+,pi-)32Ar	-22813	50	-22793.187	1.770	.4	U				k		80Bu15
32S(pi+,pi-)32Ar	-22793	26	-22793.187	1.770	-.0	Z						IMME-5,W

Item	Comment	Lab	Reference
*32Mg-u	Result from the ''Plasma" experiment. ~ Next item from ''Rilis"	H	06Ga04**
*32Si O2-C5 H4	For original doublet 32Si O2 H3-C5 H7	H	GAu101**
*32S-H C F	For original doublet 32S O2 H-H2 C O2 F	H	GAu101**
*C F3-32S O2 H	For original doublet 32S O2 H-(C F3)0.942, ~ D_M=-25761.27(0.34) uu	H	GAu101**
*C F3-32S O2	For original doublet 32S O2--(C F3)0.928, ~ D_M=-33654.93(0.59) uu	H	GAu101**
*32S(3He,8Li)27P	T=3/2, from 27Mg, Ali, Sii; (error 10+20)		AHW92c*W
*32S(3He,6He)29S	T=3/2, from 29Al, Sii, Pxi; (error 17+20)		AHW92c*W
*31Si(n,g)32Si	Original error 0.0005 increased for calibration	M	GAu036**
*31Si(n,g)32Si	No spectra, not documented	h	GAu101*G
*31P(p,g)32S	T=3289(3) Q=-3185.3(3.) to 32Sxj at 12047.96(0.28) keV	g	Nub211**
*32Cl(p)31S	E(p)=3353.5(3.0) Q(p)=3462.8(3.1) from 32Cli 5046.3(0.3) T=2 level	g	Nub211**
*32Cl(p)31S	E(p)=3348.5(2.0) Q(p)=3457.6(2.1) from 32Cli 5046.3(0.3) T=2 level	g	Nub211**
*	~ corr to 3464.4(2.1) keV	H	02Py02**

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*32Cl(p)31S                       Q(p)=3465.0(0.4) from 32Cli 5046.3(0.3) T=2 level                        g        Nub211**
*                                  ~ this Q(p) is quoted in ref. as ``A.Garcia et al. (in preparation)"     H        08Bh08**
*32Cl(p)31S                       E(p)=3356(2) Q(p)=3465.1(2.1)  from 32Cli 5046.3(0.3) T=2 level           G        Nub211**
*32Sxi(IT)32S                     All other level energies are LOWER than in ref!!                                   73Ve08*W
*32Cl(B+)32S                      E+=9470(30) to 2^+ level at 2230.57 keV                                   h        Ens119**
*32S(pi+,pi-)32Ar                 T=2, from 32Si, Pxi, Sxj, Cli; (error 16+20)                                       AHW92c*W


 33Ne-u                            49523#      644#                                        2                 g    1.0 S-u211
 33Na-u                            27386      1601        25529.000   483.000    -.8o  o                 HGA3 1.5 91Or01
 33Na-u                            25910      1100        25529.000   483.000    -.2   Z                 mGA5 1.5 99Sa.A
 33Na-u                            26370      1160        25529.000   483.000    -.5o  o                 HGA5 1.5 00Sa21
 33Na-u                            25142       376        25529.000   483.000     .7o  o                 KGA7 1.5 07Ju03
 33Na-u                            25529       322        25529.000  \483.000          2                 KGA8 1.5 12Ga45
 33Mg-O2.062                       15813.3       3.1      15813.918     2.859     .2   1    85  85  33Mg kTT1 1.0 13Ch49
 33Mg-u                             5460       900         5327.863     2.859    -.1o  o                 mGA1 1.5 87Gi05
 33Mg-u                             5203       318         5327.863     2.859     .3   U                 MGA3 1.5 91Or01
 33Mg-u                             5710       180         5327.863     2.859   -1.4   U                 MTO4 1.5 91Zh24
 33Mg-u                             5311        24         5327.863     2.859     .7   U                 HP40 1.0 06Ga04
 33Al-u                            -9490       250        -9122.314     7.500    1.0o  o                 HTO1 1.5 86Vi09
 33Al-u                            -9250       160        -9122.314     7.500     .5o  o                 HGA1 1.5 87Gi05
 33Al-u                            -9167       142        -9122.314     7.500     .2   U                 KGA3 1.5 91Or01
 33Al-u                            -9020       120        -9122.314     7.500    -.6   U                 KTO4 1.5 91Zh24
 33Al-u                            -9125        64        -9122.314     7.500     .0o  o                 HGT1 1.5 04Ma.A
 33Al-u                            -8957       100        -9122.314     7.500    -.7o  o                 HGT2 2.5 08Kn.A
 33Al-u                            -8915       128        -9122.314     7.500    -.6   U                 KGT2 2.5 08Su19
 33Al-u                            -9209        62        -9122.314     7.500    1.4   U                 KLZ1 1.0 15Xu14
 33Si O2-13C C4 H4                -66848.76      0.75                                  2                 HMS1 1.0 09Kw02,*
 33Cl-u                           -22536.9       7.5     -22548.012     0.420   -1.5   U                 HLZ1 1.0 11Tu09
 33K-u                              8095#      215#                                    2                 g    1.0 S-u211,G
 33Ca-u                            33312#      429#                                    2                 g    1.0 S-u212
 33Mg-39K.846                      36035.7       7.4      36032.177     2.859    -.5   1    15  15  33Mg GMA8 1.0 19As04
 33Al-39K.846                      21582.0       7.5                                   2                 KTT1 1.0 16Kw.A
 33Ar-39K.846                      20629.86      0.43                                  2                 MMA8 1.0 03Bl17
 33Ar-36Ar.917                     19689.2       4.5      19686.683     0.431    -.6   U                 MMA6 1.0 01He29
 31Na H2-33Na                       5300       700         3267.719   483.233   -1.2   Z                  P15 2.5 79Th.A
 33S-32S H                         -8437.29682   0.00030  -8437.29682   0.00030   .0   1   100 100  33S  HMI3 1.0 05Ra34
 30Si(a,p)33P                      -2965        10        -2959.667     1.090     .5   U                 hANL     68Be13
 33S(n,a)30Si                       3497.6       5.        3493.506     0.022    -.8   U                 hILL     81Wa31
 33S(n,a)30Si                       3496.9       5.0       3493.506     0.022    -.7   U                 M        01Wa50
 31P(3He,p)33S                      9787        15         9787.56169   0.00146   .0   U                 h        71Gr04
 32S(n,g)33S                        8641.5       0.3       8641.63923   0.00052   .5o  o                 mMMn     80Is02,Z
 32S(n,g)33S                        8641.82      0.10      8641.63923   0.00052 -1.8   U                 hORn     83Ra04,Z
 32S(n,g)33S                        8641.60      0.03      8641.63923   0.00052  1.3   U                 hMMn     85Ke08,Z
 32S(n,g)33S                        8641.81      0.17      8641.63923   0.00052 -1.0   U                 MBdn     06Fi.A
 32S(n,g)33S                        8641.6398    0.0033    8641.63923   0.00052  -.2   U                 HNBS     06De21
 32S(d,p)33S                        6420         6         6417.07299   0.00028  -.5   U                 hMIT     64Sp12
 32S(p,g)33Cl                       2276.4       0.9       2276.774     0.391     .4  -1-                M        59Ku79
 32S(p,g)33Cl                       2276.8       0.5       2276.774     0.391    -.1  -1-                m        76Al01
 32S(d,n)33Cl                         62         9           52.208     0.391   -1.1   U                 h        72El03
 32S(3He,d)33Cl                    -3218        15        -3216.701     0.391     .1   U                 h        66Gr26
 32S(3He,d)33Cl                    -3217         5        -3216.701     0.391     .1   U                 hCIT     70Mo08
 32S(p,g)33Cl                ave    2276.706     0.437     2276.774     0.391     .2   1    80  80  33Cl          average
 32S(p,g)33Cli                     -3267.0       1.0      -3271.669     0.471   -4.7B  B                 H        70Ab15
 32S(p,g)33Cli                     -3271.4       2.0      -3271.669     0.471    -.1   U                 H        82Wi.A
 32S(p,g)33Cli                     -3271.5       0.8      -3271.669     0.471    -.3   1    37  37  33CliH        02Py01
 33Cli(p)32S                        3266.8       1.0       3271.669     0.471    4.9B  B                 K        87Bo21
 33Si(B-)33P                        5768        50         5823.022     1.295    1.1   U                 H        73Go33,G
 33P(B-)33S                          249         2          248.508     1.090    -.2  -2-                         54Ni06
 33P(B-)33S                          248.3       1.3        248.508     1.090     .2  -2-                         84Po09
 33P(B-)33S                  ave     248.508     1.090                                 2                          average
 33Sxi(IT)33S                       5480.1       0.4            *                      Z                          85Ra15,Z
 33Sxi(IT)33S                       5479.73      0.13           *                      Z                          85Ke08,Z
 33Cl(B+)33S                        5532        50         5582.518     0.391    1.0   U                 h        60Wa04
 33Cli(IT)33Cl                      5548.5       0.4       5548.443     0.365    -.1   1    83  63  33CliH        06Tr10
*33Si O2-13C C4 H4                For original doublet 33Si O2 H3-13C C4 H7                                 H        GAu101**
*33K-u                            AHW (IMME) gets M=7630#, Sp=-2520#                                                 GAu92b*G
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*33Si(B-)33P Lab ANB, since same procedure as in following litterature GAu935*G

34Na-u		33590	540	34010.000	643.500	.3	Z				k	2.5	S-u095
34Na-u		34010	429	34010.000	\643.500		2				KGA8	1.5	12Ga45
34Mg-O2.126		19747	31	19746.975	7.400	-.0	U				GTT1	1.0	13Ch49
34Mg-u		8855	476	8935.456	7.400	.1o	o				HGA3	1.5	91Or01
34Mg-u		9190	350	8935.456	7.400	-.5	U				HT04	1.5	91Zh24
34Mg-u		9420	270	8935.456	7.400	-1.2	Z				mGA5	1.5	99Sa.A
34Mg-u		9900	350	8935.456	7.400	-1.8	U				HGA5	1.5	00Sa21
34Mg-u		9190	97	8935.456	7.400	-1.7	U				HGA7	1.5	07Ju03
34Al-u		-3760	430	-3218.076	2.259	.8o	o				hT01	1.5	86Vi09,*
34Al-u		-3400	250	-3218.076	2.259	.5o	o				HGA1	1.5	87Gi05,*
34Al-u		-3262	218	-3218.076	2.259	.1o	o				HGA3	1.5	91Or01,*
34Al-u		-2940	120	-3218.076	2.259	-1.5	U				HT04	1.5	91Zh24,*
34Al-u		-3199	97	-3218.076	2.259	-.1	U				KGT1	1.5	04Ma.A,*
34Al-u		-3328	86	-3218.076	2.259	.9	U				KGA7	1.5	07Ju03,*
34K-u		-1310#	210#				2				k	1.0	S-u169
34Ca-u		15780	320	15985#	322#	.3	Z					2.5	IMME
34Ca-u		15985#	322#				2				g	1.0	S-u211
34Mg-39K.872		40583.4	7.4				2				GMA8	1.0	19As04
34Al-39K.872		28438.0	7.8	28429.869	2.259	-1.0o	o				KTT1	1.0	16Kw.A
34Al-39K.872		28427.0	3.3	28429.869	2.259	.9	-2-				GTT1	1.0	17Ga20
34Al-39K.872		28432.4	3.1	28429.869	2.259	-.8	-2-				GMA8	1.0	19As04,*
34Al-39K.872	ave	28429.869	2.259				2						average
34Si-39K.872		10185.99	0.86				2				GMA8	1.0	19As04
34Ar-39K.872		11919.02	0.36	11918.036	0.083	-2.7	U				HMA8	1.0	02He23
32Na H2-34Na		4800	2500	1651.089	644.742	-.5	Z				P15	2.5	79Th.A
34Ar-36Ar.944		10907.4	3.8	10907.512	0.088	.0	U				MMA6	1.0	01He29
34Cl-34S		5895.548	0.058	5895.479	0.041	-1.2	1	49	31	34Cl	HJY1	1.0	09Er07
34Clm-34S		6052.575	0.068	6052.603	0.044	.4	1	41	31	34Clm	HJY1	1.0	09Er07
34S-34Ar		-12403.19	0.20	-12403.081	0.075	.5	1	14	13	34Ar	kJY1	1.0	11Er02
34Clm-34Cl		157.05	0.11	157.124	0.029	.7	U				HJY1	1.0	09Er07
34Clm-34Cl		157.30	0.27	157.124	0.029	-.7	U				HJY1	1.0	11Er02
34Ar-34Cl		6507.627	0.092	6507.602	0.068	-.3	1	54	52	34Ar	kJY1	1.0	11Er02
34Clm-34Ar		-6350.41	0.11	-6350.479	0.069	-.6	1	39	35	34Ar	HJY1	1.0	11Er02
C4 H3-34P O		54914.59	0.87				2				HMS1	1.0	09Kw02,*
30Si(7Li,3He)34P		100	40	91.625	0.811	-.2	U				h		77Pe17
31P(a,p)34S		629.9	2.9	627.090	0.045	-1.0	U				hHar		73Ry01
31P(a,n)34Cl		-5632	10	-5646.860	0.049	-1.5	U				hTal		70Um01
31P(a,n)34Cl		-5641.5	3.7	-5646.860	0.049	-1.4	U				hHar		73Ry01
34Ne(g,2n)32Ne		-300#	100#				3				m		S-h03b
34S(d,a)32P		5096	10	5083.993	0.060	-1.2	U				h		78Ba30
32S(3He,n)34Ar		-759	15	-777.343	0.078	-1.2	U				hCIT		67Mi02
34S(13C,14O)33Si		-14243	75	-14300.134	0.700	-.8	U				hCan		86Fi06
33S(n,g)34S		11417.12	0.10	11417.150	0.045	.3	-1-				mORn		83Ra04,Z
33S(n,g)34S		11417.22	0.23	11417.150	0.045	-.3	-1-				MBdn		06Fi.A
33S(d,p)34S		9202	10	9192.583	0.045	-.9	U				hMIT		64Sp12
33S(d,p)34S		9195	6	9192.583	0.045	-.4	U				hUtr		71Va21
33S(n,g)34S	ave	11417.136	0.092	11417.150	0.045	.2	1	24	24	34S			average
33S(p,g)34Cl		5142.42	0.20	5143.199	0.049	3.9B	B				HOak		83Ra04,*
33S(p,g)34Cl		5142.4	0.3	5143.199	0.049	2.7	U				HUtr		83Wa27,Z
33S(p,g)34Cl		5143.29	0.07	5143.199	0.049	-1.3	1	48	48	34Cl	HAuc		94Li20,W
34Si(B-)34P		4700	300	4557.018	1.140	-.5	U				h		77Na05
34P(B-)34S		5383	45	5382.988	0.812	-.0	U				hANB		73Go33
34S(t,3He)34P		-5368	20	-5364.396	0.812	.2	U				hLAl		77Aj01
34S(7Li,7Be)34P		-6224	40	-6244.881	0.815	-.5	U				hCan		85Dr06
34Cl(B+)34S		5522	30	5491.604	0.038	-1.0	U				h		56Gr07
34S(p,n)34Cl		-6252	10	-6273.951	0.038	-2.2	U				hTal		70Um01
34S(p,n)34Cl		-6271.9	1.9	-6273.951	0.038	-1.1	U				hHar		75Fr.A
34S(p,n)34Cl		-6274.27	0.56	-6273.951	0.038	.6	U				hAuc		77Ba16
34S(p,n)34Cl		-6273.11	0.25	-6273.951	0.038	-3.4F	F				mAuc		92Ba.A,*
34S(3He,t)34Cl		-5510.8	0.4	-5510.196	0.038	1.5F	F				HMun		77Vo02,*
34S(3He,t)34Cl-27Al()27Si		-678.7	2.3	-679.245	0.104	-.2	U				HChR		74Ha35
34S(pi+,pi-)34Ari		-18500	100	-18465.310	5.000	.3	Z				h		91Bi07
34Clm(IT)34Cl		146.36	0.03	146.360	0.027	-.0	1	84	65	34Clm	k		Ens126

*34Al-u Possible isomeric mixture 26(1) ms, E=46.5 keV K 12Ro25**

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*34Al-39K.872                  Authors stated only ground state                                  G        19As04**
*C4 H3-34P O                   For original doublet 34P H2 O-C4 H5                               H        GAu101**
*C4 H3-34P O                   For original doublet 34P H2 O-(C4 H5)0.981,  ~ D_M=-54171.21(0.87) uu  h   GAu101*G
*33S(p,g)34Cl                  E(p)=974.76(0.15,Z) to 6088.20(0.10,Z) level                               83Ra04**
*33S(p,g)34Cl                  Original error 0.07 increased because of discrepancy              m        AHW95c*W
*33S(p,g)34Cl                  return from 0.20 to original                                      h        GAu101*W
*34S(p,n)34Cl                  F : disturbed by resonance; at least 0.5 keV uncertain            N        94Li20**
*34S(p,n)34Cl                  Provisional; not yet corr for atomic excitation processes         m        92Ba.A*G
*34S(3He,t)34Cl                F : rejected in ref. of same group                                H        09Fa15**

 35Mg-u                          18669      1721        16790.000   289.500     -.7o  o              HGA3 1.5 91Or01,G
 35Mg-u                          17400      1040        16790.000   289.500     -.4   Z              mGA5 1.5 99Sa.A,G
 35Mg-u                          18830      1070        16790.000   289.500    -1.3o  o              HGA5 1.5 00Sa21,G
 35Mg-u                          16790       193        16790.000  \289.500           2              HGA7 1.5 07Ju03
 35Al-u                           -340       460         -240.184     7.900      .1o  o              HGA1 1.5 87Gi05
 35Al-u                           -296       298         -240.184     7.900      .1o  o              HGA3 1.5 91Or01
 35Al-u                             80       190         -240.184     7.900    -1.1   U              HT04 1.5 91Zh24
 35Al-u                           -236        75         -240.184     7.900     -.0   U              KGA7 1.5 07Ju03
 C3-35Cl H                       23320.8       0.3      23322.275     0.038     2.0   U              hM17 2.5 66Be10
 C3-35Cl H                       23322.239     0.034    23322.275     0.038      .7   1   56  56  35Cl  B07 1.5 71Sm01
 C3-35Cl H                       23321.83      0.63     23322.275     0.038      .3   U              hJ5  2.5 72Ka57
 C3-35Cl H                       23322.328     0.325    23322.275     0.038     -.1   U              hJ5  2.5 72Ka57
 C5 H10-35Cl2                   140549.37      2.98    140544.932     0.076     -.6   U              hC2  2.5 65De09
 C5 H10-35Cl2                   140545.01      0.13    140544.932     0.076     -.4   1   15  15  35Cl  B07 1.5 71Sm01
 C4 H6 O-35Cl2                  104153.75      3.45    104159.424     0.076      .7   U              hC2  2.5 65De09
 C2 D6-35Cl H                   107934.90      0.54    107932.942     0.038    -1.5   U              hJ5  2.5 72Ka57
 C2 D6-35Cl H                   107933.422     0.538   107932.942     0.038     -.4   U              hJ5  2.5 72Ka57
 C3 H-D 35Cl                     24871.92      0.75     24870.561     0.038     -.7   U              hC2  2.5 65De09
 C8 H9-35Cl3                    163867.25      0.90    163867.207     0.114     -.0   U              hA2  2.5 70St25
 35Ar-u                         -24747.3       4.3     -24742.282     0.730     1.2   U              HLZ1 1.0 11Tu09
 35Ca-u                           5060       270         5572#      215#        1.9   Z               1.0 1.0 IMM246,W
 35Ca-u                           4770       225         5572#      215#        3.6   Z              m1.0 1.0 IMME-6,W
 35Ca-u                           5572#      215#                                     2              g    1.0 S-u211
 35Sc-u                          29093#      429#                                     2              g    1.0 S-u211
 35Al-39K.897                    32315.1       7.9                                    2              GTT1 1.0 17Ga20
 35K-39K.897                     20560.69      0.55                                   2              HMA8 1.0 07Ya08
 35Cl(p,a)32S                     1862         5         1866.060     0.036      .8   U              hBar     57Va03,Y
 35Cl(p,a)32S                     1865         8         1866.060     0.036      .1   U              hMIT     64Sp12
 32S(a,p)35Cl                    -1862        17        -1866.060     0.036     -.2   U              hMIT     64Sp12
 32S(a,n)35Ar                    -8751        18        -8614.650     0.680     7.6B  B              hTal     63Ne05,W
 35Cl(d,a)33S                     8285        10         8283.133     0.036     -.2   U              hMIT     64Sp12
 33S(3He,n)35Ar                   3335        16         3321.332     0.680     -.9   U              h        75Da14
 35Kxi(2p)33Cl                    4311        40                                      2              H        85Ay01
 35Kxi(2p)33Cl                    4440       100         4311.000    40.000    -1.3   Z                       IMM246,W
 35Na(g,n)34Na                   -1920#      300#                                     3              g        S-u20c
 34S(18O,17F)35P                 -7796        40        -7808.395     1.883     -.3   U              hCan     88Or01
 34S(n,g)35S                      6986.00      0.10      6985.839     0.039    -1.6  -1-             mORn     83Ra04,Z
 34S(n,g)35S                      6985.84      0.05      6985.839     0.039     -.0  -1-             mMMn     85Ke08,Z
 34S(n,g)35S                      6986.09      0.14      6985.839     0.039    -1.8   U              HBdn     06Fi.A
 34S(d,p)35S                      4762        10         4761.272     0.039     -.1   U              hMIT     64Sp12
 34S(d,p)35S                      4757         5         4761.272     0.039      .9   U              hUtr     71Va18
 34S(n,g)35S               ave    6985.872     0.045     6985.839     0.039     -.7   1   75  46  34S           average
 34S(p,g)35Cl                     6367.4       1.6       6370.814     0.042     2.1   U              H        72Hu10,G
 34S(p,g)35Cl                     6370.7       0.4       6370.814     0.042      .3   U              m        76Sp08,Z
 34S(p,g)35Cl                     6370.70      0.20      6370.814     0.042      .6   U              HOak     83Ra04,*
 34S(p,g)35Cli                     716.4       2.5          *                         Z              h        72Hu10,W
 34S(p,g)35Cli                     717.1       1.5          *                         Z              h        76Me12,W
 35Cl(g,n)34Cl                  -12660        40       -12644.764     0.051      .4   U              h        61Sa11
 35P(B-)35S                       3909        75         3988.398     1.867     1.1   U              h        72Go31
 35Sxi(IT)35S                     9155        10         9155.407    10.000      .0   Z                       75Gu15,W
 35S(B-)35Cl                        167.4      0.2        167.322     0.026     -.4   U              H        57Co62
 35S(B-)35Cl                        166.80     0.15       167.322     0.026     3.5B  B                       85Al11
 35S(B-)35Cl                        167.288    0.100      167.322     0.026      .3   U              H        85Ap01,*
 35S(B-)35Cl                        166.93     0.2        167.322     0.026     2.0o  o              m        85Ma59,G
 35S(B-)35Cl                        167.4      0.1        167.322     0.026     -.8   U              H        85Oh06,*
 35S(B-)35Cl                        166.7      0.2        167.322     0.026     3.1B  B              H        89Si04,*
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 35S(B-)35Cl                 167.56      0.03       167.322      0.026     -7.9B  B                    92Ch27,*
 35S(B-)35Cl                 167.35      0.10       167.322      0.026      -.3   U              H     93Ab11,*
 35S(B-)35Cl                 167.23      0.10       167.322      0.026       .9   U              H     93Be21,*
 35S(B-)35Cl                 167.27      0.10       167.322      0.026       .5   U              H     93Mo01,*
 35S(B-)35Cl                 167.222     0.095      167.322      0.026      1.1   Z              h     Averag,G
 35S(B-)35Cl                 167.334     0.027      167.322      0.026      -.4   1    91  71 35S H     00Ho13
 35Cl(n,p)35S                612         4          615.025      0.026       .8   U              hBNL  68Sc01
 35Cli(IT)35Cl              5651         3            *                           Z                    72Hu10
 35Cli(IT)35Cl              5656         2            *                           Z                    76Me12,W
 35Ar(B+)35Cl               5980        40         5966.243      0.679      -.3   U              h     56Ki29
 35Ar(B+)35Cl               5950        50         5966.243      0.679       .3   U              h     60Wa04
 35Cl(p,n)35Ar             -6747.2       1.6      -6748.590      0.679      -.9  -2-             mHar  75Fr.A,Z
 35Cl(p,n)35Ar             -6747.9       1.0      -6748.590      0.679      -.7  -2-             mAuc  77Wh03,Z
 35Cl(p,n)35Ar             -6750.4       1.2      -6748.590      0.679      1.5  -2-             KMtr  78Az01,*
 35Cl(p,n)35Ar         ave -6748.590     0.679                                    2                    average
*35Mg-u                     Average GA*3+GA*5  18790(910)                                        h     GAu027*G
*35Ca-u                     T=5/2;3/2;1/2 from 35P,Sxi,Kxi;S,Cli,Ari,Kxi;S,Ar; (error 19+250)          AHW   *W
*35Ca-u                     T=5/2, from 35P, Sxi, Kxi; (error 69+200)                            m     AHW974*W
*                            ~ Other combinations give up to 320 higher mass                     m     AHW974*W
*32S(a,n)35Ar               160 keV discrepancy noticed by authors themselves.                         AHW   *W
*35Kxi(2p)33Cl              T=5/2;3/2;1/2 from 35P,Sxi;S,Cli,Ari,Kxi;S,Ar; (error 10+100)              AHW92c*W
*34S(p,g)35Cl               probably to be recalibrated ****                                     h     GAu123*G
*34S(p,g)35Cl               E(p)=1264.97(0.13,Z) to 7598.91(0.15,Z) level                        m     83Ra04**
*34S(p,g)35Cli              IT=5651(3): Q rebuilt with their Q(gs)=6367.4(1.6)                   h     MMC123*W
*34S(p,g)35Cli              IT=5656(2): Q rebuilt with Ame1971                                   h     MMC123*W
*35Sxi(IT)35S               From 37Cl(p,3He). Also possible 8430(10)                                   75Gu15*W
*35Sxi(IT)35S                IMME -> 9110(7)  Use not??                                                AHW969*W
*35Sxi(IT)35S               p.1386 rejects 8430(10) as being IAS                                       85Ay01*W
*35S(B-)35Cl                Original error (0.030) increased  to 0.100                           h     AHW92c**
*35S(B-)35Cl                Same group as 92Ch27                                                       GAu936*G
*35S(B-)35Cl                Adopted: simple average and dispersion of 9 data                     h     GAu959*G
*35S(B-)35Cl                Weighted aver. of 9 =167.390(0.019) Re=Ri*3.07=0.059                 h     GAu959*G
*35S(B-)35Cl                Simple average of 9 =167.222(0.095)                                  h     GAu959*G
*35Cli(IT)35Cl              From (p,g)                                                                 AHW944*W
*35Cl(p,n)35Ar               Original T=6942.2(2.2) recalibrated 6945.5(1.2)                     K     GAu158**
*35Cl(p,n)35Ar               was recalibrated T=6947.0(1.8,Z) Q=-6751.9(1.8) by AHW              k     AHW   *W


 36Mg-u                    28893      2930       21879.000    741.000     -1.6    Z               GA4 1.5 90Au.A
 36Mg-u                    24460      1490       21879.000    741.000     -1.2    Z              mGA5 1.5 99Sa.A
 36Mg-u                    24930      1610       21879.000    741.000     -1.3o   o              HGA5 1.5 00Sa21
 36Mg-u                    21879       494       21879.000   \741.000             2              HGA7 1.5 07Ju03
 36Al-u                     6187       421        6388.000    160.500       .3o   o              HGA3 1.5 91Or01
 36Al-u                     6500       400        6388.000    160.500      -.2    U              HT04 1.5 91Zh24
 36Al-u                     5900       220        6388.000    160.500      1.5    Z              mGA5 1.5 99Sa.A
 36Al-u                     6140       310        6388.000    160.500       .5o   o              HGA5 1.5 00Sa21
 36Al-u                     6388       107        6388.000   \160.500             2              HGA7 1.5 07Ju03
 36Si-u                   -13850       640      -13350.729     77.078       .5    U              hT01 1.5 86Vi09
 36Si-u                   -13490       320      -13350.729     77.078       .3o   o              HGA1 1.5 87Gi05
 36Si-u                   -13130       540      -13350.729     77.078      -.3    Z               GA2 1.5 89Gi.A
 36Si-u                   -13578       191      -13350.729     77.078       .8o   o              HGA3 1.5 91Or01
 36Si-u                   -13110       150      -13350.729     77.078     -1.1   -2-              T04 1.5 91Zh24
 36Si-u                   -13376        75      -13350.729     77.078       .2   -2-             HGT1 1.5 04Ma.A
 36Si-u                   -13280       118      -13350.729     77.078      -.4   -2-             HGA7 1.5 07Ju03
 36Si-u                   -13484       163      -13350.729     77.078       .8   -2-             KLZ1 1.0 15Xu14
 36Si-u                ave -13350.729   77.078                                    2                       average
 36Ar-u                   -32454.927     0.029   -32454.894      0.029      1.1    Z              MST2 1.0 99Ca.B
 36Ar-u                   -32454.895     0.015   -32454.894      0.029       .1o   o              hST2 1.0 02Bf02
 36Ar-u                   -32454.895     0.029   -32454.894      0.029       .0    1  100 100 36Ar HST2 1.0 03Fr08
 36Sc-u                    17240       540       17338#        322#          .1    Z                   2.5 IMME
 36Sc-u                    17338#      322#                                        2              g    1.0 S-u211
 36K-39K.923               14800.99      0.38     14800.801      0.349      -.5    1   84  84 36K  HMA8 1.0 07Ya08
 36Ar(3He,8Li)31Cl        -29180        50      -29211.575      3.447      -.6    U              KMSU     77Be13
 36Ar(3He,8Li)31Cl        -29149        34      -29211.575      3.447     -1.8    Z              m        IMME-4,W
 36S(48Ca,52V)32Al        -12651       370      -12346.612      7.177       .8o   o              hDar     87Ch.A,G
 36S(48Ca,51V)33Al        -14150       140      -14188.524      6.989      -.3    U              KDar     86Wo07
 36S(14C,17O)33Si          -6380        20       -6321.158      0.723      2.9    U              HMun     84Ma49
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36S(11B,14N)33Si		-4311	30	-4345.525	0.724	-1.2	U				HCan		85Fi03
36Ar(3He,6He)33Ar		-23512	30	-23508.124	0.405	.1	U				MMSU		74Na07
36Ar(3He,6He)33Ar		-23494	20	-23508.124	0.405	-.7	Z				m		IMME-4,W
36S(11B,13N)34Si		-7327	25	-7350.233	0.866	-.9	U				GCan		85Fi03
36S(14C,16O)34Si		-2989	20	-2915.564	0.823	3.7B	B				GMun		84Ma49
36S(64Ni,66Zn)34Si		-8890	41	-8872.265	1.091	.4o	o				hDar		85Wo07,*
36S(64Ni,66Zn)34Si		-8903	33	-8872.265	1.091	.9	U				GDar		86Sm05,*
36S(d,a)34P		4604.4	5.	4595.365	0.832	-1.8	U				H		82So.A,*
36Ar(p,t)34Ar		-19513	3	-19514.089	0.082	-.4	U				MMSU		74Ha02
36Ar(p,t)34Ari		-27473	50	-27448.000	5.000	.5	U				H		69Br21,*
36Ar(p,t)34Ari		-27448	5				2				H		72Pa02,*
36Na(g,n)35Na		0#	150#				4				g		S-u212,G
36S(14C,15O)35Si		-16184	50	-16108.390	35.860	1.5	-2-				Mun		84Ma49
36S(13C,14O)35Si		-21122	60	-21155.433	35.857	-.6	-2-				Can		86Fi06
36S(64Ni,65Zn)35Si		-17250	100	-17459.670	35.863	-2.1	-2-				KDar		86Sm05,*
36S(14C,15O)35Si	ave	-16108.368	35.857				2						average
36S(d,3He)35P		-7607	5	-7601.828	1.857	1.0	-2-				BNL		84Th08
36S(d,3He)35P		-7601	2	-7601.828	1.857	-.4	-2-				Hei		85Kh04
36S(14C,15N)35P		-2927	10	-2887.876	1.857	3.9B	B				hMun		84Ma49,*
36S(6Li,7Be)35P		-7521	17	-7488.449	1.858	1.9	U				hCan		85Dr06
36S(64Ni,65Cu)35P		-5659	34	-5641.688	1.980	.5	U				hDar		85Wo.A
36S(d,3He)35P	ave	-7601.828	1.857				2						average
35Cl(n,g)36Cl		8579.73	0.20	8579.79446	0.00480	.3	U				MBNn		78St25,Z
35Cl(n,g)36Cl		8579.7	0.3	8579.79446	0.00480	.3o	o				MMMn		80Is02,Z
35Cl(n,g)36Cl		8579.81	0.20	8579.79446	0.00480	-.1	U				MMMn		81Ke02,Z
35Cl(n,g)36Cl		8579.66	0.10	8579.79446	0.00480	1.3	U				H		81Su.A,Z
35Cl(n,g)36Cl		8579.61	0.09	8579.79446	0.00480	2.0	U				HILn		82Kr12,Z
35Cl(n,g)36Cl		8579.67	0.17	8579.79446	0.00480	.7	U				HBdn		06Fi.A
35Cl(n,g)36Cl		8579.7945	0.0048	8579.79446	0.00480	-.0	1	100	99	36Cl	HNBS		06De21
35Cl(d,p)36Cl		6360	8	6355.22823	0.00482	-.6	U				hMIT		64Sp12
35Cl(p,g)36Ar		8506.1	0.5	8506.981	0.045	1.8	U				M		72Ho40,Z
35Cl(p,g)36Arj		-2346.8	1.5	-2345.179	1.166	1.1	-2-				H		76Hu01
35Cl(p,g)36Arj		-2342.5	1.9	-2345.179	1.166	-1.4	-2-				H		76Ma40
35Cl(p,g)36Arj	ave	-2345.179	1.166				2						average
36Ar(d,t)35Ar		-9007	10	-8998.341	0.681	.9	U				hYal		70Wh04
36Kxi(p)35Ar		2592	21	2623.800	2.300	1.5	U				HBrk		81Ay01
36Kxi(p)35Ar		2623.8	2.3				3				H		95Ga16
36S(7Li,7Be)36P		-11277	27	-11274.989	13.113	.1	-2-				Can		85Dr06
36S(14C,14N)36P		-10256	15	-10256.620	13.112	-.0	-2-				Mun		84Ma49
36S(7Li,7Be)36P	ave	-11274.991	13.112				2						average
36Cl(B+)36S		1137	18	1142.135	0.189	.3	U				h		68Pi03
36Cl(e)36S		1180	15	1142.135	0.189	-2.5	U				h		64Li10
36Cl(e)36S		1160	18	1142.135	0.189	-1.0	U				h		65Be19
36S(p,n)36Cl		-1924.64	0.31	-1924.482	0.189	.5	1	37	36	36S	M		01Wa50
36Cli(IT)36Cl		4299.67	0.08	*			Z						82Kr12,Z
36Cl(B-)36Ar		708.7	0.6	709.533	0.045	1.4	U				M		67Sp06
36Ari(IT)36Ar		6610.8	0.3	*			Z						72Ho40
36Ari(IT)36Ar		6611.3	0.5	*			Z						74Jo02,Z
36Ar(p,n)36K		-13588.3	8.	-13596.708	0.326	-1.1	U				HBNL		71Go18,Z
36Ar(p,n)36K		-13618	23	-13596.708	0.326	.9	U				h		71Ja09
36Ar(3He,t)36K		-12930	40	-12832.953	0.326	2.4	U				hDuk		70Dz04
*36Ar(3He,8Li)31Cl		T=3/2, from 31Si, Pxi, Sxi; (error 28+20)									m		AHW967*W
*36S(48Ca,52V)32Al		Lower (upper?) limit (K.Fifield 28sep90)									GAu		*G
*36Ar(3He,6He)33Ar		T=3/2, from 33P, Sxi, Cli; (error 3+20)									m		AHW967*W
*36S(64Ni,66Zn)34Si		Calibrated with 36S(64Ni,62Ni) M-A=-26862(12) now-26861(7)									AHW		**
*36S(d,a)34P		Original error 1.2 judged too small									GAu		**
*36Ar(p,t)34Ari		IT=7950(50); Q rebuilt, estimated with 72*Pa*02 Q=-19523 for gs									H		MMC12a**
*36Ar(p,t)34Ari		Q from nucl. data a2 (1966) (unavailable)									h		MMC12a*W
*36Ar(p,t)34Ari		IT=7925(5); Q rebuilt with author's Q=-19523 for gs									H		MMC128**
*36Na(g,n)35Na		T<180ns, Sn should be negative, 36Na(g,n) should be positive									g		GAu212*G
*36S(64Ni,65Zn)35Si		M-A=-14482(59) for average of gs and 54, 114, 207 levels											86Sm05**
*36S(14C,15N)35P		Original report --2693 is a typo									h		GAu **
37Mg-u		30370	540	30286.265	750.351	-.1	Z				k	2.5	S-u111
37Al-u		10310	579	10531.000	193.500	.3o	o				HGA3	1.5	91Or01
37Al-u		10430	280	10531.000	193.500	.2	Z				mGA5	1.5	99Sa.A

37Al-u		10900	450	10531.000	193.500	-.5o	o				HGA5	1.5	00Sa21
37Al-u		10531	129	10531.000	\193.500		2				HGA7	1.5	07Ju03
37Si-u		-7550	1410	-7054.808	122.179	.2o	o				hGA1	1.5	87Gi05
37Si-u		-5370	970	-7054.808	122.179	-1.2	Z				GA2	1.5	89Gi.A
37Si-u		-7310	305	-7054.808	122.179	.6o	o				HGA3	1.5	91Or01
37Si-u		-6930	150	-7054.808	122.179	-.6	-2-				TO4	1.5	91Zh24
37Si-u		-7107	97	-7054.808	122.179	.4	-2-				HGA7	1.5	07Ju03
37Si-u	ave	-7054.808	122.179				2						average
37P-u		-20740	430	-20393.060	40.739	.5	U				hTO1	1.5	86Vi09
37P-u		-19910	190	-20393.060	40.739	-1.7o	o				hGA1	1.5	87Gi05,G
37P-u		-20670	230	-20393.060	40.739	.8	Z				GA2	1.5	89Gi.A
37P-u		-20442	200	-20393.060	40.739	.2	U				hGA3	1.5	91Or01
C3 H-37Cl		41924.73	1.09	41922.463	0.055	-.8	U				hC2	2.5	65De09
C3 H-37Cl		41922.2	0.2	41922.463	0.055	.5	U				hM17	2.5	66Be10
C3 H-37Cl		41922.176	0.305	41922.463	0.055	.4	U				hJ5	2.5	72Ka57
C2 D8-37Cl H3		123436.51	0.12	123436.558	0.055	.3	U				HB07	1.5	71Sm01
C3 H6 O2-37Cl2		104974.24	0.08	104974.292	0.111	.4	1	85	85	37Cl	B07	1.5	71Sm01
C3 H5-D2 37Cl		45020.96	1.14	45019.035	0.055	-.7	U				hC2	2.5	65De09
C8 H15-37Cl3		219665.80	0.90	219667.772	0.166	.9	U				hA2	2.5	70St25
C3 H3-D 37Cl		43473.27	1.33	43470.749	0.055	-.8	U				hC2	2.5	65De09
37K-u		-26632.5	6.4	-26624.110	0.101	1.3	U				HLZ1	1.0	11Tu09
H3 O-37Ca.514		25638.22	0.35				2				HMS1	1.0	07Ri08,*
37Sc-u		4340	270	4058#	322#	-1.0	Z				1.0	1.0	IMM246,W
37Sc-u		4058#	322#				2				g	1.0	S-u211
37Ti-u		27021#	429#				2				g	1.0	S-u211
D2 35Cl-H2 37Cl		15505.41	0.71	15503.616	0.068	-1.0	U				hC2	2.5	65De09
D2 35Cl-H2 37Cl		15503.80	0.09	15503.616	0.068	-.8	U				HH31	2.5	77So02
C5 H12-35Cl 37Cl		159145.17	0.12	159145.120	0.066	-.3	1	13	9	37Cl	B07	1.5	71Sm01
H2 35Cl-37Cl		18600.0	0.4	18600.188	0.068	.2	U				hM17	2.5	66Be10
D 35Cl-37Cl		17052.95	1.02	17051.902	0.068	-.4	U				hC2	2.5	65De09
D 35Cl-37Cl		17051.816	0.185	17051.902	0.068	.2	U				hJ5	2.5	72Ka57
37K-39K.949		7817.98	0.33	7818.436	0.101	1.4	U				HMA8	1.0	07Ya08
37Cl(p,a)34S		3030	6	3034.189	0.069	.7	U				hBar		57Va03,Y
37Cl(p,a)34S		3029	8	3034.189	0.069	.6	U				hMIT		64Sp12
37Ar(n,a)34S		4630	7	4630.409	0.212	.1	U				hILL		78As06
34S(a,n)37Ar		-4625	90	-4630.409	0.212	-.1	U				hTal		63Ne05
37Na(g,2n)35Na		-840#	150#				4				h		S-u111
37Cl(d,a)35S		7791	12	7795.462	0.067	.4	U				hMIT		64Sp12
37Cl(p,3He)35Sxi		-19713	10				2				H		75Gu15
35Cl(3He,p)37Ar		9582	15	9576.398	0.210	-.4	U				hMIT		67Sp09
36Mg(n,g)37Mg		240	110				3				K		14Ko14,*
36S(18O,17F)37P		-14410	40	-14402.646	37.948	.2	-2-				Can		88Or.A,*
36S(48Ca,47Sc)37P		-11490	120	-11556.154	37.996	-.6	-2-				Dar		88Fi04,*
36S(18O,17F)37P	ave	-14402.645	37.947				2						average
36S(n,g)37S		4303.52	0.12	4303.603	0.063	.7	-2-				mORn		84Ra09,Z
36S(n,g)37S		4303.61	0.09	4303.603	0.063	-.1	-2-				MBdn		06Fi.A
36S(d,p)37S		2082.7	2.0	2079.037	0.063	-1.8	Z						82So.A
36S(d,p)37S		2079.12	0.13	2079.037	0.063	-.6	-2-						84Pi03
36S(14C,13C)37S		-3874	7	-3872.831	0.063	.2	U				hMun		84Ma49
36S(n,g)37S	ave	4303.603	0.063				2						average
37Cl(13C,14O)36P		-16433	50	-16393.280	13.114	.8	U				hCan		88Or01
36S(p,g)37Cl		8386.47	0.23	8386.383	0.186	-.4	1	65	64	36S	mUtr		84No05,Z
36S(p,g)37Cli		-1835.5	0.3				2				H		84No05
36Ar(n,g)37Ar		8791.1	1.0	8787.459	0.208	-3.6B	B				M		68Wi25,Z
36Ar(n,g)37Ar		8788.8	1.2	8787.459	0.208	-1.1	U				M		70Ha56,Z
36Ar(n,g)37Ar		8789.9	0.9	8787.459	0.208	-2.7	U				hBdn		06Fi.A
36Ar(p,g)37K		1857.3	1.0	1857.630	0.090	.3	U				h		64Ar17,W
36Ar(p,g)37K		1857.63	0.09				2				mUtr		88De03,Z
36Ar(d,n)37K		-320	100	-366.936	0.090	-.5	U				hYal		61Ya01
36Ar(p,g)37Kxi		-3192.6	0.8				2				H		88De03,W
37S(B-)37Cl		4750	40	4865.127	0.196	2.9	U				h		67Wi14
37Cl(t,3He)37S		-4854	30	-4846.535	0.196	.2	U				hLAl		70Aj01
37Ar(e)37Cl		818	15	813.873	0.200	-.3	U				h		53An01
37Cl(p,n)37Ar		-1595.5	4.0	-1596.220	0.200	-.2	U				hWis		50Ri59,Y
37Cl(p,n)37Ar		-1595.4	1.0	-1596.220	0.200	-.8	U				MMIT		52Sc09,Z
37Cl(p,n)37Ar		-1596.9	2.4	-1596.220	0.200	.3	U				hOak		64Jo11
37Cl(p,n)37Ar		-1596.8	1.0	-1596.220	0.200	.6	U				MDuk		66Pa18,Z

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 37Cl(p,n)37Ar               -1596.22      0.20                                      2                 MPTB      98Bo30,G
 37Cl(p,n)37Ar               -1596.3       1.0      -1596.220      0.200      .1    U                 M         01Wa50
 37K(B+)37Ar                  6120         70        6147.482      0.227      .4    U                 h         58Su60
 37K(B+)37Ar                  6170         70        6147.482      0.227     -.3    U                 h         60Wa04
*37P-u                       Extrapolation on calibration more uncertain than quoted                            GAu   *G
*H3 O-37Ca.514               Error in Table II : M-A=13135.7(1.4) corr to --13136.06(0.64) keV        H         07Ri08**
*37Sc-u                      T=5/2;3/2;1/2, from 37S,Cl;Ari,Kxi;Ar,K; (error 4+250)                             AHW   *W
*36Mg(n,g)37Mg               Symmetrized from 220(+120--90) keV                                       K         14Ko14**
*36S(18O,17F)37P             And Q=-13650(40), M-A=-19750(40) if other peak is gs one                           88Or.A**
*36S(18O,17F)37P             That other choice is plausible, and preferred by author                            GAu   *G
*36S(48Ca,47Sc)37P           And Q=-11569(80), M-A=-18980(80) if other peak due to 47Sc 807.89 level            88Fi04**
*36Ar(p,g)37K                E(p)=918(1) to 2750.26(0.06) level, Z                                              88De03*W
*36Ar(p,g)37Kxi              AHW previously recalibrated T to 3281.9(0.8); could not find why and how h         MMC123*W
*37Cl(p,n)37Ar               Table 4: 37Cl-37Ar = -873.72(0.11) uu  ???                               m         GAu00a*G


 38Mg-u                      36580#      540#                                       2                 h    1.0 S-u111
 38Al-u                      15679      1081        17681#      161#       1.2    Z                  GA4 1.5 90Au.A
 38Al-u                      15484      1252        17681#      161#       1.2    Z                 mGA4 1.5 99Sa.A
 38Al-u                      15240      1500        17681#      161#       1.1o   o                 HGA4 1.5 00Sa21
 38Al-u                      17680       750        17681#      161#        .0    Z                 mGA5 1.5 99Sa.A
 38Al-u                      17980       920        17681#      161#       -.2o   o                 HGA5 1.5 00Sa21
 38Al-u                      17402       268        17681#      161#        .7D   D                 GGA7 1.5 07Ju03,*
 38Al-u                      17681#      161#                                       2                 g    1.0 S-u212
 38Si-u                      -4580       406       -4477.000   112.500      .2    Z                  GA4 1.5 90Au.A
 38Si-u                      -4371       191       -4477.000   112.500     -.4    Z                 mGA4 1.5 99Sa.A
 38Si-u                      -4510       180       -4477.000   112.500      .1o   o                 HGA4 1.5 00Sa21
 38Si-u                      -4020       290       -4477.000   112.500    -1.1    U                 HT04 1.5 91Zh24
 38Si-u                      -3950       220       -4477.000   112.500    -1.6    Z                 mGA5 1.5 99Sa.A
 38Si-u                      -4100       320       -4477.000   112.500     -.8o   o                 HGA5 1.5 00Sa21
 38Si-u                      -4477        75       -4477.000  \112.500            2                 HGA7 1.5 07Ju03
 38P-u                      -14420       620      -15696.895    77.918    -1.4    U                 hGA1 1.5 87Gi05,G
 38P-u                      -15150       370      -15696.895    77.918    -1.0    Z                  GA2 1.5 89Gi.A
 38P-u                      -16071       175      -15696.895    77.918     1.4    Z                  GA4 1.5 90Au.A
 38P-u                      -15910       140      -15696.895    77.918     1.0   -2-                 MGA4 1.5 00Sa21
 38P-u                      -15530       150      -15696.895    77.918     -.7   -2-                  T04 1.5 91Zh24
 38P-u                      -16110       310      -15696.895    77.918      .9    U                 HGA5 1.5 00Sa21
 38P-u                      -15717        75      -15696.895    77.918      .2o   o                 HGT1 1.5 04Ma.A
 38P-u                      -15660       100      -15696.895    77.918     -.1   -2-                 HGT2 2.5 08Kn.A
 38P-u                      -15688        97      -15696.895    77.918     -.1   -2-                 KLZ1 1.0 15Xu14
 38P-u                  ave -15696.895    77.918                                    2                          average
 38Ca-H6 O2                 -60460.24      0.30   -60460.206     0.209      .1o   o                 HMS1 1.0 06Bo11
 38Ca-H6 O2                 -60460.24      0.30   -60460.206     0.209      .1    1    48   48  38Ca HMS1 1.0 07Ri08
 38Sc-u                      -4820       160       -4562#      215#        1.6    Z                  1.0 1.0 IMM357,W
 38Sc-u                      -4562#      215#                                       2                 k    1.0 S-u169
 38Ti-u                       9770       270       12206#      322#        9.0    Z                  1.0 1.0 IMM357,W
 38Ti-u                      12206#      322#                                       2                 g    1.0 S-u211
 38Ar-39K.974                -1917.88      0.37    -1918.015     0.209     -.4    1    32   32  38Ar MMA8 1.0 02He23
 38K-39K.974                  4430.88      0.44     4430.997     0.210      .3    1    23   23  38K  HMA8 1.0 07Ya08,G
 38Ca 19F-39K1.462           27783.80      0.63    27783.506     0.209     -.5    U                 HMA8 1.0 07Ge07
 38K-38Ar                     6348.974     0.068    6349.012     0.048      .6    1    50   27  38K  HJY1 1.0 09Er07
 38Kxm-38Ar                   6488.743     0.049    6488.731     0.042     -.2    1    72   45  38KxmHJY1 1.0 09Er07
 38Ar-38Ca                  -13587.18      0.12   -13587.121     0.068      .5    1    32   17  38Ar kJY1 1.0 11Er02
 38Kxm-38K                     139.698     0.065     139.719     0.046      .3   -1-                 HJY1 1.0 09Er07
 38Kxm-38K                     139.78      0.14      139.719     0.046     -.4   -1-                 HJY1 1.0 11Er02
 38Kxm-38K              ave    139.713     0.059     139.719     0.046      .1    1    60   34  38Kxm          average
 38Ca-38K                     7238.04      0.10     7238.110     0.067      .7    1    45   25  38K  HJY1 1.0 11Er02
 38Kxm-38Ca                  -7098.43      0.11    -7098.391     0.067      .4    1    37   21  38KxmHJY1 1.0 11Er02
 24Mg(16O,2n)38Ca           -12727        30      -12754.713     0.195     -.9    U                 h         72Zi02,*
 35Cl(a,p)38Ar                 837.2       2.4       837.239     0.198      .0    U                 hHar      75Sq01
 35Cl(a,n)38K                -5862.1       1.5     -5859.175     0.198     1.9    U                 mMun      76Sh24,Z
 35Cl(a,n)38K                -5858.7       2.9     -5859.175     0.198     -.2    U                 mHar      75Sq01,*
 36S(t,p)38S                  3838        30        3857.916     7.174      .7    U                 h         85Da15
 36S(14C,12C)38S              -781        10        -783.031     7.174     -.2R   R  q-q=     2.031   Mun       84Ma49
 36Ar(3He,n)38Ca             -1365        21       -1313.138     0.196     2.5    U                 hCIT      69Sh04
 38Na(g,n)37Na                 700#      200#                                       5                 g         S-u212,G
 37Cl(n,g)38Cl                6107.84      0.30     6107.882     0.083      .1    U                 m         73Sp06,Z
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37Cl(n,g)38Cl		6107.95	0.10	6107.882	0.083	-.7	-2-				mMMn		81Ke02,Z
37Cl(n,g)38Cl		6107.73	0.15	6107.882	0.083	1.0	-2-				MBdn		06Fi.A
37Cl(d,p)38Cl		3885	8	3883.316	0.083	-.2	U				hMIT		64Sp12
37Cl(d,p)38Cl		3883.28	0.50	3883.316	0.083	.1	U				hRez		90Pi05,*
37Cl(n,g)38Cl	ave	6107.882	0.083				2						average
37Cl(p,g)38Ar		10243.0	1.0	10242.242	0.202	-.8	U				H		68En01,Z
37Cl(p,g)38Ari		-388.9	0.5	*			Z						78Va.A
38S(B-)38Cl		2947	20	2936.900	7.171	-.5	-3-						71En01
38S(B-)38Cl		2936	12	2936.900	7.171	.1	-3-						72Vi11
38S(B-)38Cl		2935	10	2936.900	7.171	.2	-3-	q-q=	-1.900				36S+2
38S(B-)38Cl	ave	2936.900	7.171				3						average
38Cli(IT)38Cl		8225	25	8207.972	24.000	-.7	Z				Brk		70Ha10,W
38Cl(B-)38Ar		4913	5	4916.707	0.218	.7	U				h		68Va06
38Arj(IT)38Ar		18798	30	18779.087	31.001	-.6	Z				Brk		70Ha10
38K(B+)38Ar		5870	30	5914.067	0.045	1.5	U				h		56Gr07,*
38K(B+)38Ar		5790	50	5914.067	0.045	2.5	U				h		67Va27,*
38Ar(p,n)38K		-6695.5	4.	-6696.414	0.045	-.2	U				hHar		75Sq01
38Ar(p,n)38K		-6695.65	0.70	-6696.414	0.045	-1.1	U				H		78Ja06,Z
38Ar(p,n)38Kxm		-6826.73	0.12	-6826.561	0.039	1.4	U				HAuc		98Ha36,Z
*38Al-u		Trends from Mass Surface TMS suggest 38Al 260 keV less bound									G		GAu212**
*38P-u		Extrapolation on calibration more uncertain than quoted											GAu *G
*38Sc-u		T=3;2;1, from 38S,Cli,Arj;Cl,Ari;Ar,Ca; (error 22+150)											AHW *W
*38Ti-u		T=3;2;1, from 38S,Cli,Arj;Cl,Ari;Ar,Ca; (error 35+250)											AHW *W
*38K-39K.974		Isomer not seen in gs spectra. Not found in rapid search at ±12Hz (±190keh											07Ya08*G
*24Mg(16O,2n)38Ca		E(16O)=24880(30) to 2^+ level at 2213.13(0.10) keV									h		Ens082**
*35Cl(a,n)38K		Q=-5989.1(2.9,Z) to 38Kxm at 130.15(0.04) keV									g		Nub211**
*38Na(g,n)37Na		T<400ns, Sn should be negative, 38Na(g,n) should be positive									g		GAu212*G
*37Cl(d,p)38Cl		Estimated systematic error 0.5 added to statistical error 0.064 keV									h		AHW **
*38Cli(IT)38Cl		From 40Ar(p,3He). Original value 8216(25) recalibrated											AHW944*W
*38K(B+)38Ar		E+=2680(30) 2600(50) resp, to 2^+ level at 2167.64 keV									h		Ens082**

39Al-u		22760	1360	23070#	322#	.2	Z				mGA5	1.5	99Sa.A
39Al-u		22970	1580	23070#	322#	.0o	o				HGA5	1.5	00Sa21
39Al-u		21653	676	23070#	322#	1.4D	D				HGA7	1.5	07Ju03,*
39Al-u		23070#	322#				2				g	1.0	S-u212
39Si-u		1385	567	2491.000	145.500	1.3	Z				GA4	1.5	90Au.A
39Si-u		2069	420	2491.000	145.500	.7	Z				mGA4	1.5	99Sa.A
39Si-u		1900	540	2491.000	145.500	.7o	o				HGA4	1.5	00Sa21
39Si-u		2200	310	2491.000	145.500	.6	Z				mGA5	1.5	99Sa.A
39Si-u		2210	490	2491.000	145.500	.4o	o				HGA5	1.5	00Sa21
39Si-u		2491	97	2491.000	\145.500		2				HGA7	1.5	07Ju03
39P-u		-13250	640	-13714.135	120.929	-.5	Z				GA2	1.5	89Gi.A
39P-u		-14054	262	-13714.135	120.929	.9	Z				GA4	1.5	90Au.A
39P-u		-13890	140	-13714.135	120.929	.8	-2-				MGA4	1.5	00Sa21
39P-u		-13580	160	-13714.135	120.929	-.6	-2-				TO4	1.5	91Zh24
39P-u		-13870	280	-13714.135	120.929	.4	-2-				MGA5	1.5	00Sa21
39P-u		-13602	140	-13714.135	120.929	-.5	-2-				HGT1	1.5	04Ma.A
39P-u	ave	-13714.135	120.929				2						average
39S-u		-24860	220	-24866.150	53.677	-.0	Z				GA2	1.5	89Gi.A
39K-23Na1.696		-18942.88	0.58	-18942.21758	0.00590	.8	U				HMa8	1.5	08Mu05
39Ca-u		-29278.8	6.4	-29289.189	0.640	-1.6	U				HLZ1	1.0	11Tu09
39Ti-u		1680	225	2684#	215#	4.5	Z				m1.0	1.0	IMME ,W
39Ti-u		2684#	215#				2				g	1.0	S-u211
39V-u		24230#	429#				2				g	1.0	S-u211
39K-36Ar1.083		-1144.65	0.44	-1144.867	0.032	-.5	U				HMA8	1.0	02He23
39K-36Ar1.083		-1144.83	0.40	-1144.867	0.032	-.1	U				HMA8	1.0	03Bl17
39K-37K1.054		-8231.29	0.53	-8231.703	0.106	-.5	U				HMa8	1.5	08Mu05
39Ca 19F-39K1.487		23082.43	0.64	23082.430	0.640	-.0	1	100	100	39Ca	HMA8	1.0	08Ge08
39K-40Ar		1323.3631	0.0043	1323.36278	0.00430	-.1	1	100	100	39K	HFS1	1.0	10Mo30
39K(p,a)36Ar		1287	7	1288.402	0.027	.2	U				hMIT		64Sp12
37Cl(t,p)39Cl		5701.9	2.5	5699.506	1.731	-1.0	-2-				Str		84An03
37Cl(t,p)39Cl		5697.3	2.4	5699.506	1.731	.9	-2-	q-q=	-2.206		m		40Ar-1
37Cl(t,p)39Cl	ave	5699.506	1.731				2						average
39K(p,3He)37Ari		-15493.4	6.				2				HMSU		73Be23,*
39K(p,t)37Kxi		-21713.1	3.	-21718.102	0.779	-1.7	U				HMSU		73Be23,*
39Sci(2p)37K		4969	120	5170.000	40.000	1.7	U				hLis		90De43,*

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 39Sci(2p)37K                   4877       40         5170.000     40.000     7.3B  B                  KBrk      92Mo15,*
 39Sci(2p)37K                   5146       40         5170.000     40.000      .6o  o                  KBor      01Gi01,*
 39Sci(2p)37K                   5170       40                                       3                  KBor      07Do17,*
 39Sci(2p)37K                   5365       100        5170.000     40.000     -2.0  Z                            IMM246,W
 39Na(g,n)38Na                     0#      200#                                     6                  g         S-u212,G
 39Mg(g,n)38Mg                   630#      100#                                     3                  g         S-u211
 38Ar(p,g)39K                   6380.9      1.1       6381.340      0.195      .4   U                  H         70Ma31,Z
 38Ar(p,g)39K                   6382.2      0.8       6381.340      0.195     -1.1  U                  H         84Ha27,Z
 39K(p,d)38K                  -10851        2       -10853.188      0.195     -1.1  U                  mMSU      74Wi17
 39K(3He,a)38K                  7498       15         7499.867      0.195      .1   U                  hRoc      66Bl04
 39K(3He,a)38K                  7483       10         7499.867      0.195     1.7   U                  hRoc      72Fe06
 39Cl(B-)39Ar                   3440       20         3441.973      5.292      .1   U                  h         56Pe38
 39Ari(IT)39Ar                  9089       20         9081.409      8.909     -.4   Z                            67Gr01,W
 39Ari(IT)39Ar                  9075       10         9081.409      8.909      .6   Z                            72Wi07,W
 39Ar(B-)39K                     565        5                                       2                            50Br66
 39Kxi(IT)39K                   6546        2            *                          Z                            74Du01,W
 39Ca(B+)39K                    6512       25         6524.489      0.596      .5   U                  h         58Ki40
 39K(p,n)39Ca                  -7302.5      6.       -7306.836      0.596     -.7   U                  hTal      70Ke08
 39K(p,n)39Ca                  -7314.9      1.8      -7306.836      0.596     4.5B  B                  H         78Ra15,Z
 39Ti(B+)39Sci                  6570      100         7552#       204#        9.8   Z                            S-Cb  ,W
*39Al-u                        Trends from Mass Surface TMS suggest  39Al  1320 keV less bound         G         GAu212**
*39Ti-u                        T=5/2, from 39Cl, Ari, Sci (error 65+200)                               m         AHW019*W
*39Ti-u                        T=31 ms; S)2p)=0 -> M-A=1417(22) keV                                    m         01Gi01*W
*39K(p,3He)37Ari               M-A=-25954(6); rebuilt Q=-15493.8(6.) with Ame*1971; recalibration +0.35 H        MMC123**
*39K(p,t)37Kxi                 M-A=-19753(3); Q rebuilt with Ame*1971                                  H         MMC123**
*39Sci(2p)37K                  E(2p)=3600(120) to 1/2^+ level at 1370.85 keV                           k         Ens123**
*39Sci(2p)37K                  Other possibility 39Sci(a)35K=3600(120) keV                             h         90De43**
*39Sci(2p)37K                  E(2p)=4750(40) p+p at 90 degrees; deduced Q=E(2p)[1 + Mp/M(37K)]        H         MMC123**
*39Sci(2p)37K                  E(2p)=4880(40) + recoil 266 keV; data reanalysed and included in 07*Do*17K        MMC135**
*39Sci(2p)37K                  IAS identification not sure                                             KBor      MMC135**
*39Sci(2p)37K                  T=5/2;3/2;1/2, from 39Cl,Ari;Ar,Kxi,Sc;K,Ca; (error 21+250)                       AHW92c*W
*39Sci(2p)37K                  Bad disagreement!! Do not use, provisionally                                      AHW92c*W
*39Na(g,n)38Na                 T>400ns, Sn should be positive, 39Na(g,n) should be negative (S2n also <0g        GAu212*G
*39Ari(IT)39Ar                 From 40Ar(3He,a)                                                                  AHW944*W
*39Ari(IT)39Ar                 From 40Ar(3He,a)                                                                  AHW944*W
*39Kxi(IT)39K                  From 39K(p,pg).  Assignment to 39Kxi and error from ref                           90En08*W
*39Ti(B+)39Sci                 p-stable 39Ti                                                                     90De43*W
*39Ti(B+)39Sci                 Cb-(n-H)=8108(70)-782.3=7326(70)                                                  86An07*W
*39Ti(B+)39Sci                 Syst diff -200keV with Cb-(n-H)                                                   92Bo37*W


 40Mg-u                        53194#      537#                                     2                  g    1.0 S-u211
 40Al-u                        30940#      322#                                     2                  g    1.0 S-u211
 40Si-u                         4895       770        6083.641    130.962     1.0   Z                   GA4 1.5 90Au.A
 40Si-u                         5519       735        6083.641    130.962      .5   Z                  mGA4 1.5 99Sa.A
 40Si-u                         5290      1010        6083.641    130.962      .5o  o                  HGA4 1.5 00Sa21
 40Si-u                         6400       420        6083.641    130.962     -.5   Z                  mGA5 1.5 99Sa.A
 40Si-u                         6180       740        6083.641    130.962     -.1o  o                  HGA5 1.5 00Sa21
 40Si-u                         5829       247        6083.641    130.962      .7  -2-                 HGA7 1.5 07Ju03
 40Si-u                         6120       140        6083.641    130.962     -.3  -2-                 GRT1 1.0 18Mi08
 40Si-u                   ave   6083.641   130.962                                  2                           average
 40P-u                         -7700      1500       -8737.779     89.756     -.5   Z                   GA2 1.5 89Gi.A
 40P-u                         -8947       405       -8737.779     89.756      .3   Z                   GA4 1.5 90Au.A
 40P-u                         -8283       322       -8737.779     89.756     -.9   Z                  mGA4 1.5 99Sa.A
 40P-u                         -8800       200       -8737.779     89.756      .2o  o                  HGA4 1.5 00Sa21
 40P-u                         -8950       210       -8737.779     89.756      .7  -2-                  TO4 1.5 91Zh24
 40P-u                         -8150       250       -8737.779     89.756     -1.6  Z                  mGA5 1.5 99Sa.A
 40P-u                         -8200       320       -8737.779     89.756     -1.1o o                  HGA5 1.5 00Sa21
 40P-u                         -8621       129       -8737.779     89.756     -.6  -2-                 HGA7 1.5 07Ju03
 40P-u                         -8749       107       -8737.779     89.756      .1  -2-                 GRT1 1.0 18Mi08
 40P-u                    ave  -8737.779    89.756                                  2                           average
 40S-u                        -24500       290      -24517.439      4.275     -.0   Z                   GA2 1.5 89Gi.A
 40S-u                        -24635       248      -24517.439      4.275      .3   Z                   GA4 1.5 90Au.A
 40S-u                        -24440       190      -24517.439      4.275     -.3o  o                  HGA4 1.5 00Sa21
 40S-u                        -24530       250      -24517.439      4.275      .0   U                  HTO4 1.5 91Zh24
 40S-u                        -24910       340      -24517.439      4.275      .8o  o                  HGA5 1.5 00Sa21
 40S-u                        -24627       129      -24517.439      4.275      .6   U                  HGA7 1.5 07Ju03
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C3 H4-40Ar		68917.0053	0.0035	68917.00555	0.00234	.1	1	45	45	40Ar	MI1	1.0	95Di08,W
C2 D8-40Ar		150431.1045	0.0040	150431.10071	0.00234	-.9	1	34	34	40Ar	MI1	1.0	95Di08,W
20Ne2-40Ar		22497.2245	0.0042	22497.22847	0.00296	.9	-1-				MI1	1.0	95Di08,W
20Ne2-40Ar		22497.2280	0.0060	22497.22847	0.00296	.1	-1-				mMI1	1.0	95Di08,W
20Ne2-40Ar	ave	22497.22565	0.00344	22497.22847	0.00296	.8	1	74	60	20Ne			average
40Ar-u		-37616.878	0.040	-37616.87796	0.00234	.0	U				MST2	1.0	02Bf02
40Ca-H40		-350410.425	0.022	-350410.425	0.022	-.0	1	100	100	40Ca	HST2	1.0	06Na18
40Ti-u		-9689	81	-9654.853	73.263	.4	1	82	82	40Ti	GLZ1	1.0	20Fu05
40V-u		12310	540	13387#	322#	.8	Z					2.5	IMME
40V-u		13387#	322#				2				g	1.0	S-u211
40S O-41K1.366		22541	16	22543.883	4.275	.2	U				HMS1	1.0	09Ri12
40S-41K.976		12752.0	9.4	12741.112	4.275	-1.2	1	21	21	40S	HMS1	1.0	09Ri12
40S-40Ar		13096.6	4.8	13099.439	4.275	.6	1	79	79	40S	HMS1	1.0	09Ri12
40Ca-40Ar		208.2	0.5	207.729	0.022	-.4	U				hJ3	2.5	68Fu11
40Ca(3He,8Li)35K		-29693	20	-29688.094	0.515	.2	U				HMSU		76Be08
40Ca(3He,8Li)35K		-29666	21	-29688.094	0.515	-1.1	Z						IMME-4,W
40Ca(a,8He)36Ca		-57580	40				2				Tex		77Tr03
40Ca(a,8He)36Ca		-57540	25	-57580.003	40.000	-1.6	Z						IMME-5,W
40Ar(n,a)37S		-2500	50	-2497.069	0.198	.1	U				h		55Be78
40Ar(n,a)37S		-2490	50	-2497.069	0.198	-.1	U				hRic		64Da11
40K(n,a)37Cl		3866	7	3872.461	0.076	.9	U				hBNL		68Sc01
40Ca(p,a)37K		-5179	9	-5182.145	0.096	-.3	U				hCIT		66Mc13
40Ca(3He,6He)37Ca		-24270	50	-24371.208	0.637	-2.0	U				HBrk		68Bu02
40Ca(3He,6He)37Ca		-24368	25	-24371.208	0.637	-.1	U				HMSU		73Be23,*
40Ca(3He,6He)37Ca		-24364	27	-24371.208	0.637	-.3	Z						IMME-4,W
40Ar(p,3He)38Cli		-21092	24				2				HBrk		70Ha10,*
40Ar(p,t)38Arj		-26765	31				2				HBrk		70Ha10,*
40Ca(d,a)38K		4655	10	4665.165	0.196	1.0	U				hMIT		64Sp12
40Ca(p,t)38Ca		-20459	25	-20448.738	0.195	.4	U				h		66Ha32
40Ca(p,t)38Ca		-20428	11	-20448.738	0.195	-1.9	U				hMSU		72Pa02
40Ca(p,t)38Ca		-20452	5	-20448.738	0.195	.7	U				hMSU		74Se05
40Ar(18O,19Ne)39S		-14504	200	-14412.098	50.000	.5	U				hCan		84Ho.B,G
40Ar(13C,14O)39S		-16760	50				2				Can		89Dr03
40Ar(d,3He)39Cl		-7038.4	2.5	-7035.174	1.732	1.3	Z				Hei		87Kh.A
40Ar(d,3He)39Cl		-7037.3	2.4	-7035.174	1.732	.9	Z				mHei		93Ma50
40Ar(t,a)39Cl		7256	40	7285.217	1.732	.7	U				hLAl		61Ja07
40Ar(d,3He)39Cl-36Ar()35Cl		-4024.13	2.42	-4021.668	1.733	1.0R	R	q-q=		-2.462	mHei		93Ma50
40Ar(3He,a)39Ari		1604	19	1627.189	7.373	1.2	-2-				H		67Gr01,*
40Ar(3He,a)39Ari		1631.3	8.0	1627.189	7.373	-.5	-2-				H		72Wi07,*
40Ar(3He,a)39Ari	ave	1627.189	7.373				2						average
39K(n,g)40K		7799.50	0.08	7799.620	0.056	1.5	-1-				ILn		84Vo01,Z
39K(n,g)40K		7799.56	0.16	7799.620	0.056	.4	-1-				MBdn		06Fi.A
39K(d,p)40K		5579	10	5575.053	0.056	-.4	U				hMIT		64Sp12
39K(n,g)40K	ave	7799.512	0.072	7799.620	0.056	1.5	1	61	61	40K			average
39K(p,g)40Ca		8329.5	0.9	8328.178	0.021	-1.5	U				h		68Do12
39K(p,g)40Ca		8329.6	0.9	8328.178	0.021	-1.6	U				h		68Li12,*
39K(p,g)40Ca		8328.24	0.09	8328.178	0.021	-.7	U				HUtr		90Ki07,Z
39K(3He,d)40Ca		2845	8	2834.703	0.021	-1.3	U				hOak		67Se10
40Ca(3He,a)39Ca		4950	20	4942.608	0.597	-.4	U				hAld		66Hi06
40Ca(3He,a)39Ca		4919	15	4942.608	0.597	1.6	U				HMIT		71Ra35
40Ca(7Li,8He)39Sc		-37400	40	-37376.254	24.000	.6	-2-				MSU		88Mo18
40Ca(14N,15C)39Sc		-27670	30	-27683.404	24.013	-.4	-2-				Can		88Wo07
40Ca(7Li,8He)39Sc	ave	-37376.251	24.000				2						average
40Sci(p)39Ca		3840	120	3829.780	5.735	-.1o	o				hLis		90De43
40Sci(p)39Ca		3820	30	3829.780	5.735	.3	U				h		90Zh.A,*
40Sci(p)39Ca		3827.7	10.	3829.780	5.735	.2	-2-				HGSI		97Li25,*
40Sci(p)39Ca		3830.8	7.	3829.780	5.735	-.1	-2-				HLis		98Bh12
40Sci(p)39Ca		3841	20	3829.780	5.735	-.6	U				HBor		07Do17,G
40Sci(p)39Ca	ave	3829.781	5.735				2						average
40Cl(B-)40Ar		7320	80	7482.082	32.066	2.0	-2-						89Mi03
40Ar(7Li,7Be)40Cl		-8375	35	-8343.975	32.066	.9	-2-						84Fi02
40Cl(B-)40Ar	ave	7482.082	32.066				2						average
40K(e)40Ar		1504	7	1504.403	0.056	.1	U				h		67Mc10,*
40K(e)40Ar		1497	8	1504.403	0.056	.9	U				h		68Az01,*
40K(n,p)40Ar		2270	5	2286.750	0.056	3.4B	B				hBNL		68Sc01
40K(n,p)40Ar		2286.7	1.0	2286.750	0.056	.1	U				HILL		81We12
40Ar(p,n)40K		-2286.3	1.0	-2286.750	0.056	-.5	U				HDuk		66Pa18,Z

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 40Ar(p,n)40K                     -2286.3      1.0     -2286.750     0.056    -.5   U                 H       01Wa50
 40K(B-)40Ca                       1325       15        1310.905     0.060    -.9   U                 h       52Fe16
 40K(B-)40Ca                       1350       20        1310.905     0.060   -2.0   U                 h       59Ke26
 40Cai(IT)40Ca                     7658.28     0.17        *                        Z                         88Sc23
 40Cai(IT)40Ca                     7658.18     0.05        *                        Z                         90Ki07,Z
 40Sc(B+)40Ca                     14330       40       14323.049     2.828    -.2   U                 h       68Ar03,*
 40Ca(p,n)40Sc                   -15105.4      2.9                                  2                 mYal    69Ov01,Z
 40Ca(3He,t)40Sc                 -14490       60      -14341.641     2.828    2.5   U                 hBld    65Ri06
 40Ca(pi+,pi-)40Ti               -24974      160      -24830.965    68.244     .9   1     18  18  40Ti        82Mo12,*
 40Ca(pi+,pi-)40Ti               -24764       22      -24830.965    68.244   -3.0   Z                 m       IMME-5,W
*C3 H4-40Ar                     From ratio Ar+/C3H4+     =0.998278399350( 88)                       n       95Di08*W
*C2 D8-40Ar                     From ratio Ar++/CD4+     =0.996249698100(100)                               AHW932*W
*20Ne2-40Ar                     From ratio Ar++/20Ne+    =0.999437341275(106)                       n       95Di08*W
*20Ne2-40Ar                     From ratio Ar+/20Ne+     =1.998902121050(300)                               AHW932*W
*20Ne2-40Ar                     using 20Ne mass from Tab'95   19992440.1759(20)                     m       GAu98a*G
*40Ca(3He,8Li)35K               T=3/2, from 35S, Cli, Ari; (error 7+20)                                     AHW92c*W
*40Ca(a,8He)36Ca                T=2, from 36S, Cli, Arj, Kxi; (error 14+20)                                 AHW92c*W
*40Ca(3He,6He)37Ca              Average of 2 values with small calibration correction                       AHW   **
*40Ca(3He,6He)37Ca              T=3/2, from 37Cl, Ari, Kxi; (error 18+20)                                   AHW92c*W
*40Ar(p,3He)38Cli               IT=8216(25); rebuilt Q=-21093.65(23.68); recalibrated for 10B +1.5 keV  h   MMC123**
*40Ar(p,t)38Arj                 IT=18784(30); Q rebuilt with 10C=15702.5(1.8) from ref.             H       68Br23**
*40Ar(18O,19Ne)39S              Q=-14640 keV to mixture gs, 238.27 and 275.09 keV levels in 19Ne           Ens96 *G
*40Ar(3He,a)39Ari               IT=9089(20); Q rebuilt with Ame*1961                                H       MMC123**
*40Ar(3He,a)39Ari               IT=9075(10); Q rebuilt with Ame*1964                                h       MMC123**
*39K(p,g)40Ca                   E(res)=1345.4(0.5) to 2^- level at 9641.1(0.8) keV                  h       Ens048**
*40Sci(p)39Ca                   Uncertainty not given, estimated from graph: stat(9keV), calib(11)  H       GAu   **
*40Sci(p)39Ca                   E(p)=3731(10); also E(p)=1330(20) Q(p)=1364.4(20) keV to 2468.5 level   k   Ens062**
*40Sci(p)39Ca                   IT=4370(10) in original paper                                       H       MMC123**
*40Sci(p)39Ca                   From 07Do17 we should include 01Gi01 (14), 98Lui (10), 97Trinder (12) refh  MMC128*G
*40K(e)40Ar                     LMK=0.34(0.08) 0.47(0.16) resp, to 2^+ level at 1460.851, rclcld Q  h       Ens048**
*40Sc(B+)40Ca                   E+=9580(40) to 3^- level at 3736.69 keV, and other E+               h       Ens048**
*40Ca(pi+,pi-)40Ti              Recalibrated to 16O(pi+,pi-) Q=-27704(20) keV                               GAu   **
*40Ca(pi+,pi-)40Ti              T=2 from 40Ar, Kxi, Cai, Sci; (error 13+20)                         m       AHW981*W


 41Mg-u                           62373#     537#                                   2                 g    1.0 S-u212
 41Al-u                           37134#     429#                                   2                 g    1.0 S-u211
 41Si-u                           11183     1714       14171#      322#       1.2   Z                  GA4 1.5 90Au.A
 41Si-u                           13800     1580       14171#      322#        .2   Z                 mGA5 1.5 99Sa.A
 41Si-u                           14560     1980       14171#      322#      -.1o   o                 HGA5 1.5 00Sa21
 41Si-u                           13011      397       14171#      322#       1.9D  D                 GGA7 1.5 07Ju03,*
 41Si-u                           14171#     322#                                   2                 g    1.0 S-u212
 41P-u                            -6054      528       -5346.000   129.000     .9   Z                  GA4 1.5 90Au.A
 41P-u                            -5061      429       -5346.000   129.000    -.4   Z                 mGA4 1.5 99Sa.A
 41P-u                            -5930      300       -5346.000   129.000    1.3o  o                 HGA4 1.5 00Sa21
 41P-u                            -5200      500       -5346.000   129.000    -.2   U                 HT04 1.5 91Zh24
 41P-u                            -5130      280       -5346.000   129.000    -.5   Z                 mGA5 1.5 99Sa.A
 41P-u                            -5290      420       -5346.000   129.000    -.1o  o                 HGA5 1.5 00Sa21
 41P-u                            -5346       86       -5346.000  \129.000          2                 HGA7 1.5 07Ju03
 41S-u                           -19970      540      -20406.549     4.400    -.5   Z                  GA2 1.5 89Gi.A
 41S-u                           -20713      249      -20406.549     4.400     .8   Z                  GA4 1.5 90Au.A
 41S-u                           -20500      150      -20406.549     4.400     .4   U                 MGA4 1.5 00Sa21
 41S-u                           -19970      230      -20406.549     4.400   -1.3   U                 HT04 1.5 91Zh24
 41S-u                           -20430      330      -20406.549     4.400     .0   U                 MGA5 1.5 00Sa21
 41S-u                           -20494       75      -20406.549     4.400     .8   U                 HGT1 1.5 04Ma.A
 41S-C2 H O                      -23146.2      4.4                                  2                 HMS1 1.0 09Ri12,*
 41Cl-u                          -29620      190      -29315.474    73.778    1.1  -2-                 T03 1.5 90Tu01
 41Cl-u                          -29500      270      -29315.474    73.778     .5  -2-                 T04 1.5 91Zh24
 41Cl-u                          -29247       89      -29315.474    73.778    -.8  -2- q-q=    63.784 m1.0 1.0   40Ar+1
 41Cl-u                          -29412      160      -29315.474    73.778     .6  -2- q-q=   -89.913 m1.0 1.0   41Cl+0
 41Cl-u                      ave -29315.474    73.778                               2                          average
 41Sc-u                          -30741       12      -30748.837     0.083    -.7   U                 HLZ1 1.0 11Tu09
 41Ti-u                          -16866       25      -16852.000    30.000     .6   Z                 m1.0 1.0 IMME  ,W
 41Ti-u                          -16200      390      -16852.000    30.000   -1.1   U                 HGT1 1.5 04St05
 41Ti-u                          -16852       30                                    2                 HLZ1 1.0 12Zh34,*
 41V-u                             -260      270         333#      215#       2.2   Z                 m1.0 1.0 IMM246,W
 41V-u                              333#     215#                                   2                 g    1.0 S-u211
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41Cr-u		21911#	429#				2				g	1.0	S-u212
41K-39K1.051		-30.05	0.32	-30.25947	0.00558	-.7	U				HMA8	1.0	02He23
41K-39K1.051		-29.5	2.4	-30.25947	0.00558	-.3	U				HMA8	1.0	09Na.A
41K-40Ar H		-8382.9005	0.0061	-8382.89783	0.00328	.4	-1-				HFS1	1.0	10Mo30
41K-40Ar		-557.8652	0.0039	-557.86593	0.00328	-.2	-1-				HFS1	1.0	10Mo30
41K-40Ar H	ave	-8382.89804	0.00329	-8382.89783	0.00328	.1	1	100	100	41K			average
41K(p,a)38Ar		4002	20	4019.333	0.195	.9	U				hChR		60Cl02
41K(p,a)38Ar		4018	10	4019.333	0.195	.1	U				hMIT		64Sp12
41K(d,a)39Ar		8397	15	8393.454	5.000	-.2	U				hMIT		67Sp09
39K(3He,p)41Ca		8920	20	8972.961	0.138	2.6	U				hMIT		67Sp09
40Ar(18O,17F)41Cl		-10530	83	-10467.226	68.724	.8R	R	q-q=	-62.774		Can		84Ho.B
40Ar(n,g)41Ar		6098.4	0.7	6098.928	0.347	.8	-2-				m		70Ha56,Z
40Ar(n,g)41Ar		6099.1	0.4	6098.928	0.347	-.4	-2-				MBdn		06Fi.A
40Ar(d,p)41Ar		3878	6	3874.361	0.347	-.6	U				hMIT		64Sp12
40Ar(n,g)41Ar	ave	6098.928	0.347				2						average
40Ar(p,g)41K		7807.8	0.3	7808.61989	0.00306	2.7	U				H		89Sm06,Z
40Ar(3He,d)41Kxi		-6034	15				2				H		75Me10,*
40K(n,g)41K		10095.19	0.10	10095.370	0.056	1.8	-1-				ILn		84Kr05,Z
40K(n,g)41K		10095.25	0.20	10095.370	0.056	.6	-1-				MBdn		06Fi.A
40K(n,g)41K	ave	10095.202	0.089	10095.370	0.056	1.9	1	39	39	40K			average
40Ca(n,g)41Ca		8363.0	0.5	8362.824	0.136	-.4	-1-				M		69Ar.A,Z
40Ca(n,g)41Ca		8362.5	0.5	8362.824	0.136	.6	-1-				M		70Cr04,Z
40Ca(n,g)41Ca		8362.72	0.3	8362.824	0.136	.3	-1-				mMMn		80Is02,Z
40Ca(n,g)41Ca		8362.86	0.17	8362.824	0.136	-.2	-1-				MBdn		06Fi.A
40Ca(d,p)41Ca		6134	4	6138.258	0.136	1.1	U				hMIT		68Be36
40Ca(n,g)41Ca	ave	8362.815	0.136	8362.824	0.136	.1	1	100	100	41Ca			average
40Ca(p,g)41Sc		1085.7	1.4	1084.929	0.075	-.6	U				h		73Al11
40Ca(p,g)41Sc		1085.09	0.09	1084.929	0.075	-1.8	1	69	69	41Sc	Utr		87Zi02,*
40Ca(d,n)41Sc		-1145	15	-1139.637	0.075	.4	U				h		61Ma08,Y
40Ca(p,g)41Scr		-1796.4	1.5	-1797.418	0.079	-.7	U				h		77Ko10
40Ca(p,g)41Sci		-4855.3	5.	-4853.793	3.200	.3	Z						75Ko13,W
40Ca(p,g)41Sci		-4851.4	4.9	-4853.793	3.200	-.5	-2-				H		76Fo01,W
41Sci(p)40Ca		4855.6	5.	4853.793	3.200	-.4	-2-				HJyp		97Ho12
41Sci(p)40Ca		4855.6	8.	4853.793	3.200	-.2	-2-				HLis		98Bh12
41Sci(p)40Ca		4857	16	4853.793	3.200	-.2	U				HBor		07Do17
40Ca(p,g)41Sci	ave	-4853.793	3.200				2						average
41Cl(B-)41Ar		5670	150	5760.318	68.724	.6R	R	q-q=	-90.318				74Gu10
41Ar(B-)41K		2492.0	1.1	2492.039	0.347	.0	U				H		64Pa03,*
41Kxi(IT)41K		8349	15	8349.145	15.000	.0	Z						75Me10,W
41K(p,n)41Ca		-1209.6	1.5	-1203.988	0.138	3.7B	B				hOak		64Jo11,Z
41K(p,n)41Ca		-1203.8	0.5	-1203.988	0.138	-.4	U				HCan		70Kn03,Z
41Cai(IT)41Ca		5817.8	2.0	*			Z						71Kn04,W
41Cai(IT)41Ca		5817.2	0.9	*			Z						75Fo15,W
41Cai(IT)41Ca		5814	5	*			Z						77Vo09,W
41Sc(B+)41Ca		6630	100	6495.548	0.155	-1.3	U				h		62Cr04
41Scr(IT)41Sc		2882.6	0.3	2882.347	0.049	-.8	U				H		77Ko10
41Scr(IT)41Sc		2882.39	0.10	2882.347	0.049	-.4	-1-				Utr		87Zi02,Z
41Scr(IT)41Sc		2882.26	0.06	2882.347	0.049	1.4	-1-				Utr		89Ki11,Z
41Scr(IT)41Sc	ave	2882.294	0.051	2882.347	0.049	1.0	1	90	58	41Scr			average
*41Si-u		Trends from Mass Surface TMS suggest 41Si 1080 keV less bound									G		GAu212**
*41S-C2 H O		For original doublet 41S C H-C3 H2 O									H		09Ri12**
*41Ti-u		T=3/2, from 41K, Cai, Sci; (error 12+20)									m		AHW967*W
*41Ti-u		Same result in ref.									KLZ1		13Ya03**
*41V-u		T=5/2;3/2;1/2, from 41Ar,Kxi;K,Cai,Sci;Ca,Sc; (error 29+250)											AHW *W
*41V-u		dropped all T=5/2;3/2;1/2 like results									m		AHW038*W
*40Ar(3He,d)41Kxi		IT=8349(15); Q rebuilt with Ame*1971									h		MMC123**
*40Ca(p,g)41Sc		E(p)=647.25(0.05,Z) to 1716.43(0.08,Z) level											87Zi02**
*40Ca(p,g)41Sci		Values not found in ref.									h		MMC123*W
*40Ca(p,g)41Sci		Exact expression Q=-Ecm Ecm=Mp+M(40Ca) + 2*Mp*M(40Ca)									h		MMC123*W
*41Ar(B-)41K		E-=1198.3(1.1) to 7/2^- level at 1293.609 keV									k		Ens163**
*41Kxi(IT)41K		From 40Ar(3He,d)											AHW944*W
*41Cai(IT)41Ca		From (3He,pg). Original value 5812.7(1.0) increased											AHW941*W
*41Cai(IT)41Ca		since their E(33Sxi)=5475.0(1.6) 5.1 low											AHW965*W
*41Cai(IT)41Ca		recalibrated using Ame2011 IT=5817.7, shift -5.03									h		MMC123*W
*41Cai(IT)41Ca		From (3He,ag)											AHW941*W
*41Cai(IT)41Ca		From (p,p')											AHW941*W

42Al-u		45078#	537#				2				g	1.0	S-u211
42Si-u		20860	3990	18078#	322#	-.5o	o				HGA5	1.5	99Sa.A
42Si-u		16275	623	18078#	322#	1.9D	D				HGA7	1.5	07Ju03,*
42Si-u		18078#	322#				2				g	1.0	S-u212
42P-u		354	715	1172.141	101.997	.8	Z				GA4	1.5	90Au.A
42P-u		1610	859	1172.141	101.997	-.3	Z				mGA4	1.5	99Sa.A
42P-u		260	740	1172.141	101.997	.8o	o				HGA4	1.5	00Sa21
42P-u		2110	390	1172.141	101.997	-1.6	Z				mGA5	1.5	99Sa.A
42P-u		1550	630	1172.141	101.997	-.4o	o				HGA5	1.5	00Sa21
42P-u		1084	225	1172.141	101.997	.3	-2-				HGA7	1.5	07Ju03
42P-u		1181	107	1172.141	101.997	-.1	-2-				GRT1	1.0	18Mi08
42P-u	ave	1172.141	101.997				2						average
42S-u		-19143	356	-18934.900	3.000	.4	Z				GA4	1.5	90Au.A
42S-u		-18519	215	-18934.900	3.000	-1.3	Z				mGA4	1.5	99Sa.A
42S-u		-18940	150	-18934.900	3.000	.0	U				HGA4	1.5	00Sa21
42S-u		-18510	350	-18934.900	3.000	-.8	U				HT04	1.5	91Zh24
42S-u		-19050	280	-18934.900	3.000	.3	Z				mGA5	1.5	99Sa.A
42S-u		-19390	350	-18934.900	3.000	.9	U				HGA5	1.5	00Sa21
42S-u		-18934.9	3.0				2				HMS1	1.0	09Ri12,*
42Cl-u		-26550	270	-26658.000	64.000	-.3	Z				GA2	1.5	89Gi.A
42Cl-u		-27000	190	-26658.000	64.000	1.2	U				KT03	1.5	90Tu01
42Cl-u		-26870	190	-26658.000	64.000	.7	U				KT04	1.5	91Zh24
42Cl-u		-26476	240	-26658.000	64.000	-.8	Z	q-q=	169.532		k1.0	1.0	42Ar-0
42Cl-u		-26658	64				2				KLZ1	1.0	15Xu14
42Ti-u		-26973	25	-26950.630	0.289	.9	U				KLZ1	1.0	17Zh12
42V-u		-8770	210	-8180#	210#	1.1	Z				h	2.5	IMM357,W
42V-u		-8180#	210#				2				k	1.0	S-u169
42Cr-u		6300	320	7579#	322#	4.0	Z				1.0	1.0	IMM357,W
42Cr-u		7579#	322#				2				g	1.0	S-u211
42Ar-36Ar1.167		920.6	6.2				2				MMA6	1.0	01He29
42S-41K1.024		20151.8	9.5	20156.040	3.000	.4	U				HMS1	1.0	09Ri12
42Sc-42Ca		6898.74	0.22	6898.906	0.052	.8o	o				GJY1	1.0	06Er08
42Sc-42Ca		6898.960	0.064	6898.906	0.052	-.8	1	66	56	42Sc	GJY1	1.0	17Er01,*
42Scm-42Ca		7560.68	0.23	7561.080	0.064	1.7o	o				GJY1	1.0	06Er08
42Scm-42Ca		7561.120	0.081	7561.080	0.064	-.5	1	62	59	42Scm	GJY1	1.0	17Er01,*
42Ti-42Ca		14431.69	0.71	14431.589	0.242	-.1	1	12	12	42Ti	HJY1	1.0	09Ku19
42Scm-42Sc		661.97	0.24	662.174	0.065	.8	U				HJY1	1.0	06Er08
42Scm-42Sc		662.50	0.42	662.174	0.065	-.8	U				HJY1	1.0	09Ku19
42Scm-42Sc		662.109	0.088	662.174	0.065	.7	1	55	39	42Scm	GJY1	1.0	17Er01,*
42Ti-42Sc		7532.92	0.34	7532.683	0.240	-.7	1	50	49	42Ti	HJY1	1.0	09Ku19
42Ti-42Scm		6870.19	0.38	6870.509	0.242	.8	1	40	39	42Ti	HJY1	1.0	09Ku19
28Si(16O,2n)42Ti		-17250	13	-17268.082	0.269	-1.4	U				H		72Zi02
42Ca(p,a)39K		118	7	123.957	0.148	.9	U				hMIT		64Sp12
39K(a,n)42Sc		-7160	60	-7332.595	0.154	-2.9	U				hYal		61Sm05
39K(a,n)42Sc		-7455	30	-7332.595	0.154	4.1B	B				hTal		65Ne02
40Ar(t,p)42Ar		7043	40	7043.618	5.775	.0	U				MLAl		61Ja07
40Ca(3He,p)42Sc		4966	20	4916.849	0.152	-2.5	U				hMIT		64Sp12
40Ca(3He,p)42Sc		4905	5	4916.849	0.152	2.4	U				hANL		74Ha55
40Ca(3He,n)42Ti		-2865	6	-2882.148	0.268	-2.9	U				HCIT		67Mi02
41K(n,g)42K		7533.78	0.15	7533.800	0.106	.1	-2-				mILn		85Kr06,Z
41K(n,g)42K		7533.82	0.15	7533.800	0.106	-.1	-2-				MBdn		06Fi.A
41K(d,p)42K		5314	12	5309.234	0.106	-.4	U				hMIT		64Sp12
41K(n,g)42K	ave	7533.800	0.106				2						average
41K(p,g)42Ca		10275.5	3.4	10276.716	0.148	.4	U				h		71Vi14
41Ca(n,g)42Ca		11480.63	0.06	11480.703	0.056	1.2	1	86	86	42Ca	mORn		89Ki11,Z
42Ca(3He,a)41Ca		9102	15	9096.918	0.056	-.3	U				hMIT		71Ra35
41Ca(p,g)42Sc		4272.40	0.15	4272.066	0.069	-2.2	Z				Utr		89Ki11
41Ca(p,g)42Scr		-1804.01	0.12	-1804.137	0.080	-1.1	Z				Utr		89Ki11
41Ca(p,g)42Scr-40Ca()41Scr		-6.67	0.05	-6.720	0.048	-1.0	1	90	49	42Scr	Utr		89Ki11,*
42Cl(B-)42Ar		9760	220	9590.908	59.895	-.8	U				K		89Mi03
42K(B-)42Ca		3519.	3.5	3525.263	0.182	1.8	U				h		68Va06
42K(B-)42Ca		3524	6	3525.263	0.182	.2	U				h		75Ra09
42Sc(B+)42Ca		6342	100	6426.290	0.049	.8	U				h		61Ja22
42Sc(B+)42Ca		6486	100	6426.290	0.049	-.6	U				h		63Ro10,*
42Ca(p,n)42Sc		-7213.7	2.3	-7208.637	0.049	2.2	U				hHar		75Fr.A
42Ca(3He,t)42Sc		-6442.3	0.4	-6444.882	0.049	-6.5F	F				HMun		77Vo02,*

42Ca(3He,t)42Sc-27Al()27Si		-1611.7	2.6	-1613.932	0.108	-.9	U				HChR		74Ha35
42Ca(3He,t)42Sc-26Mg()26Al		-2417.8	3.5	-2421.886	0.077	-1.2	U				HChR		74Ha35
42Ca(3He,t)42Sc-26Mg()26Al		-2421.83	0.23	-2421.886	0.077	-.2	1	11	7	26Al	ChR		87Ko34,*
42Scm(IT)42Sc		616.28	0.06	616.811	0.061	8.8B	B				G		Ens167
42Scr(IT)42Sc		6076.33	0.08	6076.203	0.069	-1.6	1	75	51	42Scr	Utr		89Ki11,Z
*42Si-u		Trends from Mass Surface TMS suggest 42Si 1680 keV less bound									G		GAu212**
*42S-u		For original doublet 42S-(C2 H O)1.024, ~ D_M=-21740.2(3.1) uu									H		09Ri12**
*42V-u		T=3;2;1, from 42Ar,Kxi;K,Cai;Ca,Ti; (error 10+200)											AHW92c*W
*42V-u		p-unstable 42V (T<55ns)											92Bo37*W
*42Cr-u		T=3;2;1, from 42Ar,Kxi;K,Cai;Ca,Ta; (error 40+300)											AHW *W
*42Sc-42Ca		Frequency ratio not correct for unc., values taken from paper									G		HWJ17b**
*42Scm-42Ca		Frequency ratio not correct for unc., values taken from paper									G		HWJ17b**
*42Scm-42Sc		Frequency ratio not correct for unc., values taken from paper									G		HWJ17b**
*41Ca(p,g)42Scr-40Ca()4		Calculated from resonance energy difference = 5.73(0.05) keV											GAu92a**
*42Sc(B+)42Ca		E+=2870(100) from 42Scm at 616.28 to 6^+ level at 3189.26 keV									k		Ens167**
*42Ca(3He,t)42Sc		F : rejected in ref. of same group									H		09Fa15**
*42Ca(3He,t)42Sc-26Mg()		Q=-2193.52(0.23) to 26Alm at 228.306 keV									g		Nub211**

43Al-u		51820#	644#				2				g	1.0	S-u211
43Si-u		26119#	429#				2				g	1.0	S-u212
43P-u		3556	1050	5411#	322#	1.2	Z				GA4	1.5	90Au.A
43P-u		6176	2147	5411#	322#	-.2	Z				mGA4	1.5	99Sa.A
43P-u		4220	1620	5411#	322#	.5	U				MGA4	1.5	00Sa21
43P-u		6990	690	5411#	322#	-1.5	Z				mGA5	1.5	99Sa.A
43P-u		6190	1040	5411#	322#	-.5o	o				HGA5	1.5	00Sa21
43P-u		5024	397	5411#	322#	.6D	D				GGA7	1.5	07Ju03,*
43P-u		5411#	322#				2				g	1.0	S-u212
43S-u		-13003	513	-13092.365	5.336	-.1	Z				GA4	1.5	90Au.A
43S-u		-12197	376	-13092.365	5.336	-1.6	Z				mGA4	1.5	99Sa.A
43S-u		-12810	250	-13092.365	5.336	-.8o	o				HGA4	1.5	00Sa21
43S-u		-13400	900	-13092.365	5.336	.2	U				HT04	1.5	91Zh24
43S-u		-12600	360	-13092.365	5.336	-.9	Z				mGA5	1.5	99Sa.A
43S-u		-12900	460	-13092.365	5.336	-.3o	o				HGA5	1.5	00Sa21
43S-u		-12958	107	-13092.365	5.336	-.8	U				HGA7	1.5	07Ju03
43S-u		-13087	22	-13092.365	5.336	-.2	-2-				HMS1	1.0	09Ri12,*
43S-u		-13092.7	5.5	-13092.365	5.336	.1	-2-				HMS1	1.0	09Ri12,*
43S-u		-13022	236	-13092.365	5.336	-.2	U				KGA8	1.5	12Ga45
43S-u	ave	-13092.365	5.336				2						average
43Cl-u		-26040	390	-25936.300	66.408	.2	Z				GA2	1.5	89Gi.A
43Cl-u		-26340	348	-25936.300	66.408	.8	Z				GA4	1.5	90Au.A
43Cl-u		-26090	300	-25936.300	66.408	.3o	o				HGA4	1.5	00Sa21
43Cl-u		-25740	200	-25936.300	66.408	-.7o	o				HT03	1.5	90Tu01
43Cl-u		-25970	350	-25936.300	66.408	.1	U				HT04	1.5	91Zh24
43Cl-u		-26010	330	-25936.300	66.408	.1o	o				HGA5	1.5	00Sa21
43Cl-u		-25905	86	-25936.300	66.408	-.2o	o				HGT1	1.5	04Ma.A
43Cl-u		-25894	140	-25936.300	66.408	-.2	-2-				HGA7	1.5	07Ju03
43Cl-u		-26361	100	-25936.300	66.408	1.7C	C				KGT2	2.5	08Kn.A
43Cl-u		-25941	70	-25936.300	66.408	.1	-2-				KLZ1	1.0	15Xu14
43Cl-u	ave	-25936.300	66.408				2						average
43Ti-u		-31461	10	-31471.580	6.140	-1.1	1	38	38	43Ti	GLZ1	1.0	18Zh29,*
43V-u		-19350	250	-19234.000	46.000	.5	Z				m1.0	1.0	IMM246,W
43V-u		-19234	46				2				HLZ1	1.0	13Ya03
43Cr-u		-2410	330	-2115#	215#	.9	Z				1.0	1.0	IMM246,W
43Cr-u		-2290	235	-2115#	215#	.3	Z				h	2.5	IMME-6,W
43Cr-u		-2115#	215#				2				g	1.0	S-u20b
43Mn-u		18647#	429#				2				g	1.0	S-u211
43Ar-36Ar1.194		4387.2	5.7				2				MMA6	1.0	01He29
43K-39K1.103		766.45	0.44				2				HMA8	1.0	07Ya08
43Ca(p,a)40K		-14	8	-9.321	0.234	.6	U				hMIT		64Sp12
40Ca(a,p)43Sc		-3470	30	-3522.307	1.863	-1.7	U				h		61Ma03
40Ca(a,n)43Ti		-11169.9	10.	-11177.213	5.719	-.8	1	40	40	43Ti	Tal		67Al08
41K(3He,p)43Cai		2452	30	2496.756	14.438	1.5	1	23	23	43Cai	HMIT		68Do02
43Vxi(2p)41Sc		4320	50	4359.339	15.075	.8	U				hLis		92Bo37
43Vxi(2p)41Sc		4503	22	4359.339	15.075	-6.5B	B				KBor		01Gi01,*
43Vxi(2p)41Sc		4348	16	4359.339	15.075	.7	1	89	89	43Vxi	HBor		07Do17
43Vxi(2p)41Sc		4081	55	4359.339	15.075	5.1	Z						IMM246,W

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 42Ca(n,g)43Ca                  7933.1       0.5       7932.897     0.173     -.4  -1-                M       69Ar.A,Z
 42Ca(n,g)43Ca                  7933.1       0.5       7932.897     0.173     -.4  -1-                mPtn    69Gr08,Z
 42Ca(n,g)43Ca                  7933.1       0.4       7932.897     0.173     -.5  -1-                m       71Bi.A,W
 42Ca(n,g)43Ca                  7932.73      0.23      7932.897     0.173      .7  -1-                MBdn    06Fi.A
 42Ca(d,p)43Ca                  5716        10         5708.331     0.173     -.8   U                 hMIT    64Sp12
 42Ca(d,p)43Ca                  5707        12         5708.331     0.173      .1   U                 hMIT    66Do02
 43Ca(d,t)42Ca                 -1672        10        -1675.667     0.173     -.4   U                 hAld    64Bj02
 42Ca(n,g)43Ca           ave    7932.889     0.174     7932.897     0.173      .0   1    99  99  43Ca         average
 42Ca(p,g)43Sc                  4935         5         4929.828     1.857    -1.0  -2-                        65Br31
 42Ca(p,g)43Sc                  4929         2         4929.828     1.857      .4  -2-                        69Wa19
 42Ca(p,g)43Sc           ave    4929.828     1.857                                  2                         average
 42Ca(3He,d)43Sci              -4808         8        -4795.444     3.269     1.6   1    17  17  43SciH       66Sc17,*
 43Vxi(p)42Ti                   8200        45         8110.304    15.077    -2.0   1    11  11  43VxiKBor    01Gi01,*
 43K(B-)43Ca                    1817        20         1833.478     0.469      .8   U                 H       54Li24,*
 43K(B-)43Ca                    1815        10         1833.478     0.469     1.8   U                 H       59Be72,*
 43Cai(IT)43Ca                  8033        30         7994.816    14.437    -1.3   Z                         68Do02,W
 43Cai(IT)43Ca                  7970        30         7994.816    14.437      .8   Z                         72Ma23,W
 43Cai(IT)43Ca                  7980        20         7994.816    14.437      .7   Z                         76Do05,W
 43Sc(B+)43Ca                   2200        20         2220.723     1.865     1.0   U                 h       52Ha44
 43Sc(B+)43Ca                   2220        10         2220.723     1.865      .1   U                 h       54Li42
 43Ca(p,n)43Sc                 -3005        10        -3003.070     1.865      .2   U                 hHar    60Mc12,Y
 43Ca(p,n)43Sc                 -2998        10        -3003.070     1.865     -.5   U                 h       67Mc07
 43Ca(3He,t)43Sci              -6467         8        -6471.111     3.266     -.5  -1-                H       71Al19,*
 43Ca(3He,t)43Sci              -6469         4        -6471.111     3.266     -.5  -1-                H       71Be29,*
 43Ca(3He,t)43Sci        ave   -6468.600     3.578    -6471.111     3.266     -.7   1    83  83  43Sci        average
 43Sci(IT)43Sc                  4238         8         4231.796     3.760     -.8   Z                         66Sc17,W
 43Sci(IT)43Sc                  4226         8         4231.796     3.760      .7   Z                         71Al19,W
*43P-u                       Trends from Mass Surface TMS suggest  43P    360 keV less bound          G       GAu212**
*43S-u                       For original doublet 43S-(C3 H5 O)0.754,     ~ D_M=-38753(22) uu         H       09Ri12**
*43S-u                       For original doublet 43S C H-(C3 H5 O)0.982, ~ D_M=-38694.8(5.5) uu      H       09Ri12**
*43Ti-u                      could be mixed with 313(1) state, without correction                 G       18Zh29**
*43V-u                       T=5/2;3/2;1/2, from 43K,Cai,Vxi;Ca,Sci;Sc,Ti; (error 180+150)         m       AHW   *W
*43Cr-u                      T=5/2;3/2;1/2, from 43K,Cai,Vxi;Ca,Sci;Sc,Ti; (error 210+250)                 AHW92a*W
*43Cr-u                      T=5/2 from 43Kxi, Cai, Vxi; (error 87+200)                           m       AHW974*W
*43Vxi(2p)41Sc               E(2p)=4292(22) + recoil=211; data reanalysed and included in 07*Do*17    K       MMC135**
*43Vxi(2p)41Sc               T=5/2;3/2;1/2, from 43K,Cai,Vxi;Ca,Sci;Sc,Ti; (error 22+50)                   AHW   *W
*42Ca(n,g)43Ca               Calibration not checked                                              m       AHW957*W
*42Ca(3He,d)43Sci            IT=4238(8); Q rebuilt with Ame*1961                                  H       MMC123**
*43Vxi(p)42Ti                Q(p)=4590(45) followed by gamma's 1938+1554 keV + recoil=118 keV     K       MMC135**
*43Vxi(p)42Ti                Better 43Vxi result from their (2p)                                  h       AHW014*W
*43K(B-)43Ca                 E-=827(20) 825(10) resp, to 3/2^+ level at 990.257 keV               k       Ens156**
*43Cai(IT)43Ca               From 41K(3He,p)                                                              AHW944*W
*43Cai(IT)43Ca               From 44Ca(p,d)                                                               AHW944*W
*43Cai(IT)43Ca               From 44Ca(d,t)                                                               AHW944*W
*43Ca(3He,t)43Sci            IT=4226(8); Q rebuilt with Ame*1965                                  H       MMC123**
*43Ca(3He,t)43Sci            CDE=7238(4) Q=-6474(4); rclbtn +6 keV for 42Ca(p,n)42Sc from Ame*1961    H       MMC123**
*43Ca(3He,t)43Sci            With a 5 keV calibr. corr. for 42Ca(p,n)42Sc                         h       AHW944*W
*43Sci(IT)43Sc               From 42Ca(3He,d)                                                             AHW944*W
*43Sci(IT)43Sc               From 43Ca(3He,t)                                                             AHW944*W
*43Sci(IT)43Sc                4234        10      43Sci(IT)43Sc                                               71Bo04*W
*43Sci(IT)43Sc               From 42Ca(3He,d)                                                             AHW965*W


 44Si-u                        31466#      537#                                     2                 g    1.0 S-u212
 44P-u                         10070       966        11927#      429#      1.3D   D                 HGA7 1.5 07Ju03,*
 44P-u                         11927#      429#                                     2                 g    1.0 S-u212
 44S-u                        -10671       730        -9881.153     5.600      .7   Z                  GA4 1.5 90Au.A
 44S-u                         -9544       569        -9881.153     5.600     -.4   Z                 mGA4 1.5 99Sa.A
 44S-u                        -10510       580        -9881.153     5.600      .7o  o                 HGA4 1.5 00Sa21
 44S-u                         -8600       450        -9881.153     5.600    -1.9   Z                 mGA5 1.5 99Sa.A
 44S-u                         -8960       620        -9881.153     5.600    -1.0o  o                 HGA5 1.5 00Sa21
 44S-u                         -9769       150        -9881.153     5.600     -.5   U                 kGA7 1.5 07Ju03
 44S-u                        -10027       301        -9881.153     5.600      .3   U                 KGA8 1.5 12Ga45
 44S-C2 H4 O                  -36095.9       5.6                                    2                 HMS1 1.0 09Ri12,*
 44Cl-u                       -21690       860       -21985.081    91.859     -.2   Z                  GA2 1.5 89Gi.A
 44Cl-u                       -21958       336       -21985.081    91.859     -.1   Z                  GA4 1.5 90Au.A
 44Cl-u                       -21475       215       -21985.081    91.859    -1.6   Z                 mGA4 1.5 99Sa.A
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44Cl-u		-21700	130	-21985.081	91.859	-1.5	-2-				KGA4	1.5	00Sa21
44Cl-u		-21500	500	-21985.081	91.859	-.6	U				HT03	1.5	90Tu01
44Cl-u		-21450	270	-21985.081	91.859	-1.3	U				HT04	1.5	91Zh24
44Cl-u		-22030	280	-21985.081	91.859	.1	Z				mGA5	1.5	99Sa.A
44Cl-u		-22150	370	-21985.081	91.859	.3	-2-				MGA5	1.5	00Sa21
44Cl-u		-22115	161	-21985.081	91.859	.5	-2-				HGT1	1.5	04Ma.A
44Cl-u		-22051	118	-21985.081	91.859	.6	-2-				GRT1	1.0	18Mi08
44Cl-u	ave	-21985.081	91.859				2						average
44Ca-u		-44515.3	10.0	-44518.510	0.349	-.3	U				KMR1	1.0	15Wi.A
44Sc-u		-40480	410	-40597.181	1.885	-.2	U				MT06	1.5	98Ba.A,*
44V-u		-25600	90	-25559.023	7.799	.5	Z				m1.0	1.0	IMME-5,W
44V-u		-25890	120	-25559.023	7.799	1.8B	B				GGT1	1.5	04St05,*
44V-u		-25579	21	-25559.023	7.799	1.0	1	14	14	44V	GLZ1	1.0	18Zh29
44Vxm-u		-25272	20	-25268.026	5.900	.2	U				GLZ1	1.0	18Zh29
44Cr-u		-14451	54	-14409.000	55.000	.3	Z				h	2.5	IMME-5,W
44Cr-u		-14409	55				2				GLZ1	1.0	20Fu05
44Mn-u		6440	540	8009#	322#	2.9	Z				1.0	1.0	IMME57,W
44Mn-u		8009#	322#				2				g	1.0	S-u211
44Ar-39K1.128		5862.9	1.7				2				MMA8	1.0	03Bl17
44K-39K1.128		2526.07	0.45				2				HMA8	1.0	07Ya08
44K-39K1.128		2529.2	2.2	2526.070	0.450	-1.4o	o				HTT1	1.0	10La.A
44K-39K1.128		2529.1	1.7	2526.070	0.450	-1.8	U				HTT1	1.0	12La05
44V-32S		2373.0	8.4	2369.804	7.799	-.4	1	86	86	44V	GMS1	1.0	20Pu02,*
44Vxm-32S		2660.8	5.9				2				GMS1	1.0	20Pu02,*
40Ca(a,g)44Ti		5127.1	0.7				2						82Di05
44Ca(p,a)41K		-1058	10	-1045.126	0.325	1.3	U				hMIT		64Sp12
41K(a,n)44Sc		-3420	60	-3389.916	1.756	.5	U				hYal		61Sm05
44Ca(d,a)42K		4273	20	4264.108	0.342	-.4	U				h		77Pa24
42Ca(t,p)44Ca		10593	15	10582.276	0.290	-.7	U				hAld		67Bj06
42Ca(3He,p)44Sc		6920	20	6910.989	1.749	-.5	U				hHei		70Sc22
43Ca(n,g)44Ca		11130.6	0.5	11131.175	0.235	1.2	-1-				M		69Ar.A,Z
43Ca(n,g)44Ca		11130.1	0.7	11131.175	0.235	1.5	-1-				m		72Wh02,Z
43Ca(n,g)44Ca		11131.54	0.29	11131.175	0.235	-1.3	-1-				MBdn		06Fi.A
43Ca(d,p)44Ca		8922	14	8906.609	0.235	-1.1	U				hMIT		64Sp12
43Ca(d,p)44Ca		8920	10	8906.609	0.235	-1.3	U				hKop		67Bj02,W
44Ca(3He,a)43Ca		9452	15	9446.446	0.235	-.4	U				hMIT		71Ra35
43Ca(n,g)44Ca	ave	11131.166	0.236	11131.175	0.235	.0	1	99	97	44Ca			average
44Ca(p,d)43Cai		-16880	30	-16901.425	14.436	-.7	-1-				H		72Ma23,*
44Ca(d,t)43Cai		-12858.7	19.7	-12868.761	14.436	-.5	-1-				H		76Do05,*
44Ca(p,d)43Cai	ave	-16887.940	16.467	-16901.425	14.436	-.8	1	77	77	43Cai			average
43Ca(p,g)44Sc		6694	2	6696.133	1.741	1.1	-2-						71Po.A
43Ca(p,g)44Sc		6706.8	5.	6696.133	1.741	-2.1	-2-	q-q=	10.667		H		44Ca+0
43Ca(p,g)44Sc		6698.8	5.	6696.133	1.741	-.5	-2-	q-q=	2.667		H		44Ca+0
43Ca(p,g)44Sc	ave	6696.133	1.741				2						average
43Ca(3He,d)44Sci		-1583	5	-1575.087	2.468	1.6	1	24	24	44Sci	H		68Sc15,W
44Vxi(p)43Ti		950	50	908.000	11.000	-.8	U				HLis		92Bo37
44Vxi(p)43Ti		908	11				2				HBor		07Do17
44Vxi(p)43Ti		1010	25	908.000	11.000	-4.1	Z						IMME ,W
44Vxi(p)43Ti		917	53	908.000	11.000	-.2	U				K		14Po05
44K(B-)44Ca		5580	80	5687.232	0.530	1.3	U				H		70Le05
44Ca(t,3He)44K		-5660	40	-5668.640	0.530	-.2	U				HLAl		70Aj01
44Cai(IT)44Ca		11850	10	*			Z						84Ra04,W
44Sc(B+)44Ca		3642	5	3652.695	1.757	2.1R	R	q-q=	-10.695				50Br52,*
44Sc(B+)44Ca		3650	5	3652.695	1.757	.5R	R	q-q=	-2.695				55Bl23,*
44Ca(p,n)44Sc		-4410	15	-4435.042	1.757	-1.7	U				hHar		60Mc12,Y
44Ca(p,n)44Sc		-4447	10	-4435.042	1.757	1.2	U				h		67Mc07
44Ca(3He,t)44Sci		-6444	4	-6449.032	2.462	-1.3	-1-				H		71Be29,*
44Ca(3He,t)44Sci		-6449	4	-6449.032	2.462	-.0	-1-				H		72Ma50,*
44Ca(3He,t)44Sci	ave	-6446.500	2.828	-6449.032	2.462	-.9	1	76	76	44Sci			average
44Sci(IT)44Sc		2796	5	2777.745	3.020	-3.7	Z						68Sc15,W
44Sci(IT)44Sc		2769	3	2777.745	3.020	2.9	Z						71Po.A,W
44Sci(IT)44Sc		2784	10	2777.745	3.020	-.6	Z						71Oh01,W
44Sci(IT)44Sc		2781	5	2777.745	3.020	-.7	Z						72Ma50,W
44Vxi(IT)44V		2770	50	2689.459	14.370	-1.6	Z						S ,W

*44P-u Trends from Mass Surface TMS suggest 44P 1730 keV less bound G GAu212**
*44S-C2 H4 O For original doublet 44S C H-C3 H5 O H 09Ri12**
*44Sc-u M-A=-37570(370) keV for mixture gs+p at 271.240 keV g Nub211**

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*44V-u              T=2, from 44Ca,Sc,E(Sci),Tij; (error 60+50)                                AHW92a*W
*44V-u              M-A=-23980(80) keV  for mixture gs+m at 270#100 keV                 g      Nub211**
*44V-u              Authors have unduely increased the lower error to 380 keV           H      GAu047**
*44Cr-u             T=2, from 44Ca, Sci, Tij, Vxi; (error 44+20)                        m      AHW968*W
*44Mn-u             T=2;3, from 44K,Cai;Ca,Sci,Tij; (error 500+250)                            AHW92a*W
*44Mn-u             p-unstable 44Mn (T<105ns)                                                  92Bo37*W
*44V-32S            From freq. ratio 44VO+/(32SCO)+=0.99996043(14)                      G      HWJ207**
*44Vxm-32S          From freq. ratio 44VmO+/(32SCO)+=0.999955631(98)                    G      HWJ207**
*43Ca(d,p)44Ca      Kop or Ald ?                  ****                                         GAu929*G
*44Ca(p,d)43Cai     IT=7970(30); Q rebuilt with Ame*1965                                H      MMC123**
*44Ca(d,t)43Cai     IT=7980(20); Q rebuilt with Ame*1971                                H      MMC123**
*43Ca(3He,d)44Sci   IT=2796(5); Q rebuilt with Ame*1965                                 h      MMC123**
*44Vxi(p)43Ti       T=2, from 44Ca, Sci, Tij (error 16+20)                                     AHW968*W
*44Cai(IT)44Ca      From (e,e')                                                                AHW944*W
*44Cai(IT)44Ca      true IT, purement electromagnétique                                 k      MMC123*W
*44Sc(B+)44Ca       E+=1463(5) 1471(5) resp, to 2^+ level at 1157.019 keV               h      Ens119**
*44Ca(3He,t)44Sci   CDE=7214(4) Q=-6450(4); rclbtn +6 keV for 42Ca(p,n)42Sc from Ame*1961  H  MMC123**
*44Ca(3He,t)44Sci   With a 5 keV calibr. corr. for 42Ca(p,n)42Sc                               AHW944*W
*44Ca(3He,t)44Sci   IT=2781(5); Q rebuilt with Ame*1971                                 H      MMC123**
*44Sci(IT)44Sc      From 43Ca(3He,d)                                                           AHW930*W
*44Sci(IT)44Sc      90En08: Sci; same authors say in 72Ma50: different level                   AHW930*W
*44Sci(IT)44Sc      From 45Sc(d,t)                                                             AHW930*W
*44Sci(IT)44Sc      From 44Ca(3He,t)                                                           AHW930*W
*44Sci(IT)44Sc       Eexc=2783(3)  NDS119=2751(10)                                             Ens99b*W
*44Vxi(IT)44V       From systematics. The 04St05 mass would yield 2440(110)                    AHW047*W
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 45Si-u                  39818#     644#                                2                g    1.0 S-u212
 45P-u                   17134#     537#                                2                k    1.0 S-u168
 45S-u                   -3703     2441      -3586#     322#       .0   Z                 GA4 1.5 90Au.A
 45S-u                   -2164     2147      -3586#     322#      -.4   Z                mGA4 1.5 99Sa.A
 45S-u                   -3610     2460      -3586#     322#       .0o  o                HGA4 1.5 00Sa21
 45S-u                   -2920     2760      -3586#     322#      -.2   Z                mGA5 1.5 99Sa.A
 45S-u                   -3330     2880      -3586#     322#      -.1o  o                HGA5 1.5 00Sa21
 45S-u                   -4283      741      -3586#     322#       .6D  D                GGA7 1.5 07Ju03,*
 45S-u                   -3586#     322#                                2                g    1.0 S-u212
 45Cl-u                 -19946      463     -19605.647  146.177    .5   Z                 GA4 1.5 90Au.A
 45Cl-u                 -19450      322     -19605.647  146.177   -.3   Z                mGA4 1.5 99Sa.A
 45Cl-u                 -19690      140     -19605.647  146.177    .4o  o                HGA4 1.5 00Sa21
 45Cl-u                 -20300      700     -19605.647  146.177    .7   U                HT03 1.5 90Tu01
 45Cl-u                 -19640      360     -19605.647  146.177    .1   Z                mGA5 1.5 99Sa.A
 45Cl-u                 -19850      460     -19605.647  146.177    .4o  o                HGA5 1.5 00Sa21
 45Cl-u                 -19710      107     -19605.647  146.177    .7  -2-               HGA7 1.5 07Ju03
 45Cl-u                 -19098      236     -19605.647  146.177  -1.4  -2-               KGA8 1.5 12Ga45
 45Cl-u             ave -19605.647  146.177                             2                         average
 45V-u                  -34225.7      9.7   -34231.501    0.926   -.6   U                KLZ1 1.0 11Tu09
 45V-u                  -34230       11     -34231.501    0.926   -.1   U                GLZ1 1.0 18Zh29
 45Cr-u                 -20840      110     -20950.000   38.000  -1.0   Z                m1.0 1.0 IMME-4,W
 45Cr-u                 -20850      160     -20950.000   38.000   -.6   Z                h1.0 1.0 IMME  ,W
 45Cr-u                 -20390      540     -20950.000   38.000   -.7   U                HGT1 1.5 04St05,*
 45Cr-u                 -20950       38                                 2                HLZ1 1.0 12Zh34,*
 45Mn-u                  -5490      320      -5346#     322#       .5   Z                h1.0 1.0 IMM246,W
 45Mn-u                  -5346#     322#                                2                g    1.0 S-u211
 45Ar-39K1.154            9922.45     0.55                              2                MMA8 1.0 03Bl17
 45K-39K1.154             2574.21     0.56                              2                HMA8 1.0 07Ya08
 45V-45Ti                 7647.74     0.23     7647.740    0.230    .0   1   100 100  45V KJY1 1.0 14Ka22
 45Sc(p,a)42Ca            2343        8        2339.027    0.676   -.5   U                hMIT     64Sp12
 45Sc(d,a)43Ca            8028       12        8047.358    0.693   1.6   U                hMIT     64Sp12
 45Sc(d,a)43Ca            8059       12        8047.358    0.693  -1.0   U                hKop     67Ha.A
 43Ca(3He,p)45Sc         10310       20       10305.696    0.693   -.2   U                hHei     70Sc22
 45Fe(2p)43Cr             1140       40        1800#     200#      16.5o  o                H        02Gi09
 45Fe(2p)43Cr             1100      100        1800#     200#       7.0   U *              H        02Pf02
 45Fe(2p)43Cr             1154       16        1800#     200#      40.4D  D                G        05Do20,*
 45Fe(2p)43Cr             1800#     200#                                3                g        S-u212
 44Ca(n,g)45Ca            7414.8      1.0      7414.819    0.171    .0   U                m        69Ar.A,Z
 44Ca(n,g)45Ca            7414.83     0.3      7414.819    0.171   -.0  -1-               mMMn     80Is02,Z
 44Ca(n,g)45Ca            7414.79     0.21     7414.819    0.171    .1  -1-               MBdn     06Fi.A
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44Ca(d,p)45Ca		5184	4	5190.252	0.171	1.6	U				hMIT		68Be36
44Ca(n,g)45Ca	ave	7414.803	0.172	7414.819	0.171	.1	1	99	97	45Ca			average
44Ca(p,g)45Sc		6887.8	1.2	6892.563	0.723	4.0B	B				H		74Sc02,Z
45Sc(3He,a)44Sc		9249	15	9250.017	1.874	.1	U				hMIT		71Ra09
45Sc(d,t)44Sci		-7846	10	-7848.120	2.562	-.2	U				H		71Oh01,*
45Vxi(p)44Ti		3190	50	3170.000	9.000	-.4	U				H		74Ja10,*
45Vxi(p)44Ti		3170	9				3				HBor		07Do17,*
45K(B-)45Ca		4180	200	4196.587	0.637	.1	U				h		64Mo18
45Ca(B-)45Sc		258	2	260.091	0.738	1.0	1	14	11	45Sc			65Fr12
45Ti(B+)45Sc		2066	5	2062.055	0.509	-.8	U				m		66Po04
45Sc(p,n)45Ti		-2844.2	4.	-2844.402	0.509	-.1	U				hRic		55Br16,Y
45Sc(p,n)45Ti		-2843.6	4.0	-2844.402	0.509	-.2	U				hCan		70Kn03
45Sc(p,n)45Ti		-2844.4	0.5	-2844.402	0.509	.0	1	100	100	45Ti	mPTB		85Sc16,Z
45Sc(3He,t)45Tii		-6801	4	-6799.787	3.134	.3	1	61	60	45Tii	H		71Be29,*
*45S-u		Trends from Mass Surface TMS suggest 45S 650 keV less bound									G		GAu212**
*45Cr-u		T=3/2, from 45Sc,Tii Vxi; (error 92+20)											AHW92a*W
*45Cr-u		T=3/2 from 45Sc, 45Tii, 45Vxi; error (150+20)									h		AHW015*W
*45Cr-u		M-A=-18940(500) keV for mixture gs+m at 107(1) keV									g		Nub211**
*45Cr-u		Authors have unduley increased the lower error to 600 keV									h		GAu047*G
*45Cr-u		Original error was 19; increased in public. for possible isomeric contamik											12Zh34*G
*45Cr-u		Same result in ref.									KLZ1		13Ya03**
*45Mn-u		T=5/2;3/2;1/2, from 45Ca,Sci;Sc,Tii,Vxi;Ti,V, (error 160+250)											AHW92a*W
*45Mn-u		p-unstable 45Mn (T<70ns)											92Bo37*W
*45Fe(2p)43Cr		Trends from Mass Surface TMS suggest 45Fe 650 keV less bound									G		GAu212**
*45Sc(d,t)44Sci		IT=2784(10) combined with Q=-5062; Q rebuilt									H		MMC123**
*45Vxi(p)44Ti		Q(p)=2060(50) 2087(9) resp, to 2^+ level at 1083.06 keV									H		Ens119**
*45Sc(3He,t)45Tii		CDE=7571(4) Q=-6807(4); rclbtn +6 keV for 42Ca(p,n)42Sc from Ame*1961									H		MMC123**
*45Sc(3He,t)45Tii		With a 5 keV calibr. corr. for 42Ca(p,n)42Sc									h		AHW944*W

46P-u		24520#	537#				2				g	1.0	S-u20c
46S-u		687#	429#				2				g	1.0	S-u20c
46Cl-u		-16231	1003	-14745.073	104.401	1.0	Z				GA4	1.5	90Au.A
46Cl-u		-15443	1074	-14745.073	104.401	.4	Z				mGA4	1.5	99Sa.A
46Cl-u		-16000	860	-14745.073	104.401	1.0o	o				HGA4	1.5	00Sa21
46Cl-u		-15030	1630	-14745.073	104.401	.1	Z				mGA5	1.5	99Sa.A
46Cl-u		-14940	1730	-14745.073	104.401	.1o	o				HGA5	1.5	00Sa21
46Cl-u		-14826	172	-14745.073	104.401	.3	-2-				HGA7	1.5	07Ju03
46Cl-u		-15040	301	-14745.073	104.401	.7	-2-				KGA8	1.5	12Ga45
46Cl-u		-14708	118	-14745.073	104.401	-.3	-2-				GRT1	1.0	18Mi08
46Cl-u	ave	-14745.073	104.401				2						average
46Ar-u		-32013	107	-31960.755	2.500	.3	U				HGT1	1.5	04Ma.A
46Sc-u		-44650	230	-44832.966	0.721	-.5	U				MTO6	1.5	98Ba.A,*
C2 H8 N-46Ti		113071	7	113047.903	0.097	-.8	U				hR09	4.0	72De11
C 13C H5 O-46Ti		84799	13	84768.257	0.097	-.6	U				hR09	4.0	72De11
C H4 N O-46Ti		76672	8	76662.394	0.097	-.3	U				hR09	4.0	72De11
C5 H2-46Ti O		68145	15	68109.088	0.097	-.6	U				hR09	4.0	72De11
C H2 O2-46Ti		52881	14	52852.945	0.097	-.5	U				hR09	4.0	72De11
13C H O2-46Ti		48423	9	48382.749	0.097	-1.1	U				hR09	4.0	72De11
46Ti-22Ne2.091		-29358.74	0.48	-29359.915	0.105	-2.4	U				GCP1	1.0	05Sa44
46V-22Ne2.091		-21787.10	0.58	-21788.883	0.149	-3.1	U				GCP1	1.0	05Sa44
46Cr-u		-31638	15	-31639.031	12.295	-.1	1	67	67	46Cr	KLZ1	1.0	17Zh12
46Mn-u		-13230	120	-13331.000	93.000	-.8	Z				1.0	1.0	IMME-5,W
46Mn-u		-13280	120	-13331.000	93.000	-.4	Z				h1.0	1.0	IMME-5,W
46Mn-u		-13331	93				2				GLZ1	1.0	20Fu05,*
46Fe-u		990	380	1299#	322#	.8	Z				1.0	1.0	IMM357,W
46Fe-u		1299#	322#				2				g	1.0	S-u211
46Ar-39K1.179		10827.5	1.2	10829.300	2.500	1.5o	o				GMA8	1.0	15Mo.A
46Ar-39K1.179		10829.3	2.5				2				GMA8	1.0	20Mo25
46K-39K1.179		4771.64	0.78				2				HMA8	1.0	07Ya08
46Ti-48Ti.958		2499.165	0.062	2499.188	0.060	.4	1	94	94	46Ti	GMS1	1.0	17Ka53
46V-46Ti		7571.67	0.41	7571.033	0.099	-1.6	U				kCP1	1.0	05Sa44
46V-46Ti		7571.41	0.33	7571.033	0.099	-1.1o	o				HJY1	1.0	06Er08
46V-46Ti		7571.10	0.11	7571.033	0.099	-.6	1	81	87	46V	HJY1	1.0	11Er02
32S(16O,2n)46Cr		-17421.6	20.	-17423.605	11.453	-.1	1	33	33	46Cr	h		72Zi02
46Ti(p,a)43Sc		-3065	14	-3076.064	1.865	-.8	U				hMIT		64Sp12,*
46Ti(p,a)43Sc		-3083	10	-3076.064	1.865	.7	U				hTal		65Pl01

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 46Ti(3He,6He)43Ti            -17470       12       -17473.555     5.719     -.3   1    23  23  43Ti GMSU      77Mu03,*
 44Ca(t,p)46Ca                  9339       20         9331.720     2.257     -.4   U                hKop      67Bj06,G
 44Ca(3He,p)46Sc                7940       20         7935.161     0.730     -.2   U                hHei      70Sc22
 46Ti(d,a)44Sc                  4400       12         4398.573     1.758     -.1   U                hKop      67Ha.A
 46Ti(p,t)44Ti                -14235       10       -14240.523     0.706     -.6   U                hOak      72Ra05
 46Ca(t,a)45K                   5998       10         6000.929     2.294      .3   U                HAld      68Sa09
 46Ca(d,t)45Ca                 -4144       10        -4141.467     2.263      .3   U                HAld      67Bj05
 46Ca(3He,a)45Ca               10194       10        10178.924     2.263    -1.5   U                HMIT      71Ra35
 45Sc(n,g)46Sc                8760.61      0.3        8760.640     0.104      .1  -2-               mBNn      80Li07,Z
 45Sc(n,g)46Sc                8760.58      0.14       8760.640     0.104      .4  -2-               mUtr      82Ti02,Z
 45Sc(n,g)46Sc                8760.75      0.18       8760.640     0.104     -.6  -2-               MBdn      06Fi.A
 45Sc(d,p)46Sc                  6541        8         6536.074     0.104     -.6   U                hMIT      64Sp12
 45Sc(d,p)46Sc                  6543        8         6536.074     0.104     -.9   U                hKop      67Ha.A
 45Sc(n,g)46Sc            ave   8760.640   0.104                                   2                          average
 45Sc(p,g)46Ti               10344.7       0.7       10344.919     0.658      .3   1    88  88  45Sc          71Gu.A
 46Ti(p,d)45Tii               -15682        5       -15683.895     3.149     -.4   1    40  40  45TiiH        78Ko27,W
 46Cri(p)45V                    4350       50         4269.000    13.000    -1.6   U                HLis      92Bo37
 46Cri(p)45V                    4269       13                                      2                HBor      07Do17,*
 46Cri(p)45V                    4290       65         4269.000    13.000     -.3   Z                          IMM357,W
 46Mni(p)45Cr                   3520      100         4840.000    33.000    13.2B  B                HLis      92Bo37,W
 46Mni(p)45Cr                   4840       33                                      3                KBor      07Do17,*
 46K(B-)46Ca                    7650      300         7725.680     2.349      .3   U                h         66Pa20
 46Ca(3He,t)46Sci              -6407        4        -6410.078     3.398     -.8   1    72  63  46SciH        71Be29,*
 46Sc(B-)46Ti                   2367        3         2366.626     0.667     -.1   U                h         53Yo03,*
 46Sc(B-)46Ti                   2364        6         2366.626     0.667      .4   U                h         56Wo09,*
 46Ti(p,n)46V                  -7844        9        -7834.719     0.092     1.0   U                hTal      63Ja12
 46Ti(p,n)46V                  -7835.8      1.8      -7834.719     0.092      .6   U                hHar      76Sq01,Z
 46Ti(3He,t)46V                -7069.0      0.6      -7070.964     0.092    -3.3F  F                HMun      77Vo02,*
 46Ti(3He,t)46V-27Al()27Si     -2230.8      2.7      -2240.014     0.133    -3.4B  B                HChR      74Ha35
 46Ti(3He,t)46V-47Ti()47V      -4121.62     0.19     -4121.830     0.113    -1.1   1    35  14  47V  HMun      09Fa15,*
 46Ti(3He,t)46V-48Ti()48Vxi      -18.57     0.20       -18.576     0.200     -.0   1   100 100  48VxiHMun      09Fa15
 46Ti(3He,t)46V-50Ti()50Vxi      -31.21     0.25       -31.210     0.250      .0   1   100 100  50VxiHMun      09Fa.A
*46Sc-u                      M-A=-41520(210) keV for mixture gs+n at 142.528 keV               g         Nub211**
*46Mn-u                      T=2, from 46Sc, Tii, Cri; (error 106+20)                                   AHW   *W
*46Mn-u                      T=2, from 46Sc, Tii, Cri                                                   GAu922*G
*46Mn-u                      Authors suggested ground state                                    g         20Fu05**
*46Fe-u                      T=3;2;1, from 46Ca,Sci,Tij;Sc,Ti,Cri;Ti,Cr; (error 127+300)                AHW   *W
*46Fe-u                      p-stable 46Fe                                                              92Bo37*W
*46Ti(p,a)43Sc               Q=-3217 probably to 43Scm at 151.79 keV                           g         Nub211**
*46Ti(3He,6He)43Ti           Averaged with ref. ; Q reduced by 3 for recalibration 27Al(3He,6He)        75Mu09**
*46Ti(3He,6He)43Ti            19812 now 19803(4), 25Mg(id) unchanged                                    AHW   *W
*44Ca(t,p)46Ca               Kop or Ald ?                 ****                                          GAu929*G
*46Ti(p,d)45Tii              Could possibly be recalibrated in future                          h         MMC123*W
*46Cri(p)45V                 Q(p)=4254(15) 3494(25) 3003(13) to gs, (5/2^+) level at 797.2, (7/2^+) atH  MMC128**
*                             ~ 1272.2 keV                                                     H         Ens082**
*46Cri(p)45V                 T=3;2;1, from 46Ca,Sci;Sc,Tii,Cri;Ti,Cr; (error 40+50)                     AHW92c*W
*46Mni(p)45Cr                V : Expected about 4750                                           h         AHW019*W
*46Mni(p)45Cr                Q(p)=4239(33) to (5/2^+) state at 493.6 + 107(1)                  K         11Ho02**
*46Ca(3He,t)46Sci            CDE=7177(4) Q=-6413(4); rclbtn +6 keV for 42Ca(p,n)42Sc from Ame*1961   H     MMC123**
*46Ca(3He,t)46Sci            With a 5 keV calibr. corr. for 42Ca(p,n)42Sc                              AHW944*W
*46Sc(B-)46Ti                E-=357(3) to 4^+ level at 2009.846 keV                            h         Ens00b**
*46Sc(B-)46Ti                E-=1475(6) to 2^+ level at 889.286 keV                            h         Ens00b**
*46Ti(3He,t)46V              This original value was recalib. to -7070.0(1.0) 996: back to original   m  AHW   *W
*46Ti(3He,t)46V              F : rejected in ref. of same group                                H         09Fa15**
*46Ti(3He,t)46V-47Ti()4      Q-Q=28.73(0.16) keV to 47Vxi IAS at 4150.35(0.11) keV             H         Ens075**


 47P-u                        30929#      644#                                     2                g    1.0 S-u20c
 47S-u                         7730#      429#                                     2                g    1.0 S-u20c
 47Cl-u                        -9576     1074       -10285#      215#        -.4D  D                HGA7 1.5 07Ju03,*
 47Cl-u                       -10285#     215#                                     2                g    1.0 S-u212
 47Ar-u                       -25400      600       -27232.887     1.300    -2.0   U                hT03 1.5 90Tu01
 47Ar-u                       -26570     1360       -27232.887     1.300     -.3   U                MGA5 1.5 00Sa21
 47Ar-u                       -26903      204       -27232.887     1.300    -1.1   U                KGA8 1.5 12Ga45
 47Sc-u                       -47630      230       -47597.556     2.073      .1   U                MT06 1.5 98Ba.A,*
 C 35Cl-47Ti                   17085.94     0.82     17095.201     0.094     4.5B  B                HH32 2.5 79Ko10
 C 13C H8 N-47Ti              117329       14       117271.603     0.086    -1.0   U                hR09 4.0 72De11
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C2 H7 O-47Ti		98012	7	97932.351	0.086	-2.8B	B				hR09	4.0	72De11
C5 H3-47Ti O		76869	10	76802.985	0.086	-1.7	U				hR09	4.0	72De11
C H3 O2-47Ti		61608	10	61546.842	0.086	-1.5	U				hR09	4.0	72De11
47Cr-u		-37103.8	8.6	-37105.004	5.579	-.1	-1-				HLZ1	1.0	11Tu09
47Cr-u		-37107	11	-37105.004	5.579	.2	-1-				GLZ1	1.0	18Zh29,W
47Cr-u	ave	-37105.014	6.775	-37105.004	5.579	.0	1	68	68	47Cr			average
47Mn-u		-24330	170	-24226.000	34.000	.6	Z				1.0	1.0	IMM246,W
47Mn-u		-24226	34				2				kLZ1	1.0	13Ya03
47Fe-u		-7690	280	-7654#	537#	.1	Z				1.0	1.0	IMM246,W
47Fe-u		-7654#	537#				2				g	1.0	S-u211
47Co-u		11401#	644#				2				g	1.0	S-u211
47Ar-39K1.205		16501.8	1.2	16500.800	1.300	-.8o	o				GMA8	1.0	15Mo.A
47Ar-39K1.205		16500.8	1.3				2				GMA8	1.0	20Mo25
47K-39K1.205		5398.5	2.7	5395.300	1.500	-1.2o	o				HTT1	1.0	10La.A
47K-39K1.205		5395.3	1.5				2				HTT1	1.0	12La05
46Ti 13C-47Ti C		4218.03	0.94	4223.700	0.068	2.4	U				hH32	2.5	79Ko10
47Ti-48Ti.979		2723.600	0.058	2723.567	0.034	-.6	1	35	37	47Ti	GMS1	1.0	17Ka53
47Ti-46Ti		-929	41	-868.865	0.068	.4	U				hR09	4.0	72De11
47Ti(d,a)45Sc		6830	12	6845.516	0.661	1.3	U				hKop		67Ha.A
46Ar(d,p)47Ar		1327	80	1442.771	2.625	1.4	U				K		06Ga28
46Ca(n,g)47Ca		7277.4	0.6	7276.374	0.268	-1.7	-1-				m		70Cr04,Z
46Ca(n,g)47Ca		7276.1	0.3	7276.374	0.268	.9	-1-				MBdn		06Fi.A
46Ca(d,p)47Ca		5055	8	5051.808	0.268	-.4	U				hKop		67Ha.A
46Ca(d,p)47Ca		5044	4	5051.808	0.268	2.0	U				hMIT		68Be36
46Ca(n,g)47Ca	ave	7276.360	0.268	7276.374	0.268	.1	1	100	90	46Ca			average
46Ti(n,g)47Ti		8875.1	3.0	8880.661	0.063	1.9	U				m		69Te01,Z
46Ti(n,g)47Ti		8880.5	0.3	8880.661	0.063	.5	U				GBdn		06Fi.A
46Ti(d,p)47Ti		6658	6	6656.094	0.063	-.3	U				hMIT		67Ba32,*
46Ti(d,p)47Ti		6659	8	6656.094	0.063	-.4	U				hKop		67Ba32,*
46Ti(d,p)47Ti		6654.3	1.7	6656.094	0.063	1.1	U				mNDm		76Jo01
46Ti(d,p)47Ti-48Ti()49Ti		738.15	0.25	738.282	0.068	.5	U				GMun		09Fa15
46Ti(p,g)47V		5167.80	0.07	5167.771	0.067	-.4	1	91	86	47V	hUtr		86De13,*
46Ti(3He,d)47V		-317	15	-325.704	0.067	-.6	U				hMIT		67Do03
47Mni(p)46Cr		6867	20	6992.000	13.000	6.2B	B				HBor		01Gi01,*
47Mni(p)46Cr		6992	13				2				HBor		07Do17,*
47K(B-)47Ca		6700	300	6632.684	2.624	-.2	U				h		64Ku02,*
47Ca(B-)47Sc		1983.	6.5	1992.177	1.185	1.4	Z						63La13
47Ca(B-)47Sc		1984.6	5.	1992.177	1.185	1.5	U				h		67Hs03,*
47Ca(B-)47Sc		1992.3	5.	1992.177	1.185	-.0	U				h		68Fi04,*
47Ca(B-)47Sc		1991.9	1.2	1992.177	1.185	.2	1	97	91	47Ca			87Ju04
47Sc(B-)47Ti		600	2	600.769	1.929	.4	1	93	93	47Sc			56Gr12
47V(B+)47Ti		2912	10	2930.542	0.088	1.9	U				h		54Da31
47Ti(p,n)47V		-3706	13	-3712.889	0.088	-.5	U				hHar		60Mc12,Y
*47Cl-u		Trends from Mass Surface TMS suggest 47Cl 660 keV more bound									G		GAu212**
*47Sc-u		M-A=-44320(210) keV for mixture gs+m at 766.83 keV and									g		Nub211**
*		~ assuming ratio R=0.07(3), from half-life=272 ns and TOF=1 us									M		GAu992**
*47Cr-u		independent from 11*Tu*09									G		WgM194*W
*47Mn-u		T=5/2;3/2;1/2, from 47Sc,Tii;Ti,Vxi;V,Cr; (error 67+150)											AHW *W
*47Mn-u		p-stable 47Mn											87Po04*W
*47Fe-u		T=5/2;3/2;1/2, from 47Sc,Tii;Ti,Vxi;V,Cr; (error 74+250)											AHW *W
*46Ti(d,p)47Ti		All 67*Ba*32 results decreased 0.2% for recalibration									h		AHW **
*46Ti(p,g)47V		E(p)=985.94(0.05,Z) to 1/2^+ level at 6132.60(0.09) keV									h		Ens075**
*47Mni(p)46Cr		Q(p)=5975(25) 4880(20) to 2^+ level at 892.16 and (4^+) at 1987.1 keV;									H		Ens102**
*		~ data reanalysed and included in 07*Do*17									K		07Do17**
*47Mni(p)46Cr		Q(p)=6104(24) 5000(15) to 2^+ level at 892.16 and (4^+) at 1987.1 keV									H		Ens102**
*		~ also tentatively Q(p)=3973(20) to (3^-) at 3196.5 keV, not used									H		MMC128**
*47K(B-)47Ca		E-=4100(300) to 2578.33 3/2^+ and 2599.53 1/2^+ levels									h		Ens075**
*47Ca(B-)47Sc		Original values increased by 4(4) for shape factor									h		87Ju04**

48S-u		13301#	537#				2				g	1.0	S-u20c
48Cl-u		-4595#	537#				2				k	1.0	S-u168
48Ar-u		-24090	320	-23999.000	18.000	.1	Z				k	2.5	S-u123
48Ar-u		-23920	330	-23999.000	18.000	-.2o	o				GMT1	1.0	15Me01
48Ar-u		-23972	129	-23999.000	18.000	-.2	U				GRT1	1.0	18Mi08
48Ar-u		-24037	279	-23999.000	18.000	.1	U				GMT1	1.0	20Me06
48Ar-u		-23999	18				2				GMR1	1.0	20Mo25

48K-39K1.231	10017.7	2.5	10018.500	0.830	.3o	o				HTT1	1.0	10La.A
48K-39K1.231	10018.50	0.83				2				HTT1	1.0	12La05
48Ca-39K1.231	-2799.93	0.22	-2800.031	0.020	-.5	U				GMS1	1.0	12Re17
48Ca-N 18O O	-44625.15	0.29	-44625.582	0.019	-1.5	U				GTT1	1.0	14Kw04
48Ca-C4	-47477.348	0.019	-47477.346	0.019	.1	1	99	99	48Ca	GSH2	1.0	16Ko45
13C 35Cl-48Ti	24261.73	0.75	24266.851	0.088	2.7	U				HH32	2.5	79Ko10
C5 H4-48Ti O	88492	24	88444.831	0.079	-.5	U				hR09	4.0	72De11
C5 H4-48Ti O	88494	27	88444.831	0.079	-.5	U				hR09	4.0	72De11
C4 H2 N-48Ti O	75935	17	75868.771	0.079	-1.0	U				hR09	4.0	72De11
C4-48Ti	52109	19	52059.322	0.079	-.7	U				hR09	4.0	72De11
48Ti O-85Rb.753	9277.7	1.2	9277.628	0.080	-.1	U				HMA8	1.0	12Na15
48Ti-N 18O O	-49207.30	0.23	-49207.558	0.079	-1.1	1	12	12	48Ti	KTT1	1.0	14Kw04
48Mn-u	-31440	76	-31451.239	7.191	-.1	Z				1.0	1.0	IMME-5,W
48Mn-u	-31480	120	-31451.239	7.191	.2	U				KGT1	1.5	04St05
48Mn-u	-31439	27	-31451.239	7.191	-.5	Z				kLZ1	1.0	14Xu.B
48Mn-u	-31454	10	-31451.239	7.191	.3	1	52	52	48Mn	KLZ1	1.0	17Zh12
48Fe-u	-19440	110	-19333.000	99.000	1.0	Z				m1.0	1.0	IMME-5,W
48Fe-u	-19496	75	-19333.000	99.000	.9	Z				h	2.5	IMME ,W
48Fe-u	-19333	99				2				GLZ1	1.0	20Fu05
48Co-u	810	430	1857#	537#	2.4	Z				1.0	1.0	IMME57,W
48Co-u	1857#	537#				2				g	1.0	S-u211
48Ca-40Ca1.200	-2586.23	0.23	-2586.365	0.032	-.6	U				GMS1	1.0	12Re17
48Ca-41K1.171	-2774.65	0.22	-2774.721	0.019	-.3	U				GMS1	1.0	12Re17
48Ti O-55Mn1.164	14972.6	1.2	14973.199	0.321	.5	1	7	7	55Mn	HMA8	1.0	12Na15
46Ti 37Cl-48Ti 35Cl	1726.8	1.1	1735.555	0.091	2.0	U				hH18	4.0	64Ba03
46Ti 37Cl-48Ti 35Cl	1730.29	0.87	1735.555	0.091	2.4	U				hH32	2.5	79Ko10
48Ti-48Ca	-4582.018	0.086	-4581.976	0.078	.5	1	82	81	48Ti	KMS1	1.0	13Bu12
48Ti-48Ca	-4581.86	0.22	-4581.976	0.078	-.5	U				KTT1	1.0	14Kw04
48Ti-47Ti	-3791	48	-3816.814	0.034	-.1	U				hR09	4.0	72De11
48Ca(3He,11C)40S	-17416	35	-17105.196	3.983	8.9F	F				hPri		79Ko.B,*
48Ca(3He,8B)43Cl	-29070	60	-28055.707	61.867	16.9F	F				hMSU		76Ka24,*
48Ca(a,9Be)43Ar	-21165.5	70.2	-21138.592	5.310	.4	U				kBrk		74Je01
48Ca(3He,7Be)44Ar	-12362	20	-12389.386	1.585	-1.4	U				MMSU		76Cr03,*
48Ca(a,7Be)45Ar	-27840.4	60.2	-27798.148	0.518	.7	U				kBrk		74Je01
48Ti(p,a)45Sc	-2560	5	-2556.575	0.660	.7	U				hANL		64Yn03
48Ti(p,a)45Sc	-2545	15	-2556.575	0.660	-.8	U				hTal		65Pl01
48Ca(6Li,8B)46Ar	-23324.8	70.2	-23288.301	2.534	.5	U				KBrk		74Je01
48Ca(14C,16O)46Ar	-6739	50	-6696.717	2.329	.8	U				KMun		80Ma40
48Ca(d,a)46K	1915	15	1899.869	0.727	-1.0	U				HANL		65Ma07
46Ca(t,p)48Ca	8752	20	8746.098	2.234	-.3	U				hAld		67Bj06
48Ti(d,a)46Sc	3967	12	3979.499	0.668	1.0	U				hKop		67Ha.A
48Ti(p,3He)46Sci	-19394	6	-19387.075	3.670	1.2	1	37	37	46Sci	H		78Ko27
48Ti(p,t)46Tii	-21192	7				2				H		78Ko27
48Ti(p,t)46Tij	-26177	6				2				H		78Ko27
46Ti(3He,n)48Cr	5550	18	5552.945	7.311	.2R	R	q-q=	-2.945		mCIT		67Mi02
48Ni(2p)46Fe	1400	100	2390#	300#	9.9D	D				G		05Gi15,*
48Ni(2p)46Fe	1280	120	2390#	300#	9.3o	o				H		11Po09
48Ni(2p)46Fe	1280	60	2390#	300#	18.5o	o				K		12Po03,*
48Ni(2p)46Fe	1290	40	2390#	300#	27.5D	D				G		14Po05,*
48Ni(2p)46Fe	2390#	300#				3				g		S-u212
48Ca(14C,15O)47Ar	-18142	100	-18693.323	1.307	-5.5B	B				HMSU		85Be50,G
48Ca(d,3He)47K	-10304	12	-10308.382	1.397	-.4	U				HANL		66Ne01
48Ca(t,a)47K	4006	15	4012.009	1.397	.4	U				HLAl		66Wi11
48Ca(t,a)47K	4001	10	4012.009	1.397	1.1	U				HAld		68Sa09
48Ca(d,t)47Ca	-3699	10	-3694.290	2.221	.5	U				HANL		66Er02
48Ca(3He,a)47Ca	10630	12	10626.101	2.221	-.3	U				HANL		66Er02
48Ca(3He,a)47Ca	10642	10	10626.101	2.221	-1.6	U				HMIT		71Ra35
47Ti(n,g)48Ti	11626.39	0.3	11626.658	0.032	.9	U				hMMn		80Is02,Z
47Ti(n,g)48Ti	11626.65	0.04	11626.658	0.032	.2	1	63	61	47Ti	mPtn		84Ru06,Z
47Ti(n,g)48Ti	11626.66	0.23	11626.658	0.032	-.0	U				MBdn		06Fi.A
47Ti(d,p)48Ti	9401	8	9402.092	0.032	.1	U				hKop		67Ba32,W
47Ti(d,p)48Ti	9403	6	9402.092	0.032	-.2	U				hMIT		67Ba32,W
47Ti(3He,d)48V	1337	15	1335.889	0.970	-.1	U				hMIT		68Do06
47Ti(3He,d)48Vxi	-1706	20	-1682.961	0.223	1.2	U				H		68Do06,W
48Mni(p)47Cr	979.6	32.	1014.202	6.296	1.1o	o				hBor		95Bl05
48Mni(p)47Cr	979.6	33.	1014.202	6.296	1.0o	o				HBor		96Fa09,*
48Mni(p)47Cr	1013	12	1014.202	6.296	.1	-1-				HBor		07Do17,*

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 48Mni(p)47Cr                  1018        10         1014.202     6.296     -.4  -1-                K        16Or03
 48Mni(p)47Cr            ave   1015.951     7.682     1014.202     6.296     -.2  1    67  49  48Mni          average
 48K(B-)48Ca                  12000       500        11940.386     0.773     -.1  U                  h        75Mu08
 48Ca(7Li,7Be)48K            -12959        27       -12802.279     0.777     5.8B B                  HCan     78We14
 48Ca(14C,14N)48K            -11910        50       -11783.909     0.773     2.5  U                  HMun     80Ma40
 48Ca(p,n)48Sc                 -534        15         -503.132     4.950     2.1  U                  h        67Mc07,Z
 48Ca(p,n)48Sc                 -506         7         -503.132     4.950      .4  1    50  50  48Sc           68Mc10
 48Sc(B-)48Ti                  3986         7         3988.868     4.950      .4  1    50  50  48Sc           57Va08,*
 48V(B+)48Ti                   4008         5         4014.947     0.969     1.4  U                  H        53Ma64,*
 48V(B+)48Ti                   4013.6       3.        4014.947     0.969      .4  1    10  10  48V  H        67Ko01,*
 48V(B+)48Ti                   4014         7         4014.947     0.969      .1  U                  H        74Me15,*
 48Ti(p,n)48V                 -4803        10        -4797.294     0.969      .6  U                  hTal     62Ne08,Y
 48Ti(3He,t)48Vxi             -7048         4        -7052.388     0.220    -1.1  U                  H        71Be29,*
 48Vxi(IT)48V                  3043         9         3018.850     0.949    -2.7  Z                           68Do03,W
 48Vxi(IT)48V                  3043        15         3018.850     0.949    -1.6  Z                           68Do06,W
 48Vxi(IT)48V                  3018.7       1.0       3018.850     0.949      .1  1    90  90  48V  H        Ens067
 48Crj(IT)48Cr                 8755        15         8760.109    16.687      .3  Z                           75Mo26,W
 48Mni(IT)48Mn                 3036.7       0.9       3036.724     0.898      .0  1   100  51  48MniK       07Do17,*
*48Mn-u                        T=2, from 48Ti,V,E(Vxi),Crj; (error 47+50)                                AHW   *W
*48Fe-u                        T=2, from 48Ti,Vxi,Crj; (error 96+50)                             m        AHW   *W
*48Fe-u                        T=2, from 48Ti,Vxi,Crj,Mni (error 66+20)                          m        AHW968*W
*48Co-u                        T=3;2, from 48Sc,Tii;Cr,Vxi,Crj; (error 300+250)                          AHW   *W
*48Ca(3He,11C)40S              F : possible 40Ca contamination; mismatch in cross-sections       h        GAu   **
*48Ca(3He,11C)40S              40Ca() Q=-4549, very different. Write Kouzes                               AHW92a*W
*48Ca(3He,8B)43Cl              F : poor spectrum. ~ Authors say: possibly not to gs              h        76Ka24**
*48Ca(3He,8B)43Cl              Cautious (N.Orr): Ca40 in target (see 51Ca exp.)                           GAu   *G
*48Ca(3He,8B)43Cl              Ganil value on top of 11B peak.                                            GAu   *G
*48Ca(3He,8B)43Cl              11B peak due to 16O (K.Fifield)                                            GAu   *G
*48Ca(3He,7Be)44Ar             M-A=-32270(20) Q=-12791(20) for 7Be 429 keV level                 M        GAu02c**
*48Ni(2p)46Fe                  From only 1 event, Si detector                                    H        05Gi15**
*48Ni(2p)46Fe                  From 4 events, gaseous detector                                   H        12Po03**
*48Ni(2p)46Fe                  Trends from Mass Surface TMS suggest  48Ni  1100 keV less bound   G        GAu212**
*48Ca(14C,15O)47Ar             K.Fifield: very dirty                                                      GAu   *G
*47Ti(d,p)48Ti                 See remark 46Ti(d,p), Kop Q=7119(8) to 2295.64 level                       AHW   *W
*47Ti(d,p)48Ti                 Two diff measurments in Kop and in MIT                                     GAu   *G
*47Ti(3He,d)48Vxi              IT=3043(15)                                                       h        MMC124*W
*48Mni(p)47Cr                  Unexpectedly low intensity 3.6(1.1)%                              h        96Fa09**
*48Mni(p)47Cr                  ->Exc=3007. I had note Eexc=2959.4(1.0) no ref.                   h        AHW957*W
*48Mni(p)47Cr                  Measured intensity 1.8(0.3)%                                      H        07Do17**
*48Sc(B-)48Ti                  E-=654(7) to 6^+ level at 3333.196 keV                            h        Ens067**
*48V(B+)48Ti                   E+=692(5) 698(3) 698(7) resp, to 4^+ level at 2295.654 keV        h        Ens067**
*48Ti(3He,t)48Vxi              CDE=7818(4) Q=-7054(4); rclbtn +6 keV for 42Ca(p,n)42Sc from Ame*1961    H        MMC123**
*48Ti(3He,t)48Vxi              With a 5 keV calibr. corr. for 42Ca(p,n)42Sc                               AHW944*W
*48Vxi(IT)48V                  From 50Cr(d,a)                                                             AHW944*W
*48Vxi(IT)48V                  From 47Ti(3He,d), same author                                              AHW944*W
*48Crj(IT)48Cr                 8760(15) fragmented with 10 keV lower level                                75Mo26*W
*48Mni(IT)48Mn                 gamma cascade 2633.5(0.5)+89.9(0.6)+313.3(0.4)                    K        GAu167**

 49Cl-u                         794#      429#                                    2                  g    1.0 S-u20c
 49Ar-u                      -19110      1180       -18315#      429#        .7o  o                  GMT1 1.0 15Me01,*
 49Ar-u                      -17499      1180       -18315#      429#       -.7D  D                  GMT1 1.0 20Me06,*
 49Ar-u                      -18315#      429#                                    2                  g    1.0 S-u212
 49K-u                       -31981       225       -31789.247     0.860      .6  U                  HGT1 1.5 04Ma.A
 49K-39K1.256                 13794.9       2.8      13795.410     0.860      .2o o                  HTT1 1.0 10La.A
 49K-39K1.256                 13795.41      0.86                                  2                  HTT1 1.0 12La05
 49Ca-39K1.256                 1247.1       2.9       1247.282     0.191      .1o o                  HTT1 1.0 10La.A
 49Ca-39K1.256                 1247.1       1.2       1247.282     0.191      .2  U                  HTT1 1.0 12La05
 49Sc-u                      -49989.3       4.5     -49986.840     2.434      .5  1    29  29  49Sc GMR1 1.0 20Ku19
 C H2 35Cl-49Ti               36637        13        36638.366     0.092      .0  U                  hR09 4.0 72De11
 C4 H-49Ti                    59967        10        59960.641     0.084     -.2  U                  hR09 4.0 72De11
 C5 H5-49Ti O                 96348        19        96346.149     0.084     -.0  U                  hR09 4.0 72De11
 C H5 32S-49Ti                63365        14        63331.942     0.084     -.6  U                  hR09 4.0 72De11
 49Mn-u                      -40410        12       -40386.649     2.377     1.9  U                  KLZ1 1.0 11Tu09
 49Mn-u                      -40373        15       -40386.649     2.377     -.9  U                  GLZ1 1.0 18Zh29
 49Fe-u                      -26390       160       -26571.000    26.000    -1.1  Z                  h1.0 1.0 IMME-4,W
 49Fe-u                      -26571        26                                     2                  HLZ1 1.0 12Zh34,*
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 49Co-u                             -10610       280       -10499#      537#         .4   Z                    1.0 1.0 IMM246,W
 49Co-u                             -10499#      537#                                      2                  g     1.0 S-u211
 49Ni-u                               9157#      644#                                      2                  g     1.0 S-u212
 47Ti 37Cl-49Ti 35Cl                   946.4       1.1        942.976     0.081     -.8   U                  hH18 4.0 64Ba03
 47Ti 37Cl-49Ti 35Cl                   944.46      0.35       942.976     0.081    -1.7   U                  hH32 2.5 79Ko10
 48Ti 13C-49Ti C                      3432.64      0.80      3431.122     0.025     -.8   U                  hH32 2.5 79Ko10
 48Ti H-49Ti                          7876         7         7901.319     0.025      .9   U                  hR09 4.0 72De11
 48Ti H-49Ti                          7874        27         7901.319     0.025      .3   U                  hR09 4.0 72De11
 49Ti-48Ti1.021                       1016.967     0.053     1016.961     0.025     -.1   1     23   20  49Ti GMS1 1.0 17Ka53
 49Mn-49Cr                            8279.63      0.25      8279.630     0.250     -.0   1    100  100  49Mn KJY1 1.0 14Ka22
 49Ti-48Ti                             -43        36          -76.287     0.025     -.2   U                  hR09 4.0 72De11
 49Ti(d,a)47Sc                        6476        12         6483.637     1.930      .6   U                  hKop      67Ha.A
 49S(g,n)48S                           -70#      300#                                      3                  g         S-u212,G
 48Ca(n,g)49Ca                        5146.6       0.7       5146.453     0.177     -.2  -2-                 m         69Ar.A,Z
 48Ca(n,g)49Ca                        5146.38      0.30      5146.453     0.177      .2  -2-                 m         70Cr04,Z
 48Ca(n,g)49Ca                        5146.48      0.23      5146.453     0.177     -.1  -2-                 MBdn      06Fi.A
 48Ca(d,p)49Ca                        2917         7         2921.887     0.177      .7   U                  hANL      66Er02
 48Ca(d,p)49Ca                        2917         4         2921.887     0.177     1.2   U                  hMIT      68Be36
 48Ca(n,g)49Ca                 ave    5146.453     0.177                                   2                            average
 48Ca(p,g)49Sc                        9628.7       3.6       9626.550     2.268     -.6  -1-                           68Vi01,Z
 48Ca(d,n)49Sc                        7404         7         7401.984     2.268     -.3  -1-                 M         68Gr09
 48Ca(3He,d)49Sc                      4150        12         4133.075     2.268    -1.4   U                  hANL      66Er02
 48Ca(p,g)49Sc                 ave    9628.672     3.201     9626.550     2.268     -.7   1     50   50  49Sc           average
 48Ti(n,g)49Ti                        8142.22      0.3       8142.379     0.023      .5   U                  hMMn      80Is02,Z
 48Ti(n,g)49Ti                        8142.39      0.03      8142.379     0.023     -.4   1     61   68  49Ti mPtn      83Ru08,Z
 48Ti(n,g)49Ti                        8142.35      0.16      8142.379     0.023      .2   U                  HBdn      06Fi.A
 48Ti(d,p)49Ti                        5907         8         5917.812     0.023     1.4   U                  hKop      67Ba32,W
 48Ti(d,p)49Ti                        5918         6         5917.812     0.023     -.0   U                  hMIT      67Ba32,W
 48Ti(d,p)49Ti                        5918.6       1.7       5917.812     0.023     -.5   U                  hNDm      76Jo01
 48Ti(p,g)49V                         6756.8       1.5       6758.176     0.821      .9R  R  q-q=    -1.376            72Ki06
 49Mni(p)48Cr                         2712.2      50.        2729.000    16.000      .3   U                  H         70Ce02,*
 49Mni(p)48Cr                         2730        29         2729.000    16.000     -.0o  o                  HBor      96Fa09,*
 49Mni(p)48Cr                         2729        16                                       3                  HBor      07Do17,*
 49K(B-)49Ca                         10970        70        11688.507     0.821    10.3B  B                  H         86Mi08
 49Ca(B-)49Sc                         5200       100         5262.444     2.274      .6   U                  h         56Ma27
 49Ca(B-)49Sc                         4970        50         5262.444     2.274     5.8B  B                  h         56OK02
 49Sc(B-)49Ti                         2010         5         2001.565     2.268    -1.7   1     21   21  49Sc           61Re06
 49Sc(B-)49Ti                         1983         7         2001.565     2.268     2.7B  B                  k         69Fl02
 49V(e)49Ti                            626        10          601.856     0.820    -2.4   U                  h         56Ha59
 49Ti(p,n)49V                        -1383         9        -1384.203     0.820     -.1   U                  hHar      60Mc12,Z
 49Ti(p,n)49V                        -1383.6       1.0      -1384.203     0.820     -.6  -2-                 mOak      64Jo11,Z
 49Ti(p,n)49V                        -1385.6       1.5      -1384.203     0.820      .9  -2- q-q=    -1.397             48Ti+1
 49Ti(p,n)49V                  ave   -1384.203     0.820                                   2                            average
 49Ti(3He,t)49Vxi                    -7052         4                                       2                  H         71Be29,*
 49Cr(B+)49V                          2590        20         2629.805     2.349     2.0   U                  h         53Cr18,*
*49Ar-u                            Trends from Mass Surface TMS suggest  49Ar   760 keV more bound          G         GAu212**
*49Fe-u                            T=3/2, from 49V, Cri, Mni; (error 150+20)                                          AHW   *W
*49Fe-u                            Same result in ref.                                                      KLZ1      13Ya03**
*49Co-u                            T=5/2;3/2;1/2, from 49Ti,Vxi;V,Cri,Mni;Cr,Mn; (error 72+250)                       AHW   *W
*49S(g,n)48S                       T>400ns, Sn should be positive, 49S(g,n)  should be negative             g         GAu212*G
*48Ti(d,p)49Ti                     See remark 46Ti(d,p)                                                               AHW   *W
*49Mni(p)48Cr                      Q(p)=1960(50) 1978(29) 1977(16) resp, to 2^+ level at 752.19(0.11) keV   H         Ens067**
*49Ti(3He,t)49Vxi                  CDE=7822(4) Q=-7058(4); rclbtn +6 keV for 42Ca(p,n)42Sc from Ame*1961    H         MMC123**
*49Ti(3He,t)49Vxi                  With a 5 keV calibr. corr. for 42Ca(p,n)42Sc                                       AHW944*W
*49Cr(B+)49V                       E+=1540(10) 1390(20) to (7/2^-)gs + (5/2^-)90.6392 and 3/2^- at 152.9282 h         Ens089**


 50Cl-u                               8266#      429#                                      2                  g     1.0 S-u20c
 50Ar-u                             -14203#      537#                                      2                  g     1.0 S-u211
 50K-u                              -26100       800       -27619.984     8.300    -1.3   U                  HT03 1.5 90Tu01
 50K-39K1.282                        18899        11        18908.300     8.300      .8o  o                  HTT1 1.0 10La.A
 50K-39K1.282                        18908.3       8.3                                     2                  HTT1 1.0 12La05
 50Ca-39K1.282                        4027.0       4.0       4027.500     1.700      .1o  o                  HTT1 1.0 10La.A
 50Ca-39K1.282                        4027.5       1.7                                     2                  HTT1 1.0 12La05
 50Sc-u                             -47940       250       -47812.564     2.700      .3   U                  MT06 1.5 98Ba.A,*
 50Sc-u                             -47822.6       9.8     -47812.564     2.700     1.0   U                  GMR1 1.0 20Ku19
 C H3 35Cl-50Ti                      47550        23        47542.167     0.096     -.1   U                  hR09 4.0 72De11
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C4 H2-50Ti		70860	8	70864.442	0.088	.1	U				hR09	4.0	72De11
C5 H6-50Ti O		107253	18	107249.950	0.088	-.0	U				hR09	4.0	72De11
C3 13C H-50Ti		66401	21	66394.245	0.088	-.1	U				hR09	4.0	72De11
C3 N-50Ti		58279	43	58288.382	0.088	.1	U				hR09	4.0	72De11
C4 H2-50V		68485	14	68493.383	0.100	.1	U				hR09	4.0	72De11
C3 N-50V		55903	23	55917.323	0.100	.2	U				hR09	4.0	72De11
C H3 35Cl-50V		45158	17	45171.108	0.107	.2	U				hR09	4.0	72De11
C4 H2-50Cr		69608	8	69607.855	0.101	-.0	U				hR09	4.0	72De11
C3 N-50Cr		57051	7	57031.795	0.101	-.7	U				hR09	4.0	72De11
C H3 35Cl-50Cr		46290	14	46285.580	0.107	-.1	U				hR09	4.0	72De11
50Fe-u		-37012	9				2				KLZ1	1.0	17Zh12
50Co-u		-18790	180	-18883.000	135.000	-.5	Z				1.0	1.0	IMM357,W
50Co-u		-18883	135				2				GLZ1	1.0	20Fu05,*
50Ni-u		-4260	280	-3714#	537#	1.9	Z				1.0	1.0	IMME-7,W
50Ni-u		-3714#	537#				2				g	1.0	S-u211
50Ti-48Ti1.042		-968.526	0.048	-968.561	0.034	-.7	1	50	45	50Ti	GMS1	1.0	17Ka53
50V-48Ti1.042		1402.62	0.11	1402.498	0.057	-1.1	1	27	26	50V	GMS1	1.0	17Ka53
50Cr-48Ti1.042		287.979	0.072	288.026	0.058	.7	1	65	64	50Cr	GMS1	1.0	17Ka53
49Ti 13C-50Ti C		6440.47	0.88	6433.604	0.033	-3.1B	B				hH32	2.5	79Ko10
50V-50Ti		2371.14	0.12	2371.059	0.062	-.7	1	27	21	50V	GMS1	1.0	17Ka53
50V-50Cr		1114.414	0.075	1114.472	0.059	.8	1	62	32	50Cr	GMS1	1.0	17Ka53
50Mn-50Cr		8195.91	0.10	8195.948	0.072	.4	1	52	52	50Mn	HJY1	1.0	08Er04
50Mnm-50Cr		8437.852	0.065	8437.833	0.059	-.3	1	81	81	50Mnm	HJY1	1.0	08Er04
50Mnm-50Mn		241.840	0.100	241.885	0.074	.4	1	55	37	50Mn	HJY1	1.0	08Er04
50Ti-49Ti		-3075	38	-3078.769	0.033	-.0	U				hR09	4.0	72De11
50Sc O-19F 35Cl		-20153.8	2.7	-20153.800	2.700	.0	1	100	100	50Sc	jMS1	1.0	21Le02
50Cr(p,6He)45V		-28686	17	-28678.047	0.864	.5	U				KMSU		75Mu09,*
50Ti(p,a)47Sc		-2231	15	-2230.970	1.930	.0	U				hTal		65Pl01
50V(p,a)47Ti		572	23	578.427	0.062	.3	U				hMIT		67Sp09
50Cr(p,a)47V		-3387	10	-3390.239	0.100	-.3	U				hAld		66Br06
50Cr(3He,6He)47Cr		-18365	14	-18359.147	5.197	.4	1	14	14	47Cr	MSU		77Mu03,*
48Ca(t,p)50Ca		3012	15	3025.202	1.584	.9	U				HAld		66Hi01
48Ca(t,p)50Ca		3020	10	3025.202	1.584	.5	U				HLAl		66Wi11
48Ca(3He,p)50Sc		7965	15	7954.501	2.515	-.7	U				GANL		69Oh01
50V(d,a)48Ti		9982	15	9980.519	0.053	-.1	U				hMIT		66Do06
50V(d,a)48Ti		9988	20	9980.519	0.053	-.4	U				hKop		67Ha.A
50Cr(d,a)48V		4928	12	4927.448	0.971	-.0	U				hKop		67Ha.A
50Cr(d,a)48V		4923	15	4927.448	0.971	.3	U				hMIT		68Do03
50Cr(d,a)48Vxi		1880	11	1908.598	0.226	2.6	U				HMIT		68Do03,*
50Cr(p,t)48Cr		-15100	8	-15100.891	7.310	-.1	-2-				Oak		71Do18
50Cr(p,t)48Cr		-15100	30	-15100.891	7.310	-.0	U				hBld		72Sh27
50Cr(p,t)48Cr		-15105.4	18.	-15100.891	7.310	.3	-2-	q-q=		-4.509	H		46Ti+2
50Cr(p,t)48Cr	ave	-15100.891	7.310				2						average
50Cr(p,t)48Crj		-23861	15				2				HMSU		75Mo26,*
50Coi(2p)48Mn		1972	13				2				HBor		07Do17
50Ti(t,a)49Sc		7644	25	7655.475	2.269	.5	U				hLAl		66Wi11
49Ti(n,g)50Ti		10939.6	0.3	10939.173	0.031	-1.4	U				hMMn		80Is02,Z
49Ti(n,g)50Ti		10939.19	0.04	10939.173	0.031	-.4	1	60	49	50Ti	mPtn		84Ru06,Z
49Ti(n,g)50Ti		10939.20	0.22	10939.173	0.031	-.1	U				MBdn		06Fi.A
49Ti(d,p)50Ti		8723	8	8714.607	0.031	-1.0	U				hKop		67Ba32,W
49Ti(d,p)50Ti		8721	6	8714.607	0.031	-1.1	U				hMIT		67Ba32,W
50Cr(p,d)49Cr		-10790	30	-10775.764	2.200	.5	U				hPri		67Wh03
50Cr(d,t)49Cr		-6743.1	2.2	-6743.100	2.200	.0	1	100	100	49Cr	NDm		76Jo01
50Fei(p)49Mn		4389	41	4332.000	10.000	-1.4o	o				HBor		96Fa09,*
50Fei(p)49Mn		4332	10				2				HBor		07Do17,*
50K(B-)50Ca		14050	300	13861.377	7.892	-.6	U				H		86Mi08
50Sc(B-)50Ti		6500	200	6894.746	2.517	2.0	U				h		63Ch03
50Sc(B-)50Ti		6260	100	6894.746	2.517	6.3B	B				h		69Wa24
50V(n,p)50Ti		2979	15	2990.974	0.058	.8	U				hILL		81Wa31
50V(n,p)50Ti		2984	10	2990.974	0.058	.7	U				NILL		94Wa17
50Ti(p,n)50V		-2991	10	-2990.974	0.058	.0	U				hHar		60Mc12,Y
50Ti(3He,t)50Vxi		-7032	4	-7039.754	0.266	-1.9	U				H		71Be29,*
50Cr(p,n)50Mn		-8416.1	1.9	-8416.825	0.067	-.4	U				hHar		75Fr.A
50Cr(3He,t)50Mn		-7650.5	0.4	-7653.070	0.067	-6.4F	F				HMun		77Vo02,*
50Cr(3He,t)50Mn-27Al()27Si		-2820.0	2.8	-2822.119	0.117	-.8	U				HChR		74Ha35
50Cr(3He,t)50Mn-42Ca()42Sc		-1207.6	2.3	-1208.187	0.083	-.3	U				HChR		74Ha35
50Cr(3He,t)50Mn-54Fe()54Co		610.09	0.17	610.070	0.100	-.1	1	35	23	54Co	nChR		87Ko34,*

*50Sc-u	M-A=-44530(220) keV for mixture gs+m at 256.895 keV	g	Nub211**
*50Co-u	T=3;2;1, from50Ti,Vxi,Crj;V,Cri;Cr,Fe, (error 75+150)		AHW *W
*50Co-u	p-stable 50Co		87Po04*W
*50Co-u	Authors suggested ground state	G	20Fu05**
*50Ni-u	T=3, from 50Ti,Vxi,Crj, (error 108+250)		AHW *W
*50Cr(p,6He)45V	Original Q increase by 1 for recalibration		AHW **
*50Cr(3He,6He)47Cr	Original Q reduced by 3, see 46Ti(3He,6He)		AHW **
*50Cr(d,a)48Vxi	IT=3043(9); rebuilt from their Q(gs)=4923(15) keV	H	MMC124**
*50Cr(p,t)48Crj	Strongest of two fragments given as IT=8760(15); Q rebuilt with Ame*1971	H	75Mo26**
*49Ti(d,p)50Ti	See remark 46Ti(d,p). Kop Q=7183(8) to 1553.79 level		AHW *W
*50Fei(p)49Mn	E(p)=2790(41) to 11/2(-) level at 1541.3125 keV	H	Ens089**
*50Fei(p)49Mn	Q(p)=2770(12) 41.1%, 1874(16) 1.0% to 11/2(-) level at 1541.3125, and	H	Ens089**
*	~ 13/2(-) at 2481.3 keV	H	Ens089**
*50Ti(3He,t)50Vxi	CDE=7802(4) Q=-7038(4); rclbtn +6 keV for 42Ca(p,n)42Sc from Ame*1961	H	MMC123**
*50Ti(3He,t)50Vxi	With a 5 keV calibr. corr. for 42Ca(p,n)42Sc		AHW944*W
*50Cr(3He,t)50Mn	F : rejected in ref. of same group	H	09Fa15**
*50Cr(3He,t)50Mn-54Fe()	Q-Q=40.90(0.16) to 650.99(0.06) level in 50Mn	k	Ens10c**

51Cl-u		15341#	751#				2				k	1.0	S-u168
51Ar-u		-6967#	429#				2				g	1.0	S-u20c
51Ca-39K1.308		8467.58	0.56				2				KMA8	1.0	13Wi06
51Ca-u		-38800	350	-39004.337	0.560	-.4	U				mT03	1.5	90Tu01,G
51Ca-u		-38900	400	-39004.337	0.560	-.2	U				mT05	1.5	94Se12,G
51Ca-u		-39249	183	-39004.337	0.560	.9	U				HGT1	1.5	04Ma.A
51Sc H-19F 33S		-8468.2	2.7	-8468.200	2.700	.0	1	100	100	51Sc	jMS1	1.0	21Le02
51Ti-39K1.308		-5917.0	2.3	-5918.615	0.520	-.7	1	5	5	51Ti	GTT1	1.0	18Re11
51Ti-u		-53378.8	16.1	-53390.531	0.520	-.7	U				GTR1	1.0	18Le03
51Ti-u		-53389.0	2.3	-53390.531	0.520	-.7o	o				GTT1	1.0	18Le03,*
51V-39K1.308		-8571.23	0.73	-8570.419	0.104	1.1	-1-				KTT1	1.0	14Ma21
51V-39K1.308		-8570.68	0.99	-8570.419	0.104	.3	-1-				KTT1	1.0	14Ma21
51V-39K1.308		-8570.9	2.0	-8570.419	0.104	.2	U				GTT1	1.0	18Re11
51V-39K1.308	ave	-8571.036	0.588	-8570.419	0.104	1.1	1	3	3	51V			average
C4 H3-51V		79526	9	79517.431	0.104	-.2	U				hR09	4.0	72De11
C5 H7-51V O		115921	13	115902.940	0.104	-.3	U				hR09	4.0	72De11
C4 H5 N-51V O		103334	13	103326.880	0.104	-.1	U				hR09	4.0	72De11
C3 H N-51V		66943	7	66941.372	0.104	-.1	U				hR09	4.0	72De11
51V-u		-56042.8	1.9	-56042.336	0.104	.2o	o				GTT1	1.0	18Le03
51Cr-39K1.308		-7763.66	0.78	-7762.694	0.179	1.2	-1-				KTT1	1.0	14Ma21
51Cr-39K1.308		-7764.0	1.2	-7762.694	0.179	1.1	-1-				KTT1	1.0	14Ma21
51Cr-39K1.308	ave	-7763.761	0.654	-7762.694	0.179	1.6	1	7	7	51Cr			average
51Fe-u		-43148	12	-43144.867	1.501	.3	U				GLZ1	1.0	11Tu09
51Fe-u		-43154	15	-43144.867	1.501	.6	U				GLZ1	1.0	18Zh29
C H2 37Cl-51Fe		24697.5	1.5				2				GMS1	1.0	18On01
51Co-u		-29490	160	-29353.000	52.000	.9	Z				1.0	1.0	IMM246,W
51Co-u		-29353	52				2				HLZ1	1.0	14Sh14
51Ni-u		-13070	280	-12507#	537#	2.0	Z				1.0	1.0	IMM246,W
51Ni-u		-12507#	537#				2				g	1.0	S-u211
51Ca-58Ni.879		17823	24	17830.353	0.650	.3	U				KTT1	1.0	12Ga29
47Ti 37Cl2-51V 35Cl2		1906.	1.8	1899.579	0.155	-.9	U				hH18	4.0	64Ba03
51V-48Ti1.063		-703.292	0.082	-703.278	0.064	.2	1	61	58	51V	GMS1	1.0	17Ka53
49Ti 37Cl-51V 35Cl		956.7	0.7	956.603	0.097	-.0	U				KH18	4.0	64Ba03
51K-51V		31871	14				2				HTT1	1.0	12Ga29
51Cr-51V		807.46	0.71	807.725	0.160	.4	-1-				KTT1	1.0	14Ma21
51Cr-51V		806.3	1.2	807.725	0.160	1.2	-1-				KTT1	1.0	14Ma21
51Cr-51V	ave	807.159	0.611	807.725	0.160	.9	1	7	6	51Cr			average
48Ca(14C,11C)51Ca		-15900	150	-15522.062	0.525	2.5	U				hMun		80Ma40,*
48Ca(14C,11C)51Ca		-16886	100	-15522.062	0.525	13.6B	B				MSU		85Be50,W
48Ca(18O,15O)51Ca		-12040	120	-11530.997	0.716	4.2B	B				hHei		85Br03,*
48Ca(18O,15O)51Ca		-13900	40	-11530.997	0.716	59.2B	B				Can		88Ca21,W
48Ca(a,p)51Sc		-5860	20	-5838.570	2.515	1.1	U				GANL		66Er02
51V(p,a)48Ti		1162	10	1153.902	0.060	-.8	U				hMIT		64Sp12
51V(d,a)49Ti		7066	12	7071.714	0.064	.5	U				hKop		67Ha.A
50Ti(n,g)51Ti		6372.3	1.2	6372.416	0.478	.1	-1-				m		71Ar39,Z
50Ti(n,g)51Ti		6372.6	0.6	6372.416	0.478	-.3	-1-				MBdn		06Fi.A
50Ti(d,p)51Ti		4143	6	4147.849	0.478	.8	U				hMIT		67Ba32,W
50Ti(d,p)51Ti		4148	8	4147.849	0.478	-.0	U				hKop		67Ba32,W

50Ti(d,p)51Ti		4147.7	1.2	4147.849	0.478	.1	-1-				NDm		76Jo01
50Ti(n,g)51Ti	ave	6372.494	0.490	6372.416	0.478	-.2	1	95	95	51Ti			average
50Ti(p,g)51V		8063.3	2.0	8060.209	0.066	-1.5	U				K		70Kl05,Z
50Ti(p,g)51V		8063.6	2.0	8060.209	0.066	-1.7	U				K		70Ma36,Z
50Ti(3He,d)51V		2555	15	2566.734	0.066	.8	U				hMIT		67Ob04
50V(n,g)51V		11051.18	0.10	11051.183	0.061	.0	-1-				mMMn		78Ro03,Z
50V(n,g)51V		11051.05	0.17	11051.183	0.061	.8	-1-				mILn		91Mi08,Z
50V(n,g)51V		11051.14	0.22	11051.183	0.061	.2	-1-				MBdn		06Fi.A
51V(g,n)50V		-11040	60	-11051.183	0.061	-.2	U				hPhi		60Ge01
50V(d,p)51V		8840	15	8826.617	0.061	-.9	U				hMIT		67De02
50V(d,p)51V		8828	20	8826.617	0.061	-.1	U				hKop		67Ha.A
51V(p,d)50V		-8815	20	-8826.617	0.061	-.6	U				hOak		65Ba29
50V(n,g)51V	ave	11051.146	0.080	11051.183	0.061	.5	1	58	35	51V			average
50V(3He,d)51Cr		4031	12	4022.971	0.151	-.7	U				hMIT		69Do01
50Cr(n,g)51Cr		9261.71	0.30	9260.669	0.148	-3.5B	B				MMMn		80Is02,Z
50Cr(n,g)51Cr		9260.63	0.20	9260.669	0.148	.2	1	55	51	51Cr	MBdn		06Fi.A
50Cr(d,p)51Cr		7049	8	7036.102	0.148	-1.6	U				hKop		67Ha.A
50Cr(d,p)51Cr		7041	6	7036.102	0.148	-.8	U				hMIT		68Ro09
50Cr(p,g)51Mn		5270.8	0.3	5270.832	0.290	.1	1	94	93	51Mn	m		72Fo25,Z
50Cr(3He,d)51Mn		-206	15	-222.643	0.290	-1.1	U				hMIT		67Sp09
50Cr(p,g)51Mni		819	2	820.195	1.509	.6	-2-				H		72Fo25,W
50Cr(3He,d)51Mni		-4652	20	-4673.280	1.509	-1.1	U				HMIT		67Ra14,W
50Cr(3He,d)51Mni		-4671.7	2.3	-4673.280	1.509	-.7	-2-				H		79Pa14,*
50Cr(p,g)51Mni	ave	820.195	1.509				2						average
51Coi(p)50Fe		6513	16				3				KBor		07Do17,*
51Ti(B-)51V		2440	30	2470.140	0.482	1.0	U				h		55Bu01
51Ti(B-)51V		2450	30	2470.140	0.482	.7	U				h		55Ma01
51Cr(e)51V		756	5	752.391	0.149	-.7	U				h		55Bi29
51V(p,n)51Cr		-1533.5	2.0	-1534.738	0.149	-.6	U				hNvl		59Go68,Z
51V(p,n)51Cr		-1533.3	1.8	-1534.738	0.149	-.8	U				hOak		64Jo11,Z
51V(p,n)51Cr		-1533.7	1.5	-1534.738	0.149	-.7	U				hCan		70Kn03,Z
51V(p,n)51Cr		-1534.93	0.24	-1534.738	0.149	.8	1	39	35	51Cr	mPTB		89Sc24,Z
51V(3He,t)51Cri		-7384	5				2				H		71Be29,W
51Mn(B+)51Cr		3232	20	3207.489	0.326	-1.2	U				h		66Gl02
*51Ca-u		"the new data set is the superior": do not use TO3 where TO5 exist									m		94Se12*G
*51Ca-u		Unknown long-lived isomers may affect all TO5 measurements									m		94Se12*G
*51Ti-u		Frequency ratios given in 18*Re*11									G		HWJ192**
*51Co-u		T=5/2;3/2;1/2, from 51V,Cri;Cr,Mni;Mn,CoRMn,Co, (error 19+150)											AHW *W
*51Co-u		p-stable 51Co											87Po04*W
*51Ni-u		T=5/2;3/2;1/2, from 51V,Cri;Cr,Mni;Mn,CoRMn,Co, (error 45+250)											AHW *W
*51Ni-u		p-stable 51Ni											87Po04*W
*48Ca(14C,11C)51Ca		May be a 40Ca contamination. ~ There is a --16900(150) peak											85Be50**
*48Ca(14C,11C)51Ca		May be Q to 1290-295(90) level, see below											AHW *W
*48Ca(18O,15O)51Ca		Proposed 970(90) level reinterpretated as gs in ref.											85Be50**
*48Ca(18O,15O)51Ca		giving then Q=-12710(150) M=-35150(150)											GAu928*G
*48Ca(18O,15O)51Ca		Weak M-A=-36120(120) level disregarded											AHW932**
*48Ca(18O,15O)51Ca		Systs says not ground-state transition									m		AHW *W
*48Ca(18O,15O)51Ca		Situation 51Ca very bad: M-A values:											AHW932*W
*48Ca(18O,15O)51Ca		36140(330)											90Tu01*W
*48Ca(18O,15O)51Ca		36240(370)											94Se12*W
*48Ca(18O,15O)51Ca		35940 34950 34540 34000											80Ma40*W
*48Ca(18O,15O)51Ca		34960 32610 31940											85Be50*W
*48Ca(18O,15O)51Ca		36120 35820 35460 35150 34880 (34470)											85Br03*W
*48Ca(18O,15O)51Ca		33950 32710 32010											88Ca21*W
*50Ti(d,p)51Ti		See remark 46Ti(d,p)											AHW *W
*50Cr(p,g)51Mni		also IT=4451(2)									h		MMC124*W
*50Cr(3He,d)51Mni		Q value published in paper; also IT=4445(15)									h		MMC124*W
*50Cr(3He,d)51Mni		IT=4449(3); Q rebuilt with Ame*1977									H		MMC124**
*51Coi(p)50Fe		Q(p)=4662(16) to (4^+) level at 1851.5 keV									H		Ens10c**
*51Coi(p)50Fe		Q(p)=6153 was a misprint in Ame*2012									K		XuX16b**
*51V(3He,t)51Cri		CDE=8145(5) Q=-7881(5); rclbtn --3 keV for 50Cr(p,n)50Mn from Ame*1961									H		MMC123**
*51V(3He,t)51Cri		With a 2 keV calibr. corr. for 50Cr(p,n)50Mn											AHW944*W

52Cl-u		24004#	751#				2				g	1.0	S-u212,G
52Ar-u		-1481#	644#				2				g	1.0	S-u211
52K-u		-17760	430	-18398.000	36.000	-.6	Z				k	2.5	S-u127

52K-u		-18398	36				2				KMR1	1.0	15Ro10
52Ca-39K1.333		11592.90	0.72				2				KMA8	1.0	13Wi06
52Ca-u		-34900	500	-36786.354	0.720	-2.5	U				HT03	1.5	90Tu01
52Ca-u		-36792	11	-36786.354	0.720	.5	U				KMR1	1.0	13Wi06
52Sc-33S 19F		-13365.9	3.3	-13365.900	3.300	-.0	1	100	100	52Sc	jMS1	1.0	21Le02
52Sc-u		-44230	860	-43503.829	3.300	.6	Z				GA2	1.5	89Gi.A
52Sc-u		-43500	230	-43503.829	3.300	-.0	U				GT03	1.5	90Tu01
52Sc-u		-43350	250	-43503.829	3.300	-.4	U				GT05	1.5	94Se12
52Sc-u		-43110	240	-43503.829	3.300	-1.1	U				GT06	1.5	98Ba.A
52Sc-u		-43438	97	-43503.829	3.300	-.7o	o				GLZ1	1.0	15Xu14
52Sc-u		-43260	560	-43503.829	3.300	-.4o	o				GMT1	1.0	15Me08
52Sc-u		-43505	70	-43503.829	3.300	.0	U				GLZ1	1.0	19Xu09
52Sc-u		-43607	247	-43503.829	3.300	.4	U				GMT1	1.0	20Me06
52Ti-39K1.333		-4738.7	3.2	-4737.237	2.949	.5	1	85	85	52Ti	GTT1	1.0	18Re11
52Ti-u		-53104	17	-53116.491	2.949	-.7	U				GTR1	1.0	18Le03
52Ti-u		-53118.0	3.2	-53116.491	2.949	.5o	o				GTT1	1.0	18Le03
52V-u		-55198	28	-55226.363	0.170	-1.0	U				GTR1	1.0	18Re11
52Cr-39K1.333		-11116.29	0.48	-11116.032	0.121	.5	U				GMA8	1.0	19Hu15
52Cr-39K1.333		-11118.0	2.1	-11116.032	0.121	.9	U				GTT1	1.0	18Re11
C4 H4-52Cr		90826	9	90795.414	0.121	-.8	U				hR09	4.0	72De11
C3 13C H3-52Cr		86373	18	86325.217	0.121	-.7	U				hR09	4.0	72De11
C3 H2 N-52Cr		78253	6	78219.354	0.121	-1.4	U				hR09	4.0	72De11
52Cr-85Rb.612		-5510.46	0.57	-5510.605	0.121	-.3	U				GMA8	1.0	19Hu15
52Cr-u		-59497.2	2.1	-59495.286	0.121	.9o	o				GTT1	1.0	18Le03
52Co-u		-36840	70	-36869.776	5.670	-.4	Z				1.0	1.0	IMME-5,W
52Co-u		-36490	210	-36869.776	5.670	-.7	Z				k	2.5	S-u127
52Co-u		-36888	9	-36869.776	5.670	2.0	1	40	40	52Co	KLZ1	1.0	16Xu10
52Com-u		-36473	11	-36465.825	8.109	.7	1	54	54	52Com	KLZ1	1.0	16Xu10
52Ni-u		-24320	90	-24219.000	89.000	1.1	Z				h1.0	1.0	IMME-5,W
52Ni-u		-24219	89				2				GLZ1	1.0	20Fu05
52Cu-u		-2630	280	-2018#	644#	2.2	Z				1.0	1.0	IMME57,W
52Cu-u		-2018#	644#				2				g	1.0	S-u211
52Ca-58Ni.897		21220	110	21212.187	0.795	-.1	U				KTT1	1.0	12Ga29
52Cr-48Ti1.083		-3114.916	0.096	-3115.043	0.085	-1.3	1	78	78	52Cr	GMS1	1.0	17Ka53
52Ca-52Cr		22740	82	22708.932	0.730	-.4	U				KTT1	1.0	12Ga29
52Mn-52Cr		5054.376	0.068				2				GJY1	1.0	17Ne05
52Fe-52Cr		7608.65	0.15				2				GJY1	1.0	17Ne05
52Fem-52Cr		15081.23	0.29				2				GJY1	1.0	17Ne05
52Co-52Cr		22637.5	7.3	22625.510	5.670	-1.6	1	60	60	52Co	GJY1	1.0	17Ne05
52Com-52Cr		23038	12	23029.461	8.109	-.7	1	46	46	52Com	GJY1	1.0	17Ne05
52Cr-50Cr		-5566	41	-5537.495	0.103	.2	U				hR09	4.0	72De11
52Cr(p,a)49V		-2596	10	-2593.296	0.824	.3	U				hAld		66Br06
50Ti(t,p)52Ti		5698	10	5706.670	2.748	.9	-1-				LAl		66Wi11
50Ti(t,p)52Ti		5700	10	5706.670	2.748	.7	-1-				LAl		71Ca19
50Ti(t,p)52Ti	ave	5699.000	7.071	5706.670	2.748	1.1	1	15	15	52Ti			average
50Ti(3He,p)52V		7653	15	7653.412	0.142	.0	U				hPhi		75Ca07
52Cr(d,a)50V		4517	12	4514.539	0.095	-.2	U				hKop		67Ha.A
52Cr(p,3He)50Vxi		-18645	6	-18651.051	0.280	-1.0	U				H		78Ko27
52Cr(p,t)50Cri		-21244	7				2				H		78Ko27
52Cr(p,t)50Crj		-26041	6				2				H		78Ko27
51V(n,g)52V		7311.2	0.5	7311.244	0.126	.1	-2-						84De15
51V(n,g)52V		7311.18	0.26	7311.244	0.126	.2	-2-				mILn		91Mi08,Z
51V(n,g)52V		7311.27	0.15	7311.244	0.126	-.2	-2-				MBdn		06Fi.A
51V(d,p)52V		5098	9	5086.678	0.126	-1.3	U				hMIT		64Sp12
51V(d,p)52V		5086	8	5086.678	0.126	.1	U				hKop		67Ha.A
51V(n,g)52V	ave	7311.245	0.126				2						average
51V(p,g)52Cr		10500.7	2.8	10505.374	0.099	1.7	U				K		74Ro44,Z
52Coi(p)51Fe		1367	60	1480.518	7.938	1.9o	o				HBor		94Fa06,W
52Coi(p)51Fe		1349	10	1480.518	7.938	13.2B	B				KBor		07Do17,G
52Coi(p)51Fe		1352	10	1480.518	7.938	12.9B	B				K		16Or03
52Ca(B-)52Sc		5700	200	6257.289	3.146	2.8B	B				K		85Hu03
52Sc(B-)52Ti		8020	250	8954.137	4.122	3.7B	B						85Hu03
52Ti(B-)52V		1940	200	1965.334	2.751	.1	U				h		67Mo11,*
52V(B-)52Cr		3904	30	3976.476	0.160	2.4	U				h		65Ko09,*
52V(B-)52Cr		3854	30	3976.476	0.160	4.1B	B				h		67Va27,*
52Mn(B+)52Cr		4710.9	4.	4708.121	0.063	-.7	U				G		58Ko57,*
52Mn(B+)52Cr		4707.9	6.	4708.121	0.063	.0	U				G		60Ka20,*

52Cr(p,n)52Mn	-5479	10	-5490.468	0.063	-1.1	U				hRic		66Ri09
52Cr(3He,t)52Mni	-7653	5				2				H		71Be29,*
52Fe(B+)52Mn	2372	10	2379.291	0.153	.7	U				G		56Ar33,*
52Fe(B+)52Mn	2229	130	2379.291	0.153	1.2	U				H		79Ge02,*
52Fe(B+)52Mn	2510	100	2379.291	0.153	-1.3	U				M		95Ir01
52Fem(IT)52Fe	6958.0	0.4	6960.664	0.304	6.7B	B				G		Ens157
52Fej(IT)52Fe	8561	5	8556.303	5.918	-.9	Z						Ens005,W
52Coi(IT)52Com	2548	2				2				K		16Or03
*52Cl-u	T>400ns, Sn should be positive, 52Cl(g,n) should be negative									g		GAu212*G
*52Co-u	T=2, from 52Cr,Mn,E(Mni),Fej; (error 35+50)											AHW *W
*52Ni-u	T=2, from 52Cr, Mni, Fej; (error 67+50)									h		AHW *W
*52Cu-u	T=3;2, from 52V,Cri;Cr,Mni,Fej; (error 72+250)											AHW *W
*52Coi(p)51Fe	Probably mixed with nearby non-IAS 1^+ levels									h		94Fa06*W
*52Coi(p)51Fe	Authors disagree (p.69) with 52Co(gs) in Ame2003.									h		07Do17*G
*52Ti(B-)52V	E-=1800(200) to 1^+ level at 141.610 keV									k		Ens159**
*52V(B-)52Cr	E-=2470(30) 2420(30) resp, to 2^+ level at 1434.091 keV									k		Ens159**
*52Mn(B+)52Cr	E+=575(4) and 572(6) resp, to 6^+ level at 3113.858 keV									k		Ens159**
*52Cr(3He,t)52Mni	CDE=8414(5) Q=-7650(5); rclbtn --3 keV for 50Cr(p,n)50Mn from Ame*1961									H		MMC123**
*52Cr(3He,t)52Mni	With a 2 keV calibr. corr. for 50Cr(p,n)50Mn											AHW944*W
*52Fe(B+)52Mn	E+=804(10) to 1^+ level at 546.438 keV									k		Ens159**
*52Fe(B+)52Mn	E+=5350(130) from 52Fem 12^+ at 6958.0 to 11^+ level at 3837.2 keV									k		Ens159**
*52Fej(IT)52Fe	Doublet, 4 keV apart, from 54Fe(p,t)											Ens005*W
*52Fej(IT)52Fe	Does not see the lower 0^+ levels of ref.											75Mo26*W

53Ar-u	7290#	750#				2				h	1.0	S-u127
53K-u	-12540	540	-13200.000	120.000	-.5	Z				k	2.5	S-u127
53K-u	-13200	120				2				KMR1	1.0	15Ro10
53Ca-u	-30550	430	-31549.000	47.000	-.9	Z				k	2.5	S-u127
53Ca-u	-31549	47				2				KMR1	1.0	13Wi06
53Sc-34S 19F	-7891	19	-7891.000	19.000	.0	1	100	100	53Sc	jMS1	1.0	21Le02
53Sc-u	-40900	1180	-41620.827	19.000	-.4	Z				GA2	1.5	89Gi.A
53Sc-u	-41440	260	-41620.827	19.000	-.5o	o				hTO3	1.5	90Tu01
53Sc-u	-41830	280	-41620.827	19.000	.5	U				hTO5	1.5	94Se12
53Sc-u	-41100	400	-41620.827	19.000	-.9	U				hTO6	1.5	98Ba.A
53Sc-u	-41694	118	-41620.827	19.000	.4	U				GGT1	1.5	04Ma.A
53Sc-u	-40910	290	-41620.827	19.000	-2.5B	B				KMT1	1.0	11Es06
53Sc-u	-41804	123	-41620.827	19.000	1.5o	o				GLZ1	1.0	15Xu14
53Sc-u	-40980	610	-41620.827	19.000	-1.1o	o				GMT1	1.0	15Me08
53Sc-u	-41772	86	-41620.827	19.000	1.8	U				GLZ1	1.0	19Xu09
53Sc-u	-41224	225	-41620.827	19.000	-1.8	U				GMT1	1.0	20Me06
53Ti-39K1.359	-1006.4	3.1				2				GTT1	1.0	18Re11
53Ti-u	-50325	19	-50329.286	3.100	-.2	U				GTR1	1.0	18Le03
53Ti-u	-50329.3	3.1	-50329.286	3.100	.0o	o				GTT1	1.0	18Le03
53V-u	-55664	20	-55665.060	3.331	-.1	U				GTR1	1.0	18Re11
53Cr-39K1.359	-10031.7	2.0	-10030.810	0.125	.4	U				GTT1	1.0	18Re11
C4 H5-53Cr	98529	8	98478.855	0.125	-1.6	U				hR09	4.0	72De11
C3 H3 N-53Cr	85958	10	85902.796	0.125	-1.4	U				hR09	4.0	72De11
C2 13C H2 N-53Cr	81507	27	81432.599	0.125	-.7	U				hR09	4.0	72De11
C3 H O-53Cr	62152	14	62093.347	0.125	-1.0	U				hR09	4.0	72De11
53Cr-85Rb.624	-4311.80	0.58	-4310.490	0.125	2.3	U				GMA8	1.0	19Hu15
53Cr-u	-59354.5	2.0	-59353.696	0.125	.4o	o				GTT1	1.0	18Le03
53Co-u	-45783	18	-45796.721	1.854	-.8	U				HLZ1	1.0	11Tu09
53Ni-u	-31530	170	-31810.000	27.000	-1.6	Z				h1.0	1.0	IMME-4,W
53Ni-u	-31810	27				2				HLZ1	1.0	12Zh34,*
53Cu-u	-14450	280	-14106#	537#	.5	Z				h	2.5	IMM246,W
53Cu-u	-14106#	537#				2				g	1.0	S-u211
53Cr-48Ti1.104	-1880.44	0.12	-1880.205	0.090	2.0	1	56	55	53Cr	GMS1	1.0	17Ka53
53Co-53Fe	8897.67	0.49	8897.649	0.476	-.0	1	94	94	53Co	HJY1	1.0	10Ka26
53Com-53Fe	12305.2	1.3	12305.350	1.003	.1	1	60	60	53Com	HJY1	1.0	10Ka26
53Com-53Co	3407.9	1.5	3407.701	1.019	-.1	1	46	40	53Com	HJY1	1.0	10Ka26
53Cr-52Cr	115	46	141.590	0.104	.1	U				hR09	4.0	72De11
51V(t,p)53V	7325	25	7309.410	3.102	-.6	U				hAld		67Hi02
53Cr(d,a)51V	7635	12	7626.295	0.103	-.7	U				hKop		67Ha.A
52Cr(n,g)53Cr	7939.52	0.3	7939.428	0.097	-.3	-1-				mMMn		80Is02,Z
52Cr(n,g)53Cr	7939.01	0.2	7939.428	0.097	2.1	-1-				mBNn		80Ko01,Z
52Cr(n,g)53Cr	7939.10	0.28	7939.428	0.097	1.2	-1-				MBdn		06Fi.A

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 52Cr(d,p)53Cr                   5725          6         5714.861     0.097     -1.7   U                 hMIT      64Sp12
 52Cr(d,p)53Cr                   5719          8         5714.861     0.097     -.5    U                 hKop      67Ha.A
 52Cr(n,g)53Cr           ave     7939.149      0.143     7939.428     0.097     1.9    1     46  25  53Cr          average
 52Cr(p,g)53Mn                   6559.1        1.1       6559.813     0.332     .6     U                 M         70Ma25,Z
 52Cr(p,g)53Mn                   6559.72       0.36      6559.813     0.332     .3     1     85  84  53Mn M        79Sw01,Z
 52Cr(3He,d)53Mn                 1070          15        1066.338     0.332     -.2    U                 hMIT      67Ob04
 53Com(p)52Fe                    1559.7        40.       1558.002     1.919     -.0o   o                 K         70Ja22
 53Com(p)52Fe                    1600.5        30.       1558.002     1.919     -1.4   U                 H         70Ce04
 53Com(p)52Fe                    1590          30        1558.002     1.919     -1.1   U                 K         72Ce01,G
 53Com(p)52Fe                    1590          30        1558.002     1.919     -1.1   U                 H         76Vi02
 53Com(p)52Fe                    1552.3        8.0       1558.002     1.919     .7     U                 G         15Sh16,*
 53Coi(p)52Fe                    2789.5        50.       2708.748     2.647     -1.6   U                 K         76Vi02,*
 53Coi(p)52Fe                    2778.5        18.       2708.748     2.647     -3.9B  B                 KBor      07Do17,*
 53Coi(p)52Fe                    2729.3        18.       2708.748     2.647     -1.1   Z                 k         14Su.A,G
 53Ti(B-)53V                     5020          100       4970.242     4.239     -.5    U                 GANB      77Pa01
 53V(B-)53Cr                     3536          50        3435.943     3.102     -2.0   U                 H         56Sc.A,*
 53Cr(p,n)53Mn                  -1379          8        -1379.615     0.343     -.1    U                 hMIT      52Lo06,Y
 53Cr(p,n)53Mn                  -1381.1        1.6      -1379.615     0.343     .9     U                 mOak      64Jo11,Z
 53Cr(3He,t)53Mni               -7589          4                                       2                 H         71Be29,*
 53Fe(B+)53Mn                    3860          100       3742.866     1.697     -1.2   U                 h         59Ju40
 53Fe(B+)53Mn                    3820          100       3742.866     1.697     -.8    U                 h         75Bl01
 53Coi(IT)53Co                   4325          2                                       2                 K         16Su10
*53Ni-u                      T=3/2, from 53Mn, Fei, Coi, (error 150+20)                                    AHW   *W
*53Ni-u                      Same result in ref.                                                 KLZ1      13Ya03**
*53Cu-u                      T=5/2;3/2;1/2, from 53Cr,Mni;Mn,Fei,Coi;Fe;Co; (error 54+250)                 AHW   *W
*53Com(p)52Fe                assumes that what they call (c.m.) protons is Qp                    k         GAu158*G
*53Com(p)52Fe                Original Q=1558(8) corrected for recoil                             K         16Hu.A**
*53Coi(p)52Fe                Q(p)=1940(50) 1929(18) resp, to 2^+ level at 849.45 keV             k         Ens159**
*53Coi(p)52Fe                Ep=1844(18) to  2^+ level at 849.45 keV                             k         Ens159*G
*53V(B-)53Cr                 E-=2530(50) to 5/2^- level at 1006.27 keV                           H         Ens09a**
*53Cr(3He,t)53Mni            CDE=8350(4) Q=-7586(4); rclbtn --3 keV for 50Cr(p,n)50Mn from Ame*1961  H   MMC123**
*53Cr(3He,t)53Mni            With a 2 keV calibr. corr. for 50Cr(p,n)50Mn                                  AHW944*W


 54Ar-u                          13484#        859#                                    2                 g     1.0 S-u212
 54K-u                          -5529#         429#                                    2                 g     1.0 S-u20c
 54Ca-u                         -26600         540      -27011.000    52.000    -.3    Z                 k     2.5 S-u127
 54Ca-u                         -27011         52                                      2                 KMR1  1.0 13Wi06
 54Sc-u                         -36060         500      -36971.640    19.001    -1.2o  o                 HT03  1.5 90Tu01,*
 54Sc-u                         -37060         500      -36971.640    19.001    .1o    o                 HT05  1.5 94Se12,*
 54Sc-u                         -36960         400      -36971.640    19.001    -.0    U                 HT06  1.5 98Ba.A,*
 54Sc-u                         -37059         225      -36971.640    19.001    .3     U                 HGT1  1.5 04Ma.A,W
 54Sc-u                         -36070         390      -36971.640    19.001    -2.3   U                 GMT1  1.0 11Es06,*
 54Sc-u                         -37202         585      -36971.640    19.001    .4o    o                 GLZ1  1.0 15Xu14,*
 54Sc-u                         -36230         680      -36971.640    19.001    -1.1o  o                 GMT1  1.0 15Me08
 54Sc-u                         -37021         386      -36971.640    19.001    .1     U                 GLZ1  1.0 19Xu09
 54Sc-u                         -36554         258      -36971.640    19.001    -1.6   U                 GMT1  1.0 20Me06
 54Ti-u                         -48680         610      -49108.000    17.000    -.5    Z                  GA2  1.5 89Gi.A
 54Ti-u                         -48820         230      -49108.000    17.000    -.8    U                 GT03  1.5 90Tu01
 54Ti-u                         -49130         250      -49108.000    17.000    .1     U                 GT05  1.5 94Se12
 54Ti-u                         -48820         280      -49108.000    17.000    -.7    U                 GT06  1.5 98Ba.A
 54Ti-u                         -48998         118      -49108.000    17.000    -.9o   o                 gLZ1  1.0 15Xu14
 54Ti-u                         -49108         17                                      2                 GTR1  1.0 18Le03
 54Ti-u                         -49050         107      -49108.000    17.000    -.5    U                 GLZ1  1.0 19Xu09
 54V-u                          -53574         18       -53567.991    12.002    .3     1     44  44  54V   GTR1  1.0 18Re11
 54Cr-39K1.385                  -10849.6       5.1      -10856.122    0.142     -1.3   U                 GTT1  1.0 18Re11
 C4 H6-54Cr                      108018        17        108072.832   0.142     .8     U                 hR09  4.0 72De11
 C3 13C H5-54Cr                  103569        15        103602.635   0.142     .6     U                 hR09  4.0 72De11
 C3 H4 N-54Cr                    95445         13        95496.772    0.142     1.0    U                 hR09  4.0 72De11
 C2 13C H3 N-54Cr                90960         24        91026.576    0.142     .7     U                 hR09  4.0 72De11
 C2 N O-54Cr                     59057         26        59111.264    0.142     .5     U                 hR09  4.0 72De11
 54Cr-85Rb.635                  -5110.22       0.69     -5109.124     0.142     1.6    U                 GMA8  1.0 19Hu15
 54Cr-u                         -61116.1       4.9      -61122.640    0.142     -1.3o  o                 GTT1  1.0 18Le03
 13C 37Cl3-54Fe 35Cl2            23744.46      1.26      23748.966    0.413     .9     U                 HH39  4.0 84Ha20
 C4 H6-54Fe                      107368        11        107342.002   0.369     -.6    U                 hR09  4.0 72De11
 C3 H4 N-54Fe                    94791         8         94765.942    0.369     -.8    U                 hR09  4.0 72De11
 C2 N O-54Fe                     58411         8         58380.434    0.369     -1.0   U                 hR09  4.0 72De11
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C3 13C H5-54Fe		102908	48	102871.805	0.369	-.2	U				hR09	4.0	72De11
54Ni-u		-42167	5				2				KLZ1	1.0	17Zh12
54Cu-u		-23580	230	-22802#	429#	1.4	Z					2.5	IMME
54Cu-u		-22802#	429#				2				g	1.0	S-u211
54Zn-u		-6230	540	-6121#	232#	.1	Z					2.5	IMME
54Cr-48Ti1.125		-2555.97	0.16	-2555.903	0.114	.4	1	50	49	54Cr	GMS1	1.0	17Ka53
54Sc-54Cr		24152	15	24151.000	19.000	-.1o	o				JTR1	1.0	20Le.A
54Sc-54Cr		24151	19				2				JTR1	1.0	21Le02
54Co-54Fe		8850.94	0.14	8850.886	0.096	-.4	1	47	47	54Co	HJY1	1.0	08Er04
54Com-54Fe		9062.960	0.092	9062.989	0.083	.3	1	81	81	54Com	HJY1	1.0	08Er04
54Com-54Co		212.18	0.15	212.103	0.105	-.5	1	49	30	54Co	HJY1	1.0	08Er04
54Cr-53Cr		-1662	48	-1768.945	0.109	-.6	U				hR09	4.0	72De11
54Fe(p,6He)49Mn		-28943	24	-28937.814	2.240	.2	U				KMSU		75Mu09,*
54Fe(a,8He)50Fe		-50950	60	-50962.923	8.391	-.2	U				KTex		77Tr05
54Fe(a,8He)50Fe		-51050	60	-50962.923	8.391	1.5	Z						IMME57,W
54Cr(p,a)51V		130	30	131.781	0.121	.1	U				hKop		64Ve02
54Fe(p,a)51Mn		-3145	9	-3147.335	0.432	-.3	U				hAld		66Br05
54Fe(p,a)51Mn		-3146.9	1.1	-3147.335	0.432	-.4	1	15	9	54Fe	NDm		74Jo14
54Fe(p,a)51Mni		-7606.6	5.0	-7597.972	1.548	1.7	U				K		79Ta22,*
54Fe(3He,6He)51Fe		-18694	15	-18726.302	1.441	-2.2	U				GMSU		77Mu03,*
54Cr(d,a)52V		5225	12	5218.460	0.175	-.5	U				hKop		67Ha.A
52Cr(t,p)54Cr		9171	10	9176.711	0.123	.6	U				hLAl		71Ca19
52Cr(3He,p)54Mn		7785	15	7780.986	1.005	-.3	U				hMIT		69Ly06
52Cr(3He,p)54Mn		7788	9	7780.986	1.005	-.8	U				hPhi		72Be07
52Cr(3He,p)54Mni		1633.6	3.9	1634.629	2.793	.3	1	51	51	54Mni	H		72Be07,*
52Cr(3He,n)54Fej		-7173	20				2				H		75Bo14,W
54Fe(d,a)52Mn		5169	12	5167.578	0.354	-.1	U				hKop		67Ha.A
54Fe(d,a)52Mn		5159	15	5167.578	0.354	.6	U				hMIT		67Sp09
54Fe(d,a)52Mn		5163.3	2.2	5167.578	0.354	1.9	U				GNDm		76Jo01
54Fe(p,t)52Fe		-15584	8	-15583.360	0.376	.1	U				G		78Ko27,*
54Fe(p,t)52Fej		-24139	7	-24139.663	5.906	-.1	-2-				H		78Ko27,W
54Fe(p,t)52Fej		-24141.3	11.0	-24139.663	5.906	.1	-2-				H		78De18,*
54Fe(p,t)52Fej	ave	-24139.663	5.906				2						average
54Zn(2p)52Ni		1480	20	2280#	200#	40.0D	D				H		05Gi15
54Zn(2p)52Ni		1480	20	2280#	200#	40.0D	D				H		05Bl15,*
54Zn(2p)52Ni		1280	210	2280#	200#	4.8	U *				H		11As08
54Zn(2p)52Ni		2280#	200#				3				g		S-u212
54Cr(d,3He)53V		-6879.2	3.1				2				NDm		79Br.B
53Cr(n,g)54Cr		9719.30	0.16	9719.080	0.101	-1.4	-1-				M		68Wh03,Z
53Cr(n,g)54Cr		9718.3	0.4	9719.080	0.101	1.9	-1-				M		72Lo26,Z
53Cr(n,g)54Cr		9718.91	0.27	9719.080	0.101	.6	-1-				mMMn		80Is02,Z
53Cr(n,g)54Cr		9718.0	0.2	9719.080	0.101	5.4V	V				g		87Mh.A,W
53Cr(n,g)54Cr		9719.7	0.5	9719.080	0.101	-1.2	-1-				mSAn		89Ho15,Z
53Cr(n,g)54Cr		9720.00	0.20	9719.080	0.101	-4.6C	C				hBdn		06Fi.A
53Cr(d,p)54Cr		7480	12	7494.513	0.101	1.2	U				hMIT		64Sp12
53Cr(d,p)54Cr		7514	10	7494.513	0.101	-1.9	U				hKop		67Ha.A
53Cr(n,g)54Cr	ave	9719.141	0.126	9719.080	0.101	-.5	1	65	45	54Cr			average
53Cr(p,g)54Mn		7559.6	1.0				2				m		75We10,Z
53Cr(3He,d)54Mn		2080	12	2066.125	1.000	-1.2	U				hMIT		69Ly06
54Fe(d,t)53Fe		-7121.5	2.1	-7121.220	1.634	.1	-1-				NDm		74Jo14
54Fe(3He,a)53Fe		7197	20	7199.171	1.634	.1	U				HMIT		68Tr01
54Fe(3He,a)53Fe		7199.6	2.6	7199.171	1.634	-.2	-1-				NDm		74Jo14
54Fe(d,t)53Fe	ave	-7121.220	1.634	-7121.220	1.634	-.0	1	100	100	53Fe			average
54Ti(B-)54V		4280	160	4154.455	19.384	-.8	U				G		96Do23
54V(B-)54Cr		7000	100	7037.112	11.179	.4	U				h		70Wa14
54Cr(t,3He)54V		-7023	15	-7018.520	11.179	.3	1	56	56	54V	LAl		77Fl03
54Mn(e)54Cr		1359	8	1377.133	1.005	2.3	U				H		72Ko47,*
54Mn(e)54Cr		1379	8	1377.133	1.005	-.2	U				H		00Hi08,*
54Cr(p,n)54Mn		-2160	5	-2159.480	1.005	.1	U				hMIT		52Lo06,Z
54Cr(3He,t)54Mni		-7541	4	-7542.082	2.793	-.3	1	49	49	54Mni	H		71Be29,*
54Mni(IT)54Mn		6151	5	6146.358	2.967	-.9	Z						72Be07,W
54Fej(IT)54Fe		14870	20	14868.008	20.003	-.1	Z						Ens934,W
54Co(B+)54Fe		8023	110	8244.548	0.089	2.0	U				h		59Su.A,*
54Co(B+)54Fe		8459	41	8244.548	0.089	-5.2C	C				h		60Mi.A
54Fe(p,n)54Co		-9031.1	2.5	-9026.895	0.089	1.7	U				hYal		69Ov01,*
54Fe(p,n)54Co		-9023.7	1.8	-9026.895	0.089	-1.8	U				hHar		74Ho21,Z
54Fe(3He,t)54Co		-8261.2	1.0	-8263.140	0.089	-1.9F	F				HMun		77Vo02,*

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 54Fe(3He,t)54Co-27Al()27Si       -3432.5       3.0      -3432.189     0.131      .1  U                 HChR     74Ha35
 54Fe(3He,t)54Co-42Ca()42Sc       -1817.24      0.18     -1818.257     0.102    -5.7B  B                 HChR     87Ko34
*54Sc-u                          Original --36000(500) uu or M-A=-33500(470) keV                   M        GAu992**
*54Sc-u                          Original --37000(500) uu or M-A=-34470(470) keV                   M        GAu992**
*54Sc-u                          M-A=-34370(370) keV for mixture gs+m at 110.5 keV                 g        Nub211**
*54Sc-u                          Isomer taken into account        {BPf}                            h        04Ma.A*W
*54Sc-u                          M-A=-33540(360) keV for mixture gs+m at 110.5 keV                 g        Nub211**
*54Sc-u                          No isomeric correction needed                                     K        HWJ151**
*54Fe(p,6He)49Mn                 Q increased 1 for recalibration                                            AHW   **
*54Fe(a,8He)50Fe                 T=3;2, from 50Ti,Vxi,Crj;V,Cri;Cr; (error 35+50)                           AHW92c*W
*54Fe(p,a)51Mni                  IT=4459(5); Q rebuilt with Ame*1977                               H        MMC124**
*54Fe(3He,6He)51Fe               Averaged with ref. ~ See 46Ti(3He,6He)                                     75Mu09**
*52Cr(3He,p)54Mni                IT=6151(5); Q rebuilt with Ame*1971                               h        MMC124**
*52Cr(3He,n)54Fej                IT=14870(20), Q(gs)=7696.7(2.9) from Ame1965; not clear for me how IAS wah     MMC124*W
*54Fe(p,t)52Fe                   Q=-21239(8) to 52Fei at 5654.5                                    g        Nub211**
*54Fe(p,t)52Fej                  Q published, also IT=8559(14)                                     h        MMC124*W
*54Fe(p,t)52Fej                  IT=8561(5); Q rebuilt with Ame*1977                               h        MMC124**
*54Zn(2p)52Ni                    Trends from Mass Surface TMS suggest  54Zn   800 keV less bound    G        GAu212**
*53Cr(n,g)54Cr                   F : there is no such paper in the procs., maybe in the book of abstracts G  GAu185*W
*54Mn(e)54Cr                     IBE=518(8) to 2^+ level at 834.855 keV, B(K)=5.99                 k        Ens148**
*54Mn(e)54Cr                     IBE=544(8) to 2^+ level at 834.855 keV                            k        Ens148**
*54Cr(3He,t)54Mni                CDE=8302(4) Q=-7538(4); rclbtn --3 keV for 50Cr(p,n)50Mn from Ame*1961   H  MMC123**
*54Cr(3He,t)54Mni                With a 2 keV calibr. corr. for 50Cr(p,n)50Mn                               AHW944*W
*54Mni(IT)54Mn                   From 52Cr(3He,p)                                                           AHW930*W
*54Fej(IT)54Fe                   From 52Cr(3He,n). Based on assumption                                      Ens872*W
*54Fej(IT)54Fe                   Thinks Eexc probably 103 lower                                             AHW974*W
*54Co(B+)54Fe                    E+=4250(110) from 54Com at 197.57 to 2949.2 6^+ level             g        Nub211**
*54Fe(p,n)54Co                   Uncorrected for resonance. Orig T=9204.1(1.8) corr in ref.        h        76Fr13**
*54Fe(3He,t)54Co                 Original value --8260.2(0.6) recalibrated                         k        AHW   **
*54Fe(3He,t)54Co                 F : rejected in ref. of same group                                H        09Fa15**


 55K-u                              505#      537#                                  2                  g    1.0 S-u20c
 55Ca-u                           -20022      172                                   2                  GRT1 1.0 18Mi08
 55Sc-u                           -30600     1100      -33110.363    66.000    -1.5  U                  GT03 1.5 90Tu01
 55Sc-u                           -32100      600      -33110.363    66.000    -1.1  U                  GT06 1.5 98Ba.A
 55Sc-u                           -32460      640      -33110.363    66.000    -1.0o o                  HMT1 1.0 11Es06
 55Sc-u                           -32760      620      -33110.363    66.000     -.6o o                  GMT1 1.0 15Me08
 55Sc-u                           -33376      236      -33110.363    66.000     1.1  U                  GMT1 1.0 20Me06
 55Sc-u                           -32861      204      -33110.363    66.000    -1.2  U                  GRT1 1.0 20Mi13
 55Ti-u                           -43370     1180      -44909.000    31.000     -.9  Z                   GA2 1.5 89Gi.A
 55Ti-u                           -44650      280      -44909.000    31.000     -.6  U                  GT03 1.5 90Tu01
 55Ti-u                           -44880      260      -44909.000    31.000     -.1  U                  GT05 1.5 94Se12
 55Ti-u                           -44360      350      -44909.000    31.000    -1.0  U                  GT06 1.5 98Ba.A
 55Ti-u                           -44909       31                                   2                  GTR1 1.0 18Le03
 55V-u                            -52738       29                                   2                  GTR1 1.0 18Re11
 55Cr-85Rb.647                     -2093.4      1.9      -2091.321     0.245     1.1  U                  GMA8 1.0 19Hu15
 C4 H7-55Mn                       116757        8      116732.182     0.280     -.8  U                  hR09 4.0 72De11
 C3 13C H6-55Mn                   112281       25      112261.986     0.280     -.2  U                  hR09 4.0 72De11
 C3 H5 N-55Mn                     104202       10      104156.123     0.280    -1.1  U                  hR09 4.0 72De11
 C2 H3 N2-55Mn                     91618       28       91580.063     0.280     -.3  U                  hR09 4.0 72De11
 C3 H3 O-55Mn                      80372       10       80346.674     0.280     -.6  U                  hR09 4.0 72De11
 55Mn-85Rb.647                     -4884.41     0.84     -4884.917     0.280     -.6o o                  GMA8 1.0 12Na15
 55Mn-85Rb.647                     -4883.81     0.80     -4884.917     0.280    -1.4  1     12  12  55Mn GMA8 1.0 19Hu15
 55Ni-u                           -48678       18      -48670.154     0.757      .4  U                  HLZ1 1.0 11Tu09
 55Cu-u                           -34130      170      -33962.000   167.000     1.0  Z                   1.0 1.0 IMM246,W
 55Cu-u                           -33962      167                                   2                  HLZ1 1.0 13Ya03
 55Zn-u                           -15710      270      -15319#      429#        1.4  Z                   1.0 1.0 IMM246,W
 55Zn-u                           -15319#     429#                                  2                  g    1.0 S-u211
 55Sc-55Cr                         26053       67       26053.000    66.000      .0o o                  JTR1 1.0 20Le.A
 55Sc-55Cr                         26053       66                                   3                  JTR1 1.0 21Le02
 55Ni-55Co                          9333.43     0.62                                2                  HJY1 1.0 10Ka26
 55Mn(p,a)52Cr                      2570        8        2571.021     0.267      .1  U                  hMIT     64Sp12
 55Mn(p,a)52Cr                      2600       10        2571.021     0.267    -2.9  U                  hANL     67Ka11
 55Mn(d,a)53Cr                      8283        8        8285.883     0.266      .4  U                  hMIT     64Sp12
 55Mn(d,a)53Cr                      8277       15        8285.883     0.266      .6  U                  hKop     67Ha.A
 54Cr(n,g)55Cr                      6246.2      0.4      6246.263     0.186      .2 -2-                 m        72Wh05,Z
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54Cr(n,g)55Cr		6246.28	0.21	6246.263	0.186	-.1	-2-				MBdn		06Fi.A
54Cr(d,p)55Cr		4027	8	4021.696	0.186	-.7	U				hMIT		64Sp12
54Cr(d,p)55Cr		4035	8	4021.696	0.186	-1.7	U				hKop		67Ha.A
54Cr(d,p)55Cr		4022.1	1.2	4021.696	0.186	-.3	U				hNDm		74Jo14
54Cr(n,g)55Cr	ave	6246.263	0.186				2						average
54Cr(p,g)55Mn		8067.2	0.4	8066.134	0.263	-2.7	1	43	37	55Mn			78We12
54Cr(3He,d)55Mn		2568	18	2572.659	0.263	.3	U				hMIT		69Ra02
55Mn(g,n)54Mn		-10192	20	-10225.614	1.035	-1.7	U				hPhi		60Ge01
54Fe(n,g)55Fe		9297.91	0.3	9298.124	0.190	.7	-1-				mMMn		80Is02,Z
54Fe(n,g)55Fe		9298.53	0.27	9298.124	0.190	-1.5	-1-				MBdn		06Fi.A
54Fe(d,p)55Fe		7084	8	7073.558	0.190	-1.3	U				hMIT		64Sp12
54Fe(d,p)55Fe		7083	10	7073.558	0.190	-.9	U				hKop		67Ha.A
54Fe(d,p)55Fe		7072.3	1.7	7073.558	0.190	.7	U				hNDm		74Jo14
54Fe(n,g)55Fe	ave	9298.253	0.201	9298.124	0.190	-.6	1	89	73	54Fe			average
54Fe(p,g)55Co		5064.0	0.7	5064.352	0.298	.5	-1-				m		77Er02,Z
54Fe(p,g)55Co		5063.9	0.4	5064.352	0.298	1.1	-1-				m		80Ha36,Z
54Fe(3He,d)55Co		-428	15	-429.123	0.298	-.1	U				hMIT		67Ob04
54Fe(3He,d)55Co		-426.9	2.2	-429.123	0.298	-1.0	U				hNDm		74Jo14
54Fe(p,g)55Co	ave	5063.925	0.347	5064.352	0.298	1.2	1	74	56	55Co			average
55Ti(B-)55V		7440	200	7292.667	39.542	-.7	U				G		96Do23
55V(B-)55Cr		5956	100	5985.188	27.014	.3	U				GANB		77Na17
55Cr(B-)55Mn		2500	40	2602.218	0.322	2.6	U				h		63Me06
55Cr(B-)55Mn		2494	25	2602.218	0.322	4.3B	B				h		65Ko09
55Fe(e)55Mn		224.5	4.	231.120	0.179	1.7	U				h		65Be19
55Fe(e)55Mn		224.5	3.	231.120	0.179	2.2	U				h		69Ka13
55Fe(e)55Mn		231.4	0.4	231.120	0.179	-.7	-1-				M		89Zl.A
55Fe(e)55Mn		230.7	1.9	231.120	0.179	.2	U				h		90Is06
55Fe(e)55Mn		231.0	1.0	231.120	0.179	.1	U				N		93Wi05,*
55Fe(e)55Mn		231.37	0.30	231.120	0.179	-.8	-1-				M		95Da14,*
55Fe(e)55Mn		231.0	0.3	231.120	0.179	.4	-1-				M		95Sy01,*
55Fe(e)55Mn		232.36	0.64	231.120	0.179	-1.9	U				H		01Ke14
55Mn(p,n)55Fe		-1015.7	2.	-1013.467	0.179	1.1	U				mNvl		59Go68,Z
55Mn(p,n)55Fe		-1014.6	0.8	-1013.467	0.179	1.4	U				mOak		64Jo11,Z
55Fe(e)55Mn	ave	231.232	0.187	231.120	0.179	-.6	1	91	84	55Fe			average
55Mn(3He,t)55Fei		-7883	6				2				H		71Be29,*
55Co(B+)55Fe		3466	2	3451.425	0.324	-7.3B	B				h		66Fi06,*
55Coi(IT)55Co		4735	10	*			Z						AHW930,W
*55Cu-u		T=5/2;3/2;1/2, from 55V,Fei;Fe,Coi;Co,Ni; (error 61+150)											AHW92c*W
*55Zn-u		T=5/2;3/2;1/2, from 55V,Fei;Fe,Coi;Co,Ni; (error 68+250)											AHW *W
*55Fe(e)55Mn		Error estimated by evaluator									N		AHW93a**
*55Fe(e)55Mn		Original error 0.10 increased by evaluator									M		GAu038**
*55Fe(e)55Mn		Original statistical error 0.10 increased by evaluator									M		GAu038**
*55Mn(3He,t)55Fei		CDE=8654(6) Q=-7890(6); rclbtn +7 keV for 54Fe(p,n)54Co from Ame*1961									H		MMC123**
*55Mn(3He,t)55Fei		With a 8 keV calibr. corr. for 54Fe(p,n)54Co									h		AHW944*W
*55Co(B+)55Fe		E+=1513(2) to 5/2^- level at 931.29 keV									h		Ens097**
*55Coi(IT)55Co		Fragmented, levels 3/2- at 4748.13(0.10) and 4721.44(0.10) keV											Ens95b*W

56K-u		8567#	644#				2				g	1.0	S-u212
56Ca-u		-14504	268				2				GRT1	1.0	18Mi08
56Sc-u		-26680	630	-27392.389	278.762	-1.1o	o				GMT1	1.0	15Me08,*
56Sc-u		-27520	350	-27392.389	278.762	.4	-2-				GMT1	1.0	20Me06,*
56Sc-u		-27171	461	-27392.389	278.762	-.5	-2-				GRT1	1.0	20Mi13,*
56Sc-u	ave	-27392.389	278.762				2						average
56Ti-u		-41300	350	-42322.324	107.570	-1.9	-1-				MTO3	1.5	90Tu01
56Ti-u		-42010	300	-42322.324	107.570	-.7	-1-				TO5	1.5	94Se12
56Ti-u		-41770	270	-42322.324	107.570	-1.4	-1-				MTO6	1.5	98Ba.A
56Ti-u		-42319	129	-42322.324	107.570	-.0	-1-				HGT1	1.5	04Ma.A
56Ti-u		-42700	290	-42322.324	107.570	1.3o	o				GLZ1	1.0	15Xu14
56Ti-u		-42738	203	-42322.324	107.570	2.0	-1-				GLZ1	1.0	19Xu09
56Ti-u		-42384	258	-42322.324	107.570	.2	-1-				GMT1	1.0	20Me06
56Ti-u	ave	-42350.913	111.345	-42322.324	107.570	.3	1	93	93	56Ti			average
56V-u		-49540	520	-49579.917	188.820	-.1	Z				GA2	1.5	89Gi.A
56V-u		-49470	250	-49579.917	188.820	-.3	-1-				MTO3	1.5	90Tu01
56V-u		-49640	260	-49579.917	188.820	.2	-1-				TO5	1.5	94Se12
56V-u		-49310	250	-49579.917	188.820	-.7	-1-				MTO6	1.5	98Ba.A
56V-u	ave	-49469.034	219.281	-49579.917	188.820	-.5	1	74	74	56V			average

56Cr-85Rb.659		-1216.3	2.0	-1220.460	0.621	-2.1	U				KMA8	1.0	05Gu27
56Mn-85Rb.659		-2965.1	1.5	-2966.621	0.315	-1.0	U				KMA8	1.0	05Gu37
56Mn-39K1.436		-8979.0	2.7	-8979.696	0.315	-.3	U				HMA8	1.0	09Na.A
C4 H8-56Fe		127754	10	127664.718	0.287	-2.2	U				hR09	4.0	72De11
C3 13C H7-56Fe		123300	47	123194.521	0.287	-.6	U				hR09	4.0	72De11
C3 H6 N-56Fe		115171	13	115088.658	0.287	-1.6	U				hR09	4.0	72De11
C3 H4 O-56Fe		91381	15	91279.209	0.287	-1.7	U				hR09	4.0	72De11
C2 H2 N O-56Fe		78790	24	78703.150	0.287	-.9	U				hR09	4.0	72De11
C2 O2-56Fe		54990	9	54893.701	0.287	-2.7B	B				hR09	4.0	72De11
56Fe-85Rb.659		-6933.40	0.60	-6933.900	0.287	-.8	1	23	23	56Fe	GMA8	1.0	19Hu15
56Cu-u		-41440	150	-41470.722	6.865	-.2	Z				h1.0	1.0	IMME-5,W
56Cu-u		-41050	210	-41470.722	6.865	-.8	Z				k	2.5	S-u103
56Cu-u		-41485	16	-41470.722	6.865	.9	-2-				gLZ1	1.0	18Zh29
56Cu-u		-41467.5	7.6	-41470.722	6.865	-.4	-2-				GMS1	1.0	18Va01,*
56Cu-u	ave	-41470.722	6.865				2						average
56Zn-u		-27620	280	-27257#	429#	1.3	Z				h1.0	1.0	IMME-5,W
56Zn-u		-27257#	429#				2				k	1.0	S-u168
56Ga-u		-5090	280	-4122#	537#	3.5	Z				h1.0	1.0	IMME57,W
56Ga-u		-4122#	537#				2				g	1.0	S-u211
56Fe-58Ni.966		-2604.70	0.47	-2604.496	0.262	.4	1	31	26	58Ni	HJY1	1.0	10Ka26
56Co-58Ni.966		2297.85	0.55	2298.000	0.420	.3	1	58	51	56Co	HJY1	1.0	10Ka26
56Ni-55Co1.018		1176.23	0.48	1175.410	0.372	-1.7	1	60	33	55Co	HJY1	1.0	10Ka26
56Cr-56Fe		5713.44	0.55				2				GMA8	1.0	19Hu15
56Ni-56Fe		7192.00	0.52	7192.224	0.339	.4	1	42	40	56Ni	HJY1	1.0	10Ka26
56Ni-56Co		2289.61	0.49	2289.729	0.401	.2	1	67	49	56Co	HJY1	1.0	10Ka26
56Fe-54Fe		-4755	47	-4672.652	0.297	.4	U				hR09	4.0	72De11
56Fe(p,a)53Mn		-1060	9	-1052.758	0.400	.8	U				hMIT		64Sp12
56Fe(p,a)53Mn		-1056	9	-1052.758	0.400	.4	U				hAld		66Br05
56Fe(p,a)53Mn		-1052.3	0.8	-1052.758	0.400	-.6	1	25	16	53Mn	NDm		74Jo14
54Cr(t,p)56Cr		5995	30	6010.588	0.581	.5	U				MAld		68Ch20
54Cr(t,p)56Cr		6024	10	6010.588	0.581	-1.3	U				MLAl		71Ca19
56Fe(d,a)54Mn		5662	12	5661.890	1.037	-.0	U				hKop		67Ha.A
56Fe(d,a)54Mn		5673	30	5661.890	1.037	-.4	U				h		67Hj01
54Fe(3He,p)56Co		7410	10	7428.150	0.462	1.8	U				hCIT		67Mi02
54Fe(3He,p)56Co		7408	15	7428.150	0.462	1.3	U				hMIT		68Be10
54Fe(3He,n)56Ni		4513	14	4512.934	0.364	-.0	U				HCIT		67Mi02
55Mn(n,g)56Mn		7270.53	0.3	7270.442	0.134	-.3	-2-				mMMn		80Is02,Z
55Mn(n,g)56Mn		7270.42	0.15	7270.442	0.134	.1	-2-				MBdn		06Fi.A
55Mn(d,p)56Mn		5052	5	5045.876	0.134	-1.2	U				hMIT		64Sp12
55Mn(d,p)56Mn		5053	8	5045.876	0.134	-.9	U				hKop		67Ha.A
55Mn(n,g)56Mn	ave	7270.442	0.134				2						average
55Mn(p,g)56Fe		10189	7	10183.592	0.157	-.8	U				h		69Fr22
55Mn(p,g)56Fe		10193.7	4.5	10183.592	0.157	-2.2	U				h		70Sa19,*
55Mn(p,g)56Fe		10195.7	3.6	10183.592	0.157	-3.4B	B				h		74Pe15,*
55Mn(p,g)56Fe		10183.80	0.17	10183.592	0.157	-1.2	1	85	49	56Fe	mUtr		92Gu03,Z
56Fe(d,t)55Fe		-4938.3	1.3	-4939.830	0.229	-1.2	U				hNDm		74Jo14
56Ni(p)55Co		-7148.5	30.	-7166.624	0.343	-.6	U				H		08Jo04,*
56Cui(p)55Ni		2929	31	2948.000	10.000	.6	U				KBor		07Do17,*
56Cui(p)55Ni		2948	10				3				K		14Or04,*
56Ti(B-)56V		7030	330	6760.405	188.184	-.8	1	33	26	56V	h		96Do23
56Cr(B-)56Mn		1610	150	1626.538	0.552	.1	U				h		60Dr03
56Mn(B-)56Fe		3685	5	3695.497	0.207	2.1	U				H		62Ho14,*
56Co(B+)56Fe		4566.0	2.0	4566.645	0.410	.3	U				H		65Pe18,*
56Fe(p,n)56Co		-5351	10	-5348.992	0.410	.2	U				hTal		62Ne08,Y
56Fe(3He,t)56Coi		-8178	9				2				H		71Be29,*
56Nii(IT)56Ni		6431.7	0.8	*			Z						01Bo54
56Nij(IT)56Ni		9968	4	9943.938	4.015	-6.0	Z						84Ka07,W
*56Sc-u		M-A=-24850(590) keV for mixture gs+m at 0#(100#) keV									K		15Me08**
*56Sc-u		M-A=-25380(260) keV for mixture gs+m at 0#(100#) keV and 775.0(0.1) keV									G		Nub211**
*56Sc-u		Isomer mixture corrected by 19(3) for 774.9(0.3) keV, 0(390) for									G		20Mi13**
*56Sc-u		~ 0#(100#) keV									G		20Mi13**
*56Cu-u		T=2, from 56Fe,Co,E(Coi),Nij, (error 126+50)											AHW *W
*56Cu-u		represents frequency ratio 56Cu+/(C4H7)+=1.01641577(12)									G		HWJ192**
*56Zn-u		T=2, from 56Fe,Coi,Nij, (error 251+50)											AHW *W
*56Ga-u		T=3;2, from 56Mn,Fei;Fe,Coi,Nij, (error 76+250)											AHW *W
*55Mn(p,g)56Fe		E(p)=1537(2) to 11703(4) level									h		70Sa19**
*55Mn(p,g)56Fe		E(p)=1537(2) to 11705(3) level									h		74Pe15**

*55Mn(p,g)56Fe	Reported accuracy (1) at 1439 resonance optimistic		AHW *W
*56Ni(p)55Co	E(p)=2540(30) from 9735 level	H	08Jo04**
*56Cui(p)55Ni	Strongest frg (strength 2.7); weaker frg 85(70) keV lower (strength 1.3)	K	14Or04**
*56Cui(p)55Ni	Neither 07Do17 or 14Or04 makes sense kinematically. Marion uses 3508(140)	k	MMC143*W
*56Mn(B-)56Fe	E-=2838(5) to 2^+ level at 846.7778 keV	H	Ens115**
*56Co(B+)56Fe	E+=1459(3) to 4^+ level at 2085.1045 keV	h	Ens115**
*56Fe(3He,t)56Coi	Strongest fragment given as CDE=8950(6); Q=-8186(6) rebuilt with Ame*1965	H	71Be29**
*	~ recalibration +7 keV for 54Fe(p,n)54Co from Ame*1961	H	MMC123**
*56Fe(3He,t)56Coi	Q(gs) rebuilt with Ame1965 = -4593(9); recalibration of 54Fe(p,n)54Co wrth		MMC129*W
*56Fe(3He,t)56Coi	CDE(xs=55)=8880(6) CDE(xs=115)=8950(6) yield Q=-8116(6) Q=-8186(6)	h	MMC123*W
*56Nij(IT)56Ni	From 58Ni(p,t). Centroid energy of IAS		84Ka07*W

57K-u		15169#	644#				2				g	1.0	S-u212
57Ca-u		-7912	1063	-7042#	429#	.8D	D				GRT1	1.0	18Mi08,*
57Ca-u		-7042#	429#				2				g	1.0	S-u212
57Sc-u		-22540	1400	-22952.000	193.000	-.3o	o				GMT1	1.0	15Me08
57Sc-u		-21664	944	-22952.000	193.000	-1.4	U				GMT1	1.0	20Me06
57Sc-u		-22952	193				2				GRT1	1.0	20Mi13
57Ti-u		-35700	1000	-36931.901	221.020	-.8o	o				GTO3	1.5	90Tu01
57Ti-u		-36200	400	-36931.901	221.020	-1.2	-2-				MTO6	1.5	98Ba.A
57Ti-u		-37102	408	-36931.901	221.020	.3	-2-				HGT1	1.5	04Ma.A
57Ti-u		-36280	370	-36931.901	221.020	-1.8o	o				GMT1	1.0	11Es06
57Ti-u		-37037	258	-36931.901	221.020	.4	-2-				GMT1	1.0	20Me06
57Ti-u	ave	-36931.901	221.020				2						average
57V-u		-48870	730	-47703.000	91.000	1.1	Z				GA2	1.5	89Gi.A
57V-u		-47300	400	-47703.000	91.000	-.7	U				KTO3	1.5	90Tu01
57V-u		-47640	270	-47703.000	91.000	-.2	U				GTO5	1.5	94Se12
57V-u		-47320	250	-47703.000	91.000	-1.0	U				GTO6	1.5	98Ba.A
57V-u		-47703	91				2				KLZ1	1.0	15Xu14
57V-u		-47934	279	-47703.000	91.000	.8	U				GMT1	1.0	20Me06
57Cr-u		-56590	590	-56387.887	2.000	.2	Z				GA2	1.5	89Gi.A
57Cr-u		-56240	250	-56387.887	2.000	-.4	U				MTO3	1.5	90Tu01
57Cr-u		-56300	260	-56387.887	2.000	-.2	U				MTO5	1.5	94Se12
57Cr-u		-56170	270	-56387.887	2.000	-.5	U				MTO6	1.5	98Ba.A
57Cr-85Rb.671		2802.1	2.0	2801.200	2.000	-.5o	o				GMA8	1.0	05Gu27
57Cr-85Rb.671		2801.2	2.0				2				GMA8	1.0	19Hu15
57Mn-85Rb.671		-2525.1	2.3	-2524.969	1.615	.1	1	49	49	57Mn	MMA8	1.0	05Gu37
57Mn-39K1.462		-8650.7	2.8	-8652.936	1.615	-.8	1	33	33	57Mn	HMA8	1.0	12Na15
C7 H8-57Fe 35Cl		158378.5	3.5	158355.611	0.290	-2.6	U				hM18	2.5	68Hu05
C4 H9-57Fe		135085	11	135033.336	0.288	-1.2	U				hR09	4.0	72De11
C3 H7 N-57Fe		122500	10	122457.277	0.288	-1.1	U				hR09	4.0	72De11
C3 H5 O-57Fe		98684	8	98647.828	0.288	-1.1	U				hR09	4.0	72De11
C2 H3 N O-57Fe		86104	17	86071.768	0.288	-.5	U				hR09	4.0	72De11
57Ni-85Rb.671		-1019.8	2.7	-1019.518	0.608	.1	U				HMA8	1.0	07Gu09
57Cu-u		-50772	43	-50788.313	0.538	-.4	U				HLZ1	1.0	11Tu09
57Zn-u		-35086	135	-34944#	215#	1.1	Z				m1.0	1.0	IMME-4,W
57Zn-u		-34944#	215#				2				h	1.0	S-u103,*
57Ga-u		-17070	280	-16543#	429#	1.9	Z				h1.0	1.0	IMM246,W
57Ga-u		-16543#	429#				2				g	1.0	S-u211
56Fe 13C-57Fe C		2897.67	0.47	2898.422	0.018	.6	U				hH30	2.5	77Ba10
56Fe 13C-57Fe C		2897.68	0.40	2898.422	0.018	.7	U				hH30	2.5	77Ba10
56Fe H-57Fe		7325	7	7368.618	0.018	1.6	U				hR09	4.0	72De11
57Fe-56Fe1.018		1627.95	0.46	1627.574	0.019	-.8	U				HJY1	1.0	10Ka26
57Fe-58Ni.983		-1048.75	0.46	-1048.893	0.266	-.3	1	33	29	58Ni	HJY1	1.0	10Ka26
57Ni-58Ni.983		3350.77	0.72	3350.551	0.532	-.3	1	55	50	57Ni	HJY1	1.0	10Ka26
57Cu-56Ni1.018		8126.29	0.55	8125.626	0.438	-1.2	1	63	48	57Cu	HJY1	1.0	10Ka26
57Cu-57Fe		13817.80	0.86	13819.736	0.465	2.3	1	29	29	57Cu	HJY1	1.0	10Ka26
57Cu-57Ni		9420.42	0.55	9420.292	0.472	-.2	1	74	50	57Ni	HJY1	1.0	10Ka26
56Fe 37Cl-57Fe 35Cl		-3413.7	4.3	-3406.538	0.071	.7	U				hM18	2.5	68Hu05
57Fe-56Fe		456.6	1.4	456.414	0.018	-.1	U				hM18	2.5	68Hu05
57Fe-56Fe		453.2	2.1	456.414	0.018	.6	U				hM18	2.5	68Hu05
57Fe-56Fe		491	39	456.414	0.018	-.2	U				hR09	4.0	72De11
54Cr(a,p)57Mn		-4308	8	-4313.155	1.510	-.6	U				MNDm		76Ma03
54Cr(a,p)57Mn		-4302	8	-4313.155	1.510	-1.4	U				MCan		78An10
57Fe(p,a)54Mn		237	9	240.285	1.037	.4	U				hMIT		64Sp12
54Fe(a,p)57Co		-1770.3	1.8	-1773.013	0.517	-1.5	U				mNDm		74Jo14

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 55Mn(t,p)57Mn               7438.2      3.6       7434.577     1.519    -1.0   1     18  17  57Mn  NDm      77Ma12
 57Fe(d,a)55Mn               8246       15         8241.332     0.158     -.3   U                   hKop     67Ha.A
 56Fe(n,g)57Fe               7645.9      0.5       7646.172     0.017      .5   U                   hUtr     68Sp01
 56Fe(n,g)57Fe               7646.10     0.17      7646.172     0.017      .4o  o                   mBNn     76Al16,Z
 56Fe(n,g)57Fe               7645.96     0.20      7646.172     0.017     1.1   U                   MBNn     78St25,Z
 56Fe(n,g)57Fe               7646.13     0.21      7646.172     0.017      .2   U                   mMMn     80Is02,Z
 56Fe(n,g)57Fe               7645.93     0.15      7646.172     0.017     1.6   U                   GPtn     80Ve05,Z
 56Fe(n,g)57Fe               7646.0956   0.0500    7646.172     0.017     1.5  -1-                  HPTc     97Ro26,*
 56Fe(n,g)57Fe               7646.08     0.09      7646.172     0.017     1.0   U                   G        02Bo11
 56Fe(n,g)57Fe               7646.10     0.15      7646.172     0.017      .5o  o                   GBdn     06Fi.A
 56Fe(n,g)57Fe               7646.183    0.018     7646.172     0.017     -.6  -1-                  GBdn     17Fi03
 56Fe(d,p)57Fe               5425        8         5421.605     0.017     -.4   U                   hMIT     64Sp12
 56Fe(d,p)57Fe               5425        8         5421.605     0.017     -.4   U                   hKop     67Ha.A
 56Fe(d,p)57Fe               5419.8      1.3       5421.605     0.017     1.4   U                   hNDm     74Jo14
 56Fe(n,g)57Fe          ave  7646.173    0.017     7646.172     0.017     -.1   1    100  88  57Fe           average
 56Fe(p,g)57Co               6027.7      1.0       6027.466     0.449     -.2  -1-                  m        70Ob02,Z
 56Fe(p,g)57Co               6029.3      1.5       6027.466     0.449    -1.2  -1-                  m        71Le21,Z
 56Fe(3He,d)57Co              538       20          533.991     0.449     -.2   U                   hLAl     65Bl13
 56Fe(p,g)57Co          ave  6028.192    0.832     6027.466     0.449     -.9   1     29  29  57Co           average
 56Fe(p,g)57Coi             -1226.4      0.5      -1225.856     0.327      .9  -2-                  H        70Ob02,*
 56Fe(p,g)57Coi             -1225.6      0.4      -1225.856     0.327     -.6  -2-                  H        71Le21,*
 56Fe(p,g)57Coi         ave -1225.857    0.327                                  2                            average
 57Cui(p)56Ni                4650       50         4608.845    25.086     -.8  -2-                  H        76Vi02
 57Cui(p)56Ni                4568       10         4608.845    25.086     4.1C  C                   H        98Jo.A
 57Cui(p)56Ni                4595       29         4608.845    25.086      .5  -2-                  H        02Jo09
 57Cui(p)56Ni           ave  4608.845   25.086                                  2                            average
 57Ti(B-)57V                11020      950        10033.215   222.647    -1.0   U                   K        96Do23
 57Cr(B-)57Mn                5100      100         4961.295     2.395    -1.4   U                   MANB     78Da04
 57Mn(B-)57Fe                2690       50         2695.737     1.522      .1   U                   h        63Va37
 57Co(e)57Fe                  810       30          836.359     0.449      .9   U                   H        71La02,*
 57Fe(p,n)57Co              -1619.4      2.0      -1618.706     0.449      .3  -1-                  mOak     64Jo11,Z
 57Fe(p,n)57Co              -1618.2      2.0      -1618.706     0.449     -.3  -1-                   Can     70Kn03
 57Fe(p,n)57Co          ave -1618.773    1.402    -1618.706     0.449      .0   1     10  10  57Co           average
 57Fe(3He,t)57Coi           -8122        7        -8108.273     0.327     2.0   U                   H        71Be29,*
 57Ni(B+)57Co                3245       10         3261.697     0.642     1.7   U                   h        50Fr10,*
 57Ni(B+)57Co                3235       10         3261.697     0.642     2.7   U                   h        51Ca28,*
 57Ni(B+)57Co                3246       10         3261.697     0.642     1.6   U                   h        58Ko60,*
 57Nii(IT)57Ni               5230       10            *                         Z                            AHW930,W
 57Nii(IT)57Ni               5238.8      0.7          *                         Z                   h        Ens98c,W
 57Cu(B+)57Ni                8742      130         8774.947     0.439      .3   U                   h        84Sh28
*57Ca-u                     Trends from Mass Surface TMS suggest  57Ca   810 keV less bound         G        GAu212**
*57Zn-u                     T=3/2, from 57Co, Nii, Cui, (error 130+20)                                       AHW   *W
*57Zn-u                     estimates -32840(70) from 57Cui + Coulomb corr                          h        02Jo09**
*57Ga-u                     T=5/2;3/2;1/2, from 57Fe,Coi;Co,Nii,Coi;Ni,Co; (error 47+250)                    AHW   *W
*56Fe(n,g)57Fe              Original error 0.0005 increased for calibration                         M        GAu036**
*56Fe(p,g)57Coi             T=1247.9 recalibrated to T=1248.5(0.6) keV                              H        AHW974**
*56Fe(p,g)57Coi             don't know which 27Al(p,g)28Si* resonance is used                       h        MMC124*W
*56Fe(p,g)57Coi             T=1247.1 recalibrated to T=1247.7(0.4) keV                              H        AHW974**
*56Fe(p,g)57Coi             don't know which 27Al(p,g)28Si* resonance is used                       h        MMC124*W
*57Co(e)57Fe                IBE=674(30) to 5/2^- level at 136.4743 keV                              H        Ens98c**
*57Fe(3He,t)57Coi           CDE=8893(7) Q=-8129(7); rclbtn +7 keV for 54Fe(p,n)54Co from Ame*1961   H        MMC123**
*57Fe(3He,t)57Coi           With a 8 keV calibr. corr. for 54Fe(p,n)54Co                            h        AHW944*W
*57Fe(3He,t)57Coi           also peak at +14 keV ; maybe not pure IAS                               h        MMC124*W
*57Ni(B+)57Co               E+=845(10) 835(10) 849(10) resp, to 13/2^- level at 1377.663 keV        h        Ens98c**
*57Nii(IT)57Ni              Fragmented 5135(5),5239(5),5368(5)                                               Ens92a*W
*57Nii(IT)57Ni              Energies from 59Ni(p,t)                                                          78Na11*W
*57Nii(IT)57Ni              Strongest of three fragments (middle one)                               h        GAu129*G


 58K-u                       23543#    751#                                     2                   g    1.0 S-u212
 58Ca-u                      -1643#    537#                                     2                   g    1.0 S-u212
 58Sc-u                     -16618     204                                      2                   GRT1 1.0 20Mi13,*
 58Ti-u                     -33162     268        -33191.481   196.823     -.1  -2-                 GMT1 1.0 20Me06,G
 58Ti-u                     -33226     290        -33191.481   196.823      .1  -2-                 GRT1 1.0 20Mi13,G
 58Ti-u                 ave -33191.481 196.823                                  2                            average
 58V-u                      -42830    1600        -43404.015   102.863     -.2   Z                   GA2 1.5 89Gi.A
 58V-u                      -43210     280        -43404.015   102.863     -.5   U                  GTO3 1.5 90Tu01
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58V-u		-43350	280	-43404.015	102.863	-.1	U				GT05	1.5	94Se12
58V-u		-42700	400	-43404.015	102.863	-1.2	U				GT06	1.5	98Ba.A
58V-u		-43328	107	-43404.015	102.863	-.5	-2-				HGT1	1.5	04Ma.A
58V-u		-43457	134	-43404.015	102.863	.4	-2-				KLZ1	1.0	15Xu14
58V-u		-42641	247	-43404.015	102.863	-3.1B	B				GMT1	1.0	20Me06
58V-u	ave	-43404.015	102.863				2						average
58Cr-u		-55880	910	-55815.498	3.200	.0	Z				GA2	1.5	89Gi.A
58Cr-u		-55680	230	-55815.498	3.200	-.4	U				KT03	1.5	90Tu01
58Cr-u		-55750	260	-55815.498	3.200	-.2	U				KT05	1.5	94Se12
58Cr-u		-55490	270	-55815.498	3.200	-.8	U				KT06	1.5	98Ba.A
58Cr-85Rb.682		4343.9	3.2				2				GMA8	1.0	18Mo14
58Mn-39K1.487		-5964.9	2.9				2				HMA8	1.0	12Na15,*
C3 H8 N-58Fe		132382	12	132400.684	0.339	.4	U				hR09	4.0	72De11
C3 H6 O-58Fe		108576	13	108591.235	0.339	.3	U				hR09	4.0	72De11
C2 H4 N O-58Fe		95999	13	96015.176	0.339	.3	U				hR09	4.0	72De11
C3 H6 O-58Ni		106491	8	106523.160	0.375	1.0	U				hR10	4.0	74De22
C3 13C H9-58Ni		138424	14	138438.472	0.375	.3	U				hR10	4.0	74De22
C3 H8 N-58Ni		130302	25	130332.609	0.375	.3	U				hR10	4.0	74De22
C2 H4 O N-58Ni		93926	10	93947.101	0.375	.5	U				hR10	4.0	74De22
C2 H4 O N-58Ni		93928	15	93947.101	0.375	.3	U				hR10	4.0	74De22
C3 H6 O-58Ni		106504	14	106523.160	0.375	.3	U				hR10	4.0	74De22
58Ga-u		-25750	230	-25271#	322#	.8	Z				h	2.5	IMM357,W
58Ga-u		-25271#	322#				2				k	1.0	S-u169
58Ge-u		-8990	340	-8137#	537#	1.0	Z				h	2.5	IMM357,W
58Ge-u		-8137#	537#				2				g	1.0	S-u211
58Ni-58Fe		2059	32	2068.075	0.327	.1	U				hR09	4.0	72De11
58Cu-58Ni		9190.61	0.50	9190.633	0.475	.0	1	90	90	58Cu	HJY1	1.0	10Ka26
58Ni(p,6He)53Co		-27889	18	-27872.619	1.729	.9	U				HMSU		75Mu09,*
58Ni(a,8He)54Ni		-50190	50	-50135.326	4.671	1.1	U				KTex		77Tr05
58Fe(p,a)55Mn		420	9	421.326	0.238	.1	U				hMIT		64Sp12
58Ni(p,a)55Co		-1341.0	2.9	-1334.820	0.380	2.1	U				hBNL		73Go19
58Ni(p,a)55Co		-1335.1	0.9	-1334.820	0.380	.3	1	18	11	55Co	NDm		74Jo14
58Ni(3He,6He)55Ni		-17556	11	-17553.786	0.693	.2	U				HMSU		77Mu03,*
58Fe(d,a)56Mn		5470	12	5467.202	0.273	-.2	U				hKop		67Ha.A
56Fe(3He,p)58Co		6853	15	6882.377	1.126	2.0	U				hMIT		72Ly01
58Ni(d,a)56Co		6522	12	6522.453	0.393	.0	U				hKop		67Ha.A
58Ni(d,a)56Co		6506	10	6522.453	0.393	1.6	U				hMIT		68Be10
58Ni(p,t)56Ni		-13987	18	-13982.062	0.349	.3	U				HBld		65Ho07
58Ni(p,t)56Nij		-23926	4				2				H		84Ka07,*
57Fe(n,g)58Fe		10044.60	0.3	10044.572	0.181	-.1	-1-				mMMn		80Is02,Z
57Fe(n,g)58Fe		10044.65	0.24	10044.572	0.181	-.3	-1-				MBdn		06Fi.A
57Fe(d,p)58Fe		7815	8	7820.006	0.181	.6	U				hMIT		64Sp12
57Fe(d,p)58Fe		7824	12	7820.006	0.181	-.3	U				hKop		67Ha.A
57Fe(n,g)58Fe	ave	10044.630	0.187	10044.572	0.181	-.3	1	93	86	58Fe			average
57Fe(p,g)58Co		6952	3	6954.247	1.126	.7	1	14	14	58Co			70Er03
58Ni(p,d)57Ni		-9971.2	7.	-9991.662	0.497	-2.9	U				H		79Ik04,*
58Ni(3He,a)57Ni		8360.3	4.	8361.393	0.497	.3	U				HMSU		76Na23
58Ni(3He,a)57Ni		8384.8	15.	8361.393	0.497	-1.6	U				H		79Fo09,*
58Ni(7Li,8He)57Cu		-29564	50	-29622.435	0.458	-1.2	U				hMSU		85Sh03
58Ni(7Li,8He)57Cu		-29613	17	-29622.435	0.458	-.6	U				HTex		86Ga19
58Ni(14N,15C)57Cu		-19900	40	-19929.585	0.917	-.7	U				HBer		87St04
58Mn(B-)58Fe		5890	100	6327.703	2.720	4.4B	B				h		69Wa10,*
58Mn(B-)58Fe		5958	100	6327.703	2.720	3.7B	B				h		71Dy01,*
58Fe(t,3He)58Mn		-6318	15	-6309.111	2.720	.6	U				HLAl		77Fl03,*
58Co(B+)58Fe		2305	6	2307.979	1.139	.5	U				m		52Ch31,*
58Co(B+)58Fe		2307	4	2307.979	1.139	.2	U				m		63Rh02,*
58Fe(3He,t)58Coi		-8079	8				2				H		71Be29,*
58Nii(IT)58Ni		8830	40	8829.788	40.000	-.0	Z						74Ko08,W
58Nij(IT)58Ni		14537	7	14538.788	7.000	.3	Z						84Ka07,W
58Ni(p,n)58Cu		-9351	5	-9343.367	0.443	1.5	U				HMar		64Ma.A
58Ni(p,n)58Cu		-9352.6	3.4	-9343.367	0.443	2.7	U				HRic		66Bo20,Z
58Ni(p,n)58Cu		-9346	10	-9343.367	0.443	.3	U				HRic		66Ri09
58Ni(p,n)58Cu		-9346.6	1.7	-9343.367	0.443	1.9	U				HYal		69Ov01,Z
58Ni(p,n)58Cu		-9347.8	4.0	-9343.367	0.443	1.1	U				HHar		76Fr13
58Ni(pi+,pi-)58Zn		-16908	50				2						86Se04

*58Sc-u Isomer mixture was corrected. G 20Mi13**

*58Ti-u Trends from Mass Surface TMS suggest 58Ti 310 keV more bound g GAu212*G

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*58Mn-39K1.487              D_M=-5887.8(2.9) uu  for 58Mnm at 71.77 keV; M-A=-55755.6(2.7) keV       g        Nub211**
*58Ga-u                     T=3;2;1, from 58Fe,Coi,Nij;Co,Nii;Zn,Ni, (error 62+200)                           AHW   *W
*58Ge-u                     T=3;2;1, from 58Fe,Coi,Nij;Co,Nii;Zn,Ni, (error 93+300)                           AHW   *W
*58Ni(p,6He)53Co            Q increased 1 for recalibration                                                   AHW   **
*58Ni(3He,6He)55Ni          Averaged with ref. ~ See 46Ti(3He,6He)                                            75Mu09**
*58Ni(p,t)56Nij             Strongest of three fragments IT=9943(4); Q rebuilt with Ame*1977         H        MMC129**
*58Ni(p,t)56Nij             Three fragments in IAS IT=9943(4) 10011(6) 10041(6); intensity weighted  h        MMC128*W
*                            ~ centroid energy IT=9968(4); Q(gs)=-13983 rebuilt with Ame1977         h        MMC128*W
*58Ni(p,d)57Ni              Q=-15210(7) for 57Nii at 5238.8(0.7) keV, strongest fragment IT=5230(7); g        Nub211**
*                            ~ rebuilt with Q(gs)=-9975 keV, average of 73*Ed*01 and 65*Sh*06        H        73Ed01**
*58Ni(3He,a)57Ni            IT=5235(15); Q=3146(15) for 57Nii at 5238.8(0.7) rebuilt with Ame*1977   H        MMC129**
*58Mn(B-)58Fe               Q-=6100(300); and 5930(100) from 58Mnm at 71.77 keV                      g        Nub211**
*58Mn(B-)58Fe               Q-=6030(100) from 58Mnm at 71.77 keV                                     g        Nub211**
*58Fe(t,3He)58Mn            And Q=-6318(15)--77(8) to 58Mnm at 71.77 keV                             g        Nub211**
*58Fe(t,3He)58Mn            Q=-6300(30) to 58Mnm at 71.78(0.05)    <-- GAu09b : wrong in Ame2003     h        92Sc.A*G
*58Co(B+)58Fe               E+=472(6) 474(4) resp, to 2^+ level at 810.7662 keV                      h        Ens104**
*58Fe(3He,t)58Coi           Strongest of two fragments IT=5759(8); Q rebuilt with Ame*1964           H        71Be29**
*                            ~ recalibration +7 keV for 54Fe(p,n)54Co from Ame*1961                  H        MMC123**
*58Fe(3He,t)58Coi           Q(gs)rebuilt with Ame1964 =-2327(8)                                      h        MMC129*W
*58Fe(3He,t)58Coi           Fragments: Q=-8059(8) xs=90; Q=8079(8) xs=98 ; IT=5739(8) xs=90; IT=5759(h        MMC129*W
*58Fe(3He,t)58Coi           58Coi fragmented: (90) -8074(7), (98) -8094(7)                           h        71Be29*W
*58Fe(3He,t)58Coi           With a 8 keV calibr. corr. for 54Fe(p,n)54Co  {GAu124: apparently -8 insth        AHW944*W
*58Nii(IT)58Ni              From 60Ni(p,t).                                                                   AHW944*W
*58Nij(IT)58Ni              From 60Ni(p,t). Centroid energy of IAS                                            84Ka07*W
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 59K-u                        30864#     859#                                   2                  g    1.0 S-u212
 59Ca-u                        6237#     644#                                   2                  g    1.0 S-u20c
 59Sc-u                      -11626      268                                    2                  GRT1 1.0 20Mi13
 59Ti-u                      -27075      290      -27783#      322#      -2.4D  D                  GMT1 1.0 20Me06
 59Ti-u                      -27053      258      -27783#      322#      -2.8D  D                  GRT1 1.0 20Mi13,*
 59Ti-u                      -27783#     322#                                   2                  g    1.0 S-u212
 59V-u                       -38500      400      -40376.656   147.505   -3.1B  B                  HT03 1.5 90Tu01
 59V-u                       -40700      350      -40376.656   147.505     .6  -2-                  T05 1.5 94Se12
 59V-u                       -39900      400      -40376.656   147.505    -.8  -2-                 MT06 1.5 98Ba.A
 59V-u                       -40677      129      -40376.656   147.505    1.6  -2-                 HGT1 1.5 04Ma.A
 59V-u                       -40136      437      -40376.656   147.505    -.6   Z                  kLZ1 1.0 15Xu.A,W
 59V-u                       -39764      279      -40376.656   147.505   -2.2  -2-                 GMT1 1.0 20Me06
 59V-u                   ave -40376.656  147.505                                2                           average
 59Cr-u                      -52730      750      -51654.574     0.720    1.0   Z                   GA2 1.5 89Gi.A
 59Cr-u                      -51490      290      -51654.574     0.720    -.4   U                  GT03 1.5 90Tu01,*
 59Cr-u                      -51640      310      -51654.574     0.720    -.0   U                  GT05 1.5 94Se12,*
 59Cr-u                      -51100      310      -51654.574     0.720   -1.2   U                  GT06 1.5 98Ba.A,*
 59Cr-u                      -52380      500      -51654.574     0.720    1.5   U                  GMT1 1.0 16Me07,*
 59Cr-u                      -51672       21      -51654.574     0.720     .8   U                  GMR1 1.0 18Mo14
 59Cr-85Rb.694                 9563.35     0.72                                 2                  GMA8 1.0 18Mo14
 59Mn-39K1.513                -4696.8      2.5                                  2                  HMA8 1.0 12Na15
 59Fe-85Rb.694                -3907.7      1.1     -3908.584     0.355    -.8   1    10  10  59Fe GMA8 1.0 19Hu15
 C3 H7 O-59Co                116467       12      116496.318     0.426     .6   U                  hR10 4.0 74De22
 C2 13C H6 O-59Co            112011       25      112026.121     0.426     .2   U                  hR10 4.0 74De22
 C2 H5 O N-59Co              103901        6      103920.258     0.426     .8   U                  hR10 4.0 74De22
 59Co-39K1.513               -11892.4      1.5    -11894.387     0.426   -1.3   U                  GMA8 1.0 19Hu15
 59Zn-u                      -50698       29      -50688.113     0.815     .3   U                  HLZ1 1.0 11Tu09
 59Ga-u                      -36630      180      -36243#      183#       .9   Z                  h    2.5 IMM246,W
 59Ga-u                      -36243#     183#                                   2                  k    1.0 S-u169
 59Ge-u                      -18250      300      -17574#      429#       .9   Z                  h    2.5 IMM246,W
 59Ge-u                      -17574#     429#                                   2                  g    1.0 S-u211
 58Ni H-59Co                   9970       15        9973.158     0.215     .1   U                  hR10 4.0 74De22
 59Zn-58Cu1.017                5722.4      1.3      5722.553     0.785     .1   1    36  27  59Zn HJY1 1.0 10Ka26
 59Zn-59Cu                     9815.22     0.72     9815.173     0.646    -.1   1    81  73  59Zn HJY1 1.0 10Ka26
 59Co-58Ni                    -2182       35       -2148.126     0.215     .2   U                  hR10 4.0 74De22
 59Co(p,a)56Fe                 3245        8        3241.380     0.315    -.5   U                  hMIT      64Sp12
 59Co(p,a)56Fe                 3243        9        3241.380     0.315    -.2   U                  hAld      66Br05
 59Co(p,a)56Fe                 3240.4      1.4      3241.380     0.315     .7   U                  HNDm      74Jo14
 59Co(d,a)57Fe                 8667       15        8662.986     0.315    -.3   U                  hKop      67Ha.A
 59Co(d,a)57Fe                 8659.3      3.2      8662.986     0.315    1.2   U                  hNDm      74Jo14
 59Ni(p,t)57Ni               -12738.2      3.3    -12733.712     0.499    1.4   U                  HMSU      76Na23
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59Ni(p,t)57Ni		-12738.4	5.0	-12733.712	0.499	.9	U				H		78Na11,*
58Fe(n,g)59Fe		6581.15	0.30	6581.005	0.107	-.5	-1-				MPtn		73Sp06,Z
58Fe(n,g)59Fe		6580.94	0.20	6581.005	0.107	.3	-1-				mPtn		80Ve05,Z
58Fe(n,g)59Fe		6581.02	0.14	6581.005	0.107	-.1	-1-				MBdn		06Fi.A
58Fe(d,p)59Fe		4357	8	4356.438	0.107	-.1	U				hMIT		64Sp12
58Fe(d,p)59Fe		4369	8	4356.438	0.107	-1.6	U				hKop		67Ha.A
58Fe(n,g)59Fe	ave	6581.014	0.107	6581.005	0.107	-.1	1	99	90	59Fe			average
58Fe(p,g)59Co		7359.7	2.0	7363.538	0.354	1.9	U				h		74Ke14,Z
58Fe(3He,d)59Co		1871	20	1870.063	0.354	-.0	U				hLAl		65Bl13
58Fe(p,g)59Co-56Fe()57Co		1336.5	0.7	1336.072	0.448	-.6	1	41	28	57Co			75Br29
59Co(g,n)58Co		-10441	26	-10453.864	1.102	-.5	U				hPhi		60Ge01
59Co(d,t)58Co		-4196.0	1.4	-4196.634	1.102	-.5	1	62	61	58Co	NDm		74Jo14
58Ni(n,g)59Ni		8999.37	0.30	8999.280	0.050	-.3	U				M		75Wi06,Z
58Ni(n,g)59Ni		8999.38	0.20	8999.280	0.050	-.5	U				MMMn		77Is01,Z
58Ni(n,g)59Ni		8999.10	0.23	8999.280	0.050	.8	U				MILn		93Ha05,Z
58Ni(n,g)59Ni		8999.28	0.05	8999.280	0.050	-.0	Z				hORn		02Ra.A
58Ni(n,g)59Ni		8999.28	0.05	8999.280	0.050	-.0	1	99	74	59Ni	HORn		04Ra23
58Ni(n,g)59Ni		8999.15	0.18	8999.280	0.050	.7	U				HBdn		06Fi.A
58Ni(d,p)59Ni		6797	10	6774.714	0.050	-2.2	U				hKop		67Ha.A
58Ni(d,p)59Ni		6785	5	6774.714	0.050	-2.1	U				hMIT		70An25
58Ni(d,p)59Ni		6773.5	1.7	6774.714	0.050	.7	U				hNDm		74Jo14
58Ni(p,g)59Cu		3418.5	0.5	3418.554	0.394	.1	1	62	62	59Cu	M		63Bo07,Z
58Ni(p,g)59Cu		3419	2	3418.554	0.394	-.2	U				M		70Fo09
58Ni(p,g)59Cu		3416.7	2.0	3418.554	0.394	.9	U				M		75Kl06,Z
58Ni(p,pi-)59Zn		-144735	40	-144783.614	0.696	-1.2	U				H		83Sh31
59Mn(B-)59Fe		5200	100	5139.629	2.352	-.6	U				mANB		77Pa18
59Fe(B-)59Co		1570	4	1564.880	0.369	-1.3	U				h		52Me53,*
59Fe(B-)59Co		1563	3	1564.880	0.369	.6	U				h		63Wo01,*
59Ni(e)59Co		1074.5	1.3	1073.005	0.194	-1.2	U				m		76Be02,*
59Co(p,n)59Ni		-1855.8	2.0	-1855.352	0.194	.2	U				mMIT		51Mc48,Z
59Co(p,n)59Ni		-1854.3	4.0	-1855.352	0.194	-.3	U				m		57Bu37,Z
59Co(p,n)59Ni		-1861	5	-1855.352	0.194	1.1	U				hRic		57Ch30,Z
59Co(p,n)59Ni		-1855.8	1.6	-1855.352	0.194	.3	U				mOak		64Jo11,Z
59Co(p,n)59Ni		-1855.33	0.20	-1855.352	0.194	-.1	1	95	90	59Co	MPTB		98Bo30,G
59Co(3He,t)59Nii		-8436	8	-8433.535	2.110	.3	U				H		71Be29,*
59Zn(B+)59Cu		9120	100	9142.776	0.602	.2	U				H		81Ar13
*59Ti-u		Isomer mixture was corrected									G		20Mi13**
*59Ti-u		Trends from Mass Surface TMS suggest 59Ti 670 keV more bound									G		GAu212**
*59V-u		withdrawn by authors									kLZ1		15Xu.A*W
*59Cr-u		Original --51220(240) uu or M-A=-47710(230) keV									M		GAu992**
*59Cr-u		Original --51370(270) uu or M-A=-47850(250) keV									M		GAu992**
*59Cr-u		M-A=-47350(250) keV for mixture gs+m at 502.7 keV									g		Nub211**
*59Cr-u		M-A=-48540(440) keV for mixture gs+m at 502.7 keV									g		Nub211**
*59Ga-u		T=5/2;3/2;1/2, from 59Co.Nii;Ni.Cui;Cu,Zn; (error 73+150)											AHW *W
*59Ge-u		T=5/2;3/2;1/2, from 59Co.Nii;Ni.Cui;Cu,Zn; (error 125+250)											AHW *W
*59Ni(p,t)57Ni		Strongest of three IAS frgs, Q=-17977.2(5.0) for 57Nii at 5238.8									g		Nub211**
*59Fe(B-)59Co		E-=475(3) to 3/2^- level at 1099.256 keV									h		Ens024**
*59Fe(B-)59Co		E-=462(3), 273(3) to 3/2^- levels at 1099.256, 1291.605 keV									h		Ens024**
*59Ni(e)59Co		Authors add B(K)=8.3 of Ni, changed in 7.7 of Co											AHW **
*59Co(p,n)59Ni		Table 4: 59Co-59Ni = -1151.88(0.12) uu ???									m		GAu00a*G
*59Co(3He,t)59Nii		Strongest frg Q=-8441(8); rclbtn +5 keV for 58Ni(p,n)58Cui from Ame*1961									h		MMC129**
*59Co(3He,t)59Nii		With a 3 keV calibr. corr. for 58Ni(p,n)58Cui									h		AHW944*W

60Ca-u		11809#	751#				2				g	1.0	S-u212
60Sc-u		-3811	1116	-4885#	537#	-1.0D	D				GRT1	1.0	20Mi13,*
60Sc-u		-4885#	537#				2				g	1.0	S-u212
60Ti-u		-23725	258				2				GRT1	1.0	20Mi13,G
60V-u		-33860	700	-35520.785	195.327	-1.6	U				HTO3	1.5	90Tu01,*
60V-u		-35560	600	-35520.785	195.327	.0	-2-				MTO5	1.5	94Se12,*
60V-u		-35180	520	-35520.785	195.327	-.4	-2-				hTO6	1.5	98Ba.A,*
60V-u		-35889	215	-35520.785	195.327	1.1	-2-				HGT1	1.5	04Ma.A,G
60V-u		-35510	430	-35520.785	195.327	-.0o	o				GMT1	1.0	11Es06,*
60V-u		-35300	270	-35520.785	195.327	-.8	-2-				GMT1	1.0	20Me06,*
60V-u	ave	-35520.785	195.327				2						average
60Cr-u		-51580	830	-50358.344	1.200	1.0	Z				GA2	1.5	89Gi.A
60Cr-u		-49680	240	-50358.344	1.200	-1.9	U				GTO3	1.5	90Tu01

60Cr-u		-50270	280	-50358.344	1.200	-.2	U				GT05	1.5	94Se12
60Cr-u		-49910	280	-50358.344	1.200	-1.1	U				GT06	1.5	98Ba.A
60Cr-u		-50929	494	-50358.344	1.200	1.2	U				GMT1	1.0	16Me07
60Cr-u		-50368	20	-50358.344	1.200	.5	U				GMR1	1.0	18Mo14
60Cr-85Rb.706		11918.1	1.2				2				GMA8	1.0	18Mo14
60Mn-u		-56550	240	-56863.426	2.500	-.9	U				MT03	1.5	90Tu01,*
60Mn-u		-56810	290	-56863.426	2.500	-.1	U				MT05	1.5	94Se12,*
60Mn-u		-56530	280	-56863.426	2.500	-.8	U				MT06	1.5	98Ba.A,*
60Mn-39K1.538		-1044.0	2.5				2				HMA8	1.0	12Na15,*
60Co-u		-66380	280	-66184.464	0.433	.5	U				MT06	1.5	98Ba.A,*
C3 H8 O-60Ni		126796	14	126729.744	0.379	-1.2	U				hR10	4.0	74De22
C2 H6 O N-60Ni		114231	10	114153.685	0.379	-1.9	U				hR10	4.0	74De22
C2 13C H7 O-60Ni		122315	10	122259.548	0.379	-1.4	U				hR10	4.0	74De22
C H2 N O2-60Ni		77843	16	77768.177	0.379	-1.2	U				hR10	4.0	74De22
C5-60Ni		69275	14	69214.870	0.379	-1.1	U				hR10	4.0	74De22
60Ni-85Rb.706		-6937.8	1.6	-6938.426	0.379	-.4	U				KMA8	1.0	07Gu09
60Ga-u		-42940	120	-42502#	215#	1.5	Z				h	2.5	IMME-5,W
60Ga-u		-42502#	215#				2				k	1.0	S-u169
60Gai-C5		-40233	99	*			Z				h1.0	1.0	IMME ,W
60Ge-u		-29810	250	-29555#	322#	.4	Z				h	2.5	IMME-5,W
60Ge-u		-29880	204	-29555#	322#	1.6	Z				h1.0	1.0	IMME ,W
60Ge-u		-29555#	322#				2				g	1.0	S-u211
60As-u		-6230	640	-6055#	429#	.3	Z				1.0	1.0	IMME57,W
60As-u		-6055#	429#				2				g	1.0	S-u211
60Zn-58Ni1.034		8698.02	0.55	8698.053	0.444	.1	1	65	65	60Zn	HJY1	1.0	10Ka26
60Zn-59Cu1.017		3373.19	0.55	3373.157	0.444	-.1	1	65	35	60Zn	HJY1	1.0	10Ka26
60Ni-58Ni H		-12513	30	-12381.552	0.076	1.1	U				hR10	4.0	74De22
60Ni-59Co		-2503	40	-2408.395	0.215	.6	U				hR10	4.0	74De22
60Ni-58Ni		-4624	25	-4556.521	0.076	.7	U				hR10	4.0	74De22
60Ni-58Ni		-4627	45	-4556.521	0.076	.4	U				hR10	4.0	74De22
60Ni H-59Co		5310	40	5416.637	0.215	.7	U				hR10	4.0	74De22
60Ni(p,a)57Co		-263.6	0.7	-263.530	0.426	.1	1	37	33	57Co	NDm		74Jo14
58Fe(t,p)60Fe		6907	15	6918.743	3.391	.8	-2-				LAl		71Ca19
58Fe(t,p)60Fe		6947	10	6918.743	3.391	-2.8	-2-				MSU		76St11
58Fe(t,p)60Fe		6913	4	6918.743	3.391	1.4	-2-				LAl		78No05
58Fe(t,p)60Fe		6931.6	10.	6918.743	3.391	-1.3	-2-	q-q=	12.857		H		64Ni-4
58Fe(t,p)60Fe	ave	6918.743	3.391				2						average
60Ni(d,a)58Co		6084.5	2.2	6084.856	1.107	.2	1	25	25	58Co	NDm		74Jo14
58Ni(t,p)60Ni		11905	10	11905.212	0.070	.0	U				hAld		71Da16
60Ni(p,t)58Nii		-20735	40				2				H		74Ko08,*
60Ni(p,t)58Nij		-26444	7				2				H		84Ka07,*
58Ni(3He,p)60Cu		5770	12	5758.639	1.575	-.9	U				hCIT		67Mi02
58Ni(3He,p)60Cu		5746	20	5758.639	1.575	.6	U				hMIT		68Yo01
58Ni(3He,p)60Cui		3210	10	3217.509	5.145	.8	1	26	26	60Cui	HMIT		68Yo01,W
58Ni(3He,n)60Zn		818	18	805.500	0.414	-.7	U				HCIT		67Mi02
58Ni(3He,n)60Zn		821	13	805.500	0.414	-1.2	U				HOak		72Gr39
58Ni(3He,n)60Znj		-6562	24				2				H		74Ev02,*
59Co(n,g)60Co		7491.88	0.08	7491.918	0.071	.5	-2-				mBNn		84Ko29,Z
59Co(n,g)60Co		7492.05	0.15	7491.918	0.071	-.9	-2-				MBdn		06Fi.A
59Co(d,p)60Co		5267	11	5267.351	0.071	.0	U				hMIT		64Sp12
59Co(d,p)60Co		5272	8	5267.351	0.071	-.6	U				hKop		67Ha.A
59Co(n,g)60Co	ave	7491.918	0.071				2						average
59Co(p,g)60Nii		-1594	4				2				H		67Ar01,W
59Ni(n,g)60Ni		11387.6	0.4	11387.728	0.050	.3	U				M		75Wi06,Z
59Ni(n,g)60Ni		11387.73	0.05	11387.728	0.050	-.0	Z				hORn		02Ra.A
59Ni(n,g)60Ni		11387.73	0.05	11387.728	0.050	-.0	1	99	78	60Ni	HORn		04Ra23
60Ni(p,d)59Ni		-9180	50	-9163.162	0.050	.3	U				hPri		64Le10
60Ni(d,t)59Ni		-5130.2	2.1	-5130.498	0.050	-.1	U				mNDm		74Jo14
60Ni(p,d)59Nii		-16505.1	2.1				2				H		78Ik02,*
60Mn(B-)60Fe		8234	86	8445.228	4.126	2.5	U				HANB		78No03,*
60Co(B-)60Ni		2823.6	1.0	2822.806	0.212	-.8	U				m		68Wo02,*
60Cu(B+)60Ni		6250	40	6127.981	1.573	-3.1B	B				h		54Nu26
60Ni(p,n)60Cu		-6912	20	-6910.328	1.573	.1	U				hChR		58Go77
60Ni(p,n)60Cu		-6909	10	-6910.328	1.573	-.1	U				hRic		66Ri09
60Ni(p,n)60Cu		-6910.3	1.6				2				mYal		69Ov01,Z
60Ni(3He,t)60Cui		-8685	6	-8687.703	5.145	-.5	1	74	74	60Cui	H		71Be29,*
60Cui(IT)60Cu		2536	15	2541.130	5.380	.3	Z						68Yo01,W

60Zn(B+)60Cu	4166	64	4170.792	1.629	.1	U	h	86Ka38
60Zni(IT)60Zn	4851.9	0.7	*			Z		01Ma96
60Znj(IT)60Zn	7380	30	7367.499	24.004	-.4	Z		Ens935

*60Sc-u	Trends from Mass Surface TMS suggest 60Sc 1000 keV more bound	G	GAu212**
*60Ti-u	Trends from Mass Surface TMS suggest 60Ti 140 keV more bound	g	GAu212*G
*60V-u	Original --33800(700) uu or M-A=-31500(650) keV	M	GAu992**
*60V-u	Original --35500(600) uu or M-A=-33070(560) keV	M	GAu992**
*60V-u	M-A=-32700(470) keV for mixture gs+m+n at 0#150 and 203.7(0.7) keV	g	Nub211**
*60V-u	Isomer taken into account {BPf}	h	04Ma.A*G
*60V-u	M-A=-33010(390) keV for mixture gs+m+n at 0#150 and 203.7(0.7) keV	g	Nub211**
*60V-u	M-A=-32810(230) keV for mixture gs+m+n at 0#150 and 203.7(0.7) keV	g	Nub211**
*60Mn-u	M-A=-52540(230) keV for mixture gs+m at 271.90 keV	g	Nub211**
*60Mn-u	M-A=-52780(260) keV for mixture gs+m at 271.90 keV	g	Nub211**
*60Mn-u	M-A=-52520(250) keV for mixture gs+m at 271.90 keV	g	Nub211**
*60Mn-39K1.538	D_M=-752.1(2.5) uu for 60Mnm at 271.90 keV; M-A=-52695.9(2.4) keV	g	Nub211**
*60Co-u	M-A=-61800(260) keV for mixture gs+m at 58.59 keV	g	Nub211**
*60Ga-u	T=2, from 60Ni,Cu,E(Cui),Nii, (error 102+50)		AHW *W
*60Gai-C5	T=2, from 60Ni,Cui,Znj (error 91+20)		AHW968*W
*60Ge-u	T=2, from 60Ni, Cui, Nii, (error 227+50)		AHW *W
*60Ge-u	T=2, from 60Ni,Cui, Znj (error 187+50)		AHW968*W
*60As-u	T=3;2, from 60Co,Nii; Ni,Cui,Znj; (error 520+250)		AHW *W
*60Ni(p,t)58Nii	IT=8830(40); Q rebuilt with Ame*1971	h	MMC124**
*60Ni(p,t)58Nij	IT=14537(7); Q rebuilt with Ame*1977	H	MMC124**
*58Ni(3He,p)60Cui	Q given in paper, and IT=2536(15) deduced by authors	h	68Yo01*W
*58Ni(3He,n)60Znj	IT=7380(30); Q rebuilt with Ame*1971***	H	MMC124**
*58Ni(3He,n)60Znj	Only paper listed in NDS with sufficient energy to reach 60Znj. Neutron Th		MMC124*W
*59Co(p,g)60Nii	AHW used Ep=1594(4); original paper says Qp=1594(4)	h	MMC124*W
*60Ni(p,d)59Nii	Strongest fragment IT=7341; Q rebuilt with Ame*1977	H	MMC129**
*60Mn(B-)60Fe	E-=5714(86) from 60Mnm at 271.90 to (3^+,4^+) 2792.68 level	k	Ens13c**
*	~ I was not completely happy but see no reason not to use	n	AHW956*W
*60Mn(B-)60Fe	E-=5714(86) from 60Mnm at 271.90 to 4^+ 3072.01 level, reinterpreted <--	k	Ens13c*W
*60Co(B-)60Ni	E-=317.88(0.10) to 4^+ lvl at 2505.753 keV	k	Ens13c**
*60Co(B-)60Ni	But see their 137Cs(B-) !	h	AHW *W
*60Ni(3He,t)60Cui	CDE=9454(6) Q=-8690(6); rclbtn +5 keV for 58Ni(p,n)58Cui from Ame*1961	h	MMC123**
*60Ni(3He,t)60Cui	With a 3 keV calibr. corr. for 58Ni(p,n)58Cui	h	AHW944*W
*60Cui(IT)60Cu	From 58Ni(3He,p)		AHW944*W

61Ca-u		20408#	859#				2				g	1.0	S-u212
61Sc-u		537#	644#				2				g	1.0	S-u211
61Ti-u		-17370	483	-17574#	322#	-.4D	D				GRT1	1.0	20Mi13,*
61Ti-u		-17574#	322#				2				g	1.0	S-u212
61V-u		-32750	960	-32396.471	252.197	.4o	o				GMT1	1.0	11Es06
61V-u		-32614	301	-32396.471	252.197	.7	-2-				GMT1	1.0	20Me06
61V-u		-31884	462	-32396.471	252.197	-1.1	-2-				GRT1	1.0	20Mi13
61V-u	ave	-32396.471	252.197				2						average
61Cr-u		-44500	400	-45621.869	2.000	-1.9	U				GT03	1.5	90Tu01
61Cr-u		-45910	300	-45621.869	2.000	.6	U				GT05	1.5	94Se12
61Cr-u		-45120	280	-45621.869	2.000	-1.2	U				GT06	1.5	98Ba.A
61Cr-u		-45679	107	-45621.869	2.000	.4	U				GGT1	1.5	04Ma.A
61Cr-u		-45634	176	-45621.869	2.000	.1	U				GLZ1	1.0	15Xu14
61Cr-u		-46248	548	-45621.869	2.000	1.1	U				KMT1	1.0	16Me07
61Cr-u		-45629	22	-45621.869	2.000	.3	U				GMR1	1.0	18Mo14
61Cr-85Rb.718		17713.1	2.0				2				GMA8	1.0	18Mo14
61Mn-u		-55370	930	-55547.458	2.500	-.1	Z				GA2	1.5	89Gi.A
61Mn-u		-55160	300	-55547.458	2.500	-.9	U				HT03	1.5	90Tu01
61Mn-u		-55540	280	-55547.458	2.500	-.0	U				HT05	1.5	94Se12
61Mn-u		-55320	270	-55547.458	2.500	-.6	U				HT06	1.5	98Ba.A
61Mn-39K1.564		1215.6	2.5				2				HMA8	1.0	12Na15
61Fe-39K1.564		-6490.7	2.8				2				HMA8	1.0	12Na15
C H3 N O2-61Ni		85373	14	85323.519	0.381	-.9	U				hR10	4.0	74De22
C5 H-61Ni		76810	10	76770.212	0.381	-1.0	U				hR10	4.0	74De22
61Ga-u		-50610	210	-50601.139	40.788	.0	Z					2.5	IMME
61Ga-u		-50654	59	-50601.139	40.788	.9	1	48	48	61Ga	HLZ1	1.0	11Tu09
61Ge-u		-36275#	322#				2				g	1.0	S-u211
61As-u		-18465#	322#				2				g	1.0	S-u211
60Ni H-61Ni		7539	14	7555.342	0.051	.3	U				hR10	4.0	74De22

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 61Ni-60Ni                       339        60          269.690     0.051     -.3   U                 hR10 4.0 74De22
 61Ni-58Ni H                  -12187        30       -12111.863     0.091      .6   U                 hR10 4.0 74De22
 61Ni-59Co                     -2220        30        -2138.705     0.221      .7   U                 hR10 4.0 74De22
 58Ni(a,n)61Zn                 -9810        30        -9526.367    15.900     9.5B  B                 hOak     64St01
 58Ni(6Li,t)61Zn               -4736        23        -4742.896    15.900     -.3R  R  q-q=    6.896   LAl     78Wo01
 59Co(3He,p)61Ni                9635        10         9634.439     0.206     -.1   U                 hMIT     67Sp09
 60Ni(n,g)61Ni                  7820.22      0.40      7820.104     0.048     -.3   U                 M        75Wi06,Z
 60Ni(n,g)61Ni                  7819.96      0.20      7820.104     0.048      .7   U                 MMMn     77Is01,Z
 60Ni(n,g)61Ni                  7820.02      0.20      7820.104     0.048      .4   U                 MILn     93Ha05,Z
 60Ni(n,g)61Ni                  7820.12      0.05      7820.104     0.048     -.3   Z                 hORn     02Ra.A
 60Ni(n,g)61Ni                  7820.11      0.05      7820.104     0.048     -.1  -1-                HORn     04Ra23
 60Ni(n,g)61Ni                  7820.06      0.16      7820.104     0.048      .3  -1-                MBdn     06Fi.A
 60Ni(d,p)61Ni                  5604         8         5595.538     0.048    -1.1   U                 hMIT     70An25
 60Ni(d,p)61Ni                  5596.1       1.3       5595.538     0.048     -.4   U                 hNDm     74Jo14
 60Ni(n,g)61Ni           ave    7820.106     0.048     7820.104     0.048     -.0   1   100  82  61Ni          average
 61Gai(p)60Zn                   3110        30                                      2                 H        87Ho.A
 61Fe(B-)61Co                   3827       100         3977.676     2.740     1.5   U                 h        67Eh02,*
 61Fe(B-)61Co                   3887       100         3977.676     2.740      .9   U                 h        67Gu06,*
 61Co(B-)61Ni                   1290        40         1323.850     0.790      .8   U                 h        56Nu02
 61Cu(B+)61Ni                   2227         5         2237.966     0.962     2.2   U                 h        50Ow03
 61Ni(p,n)61Cu                 -3024.0       4.       -3020.313     0.962      .9   U                 hOak     64Jo11,Z
 61Ni(3He,t)61Cui              -8630         7                                      2                 H        71Be29,*
 61Zn(B+)61Cu                   5400       200         5635.157    15.903     1.2   U                 h        59Cu86
 61Ga(B+)61Zn                   9255        50         9214.244    37.679     -.8   1    57  52  61Ga M        02We07
*61Ti-u                       Isomer mixture was corrected.                                           G        20Mi13**
*61Ti-u                       Trends from Mass Surface TMS suggest  61Ti   190 keV more bound         G        GAu212**
*61Fe(B-)61Co                 E-=2800(100) 2860(100) resp, to 3/2^- level at 1027.48 keV              k        Ens153**
*61Ni(3He,t)61Cui             Strongest fragment IT=6380(7); Q rebuilt with Ame*1964                  H        MMC129**
*                              ~ recalibration +5 keV for 58Ni(p,n)58Cui from Ame*1961                H        MMC123**
*61Ni(3He,t)61Cui             IT=6380(7) xs=55; IT=6398(7) xs=35                                      h        71Be29*W
*61Ni(3He,t)61Cui             average of (55) -8632(6), (35) -8583(6)                                 h        AHW930*W
*61Ni(3He,t)61Cui             With a 3 keV calibr. corr. for 58Ni(p,n)58Cui                           h        AHW944*W


 62Sc-u                         7848#      644#                                     2                 g    1.0 S-u212
 62Ti-u                       -14278       483       -13097#      429#        2.4D  D                 GRT1 1.0 20Mi13,*
 62Ti-u                       -13097#      429#                                     2                 g    1.0 S-u212
 62V-u                        -27204       451       -27067.443   283.724      .3  -2-                GMT1 1.0 20Me06
 62V-u                        -26978       365       -27067.443   283.724     -.2  -2-                GRT1 1.0 20Mi13
 62V-u                   ave  -27067.443   283.724                                  2                          average
 62Cr-u                       -42400       600       -43857.080     3.700    -1.6   U                 GT03 1.5 90Tu01
 62Cr-u                       -44200       400       -43857.080     3.700      .6   U                 GT05 1.5 94Se12
 62Cr-u                       -43100       350       -43857.080     3.700    -1.4   U                 GT06 1.5 98Ba.A
 62Cr-u                       -44026       118       -43857.080     3.700     1.0   U                 GGT1 1.5 04Ma.A
 62Cr-u                       -43897       526       -43857.080     3.700      .1   U                 KMT1 1.0 16Me07
 62Cr-u                       -43845        19       -43857.080     3.700     -.6   U                 GMR1 1.0 18Mo14
 62Cr-85Rb.729                 20448.2       3.7                                    2                 GMA8 1.0 18Mo14
 62Mn-u                       -51910       910       -52092.616     7.024     -.1   Z                  GA2 1.5 89Gi.A
 62Mn-u                       -51510       270       -52092.616     7.024    -1.4   U                 HT03 1.5 90Tu01
 62Mn-u                       -52030       280       -52092.616     7.024     -.1   U                 HT05 1.5 94Se12
 62Mn-u                       -51180       280       -52092.616     7.024    -2.2   U                 HT06 1.5 98Ba.A
 62Mnm-39K1.590                 5982.3       2.8                                    2                 HMA8 1.0 12Na15
 62Fe-39K1.590                 -5501.5       3.0                                    2                 HMA8 1.0 12Na15
 C5 H2-62Ni                    87299        10        87305.310     0.456      .2   U                 hR10 4.0 74De22
 C H4 N O2-62Ni                95859        12        95858.617     0.456     -.0   U                 hR10 4.0 74De22
 62Ge-u                       -45350       150       -45239#      150#         .3   Z                 h    2.5 IMME
 62Ge-u                       -45239#      150#                                     2                 g    1.0 S-u211
 62As-u                       -27160       320       -26216#      322#        1.2   Z                      2.5 IMME
 62As-u                       -26216#      322#                                     2                 g    1.0 S-u211
 62Cu-62Ni                      4250.05      0.61      4250.050     0.510      .0   Z                 hJY1 1.0 06Er03,G
 62Cu-62Ni                      4250.05      0.51                                   2                 HJY1 1.0 06Er03
 62Zn-62Ni                      5988.50      0.65      5988.606     0.477      .2   Z                 hJY1 1.0 06Er03,G
 62Zn-62Ni                      5988.49      0.58      5988.606     0.477      .2   1    68  68  62Zn HJY1 1.0 06Er03
 62Ga-62Ni                     15845.04      0.76     15844.886     0.510     -.2   Z                 hJY1 1.0 06Er03,G
 62Ga-62Ni                     15845.06      0.71     15844.886     0.510     -.2   1    52  52  62Ga HJY1 1.0 06Er03
 62Ga-62Zn                      9856.23      0.53      9856.280     0.404      .1   Z                 hJY1 1.0 06Er03,G
 62Ga-62Zn                      9856.21      0.45      9856.280     0.404      .2   1    81  48  62Ga HJY1 1.0 06Er03
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 62Ni-61Ni                       -2669      15      -2710.066     0.328    -.7  U                hR10 4.0 74De22
 62Ni-60Ni                       -2333      30      -2440.377     0.331    -.9  U                hR10 4.0 74De22
 62Ni(p,a)59Co                     342      10        347.453     0.366     .5  U                hMIT     64Sp12
 62Ni(p,a)59Co                     343.3     0.7      347.453     0.366    5.9B B                HNDm     74Jo14
 59Co(a,p)62Ni                    -346.5     2.3     -347.453     0.366    -.4  U                mNDm     74Jo14
 62Ni(18O,20Ne)60Fe                911      20        925.850     3.417     .7  U                hHei     84Ha31
 62Ni(d,a)60Co                    5611.2     2.4     5614.805     0.373    1.5  U                hNDm     74Jo14
 60Ni(t,p)62Ni                    9937      10       9934.036     0.309    -.3  U                hAld     71Da16
 60Ni(3He,p)62Cu                  5938      25       5956.548     0.567     .7  U                hMIT     67Sp09
 60Ni(3He,n)62Zn                  3580      30       3554.746     0.541    -.8  U                hOak     72Gr39
 62Ni(14C,15O)61Fe               -7921     100      -7661.666     2.688    2.6F F                hOrs     84De33,*
 62Ni(t,a)61Co                    8689      20       8676.634     0.731    -.6  U                hLAl     66Bl15
 61Ni(n,g)62Ni                   10596.2     1.5    10595.729     0.306    -.3 -1-                        70Fa06
 61Ni(n,g)62Ni                   10595.8     0.7    10595.729     0.306    -.1 -1-               m        75Wi06,Z
 61Ni(n,g)62Ni                   10595.6     0.4    10595.729     0.306     .3 -1-               MBdn     06Fi.A
 61Ni(d,p)62Ni                    8379       8       8371.163     0.306   -1.0  U                hMIT     64Sp12
 61Ni(d,p)62Ni                    8369      15       8371.163     0.306     .1  U                hAld     67Te02
 62Ni(d,t)61Ni                   -4340.6     1.3    -4338.499     0.306    1.6 -1-                NDm     74Jo14
 61Ni(n,g)62Ni               ave 10595.814   0.327  10595.729     0.306    -.3  1    87  69  62Ni         average
 62Mnm(IT)62Mn                     343       6                                  3                K        15Ga38,*
 62Fe(B-)62Co                     3000     200       2546.343    18.783   -2.3  U                h        75Fr16
 62Co(B-)62Ni                     5195      30       5322.040    18.570    4.2C C                h        57Ga15,*
 62Ni(t,3He)62Co                  -5350     50      -5303.448    18.570     .9 -2-               H        72Ba31,W
 62Ni(t,3He)62Co                  -5296     20      -5303.448    18.570    -.4 -2-                LAl     76Aj03
 62Ni(t,3He)62Co             ave -5303.448  18.570                              2                         average
 62Cu(B+)62Ni                     3932      10       3958.897     0.475    2.7  U                H        54Nu27
 62Cu(B+)62Ni                     3942      10       3958.897     0.475    1.7  U                H        64Sa32
 62Cu(B+)62Ni                     3956       7       3958.897     0.475     .4  U                H        67An01
 62Ni(p,n)62Cu                   -4733      10      -4741.244     0.475    -.8  U                HBar     61Ri02
 62Ni(p,n)62Cu                   -4734.8    10.     -4741.244     0.475    -.6  U                HRic     66Ri09
 62Ni(3He,t)62Cui                -8591       6                                  2                H        71Be29,*
 62Zn(B+)62Cu                     1682      10       1619.455     0.651   -6.3B B                         50Ha65
 62Zn(B+)62Cu                     1697      10       1619.455     0.651   -7.8B B                         54Nu27
 62Ga(B+)62Zn                     9171      26       9181.067     0.376     .4  U                HANB     79Da04
*62Ti-u                         Trends from Mass Surface TMS suggest  62Ti  1200 keV less bound      G        GAu212**
*62Cu-62Ni                      From freq. ratio 1.0000686291(99), average of 2 measurements; a systematih    GAu066*G
*                                ~ error 6.5e-9 has been added to each. Resulting M=-62787.13(0.83) keV  h    GAu066*G
*62Zn-62Ni                      From freq. ratio 1.0000967014(105), average of 2 measurements; a systemath    GAu066*G
*                                ~ error 6.5e-9 has been added to each. Resulting M=-61167.77(0.85) keV  h    GAu066*G
*62Ga-62Ni                      From freq. ratio 1.0002558631(122), average of 3 measurements; a systemath    GAu066*G
*                                ~ error 6.5e-9 has been added to each. Resulting M=-51986.47(0.92) keV  h    GAu066*G
*62Ga-62Zn                      From freq. ratio 1.0001591415(86), average of 3 measurements; a systematih    GAu066*G
*                                ~ error 6.5e-9 has been added to each. Resulting Q+=9181.02(0.49) keV   h    GAu066*G
*62Ni(14C,15O)61Fe              F : not unambiguously gs transition                                  h        84De33**
*62Mnm(IT)62Mn                  Ex=418(2) -- 72(+8--3)                                               K        GAu15c**
*62Co(B-)62Ni                   E-=5217(30) from 62Com at 22(5) keV                                  g        Nub211**
*62Ni(t,3He)62Co                B : Derived from vague data on 64Ni(d,a)                             m        AHW   *W
*62Ni(3He,t)62Cui               CDE=9360(6) Q=-8596(6); rclbtn +5 keV for 58Ni(p,n)58Cui from Ame*1961  h     MMC124**
*62Ni(3He,t)62Cui               With a 3 keV calibr. corr. for 58Ni(p,n)58Cui                        h        AHW944*W


 63Sc-u                          14031#    751#                                 2                g    1.0 S-u212
 63Ti-u                          -6291#    537#                                 2                g    1.0 S-u212
 63V-u                          -23339     365                                  2                GRT1 1.0 20Mi13,G
 63Cr-u                         -38819     462     -38839.000    78.000    -.0  U                GGT1 1.5 04Ma.A
 63Cr-u                         -37870     700     -38839.000    78.000   -1.4o o                KMT1 1.0 11Es06
 63Cr-u                         -38583     462     -38839.000    78.000    -.6  U                GMT1 1.0 16Me07
 63Cr-u                         -38839      78                                  2                GMR1 1.0 18Mo14
 63Mn-u                         -48630    1610     -50335.327     4.000    -.7  Z                 GA2 1.5 89Gi.A
 63Mn-u                         -49300     400     -50335.327     4.000   -1.7  U                HT03 1.5 90Tu01
 63Mn-u                         -50190     300     -50335.327     4.000    -.3  U                HT05 1.5 94Se12
 63Mn-u                         -49600     290     -50335.327     4.000   -1.7  U                HT06 1.5 98Ba.A
 63Mn-u                         -50500     107     -50335.327     4.000    1.0o o                HGT1 1.5 04Ma.A
 63Mn-u                         -50829     102     -50335.327     4.000    1.9  U                kGT2 2.5 08Kn.A
 63Mn-39K1.615                    8278.7     4.0                                2                HMA8 1.0 12Na15
 63Fe-u                         -59560     770     -59727.301     4.619    -.1  Z                 GA2 1.5 89Gi.A
 63Fe-u                         -59190     240     -59727.301     4.619   -1.5  U                HT03 1.5 90Tu01
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63Fe-u		-59570	290	-59727.301	4.619	-.4	U				HT05	1.5	94Se12
63Fe-u		-58990	300	-59727.301	4.619	-1.6	U				HT06	1.5	98Ba.A
63Fe-39K1.615		-1114.5	6.1	-1113.274	4.619	.2	1	57	57	63Fe	HMA8	1.0	12Na15
63Fe-H C2 F2		-64354	10	-64358.657	4.619	-.5o	o				HMS1	1.0	08Bl05
63Fe-H C2 F2		-64353	10	-64358.657	4.619	-.6	1	21	21	63Fe	HMS1	1.0	10Fe01
63Fe-C 32S F		-30204	10	-30201.637	4.619	.2	1	21	21	63Fe	HMS1	1.0	10Fe01
C5 H3-63Cu		93930	4	93877.976	0.458	-3.3B	B				hR10	4.0	74De22
C4 H N-63Cu		81347	10	81301.917	0.458	-1.1	U				hR10	4.0	74De22
C4 13C H2-63Cu		89466	14	89407.780	0.458	-1.0	U				hR10	4.0	74De22
C2 H7 O2-63Cu		115064	16	115007.342	0.458	-.9	U				hR10	4.0	74De22
13C C H8 O N-63Cu		134404	18	134346.595	0.458	-.8	U				hR10	4.0	74De22
47Ti O-63Cu		17036	23	17074.992	0.460	.4	U				hR09	4.0	72De11
63Cu H2 O-81Sr		16962	14	16950.409	3.389	-.8	U				GRI1	1.0	18Ki21
63Ga-85Rb.741		4658.0	1.4				2				MMA8	1.0	07Gu09
C5 H2-63Ga.984		75382.6	6.7	75384.580	1.378	.3	U				HMS1	1.0	07Sc24
63Ge-u		-50360	210	-50372.000	40.000	-.0	Z				h	2.5	IMME
63Ge-u		-50372	40				2				HLZ1	1.0	11Tu02
63As-u		-35964#	215#				2				k	1.0	S-u168
63Se-u		-18089#	537#				2				g	1.0	S-u211
63Cu-62Ni		1193	35	1252.366	0.063	.4	U				hR10	4.0	74De22
63Cu-61Ni		-1449	30	-1457.700	0.333	-.1	U				hR10	4.0	74De22
63Cu(p,a)60Ni		3757	8	3757.430	0.313	.1	U				hMIT		64Sp12
63Cu(p,a)60Ni		3780	10	3757.430	0.313	-2.3	U				hMin		67Jo03
63Cu(p,a)60Ni		3754.9	1.5	3757.430	0.313	1.7	U				mNDm		76Jo01
60Ni(a,n)63Zn		-7970	40	-7906.216	1.558	1.6	U				hOak		64St01
60Ni(a,n)63Zn		-7910	20	-7906.216	1.558	.2	U				h		67Bi04
63Cu(d,a)61Ni		9376	30	9352.968	0.310	-.8	U				h		67Hj01
62Ni(n,g)63Ni		6838.04	0.20	6837.770	0.059	-1.4	-1-				mMMn		77Is01,Z
62Ni(n,g)63Ni		6837.88	0.18	6837.770	0.059	-.6	-1-				mILn		92Ha21,Z
62Ni(n,g)63Ni		6837.89	0.14	6837.770	0.059	-.9	-1-				MBdn		06Fi.A
62Ni(n,g)63Ni		6837.75	0.18	6837.770	0.059	.1	-1-				KJAn		12Os04
62Ni(d,p)63Ni		4620	6	4613.204	0.059	-1.1	U				hMIT		70An25
62Ni(d,p)63Ni		4614.0	1.1	4613.204	0.059	-.7	U				hNDm		74Jo14
62Ni(n,g)63Ni	ave	6837.884	0.085	6837.770	0.059	-1.3	1	48	34	63Ni			average
62Ni(p,g)63Cu		6119.2	1.5	6122.400	0.059	2.1	U				h		72Ki15
62Ni(p,g)63Cu		6122.30	0.08	6122.400	0.059	1.2	1	54	39	63Cu	mUtr		86De14,Z
63Cu(g,n)62Cu		-10833	17	-10863.643	0.479	-1.8	U				hPhi		60Ge01
63Co(B-)63Ni		3590	50	3661.339	18.570	1.4	1	14	14	63Co	H		69Ki.A
63Ni(B-)63Cu		65.87	0.15	66.977	0.015	7.4B	B				h		66Hs01
63Ni(B-)63Cu		66.946	0.020	66.977	0.015	1.5o	o				h		87He14,G
63Ni(B-)63Cu		66.945	0.004	66.977	0.015	7.9F	F				h		92Ka29,*
63Ni(B-)63Cu		66.9459	0.0054	66.977	0.015	5.7F	F				M		93Oh02,*
63Ni(B-)63Cu		66.980	0.015	66.977	0.015	-.2	1	98	55	63Ni	M		99Ho09
63Zn(B+)63Cu		3352	20	3366.439	1.545	.7	U				h		61Cu02
63Zn(B+)63Cu		3390	30	3366.439	1.545	-.8	U				h		61Va08
63Cu(p,n)63Zn		-4146.5	4.	-4148.786	1.545	-.6	-1-				Ric		55Br16
63Cu(p,n)63Zn		-4139.5	8.	-4148.786	1.545	-1.2	U				mOak		55Ki28,Z
63Cu(p,n)63Zn		-4150.1	4.4	-4148.786	1.545	.3	-1-				Tkm		63Ok01
63Cu(p,n)63Zn	ave	-4148.131	2.913	-4148.786	1.545	-.2	1	28	27	63Zn			average
63Cu(3He,t)63Zni		-8875	6				2				H		71Be29,*
63Ga(B+)63Zn		5520	100	5666.329	2.033	1.5	U				M		72Fi.A
*63V-u		Trends from Mass Surface TMS suggest 63V 100 keV less bound									g		GAu212*G
*63Ni(B-)63Cu		Updated in 93Oh02											GAu955*G
*63Ni(B-)63Cu		F : excitation of atomic electron not taken into account									M		99Ho09**
*63Ni(B-)63Cu		There may be a correction (few 10eV) as in 3H-3He											GAu929*G
*63Ni(B-)63Cu		At most few eV: outer electrons, I would think											AHW932*G
*63Cu(3He,t)63Zni		CDE=9644(6) Q=-8880(6); rclbtn +5 keV for 58Ni(p,n)58Cui from Ame*1961									h		MMC124**
*63Cu(3He,t)63Zni		With a 3 keV calibr. corr. for 58Ni(p,n)58Cui									h		AHW944*W
64Ti-u		-1589#	644#				2				g	1.0	S-u212
64V-u		-17917	548	-17520#	429#	.7D	D				GRT1	1.0	20Mi13,*
64V-u		-17520#	429#				2				g	1.0	S-u212
64Cr-u		-35920	320	-36114.000	322.000	-.2	Z				k	2.5	S-u127
64Cr-u		-35942	472	-36114.000	322.000	-.4o	o				GMT1	1.0	16Me07
64Cr-u		-36114	322				2				GMT1	1.0	20Me06
64Mn-u		-45340	350	-46150.631	3.800	-1.5	U				HT03	1.5	90Tu01,*

64Mn-u		-46340	350	-46150.631	3.800	.4	U				HT05	1.5	94Se12,*
64Mn-u		-45664	306	-46150.631	3.800	-1.1	U				HT06	1.5	98Ba.A,*
64Mn-u		-46280	129	-46150.631	3.800	.7	U				HGT1	1.5	04Ma.A,G
64Mn-85Rb.753		20271.7	3.8				2				HMA8	1.0	12Na15
64Fe-u		-60930	1380	-59012.238	5.386	.9	Z				GA2	1.5	89Gi.A
64Fe-u		-58600	400	-59012.238	5.386	-.7	U				HT03	1.5	90Tu01
64Fe-u		-59130	300	-59012.238	5.386	.3	U				HT05	1.5	94Se12
64Fe-u		-58500	350	-59012.238	5.386	-1.0	U				HT06	1.5	98Ba.A
64Fe-u		-59012.2	5.3	-59012.238	5.386	-.0o	o				HMS1	1.0	08Bl05
H C2 F2-64Fe.984		62699.4	5.3				2				hMS1	1.0	10Fe01
64Com-u		-64075.5	4.5	-64075.204	4.356	.1o	o				HMS1	1.0	08Bl05
H C2 F2-64Com.984		67681.6	4.6	67681.359	4.286	-.1	1	87	87	64Com	hMS1	1.0	10Fe01,G
64Com-32S O2		-25974	12	-25975.616	4.356	-.1	1	13	13	64Com	HMS1	1.0	10Fe01
C5 H4-64Ni		103278	10	103333.900	0.497	1.4	U				hR10	4.0	74De22
C4 13C H3-64Ni		98809	12	98863.703	0.497	1.1	U				hR10	4.0	74De22
C4 H2 N-64Ni		90703	16	90757.840	0.497	.9	U				hR10	4.0	74De22
64Ni-85Rb.753		-5609.2	1.4	-5611.441	0.497	-1.6	1	13	13	64Ni	MMA8	1.0	07Gu09
64Zn-85Rb.753		-4430.1	8.4	-4435.893	0.691	-.7	U				HMA8	1.0	07Ke09
64Ga-85Rb.753		3261.3	2.5	3262.697	1.534	.6	1	38	38	64Ga	MMA8	1.0	07Gu09
C5 H2-64Ga.969		76851.5	2.6	76851.748	1.486	.1	1	33	33	64Ga	HMS1	1.0	07Sc24
64Ge-u		-57090	690	-58310.088	4.000	-1.2	U				MGA6	1.5	02Li24
64Ge-u		-58347	34	-58310.088	4.000	1.1	Z				hCP1	1.0	03Sh.A
H 32S O2-64Ge H		20210.5	4.0				2				HMS1	1.0	07Sc24
64Ge-85Rb.753		8070	43	8112.243	4.000	1.0	U				gMS1	1.0	19Sc11
64Se-u		-28835#	537#				2				g	1.0	S-u211
64Ga-64Zn		7698.5	4.1	7698.590	1.592	.0	1	15	13	64Ga	kCP1	1.0	07Cl01
64Ge-64Zn		12517	33	12548.136	4.059	.9	U				HCP1	1.0	07Cl01
64Ni-63Cu		-1523	30	-1630.891	0.219	-.9	U				hR10	4.0	74De22
64Ga-63Ga		-2730	150	-2453.829	2.077	.7	U				hCR1	2.5	89Sh10
64Ni-62Ni		-352	25	-378.525	0.227	-.3	U				hR10	4.0	74De22
64Ni(3He,8B)59Mn		-19610	30	-19564.055	2.576	1.5	U				HMSU		76Ka24,G
64Ni(3He,7Be)60Fe		-6511	10	-6523.638	3.423	-1.3R	R	q-q=	12.638		MSU		76St11
64Ni(a,7Be)61Fe		-21523	20	-21522.613	2.650	.0	U				HTex		77Co08
64Ni(14C,17O)61Fe		-4609	100	-4349.874	2.649	2.6	U				hOrs		84Be.A,*
64Ni(p,a)61Co		663.2	0.7				2				NDm		74Jo14
64Zn(p,a)61Cu		830	15	844.100	0.700	.9	U				h		67Br10
64Zn(p,a)61Cu		830	10	844.100	0.700	1.4	U				hMin		67Jo03
64Zn(p,a)61Cu		844.1	0.7				2				NDm		76Jo01
64Zn(3He,6He)61Zn		-12331	23	-12315.988	15.887	.7	-1-				MSU		79We02
64Zn(3He,6He)61Zn		-12309.6	23.	-12315.988	15.887	-.3	-1-	q-q=	6.388		H		58Ni+3
64Zn(3He,6He)61Zn	ave	-12320.300	16.263	-12315.988	15.887	.3	1	95	95	61Zn			average
64Ni(11B,13N)62Fe		-4930	70	-4898.750	2.845	.4	U				hTex		77Co08
64Ni(14C,16O)62Fe		-501	40	-464.082	2.833	.9	U				HOrs		81Be40
64Ni(18O,20Ne)62Fe		-1915	50	-1961.861	2.833	-.9	U				HCan		76Hi14
64Ni(18O,20Ne)62Fe		-1920	21	-1961.861	2.833	-2.0	U				HHei		77Bh03,*
64Ni(18O,20Ne)62Fe		-1947	26	-1961.861	2.833	-.6	U				HHei		84Ha31
64Ni(d,a)62Co		5190	20	5036.173	18.571	-7.7B	B				h		72Ba31
62Ni(t,p)64Ni		7999	20	8013.434	0.212	.7	U				hAld		71Da16
62Ni(3He,p)64Cu		6299	25	6320.226	0.063	.8	U				hMIT		67Sp09
62Ni(3He,n)64Zn		6118	12	6117.479	0.645	-.0	U				hOak		72Gr39
64Zn(d,a)62Cu		7508	15	7494.332	0.801	-.9	U				mMIT		67Sp09
64Zn(p,t)62Zn		-12493	10	-12496.769	0.783	-.4	U				HBld		72Fa08
64Ni(14C,15O)63Fe		-11387	60	-11299.134	4.355	1.5	U				hOrs		82De.A,*
64Ni(34S,35Ar)63Fe		-17931	260	-18347.805	4.380	-1.6	U				HHei		83Wi.B,G
64Ni(t,a)63Co		7266	20	7277.414	18.570	.6	1	86	86	63Co	LAl		66Bl15
63Ni(n,g)64Ni		9657.32	0.4	9657.460	0.204	.4	-1-				H		75Wi06,Z
63Ni(n,g)64Ni		9657.58	0.24	9657.460	0.204	-.5	-1-				mILn		92Ha21,G
63Ni(n,g)64Ni	ave	9657.511	0.206	9657.460	0.204	-.2	1	98	87	64Ni			average
63Cu(n,g)64Cu		7916.07	0.12	7915.868	0.024	-1.7	U				GBNn		83De28,Z
63Cu(n,g)64Cu		7915.52	0.08	7915.868	0.024	4.4B	B				H		02Bo11
63Cu(n,g)64Cu		7916.14	0.16	7915.868	0.024	-1.7	U				GBdn		06Fi.A
63Cu(n,g)64Cu		7915.867	0.024	7915.868	0.024	.0	1	100	91	64Cu	G		16Te05
63Cu(d,p)64Cu		5697	8	5691.302	0.024	-.7	U				hMIT		64Sp12
64Zn(n,d)63Cu		-5520	50	-5488.554	0.645	.6	U				h		65Wa14
64Zn(d,t)63Zn		-5604.9	1.7	-5604.677	1.477	.1	1	76	73	63Zn	NDm		76Jo01
64As(p)63Ge		100#	200#				3				k		S-u168,G
64Co(B-)64Ni		7000	500	7306.592	20.000	.6	U				h		69Wa15

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 64Co(B-)64Ni                       7000        400         7306.592    20.000      .8   U                h        74Ra31
 64Ni(t,3He)64Co                   -7288         20                                       2                LAl      72Fl17
 64Cu(B+)64Ni                       1673.4       1.0        1674.616     0.205     1.2   U                m        83Ch47
 64Ni(p,n)64Cu                     -2458          6        -2456.963     0.205      .2   U                h        61Va19
 64Ni(p,n)64Cu                     -2458.22      0.31      -2456.963     0.205     4.1B  B                HPTB     92Bo02,Z
 64Cu(B-)64Zn                        577.8       1.0         579.600     0.645     1.8   1    42  32  64Zn          83Ch47
 64Ga(B+)64Zn                       7072         30         7171.191     1.482     3.3B  B                h        60Ja07
 64Zn(p,n)64Ga                     -7951          4        -7953.538     1.482     -.6   1    14  12  64Ga  Tex     72Da.A
 64Zn(3He,t)64Ga                   -7206          8        -7189.783     1.482     2.0   U                hMSU     74Ro16,*
 64Zn(3He,t)64Gai                  -9141         17        -9096.820     2.507     2.6   U                HMIT     70Hi06
 64Zn(3He,t)64Gai                  -9110          6        -9096.820     2.507     2.2   1    17  17  64GaiH       71Be29,*
 64Zn(3He,t)64Gai                  -9111.1       2.3       -9096.820     2.507     6.2   Z                hMSU     74Ro16,W
 64Gai(IT)64Ga                      1905.1       2.3        1907.037     2.156      .8   1    88  83  64GaiH       74Ro16,G
 64Ge(B+)64Ga                       4410        250         4517.324     3.990      .4   U                M        73Da01,*
*64V-u                            Trends from Mass Surface TMS suggest  64V    370 keV less bound          G        GAu212**
*64Mn-u                           Original --45270(350) uu or M-A=-42170(330) keV                           M        GAu992**
*64Mn-u                           Original --46270(350) uu or M-A=-43100(330) keV                           M        GAu992**
*64Mn-u                           M-A=-42430(280) keV for mixture gs+m at 174.1(0.5) (4^+) keV              g        Nub211**
*64Mn-u                           Isomer taken into account        {BPf}                                    h        04Ma.A*G
*H C2 F2-64Com.984                assumption about isomer is weak. 64Com added to solve conflict with 72Fl1h        GAu09b*G
*64Ni(3He,8B)59Mn                 Error seems too optimistic, from Fig.1 I would guess 47 keV more realistih        GAu122*G
*64Ni(14C,17O)61Fe                Cited in ref. and confirmed in PrvCom sep 88                              h        84De33**
*64Ni(18O,20Ne)62Fe               Q-Q(62Ni(18O,20Ne))=-2843(20), Q(62)=923(4) keV                                    AHW   **
*64Ni(14C,15O)63Fe                Not unambiguously ground-state transition                                 h        84De33*G
*64Ni(14C,15O)63Fe                Original --11743(60) reinterpreted as (3/2^-) 356.2 level in 63Fe         H        GAu114**
*64Ni(34S,35Ar)63Fe               No action yet, to be worked out                                                    GAu   *G
*63Ni(n,g)64Ni                    Original 9657.64 recalib : change in value 35Cl(n,g) calibrator           m        AHW039*G
*64As(p)63Ge                      T=40(30)ms -> S(p)>-100  Qp<100                                           k        Nub16b*G
*64Zn(3He,t)64Ga                  M-A=-58819(8); Q rebuilt with Ame*1971                                    H        GAu124**
*64Zn(3He,t)64Ga                  Agrees poorly with (p,n) The value via 64Gai differs in other direction  h        AHW048*W
*64Zn(3He,t)64Gai                 CDE=9879(6) Q=-9115(6); rclbtn +5 keV for 58Ni(p,n)58Cui from Ame*1961   H        MMC124**
*64Zn(3He,t)64Gai                 With a 3 keV calibr. corr. for 58Ni(p,n)58Cui                             h        AHW944*W
*64Zn(3He,t)64Gai                 IT=1905.1(2.3); Q rebuilt with Ame1971 and their 64Ga; do not use, see neh        MMC124*W
*64Gai(IT)64Ga                    Calibrated on their 323.0 keV, now NDS=322.99(0.08)                       h        GAu124*G
*64Ge(B+)64Ga                     E+=2960(250) to (1^+) level at 427.03 keV                                 H        Ens073**


 65Ti-u                             5593#       751#                                      2                g    1.0 S-u212
 65V-u                            -13001#       537#                                      2                g    1.0 S-u20c
 65Cr-u                           -29286        837       -30392#       215#      -1.3D  D                GMT1 1.0 20Me06,*
 65Cr-u                           -30392#       215#                                      2                g    1.0 S-u212
 65Mn-u                           -43900        600       -43980.251     4.000     -.1   U                HT05 1.5 94Se12
 65Mn-u                           -43500        500       -43980.251     4.000     -.6   U                HT06 1.5 98Ba.A
 65Mn-u                           -43790        330       -43980.251     4.000     -.6   U                HMT1 1.0 11Es06
 65Mn-85Rb.765                     23500.6       4.0                                      2                HMA8 1.0 12Na15
 65Fe-u                           -56090        940       -54984.676     5.488      .8   Z                 GA2 1.5 89Gi.A
 65Fe-u                           -54680        300       -54984.676     5.488     -.7   U                kT03 1.5 90Tu01,*
 65Fe-u                           -55270        320       -54984.676     5.488      .6   U                kT05 1.5 94Se12,*
 65Fe-u                           -54290        380       -54984.676     5.488    -1.2   U                HT06 1.5 98Ba.A,*
 65Fe-u                           -54985.9       5.4      -54984.676     5.488      .2o  o                kMS1 1.0 08Bl05,*
 O2-65Fe.492                       16881.7       2.7                                      2                gMS1 1.0 10Fe01,*
 65Co-u                           -63537.9       2.3      -63537.928     2.236     -.0o  o                HMS1 1.0 08Bl05
 O2-65Co.492                       21089.9       1.1                                      2                HMS1 1.0 10Fe01
 65Ni-85Rb.765                     -2438.0       2.4       -2434.564     0.519     1.4   U                HMA8 1.0 07Gu09
 C5 H5-65Cu                       111384          4       111335.684     0.691    -3.0B  B                hR10 4.0 74De22
 C4 H3 N-65Cu                      98800          8        98759.624     0.691    -1.3   U                hR10 4.0 74De22
 C4 13C H4-65Cu                   106921         18       106865.487     0.691     -.8   U                hR10 4.0 74De22
 49Ti O-65Cu                       15030         10        14989.534     0.694    -1.0   U                hR09 4.0 72De11
 65Cu-85Rb.765                     -4730.6       1.2       -4729.673     0.691      .8   1    33  33  65Cu MMA8 1.0 07Gu09
 65Ga-85Rb.765                       215.4       1.5         215.276     0.849     -.1   1    32  32  65Ga MMA8 1.0 07Gu09
 65Ge-u                           -60080        270       -60631.864     2.324    -1.4   U                MGA6 1.5 02Li24
 C5 H2-65Ge.939                    72585.2       4.0       72583.384     2.182     -.5  -1-               HMS1 1.0 07Sc24,*
 C5 H5-65Ge.985                    98847.2       4.2       98847.546     2.289      .1  -1-               HMS1 1.0 07Sc24,*
 C5 H2-65Ge.939               ave  72584.173     2.897     72583.384     2.182     -.3   1    57  57  65Ge          average
 65Ge H-85Rb.776                   15634.4       6.2       15644.335     2.324     1.6   1    14  14  65Ge HMS1 1.0 07Sc24,*
 65Ge O H-85Rb.965                 27237.1       4.3       27230.690     2.324    -1.5   1    29  29  65Ge gMS1 1.0 19Sc11
 65As-u                           -50389         91                                       2                HLZ1 1.0 11Tu02
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65Se-u		-35448#	322#				2				k	1.0	S-u169
65Br-u		-17703#	537#				2				g	1.0	S-u211
64Zn H-65Cu		9171	16	9177.332	0.413	.4	U				GRI1	1.0	18Ki21
65Zn-65Cu		1459	13	1451.059	0.382	-.6	U				GRI1	1.0	18Ki21
65Ga-65Cu		4945.2	2.1	4944.949	0.737	-.1	1	12	9	65Ga	GRI1	1.0	18Ki21
65Ge-65Cu		11592	22	11578.661	2.424	-.6	U				GRI1	1.0	18Ki21
65Cu-64Ni		-275	40	-176.752	0.736	.6	U				hR10	4.0	74De22
65Cu-63Cu		-1784	10	-1807.643	0.707	-.6	U				hR10	4.0	74De22
65Cu(p,a)62Ni		4345	8	4346.818	0.659	.2	U				hMIT		64Sp12
65Cu(p,a)62Ni		4340	10	4346.818	0.659	.7	U				hMin		67Jo03
65Cu(p,a)62Ni		4344.6	1.8	4346.818	0.659	1.2	1	13	10	65Cu	NDm		76Jo01
62Ni(a,n)65Zn		-6510	40	-6480.817	0.650	.7	U				hOak		64St01
65Cu(d,a)63Ni		9012	40	8960.021	0.659	-1.3	U				h		67Hj01
63Cu(t,p)65Cu		9351	25	9344.649	0.659	-.3	U				hAld		66Bj02
64Ni(n,g)65Ni		6097.86	0.20	6098.081	0.138	1.1	-2-				mMMn		77Is01,Z
64Ni(n,g)65Ni		6098.28	0.19	6098.081	0.138	-1.0	-2-				MBdn		06Fi.A
64Ni(d,p)65Ni		3876	6	3873.514	0.138	-.4	U				hMIT		64Sp12
64Ni(d,p)65Ni		3867	15	3873.514	0.138	.4	U				hAld		67Te02
64Ni(d,p)65Ni		3870	5	3873.514	0.138	.7	U				hMIT		70An25
64Ni(n,g)65Ni	ave	6098.081	0.138				2						average
65Cu(t,a)64Ni		12352	11	12360.251	0.686	.8	U				h		72He23
65Cu(g,n)64Cu		-9896	28	-9910.577	0.659	-.5	U				hPhi		60Ge01
65Cu(d,t)64Cu		-3650	60	-3653.347	0.659	-.1	U				hANL		60Ze02
64Zn(n,g)65Zn		7979.3	0.8	7979.325	0.168	.0	U				M		71Ot01,Z
64Zn(n,g)65Zn		7979.2	0.5	7979.325	0.168	.2	U				M		75De.A,Z
64Zn(n,g)65Zn		7979.28	0.17	7979.325	0.168	.3	1	98	54	65Zn	MBdn		06Fi.A
64Zn(d,p)65Zn		5758	10	5754.759	0.168	-.3	U				hANL		67Vo05
64Zn(p,g)65Ga		3942.0	1.0	3942.440	0.615	.4	-1-				m		75We24,Z
64Zn(p,g)65Ga		3943.0	1.0	3942.440	0.615	-.6	-1-						87Vi01
64Zn(p,g)65Ga	ave	3942.500	0.707	3942.440	0.615	-.1	1	76	59	65Ga			average
65Ge(ep)64Zn		2300	100	2236.823	2.258	-.6	U				HChR		81Ha44
65Asi(p)64Ge		3603	30	3575.000	10.000	-.9	U				G		93Ba12
65Asi(p)64Ge		3564	20	3575.000	10.000	.5o	o				G		11Ro47,*
65Asi(p)64Ge		3575	10				3				G		14Ro14
65Ni(B-)65Cu		2140	10	2137.881	0.700	-.2	U				h		64Fr04
65Zn(B+)65Cu		1347	2	1351.653	0.356	2.3	U				h		49Ma57
65Zn(B+)65Cu		1347	2	1351.653	0.356	2.3	U				h		53Ba82
65Zn(B+)65Cu		1347	3	1351.653	0.356	1.6	U				h		53Pe14
65Zn(B+)65Cu		1349	3	1351.653	0.356	.9	U				h		53Sa26
65Zn(B+)65Cu		1342	4	1351.653	0.356	2.4	U				h		53Yu04
65Zn(B+)65Cu		1346	4	1351.653	0.356	1.4	U				h		56Av28
65Cu(p,n)65Zn		-2131.4	1.5	-2134.000	0.356	-1.7	U				h		56Ma14,Z
65Cu(p,n)65Zn		-2135.8	2.5	-2134.000	0.356	.7	U				h		57Be44,Z
65Cu(p,n)65Zn		-2135.3	1.8	-2134.000	0.356	.7	U				hTkm		63Ok01
65Cu(p,n)65Zn		-2135.6	1.7	-2134.000	0.356	.9	U				hOak		64Jo11,Z
65Cu(p,n)65Zn		-2134.6	0.8	-2134.000	0.356	.7	-1-				mYal		69Ov01,Z
65Cu(p,n)65Zn		-2133.55	0.43	-2134.000	0.356	-1.0	-1-				PTB		89Sc24
65Cu(p,n)65Zn	ave	-2133.779	0.377	-2134.000	0.356	-.6	1	89	46	65Zn			average
65Ga(B+)65Zn		3277	30	3254.538	0.630	-.7	U				h		57Da07,W
65Ge(B+)65Ga		5220	400	6179.263	2.305	2.4	U				h		58Po79,W
*65Cr-u		Trends from Mass Surface TMS suggest 65Cr 780 keV more bound									G		GAu212**
*65Fe-u		M-A=-50740(250) keV for mixture gs+m at 393.7(0.2) keV									g		Nub211**
*65Fe-u		M-A=-51290(280) keV for mixture gs+m at 393.7(0.2) keV									g		Nub211**
*65Fe-u		M-A=-50370(330) keV for mixture gs+m at 393.7(0.2) keV and									g		Nub211**
*		~ assuming ratio R=0.13(6), from half-life=430 ns and TOF=1 us									M		GAu992**
*65Fe-u		Uncertainty as published is erroneous, see original frequency ratio									h		GAu09b*G
*65Fe-u		D_M=-54988.9(7.1) uu to gs, D_M=-54557.0(8.4) to 65Fem at 393.7 keV									gMS1		Nub211**
*65Fe-u		M-A=-51221.8(6.6) keV to gs, M-A=-50819.5(7.8) keV									kMS1		08Bl05*G
*O2-65Fe.492		D_M=16883.6(3.6) uu to gs, D_M=16671.2(4.2) to 65Fem at 393.7 keV									gMS1		Nub211**
*O2-65Fe.492		M-A=-51221.5(6.8)keV to gs, M-A=-50819.3(8.0)									kMS1		10Fe01**
*C5 H2-65Ge.939		For original doublet C5 H2-(65Ge H)0.939, ~ D_M=65237.5(4.0) uu									H		GAu095**
*		~ 65237.5(4.0)+7825.032*.939=72585.20									h		GAu095*G
*C5 H5-65Ge.985		For original doublet C5 H5-(65Ge H)0.985, ~ D_M=91139.5(4.2) uu									H		GAu095**
*		~ 91139.5(4.2)+7825.032*.985=98847.157									h		GAu095*G
*65Ge H-85Rb.776		Combining their 3 results yields a precision for 65Ge of 2.4 keV, while									H		GAu095**
*		~ their Table III gives 1.2 keV									H		GAu095**
*65Asi(p)64Ge		And E(p)=2620(30) to 901.7 level									H		11Ro47**

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*65Ga(B+)65Zn                  Combining two E+ with three level energies                              AHW   *W
*65Ge(B+)65Ga                  E+ to several levels below 900                                          AHW   *W


 66V-u                           -6763#     537#                                2                 g    1.0 S-u20c
 66Cr-u                         -26989#     322#                                2                 g    1.0 S-u20c
 66Mn-u                         -39860      860      -39453.167    12.000      .5   U                 HMT1 1.0 11Es06,*
 66Mn-85Rb.776                   28998       12                                 2                 KMA8 1.0 12Na15
 66Mn-u                         -38948      215      -39453.167    12.000     -.9   Z                 k    2.5 S-u169
 66Fe-u                         -52300      700      -53750.041     4.400    -1.4   U                 HT03 1.5 90Tu01
 66Fe-u                         -54020      350      -53750.041     4.400      .5   U                 HT05 1.5 94Se12
 66Fe-u                         -52800      300      -53750.041     4.400    -2.1   U                 HT06 1.5 98Ba.A
 66Fe-u                         -53935      150      -53750.041     4.400      .8   U                 HGT1 1.5 04Ma.A
 66Fe-28Si F2                   -27482.9      4.4                               2                 HMS1 1.0 10Fe01
 66Co-u                         -61840      750      -60557.057    15.000     1.1   Z                  GA2 1.5 89Gi.A
 66Co-u                         -60470      300      -60557.057    15.000     -.2   U                 HT05 1.5 94Se12,*
 66Co-u                         -59870      290      -60557.057    15.000    -1.6   U                 HT06 1.5 98Ba.A,*
 66Co-O C F2                    -52278       15      -52278.000    15.000     .0o   o                 HMS1 1.0 08Bl05
 66Co-O C F2                    -52278       15                                 2                 HMS1 1.0 10Fe01
 66Ni-85Rb.776                   -2409.5      1.5                               2                 MMA8 1.0 07Gu09
 66Cu-85Rb.776                   -2680.6      2.2     -2680.029     0.696      .3   1    10  10  66Cu MMA8 1.0 07Gu09
 C5 H5-66Ge.970                 103278.9      2.5                               2                 HMS1 1.0 07Sc24,*
 66As-u                         -55290      730      -55851.222     6.100     -.5   U                 HGA6 1.5 02Li24
 66As-85Rb.776                   12607       32       12599.945     6.100     -.2   U                 HMS1 1.0 07Sc24
 66As O-85Rb.965                 24186.3      6.1                               2                 gMS1 1.0 19Sc11
 66Se-u                         -44724#     215#                                2                 k    1.0 S-u169
 66Br-u                         -25303#     429#                                2                 g    1.0 S-u20b
 65Ge H-66Zn                     21182       24       21159.529     2.457     -.9   U                 GRI1 1.0 18Ki21
 66Ga-66Zn                        5528       11        5556.128     0.859     2.6F  F                 GRI1 1.0 18Ki21,*
 66Ge-66Zn                        7824       14        7828.485     2.698      .3   U                 GRI1 1.0 18Ki21
 66Zn(p,a)63Cu                    1544.3      0.8      1544.695     0.688      .5   1    74  66  66Zn  NDm      76Jo01
 63Cu(a,n)66Ga                   -7670       30       -7502.542     1.055     5.6B  B                 hOak     64St01
 64Ni(t,p)66Ni                    6559       25        6568.099     1.472      .4   U                 MAld     71Da16
 64Zn(t,p)66Zn                   10582       15       10556.051     0.914    -1.7   U                 hAld     72Hu06
 65Cu(n,g)66Cu                    7065.80     0.12     7065.930     0.094     1.1  -1-                mBNn     83De29,Z
 65Cu(n,g)66Cu                    7066.13     0.15     7065.930     0.094    -1.3  -1-                MBdn     06Fi.A
 65Cu(d,p)66Cu                    4837        8        4841.364     0.094      .5   U                 hMIT     64Sp12
 65Cu(n,g)66Cu              ave   7065.929    0.094    7065.930     0.094      .0   1   100  90  66Cu          average
 66Zn(d,t)65Zn                   -4770       60       -4801.292     0.917     -.5   U                 hANL     60Ze02
 66Co(B-)66Ni                     9700      500        9597.752    14.042     -.2   U                 H        88Bo06
 66Ni(B-)66Cu                      200       30         251.996     1.541     1.7   U                 h        56Jo20
 66Cu(B-)66Zn                     2650       30        2640.939     0.925     -.3   U                 h        51Fr19,*
 66Cu(B-)66Zn                     2650       30        2640.939     0.925     -.3   U                 h        56Jo20
 66Ga(B+)66Zn                     5175.0      3.0      5175.500     0.800      .2   U                 K        63Ca03,*
 66Ga(B+)66Zn                     5175.5      0.8                               2                 K        14Se12
 66Zn(3He,t)66Gai                -9044        6                                 2                 H        71Be29,*
 66Ge(B+)66Ga                     2490       50        2116.688     2.638    -7.5F  F                 h        69Ba31,*
 66Ge(B+)66Ga                     2420       30        2116.688     2.638   -10.1F  F                 h        69Sa08,*
 66Ge(B+)66Ga                     2100       30        2116.688     2.638      .6   U                 H        70De39,*
 66As(B+)66Ge                     9550       50        9581.957     6.168      .6   U                 HANB     79Da.A
*66Mn-u                        M-A=-36900(790) keV for mixture gs+m at 464.5 keV (5^-)               g        Nub211**
*66Co-u                        Original --60160(300) uu or M-A=-56040(280) keV                       M        GAu992**
*66Co-u                        M-A=-55480(270) keV for mixture gs+m+n at 175.1 and 642(5) keV        g        Nub211**
*                               ~ and assuming for first isomer a ratio R=0.5(0.2) to gs,            M        GAu992**
*                               ~ from half-life=1.21 us and TOF=1 us                                M        GAu992**
*C5 H5-66Ge.970                For original doublet C5 H5-(66Ge H)0.970,    ~ D_M=95688.6(2.5) uu    H        GAu095**
*                               ~ 95688.6(2.5)+7825.032*.970=103278.881                              h        GAu095*G
*66Ga-66Zn                     Compromised measurement due to the influence of neighboring ToF peaks  G        Sar201**
*66Cu(B-)66Zn                  E-=2630(30) 1640(30) to gs and 2^+ level at 1039.2279 keV             h        Ens104**
*66Ga(B+)66Zn                  Original E+=4153(3) corrected for recoil                              K        14Se12**
*66Zn(3He,t)66Gai              CDE=9813(6) Q=-9049(6); rclbtn +5 keV for 58Ni(p,n)58Cui from Ame*1961  H        MMC124**
*66Ge(B+)66Ga                  E+=1440(50) to 43.9 lvl; F : probably distorted by annihilation pile up  h        AHW   **
*66Ge(B+)66Ga                  E+=1370(30) to 43.9 lvl; F : probably distorted by annihilation pile up  h        AHW   **
*66Ge(B+)66Ga                  E+=1028(30), 668(30), 558(50) to 43.812 1^+, 381.859 1^+, 536.618 1^+ lvlh        Ens104**


 67V-u                           -1872#     644#                                2                 g    1.0 S-u20c
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67Cr-u		-20687#	429#				2				g	1.0	S-u20c
67Mn-u		-36600	670	-36050#	215#	.8o	o				GMT1	1.0	15Me.A,G
67Mn-u		-36458	354	-36050#	215#	1.2D	D				GMT1	1.0	20Me06,*
67Mn-u		-36050#	215#				2				g	1.0	S-u212
67Fe-u		-50190	500	-49070.000	4.100	1.5	U				GT05	1.5	94Se12,*
67Fe-u		-48450	380	-49070.000	4.100	-1.1	U				GT06	1.5	98Ba.A,*
67Fe-u		-49641	440	-49070.000	4.100	.9	U				GGT1	1.5	04Ma.A,G
67Fe-u		-49580	300	-49070.000	4.100	1.7o	o				KMT1	1.0	11Es06,*
67Fe-u		-48510	460	-49070.000	4.100	-1.2o	o				GMT1	1.0	15Me.A,W
67Fe-u		-49220	370	-49070.000	4.100	.4	U				GMT1	1.0	20Me06,*
67Fe-u		-49070.0	4.1				2				GJY1	1.0	20Ca08
67Co-u		-59800	970	-59390.374	6.917	.3	Z				GA2	1.5	89Gi.A
67Co-u		-59390	300	-59390.374	6.917	-.0	U				HT05	1.5	94Se12
67Co-u		-58730	350	-59390.374	6.917	-1.3	U				MT06	1.5	98Ba.A
28Si F2-67Co.985		32232.9	8.0	32232.379	6.813	-.1	-2-				HMS1	1.0	10Fe01
28Si F2-67Co.985		32231	13	32232.379	6.813	.1	-2-				HMS1	1.0	10Fe01,*
28Si F2-67Co.985	ave	32232.378	6.813				2						average
67Ni-u		-68370	430	-68430.587	3.100	-.1	U				MT05	1.5	94Se12,*
67Ni-u		-68090	470	-68430.587	3.100	-.5	U				MT06	1.5	98Ba.A,*
67Ni-85Rb.788		1079.1	3.1				2				MMA8	1.0	07Gu09
67Cu-85Rb.788		-2760.0	1.3	-2760.823	0.958	-.6	1	54	54	67Cu	MMA8	1.0	07Gu09
67As-u		-60500	260	-60748.889	0.475	-.6	U				MGA6	1.5	02Li24
67As-86Kr.779		8885.7	2.9	8885.433	0.475	-.1	U				HMS1	1.0	07Sc24
67As-86Kr.779		8808	30	8885.433	0.475	2.6	U				HMS1	1.0	07Sc24
67As-85Rb.788		8762.5	1.7	8760.798	0.475	-1.0	U				HMS1	1.0	07Sc24
67As-85Rb.788		8760.87	0.54	8760.798	0.475	-.1	1	77	77	67As	gMS1	1.0	19Sc11
67As O-85Rb.976		20258.7	1.0	20258.948	0.475	.2	1	23	23	67As	gMS1	1.0	19Sc11
67Se-u		-50006	72				2				HLZ1	1.0	11Tu02
67Br-u		-34922#	322#				2				g	1.0	S-u20b
67Zn N-66Zn 15N		4060.21	0.32	4058.889	0.251	-1.7	U				KH30	2.5	77Ba10,*
66Zn H-67Zn		6741	15	6731.249	0.251	-.7	U				GRI1	1.0	18Ki21
67Ga-67Zn		1112	11	1074.854	1.202	-3.4F	F				GRI1	1.0	18Ki21,*
67Ge-67Zn		5587.9	4.9	5589.577	4.582	.3	1	87	87	67Ge	GRI1	1.0	18Ki21
67As-67Zn		12122	27	12123.688	0.939	.1	U				GRI1	1.0	18Ki21
64Zn(a,n)67Ge		-9240	60	-8976.702	4.342	4.4B	B				hOak		64St01
64Zn(a,n)67Ge		-8987.5	12.	-8976.702	4.342	.9	1	13	13	67Ge	GANL		78Mu05
64Zn(a,n)67Ge		-8993	5	-8976.702	4.342	3.3B	B				G		79Al04
65Cu(t,p)67Cu		7716	25	7716.716	1.069	.0	U				hAld		66Bj02
65Cu(3He,p)67Zn		8185	40	8258.947	0.933	1.8	U				hMIT		74Is01
67Kr(2p)65Se		1690	17	2890#	300#	70.6D	D				G		16Go26,*
67Kr(2p)65Se		2890#	300#				3				g		S-u212
66Zn(n,g)67Zn		7052.5	0.6	7052.466	0.234	-.1	-1-				m		71Ot01,Z
66Zn(n,g)67Zn		7052.5	0.5	7052.466	0.234	-.1	-1-				m		75De.A,Z
66Zn(n,g)67Zn		7052.5	0.3	7052.466	0.234	-.1	-1-				MBdn		06Fi.A
66Zn(d,p)67Zn		4827	10	4827.899	0.234	.1	U				hANL		67Vo05
66Zn(d,p)67Zn		4820	5	4827.899	0.234	1.6	U				hMIT		74Is01
67Zn(d,t)66Zn		-800	60	-795.235	0.234	.1	U				hANL		60Ze02
66Zn(n,g)67Zn	ave	7052.500	0.236	7052.466	0.234	-.1	1	98	64	67Zn			average
67Ni(B-)67Cu		3830	90	3576.865	3.022	-2.8	U				h		75Re09
67Cu(B-)67Zn		577	8	560.823	0.830	-2.0	U				M		53Ea11
67Cu(B-)67Zn		560.3	1.0	560.823	0.830	.5	1	69	46	67Cu	KANB		15Ch57
67Zn(p,n)67Ga		-1776	5	-1783.567	1.120	-1.5	U				hRic		57Ch30,Y
67Zn(p,n)67Ga		-1783.3	1.4	-1783.567	1.120	-.2	1	66	54	67Ga	mOak		64Jo11,Z
67Ge(B+)67Ga		4330	100	4205.438	4.407	-1.2	U				h		59Ri35,*
67Ge(B+)67Ga		4370	150	4205.438	4.407	-1.1	U				h		69Ba07,*
67As(B+)67Ge		6010	100	6086.486	4.342	.8	U				HANB		80Mu12

*67Mn-u	Trends from Mass Surface TMS suggest 67Mn 380 keV less bound	G	GAu212**
*67Fe-u	Original --50000(500) uu or M-A=-46570(470) keV	M	GAu992**
*67Fe-u	M-A=-44930(330) keV for mixture gs+m at 403(9) keV	g	Nub211**
*67Fe-u	Isomer taken into account {BPf}	h	04Ma.A*G
*67Fe-u	M-A=-45980(250) keV for mixture gs+m at 403(9) keV	g	Nub211**
*67Fe-u	Isomer decay used in PID. Assuming isomer taken into account	k	15Me.A*W
*67Fe-u	M-A=-45560(320) keV for mixture gs+m+n at 403(9) and 450#(100#) keV	g	Nub211**
*28Si F2-67Co.985	M-A=-54829(12) for 67Com at 491.55(0.11) keV	H	10Fe01**
*28Si F2-67Co.985	31711 - (-491.6/u*0.985) = 32231	h	GAu115*G
*67Ni-u	Original --67840(300) uu or M-A=-63190(280) keV	M	GAu992**
*67Ni-u	M-A=-62930(330) keV for mixture gs+m at 1006.6(0.2) keV	g	Nub211**

*67Zn N-66Zn 15N	Original 4060.21(0.25); plus syst 0.20 uu estimated by evaluator	K	GAu158**
*67Ga-67Zn	Compromised measurement due to the influence of neighboring ToF peaks	G	Sar201**
*67Kr(2p)65Se	Trends from Mass Surface TMS suggest 67Kr 1200 keV less bound	G	GAu212**
*67Ge(B+)67Ga	E+=3140(100) 3180(100) resp, to 1/2^- level at 166.98 keV	h	Ens05c**

68Cr-u		-16844#	537#				2				g	1.0	S-u20c
68Mn-u		-29748	1406	-31047#	322#	-.9D	D				GMT1	1.0	20Me06,*
68Mn-u		-31047#	322#				2				g	1.0	S-u212
68Fe-u		-46300	500	-47125#	207#	-1.1	-2-				MT06	1.5	98Ba.A
68Fe-u		-47330	460	-47125#	207#	.4o	o				KMT1	1.0	11Es06
68Fe-u		-46830	460	-47125#	207#	-.6o	o				GMT1	1.0	15Me.A
68Fe-u		-47622	344	-47125#	207#	1.4D	D				GMT1	1.0	20Me06,*
68Fe-u		-47193#	215#	-47125#	207#	.3	-2-				g	1.0	S-u212
68Fe-u	ave	-47125#	207#				2						average
68Co-u		-56250	1070	-55440.599	4.143	.5	Z				GA2	1.5	89Gi.A
68Co-u		-55640	350	-55440.599	4.143	.4o	o				HT05	1.5	94Se12
68Co-u		-54750	300	-55440.599	4.143	-1.5	U				HT06	1.5	98Ba.A
68Co-u		-55730	140	-55440.599	4.143	.8	U				GGT2	2.5	08Kn.A,*
68Co-u		-55760	250	-55440.599	4.143	1.3	U				GMT1	1.0	11Es06,*
O 18O-68Co.5		21794.5	2.4	21794.531	2.071	.0	1	74	74	68Co	GMS1	1.0	18Iz01
68Co-34S2.000		8825.2	8.2	8825.380	4.143	.0	1	26	26	68Co	GMS1	1.0	18Iz01
68Ni-u		-68030	930	-68131.212	3.200	-.1	U				MT05	1.5	94Se12,*
68Ni-u		-67530	930	-68131.212	3.200	-.4	U				MT06	1.5	98Ba.A,*
68Ni-85Rb.800		2437.0	3.2				2				MMA8	1.0	07Gu09
68Cu-u		-70570	440	-70389.112	1.700	.3	U				MT06	1.5	98Ba.A,*
68Cu-85Rb.800		179.1	1.7				2				MMA8	1.0	07Gu09,*
68Ga-85Rb.800		-1484	37	-1451.626	1.536	.9	U				MMA8	1.0	07Gu09
68Ge-C5 H8		-134496.7	8.6	-134504.950	2.014	-1.0	U				HCP1	1.0	04Cl03
68Ge-C5 H8		-134506.3	2.8	-134504.950	2.014	.5	-2-				HCP1	1.0	04Cl03
68Ge-C5 H8		-134503.5	2.9	-134504.950	2.014	-.5	-2-				HCP1	1.0	04Cl03
68Ge-C5 H8	ave	-134504.949	2.014				2						average
68As-u		-63221	107	-63225.873	1.982	-.0	U				HGT1	1.5	01Ha66
68As-C5 H8		-125839	13	-125826.128	1.982	1.0	U				HCP1	1.0	04Cl03
68As-C5 H8		-125827.7	9.9	-125826.128	1.982	.2	U				HCP1	1.0	04Cl03
68As-C5 H8		-125827.1	2.9	-125826.128	1.982	.3	-1-				HCP1	1.0	04Cl03
68As-C5 H8		-125824.4	3.1	-125826.128	1.982	-.6	-1-				HCP1	1.0	04Cl03
68As-C5 H8	ave	-125825.840	2.118	-125826.128	1.982	-.1	1	88	88	68As			average
C F3-68As1.015		59385.8	5.7	59383.746	2.011	-.4	1	12	12	68As	HMS1	1.0	07Sc24
68Se-u		-56197	86	-58174.763	0.532	-23.0F	F				MCS1	1.0	01La31,*
68Se-u		-57560	1070	-58174.763	0.532	-.4	U				MGA6	1.5	02Li24
68Se-u		-58202	35	-58174.763	0.532	.8	Z				hCP1	1.0	03Sh.A
68Se-u		-57900	300	-58174.763	0.532	-.9	U				HCS1	1.0	08Go23
68Se-C5 H8		-120801	31	-120775.018	0.532	.8	U				HCP1	1.0	04Cl03
C F3-68Se1.015		54256.87	0.54				2				HMS1	1.0	09Sa12
68Kr-u		-27511#	537#				2				g	1.0	S-u20b
68Zn 35Cl-66Zn 37Cl		1757.9	1.0	1760.717	0.332	.7	U				hH18	4.0	64Ba03
68As-68Ge		8698.8	9.9	8678.822	2.826	-2.0	U				kCP1	1.0	04Cl03
68Se-68Ge		13669	27	13729.931	2.083	2.3	U				HCP1	1.0	04Cl03
65Cu(a,n)68Ga		-5800	40	-5824.025	1.532	-.6	U				hOak		64St01
66Ni(t,p)68Ni-68Zn()70Zn		-2110	21	-2100.068	3.874	.5	U				MHei		77Bh03
66Zn(t,p)68Zn		8758	15	8768.766	0.303	.7	U				hAld		72Hu06
68Zn(14C,15O)67Ni		-6052	150	-6100.195	3.031	-.3	U				hOrs		84De33
67Zn(n,g)68Zn		10198.2	0.4	10198.096	0.193	-.3	-1-				m		71Ot01,Z
67Zn(n,g)68Zn		10198.06	0.22	10198.096	0.193	.2	-1-				MBdn		06Fi.A
68Zn(d,t)67Zn		-3930	60	-3940.866	0.193	-.2	U				hANL		60Ze02
67Zn(n,g)68Zn	ave	10198.093	0.193	10198.096	0.193	.0	1	100	99	68Zn			average
68Br(p)67Se		500#	250#				3				g		S-u212,G
68Cu(B-)68Zn		4580	60	4440.111	1.765	-2.3	U				h		64Ba13
68Cu(B-)68Zn		4590	50	4440.111	1.765	-3.0B	B				k		72Sw01,W
68Zn(t,3He)68Cu		-4410	20	-4421.519	1.765	-.6	U				MLAl		77Sh08
68Ga(B+)68Zn		2921.1	1.2				2						72Sl03
68Ga(B+)68Zn		2915	10	2921.100	1.200	.6	U				h		85Bo58
68Zn(p,n)68Ga		-3693	6	-3703.447	1.200	-1.7	U				hRic		55Br16,Z
68Zn(p,n)68Ga		-3703	5	-3703.447	1.200	-.1	U				hRic		57Ch30,Z
68Zn(p,n)68Ga		-3707	5	-3703.447	1.200	.7	U				hOak		64Jo11,Z
68As(B+)68Ge		8100	100	8084.271	2.632	-.2	U				HANB		77Pa13

68As(B+)68Ge		8073	54	8084.271	2.632	.2	U				H		02Cl.A,*
68Se(B+)68As		4710	200	4705.079	1.911	-.0	U				H		04Wo16
*68Mn-u		Trends from Mass Surface TMS suggest 68Mn 1210 keV more bound									G		GAu212**
*68Fe-u		Trends from Mass Surface TMS suggest 68Fe 400 keV less bound									G		GAu212**
*68Co-u		M-A=-51838(96) keV for mixture gs+m at 150#(150#) keV									g		Nub211**
*68Co-u		M-A=-51860(210) keV for mixture gs+m at 150#(150#) keV									g		Nub211**
*68Ni-u		M-A=-61950(280) keV for mixture gs+n at 2849.1 keV									g		Nub211**
*68Ni-u		M-A=-61480(280) keV for mixture gs+n at 2849.1 keV									g		Nub211**
*68Cu-u		M-A=-65380(350) keV for mixture gs+m at 721.26 keV									g		Nub211**
*68Cu-85Rb.800		This result was first published in ref.									HMA8		04Bl16**
*68Cu-85Rb.800		Also 948.6(1.6) uu for 68Cum-85Rb.800, yielding excit. of 716.7(2.2) keV									M		07Gu09**
*68Cu-85Rb.800		This Exc. differs from the known one 721.26 by 4.6(2.2) keV i.e. 2.1 sigm									g		Nub211*G
*68Se-u		F : other results in same paper not trusted, see 80Y and 80Zr									M		GAu034**
*68Br(p)67Se		T<1.5 us -> S(p)<-500 Qp>500									k		Nub16b*G
*68Cu(B-)68Zn		Several E-, also from isomer											AHW *W
*68As(B+)68Ge		From mass difference 8667(64) uu									M		02Cl.A**
69Cr-u		-10338#	537#				2				g	1.0	S-u20c
69Mn-u		-27225#	429#				2				g	1.0	S-u20c
69Fe-u		-42240	640	-42082#	215#	.2o	o				GMT1	1.0	15Me.A,*
69Fe-u		-43232	429	-42082#	215#	2.7D	D				GMT1	1.0	20Me06,*
69Fe-u		-42082#	215#				2				g	1.0	S-u212
69Co-u		-54800	400	-54091.000	92.000	1.2o	o				HTO5	1.5	94Se12
69Co-u		-53050	300	-54091.000	92.000	-2.3	U				GTO6	1.5	98Ba.A
69Co-u		-54070	230	-54091.000	92.000	-.1	U				GMT1	1.0	11Es06
69Co-u		-54117	223	-54091.000	92.000	.1	U				GLZ1	1.0	15Xu14
69Co-u		-54091	92				2				GJY1	1.0	20Ca08,*
69Com-39K1.769		10296	15	10296.876	14.453	.1	1	93	93	69Com	GMS1	1.0	18Iz01,*
69Com-u		-53895	54	-53906.354	14.453	-.2	1	7	7	69Com	GJY1	1.0	20Ca08
69Ni-u		-64600	400	-64389.732	4.000	.4	U				MTO5	1.5	94Se12,*
69Ni-u		-64250	450	-64389.732	4.000	-.2	U				MTO6	1.5	98Ba.A,*
69Ni-85Rb.812		7237.0	4.0				2				MMA8	1.0	07Gu09
69Cu-85Rb.812		1056.0	1.5				2				MMA8	1.0	07Gu09
69Zn-u		-73580	400	-73449.640	0.853	.2	U				MTO6	1.5	98Ba.A,*
C5 H9-69Ga		144852.7	2.4	144851.762	1.285	-.2	U				hM15	2.5	63Ri07
69Ga-85Rb.812		-2799.8	1.6	-2799.743	1.285	.0	1	65	65	69Ga	MMA8	1.0	07Gu09
69As-u		-67757.8	23.6	-67756.489	19.452	.1	1	68	68	69As	JGR1	1.0	21Ma22
C F3-69Se		55794.7	1.6	55794.642	1.600	-.0	1	100	100	69Se	HMS1	1.0	07Sc24,G
69Kr-u		-34504#	322#				2				g	1.0	S-u20b
69Ga(p,a)66Zn		4440	10	4435.461	1.397	-.5	U				hANL		67Ka11
66Zn(a,n)69Ge		-7520	30	-7444.953	1.501	2.5	U				hOak		64St01
67Zn(t,p)69Zn		8168	20	8198.370	0.250	1.5	U				hAld		72Hu06
68Zn(n,g)69Zn		6482.3	0.8	6482.070	0.160	-.3	U				m		71Ot01,Z
68Zn(n,g)69Zn		6481.8	0.5	6482.070	0.160	.5	U				m		75De.A,Z
68Zn(n,g)69Zn		6482.07	0.16				2				MBdn		06Fi.A
68Zn(d,p)69Zn		4259	10	4257.504	0.160	-.1	U				hANL		67Vo05
68Zn(d,p)69Zn		4243	10	4257.504	0.160	1.5	U				hMIT		75Is04
68Zn(3He,d)69Ga		1126	20	1116.164	1.414	-.5	U				h		74Ri08
69Se(ep)68Ge		3390	50	3255.113	2.396	-2.7	U				HChR		76Ha29
69Se(ep)68Ge		3370	70	3255.113	2.396	-1.6	U				HChR		77Ma24,W
69Br(p)68Se		789	37	641.000	42.000	-4.0B	B				KMSU		11Ro18,*
69Br(p)68Se		641	42				3				KMSU		14De41,*
69Bri(p)68Se		4131	50	4129.133	18.679	-.0	-3-				H		97Xu01,*
69Bri(p)68Se		4210.6	50.	4129.133	18.679	-1.6	-3-				KMSU		11Ro47,*
69Bri(p)68Se		4113	22	4129.133	18.679	.7	-3-				KMSU		14De41,*
69Bri(p)68Se	ave	4129.133	18.679				3						average
69Cu(B-)69Zn		2480	70	2681.685	1.607	2.9	U				h		66Va12
69Zn(B-)69Ga		897	5	909.916	1.423	2.6	U				h		53Du03
69Ge(B+)69Ga		2225	15	2227.145	0.550	.1	U				H		51Hu38,*
69Ga(p,n)69Ge		-3008.8	3.2	-3009.492	0.550	-.2	U				hTkm		63Ok01
69Ga(p,n)69Ge		-3006.0	4.	-3009.492	0.550	-.9	U				hOak		64Jo11,Z
69Ga(p,n)69Ge		-3009.50	0.55	-3009.492	0.550	.0	1	100	100	69Ge	mPTB		92Bo.B,Z
69As(B+)69Ge		3972	50	3985.908	18.142	.3	-1-				h		70Bo19
69As(B+)69Ge		4067	50	3985.908	18.142	-1.6	-1-				ChR		77Ma24,*
69As(B+)69Ge	ave	4019.500	35.355	3985.908	18.142	-1.0	1	26	26	69As			average
69Se(B+)69As		6817	75	6680.054	18.173	-1.8	1 *	6	6	69As	HChR		77Ma24,*

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*69Fe-u                           Trends from Mass Surface TMS suggest  69Fe  1070 keV less bound         G        GAu212**
*69Co-u                           the mass value was derived from the gs. and iso. production ratio      G        20Ca08**
*69Com-39K1.769                   Re-assigned the gs. to the short-lived iso. state suggested by 20*Ca*08  G        20Ca08**
*69Com-39K1.769                   the mass value was derived from the gs. and iso. production ratio      G        20Ca08**
*69Ni-u                           M-A=-59940(330) keV for mixture gs+m+n at 321(2) and 2700.0 keV        g        Nub211**
*69Ni-u                           M-A=-59620(380) keV for mixture gs+m+n at 321(2) and 2700.0 keV        g        Nub211**
*                                  ~ and assuming for second isomer a ratio R=0.13(0.06) to gs,          M        GAu992**
*                                  ~ from half-life=439 ns and TOF=1 us                                  M        GAu992**
*69Zn-u                           M-A=-68320(350) keV for mixture gs+m at 438.636 keV                    g        Nub211**
*C F3-69Se                        Seriously conflicting with 69Se(ep)68Ge and 69Se(B+)69As from ChR      h        GAu095*G
*69Se(ep)68Ge                     Qep=3364(75) and 3400(100)                                             h        77Ma24*W
*69Br(p)68Se                      Symmetrized from Q(p)=785(+40--34) keV                                 H        GAu11c**
*69Br(p)68Se                      And E(p)=751(+132--82) in good agreement with previous item            K        14De41**
*69Bri(p)68Se                     Might be also a more intense peak around 3 MeV                         K        GAu15a**
*69Bri(p)68Se                     E(p)=2970(50) to (2^+) level at 1196.7 keV                             K        GAu15a**
*69Bri(p)68Se                     A weaker peak around 4 MeV cannot be excluded, could feed lower (2^+)  K        GAu15a**
*69Bri(p)68Se                     Maybe not to first 2+ at 853.75; if 1196.7 (2+) level, then +343=4210.6(5k        GAu15a*G
*69Bri(p)68Se                     Original Q=2939(22) corrected to Q(p)=2916(22) to (2^+) lvl at 1196.7 keVK        16Hu.A**
*69Ge(B+)69Ga                     E+=1215, 610 to gs 3/2^-, 574.220 5/2^- levels                         k        Ens141**
*69As(B+)69Ge                     E+=2812(50) to 3/2^- level at 232.70 keV                               k        Ens141**
*69Se(B+)69As                     E+=5006(75) to 789.46 (1/2^-,3/2^-) level, and others                  k        Ens141**
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 70Cr-u                          -6055#     644#                                2                   g    1.0 S-u20c
 70Mn-u                         -21954#     537#                                2                   g    1.0 S-u20c
 70Fe-u                         -40483      526      -39603#     322#     1.7D  D                   GMT1 1.0 20Me06,*
 70Fe-u                         -39603#     322#                                2                   g    1.0 S-u212
 70Co-u                         -49000      600      -49946.600   11.800   -1.1  U                   HT06 1.5 98Ba.A
 70Co-u                         -50370      320      -49946.600   11.800    1.3  U                   gMT1 1.0 11Es06,*
 70Co-u                         -49946.6     11.8                               2                   GJY1 1.0 20Ca08
 70Ni-u                         -65920     1180      -63568.699    2.301    1.3  Z                    GA2 1.5 89Gi.A
 70Ni-u                         -63980      350      -63568.699    2.301     .8  U                   HT05 1.5 94Se12,*
 70Ni-u                         -63020      350      -63568.699    2.301   -1.0  U                   HT06 1.5 98Ba.A,*
 70Cu-85Rb.824                    5077.6      1.7      5077.336    1.161    -.2  -2-                 MMA8 1.0 07Gu09,*
 70Cu-85Rb.824                    5077.2      2.2      5077.336    1.161     .1  -2-                 HMA8 1.0 07Gu09,*
 70Cu-85Rb.824                    5077.0      2.3      5077.336    1.161     .1  -2-                 HMA8 1.0 07Gu09,*
 70Cu-85Rb.824               ave  5077.336    1.161                             2                             average
 70Ga-85Rb.824                   -1293.0      2.3     -1292.831    1.289     .1  1    31   31  70Ga MMA8 1.0 07Gu09
 C5 H10-70Ge                    154001.3      2.2    154001.777    0.880     .1  U                   hM15 2.5 63Ri07
 C4 H6 O-70Ge                   117616.1      1.8    117616.269    0.880     .0  U                   HM15 2.5 63Ri07
 70As-85Rb.824                    3619.9      1.5                               2                   GMA8 1.0 20Ku19
 70Se-u                         -66890      490      -66483.353    1.453     .6o o                   hGA6 1.5 98Ch20
 70Se-u                         -66635       75      -66483.353    1.453    1.3  U                   hGT1 1.5 01Ha66
 70Se-u                         -66520      140      -66483.353    1.453     .2  U                   HGA6 1.5 02Li24
 70Se-u                         -66480.3      2.8    -66483.353    1.453   -1.1  1    27   27  70Se JGR1 1.0 21Ma22
 70Se-13C F3                    -65048.8      1.7    -65047.675    1.453     .7  1    73   73  70Se HMS1 1.0 09Sa12
 70Se-85Rb.824                    6209.5      6.0      6201.905    1.453   -1.3  Z                   hMA8 1.0 04He.A
 70Se-85Rb.824                    6209       18        6201.905    1.453    -.4  U                   HMA8 1.0 11He10
 70Br-13C F3                    -53772       16                                 2                   HMS1 1.0 09Sa12,*
 70Kr-u                         -44620      210      -44123#     215#      .9  Z                   h    2.5 IMME
 70Kr-u                         -44123#     215#                                2                   k    1.0 S-u168
 70Ni-72Ge.972                   12173.6      2.3                               2                   HJY1 1.0 07Ra27
 70Zn 35Cl-68Zn 37Cl              3429.5      1.7      3425.064    2.194    -.7  1    10    9  70Zn  H18 4.0 64Ba03
 70Zn(3He,8B)65Co               -18385       13      -18369.896    3.002    1.2  U                   HPri     78Ko24
 70Zn(a,7Be)67Ni                -19155       36      -19166.145    3.467    -.3  U                   MTex     78Co.A
 70Zn(a,7Be)67Ni                -19164       22      -19166.145    3.467    -.1  U                   MPri     78Ko28
 70Zn(14C,17O)67Ni               -1661      100       -1993.405    3.466   -3.3B B                   hOrs     88Gi04
 70Ge(p,a)67Ga                    1180.9      1.5      1181.175    1.159     .2  1    60   46  67Ga  NDm     76Jo01
 70Ge(3He,6He)67Ge              -10572       30      -10549.195    4.378     .8  U                   hMSU     78Pa11
 70Zn(14C,16O)68Ni                1727       30        1655.967    3.544   -2.4  U                   hOrs     88Gi04,G
 70Zn(18O,20Ne)68Ni                172       26         158.187    3.544    -.5  U                   MHei     84Ha31
 68Zn(t,p)70Zn                    7196       15        7218.436    2.043    1.5  U                   hAld     72Hu06
 70Ge(p,t)68Ge                  -11251       13      -11244.077    2.048     .5  U                   HChR     72Hs01
 70Ge(p,t)68Ge                  -11242        7      -11244.077    2.048    -.3  U                   HOrs     77Gu02
 70Zn(14C,15O)69Ni               -8936      150       -9421.824    4.219   -3.2B B                   MOrs     84De33
 70Zn(d,3He)69Cu                 -5605       10       -5624.026    2.373   -1.9  U                   MANL     78Ze04
 70Zn(d,3He)69Cu                 -5622       13       -5624.026    2.373    -.2  U                   MHei     84Ha31
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 70Zn(t,a)69Cu                    8682        20         8696.365     2.373      .7  U                   MLAl     81Aj02
 69Ga(n,g)70Ga                    7654.0       1.0       7653.649     0.170     -.4  U                   M        71Ar12,Z
 69Ga(n,g)70Ga                    7651.6       1.0       7653.649     0.170     2.0F F                   h        71Ve03,*
 69Ga(n,g)70Ga                    7653.65      0.17      7653.649     0.170     -.0  1    100  64  70Ga MBdn     06Fi.A
 69Ga(d,p)70Ga                    5430        10         5429.082     0.170     -.1  U                   hKop     71Ar12
 70Ge(d,3He)69Ga                 -3030         7        -3029.710     1.449      .0  U                   MOrs     78Ro14
 70Cu(B-)70Zn                     6310       110         6588.370     2.202     2.5  U                   h        75Re09,*
 70Cu(B-)70Zn                     5928       110         6588.370     2.202     6.0B B                   h        75Re09,*
 70Zn(t,3He)70Cu                 -6559        20        -6569.778     2.202     -.5  U                   MLAl     77Sh08
 70Zn(t,3He)70Cu                 -6602        20        -6569.778     2.202     1.6  U                   MLAl     87Aj.A
 70Zn(p,n)70Ga                   -1436.3       2.0      -1436.945     1.574     -.3  -1-                 hNvl     59Go68,Z
 70Zn(p,n)70Ga                   -1439.1       3.0      -1436.945     1.574      .7  -1-                 mOak     64Jo11,Z
 70Zn(p,n)70Ga               ave -1437.174     1.640    -1436.945     1.574      .1  1     92  88  70Zn          average
 70Ga(B-)70Ge                     1650        10         1651.883     1.452      .2  U                   M        57Bu41
 70As(B+)70Ge                     6220        50         6228.063     1.620      .2  U                   G        63Bo14,*
 70Se(B+)70As                     2780       200         2405.122     1.945    -1.9F F                   h        75La02,*
 70Se(B+)70As                     2736        85         2405.122     1.945    -3.9B B                   M        01To06
 70Br(B+)70Se                     9970       170        10503.224    14.965     3.1C C                   HANB     79Da.A
 70Br(B+)70Se                     9898        80        10503.224    14.965     7.6B B                   H        04Ka38,*
*70Fe-u                         Trends from Mass Surface TMS suggest  70Fe   820 keV less bound         G        GAu212**
*70Co-u                         M-A=-46820(280) keV for mixture gs+m at 200#200 keV                      g        Nub211**
*70Ni-u                         Original --63860(350) uu or M-A=-59490(330) keV                          M        GAu992**
*70Ni-u                         M-A=-58590(330) keV for mixture gs+m at 2860.9(0.1) keV and              g        Nub211**
*                                ~ assuming ratio R=0.04(2), from half-life=232 ns and TOF=1 us          M        GAu992**
*70Cu-85Rb.824                  The three results for 70Cu were first published in ref.                  H        04Va07**
*70Cu-85Rb.824                  D_M=5185.7(2.2) uu   for 70Cum at 101.1(0.3) keV; M-A=-62875.4(2.0) keV  g        Nub211**
*70Cu-85Rb.824                  D_M=5337.4(2.3) uu   for 70Cun at 242.6(0.5) keV; M-A=-62734.1(2.2) keV  g        Nub211**
*70Br-13C F3                    D_M=-51311(16) uu    for 70Brm at 2292.3(0.8) keV                        g        Nub211**
*70Zn(14C,16O)68Ni              Re-evaluation of data in ref, PrvCom sep 88                                       81Be40*G
*69Ga(n,g)70Ga                  F : E(g) systematically lower than for other authors; ~ Z recalibrated   h        AHW   **
*70Cu(B-)70Zn                   E-=4550(120), 3370(170) to 4^+ level at 1786.33, 5^- at 3037.61 keV      h        Ens04c**
*70Cu(B-)70Zn                   E-=6170(110) from 70Cun 1^+ at 242.6 keV                                 g        Nub211**
*70As(B+)70Ge                   E+=2144(50) to 3^+ level at 3046.427, 4^+ at 3058.707 keV                h        Ens04c**
*70As(B+)70Ge                   Error guessed by AHW                                                              AHW   *W
*70Se(B+)70As                   E+=1500(200) to  1^+ level at 81.49, 1^+ at 234.70, 1^+ at 458.12 keV    h        Ens04c**
*70Se(B+)70As                   F : author's half-life 20(2)m disagrees with Nubase 41.1(0.3)m           g        Nub211**
*70Br(B+)70Se                   Q+=12190(80) from 2292.3 70Brm                                           H        04Ka38**


 71Mn-u                         -17842#      537#                                    2                   g    1.0 S-u20c
 71Fe-u                         -34278#      429#                                    2                   g    1.0 S-u20b
 71Co-u                         -47100       600       -47633.077   499.230     -.6  -2-                 MTO6 1.5 98Ba.A
 71Co-u                         -47870       600       -47633.077   499.230      .4  -2-                 HMT1 1.0 11Es06
 71Co-u                     ave -47633.077   499.230                                 2                            average
 71Ni-u                         -60000       400       -59481.037     2.401      .9  U                   HTO5 1.5 94Se12
 71Ni-u                         -58700       350       -59481.037     2.401    -1.5  U                   HTO6 1.5 98Ba.A
 71Cu-u                         -68380       970       -67323.169     1.600      .7  Z                    GA2 1.5 89Gi.A
 71Cu-85Rb.835                    6332.4       1.6                                   2                   MMA8 1.0 07Gu09
 71Zn-u                         -72080       380       -72280.421     2.849     -.4  U                   MTO6 1.5 98Ba.A,*
 71Znm-85Rb.835                   1544.3       2.6       1544.413     2.531      .0  1     95  95  71ZnmHMA8 1.0 08Ba54
 C5 H11-71Ga                    161370.2       3.2     161372.797     0.871      .3  U                   MM15 2.5 63Ri07
 71Ga-85Rb.835                   -1641.6       3.0      -1641.877     0.871     -.1  -1-                 MMA8 1.0 07Gu09
 71Ga-85Rb.835                   -1640.2       1.3      -1641.877     0.871    -1.3  -1-                 HMA8 1.0 07Ke09
 71Ga-85Rb.835               ave -1640.421     1.193    -1641.877     0.871    -1.2  1     53  53  71Ga          average
 71Se-u                         -68160       340       -67790.569     3.000      .7o o                   hGA6 1.5 98Ch20
 71Se-u                         -67687        75       -67790.569     3.000     -.9  U                   HGT1 1.5 01Ha66
 71Se-u                         -67830       120       -67790.569     3.000      .2  U                   MGA6 1.5 02Li24
 71Se-u                         -67791.1      24.7     -67790.569     3.000      .0  U                   JGR1 1.0 21Ma22
 71Se-85Rb.835                    5867.7       7.0       5865.000     3.000     -.4  Z                   hMA8 1.0 04He.A
 71Se-85Rb.835                    5865.0       3.0                                   2                   HMA8 1.0 11He10
 71Br-u                         -61260       610       -60657.847     5.799      .7  U                   HGA6 1.5 02Li24
 71Br-u                         -60634.9      17.2     -60657.847     5.799    -1.3  U                   JGR1 1.0 21Ma22
 71Br H2-C4 H9 O               -110347.7       5.8    -110347.689     5.799      .0  1    100 100  71Br HMS1 1.0 09Sa12
 71Kr-u                         -49727       151       -49734.304   138.239     -.0  1     84  84  71Kr HLZ1 1.0 11Tu02
 71Rb-u                         -34665#      429#                                    2                   g    1.0 S-u20b
 71Ni-72Ge.986                   17352.2       2.4                                   2                   HJY1 1.0 07Ra27
 71Ga-71Ge                        -249.538     0.106     -249.567     0.100     -.3  1     89  77  71Ge GJY1 1.0 16Al30
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 68Zn(a,n)71Ge                     -5630       40        -5746.900     1.045    -2.9   U                  hOak      64St01
 70Zn(18O,17F)71Cu                 -9529       35        -9588.134     2.441    -1.7   U                  MBer      89Bo.A
 70Zn(d,p)71Zn                      3609       10         3610.787     3.194      .2   1     10    7  71Zn  ANL      67Vo05
 70Zn(3He,d)71Ga                    2380       20         2369.872     2.078     -.5   U                  h         74Ri08
 71Ga(g,n)70Ga                     -9240       60        -9300.292     1.447    -1.0   U                  hPhi      60Ge01
 71Ga(d,t)70Ga                     -3054       10        -3043.061     1.447     1.1   U                  hKop      71Ar12
 70Ge(n,g)71Ge                      7415.3      1.5       7415.939     0.106      .4   U                  h         70Or.A
 70Ge(n,g)71Ge                      7415.1      2.        7415.939     0.106      .4   U                  h         72Gr34
 70Ge(n,g)71Ge                      7415.95     0.15      7415.939     0.106     -.1  -1-                 mMMn      91Is01,Z
 70Ge(n,g)71Ge                      7415.93     0.15      7415.939     0.106      .1  -1-                 MBdn      06Fi.A
 70Ge(d,p)71Ge                      5182       10         5191.372     0.106      .9   U                  hKyu      73Ka03
 70Ge(n,g)71Ge             ave      7415.940    0.106     7415.939     0.106     -.0   1    100   86  70Ge           average
 70Ge(p,g)71As                      4619        5         4620.192     4.084      .2R  R  q-q=    -1.192  m         75Li14
 71Znm(IT)71Zn                       157.7      1.3        157.670     1.290     -.0   1     98   93  71Zn H         Ens10c
 71Zn(B-)71Ga                       2610       50         2810.340     2.775     4.0B  B                  h         61Th01
 71Zn(B-)71Ga                       2786       50         2810.340     2.775      .5   U                  h         61Th01,*
 71Zn(B-)71Ga                       2796       50         2810.340     2.775      .3   U                  h         64So01,*
 71Ge(e)71Ga                         231        3          232.470     0.093      .5   Z                            55Bi96
 71Ge(e)71Ga                         233.0      0.5        232.470     0.093    -1.1   U                  GHei      84Ha.A
 71Ge(e)71Ga                         229.3      1.0        232.470     0.093     3.2F  F                  M         91Zl01,*
 71Ge(e)71Ga                         232.1      0.5        232.470     0.093      .7   U                  G         93Di03,*
 71Ge(e)71Ga                         232.71     0.29       232.470     0.093     -.8   1     10    9  71Ge M         95Le19,W
 71Ge(e)71Ga                         233.5      1.2        232.470     0.093     -.9   U                  KTT1      13Fr13
 71Ga(p,n)71Ge                     -1018.4      2.0      -1014.817     0.093     1.8   U                  hOak      64Jo11,Z
 71Ga(3He,t)71Ge-65Cu()65Zn         1122.0      0.9       1119.183     0.368    -3.1B  B                  HPri      84Ko10
 71As(B+)71Ge                       1997       20         2013.400     4.082      .8   U                  m         53St31,*
 71As(B+)71Ge                       2010       10         2013.400     4.082      .3  -2-                 h         54Th36,*
 71As(B+)71Ge                       2012       10         2013.400     4.082      .1  -2-                 h         55Gr08,*
 71As(B+)71Ge                       2014.6      5.        2013.400     4.082     -.2  -2- q-q=     1.200  m          70Ge+1
 71As(B+)71Ge              ave      2013.400    4.082                                  2                            average
 71Se(B+)71As                       4428      125         4746.742     5.014     2.5   U                  h         73Sc17,G
 71Se(B+)71As                       4762       35         4746.742     5.014     -.4   U                  H         01To06
 71Kr(e)71Br                       10140      320        10175.215   128.845      .1   1     16   16  71Kr M         97Oi01
*71Zn-u                          M-A=-67060(350) keV for mixture gs+m at 157.7 keV                        g         Nub211**
*71Zn(B-)71Ga                    E-=1450(50) 1460(50) resp, from 71Znm at 157.7(1.3) to 9/2^+ at 1493.74  h         Ens10c**
*71Ge(e)71Ga                     F : sees 17 keV neutrino                                                 M         AHW96a**
*71Ge(e)71Ga                     Original error 0.1 increased for calibration uncertainty                 N         GAu955**
*71Ge(e)71Ga                     Symmetrized from 232.65(+0.34-0.24)                                      m         95Le19*W
*71As(B+)71Ge                    E+=800(20) 813(10) 815(10) resp, to 5/2^- level at 174.943 keV           h         Ens10c**
*71Se(B+)71As                    Not documented at all  AHW048 agrees                                     h         GAu044*G


 72Mn-u                           -11991#     644#                                     2                  g    1.0 S-u20c
 72Fe-u                           -31401#     537#                                     2                  g    1.0 S-u20b
 72Co-u                           -43264#     322#                                     2                  g    1.0 S-u185
 72Ni-u                           -58700      500       -58214.076     2.401      .6   U                  HT05 1.5 94Se12
 72Ni-u                           -57400      400       -58214.076     2.401    -1.4   U                  HT06 1.5 98Ba.A
 72Cu-u                           -65010      750       -64179.694     1.500      .7   Z                   GA2 1.5 89Gi.A
 72Cu-u                           -64250      510       -64179.694     1.500      .1   U                  MT06 1.5 98Ba.A,*
 72Cu-85Rb.847                     10534.4      1.5                                    2                  MMA8 1.0 07Gu09
 72Zn-85Rb.847                      1556.9      2.3                                    2                  HMA8 1.0 08Ba54
 72Ga-85Rb.847                      1079.5      1.5       1081.546     0.878     1.4   1     34   34  72Ga MMA8 1.0 07Gu09
 C4 H8 O-72Ge                     135438.4      2.1     135439.050     0.081      .1   U                  hM15 2.5 63Ri07
 72Ge-u                           -77906       25       -77924.176     0.081     -.7   U                  KMR1 1.0 15Wi.A
 72Ge-u                           -77927       22       -77924.176     0.081      .1   U                  KMR1 1.0 15Wi.A
 72Ge-u                           -77898       20       -77924.176     0.081    -1.3   U                  KMR1 1.0 15Wi.A
 72Se-85Rb.847                      1853.7      3.2       1854.600     2.100      .3   Z                  hMA8 1.0 04He.A
 72Se-85Rb.847                      1854.6      2.1                                    2                  HMA8 1.0 11He10
 72Br 27Al-85Rb1.165               20889.5      7.0      20897.969     1.101     1.2   Z                  hMA8 1.0 04He.A
 72Br 27Al-85Rb1.165               20892.1      7.2      20897.969     1.101      .8   U                  KMA8 1.0 11He10
 72Br-85Rb.847                     11308.7      1.1                                    2                  KMS1 1.0 15Va05,*
 72Kr-85Rb.847                     16806.5      8.6                                    2                  HMA8 1.0 06Ro11
 72Rb-u                           -41149#     537#                                     2                  k    1.0 S-u169
 70Ge H2-72Ge                      17821.3      1.7      17822.782     0.884      .3   U                  HM15 2.5 63Ri07
 72Ge 35Cl-70Ge 37Cl                 779.8      5.9        777.406     0.886     -.2   U                  hH40 2.5 85El01
 72Ni-72Ge                         19710.1      2.4                                    2                  HJY1 1.0 07Ra27
 70Zn(t,p)72Zn                      6231       20         6241.583     2.875      .5   U                  MAld      72Hu06
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71Ga(n,g)72Ga		6521.1	1.0	6520.475	0.189	-.6	U				M		70Li04,Z
71Ga(n,g)72Ga		6519.8	1.0	6520.475	0.189	.7F	F				h		71Ve03,*
71Ga(n,g)72Ga		6520.44	0.19	6520.475	0.189	.2	1	99	66	72Ga	MBdn		06Fi.A
72Ge(d,3He)71Ga		-4241	7	-4242.279	0.814	-.2	U				mOrs		78Ro14
72Zn(B-)72Ga		422	20	442.789	2.293	1.0	U				H		63De11,*
72Zn(B-)72Ga		458	6	442.789	2.293	-2.5B	B				k		63Th03,*
72Ga(B-)72Ge		4000	20	3997.626	0.822	-.1	U				H		55Jo09,*
72Ga(B-)72Ge		3984	10	3997.626	0.822	1.4	U				H		60La04,*
72As(B+)72Ge		4361	10	4356.102	4.082	-.5	-2-						50Me55
72As(B+)72Ge		4345	10	4356.102	4.082	1.1	-2-						68Vi05
72Ge(p,n)72As		-5140	5	-5138.449	4.082	.3	-2-				Kyu		76Ki12
72As(B+)72Ge	ave	4356.102	4.082				2						average
72Br(B+)72Se		8869	95	8806.438	2.208	-.7	U				H		01To06
72Kr(B+)72Br		5040	80	5121.168	8.076	1.0	U				H		73Sc17,*
*72Cu-u		M-A=-59710(470) keV for mixture gs+m at 270.3 keV									g		Nub211**
*72Br-85Rb.847		D_M=11308.4(1.1) uu, 11417.2(1.2) for gs and 72Brm at 100.76(0.15) keV									g		Nub211**
*		~ resp M-A=-59062.0(1.0) and --58960.7(1.1) keV									K		15Va05**
*71Ga(n,g)72Ga		F : E(g) systematically lower than for other authors; ~ Z recalibrated									h		AHW **
*72Zn(B-)72Ga		E-=260(20) 296(6) resp, to 1^+ level at 161.53 keV									h		Ens102**
*72Ga(B-)72Ge		E-=3166(20) 3150(10) resp, to 2^+ level at 834.01 keV									h		Ens102**
*72Kr(B+)72Br		E+=3794(180), 3626(105), 3682(80), 3364(155) to 162.67, 309.84 1^+,									h		73Sc17**
*		~ 415.05 1^+ and 576.74 1^+ levels									h		Ens102**

73Mn-u		-7193#	644#				2				g	1.0	S-u20c
73Fe-u		-25754#	537#				2				g	1.0	S-u20b
73Co-u		-40762#	322#				2				g	1.0	S-u185
73Ni-u		-52500	500	-53793.319	2.601	-1.7	U				HTO6	1.5	98Ba.A
73Cu-u		-64410	1180	-63325.623	2.085	.6	Z				GA2	1.5	89Gi.A
73Cu-u		-62740	350	-63325.623	2.085	-1.1	U				MTO6	1.5	98Ba.A
73Cu-85Rb.859		12447.9	4.2	12446.996	2.085	-.2	1	25	25	73Cu	MMA8	1.0	07Gu09
73Zn-u		-70100	380	-70417.419	2.000	-.6	U				MTO6	1.5	98Ba.A,*
73Zn-85Rb.859		5355.2	2.0				2				HMA8	1.0	08Ba54
73Ga-85Rb.859		947.3	1.8				2				MMA8	1.0	07Gu09
C4 H9 O-73Ge		141878.4	2.1	141880.952	0.061	.5	U				hM15	2.5	63Ri07
73Se-85Rb.859		2524.7	2.9	2527.500	7.970	1.0	Z				hMA8	1.0	04He.A
73Se-85Rb.859		2511	11	2527.500	7.970	1.5	1	52	52	73Se	HMA8	1.0	11He10,*
73Br-u		-68428	97	-68326.559	7.237	.7	U				HGT1	1.5	01Ha66
73Br-u		-68315.3	19.4	-68326.559	7.237	-.6	1	14	14	73Br	GMR1	1.0	20Ku19
73Br 27Al-85Rb1.176		16945.3	7.8	16947.120	7.237	.2	Z				hMA8	1.0	04He.A
73Br 27Al-85Rb1.176		16945.3	7.8	16947.120	7.237	.2	1	86	86	73Br	HMA8	1.0	11He10
73Kr-85Rb.859		15062.8	10.2	15061.813	7.062	-.1	Z				mMA8	1.0	01Ke.A
73Kr-85Rb.859		15061.8	7.1	15061.813	7.062	.0o	o				HMA8	1.0	04Ro32,*
73Kr-85Rb.859		15062.8	9.7	15061.813	7.062	-.1	-2-				hMA8	1.0	06Ro11
73Kr-85Rb.859		15060.7	10.3	15061.813	7.062	.1	-2-				HMA8	1.0	06Ro11
73Kr-85Rb.859	ave	15061.813	7.062				2						average
73Sr-u		-34300#	430#				2				h	1.0	S-u111
73Ni-72Ge1.014		25221.8	2.6				2				HJY1	1.0	07Ra27
73Cu-72Ge1.014		15689.2	2.4	15689.495	2.084	.1	1	75	75	73Cu	HJY1	1.0	07Ra27
72Ge H-73Ge		6443.9	1.3	6441.902	0.054	-.6	U				hM15	2.5	63Ri07
73Br-72Br		-4610	330	-4921.165	7.320	-.4	U				mCR1	2.5	89Sh10,*
73Br-72Br		-4709	166	-4921.165	7.320	-.9	U				HCR2	1.5	91Sh19,*
72Ge(n,g)73Ge		6783.4	0.9	6782.940	0.050	-.5	U				h		72Gr34
72Ge(n,g)73Ge		6780.9	2.	6782.940	0.050	1.0	U				h		72Ha74
72Ge(n,g)73Ge		6782.94	0.05	6782.940	0.050	.0	1	100	100	72Ge	mMMn		91Is01,Z
72Ge(n,g)73Ge		6783.12	0.15	6782.940	0.050	-1.2	U				MBdn		06Fi.A
72Ge(d,p)73Ge		4571	4	4558.374	0.050	-3.2B	B				HAld		69He05,W
72Ge(d,p)73Ge		4563	10	4558.374	0.050	-.5	U				hKop		72Ha74
72Ge(d,p)73Ge		4541	10	4558.374	0.050	1.7	U				hKyu		73Ka03
72Ge(3He,d)73As		160	4	162.342	3.852	.6	1	93	93	73As	Hei		76Sc13
73Kr(ep)72Se		3700	150	4027.460	6.862	2.2	U				hChR		81Ha44
73Rb(p)72Kr		640	40				3				G		20Ho17
73Rbi(p)72Kr		3803	40	3843.000	17.889	1.0	-3-				H		93Ba61
73Rbi(p)72Kr		3853	20	3843.000	17.889	-.5	-3-				G		20Ho06
73Rbi(p)72Kr	ave	3843.000	17.889				3						average
73Ga(B-)73Ge		1554	40	1598.189	1.678	1.1	U				H		58Yt22,*
73Ga(B-)73Ge		1564	80	1598.189	1.678	.4	U				H		70Wa21,*

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 73Ge(p,n)73As                   -1121.6      15.       -1127.123     3.853     -.4   U                   HOak      64Jo11,*
 73Se(B+)73As                     2740        10         2725.360     7.399    -1.5   1     55  48  73Se            56Ha10,*
 73Br(B+)73Se                     4748       500         4581.610    10.028     -.3   U                   h         70Mu02,*
 73Br(B+)73Se                     4648       400         4581.610    10.028     -.2   U                   m         74Ro11,*
 73Br(B+)73Se                     4688       140         4581.610    10.028     -.8   U                   H         87He21,*
 73Br(B+)73Se                     4610        70         4581.610    10.028     -.4   U                   H         01To06
 73Kr(B+)73Br                     6790       350         7094.029     9.419      .9   U                   M         73Sc17,*
 73Kr(B+)73Br                     6860       220         7094.029     9.419     1.1   U                   M         97Oi01
*73Zn-u                         M-A=-65200(350) keV for mixture gs+m at 195.5 keV                         g         Nub211**
*73Se-85Rb.859                  D_M=2524.6(7.3) uu   for mx gs+m at 25.71 keV; M-A=-68230.0(6.8) keV      g         Nub211**
*73Kr-85Rb.859                  Combined results of next two items                                        h         GAu065**
*73Br-72Br                      D_M=-4660(330) uu   corr for 72Br gs+m mixture at 100.76 keV              g         Nub211**
*73Br-72Br                      From 72Br/73Br=0.98635312(227)                                                      AHW   **
*72Ge(d,p)73Ge                  Original error 4 clearly too low compared too other Ald data; AHW used 10           AHW   *W
*73Ga(B-)73Ge                   E-=1190(40) 1200(80) resp, to 3/2^- level at 364.02 keV                   H         Ens043**
*73Ge(p,n)73As                  T=1205(15) to 5/2^- level at 67.039(0.008)keV                             H         Ens043**
*73Se(B+)73As                   E+=1290(10) to 9/2^+ level at 427.906 keV                                 H         Ens043**
*73Br(B+)73Se                   E+=3700(500) 3600(400) 3640(140) resp, to 73Sem at 25.71 keV              g         Nub211**
*73Kr(B+)73Br                   E+=5589(350) to 3/2^- level at 178.08 keV                                 h         Ens043**


 74Fe-u                         -22179#      537#                                     2                   g    1.0 S-u212
 74Co-u                         -36007#      429#                                     2                   g    1.0 S-u185
 74Ni-u                         -52830      1060       -52282#      215#         .5D  D                   HMT1 1.0 11Es06,*
 74Ni-u                         -52282#      215#                                     2                   g    1.0 S-u212
 74Cu-u                         -59400       400       -60125.139     6.600    -1.2   U                   MTO6 1.5 98Ba.A
 74Cu-85Rb.871                   16706.0       6.6                                    2                   MMA8 1.0 07Gu09
 74Zn-85Rb.871                    6238.4       2.7                                    2                   HMA8 1.0 08Ba54
 74Ga-85Rb.871                    3776.9      22.6       3776.865     3.214     -.0   U                   hMA8 1.0 07Ke09,*
 74Ga-85Rb.871                    3776.9       4.0       3776.865     3.214     -.0  -2-                  MMA8 1.0 07Gu09
 74Ga-85Rb.871                    3806.5      34.6       3776.865     3.214     -.9   U                   HMA8 1.0 07Ke09,*
 74Ga-85Rb.871                    3776.8       5.4       3776.865     3.214      .0  -2-                  kTT1 1.0 15Ma30,G
 74Ga-85Rb.871             ave    3776.865     3.214                                  2                            average
 C 32S2-74Ge H2                   7314.0       1.4       7314.522     0.014      .1   U                   hM15 2.5 63Ri07
 74Ge-84Kr                       9680.0337     0.0128    9680.034     0.013      .0   1    100 100  74Ge HFS1 1.0 10Mo03
 C6 H2-74Se                      93173.8       3.8      93174.130     0.016      .0   U                   MM15 2.5 63Ri07
 74Se-84Kr                      10978.2066     0.0128  10978.207     0.015      .0o  o                   HFS1 1.0 10Mo03,*
 74Se-85Rb.871                    -692.0       2.8       -692.927     0.016     -.3   Z                   hMA8 1.0 04He.A
 74Se-85Rb.871                    -691.4       7.3       -692.927     0.016     -.2   U                   HMA8 1.0 11He10
 74Br 27Al-85Rb1.188             16253.4       5.3      16242.478     6.264    -2.1   Z                   hMA8 1.0 04He.A
 74Br 27Al-85Rb1.188             16246.0       6.8      16242.478     6.264     -.5   1     85  85  74Br HMA8 1.0 11He10,*
 74Kr-85Rb.871                    9917.5       1.8       9915.156     2.162    -1.3   Z                   mMA8 1.0 01Ke.A
 74Kr-85Rb.871                    9915.0       2.2       9915.156     2.162      .1o  o                   HMA8 1.0 04Ro32,*
 74Kr-85Rb.871                    9916.8       2.6       9915.156     2.162     -.6  -1-                  hMA8 1.0 06Ro11
 74Kr-85Rb.871                    9909.7       4.4       9915.156     2.162     1.2  -1-                  HMA8 1.0 06Ro11
 74Kr-85Rb.871             ave    9914.962     2.238     9915.156     2.162      .1   1     93  93  74Kr            average
 74Rb-85Rb.871                   21103        20        21097.006     3.250     -.3   Z                   hMA8 1.0 01Ke.A
 74Rb-85Rb.871                   21109        19        21097.006     3.250     -.6   U                   hMA8 1.0 07Ke09
 74Rb-85Rb.871                   21097.9       4.3      21097.006     3.250     -.2o  o                   HMA8 1.0 04Ke10,*
 74Rb-85Rb.871                   21095.7       5.2      21097.006     3.250      .3  -1-                  HMA8 1.0 07Ke09
 74Rb-85Rb.871                   21102.7       7.5      21097.006     3.250     -.8  -1-                  HMA8 1.0 07Ke09
 74Rb-85Rb.871                   21096.4       6.5      21097.006     3.250      .1  -1-                  kTT1 1.0 15Ma30,G
 74Rb-85Rb.871             ave   21097.498     3.571    21097.006     3.250     -.1   1     83  83  74Rb            average
 74Rb-u                         -55765       125       -55734.133     3.250      .2   U                   HP40 1.0 06Lu19
 74Sr-u                         -43830#      107#                                     2                   h    1.0 S-u048,*
 74Ge 35Cl-72Ge 37Cl              2047.5       1.1       2052.061     0.105     1.0   U                   hH18 4.0 64Ba03
 74Ge 35Cl-72Ge 37Cl              2047.74      0.71      2052.061     0.105     2.4   U                   hH40 2.5 85El01
 74Ge 35Cl-72Ge 37Cl              2052.01      0.26      2052.061     0.105      .1   U                   HH44 1.5 91Hy01
 74Se 35Cl-72Ge 37Cl              3347.9       4.7       3350.234     0.106      .2   U                   hH40 2.5 85El01
 73Ge H-74Ge                     10105.1       1.7      10106.226     0.060      .3   U                   hM15 2.5 63Ri07
 74Se-74Ge                        1298.5       8.5       1298.173     0.008     -.0   U                   hH40 2.5 85El01
 74Se-74Ge                        1298.7       3.7       1298.173     0.008     -.1   U                   hH40 2.5 85El01
 74Se-74Ge                        1298.096     0.053     1298.173     0.008     1.5   U                   HJY1 1.0 10Ko15
 74Se-74Ge                        1298.1729    0.0080    1298.173     0.008      .0   1    100 100  74Se HFS1 1.0 10Mo03
 74Br-73Br                       -1244       410       -1763.162     9.572     -.5   U                   hCR1 2.5 89Sh10,*
 74Se(p,t)72Se                  -11979        24      -12005.862     1.956    -1.1   U                   HWin      74De31,*
 74Ge(14C,15O)73Zn               -8018       150       -7664.769     1.926     2.4   U                   hOrs      84De33
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 74Ge(d,3He)73Ga               -5515         7        -5518.603     1.677     -.5   U                   MOrs    78Ro14
 74Ge(d,3He)73Ga               -5509        13        -5518.603     1.677     -.7   U                   MHei    84Ha31
 73Ge(n,g)74Ge                 10200.2       0.6      10196.237     0.055    -6.6B  B                   h       70Ha60
 73Ge(n,g)74Ge                 10198         2        10196.237     0.055     -.9   U                   h       74Ch18
 73Ge(n,g)74Ge                 10195.90      0.15     10196.237     0.055     2.2  -1-                  mILn    85Ho.A,Z
 73Ge(n,g)74Ge                 10196.32      0.14     10196.237     0.055     -.6  -1-                  H       89Bu.A
 73Ge(n,g)74Ge                 10196.31      0.07     10196.237     0.055    -1.0  -1-                  mMMn    91Is01,Z
 73Ge(n,g)74Ge                 10196.06      0.20     10196.237     0.055      .9  -1-                  MBdn    06Fi.A
 73Ge(n,g)74Ge             ave 10196.236     0.056    10196.237     0.055      .0   1    100 100  73Ge          average
 74Se(d,3He)73As               -3027         8        -3055.950     3.853    -3.6B  B                   HOrs    83Ro08,*
 74Zn(B-)74Ga                   2350       100         2292.906     3.910     -.6   U                   M       72Er05,*
 74Ga(B-)74Ge                   5400       100         5372.825     2.994     -.3   U                   M       62Ei02,*
 74As(B+)74Ge                   2558         4         2562.387     1.693     1.1  -1-                          71Bo01,*
 74Ge(p,n)74As                 -3343.5       5.6      -3344.734     1.693     -.2  -1-                   Tkm    63Ok01
 74Ge(p,n)74As                 -3348.3       5.       -3344.734     1.693      .7  -1-                  mOak    64Jo11,Z
 74Ge(p,n)74As                 -3346         5        -3344.734     1.693      .3  -1-                  m       70Fi03,Z
 74Ge(p,n)74As                 -3347         3        -3344.734     1.693      .8  -1-                   Kyu    73Ki11
 74As(B+)74Ge              ave  2562.856     1.869     2562.387     1.693     -.3   1     82  82  74As          average
 74As(B-)74Se                   1351         4         1353.147     1.693      .5   1     18  18  74As          71Bo01,*
 74Br(B+)74Se                   6857       100         6925.049     5.835      .7   U                   N       69La15,*
 74Se(p,n)74Br                 -7689        15        -7707.396     5.835    -1.2   1     15  15  74Br          75Lu02,*
 74Kr(B+)74Br                   3000       200         2956.317     6.173     -.2   U                   M       74Ro11
 74Kr(B+)74Br                   3327       125         2956.317     6.173    -3.0B  B                   k       75Sc07
 74Rb(B+)74Kr                  10000      1500        10415.828     3.424      .3   U                   h       76Da.D
 74Rb(B+)74Kr                  10400        40        10415.828     3.424      .4   Z                   m       01Ga24,G
 74Rb(B+)74Kr                  10413.8       7.0      10415.828     3.424      .3   1     24  17  74Rb  H       03Pi08,*
*74Ni-u                      Trends from Mass Surface TMS suggest  74Ni   510 keV less bound          G       GAu212**
*74Ga-85Rb.871               D_M=3780.1(22.5) uu corr --3.0(1.7) keV for gs+m mx R<0.1 at 59.571 keV  g       Nub211**
*74Ga-85Rb.871               D_M=3809.7(34.6) uu corr --3.0(1.7) keV for gs+m mx R<0.1 at 59.571 keV  g       Nub211**
*74Ga-85Rb.871               D_M= 3776.9(5.4) uu  M-A=-68049.6(5.0)keV corr for e- binding=-60eV      k       11Et.A*G
*                             ~ isomeric mixture 200:1                                                k       11Et.A*G
*74Se-84Kr                   Not independent measurement, use 74Ge-74Se below                         HFS1    10Mo03**
*74Br 27Al-85Rb1.188         D_M=16253.4(5.3) uu for mixture gs+m at 13.58 keV; M-A=-82474.9(4.9) keV g       Nub211**
*74Kr-85Rb.871               Combined results of next two items                                       h       GAu065**
*74Rb-85Rb.871               Combined results of next two items                                       H       GAu065**
*74Rb-85Rb.871               D_M=21096.4(6.5) uu  M-A=-51916.6(6.0)keV corr for e- binding=+66eV      k       11Et.A*G
*74Sr-u                      from mirror of 74Kr                                                      h       04Ro32**
*74Br-73Br                   D_M=-1230(410) uu    for 74Brm at 13.58 keV                              g       Nub211**
*74Se(p,t)72Se               Original error 12; added systematic error 21 keV                         H       GAu092**
*74Se(d,3He)73As             Q=-3033(8) for Q(76Se(d,3He))=-4020.7(2.0), now 4014.5 keV                       AHW   **
*74Zn(B-)74Ga                E-=2100(100) to 1^+ level at 251.787 keV                                 h       Ens067**
*74Ga(B-)74Ge                E-=2450(100) to 3^- level at 2949.48 keV                                 h       Ens067**
*74As(B+)74Ge                Original error increased: authors report E(2^+)=593.1(1.5) while                 AHW   **
*                             ~ E(2^+)=595.850(0.006) keV; see also 84Rb(B+)                          h       Ens067**
*74As(B-)74Se                Original value 1350.1(0.7), error increased, see 84Rb(B+)                        AHW   **
*74Br(B+)74Se                E+=5200(100), 4500(100) to 634.76, 1363.21 levels                        N       69La15**
*                             ~ from 74Brm at 13.8(0.5) keV                                           N       93Do05**
*74Se(p,n)74Br               T=7868(15) to (2^-) level at 72.65 keV                                   h       Ens067**
*74Rb(B+)74Kr                Wrong. Not measured in that work                                         m       GAu039*G
*74Rb(B+)74Kr                Deduced from measured half-life and branching ratio                      M       GAu039**
*74Rb(B+)74Kr                Original 10405(9) re-evaluated in ref.                                   H       11To.A**


 75Fe-u                       -15781#      644#                                 2                   g    1.0 S-u212
 75Co-u                       -32808#      429#                                 2                   g    1.0 S-u185
 75Ni-u                       -47494#      215#                                 2                   g    1.0 S-u212
 75Cu-u                       -58100       700       -58476.183     0.771     -.4   U                   HT06 1.5 98Ba.A
 75Cu-85Rb.882                 19325.40      0.81     19325.273     0.771     -.2   1     91  91  75Cu GMA8 1.0 17We16
 75Zn-85Rb.882                 10641.7       2.1                                2                   HMA8 1.0 08Ba54
 75Ga-85Rb.882                  4301.7       2.6       4305.940     0.720     1.6   U                   GMA8 1.0 07Gu09
 75Ga-85Rb.882                  4305.94      0.72                               2                   GMA8 1.0 19Hu15
 C3 H7 O2-75As                123009.8       2.6     123009.900     0.949      .0   U                   hM15 2.5 63Ri07
 75As-85Rb.882                  -601.3       7.6       -603.982     0.949     -.4   U                   MMA8 1.0 02Ke.A
 75Br 27Al-85Rb1.200           13201.3       4.6      13201.296     4.600     -.0   Z                   hMA8 1.0 04He.A
 75Br 27Al-85Rb1.200           13201.3       4.6                                2                   HMA8 1.0 11He10
 75Kr-85Rb.882                  8749.0       4.4       8747.200     8.700     -.4   Z                   mMA8 1.0 01Ke.A
 75Kr-85Rb.882                  8747.2       8.7                                2                   hMA8 1.0 06Ro11
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75Rb-u		-61430.1	15.0	-61426.800	1.267	.2	Z				MA2	1.0	89Sa.A
75Rb-85Rb.882		16371	8	16374.656	1.267	.5	U				HMA2	1.0	94Ot01
75Rb-85Rb.882		16374.7	1.7	16374.656	1.267	-.0	-2-				HMA8	1.0	07Ke09
75Rb-85Rb.882		16368	21	16374.656	1.267	.3	U				HMA8	1.0	07Ke09
75Rb-85Rb.882		16374.6	1.9	16374.656	1.267	.0	-2-				kTT1	1.0	15Ma30,G
75Rb-85Rb.882	ave	16374.656	1.267				2						average
75Sr-u		-49670	270	-50047.232	236.183	-.6	Z					2.5	IMME
75Y-u		-34160#	322#				2				k	1.0	S-u168
75Cu-72Ge1.042		22719.6	2.5	22720.813	0.774	.5	1	10	9	75Cu	HJY1	1.0	07Ra27
75As 35Cl-73Ge 37Cl		1079.6	5.0	1085.732	0.953	.5	U				hH40	2.5	85El01
74Ge(n,g)75Ge		6505.9	1.1	6505.840	0.050	-.1	U				h		72Gr34
74Ge(n,g)75Ge		6505.5	2.	6505.840	0.050	.2	U				h		72Ha74
74Ge(n,g)75Ge		6505.81	0.30	6505.840	0.050	.1	U				H		89Bu.A,*
74Ge(n,g)75Ge		6505.26	0.08	6505.840	0.050	7.2B	B				mMMn		91Is01,Z
74Ge(n,g)75Ge		6505.45	0.14	6505.840	0.050	2.8C	C				hBdn		06Fi.A
74Ge(n,g)75Ge		6505.84	0.05				2				H		12Me04
74Ge(d,p)75Ge		4265	15	4281.274	0.050	1.1	U				hMIT		67Sp09
74Ge(d,p)75Ge		4282	10	4281.274	0.050	-.1	U				hKop		72Ha74
74Ge(d,p)75Ge		4268	10	4281.274	0.050	1.3	U				hKyu		73Ka03
74Ge(p,g)75As		6901.6	5.	6900.723	0.884	-.2	U				m		74Wa08
74Ge(3He,d)75As		1414	4	1407.248	0.884	-1.7	U				HHei		76Sc13
75As(g,n)74As		-10259	31	-10245.457	1.910	.4	U				hPhi		60Ge01
74Se(n,g)75Se		8027.84	0.30	8027.597	0.072	-.8	U				hBNn		81En07,Z
74Se(n,g)75Se		8027.60	0.08	8027.597	0.072	-.0	-1-				mILn		84To11,Z
74Se(n,g)75Se		8027.59	0.16	8027.597	0.072	.0	-1-				MBdn		06Fi.A
74Se(n,g)75Se	ave	8027.598	0.072	8027.597	0.072	-.0	1	100	100	75Se			average
75Zn(B-)75Ga		6060	80	5901.723	2.068	-2.0	U				HStu		86Ek01
75Ga(B-)75Ge		3300	200	3396.334	0.673	.5	U				h		60Mo01
75Ge(B-)75As		1188	20	1177.230	0.885	-.5	U				h		55Sc09
75As(p,n)75Se		-1647.2	2.0	-1647.061	0.882	.1	-1-				mNvl		59Go68,Z
75As(p,n)75Se		-1647.3	1.1	-1647.061	0.882	.3	-1-				mOak		64Jo11,Z
75As(p,n)75Se		-1643	5	-1647.061	0.882	-.8	U				h		70Fi03
75As(p,n)75Se	ave	-1647.303	0.954	-1647.061	0.882	.3	1	85	85	75As			average
75Br(B+)75Se		3010	20	3062.469	4.285	2.6	U				H		52Fu04,*
75Br(B+)75Se		3030	50	3062.469	4.285	.6	U				m		61Ba43,*
75Br(B+)75Se		3050	20	3062.469	4.285	.6	U				H		69Ra24,*
75Kr(B+)75Br		4400	200	4783.388	9.167	1.9	U				H		74Ro12,*
75Sr(e)75Rb		10600	220				3				M		03Hu01
*75Rb-85Rb.882		D_M=16374.5(1.9) uu M-A=-57218.8(1.7)keV corr for e- binding=+74eV									k		11Et.A*G
*74Ge(n,g)75Ge		Original error 0.03 keV increased									H		GAu126**
*75Br(B+)75Se		E+=1700(20) 1720(50) 1740(20) resp, to 3/2^- level at 286.5714 keV									k		Ens139**
*75Kr(B+)75Br		E+=3200(200) to 132.46 (5/2)^+, 154.61 (3/2)^+ levels									k		Ens139**

76Fe-u		-11369#	644#				2				g	1.0	S-u212
76Co-u		-27547#	537#				2				g	1.0	S-u185
76Ni-u		-45293#	322#				2				g	1.0	S-u212
76Cu-85Rb.894		24135.0	7.2	24128.950	0.980	-.8o	o				GMA8	1.0	07Gu09
76Cu-85Rb.894		24128.95	0.98				2				GMA8	1.0	17We16
76Zn-85Rb.894		11975.5	2.0	11974.932	1.563	-.3	1	61	61	76Zn	HMA8	1.0	08Ba54
76Zn-88Rb.864		9737.4	2.5	9738.288	1.564	.4	1	39	39	76Zn	HJY1	1.0	08Ha23
76Ga-85Rb.894		7687.6	2.1				2				MMA8	1.0	07Gu09
C 32S2-76Ge		22741.6	1.5	22739.622	0.019	-.5	U				MM15	2.5	63Ri07
76Ge-u		-78597.242	0.096	-78597.275	0.019	-.3	U				MST2	1.0	01Do08,W
C6 H4-76Se		112100	8	112086.425	0.017	-.7	U				hM15	2.5	63Ri07
76Se-u		-80786.205	0.081	-80786.297	0.017	-1.1	U				HST2	1.0	01Do08
76Kr-85Rb.894		4769.9	3.7	4770.718	4.308	.2	Z				mMA8	1.0	01Ke.A
76Kr-85Rb.894		4774.3	4.7	4770.718	4.308	-.8	1	84	84	76Kr	hMA8	1.0	06Ro11
76Rb-u		-64928.6	15.0	-64926.969	1.007	.1	Z				MA2	1.0	89Sa.A
76Rb-85Rb.894		13931	8	13933.006	1.007	.3	U				hMA2	1.0	94Ot01
76Rb-85Rb.894		13932.2	2.2	13933.006	1.007	.4	Z				mMA8	1.0	01Ke.A
76Rb-85Rb.894		13932.2	2.0	13933.006	1.007	.4	-2-				hMA8	1.0	07Ke09
76Rb-85Rb.894		13923	15	13933.006	1.007	.7	U				HMA8	1.0	07Ke09
76Rb-85Rb.894		13935.3	1.6	13933.006	1.007	-1.4	-2-				HMA8	1.0	07Ke09
76Rb-85Rb.894		13931.0	1.7	13933.006	1.007	1.2	-2-				kTT1	1.0	15Ma30,G
76Rb-85Rb.894		13925.2	4.5	13933.006	1.007	1.7	U				KTT1	1.0	15Ma30
76Rb-85Rb.894		13933.5	3.4	13933.006	1.007	-.1o	o				KTT1	1.0	15Ma30,*

76Rb-85Rb.894	ave	13933.006	1.007				2						average
76Sr 19F-85Rb1.118		38785	37				2				HMA8	1.0	05Si34
76Sr-u		-58813	107	-58237.240	37.000	5.4F	F				MCS1	1.0	01La31,*
76Y-u		-41063#	322#				2				g	1.0	S-u20b
76Ge-84Kr		9904.9983	0.0175	9904.998	0.019	-.0o	o				HFS1	1.0	10Mo03,*
76Se-84Kr		7715.9762	0.0169	7715.976	0.017	-.0	1	100	100	76Se	HFS1	1.0	10Mo03
74Ge H2-76Ge		15425.0	1.7	15425.100	0.023	.0	U				hM15	2.5	63Ri07
76Ge 35Cl-74Ge 37Cl		3175.7	1.5	3175.089	0.072	-.1	U				hH18	4.0	64Ba03
76Ge 35Cl-74Ge 37Cl		3170.41	0.74	3175.089	0.072	2.5	U				hH40	2.5	85El01
76Ge 35Cl-74Ge 37Cl		3174.61	0.41	3175.089	0.072	.8	U				hH44	1.5	91Hy01
76Se 35Cl-74Ge 37Cl		986.30	0.65	986.066	0.072	-.2	U				HH44	1.5	91Hy01
76Ge-76Se		2190.92	0.59	2189.022	0.008	-1.3	U				hH40	2.5	85El01
76Ge-76Se		2188.60	0.42	2189.022	0.008	.7	U				MH44	1.5	91Hy01
76Ge-76Se		2188.963	0.054	2189.022	0.008	1.1	U				HST2	1.0	01Do08
76Ge-76Se		2188.98	0.16	2189.022	0.008	.3	U				HJY1	1.0	08Ra09
76Ge-76Se		2189.0221	0.008	2189.022	0.008	-.0	1	100	100	76Ge	HFS1	1.0	10Mo03
75Rb-76Rb.493 74Rb.507		-1140	170	-1081.090	1.990	.1	U				MP20	2.5	82Au01
76Ge(14C,17O)73Zn		-3779	40	-3790.830	1.863	-.3	U				HOrs		84Be10,*
76Ge(14C,16O)74Zn		163	40	300.718	2.515	3.4B	B				HOrs		84Be10
76Ge(18O,20Ne)74Zn		-1219	21	-1197.062	2.515	1.0	U				HHei		84Ha31
76Ge(14C,15O)75Zn		-10354	150	-10489.711	2.017	-.9	U				HOrs		84De33
76Ge(d,3He)75Ga		-6545	7	-6547.755	0.671	-.4	U				MOrs		78Ro14
76Ge(d,3He)75Ga		-6536	22	-6547.755	0.671	-.5	U				mHei		84Ha31
75As(n,g)76As		7329	2	7328.499	0.067	-.3	U				h		68Jo11
75As(n,g)76As		7328.421	0.075	7328.499	0.067	1.0	-2-				mILn		90Ho10,Z
75As(n,g)76As		7328.81	0.15	7328.499	0.067	-2.1	-2-				HBdn		06Fi.A
75As(d,p)76As		5105	5	5103.933	0.067	-.2	U				h		76Mo32
75As(n,g)76As	ave	7328.499	0.067				2						average
75Se(n,g)76Se		11154.15	0.30	11153.788	0.075	-1.2	U				HILn		83To20,Z
76Zn(B-)76Ga		4160	80	3993.624	2.438	-2.1	U				HStu		86Ek01
76Ga(B-)76Ge		6770	150	6916.250	1.956	1.0o	o				hStu		77Al17
76Ga(B-)76Ge		7010	90	6916.250	1.956	-1.0	U				MStu		86Ek01
76Ge(p,n)76As		-1705	5	-1703.861	0.886	.2	U				h		70Fi03
76As(B-)76Se		2970	2	2960.576	0.886	-4.7B	B				H		69Na11
76Br(B+)76Se		5002	20	4962.881	9.322	-2.0	-2-						71Dz08
76Br(n,p)76Se		5730	15	5745.228	9.322	1.0	-2-				ILL		78An14
76Se(p,n)76Br		-5738.6	15.	-5745.228	9.322	-.4	-2-						75Lu02
76Br(B+)76Se	ave	4962.881	9.322				2						average
76Rb(B+)76Kr		8793	570	8534.617	4.121	-.5	U				h		75We23
76Rb(B+)76Kr		8063	44	8534.617	4.121	10.7F	F				h		82Mo10,*
76Rb(B+)76Kr		8094	162	8534.617	4.121	2.7F	F				hBNL		83Li11,*
76Rb(B+)76Kr		8250	150	8534.617	4.121	1.9	U				hIRS		93Al03
*76Ge-u		Labelled U since following from given 76Ge-76Se									M		AHW009*W
*76Rb-85Rb.894		D_M=13930.9(1.7) uu M-A=-60481.1(1.6)keV corr for e- binding=+81eV									k		11Et.A*G
*76Rb-85Rb.894		no accuracy check was performed for this 12^+ charge state									K		15Ma30**
*76Sr-u		F : other results in same paper not trusted, see 80Y									M		GAu03b**
*76Ge-84Kr		Not independent measurement, use 76Ge-76Se below									HFS1		10Mo03**
*76Ge(14C,17O)73Zn		Q=-3974(40) M-A=-65410(40) to 73Znm at 195.5 keV									H		GAu06b**
*76Rb(B+)76Kr		E+=4558(30) to level (1^+,2^+) at 2570.95 keV and corrections by authors									h		Ens953**
*76Rb(B+)76Kr		F : 29.6% feeding above 2570.95 level from ref.									h		84Mo22**

77Co-u		-23521#	644#				2				g	1.0	S-u185
77Ni-u		-40097#	429#				2				g	1.0	S-u212
77Cu-u		-51850	540	-52456.401	1.300	-1.1	U				GOR1	1.0	06Ha62
77Cu-85Rb.906		27462.1	1.3				2				GMA8	1.0	17We16
77Zn-u		-62790	780	-63112.802	2.118	-.3	U				MT06	1.5	98Ba.A,*
77Zn-u		-63380	260	-63112.802	2.118	.4	U				HGT2	2.5	08Kn.A,*
77Zn-88Rb.875		14485.7	4.5	14486.056	2.121	.1	1	22	22	77Zn	HJY1	1.0	08Ha23
77Ga-u		-70960	860	-70845.701	2.600	.1	Z				GA2	1.5	89Gi.A
C6 H5-77Se		119211.9	4.2	119211.009	0.067	-.1	U				hM15	2.5	63Ri07
77Rb-39K1.974		1912	27	2044.997	1.400	4.9B	B				hMA2	1.0	87Bo59
77Rb-u		-69591.4	15.0	-69598.401	1.400	-.5	Z				MA2	1.0	89Sa.A
77Y-u		-50010	320	-49854#	218#	.2	Z					2.5	IMME
77Zr-u		-33924#	429#				2				g	1.0	S-u20b
77Zn-85Rb.906		16805.8	2.4	16805.699	2.118	-.0	1	78	78	77Zn	HMA8	1.0	08Ba54
77Ga-85Rb.906		9072.8	2.6				2				MMA8	1.0	07Gu09

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 77Ga-85Rb.906                   9070.0      4.6       9072.800     2.600     .6  U              GMA8 1.0 19Hu15
 77Kr-85Rb.906                   4588.7      2.8       4588.500     2.100    -.1  Z              mMA8 1.0 01Ke.A
 77Kr-85Rb.906                   4588.5      2.1                                2              hMA8 1.0 06Ro11
 77Rb-85Rb.906                  10327        8        10320.100     1.400    -.9  U              HMA2 1.0 94Ot01
 77Rb-85Rb.906                  10320.1      1.4                                2              HMA8 1.0 07Ke09
 77Sr 19F-85Rb1.129             35938.0      8.5                                2              HMA8 1.0 05Si34
 75Rb-77Rb.325 74Rb.676         -1340      380        -1053.564     2.400     .3  U              MP20 2.5 82Au01
 76Rb-77Rb.494 75Rb.507           525       30          557.062     1.285     .4  U              hP20 2.5 82Au01
 76Ge(n,g)77Ge                   6072.5      1.0       6071.290     0.050   -1.2  U              H        72Gr34,Z
 76Ge(n,g)77Ge                   6071.7      1.2       6071.290     0.050    -.3  U              M        72Ha74,Z
 76Ge(n,g)77Ge                   6072.3      0.4       6071.290     0.050   -2.5  U              HBdn     06Fi.A
 76Ge(n,g)77Ge                   6071.29     0.05                               2              H        12Me04
 76Ge(d,p)77Ge                   3839       10         3846.724     0.050     .8  U              hKop     72Ha74
 76Ge(d,p)77Ge                   3823       12         3846.724     0.050    2.0  U              hKyu     73Ka03
 76Ge(3He,d)77As                 2497        3         2498.932     1.692     .6  1    32  32  77As  Hei      76Sc13
 76Se(n,g)77Se                   7418.87     0.20      7418.856     0.060    -.1  -1-            mBNn     81En07
 76Se(n,g)77Se                   7418.85     0.07      7418.856     0.060     .1  -1-            mILn     85To10,Z
 76Se(n,g)77Se                   7418.85     0.15      7418.856     0.060     .0  -1-            MBdn     06Fi.A
 76Se(d,p)77Se                   5192       10         5194.289     0.060     .2  U              hAld     63Ma27
 76Se(n,g)77Se          ave      7418.852    0.060     7418.856     0.060     .1  1    99  99  77Se           average
 77Sr(ep)76Kr                    3850      200         3921.292     8.877     .4  U              MChR     76Ha29
 77Y(p)76Sr                       520#     200#                                 3              k        S-u169,G
 77Zn(B-)77Ga                    7270      120         7203.149     3.124    -.6  U              HStu     86Ek01
 77Ga(B-)77Ge                    5340       60         5220.518     2.422   -2.0  U              MStu     77Al17
 77Ga(B-)77Ge                    5690      300         5220.518     2.422   -1.6  U              hStu     86Ek01
 77Ge(B-)77As                    2670      100         2703.464     1.693     .3  U              h        52Sm13,*
 77As(B-)77Se                     700        7          683.163     1.692   -2.4  U              h        51Ca04
 77As(B-)77Se                     679        4          683.163     1.692    1.0  1    18  18  77As           51Je01
 77Br(B+)77Se                    1358       20         1364.679     2.810     .3  U              h        51Ca28
 77Se(p,n)77Br                  -2147        4        -2147.026     2.810    -.0  -2-             Oak     58Jo01
 77Se(p,n)77Br                  -2147.0      4.       -2147.026     2.810     .0  -2-             Tkm     63Ok01
 77Se(p,n)77Br          ave     -2147.026    2.810                              2                       average
 77Kr(B+)77Br                    3012       30         3065.366     3.424    1.8  U              M        55Th01,*
 77Kr(B+)77Br                    3027       40         3065.366     3.424    1.0  U              h        73Ba22,*
 77Kr(B+)77Br                    3300      100         3065.366     3.424   -2.3  U              h        74Ro11,*
 77Kr(B+)77Br                    2760       42         3065.366     3.424    7.3B B              h        82Mo10,*
 77Rb(B+)77Kr                    5180      390         5338.952     2.351     .4  U              h        75We23
 77Rb(B+)77Kr                    5272       26         5338.952     2.351    2.6  U              h        82Mo10
 77Rb(B+)77Kr                    5113       69         5338.952     2.351    3.3B B               BNL     83Li11
 77Rb(B+)77Kr                    5320       70         5338.952     2.351     .3  U              hIRS     93Al03
 77Sr(B+)77Rb                    6986      227         7027.057     8.024     .2  U              MBNL     83Li11
*77Zn-u                         M-A=-58100(700) keV for mixture gs+m at 772.440 keV              g        Nub211**
*77Zn-u                         M-A=-58648(95) keV  for mixture gs+m at 772.440 keV (1/2^-)      g        Nub211**
*77Y(p)76Sr                     T=63(17)ms -> S(p)>-180  Qp<180                                  g        Nub211*G
*77Ge(B-)77As                   E-=2196(100) to 9/2^+ 77Asm at 475.48 keV                        g        Nub211**
*77Kr(B+)77Br                   Error not in 55*Th*01, estimated by evaluator                    h        AHW   **
*77Kr(B+)77Br                   E+=1860(30) 1875(40) resp, to 5/2^+ level at 129.64 keV          k        Ens126**
*77Kr(B+)77Br                   E+=2000(100) 1528(36) resp, to (3/2)^+ level at 276.22 keV       k        Ens126**


 78Co-u                        -16447#     751#                                 2              g    1.0 S-u185
 78Ni-u                        -37445#     429#                                 2              g    1.0 S-u212
 78Cu-u                        -47770      540       -48083.476    14.312    -.6  U              HOR1 1.0 06Ha62
 78Cu-u                        -48115.2     23.6     -48083.476    14.312    1.3  1    37  37  78Cu GMR1 1.0 17We16
 78Cu-85Rb.918                  32912       18        32893.545    14.312   -1.0  1    63  63  78Cu GMA8 1.0 17We16
 78Zn-88Rb.886                  16863.8      2.9      16863.589     2.086    -.1  1    52  52  78Zn HJY1 1.0 08Ha23
 78Ga-88Rb.886                  10184.3      3.3      10185.240     1.136     .3  1    12  12  78Ga HJY1 1.0 08Ha23
 C6 H6-78Se                    129642.6      2.2     129640.947     0.192    -.3  U              hM15 2.5 63Ri07
 C6 H6-78Kr                    126548.3      3.6     126583.850     0.330    3.9B B              MM15 2.5 63Ri07
 C6 H6-78Kr                    126554       17       126583.850     0.330    1.2  U              hR11 1.5 78Di09
 C6 H6-78Kr                    126560        7       126583.850     0.330    2.3  U              hR11 1.5 78Di09
 C5 N H4-78Kr                  113994       20       114007.790     0.330     .5  U              hR11 1.5 78Di09
 78Y-u                         -56010#     320#                                 2              k    1.0 S-u167
 78Zr-u                        -43854#     429#                                 2              k    1.0 S-u168
 78Kr-86Kr.907                   1441.2      1.0       1442.505     0.330    1.3  1    11  11  78Kr HMS1 1.0 06Ri15
 78Zn-85Rb.918                  19266.0      3.0      19266.225     2.087     .1  1    48  48  78Zn HMA8 1.0 08Ba54
 78Ga-85Rb.918                  12585.2      2.6      12587.876     1.128    1.0  U              GMA8 1.0 07Gu09
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78Ga-85Rb.918		12588.0	1.2	12587.876	1.128	-.1	1	88	88	78Ga	GMA8	1.0	19Hu15
78Kr-85Rb.918		1344.2	1.8	1343.362	0.330	-.5	Z				mMA8	1.0	01Ke.A
78Kr-85Rb.918		1342.3	1.4	1343.362	0.330	.8	U				KMA8	1.0	06Ro11
78Kr-85Rb.918		1338.9	2.2	1343.362	0.330	2.0	U				KMA8	1.0	06Ro11
78Rb-85Rb.918		9118	8	9118.888	3.476	.1	-2-				hMA2	1.0	94Ot01
78Rb-85Rb.918		9121.3	7.5	9118.888	3.476	-.3	-2-				HTT1	1.0	12Ga15,*
78Rb-85Rb.918		9118.3	4.5	9118.888	3.476	.1	-2-				HTT1	1.0	12Ga15,*
78Rb-85Rb.918	ave	9118.888	3.476				2						average
78Sr-85Rb.918		13157	8				2				hMA2	1.0	94Ot01
78Se 35Cl2-74Ge 37Cl2		2030.4	2.2	2031.732	0.236	.4	U				hH44	1.5	91Hy01
78Se 35Cl-76Ge 37Cl		-1147.60	0.92	-1143.357	0.203	1.8	U				hH40	2.5	85El01
78Se 35Cl-76Ge 37Cl		-1143.57	0.72	-1143.357	0.203	.2	U				HH44	1.5	91Hy01
78Se 35Cl-76Se 37Cl		1042.03	1.35	1045.665	0.203	1.1	U				hH40	2.5	85El01
78Se 35Cl-76Se 37Cl		1044.58	0.45	1045.665	0.203	1.6	U				HH44	1.5	91Hy01
76Se H2-78Kr		14440	25	14497.425	0.329	1.5	U				hR11	1.5	78Di09
77Se H-78Kr		7367	26	7372.840	0.324	.1	U				hR11	1.5	78Di09
78Kr-78Se		3074	16	3057.097	0.279	-.7	U				hR11	1.5	78Di09
78Kr-78Se		3098	20	3057.097	0.279	-1.4	U				hR11	1.5	78Di09
78Kr-78Se		3057.18	0.29	3057.097	0.279	-.3	1	92	89	78Kr	KMS1	1.0	13Bu17
78Se H-78Kr		4724	33	4767.934	0.279	.9	U				hR11	1.5	78Di09
76Rb-78Rbx.325 75Rb.676		-130	40	-69.286	4.223	.6	U				hP20	2.5	82Au01
77Rb-78Rbx.494 76Rb.507		-1192	19	-1138.054	6.295	1.1	U				mP20	2.5	82Au01
78Kr(a,8He)74Kr		-41080	75	-41031.206	2.039	.7	U				MTex		82Mo23,*
78Se(p,a)75As		870.9	2.3	872.307	0.896	.6	1	15	15	75As	NDm		82Zu04
78Kr(3He,6He)75Kr		-12581	14	-12515.528	8.110	4.7B	B				M		87Mo06
76Ge(t,p)78Ge		6310	5	6310.000	3.536	-.0	-2-				LAl		78Ar12
76Ge(t,p)78Ge		6310	5	6310.000	3.536	-.0	-2-				Phi		81St18
76Ge(t,p)78Ge	ave	6310.000	3.536				2						average
78Se(p,t)76Se		-9433.7	4.3	-9434.832	0.178	-.3	U				hNDm		82Zu04
78Kr(a,6He)76Kr		-20351	10	-20331.757	4.018	1.9o	o				hTex		82Mo23,*
78Kr(p,t)76Kr		-12840	15	-12825.417	4.018	1.0	U				MTky		81Ma30
78Se(d,3He)77As		-4904	4	-4905.114	1.696	-.3	1	18	18	77As	Ors		83Ro08,*
77Se(n,g)78Se		10497.7	0.3	10497.773	0.168	.2	-1-				BNn		81En07,Z
77Se(n,g)78Se		10497.75	0.21	10497.773	0.168	.1	-1-				MBdn		06Fi.A
78Se(p,d)77Se		-8271.9	4.0	-8273.206	0.168	-.3	U				hNDm		82Zu04
77Se(n,g)78Se	ave	10497.734	0.172	10497.773	0.168	.2	1	96	95	78Se			average
78Kr(d,t)77Kr		-5804	7	-5822.920	1.980	-2.7	U				h		87Mo06
78Zn(B-)78Ga		6440	140	6220.843	2.209	-1.6o	o				mStu		86Ek01
78Zn(B-)78Ga		6364	90	6220.843	2.209	-1.6	U				HStu		00Me.A
78Ga(B-)78Ge		8140	160	8157.973	3.688	.1o	o				hStu		77Al17,W
78Ga(B-)78Ge		8200	80	8157.973	3.688	-.5o	o				mStu		86Ek01
78Ga(B-)78Ge		8054	43	8157.973	3.688	2.4	U				hStu		00Me.A
78Ge(B-)78As		967	30	954.910	10.399	-.4R	R	q-q=		12.090	h		65Fr04,*
78Ge(B-)78As		987	20	954.910	10.399	-1.6R	R	q-q=		32.090	h		65Kv01,*
78As(B-)78Se		4270	100	4208.983	9.780	-.6	U				h		70Mc01
78As(B-)78Se		4310	100	4208.983	9.780	-1.0	U				h		71Mo20,*
78Br(B+)78Se		3542	50	3573.784	3.575	.6	U				hBar		61Ri02
78Se(p,n)78Br		-4344	10	-4356.131	3.575	-1.2	-2-				Bar		61Ri02
78Se(p,n)78Br		-4370	10	-4356.131	3.575	1.4	-2-				LAl		61Sc11
78Se(p,n)78Br		-4355.5	7.4	-4356.131	3.575	-.1	-2-				mTkm		63Ok01,Z
78Se(p,n)78Br		-4356	5	-4356.131	3.575	-.0	-2-				m		70Fi03,Z
78Se(p,n)78Br	ave	-4356.131	3.575				2						average
78Rb(B+)78Kr		7085	370	7242.856	3.252	.4	U				h		75We23,*
78Rb(B+)78Kr		7240	50	7242.856	3.252	.1	U				h		81Ba40
78Rb(B+)78Kr		7185	50	7242.856	3.252	1.2	U				hIRS		93Al03,*
78Rbx(IT)78Rb		74	12				3						82Au01,*

*78Rb-85Rb.918	Correction for e- binding=+97eV is negligible	h	12Ga15**
*78Rb-85Rb.918	D_M= 9237.6(4.5) uu M-A=-66824.9(4.2) keV corr for e- binding=+97 eV	H	12Ga15**
*	~ from 78Rbn at 111.19(0.22) keV	g	Nub211**
*78Kr(a,8He)74Kr	Original --41120(75) for 4 events included 1 background event	M	GAu016**
*	~ (check value with Alban) <- checked GAu023	m	GAu016*W
*78Kr(a,6He)76Kr	Replaced by calibration free 80Kr(a,6He)78Kr-78Kr()76Kr	h	GAu016**
*78Se(d,3He)77As	Original value --4910(4) corrected, see 74Se(d,3He)		AHW **
*78Ga(B-)78Ge	reinterpreted in ref. as 7890(160) keV	h	80Le22*W
*78Ge(B-)78As	E-=690(30) 710(20) resp, to 1^+ level at 277.3 keV	h	Ens09a**
*78As(B-)78Se	E-=3000(100) to 2^+ level at 1308.644 keV		Ens09a**
*78Rb(B+)78Kr	E+=3410(370) from 78Rbn 4(-) at 111.19(0.22) to (4)^- lvl at 2764.10 keV	h	Ens09a**

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*78Rb(B+)78Kr                     Q+=7180(80); and 7300(50) from 78Rbn at 111.19(0.22) keV              h       Ens09a**
*78Rbx(IT)78Rb                    Corrected; using 78Rbn(IT)=111.2 keV                                          GAu92b**

 79Ni-u                            -30231#      537#                                   2                   g    1.0 S-u212
 79Cu-u                            -46700       540        -45526.900   112.700     2.2  U                   GOR1 1.0 06Ha62
 79Cu-u                            -45526.9     112.7                                  2                   GMR1 1.0 17We16
 79Zn-88Rb.898                      22278.1       2.9       22276.668     2.387     -.5  1    68  68  79Zn HJY1 1.0 08Ha23
 79Ga-88Rb.898                      12490.9       2.0       12490.182     1.298     -.4  1    42  42  79Ga HJY1 1.0 08Ha23
 79Ga-u                            -67064       129        -67148.418     1.297     -.3  U                   HGT2 2.5 08Su19
 C6 H7-79Br                        136444.3       2.4      136437.647     1.075    -1.1  U                   MM15 2.5 63Ri07
 C6 H7-79Br                        136444        15        136437.647     1.075     -.3  U                   hR11 1.5 78Di09
 C6 H7-79Br                        136449        12        136437.647     1.075     -.6  U                   hR11 1.5 78Di09
 C5 13C H6-79Br                    131976        16        131967.451     1.075     -.4  U                   hR11 1.5 78Di09
 C5 13C H6-79Br                    131974        17        131967.451     1.075     -.3  U                   hR11 1.5 78Di09
 C5 N H5-79Br                      123870         7        123861.588     1.075     -.8  U                   hR11 1.5 78Di09
 C5 N H5-79Br                      123871        14        123861.588     1.075     -.4  U                   hR11 1.5 78Di09
 C5 O H3-79Br                      100061        15        100052.139     1.075     -.4  U                   hR11 1.5 78Di09
 C5 O H3-79Br                      100057        20        100052.139     1.075     -.2  U                   hR11 1.5 78Di09
 C4 N O H-79Br                      87489        20         87476.079     1.075     -.4  U                   hR11 1.5 78Di09
 79Kr-u                            -79981        52        -79917.080     3.736     1.2  U                   MGS2 1.0 05Li24,*
 79Rb-u                            -76022.0      15.0      -76009.905     2.086      .8  Z                    MA2 1.0 89Sa.A
 79Y-u                             -62054        86                                    2                   GLZ1 1.0 18Xi04
 79Zr-u                            -50210#      322#                                   2                   k    1.0 S-u168
 79Nb-u                            -33978#      537#                                   2                   k    1.0 S-u168
 79Zn-85Rb.929                      24582.4       4.2       24585.405     2.389      .7  1    32  32  79Zn HMA8 1.0 08Ba54
 79Ga-85Rb.929                      14798.4       1.7       14798.919     1.297      .3  1    58  58  79Ga GMA8 1.0 19Hu15
 79Rb-85Rb.929                       5934         8          5937.432     2.086      .4  U                   HMA2 1.0 94Ot01
 79Rb-85Rb.929                       5937.2       2.3        5937.432     2.086      .1  1    82  82  79Rb HMA8 1.0 07Ke09
 79Sr-85Rb.929                      11655         9         11652.030     7.967     -.3  1    78  78  79Sr hMA2 1.0 94Ot01
 77Se H2-79Br                       17239         8         17226.638     1.076    -1.0  U                   hR11 1.5 78Di09
 78Se H-79Br                         6806         8          6796.700     1.084     -.8  U                   hR11 1.5 78Di09
 79Br-79Rb                          -5652.7       5.0       -5652.519     2.260      .0  1    20  17  79Rb GRI1 1.0 18Ki21
 79Kr-79Rb                          -3870        41         -3907.175     4.232     -.9  U                   GRI1 1.0 18Ki21,*
 79Sr-79Rb                           5704        17          5714.598     8.119      .6  1    23  22  79Sr GRI1 1.0 18Ki21
 79Br-78Kr                          -2072        30         -2028.765     1.117     1.0  U                   hR11 1.5 78Di09
 77Rb-79Rb.487 75Rb.513             -1010        40          -996.354     1.721      .1  U                   hP20 2.5 82Au01
 77Rb-79Rb.325 76Rb.675             -1060        40          -996.213     1.581      .6  U                   hP20 2.5 82Au01
 77Rb-79Rb.325 76Rb.675              -990        70          -996.213     1.581     -.0  U                   hP20 2.5 82Au01
 78Rbx-79Rb.494 77Rb.506              940        40           919.375    12.483     -.2  U                   hP20 2.5 82Au01
 78Se(n,g)79Se                       6962.6       0.3        6962.832     0.133      .8  -2-                 m        79Br.A,Z
 78Se(n,g)79Se                       6962.2       0.3        6962.832     0.133     2.1  -2-                 MBNn     81En07,Z
 78Se(n,g)79Se                       6963.11      0.17       6962.832     0.133    -1.6  -2-                 MBdn     06Fi.A
 78Se(d,p)79Se                       4756         6          4738.266     0.133    -3.0B  B                  kMIT     64Sp12
 78Se(n,g)79Se                  ave  6962.832     0.133                                2                            average
 78Kr(d,p)79Kr                       5980        50          6110.757     3.492     2.6  U                   hYal     56Bl10,W
 78Kr(3He,d)79Rb                    -1585        10         -1580.009     1.966      .5  U                   hPhi     87St11
 79Zn(B-)79Ga                        8550       240          9116.054     2.529     2.4  U                   HStu     86Ek01
 79Ga(B-)79Ge                        6770        80          6978.824    37.147     2.6o o                   kStu     77Al17
 79Ga(B-)79Ge                        7000        80          6978.824    37.147     -.3o o                   mStu     86Ek01
 79Ga(B-)79Ge                        6979        40          6978.824    37.147     -.0  1    86  86  79Ge HStu     00Me.A
 79Ge(B-)79As                        4300       200          4108.900    37.436    -1.0  U                   H        70Ka04
 79Ge(B-)79As                        4110       100          4108.900    37.436     -.0  1    14  14  79Ge  Stu     81Al20
 79As(B-)79Se                        2230        50          2281.386     5.328     1.0  U                   h        61Ku09,*
 79Se(B-)79Br                         160         5           150.600     1.019    -1.9  U                   h        49Pa.A
 79Kr(B+)79Br                        1612        10          1625.778     3.333     1.4  -2-                          52Be55
 79Kr(B+)79Br                        1620         5          1625.778     3.333     1.2  -2-                          54Th39
 79Kr(B+)79Br                        1635         5          1625.778     3.333    -1.8  -2-                          64Bo25
 79Kr(B+)79Br                   ave  1625.778     3.333                                2                            average
 79Rb(B+)79Kr                        3530        50          3639.510     3.942     2.2  U                   h        71Li02,*
 79Rb(B+)79Kr                        3720        90          3639.510     3.942     -.9  U                   h        72Br31,*
 79Rb(B+)79Kr                        3650        70          3639.510     3.942     -.1  U                   hIRS     93Al03
 79Sr(B+)79Rb                        5259        78          5323.114     7.563      .8  U                   hBNL     81Li12
 79Sr(B+)79Rb                        5059        67          5323.114     7.563     3.9B  B                  hOrs     82De36
 79Y(B+)79Sr                         7120       450          7676.729    80.452     1.2  U                   K        92Mu12
*79Kr-u                           M-A=-74437(30) keV  for mixture gs+m at 129.77 7/2^+ keV              g       Nub211**
*79Kr-79Rb                        D_M=-3800(9) uu for 79Kr gs+m mixture at 129.77 keV; M-A=-74342.7(9.3) keG    Nub211**
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*78Kr(d,p)79Kr Possibly to one of known about 150 level AHW *W
*79As(B-)79Se E-=1700(50) to 527.93 3/2^- level, and other E- k Ens167**
*79Rb(B+)79Kr E+=1825(50) 2010(90) resp, to 3/2^+ level at 688.17 keV k Ens167**

80Ni-u		-24949#	644#				2				g	1.0	S-u212
80Cu-u		-39377#	322#				2				g	1.0	S-u185
80Ga-u		-63441	129	-63579.226	3.104	-.4	U				HGT2	2.5	08Su19
80Ga-u		-63567	52	-63579.226	3.104	-.2	U				GTR1	1.0	20Re04
C6 H8-80Se		146068.5	2.9	146078.493	1.016	1.4	U				MM15	2.5	63Ri07
C6 H8-80Kr		146225.7	4.6	146222.314	0.746	-.3	U				mM15	2.5	63Ri07
C6 H8-80Kr		146235	18	146222.314	0.746	-.5	U				hR11	1.5	78Di09
C6 H8-80Kr		146215	16	146222.314	0.746	.3	U				hR11	1.5	78Di09
C5 O H4-80Kr		109834	20	109836.806	0.746	.1	U				hR11	1.5	78Di09
80Y-u		-65720	190	-65645.249	6.701	.4	U				H1.0	1.0	98Is06
80Y-u		-66664	86	-65645.249	6.701	11.8F	F				MCS1	1.0	01La31,*
80Y-u		-65600	200	-65645.249	6.701	-.2	U				HCS1	1.0	08Go23
80Y O-96Mo		24594.6	6.7				2				HJY1	1.0	06Ka48
80Zr-u		-59600	1600	-58787#	322#	.5D	D				K1.0	1.0	98Is06,*
80Zr-u		-59740	161	-58787#	322#	5.9F	F				MCS1	1.0	01La31,*
80Zr-u		-58787#	322#				2				g	1.0	S-u212
80Nb-u		-41246#	429#				2				k	1.0	S-u168
80Zn-88Rb.909		25165.2	7.3	25167.056	2.778	.3	1	14	14	80Zn	HJY1	1.0	08Ha23
80Ga-88Rb.909		17034.9	3.1				2				HJY1	1.0	08Ha23
80Ge-88Rb.909		5964.9	2.2				2				HJY1	1.0	08Ha23
80Kr-86Kr.930		-488.9	1.1	-489.939	0.746	-.9	1	46	46	80Kr	HMS1	1.0	06Ri15
80Zn-85Rb.941		27559.1	3.0	27558.787	2.775	-.1	1	86	86	80Zn	HMA8	1.0	08Ba54
80Kr-85Rb.941		-614.8	2.3	-616.202	0.746	-.6	Z				mMA8	1.0	01Ke.A
80Kr-85Rb.941		-614.5	1.7	-616.202	0.746	-1.0	1	19	19	80Kr	hMA8	1.0	06Ro11
80Kr-85Rb.941		-627.1	9.6	-616.202	0.746	1.1	U				HMA8	1.0	10Na13,*
80Rb-85Rb.941		5528	8	5522.300	2.000	-.7	U				HMA2	1.0	94Ot01
80Rb-85Rb.941		5522.3	2.0				2				HMA8	1.0	07Ke09
80Sr-85Rb.941		7531	8	7523.396	3.719	-1.0	-2-				hMA2	1.0	94Ot01
80Sr-85Rb.941		7513	14	7523.396	3.719	.7	U				HMA8	1.0	05Si34
80Sr-85Rb.941		7521.3	4.2	7523.396	3.719	.5	-2-				HSH1	1.0	11Ha08
80Sr-85Rb.941	ave	7523.396	3.719				2						average
80Se 35Cl-78Se 37Cl		2164.8	1.4	2162.643	1.030	-.4	U				hH18	4.0	64Ba03
80Se 35Cl-78Se 37Cl		2160.8	9.2	2162.643	1.030	.1	U				hH40	2.5	85El01
80As-80Kr		6096.5	3.5				2				HMS1	1.0	07Bo50
80Rb-80Kr		6128	12	6138.502	2.134	.9	U				GRI1	1.0	18Ki21
80Sr-80Kr		8110	16	8139.598	3.793	1.8F	F				GRI1	1.0	18Ki21,*
80Kr-79Br		-1955	28	-1959.635	1.233	-.1	U				hR11	1.5	78Di09
80Kr-78Kr		-4046	30	-3988.400	0.813	1.3	U				hR11	1.5	78Di09
79Rb-80Rb.658 77Rb.342		-1218	27	-1139.283	2.340	1.2	U				hP20	2.5	82Au01
79Rb-80Rb.494 78Rbx.506		-1313	24	-1316.214	6.646	-.1	U				hP20	2.5	82Au01
80Se(p,a)77As		1020.0	2.8	1020.903	1.768	.3	1	40	32	77As	NDm		82Zu04
80Kr(3He,6He)77Kr		-10398	24	-10384.880	2.076	.5	U				M		87Mo06
80Se(d,a)78As		5755	12	5768.289	9.733	1.1	-2-				Phi		77Mo13
80Se(d,a)78As		5780	30	5768.289	9.733	-.4	-2-	q-q=	11.711		m		78Ge+0
80Se(d,a)78As		5800	20	5768.289	9.733	-1.6	-2-	q-q=	31.711		m		78Ge+0
80Se(d,a)78As	ave	5768.289	9.733				2						average
80Se(p,t)78Se		-8395.1	3.0	-8394.374	0.956	.2	-1-				NDm		82Zu04
80Se(p,t)78Se		-8393.0	3.0	-8394.374	0.956	-.5	-1-	q-q=	1.374		m		79Se+1
80Se(p,t)78Se	ave	-8394.050	2.121	-8394.374	0.956	-.2	1	20	20	80Se			average
80Kr(a,6He)78Kr-78Kr()76Kr		1432	10	1449.406	4.085	1.7	1	17	16	76Kr	m		82Mo23
78Kr(3He,n)80Sr		2990	30	2993.085	3.477	.1	U				h		79Al19
80Se(d,3He)79As		-5921	7	-5918.902	5.241	.3	-1-				Ors		83Ro08,*
80Se(d,3He)79As		-5921	13	-5918.902	5.241	.2	-1-				Hei		83Wi14
80Se(t,a)79As		8407	10	8401.489	5.241	-.6	-1-				Phi		83Mo09
80Se(d,3He)79As	ave	-5918.905	5.247	-5918.902	5.241	.0	1	100	100	79As			average
80Se(p,d)79Se		-7687.6	3.0	-7688.772	0.965	-.4R	R	q-q=	1.172		NDm		82Zu04
79Br(n,g)80Br		7892.11	0.20	7892.276	0.134	.8	-1-				mILn		78Do06,Z
79Br(n,g)80Br		7892.41	0.18	7892.276	0.134	-.7	-1-				MBdn		06Fi.A
79Br(d,p)80Br		5640	20	5667.709	0.134	1.4	U				hMtr		72Ch33
79Br(n,g)80Br	ave	7892.276	0.134	7892.276	0.134	-.0	1	100	96	79Br			average
80Zn(B-)80Ga		7540	200	7575.055	3.877	.2	U				HStu		86Ek01
80Zn(B-)80Ga		7150	150	7575.055	3.877	2.8	U				HTrs		86Gi07

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 80Ga(B-)80Ge                       10000      300        10311.640     3.541     1.0o  o               hStu      81Al20
 80Ga(B-)80Ge                       10380      120        10311.640     3.541     -.6   U               HStu      86Ek01
 80Ge(B-)80As                        2640       70         2679.287     3.916      .6   U               HStu      77Al17
 80Ge(B-)80As                        2630       20         2679.287     3.916     2.5   U               HTrs      86Gi07
 80As(B-)80Se                        6000      200         5544.885     3.441    -2.3   U               h         59Me68
 80As(B-)80Se                        5470       90         5544.885     3.441      .8   U               hTrs      86Gi07
 80Se(t,3He)80As                    -5560       25        -5526.293     3.441     1.3   U               HLAl      79Aj02
 80Br(B+)80Se                        1884       10         1870.462     0.309    -1.4   U               h         54Li19
 80Br(B+)80Se                        1872        7         1870.462     0.309     -.2   U               h         69Ka06
 80Se(p,n)80Br                      -2655.2      2.8      -2652.809     0.309      .9   U               hTkm      63Ok01
 80Se(p,n)80Br                      -2652.5      3.0      -2652.809     0.309     -.1   U               hOak      64Jo11,Z
 80Se(p,n)80Br                      -2653.2      5.       -2652.809     0.309      .1   U               h         70Fi03
 80Se(p,n)80Br                      -2652.81     0.31     -2652.809     0.309      .0   1   100  96  80Br mPTB      92Bo02,Z
 80Br(B-)80Kr                        1970       30         2004.431     1.141     1.1   U               m         52Fu04
 80Br(B-)80Kr                        2040       20         2004.431     1.141    -1.8   U               m         54Li19
 80Br(B-)80Kr                        1997       10         2004.431     1.141      .7   U               m         69Ka06
 80Rb(B+)80Kr                        5120      500         5717.978     1.988     1.2   U               h         61Ho13
 80Rb(B+)80Kr                        5500      350         5717.978     1.988      .6   U               h         75We23,*
 80Rb(B+)80Kr                        5650      100         5717.978     1.988      .7   U               hIRS      93Al03
 80Kr(p,n)80Rb                      -6484.0     20.       -6500.325     1.988     -.8   U               h         72Ja.A
 80Y(B+)80Sr                         6952      152         9163.305     7.139    14.5F  F               hBNL      81Li12,*
 80Y(B+)80Sr                         6934      242         9163.305     7.139     9.2F  F               hOrs      82De36,*
 80Y(B+)80Sr                         6200      600         9163.305     7.139     4.9F  F               h         96Sh27,*
*80Y-u                            F : below lower limit M>-65890(90) uu --61376(83) keV determined in ref. h         03Ba18**
*80Zr-u                           Trends from Mass Surface TMS suggest  80Zr   770 keV less bound        G         GAu212**
*80Zr-u                           F : other results in same paper not trusted, see 80Y and 68Se          M         GAu034**
*80Kr-85Rb.941                    Only one measurement                                                   H         GAu09b**
*80Sr-80Kr                        Compromised measurement due to the influence of neighboring ToF peaks  G         Sar201**
*80Se(d,3He)79As                  Originally --5927(7), see 74Se(d,3He)                                            AHW   **
*80Rb(B+)80Kr                     E+=3860(350) to 2^+ level at 616.60 keV                                h         Ens058**
*80Y(B+)80Sr                      F : below lower limit Q- > 8929(23) keV determined in ref.             H         03Ba18**
*                                  ~ see also result of 96Sh27 for 84Nb and 88Tc : all 3 MeV too small   h         GAu125*G


 81Ni-u                            -17273#     751#                                     2               g    1.0 S-u212
 81Cu-u                            -34257#     322#                                     2               g    1.0 S-u185
 81Ga-u                            -61853       33       -61866.158     3.504     -.4   U               GTR1 1.0 20Re04
 81Ge-u                            -71710      240       -71167.058     2.206      .9   U               HGT2 2.5 08Kn.A,*
 C6 H9-81Br                        154135.3      3.8     154137.090     1.050      .2   U               mM15 2.5 63Ri07
 C6 H9-81Br                        154143       17       154137.090     1.050     -.2   U               hR11 1.5 78Di09
 C6 H9-81Br                        154134       10       154137.090     1.050      .2   U               hR11 1.5 78Di09
 C5 N H7-81Br                      141561       10       141561.030     1.050      .0   U               hR11 1.5 78Di09
 C5 N H7-81Br                      141553       18       141561.030     1.050      .3   U               hR11 1.5 78Di09
 C5 O H5-81Br                      117742       12       117751.582     1.050      .5   U               hR11 1.5 78Di09
 C4 O2 H-81Br                       81356       20        81366.073     1.050      .3   U               hR11 1.5 78Di09
 C4 13C O H4-81Br                  113275       14       113281.385     1.050      .3   U               hR11 1.5 78Di09
 81Rb-u                            -80958       41       -81006.099     5.265    -1.2   U               MGS2 1.0 05Li24,*
 81Y O-97Mo                         18352.0      5.8                                    2               HJY1 1.0 06Ka48
 81Zr-u                            -61755       99                                      2               GLZ1 1.0 18Xi04
 81Nb-u                            -49770#     429#                                     2               k    1.0 S-u169
 81Mo-u                            -33774#     537#                                     2               g    1.0 S-u20b
 81Ga-88Rb.920                      19723.5      3.5                                    2               HJY1 1.0 08Ha23
 81Ge-88Rb.920                      10422.6      2.2                                    2               HJY1 1.0 08Ha23
 81As-88Rb.920                       3721.9      3.3       3721.947     2.836      .0   1    74  74  81As HJY1 1.0 08Ha23
 81Zn-85Rb.953                      34467.0      5.4                                    2               HMA8 1.0 08Ba54
 81Rb-85Rb.953                       3063        8         3058.283     5.265     -.6  -1-              hMA2 1.0 94Ot01
 81Rb-85Rb.953                       3055.4      9.2       3058.283     5.265      .3  -1-              HSH1 1.0 11Ha08,*
 81Rb-85Rb.953               ave     3059.728    6.037     3058.283     5.265     -.2   1    76  76  81Rb          average
 81Sr-85Rb.953                       7278        8         7275.776     3.358     -.3  -2-              hMA2 1.0 94Ot01
 81Sr-85Rb.953                       7272       12         7275.776     3.358      .3   U               HMA8 1.0 05Si34
 81Sr-85Rb.953                       7275.3      3.7       7275.776     3.358      .1  -2-              HSH1 1.0 11Ha08
 81Sr-85Rb.953               ave     7275.776    3.358                                  2                        average
 81Se-80Kr1.013                      2704.2      2.4       2702.167     1.207     -.8   1    25  17  81Se HMS1 1.0 07Bo50,*
 80Se H-81Br                         8023        8         8058.597     1.457     3.0B  B               kR11 1.5 78Di09
 80Kr H-81Br                         7922       18         7914.776     1.262     -.3   U               hR11 1.5 78Di09
 81Br-81Sr                          -6899.5      4.9      -6923.196     3.519    -4.8B  B               GRI1 1.0 18Ki21
 81Rb-81Sr                          -4193       27        -4217.493     6.245     -.9   U               GRI1 1.0 18Ki21,*
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 81Br-H 79Br                  -9865        13        -9874.411     1.499     -.3   U                 hM15 2.5 63Ri07
 81Br-80Kr                      -91        32          -89.744     1.262      .0   U                 hR11 1.5 78Di09
 81Br-79Br                    -2020        32        -2049.379     1.499     -.6   U                 hR11 1.5 78Di09
 81Br-79Br                    -2014        35        -2049.379     1.499     -.7   U                 hR11 1.5 78Di09
 79Rb-81Rb.325 78Rbx.675      -1130        30        -1147.885     8.758     -.2   U                 MP20 2.5 82Au01,Y
 80Rb-81Rb.494 79Rb.506         927        29          926.339     3.211     -.0   U                 MP20 2.5 82Au01,Y
 80Se(n,g)81Se                 6700.9       0.5       6700.850     0.349     -.1  -1-                mBNn     81En07,Z
 80Se(n,g)81Se                 6700.9       0.5       6700.850     0.349     -.1  -1-                MBdn     06Fi.A
 80Se(d,p)81Se                 4490         6         4476.284     0.349    -2.3   U                 hMIT     64Sp12
 80Se(d,p)81Se                 4477.5       3.0       4476.284     0.349     -.4   U                 hNDm     82Zu04
 80Se(n,g)81Se          ave    6700.900     0.354     6700.850     0.349     -.1   1    97  72  81Se          average
 81Br(g,n)80Br               -10130        35       -10159.345     1.390     -.8   U                 hPhi     60Ge01
 80Kr(d,p)81Kr                 5660        15         5649.496     1.251     -.7   U                 hTex     75Ch11,*
 80Kr(d,p)81Kr                 5646         4         5649.496     1.251      .9   1    10   7  81Kr  Oak     86Bu18
 80Kr(3He,d)81Rb               -637        10         -641.255     4.930     -.4   1    24  24  81Rb  Phi     87St11
 81Zr(ep)80Sr                  4700       200         5498.078    92.283     4.0B  B                 K        99Hu05
 81Nb(p)80Zr                    820       150         1110#      500#        1.9   Z                 h        S-u095,G
 81Ga(B-)81Ge                  8320       150         8663.733     3.851     2.3   U                 HStu     81Al20
 81Ge(B-)81As                  6230       120         6241.619     3.344      .1   U                 HStu     81Al20,*
 81As(B-)81Se                  3800       200         3855.704     2.807      .3   U                 h        60Mo01
 81As(B-)81Se                  3730       100         3855.704     2.807     1.3   U                 hStu     77Al17
 81Se(B-)81Br                  1600        50         1588.033     1.379     -.2   U                 h        60Ku06
 81Se(B-)81Br                  1560        50         1588.033     1.379      .6   U                 h        67Yt03
 81Kr(e)81Br                    280.7       0.5        280.852     0.471      .3   1    89  84  81Kr          88Ax01,*
 81Br(p,n)81Kr                -1062         4        -1063.199     0.471     -.3   U                 h        84Fi.A
 81Br(3He,t)81Kr               -296         6         -299.444     0.471     -.6   U                 h        84Bu23,W
 81Br(3He,t)81Kr-51V()51Cr      470.6       1.8        471.539     0.494      .5   U                 hPri     82Ko06,*
 81Rb(B+)81Kr                  2260        30         2239.495     5.019     -.7   U                 h        75Va24,*
 81Rb(B+)81Kr                  2290        50         2239.495     5.019    -1.0   U                 h        77Li14
 81Sr(B+)81Rb                  3990        30         3928.569     5.817    -2.0   U                 h        73Br32,*
 81Y(B+)81Sr                   5408        86         5815.216     6.245     4.7B  B                 HBNL     81Li12
 81Y(B+)81Sr                   5620        89         5815.216     6.245     2.2   U                 HOrs     82De36
 81Zr(B+)81Y                   7160       290         8188.500    92.376     3.5B  B                 KOrs     82De36
*81Ge-u                     M-A=-66454(93) keV  for mixture gs+m at 679.14 keV                       g        Nub211**
*81Rb-u                     M-A=-75369(29) keV  for mixture gs+m at 86.31 keV                        g        Nub211**
*81Rb-85Rb.953              D_M=3148.1(9.2) keV  for 81Rbm at 86.31(0.07) keV; M-A=-75373.1(8.6) keV g        Nub211**
*81Se-80Kr1.013             D_M=2814.8(2.4) uu   for 81Sem at 103.00(0.06)keV; M-A=-76283.2(2.4) keV g        Nub211**
*81Rb-81Sr                  D_M=4147.0(0.9) uu for mixture gs+m at 86.31 keV; M-A=-75391.5 keV      G        Nub211**
*80Kr(d,p)81Kr              Original value 5610(15) reinterpreted as going to 49.57 level            h        76Me08**
*81Nb(p)80Zr                T<44ns     -> S(p)<-600  Qp>600                                          g        Nub211*G
*81Ge(B-)81As               Q-=6230(120); and 6930(280) from 81Gem at 679.14 keV                     g        Nub211**
*81Kr(e)81Br                LM=0.42(0.05), Q(e)=4.7(0.5) to 5/2^- level at 275.985 keV               h        Ens08a**
*81Br(3He,t)81Kr            Q=Q(82Kr(d,3He) - Q(82Kr(d,t)                                                     AHW   *W
*81Br(3He,t)81Kr-51V()5     Q-Q to 456.89(0.03) level=13.7(1.8) keV                                  h        GAu923**
*81Rb(B+)81Kr               E+=1050(30) to 1/2^- level at 190.64 keV                                 h        Ens08a**
*81Sr(B+)81Rb               E+=2684(30) to 301.241 3/2^- level, and other E+                         h        Ens08a**


 82Ni-u                       -11508#     859#                                     2                 g    1.0 S-u212
 82Cu-u                       -27622#     429#                                     2                 g    1.0 S-u185
 82Zn-u                       -45740      320      -45425.902     3.300      .4   Z                 k    2.5 S-u119
 82Ga-u                       -56812      268      -56823.468     2.605     -.0   U                 HGT1 1.5 04Ma.A
 82Ga-u                       -56870       33      -56823.468     2.605     1.4   U                 GTR1 1.0 20Re04,*
 82Ge-u                       -70400      129      -70225.968     2.405      .5   U                 HGT2 2.5 08Su19
 C6 H10-82Se                  161545.0      4.6    161550.787     0.500      .5   U                 mM15 2.5 63Ri07
 C6 H10-82Kr                  164769.8      3.4    164769.16529   0.00591   -.1   U                 mM15 2.5 63Ri07
 C6 H10-82Kr                  164787       14      164769.16529   0.00591   -.8   U                 hR11 1.5 78Di09
 C6 H10-82Kr                  164784       16      164769.16529   0.00591   -.6   U                 hR11 1.5 78Di09
 C5 N H8-82Kr                 152200       25      152193.10575   0.00588   -.2   U                 hR11 1.5 78Di09
 C5 O H6-82Kr                 128396       20      128383.65696   0.00588   -.4   U                 hR11 1.5 78Di09
 82Rb-u                       -81775       39      -81790.977     3.230     -.4   U                 MGS2 1.0 05Li24,*
 82Sr-u                       -81604       63      -81600.154     6.432      .1   U                 MGS2 1.0 05Li24
 82Y O-98Mo                    16441.2      5.9                                    2                 HJY1 1.0 06Ka48
 82Zr-u                       -68312       11      -68292.502     1.700     1.8   U                 GLZ1 1.0 18Xi04
 82Nb-u                       -55620#     322#                                     2                 g    1.0 S-u212
 82Mo-u                       -43339#     429#                                     2                 k    1.0 S-u168
 82Ga-88Rb.932                 25830.4      2.6                                    2                 HJY1 1.0 08Ha23
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 82Ge-88Rb.932                  12427.9       2.4                                        2                 HJY1 1.0 08Ha23
 82As-88Rb.932                   7392.6       4.0                                        2                 KJY1 1.0 08Ha23,*
 82Kr-86Kr.953                  -1329.4       1.1       -1330.77083   0.00479   -1.2     U                 KMS1 1.0 06Ri15
 82Kr-86Kr.953                  -1330.7684    0.0094    -1330.77083   0.00479    -.3     1     26   25  82Kr KFS1 1.0 13Ho22
 82Zn-85Rb.965                  39697.0       3.3                                        2                 KMA8 1.0 13Wo06
 82Kr-85Rb.965                  -1394.9       2.6       -1395.94391   0.00581    -.4     U                 KMA8 1.0 06Ro11
 82Rbm-85Rb.965                  3407         9          3406.000     2.800      -.1     U                 HMA2 1.0 94Ot01
 82Rbm-85Rb.965                  3406.0       2.8                                        2                 MMA8 1.0 05Gu37
 82Sr-85Rb.965                   3517         8          3522.748     6.432       .7     1     65   65  82Sr hMA2 1.0 94Ot01
 82Zr-85Rb.965                  16830.4       1.7                                        2                 GJY1 1.0 19Vi05
 82Se 35Cl-80Se 37Cl             3128.92      0.63       3127.893     0.998      -.7     1     40   36  80Se  H40 2.5 85El01
 80Se H2-82Kr                   18665        18         18690.673     1.016      1.0     U                 hR11 1.5 78Di09
 80Se H2-82Kr                   18671        19         18690.673     1.016       .7     U                 hR11 1.5 78Di09
 82Kr-84Kr.976                   -140.6277    0.0051     -140.62698   0.00451     .1     1     78   75  82Kr KFS1 1.0 13Ho22
 81Br H-82Se                     7419         8          7413.698     1.162      -.4     U                 hR11 1.5 78Di09
 81Br H-82Kr                    10662        20         10632.075     1.050     -1.0     U                 hR11 1.5 78Di09
 82Se-82Kr                       3222        16          3218.378     0.500      -.2     U                 hR11 1.5 78Di09
 82Se-82Kr                       3218        22          3218.378     0.500       .0     U                 hR11 1.5 78Di09
 82Se-82Kr                       3216.1       1.6        3218.378     0.500       .9     U                 KH45 1.5 93Nx01
 82Se-82Kr                       3218.36      0.52       3218.378     0.500       .0     1     93   93  82Se KMS1 1.0 13Li01
 82Kr-78Se H3                  -27269        35        -27303.186     0.192      -.7     U                 hR11 1.5 78Di09
 80Se H3-82Kr                   26466        32         26515.704     1.016      1.0     U                 hR11 1.5 78Di09
 82Kr-81Br                      -2805        32         -2807.043     1.050      -.0     U                 hR11 1.5 78Di09
 82Se H-82Kr                    11082        40         11043.410     0.500      -.6     U                 hR11 1.5 78Di09
 79Rb-82Rb.241 78Rbx.760        -1536        29         -1626.830     9.671     -1.3     U                 MP20 2.5 82Au01,Y
 81Rb-82Rb.741 78Rbx.260        -1680        40         -1617.562     6.282       .6     U                 MP20 2.5 82Au01,Y
 80Rb-82Rb.325 79Rb.675           440        40           377.438     2.479      -.6     U                 MP20 2.5 82Au01,Y
 82Kr(3He,6He)79Kr              -8822        31         -8810.383     3.481       .4     U                 h        87Mo06
 82Se(14C,16O)80Ge               -449        60          -301.685     2.106      2.5     U                 HOrs     83Be.C
 82Se(18O,20Ne)80Ge             -2020        40         -1799.465     2.106      5.5B    B                 MHei     83Wi14,*
 82Se(p,t)80Se                  -7496.1       3.0       -7495.249     0.929       .3     1     10    9  80Se  NDm     82Zu04
 82Se(d,3He)81As                -6864        10         -6856.077     2.663       .8    -1-                 Ors     83Ro08,*
 82Se(d,3He)81As                -6861        18         -6856.077     2.663       .3     U                 hHei     83Wi14
 82Se(t,a)81As                   7467         6          7464.314     2.663      -.4    -1-                 Phi     82Mo04
 82Se(d,3He)81As          ave   -6856.199     5.145     -6856.077     2.663       .0     1     27   26  81As          average
 82Se(p,d)81Se                  -7051.8       2.8       -7051.629     0.962       .1     1     12   11  81Se hNDm     82Zu04
 81Br(n,g)82Br                   7592.80      0.20       7592.944     0.120       .7    -1-                mILn     78Do06,Z
 81Br(n,g)82Br                   7593.02      0.15       7592.944     0.120      -.5    -1-                MBdn     06Fi.A
 81Br(d,p)82Br                   5400        20          5368.378     0.120     -1.6     U                 hMtr     72Ch33
 81Br(n,g)82Br            ave    7592.941     0.120      7592.944     0.120       .0     1    100   94  81Br          average
 82Ge(B-)82As                    4700       140          4690.352     4.345      -.1     U                 HStu     81Al20
 82As(B-)82Se                    7270       200          7488.468     3.758      1.1     U                 H        70Va31,*
 82As(B-)82Se                    6360       200          7488.468     3.758      5.6B    B                 K        70Ka04,*
 82As(B-)82Se                    7740        30          7488.468     3.758     -8.4C    C                 hStu     00Me.A,*
 82As(B-)82Se                    7531        21          7488.468     3.758     -2.0     U                 HStu     04Ga44,*
 82Se(t,3He)82As                -7500        25         -7469.876     3.758      1.2     U                 KLAl     79Aj02
 82Br(B-)82Kr                    3092.9       1.0        3093.119     0.971       .2     1     94   94  82Br M        56Wa24,*
 82Rb(B+)82Kr                    4400        15          4403.982     3.009       .3     U                 H        69Be74,*
 82Rb(B+)82Kr                    4420        60          4403.982     3.009      -.3     U                 hIRS     93Al03,*
 82Kr(p,n)82Rb                  -5161        20         -5186.329     3.009     -1.3     U                 H        72Ja.A
 82Rbm(IT)82Rb                     69.0       1.5                                        3                 h        Ens035
 82Y(B+)82Sr                     7868       185          7945.965     8.132       .4     U                 HBNL     81Li12
 82Y(B+)82Sr                     7793       123          7945.965     8.132      1.2     U                 HOrs     82De36
 82Zr(B+)82Y                     4000       500          4450.034     5.722       .9F    F                 MOrs     82De36,*
 82Zr(B+)82Y                     4120       200          4450.034     5.722      1.7     Z                 k        S-u103
*82Ga-u                         corr. for gs+m of 82Rb as calibrant, -52939(23) keV assuming mainly iso. G        20Re04**
*82Rb-u                         M-A=-76138(30) keV  for mixture gs+m at 69.0(1.5) keV                    g        Nub211**
*82As-88Rb.932                  D_M=7395.1(4.6) 7532.5(4.0) uu to gs and 82Asm at 131.6(0.5) keV         g        Nub211**
*82As-88Rb.932                  M-A=-70103.1(4.3) -69975.1(3.8) keV                                      g        Nub211*G
*82Se(18O,20Ne)80Ge             Recalibrated to 64Ni()62Fe=-1938(15) keV                                          AHW932**
*82Se(d,3He)81As                Originally --6870(10), see 74Se(d,3He)                                            AHW   **
*82As(B-)82Se                   E-=7200(200) to gs (80%) and 654.75 2^+ level (10%)                      h        Ens035**
*82As(B-)82Se                   E-=3600(200) from 82Asm at 132.1 to 5^- level at 2893.70 and higher lvls k        Ens035**
*82As(B-)82Se                   and E-=7625(22) from 82Asm at 132.1 keV                                  K        00Me.A**
*82As(B-)82Se                   Provisionally, not trusted                                               m        AHW023*W
*82As(B-)82Se                   Average of 3 branches; and 7677(17) avg of 2 branches from 82Asm at 132.1K        04Ga44**
*82Br(B-)82Kr                   E-=444(1) to 4^- level at 2648.360 keV                                   h        Ens035**
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*82Rb(B+)82Kr                    E+=3350(60); and 800(15) from 82Rbm at 69.0(1.5) to 4^- level at 2648.360h        Ens035**
*82Rb(B+)82Kr                    Q+=4360(100); and 4510(60) of 82Rbm at 69.0(1.5) keV                     g        Nub211**
*82Zr(B+)82Y                     F : for 2.5(0.1) m activity, but Ensdf adopts 32(5) s                    M        Ens035**

 83Cu-u                            -21890#      537#                                  2                   g    1.0 S-u185
 83Zn-u                            -38959#      322#                                  2                   k    1.0 S-u169
 83Ga-u                            -52881        27       -52879.700     2.805     .0  U                   GTR1 1.0 20Re04
 83Ge-u                            -65626       268       -65460.900     2.605     .4o o                   HGT1 1.5 04Ma.A
 83Ge-u                            -65270       320       -65460.900     2.605    -.6  U                   HOR1 1.0 06Ha62
 83Ge-u                            -65276       129       -65460.900     2.605    -.6  U                   HGT2 2.5 08Su19
 83As-u                            -74677       129       -74793.100     3.004    -.4  U                   HGT2 2.5 08Su19
 C6 H11-83Kr                       171946.8       3.4     171948.834     0.010     .2  U                   hM15 2.5 63Ri07
 C6 H11-83Kr                       171948        16       171948.834     0.010     .0  U                   hR11 1.5 78Di09
 C5 N H9-83Kr                      159344        25       159372.775     0.010     .8  U                   hR11 1.5 78Di09
 C5 N H9-83Kr                      159360        19       159372.775     0.010     .4  U                   hR11 1.5 78Di09
 C5 O H7-83Kr                      135543        25       135563.326     0.010     .5  U                   hR11 1.5 78Di09
 83Rb-u                            -84889.1      15.0     -84885.819     2.500     .2  Z                    MA2 1.0 89Sa.A
 83Y O-98Mo1.010                    12941        20                                   2                   HJY1 1.0 06Ka48,*
 83Zr O-98Mo1.010                   19697.9       6.9                                 2                   HJY1 1.0 06Ka48
 83Nb-u                            -61850       174                                   2                   GLZ1 1.0 18Xi04
 83Mo-u                            -49748#      430#                                  2                   k    1.0 S-u167
 83Tc-u                            -33623#      537#                                  2                   k    1.0 S-u168
 83Ga-88Rb.943                      30749.7       2.8                                 2                   HJY1 1.0 08Ha23
 83Ge-88Rb.943                      18168.5       2.6                                 2                   HJY1 1.0 08Ha23
 83As-88Rb.943                       8836.3       3.0                                 2                   HJY1 1.0 08Ha23
 80Se H3-83Kr                       25825        25        25870.341     1.016    1.2  U                   hR11 1.5 78Di09
 83Kr-86Kr.965                        386.6       1.1        387.261     0.009     .6  U                   HMS1 1.0 06Ri15
 83Rb-85Rb.976                       1207         8         1207.400     2.500     .1  U                   HMA2 1.0 94Ot01
 83Rb-85Rb.976                       1207.4       2.5       1207.400     2.500     .0  1   100 100  83Rb HMA8 1.0 07Ke09
 82Se H-83Kr                        10380        18        10398.047     0.500     .7  U                   hR11 1.5 78Di09
 82Se H-83Kr                        10368        16        10398.047     0.500    1.3  U                   hR11 1.5 78Di09
 82Kr H-83Kr                         7160        18         7179.669     0.010     .7  U                   hR11 1.5 78Di09
 83Kr-84Kr.988                       1566.7601    0.0089    1566.760     0.009     .0  1   100 100  83Kr KFS1 1.0 13Ho22
 83Sr-83Rb                           2447         9         2440.191     6.897    -.8  1    59  59  83Sr mMA2 1.0 94Ot01
 83Kr-80Se H2                      -18022        36       -18045.310     1.016    -.4  U                   hR11 1.5 78Di09
 85Rb-83Kr H                       -10211        45       -10161.812     0.010     .7  U                   hR11 1.5 78Di09
 83Kr-82Se                          -2572        35        -2573.015     0.500    -.0  U                   hR11 1.5 78Di09
 83Kr-82Kr                            648        12          645.363     0.010    -.1  U                   mM15 2.5 63Ri07
 81Rb-83Rb.488 79Rb.513              -529        26         -548.405     5.132    -.3  U                   MP20 2.5 82Au01,Y
 81Rb-83Rb.325 80Rb.675             -1054        27        -1040.300     5.119     .2  U                   MP20 2.5 82Au01,Y
 82Rb-83Rb.659 80Rb.342               627        24          603.749     3.437    -.4  U                   MP20 2.5 82Au01,Y
 82Rb-83Rb.494 81Rb.506              1098        23         1054.173     4.066    -.8  U                   MP21 2.5 82Au01,Y
 82Ge(d,p)83Ge                       1470        70         1408.119     3.296    -.9  U                   HNDm     05Th03
 82Se(d,p)83Se                       3593.4       3.0                                 2                    NDm     78Mo12
 82Se(3He,d)83Br                     3207.4       5.6       3215.322     3.797    1.4  1    46  46  83Br  NDm     83Zu01
 82Kr(3He,d)83Rb                      288        10          274.340     2.329   -1.4  U                   hPhi     87St11
 83Zr(ep)82Sr                        2750       100         2809.432     8.789     .6  U                   h        83Ha06
 83As(B-)83Se                        5460       220         5671.212     4.129    1.0  U                   HStu     77Al17
 83Se(B-)83Br                        3610        40         3673.178     4.839    1.6  U                   h        67Ma35
 83Se(B-)83Br                        3681        20         3673.178     4.839    -.4  U                   h        68Sc10,*
 83Br(B-)83Kr                         982        10          976.922     3.795    -.5 -1-                           51Du03,*
 83Br(B-)83Kr                         967        15          976.922     3.795     .7  U                   m        63Pa09,*
 83Br(B-)83Kr                         966         6          976.922     3.795    1.8 -1-                  H        69Ph03,*
 83Br(B-)83Kr                ave      970.235     5.145      976.922     3.795    1.3  1    54  54  83Br          average
 83Rb(e)83Kr                          750        20          920.004     2.329    8.5B B                   h        70Go45,*
 83Sr(B+)83Rb                        2264        10         2273.024     6.424     .9  1    41  41  83Sr h        68Et01,*
 83Y(B+)83Sr                         4509        85         4591.944    19.844    1.0  U                   HBNL     81Li12,*
 83Y(B+)83Sr                         4455        50         4591.944    19.844    2.7B B                   HOrs     82De36,*
 83Zr(B+)83Y                         5868        85         6294.013    19.707    5.0B B                   HOrs     82De36,*
 83Nb(B+)83Zr                        7500       300         8298.749   162.207    2.7B B                   K        88Ku14
*83Y O-98Mo1.010                 D_M=12973.8(5.9) uu for mx gs+m at 62.04(0.10) keV; M-A=-72172.9(5.8) keVg        Nub211**
*83Se(B-)83Br                    Q-=3910(20) from 83Sem at 228.92 keV                                     g        Nub211**
*83Br(B-)83Kr                    E-=940(10) 925(15) 924(6) resp, to 83Krn at 41.5575 keV                  g        Nub211**
*83Rb(e)83Kr                     LK=0.132(0.002) to 5/2^- level at 561.9585, recalculated Q               k        Ens153**
*83Sr(B+)83Rb                    E+=1227(8) 24% to gs, 20% to 83Rbm at 42.0780, and other E+              g        Nub211**
*83Sr(B+)83Rb                    Forced to primary otherwise not combined with doublet                    h        GAu069*G
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*83Y(B+)83Sr	E+=2868(85) from 83Yxm at 62.04 keV to (3/2^-) level at 681.11 keV	k	Ens153**
*83Y(B+)83Sr	E+=3353(50) to 9/2^+ level at 35.47 keV	k	Ens153**
*	~ and E+=2941(84) from 83Yxm at 62.04 to (3/2^-) lvl at 681.11 keV	k	Ens153**
*83Zr(B+)83Y	Q+=5806(85) to 83Yxm at 62.04 keV	g	Nub211**
*83Zr(B+)83Y	Recalculated value 5802(50) of ref. not accepted		87Ra06**

84Cu-u		-14729#	537#				2					g	1.0	S-u211
84Zn-u		-34171#	429#				2					g	1.0	S-u212
84Ga-u		-47337	32				2					GTR1	1.0	20Re04
84Ge-u		-62270	430	-62424.910	3.404	-.4	U					HOR1	1.0	06Ha62
84As-u		-70530	320	-70696.710	3.404	-.5	U					HOR1	1.0	06Ha62,*
84As-u		-70710	128	-70696.710	3.404	.0	U					gGT2	2.5	08Su19
C6 H12-84Kr		182399.4	2.5	182402.65569	0.00410	.5	U					hM15	2.5	63Ri07
C6 H12-84Kr		182392	6	182402.65569	0.00410	1.2	U					hR11	1.5	78Di09
C5 N H10-84Kr		169819	18	169826.59615	0.00405	.3	U					hR11	1.5	78Di09
C5 N H10-84Kr		169819	13	169826.59615	0.00405	.4	U					hR11	1.5	78Di09
C5 O H8-84Kr		146010	20	146017.14736	0.00405	.2	U					hR11	1.5	78Di09
C4 13C O H7-84Kr		141543	18	141546.95079	0.00402	.1	U					hR11	1.5	78Di09
84Kr-N6		-106946.3154	0.0152	-106946.29843	0.00403	1.1o	o					HFS1	1.0	05Sh38,*
84Kr-N6		-106946.2971	0.0086	-106946.29843	0.00403	-.2	1	22	21	84Kr		HFS1	1.0	09Re03
84Kr H-85Rb		7515	18	7533.02294	0.00400	.7	U					hR11	1.5	78Di09
C6 H12-84Sr		180470.8	2.6	180481.264	1.335	1.6	U					HM15	2.5	63Ri07
84Y O-97Mo1.031		12483.5	5.1	12482.254	4.613	-.2	1	82	82	84Y		HJY1	1.0	08We10
84Zr O-98Mo1.020		14728.6	5.9				2					HJY1	1.0	06Ka48
84Nb-u		-65721	13	-65694.289	0.430	2.1	U					GLZ1	1.0	18Xi04
84Mo-u		-58154#	320#				2					k	1.0	S-u169,*
84Tc-u		-40473#	429#				2					k	1.0	S-u168
84Ge-88Rb.955		22268.7	3.4				2					HJY1	1.0	08Ha23
84As-88Rb.955		13996.9	3.4				2					HJY1	1.0	08Ha23
84Se-88Rb.955		3160.4	2.1	3160.371	2.099	-.0	1	100	100	84Se		HJY1	1.0	08Ha23
82Se H2-84Kr		20834	16	20851.868	0.500	.7	U					hR11	1.5	78Di09
84Kr-86Kr.977		-1168.3	1.0	-1168.85340	0.00224	-.6	U					HMS1	1.0	06Ri15
83Kr H-84Kr		10465	16	10453.821	0.009	-.5	U					hR11	1.5	78Di09
84Kr-85Rb.988		-1349.4	1.5	-1350.53427	0.00395	-.8	U					HMA8	1.0	06De36
84Rb-85Rb.988		1536	8	1526.962	2.355	-1.1	U					HMA2	1.0	94Ot01
84Sr-85Rb.988		622.9	5.0	570.857	1.335	-10.4	Z					hMA8	1.0	04He.A,G
84Sr-85Rb.988		570.9	1.5	570.857	1.335	-.0	-1-					HMA8	1.0	07Ke09
84Sr-85Rb.988		572.1	4.3	570.857	1.335	-.3	-1-					HSH1	1.0	11Ha08
84Sr-85Rb.988		622.9	5.0	570.857	1.335	-10.4	Z					hMA8	1.0	11He10,G
84Sr-85Rb.988	ave	571.030	1.416	570.857	1.335	-.1	1	89	89	84Sr				average
84Nb-85Rb.988		21457.45	0.43				2					GJY1	1.0	19Vi05
84Kr-80Se H3		-28505	48	-28499.131	1.016	.1	U					hR11	1.5	78Di09
84Kr-83Kr		-2628	12	-2628.790	0.009	-.0	U					hM15	2.5	63Ri07
84Kr-83Kr		-2646	30	-2628.790	0.009	.4	U					hR11	1.5	78Di09
84Kr-40Ar2		-13268.5136	0.0171	-13268.517	0.006	-.2	1	12	7	40Ar		HFS1	1.0	05Sh38,*
C2 O4-84Kr		68160.7359	0.0205	68160.74994	0.00406	.7o	o					HFS1	1.0	05Sh38,*
C2 O4-84Kr		68160.7516	0.0131	68160.74994	0.00406	-.1	1	10	9	84Kr		HFS1	1.0	09Re03
82Se(t,p)84Se		6016	15	6014.675	2.015	-.1	U					HLAl		74Kn02
84Sr(p,t)82Sr		-12310	10	-12300.358	6.029	1.0	1	36	35	82Sr		Oak		73Ba56
84Sr(p,t)82Sr		-12295	24	-12300.358	6.029	-.2	U					HWin		74De31,*
83Kr(n,g)84Kr		10519.5	1.8	10520.020	0.008	.3	U					M		72Ma42,Z
83Kr(n,g)84Kr		10520.6	0.3	10520.020	0.008	-1.9	U					KBdn		06Fi.A
84Sr(d,t)83Sr		-5720	30	-5666.053	6.946	1.8	U					h		70Be24,*
84As(B-)84Se		7195	200	10094.162	3.722	14.5F	F					NTrs		94Gi07,*
84As(B-)84Se		9120	880	10094.162	3.722	1.1	U					H		96WaZX
84Se(B-)84Br		1818	50	1835.364	25.765	.3	1	27	26	84Br				68Re12,*
84Se(B-)84Br		1808	100	1835.364	25.765	.3	U					m		70Ei02,*
84Br(B-)84Kr		4650	30	4656.251	25.730	.2	1	74	74	84Br		H		70Ha21,*
84Brm(B-)84Kr		4970	100				2					N		70Ha21,*
84Rb(B+)84Kr		2679	3	2680.371	2.194	.5	-1-							64La03
84Rb(B+)84Kr		2682	5	2680.371	2.194	-.3	-1-							71Bo01,*
84Rb(n,p)84Kr		3450	10	3462.718	2.194	1.3	U					hILL		76An05
84Rb(B+)84Kr	ave	2679.794	2.572	2680.371	2.194	.2	1	73	73	84Rb				average
84Rb(B-)84Sr		892	4	890.606	2.336	-.3	1	34	27	84Rb				71Bo01,*
84Y(B+)84Sr		6950	30	6755.141	4.411	-6.5F	F					h		70Va.A,*
84Y(B+)84Sr		6750	10	6755.141	4.411	.5	1	19	18	84Y		H		70Re.A,*

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 84Y(B+)84Sr                        6980       100         6755.141     4.411     -2.2   Z                  h        81Fr.A
 84Y(B+)84Sr                        6148       100         6755.141     4.411      6.1   Z                  h        81Fr.A,G
 84Y(B+)84Sr                        6423       135         6755.141     4.411      2.5   U                  HBNL     81Li12,*
 84Y(B+)84Sr                        6408       124         6755.141     4.411      2.8   U                  HOrs     82De36,*
 84Nb(B+)84Zr                       7200       300        10227.850     5.513     10.1B  B                  K        96Sh27,G
*84As-u                           Erroneously reported as --75700(300) keV in the publication           H        08Ha.A**
*84Kr-N6                          Corrected in ref. of same group                                       H        09Re03**
*84Mo-u                           p-stable 84Mo                                                                  91Ge01**
*84Sr-85Rb.988                    only one measurement - resonance looks ugly - Contam!!??, z-analysis stroh     04He.A*G
*84Sr-85Rb.988                    only one measurement - resonance looks ugly - Contam!!??, z-analysis stroh     11He10*G
*84Kr-40Ar2                       Corrected in ref. of same group                                       H        09Re03**
*C2 O4-84Kr                       Corrected in ref. of same group                                       H        09Re03**
*84Sr(p,t)82Sr                    Original error 12; added systematic error 21 keV                      H        GAu092**
*84Sr(d,t)83Sr                    Q=-5755(30) to 9/2^+ level at 35.47 keV                               k        Ens153**
*84As(B-)84Se                     F : observed (B-n) decay implies Q- >  8681(15) keV                   h        93Ru01**
*84Se(B-)84Br                     E-=1410(50) 1400(100) resp, to 1^+ level at 408.2 keV                 h        Ens09a**
*84Br(B-)84Kr                     E-=4626(15),3810(50),2700(50) to gs, 881.615 2^+, 1897.784 0^+        h        Ens09a**
*84Br(B-)84Kr                     the authors combination of the two devices is more reliable           h        GAu098*G
*84Brm(B-)84Kr                    E-=2200(100) to 5^- level at 2770.94 keV                              M        Ens09a**
*84Rb(B+)84Kr                     Original error increased: authors report E(2^+)=877.2(1.5) while              AHW   **
*                                  ~ E(2^+)=881.615(0.003) keV; see also 74As(B+)                                Ens09a**
*84Rb(B-)84Sr                     Originally 891.8(2.0), error increased, see 84Rb(B+)                           AHW   **
*84Y(B+)84Sr                      F : possibly additioned with e^+e-                                    h        AHW955**
*84Y(B+)84Sr                      E+=1641(10) and 2242(17) to levels at 4062 and 3511 keV               H        70Re.A**
*84Y(B+)84Sr                      E+=4400(100) from 67 level to 793.30 level                            h        00Do10*G
*84Y(B+)84Sr                      Q+=6409(170), and 6499(135) from 84Yxm at 67 keV                      H        00Do10**
*84Y(B+)84Sr                      Q+=6475(124) from 84Yxm at 67 keV                                     H        00Do10**
*84Nb(B+)84Zr                     B : see also result of same ref. for 80Y and 88Tc: all 3 MeV too small  g      GAu211*G


 85Zn-u                           -26946#      537#                                    2                  g    1.0 S-u212
 85Ga-u                           -42667        40                                     2                  GTR1 1.0 20Re04
 85Ge-u                           -57220       540       -57030.341     4.003      .4   U                  HOR1 1.0 06Ha62
 85As-u                           -68095       225       -67836.341     3.304      .8o  o                  HGT1 1.5 04Ma.A
 85As-u                           -67887       129       -67836.341     3.304      .2   U                  HGT2 2.5 08Su19
 C6 H13-85Rb                      189927.6       3.9     189935.67863   0.00536    .8   U                  MM15 2.5 63Ri07
 C6 H13-85Rb                      189930        15       189935.67863   0.00536    .3   U                  hR11 1.5 78Di09
 C4 N O H7-85Rb                   140985        18       140974.11075   0.00530   -.4   U                  hR11 1.5 78Di09
 85Rb-39K2.179                     -9124.6       2.7      -9126.698     0.012     -.8   U                  HMA8 1.0 09Na.A
 85Rb-120Sn.708                   -18970.8       2.2     -18969.674     0.699      .5   U                  HJY1 1.0 11Ha48
 85Y-u                            -83559        31       -83566.961    20.360     -.3  -2-                 MGS2 1.0 05Li24,*
 85Y-u                            -83573        27       -83566.961    20.360      .2  -2- q-q=    -5.625  m1.0 1.0   85Sr+0
 85Y-u                       ave  -83566.961    20.360                                 2                            average
 85Zr O-98Mo1.031                  13886.7       6.9                                   2                  HJY1 1.0 06Ka48
 85Nb O-98Mo1.031                  21246        26        21289.336     4.404     1.7   U                  HJY1 1.0 06Ka48,*
 85Tc-u                           -49222#      429#                                    2                  k    1.0 S-u168
 85Ru-u                           -32883#      537#                                    2                  g    1.0 S-u20b
 85Ge-88Rb.966                     28638.8       4.0                                   2                  HJY1 1.0 08Ha23
 85As-88Rb.966                     17832.8       3.3                                   2                  HJY1 1.0 08Ha23
 85Se-88Rb.966                      7929.9       2.8                                   2                  HJY1 1.0 08Ha23
 85Br-88Rb.966                      1314.9       3.3                                   2                  HJY1 1.0 07Ra23
 85Nb-85Rb                         17056.1       4.4                                   2                  HSH1 1.0 11Ha08,*
 85Mo-85Rb                         26471        17                                     2                  HSH1 1.0 11Ha08
 C6 H14-85Rb                      197760.706     0.014   197760.71053   0.00536    .3   U                  HMI2 1.0 99Br47
 85Rb-C6 H12                     -182110.662     0.024  -182110.64673   0.00536    .6   U                  HMI2 1.0 99Br47
 85Rb-84Kr                           300        32          292.00895   0.00400   -.2   U                  hR11 1.5 78Di09
 85Rb-84Kr                           292.0121    0.0064     292.00895   0.00400   -.5   1     39   34   85Rb HFS1 1.0 10Mo30
 83Rb-85Rb.488 81Rb.512             -351        22         -339.143     3.425      .2   U                  MP21 2.5 82Au01,Y
 84Kr(d,p)85Kr                      4895         8         4887.747     2.000     -.9   U                  hMIT     63Ho.A
 85Rb(g,n)84Rb                    -10650        80       -10479.684     2.194     2.1   U                  hPhi     60Ge01
 85Rb(p,d)84Rb                     -8275         6        -8255.118     2.194     3.3B  B                  HBld     78Sh11
 84Sr(d,p)85Sr                      6303         8         6300.461     3.013     -.3   1     14   12   85Sr          71Mo02
 85Mo(ep)84Zr                       5100       200         6622.961    16.763     7.6B  B                  H        99Hu05
 85Se(B-)85Br                       6185        90         6161.833     4.031     -.3o  o                  hBwg     87Gr.A
 85Se(B-)85Br                       6182        23         6161.833     4.031     -.9   U                  HBwg     92Gr.A
 85Br(B-)85Kr                       2870        19         2904.862     3.671      1.8  U                  HStu     79Al05
 85Kr(B-)85Rb                        687         2                                     2                           70Wo08
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 85Sr(e)85Rb                     1007        30         1064.051     2.813      1.9  U                 h        69Mc05,W
 85Rb(p,n)85Sr                  -1890        30        -1846.398     2.813      1.5  U                 hBNL     58El44
 85Rb(3He,t)85Sr                -1083         3        -1082.643     2.813       .1  1    88  88  85Sr  Pri     82Ko06
 85Y(B+)85Sr                     3255        25         3261.158    19.173      .2R  R  q-q=    -6.158 m        63Do07,*
 85Zr(B+)85Y                     4693        99         4666.935    20.026      -.3  U                 HOrs     82De36
 85Nb(B+)85Zr                    6000       200         6895.512     7.625     4.5F  F                 H        88Ku14,*
*85Y-u                          M-A=-77824(28) keV  for mixture gs+m at 19.68 keV                      g        Nub211**
*85Nb O-98Mo1.031               D_M=21292.2(6.9) uu for mx gs+m at 150#80 keV; M-A=-66274.8(6.6) keV   g        Nub211**
*85Nb-85Rb                      Misprint in publication 1.000200869 (not 1.00200869)                   H        GAu119**
*85Sr(e)85Rb                    To 9/2+ level at 514.0083 keV                                          n        Ens912*W
*85Y(B+)85Sr                    E+=1540(20) to 3/2^- level at 743.25 keV                               k        Ens148**
*                                ~ and E+=2240(10) from 85Yxm at 19.68 (conflicting -> outer error used) g        Nub211**
*85Nb(B+)85Zr                   F : see discussion of this result in ref.                              H        06Ka48**
*                                ~ Q+=6100(200) in text p.268 and in Table 1                           h        GAu066**


 86Zn-u                         -21537#     537#                                     2                 g    1.0 S-u212
 86Ga-u                         -36243#     429#                                     2                 g    1.0 S-u212
 86Ge-u                         -54750      540       -53033.000   470.000     3.2B  B                 KOR1 1.0 06Ha62
 86Ge-u                         -53033      188       -53033.000  \470.000           2                 KGT3 2.5 16Kn03,G
 86As-u                         -63586      247       -63298.468     3.704      .8o  o                 HGT1 1.5 04Ma.A
 86As-u                         -63189      129       -63298.468     3.704      -.3  U                 HGT2 2.5 08Su19
 86Se-u                         -75702      128       -75688.268     2.705       .0  U                 HGT2 2.5 08Su19
 C6 H14-86Kr                    198936.7      2.7     198939.82188   0.00399     .5  U                 MM15 2.5 63Ri07
 C6 H14-86Kr                    198933       15       198939.82188   0.00399     .3  U                 hR11 1.5 78Di09
 C5 N H12-86Kr                  186366       20       186363.76234   0.00394    -.1  U                 hR11 1.5 78Di09
 86Kr-u                         -89389.9      1.2     -89389.37532   0.00399     .4  Z                 mST1 1.0 95Ca.A
 86Kr-u                         -89390.2      1.2     -89389.37532   0.00399     .7  Z                 MST2 1.0 99Ca.B
 86Kr-u                         -89389.271    0.110   -89389.37532   0.00399    -.9  U                 hST2 1.0 02Bf02
 86Kr-120Sn.717                 -19269.6      2.2     -19268.609     0.708       .5  U                 HJY1 1.0 11Ha48
 C6 H14-86Sr                    200264.9      3.6     200289.72184   0.00563    2.8  U                 hM15 2.5 63Ri07
 86Y-u                          -85019       75       -85113.904    15.182    -1.3  U                 MGS2 1.0 05Li24,*
 86Zr O-98Mo1.041                 9692.8      6.9       9686.278     3.830      -.9  1    31  31  86Zr HJY1 1.0 06Ka48
 86Nb O-98Mo1.041                19171.0      5.9                                    2                 HJY1 1.0 06Ka48
 86Tc-u                         -55363#     322#                                     2                 k    1.0 S-u168
 86Ru-u                         -42695#     429#                                     2                 k    1.0 S-u167
 86As-88Rb.977                   23346.2      3.7                                    2                 HJY1 1.0 08Ha23
 86Se-88Rb.977                   10956.4      2.7                                    2                 HJY1 1.0 08Ha23
 86Br-88Rb.977                    5450.1      3.3                                    2                 HJY1 1.0 07Ra23
 86Kr-84Kr1.024                   1236.9544   0.0042    1236.95646   0.00229     .5  1    30  20  84Kr KFS1 1.0 12Ra34
 86Sr-84Kr1.024                   -112.9463   0.0054    -112.94350   0.00414     .5  1    59  54  86Sr KFS1 1.0 12Ra34
 86Kr-85Rb1.012                   -120.3      3.6       -120.59130   0.00382    -.1  U                 hMA8 1.0 06Ro11
 86Kr-85Rb1.012                   -119.1      1.6       -120.59130   0.00382    -.9  U                 HMA8 1.0 06De36
 86Kr-85Rb1.012                    -54       88         -120.59130   0.00382    -.8  U                 HMA9 1.0 10Na13,*
 86Rb-85Rb1.012                    441        9          436.227     0.215      -.5  U                 hMA2 1.0 94Ot01
 86Sr 19F-85Rb1.235              16608       13        16603.564     0.006      -.3  U                 HMA8 1.0 05Si34
 86Zr-85Rb1.012                   5562.7      4.6       5565.599     3.828       .6  1    69  69  86Zr HSH1 1.0 11Ha08
 86Mo-85Rb1.012                  20443.6      4.0      20442.876     3.147      -.2  -2-               HSH1 1.0 11Ha08
 86Mo-85Rb1.012                  20441.7      5.1      20442.876     3.147       .2  -2-               GJY1 1.0 19Vi05
 86Mo-85Rb1.012             ave  20442.876    3.147                                  2                          average
 86Sr-86Kr                       -1349.8965   0.0060   -1349.89996   0.00421    -.6  1    49  46  86Sr KFS1 1.0 12Ra34
 86Kr-85Rb                       -1206       42        -1179.11135   0.00378     .4  U                 hR11 1.5 78Di09
 86Kr-85Rb                       -1179.1083   0.0071   -1179.11135   0.00378    -.4  -1-               HFS1 1.0 10Mo30,*
 86Kr-85Rb                       -1179.1109   0.0059   -1179.11135   0.00378    -.1  -1-               HFS1 1.0 10Mo30,*
 86Kr-85Rb                  ave  -1179.10984  0.00454  -1179.11135   0.00378    -.3  1    69  66  85Rb          average
 86Kr-N6                       -107833.3986   0.0074 -107833.40082   0.00392    -.3  1    28  27  86Kr HFS1 1.0 09Re03
 C2 O4-86Kr                      69047.8337   0.0155   69047.85234   0.00394    1.2o  o                 HFS1 1.0 05Sh38,*
 C2 O4-86Kr                      69047.8440   0.0113   69047.85234   0.00394     .7  1    12  12  86Kr HFS1 1.0 09Re03
 86Kr-84Kr                        -908       32         -887.10240   0.00226     .4  U                 hR11 1.5 78Di09
 86Kr-84Kr                        -887.1041   0.0125    -887.10240   0.00226     .1o  o                 HFS1 1.0 05Sh38,*
 86Kr-84Kr                        -887.1080   0.0069    -887.10240   0.00226     .8  -1-               HFS1 1.0 09Re03,*
 86Kr-84Kr                        -887.0954   0.0060    -887.10240   0.00226   -1.2  -1-               HFS1 1.0 10Mo30,*
 86Kr-84Kr                  ave   -887.10083  0.00453   -887.10240   0.00226    -.3  1    25  15  84Kr          average
 86Sr(p,t)84Sr                  -11535       10       -11534.359     1.243       .1  U                 hOak     73Ba56
 85Rb(n,g)86Rb                    8651.1      1.0       8650.980     0.200      -.1  U                 M        69Da15,Z
 85Rb(n,g)86Rb                    8651.3      1.5       8650.980     0.200      -.2  U                 M        70Or.A
 85Rb(n,g)86Rb                    8650.98     0.20                                   2                 MBdn     06Fi.A
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85Rb(d,p)86Rb		6433	10	6426.414	0.200	-.7	U				hTal		69Da15
86Se(B-)86Br		5095	100	5129.086	3.972	.3o	o				hBwg		87Gr.A
86Se(B-)86Br		5099	11	5129.086	3.972	2.7C	C				kBwg		92Gr.A
86Br(B-)86Kr		7620	60	7633.415	3.078	.2	U				hStu		79Al05
86Br(B-)86Kr		7626	11	7633.415	3.078	.7	U				HBwg		92Gr.A
86Rb(B-)86Sr		1774	5	1776.097	0.200	.4	U				K		64Da16
86Rb(B-)86Sr		1770	3	1776.097	0.200	2.0	U				K		66An10
86Rb(B-)86Sr		1779.2	2.5	1776.097	0.200	-1.2	U				K		75Be21
86Rb(B-)86Sr		1775	3	1776.097	0.200	.4	U				K		75Ra09
86Y(B+)86Sr		5220	20	5240.000	14.142	1.0	-2-						62Ya01,*
86Y(B+)86Sr		5260	20	5240.000	14.142	-1.0	-2-						65Va02,*
86Y(B+)86Sr	ave	5240.000	14.142				2						average
86Nb(B+)86Zr		7978	80	8834.963	6.552	10.7F	F				H		82De43,*
86Mo(B+)86Nb		5019	430	5023.134	6.232	.0	U				H		94Sh07,*

*86Ge-u	Trends from Mass Surface TMS suggest 86Ge 70 keV more bound	g	GAu212*G
*86Y-u	M-A=-79086(29) keV for mixture gs+m at 218.21 keV	g	Nub211**
*86Kr-85Rb1.012	Typo in original paper, ratio should read 1.011 763 90(1 03)	H	GAu115**
*86Kr-85Rb	Different charge states : 3^+ and 2^+	H	10Mo30**
*C2 O4-86Kr	Corrected in ref. of same group	H	09Re03**
*86Kr-84Kr	Corrected in ref. of same group	H	09Re03**
*86Kr-84Kr	Different charge states in these two results: 3^+ and 2^+	H	10Mo30**
*86Y(B+)86Sr	E+=2019(20) 1960(20) resp, to 2229.81 4^+ level, and other E+	k	Ens14c**
*86Nb(B+)86Zr	F : see discussion of this result in ref.	H	06Ka48**
*86Mo(B+)86Nb	E+=3900(400) to (1^+) level at 97.1 keV	H	94Sh07**

87Ga-u	-30993#	537#				2				g	1.0	S-u212
87Ge-u	-46796#	322#				2				g	1.0	S-u212
87Se-u	-71357	128	-71311.383	2.406	.1	U				HGT2	2.5	08Su19
87Kr-u	-86622	30	-86645.241	0.264	-.8	U				MGS2	1.0	05Li24
C4 H7 O2-87Rb	135417.8	2.7	135423.933	0.006	.9	U				MM15	2.5	63Ri07
C5 13C H14-87Rb	203767	15	203724.753	0.006	-1.9	U				hR11	1.5	78Di09
C4 O N H9-87Rb	159277	15	159233.381	0.006	-1.9	U				hR11	1.5	78Di09
C3 13C O N H8-87Rb	154809	25	154763.185	0.006	-1.2	U				hR11	1.5	78Di09
C4 H7 O2-87Sr	135722.2	3.5	135726.96726	0.00545	.5	U				mM15	2.5	63Ri07
87Y-u	-89153	30	-89123.900	1.211	1.0	U				MGS2	1.0	03Li.A,*
87Zr-u	-85222	30	-85182.661	4.450	1.3	U				MGS2	1.0	05Li24
87Zr O-97Mo1.062	9543.3	5.2	9542.010	4.449	-.2	1	73	73	87Zr	HJY1	1.0	08We10
87Nb1.069-C7 H9	-155224	30	-155205.038	7.807	.6	U				HCP1	1.0	11Fa10
87Nb O-98Mo1.051	15027.9	7.3				2				HJY1	1.0	06Ka48,*
87Mo1.069-C7 H9	-147186.1	4.8	-147183.551	3.279	.5	1	47	47	87Mo	HCP1	1.0	11Fa10
87Ru-u	-49093#	429#				2				g	1.0	S-u20b
87Sr-84Kr1.036	565.8516	0.0059	565.85046	0.00405	-.2	1	47	41	87Sr	KFS1	1.0	12Ra34
87Kr-85Rb1.024	3683.0	2.9	3682.074	0.264	-.3	U				HMA8	1.0	06De36
87Kr-85Rb1.024	3684.1	4.7	3682.074	0.264	-.4	U				HMA8	1.0	10Na13
87Rb-85Rb1.024	-490	9	-492.156	0.007	-.2	U				hMA2	1.0	94Ot01
87Rb-85Rb1.024	-492.04	0.87	-492.156	0.007	-.1	Z				hMA8	1.0	04He.A
87Rb-85Rb1.024	-493.0	2.7	-492.156	0.007	.3	U				HMA8	1.0	06De36
87Rb-85Rb1.024	-492.33	0.80	-492.156	0.007	.2	U				HMA8	1.0	07Ke09
87Rb-85Rb1.024	-492.4	1.4	-492.156	0.007	.2	U				HMA8	1.0	09Na.A
87Rb-85Rb1.024	-492.04	0.87	-492.156	0.007	-.1	U				HMA8	1.0	11He10
87Rb-85Rb1.024	-492.166	0.056	-492.156	0.007	.2	U				GJY2	1.0	18Ne09,*
87Sr-85Rb1.024	-780	9	-795.19087	0.00538	-1.7	U				hMA2	1.0	94Ot01
87Mo-85Rb1.024	18525.6	4.2	18523.514	3.067	-.5	1	53	53	87Mo	HSH1	1.0	11Ha08
87Tc-85Rb1.024	28394.5	4.5				2				HSH1	1.0	11Ha08,*
87As-88Rb.989	28000.6	3.2				2				HJY1	1.0	08Ha23
87Se-88Rb.989	16397.5	2.4				2				HJY1	1.0	08Ha23
87Br-88Rb.989	8382.9	3.4				2				HJY1	1.0	07Ra23
86Kr H-87Rb	9309	16	9255.12747	0.00551	-2.2	U				hR11	1.5	78Di09
87Sr-86Kr1.012	-660.4616	0.0050	-660.46079	0.00394	.2	1	62	59	87Sr	KFS1	1.0	12Ra34
C6 H16-87Rb	216019.966	0.023	216019.981	0.006	.7	U				HMI2	1.0	99Br47
87Rb-C6 H14	-200369.931	0.015	-200369.917	0.006	.9	1	19	19	87Rb	MMI2	1.0	99Br47
87Rb-86Kr	-1477	30	-1430.09557	0.00551	1.0	U				hR11	1.5	78Di09
87Rb-86Kr	-1430.0932	0.0059	-1430.09557	0.00551	-.4	1	87	81	87Rb	HFS1	1.0	10Mo30
87Sr-86Sr	-382	12	-383.23019	0.00555	-.0	U				hM15	2.5	63Ri07
87Rb-85Rb	-2620	35	-2609.207	0.007	.2	U				hR11	1.5	78Di09
85Rb-87Rb.489 83Rb.512	-310	30	-314.847	1.192	-.1	U				hP21	2.5	82Au01

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 84Rb-87Rb.241 83Rb.759           850        72          643.711     2.817    -1.1   U                MP21 2.5 82Au01,*
 87Sr(p,t)85Sr                  -11440       10       -11437.627     2.813      .2   U                mOak     73Ba56
 87Br(B-n)86Kr                    1335       25         1302.672     3.171    -1.3   U                H        84Kr.B
 86Kr(n,g)87Kr                    5515.04     0.6       5515.173     0.246      .2  -2-               m        77Je03,Z
 86Kr(n,g)87Kr                    5515.20     0.27      5515.173     0.246     -.1  -2-               MBdn     06Fi.A
 86Kr(d,p)87Kr                    3286        8         3290.607     0.246      .6   U                hMIT     63Ho.A
 86Kr(n,g)87Kr             ave    5515.173    0.246                                  2                         average
 87Rb(g,n)86Rb                   -9990       70        -9922.117     0.200     1.0   U                hPhi     60Ge01
 87Rb(d,t)86Rb                   -3659       15        -3664.887     0.200     -.4   U                hTal     69Da15
 86Sr(n,g)87Sr                    8428.12     0.17      8428.29472   0.00518   1.0   U                KILn     86Wi16,Z
 86Sr(n,g)87Sr                    8428.17     0.17      8428.29472   0.00518    .7   U                KBdn     06Fi.A
 86Sr(d,p)87Sr                    6203        8         6203.72849   0.00517    .1   U                h        71Mo02
 86Sr(p,g)87Y                     5785.4      3.3       5784.258     1.128     -.3R  R  q-q=     1.142          71Um03
 86Sr(3He,d)87Y                    346       15          290.783     1.128    -3.7B  B                hANL     71Ma11
 87Mo(ep)86Zr                     3700      300         3795.235     4.569      .3   U                H        83Ha06
 87Se(B-)87Br                     7250      150         7465.553     3.877     1.4o  o                hBwg     87Gr.A
 87Se(B-)87Br                     7275       35         7465.553     3.877     5.4B  B                HBwg     92Gr.A
 87Br(B-)87Kr                     6830      120         6817.845     3.181     -.1   U                hStu     79Al05
 87Br(B-)87Kr                     6750      150         6817.845     3.181      .5o  o                hBwg     87Gr.B
 87Br(B-)87Kr                     6855       25         6817.845     3.181    -1.5   U                HBwg     92Gr.A
 87Kr(B-)87Rb                     3888        7         3888.271     0.246      .0   U                M        73Wo01
 87Rb(B-)87Sr                      272        3          282.275     0.006     3.4B  B                         59Fl40
 87Rb(B-)87Sr                      274        3          282.275     0.006     2.8B  B                k        61Be41
 87Rb(3He,t)87Sr-81Br()81Kr        564.0      1.5        563.127     0.471     -.6   1    10    9  81Kr  Pri    82Ko06
 87Y(B+)87Sr                      2190       50         1861.689     1.128    -6.6B  B                h        67Mi13,*
 87Y(B+)87Sr                      1791       40         1861.689     1.128     1.8   U                h        69Zo04,*
 87Sr(p,n)87Y                    -2644.2      1.2      -2644.036     1.128      .1  -2-               m        71Um03,Z
 87Sr(p,n)87Y                    -2642.8      3.3      -2644.036     1.128     -.4  -2- q-q=     1.236            86Sr+1
 87Sr(p,n)87Y              ave   -2644.036    1.128                                  2                         average
 87Zr(B+)87Y                      3663       40         3671.240     4.296      .2   U                h        65Ba48,*
 87Nb(B+)87Zr                     5165       60         5472.654     7.963     5.1B  B                H        82De43,*
 87Mo(B+)87Nb                     6382      308         6989.676     7.378     2.0   U                H        82De43,*
 87Mo(B+)87Nb                     6589      300         6989.676     7.378     1.3   U                H        91Mi15,*
*87Y-u                          M-A=-82665(28) keV  for 87Yxm at 380.82 keV                           g        Nub211**
*87Nb O-98Mo1.051               D_M=15030.0(6.9) uu for mx gs+m at 3.9(0.1) keV; M-A=-73870.2(6.7) keV  g        Nub211**
*87Rb-85Rb1.024                 from 85Rb+/87Rb+=1.023523278677(654), alt.in ref. 1.023523278629(662)  G        18Ne09**
*87Tc-85Rb1.024                 Most probably the high-spin isomer                                    H        11Ha08**
*84Rb-87Rb.241 83Rb.759         D_M=1080(40) keV    corr --230(60) for mixture gs+m at 463.59 keV     g        Nub211**
*87Y(B+)87Sr                    E+=780(50) to 87Srm at 388.82 keV                                     g        Nub211**
*87Y(B+)87Sr                    E+=1150(40) from 87Yxm at 380.82 keV                                  g        Nub211**
*87Zr(B+)87Y                    E+=2260(40) to 87Yxm at 380.82 keV                                    g        Nub211**
*87Nb(B+)87Zr                   Q+=5169(60) from 87Nbm at 3.9(0.1) keV                                g        Nub211**
*87Mo(B+)87Nb                   Q+=6378(308)) to 87Nbm at 3.9(0.1) keV                                g        Nub211**
*87Mo(B+)87Nb                   E+=5300(300) to (7/2)^+ level at 266.9 keV                            k        Ens15a**


 88Ga-u                         -24037#     537#                                     2                g    1.0 S-u211
 88Ge-u                         -42426#     429#                                     2                g    1.0 S-u20c
 88As-u                         -54160#     215#                                     2                g    1.0 S-u211
 88Se-u                         -68555      129       -68582.510     3.604     -.1   U                HGT2 2.5 08Su19
 88Br-u                         -75832      100       -75916.710     3.404     -.3o  o                HGT2 2.5 08Kn.A
 88Br-u                         -75823      129       -75916.710     3.404     -.3   U                HGT2 2.5 08Su19
 C4 H8 O2-88Sr                  146789.1      4.7     146817.23971   0.00596   2.4   U                hM15 2.5 63Ri07
 88Y-u                          -90500       31       -90498.725     1.610      .0   U                MGS2 1.0 05Li24
 88Zr O-98Mo1.061                 5502.3      6.9       5502.105     5.799     -.0   1    71   71  88Zr HJY1 1.0 06Ka48
 88Nb O-98Mo1.061                13458       76        13507.865    62.060      .7   1    67   67  88Nb KJY1 1.0 06Ka48,*
 88Ru-u                         -58336#     322#                                     2                k    1.0 S-u168
 88Rh-u                         -39571#     429#                                     2                k    1.0 S-u169
 88Sr-84Kr1.048                  -1637.3606   0.0069   -1637.36594   0.00468   -.8   1    46   42  88Sr KFS1 1.0 12Ra34
 88Kr-85Rb1.035                   5745.5      2.8                                    2                HMA8 1.0 06De36
 88Rb-85Rb1.035                   2615        9         2613.211     0.171     -.2   U                mMA4 1.0 02Ra23
 88Sr-85Rb1.035                  -3108       20        -3090.12576   0.00590    .9   U                hMA8 1.0 07Ke09
 88Sr-85Rb1.035                  -3088       11        -3090.12576   0.00590   -.2   U                HMA8 1.0 05Si34
 88Mo-85Rb1.035                  13265.4      4.1                                    2                HJY1 1.0 08We10
 88Tc-85Rb1.035                  25045       23        25091.832     4.400     2.0   U                GJY1 1.0 08We10,*
 88Sr-86Kr1.023                  -2942.4188   0.0059   -2942.41490   0.00459    .7   1    61   58  88Sr KFS1 1.0 12Ra34
 88Tc-87Rb1.011                  25612.7      4.4                                    2                GJY1 1.0 19Vi05
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 88Se-88Rb                     20101.9      3.6                                  2                 HJY1 1.0 08Ha23
 88Br-88Rb                     12767.7      3.4                                  2                 HJY1 1.0 07Ra23
 88Tcm-88Tc                       75.6      3.5                                  3                 GJY1 1.0 19Vi05
 88Sr-87Sr                     -3260       12       -3265.24056   0.00589   -.2  U                 hM15 2.5 63Ri07
 86Kr(t,p)88Kr                  4091       15        4086.459     2.608     -.3  U                 HLAl     76Fl02
 88Sr(p,t)86Sr                -11060       10      -11059.36882   0.00561    .1  U                 hOak     73Ba56
 87Rb(n,g)88Rb                  6082.52     0.16     6082.521     0.159      .0  1    99  99  88Rb MBdn     06Fi.A
 87Rb(d,p)88Rb                  3858       15        3857.955     0.159     -.0  U                 hOak     71Ra17
 87Rb(d,p)88Rb                  3837       20        3857.955     0.159     1.0  U                 h        71To05
 87Sr(n,g)88Sr                 11112.63     0.22    11112.87038   0.00550   1.1  U                 KILn     87Wi15,Z
 87Sr(n,g)88Sr                 11112.64     0.22    11112.87038   0.00550   1.0  U                 KBdn     06Fi.A
 87Sr(d,p)88Sr                  8865        5        8888.30415   0.00548   4.7B B                 hMIT     68Co20
 88Se(B-)88Br                   6854       31        6831.764     4.613     -.7  U                 HBwg     92Gr.A
 88Br(B-)88Kr                   8970      130        8975.328     4.106      .0  U                 hStu     79Al05
 88Br(B-)88Kr                   8880      200        8975.328     4.106      .5o o                 hBwg     87Gr.B
 88Br(B-)88Kr                   8960       36        8975.328     4.106      .4  U                 HBwg     92Gr.A
 88Kr(B-)88Rb                   2930       30        2917.709     2.613     -.4  U                 HTrs     78Wo15
 88Rb(B-)88Sr                   5310       60        5312.624     0.159      .0  U                 hTrs     78Wo15
 88Rb(B-)88Sr                   5318        9        5312.624     0.159     -.6  U                 mGsn     80De02,*
 88Rb(B-)88Sr                   5313        5        5312.624     0.159     -.1  U                 mTrs     82Br23
 88Y(B+)88Sr                    3622.6      1.5                                  2                          79An36,*
 88Sr(p,n)88Y                  -4402        6       -4404.947     1.500     -.5  U                 hBar     61Sh23
 88Sr(p,n)88Y                  -4406       10       -4404.947     1.500      .1  U                 hTal     62Ne08
 88Nb(B+)88Zr                   7550      100        7457.319    57.892     -.9  1    34  33  88Nb H        84Ox01
 88Nbm(B+)88Zr                  7590      100                                    2                          84Ox01,W
 88Tc(B+)88Mo                   8600     1300       11016.251     5.602     1.9  U                 H        96Od01
 88Tc(B+)88Mo                   7800      600       11016.251     5.602     5.4B B                 H        96Sh27
*88Nb O-98Mo1.061           D_M=13527.5(6.9) uu for mx gs+m at 130(120) keV; M-A=-76150.9(6.7) keV  g        Nub211**
*88Tc-85Rb1.035             Most probably the low-spin isomer                                     H        08We10**
*88Tc-85Rb1.035             D_M=25082.4(4.1) uu for mixture gs+m at 70(3) keV; M-A=-61679.1(3.8) keV g        Nub211**
*88Rb(B-)88Sr               Original error 4 corr in ref.                                         N        94Ha.A**
*88Y(B+)88Sr                E+=764.6(1.5) to 2^+ level at 1836.090 keV                            k        Ens141**
*88Nbm(B+)88Zr              For 8 m and M4 E(IT)<200                                              m        AHW953*W

 89Ge-u                       -35470#     429#                                   2                 g    1.0 S-u212
 89As-u                       -49952#     322#                                   2                 g    1.0 S-u20c
 89Se-u                       -63285      225      -63330.941     4.004     -.1o o                 HGT1 1.5 04Ma.A
 89Se-u                       -63291      129      -63330.941     4.004     -.1  U                 HGT2 2.5 08Su19
 C7 H5-89Y                    133247.0      3.4    133287.003     0.364     4.7B B                 MM15 2.5 63Ri07
 89Nb-u                       -86588       34      -86555.303    25.367     1.0  -1-               MGS2 1.0 05Li24,*
 89Nb-u                       -86568.2     54.     -86555.303    25.367      .2  -1- q-q=  -12.013 H1.0 1.0   92Mo-3
 89Nb-u                   ave -86582.379   28.772  -86555.303    25.367      .9  1    78  78  89Nb          average
 89Kr-85Rb1.047                10191.6      2.3                                  2                 HMA8 1.0 06De36
 89Rb-85Rb1.047                 4628        9        4634.287     5.826      .7  1    42  42  89Rb NMA4 1.0 02Ra23
 89Y-85Rb1.047                 -1806.32     0.52    -1805.693     0.364     1.2  1    49  49  89Y  GMS1 1.0 19Sa39
 89Mo-85Rb1.047                11824.3      4.2                                  2                 HJY1 1.0 08We10
 89Tc-85Rb1.047                20007       17       20004.800     4.100     -.1  U                 HSH1 1.0 08We10
 89Tc-85Rb1.047                20004.8      4.1                                  2                 HJY1 1.0 08We10
 89Ru-85Rb1.047                29694       26                                    2                 GJY1 1.0 19Vi05
 89Y-87Rb1.023                 -1252.96     0.51    -1253.525     0.364    -1.1  1    51  51  89Y  GMS1 1.0 19Sa39
 89Se-88Rb1.011                26329.0      4.0                                  2                 HJY1 1.0 08Ha23
 89Br-88Rb1.011                16364.5      3.5                                  2                 HJY1 1.0 07Ra23
 88Rb-89Rb.494 87Rb.506          545       23         563.406     2.685      .3  U                 hP21 2.5 82Au01
 89Y(d,a)87Sr                   7889       15        7879.681     0.339     -.6  U                 hMtr     72Br13
 88Sr(n,g)89Sr                  6358.70     0.13     6358.716     0.092      .1  -1-                ILn     89Wi05,Z
 88Sr(n,g)89Sr                  6358.73     0.13     6358.716     0.092     -.1  -1-               MBdn     06Fi.A
 88Sr(d,p)89Sr                  4133        5        4134.150     0.092      .2  U                 hMIT     67Sp09
 88Sr(n,g)89Sr            ave   6358.715    0.092    6358.716     0.092      .0  1   100 100  89Sr          average
 88Sr(p,g)89Y                   7078        4        7078.544     0.339      .1  U                 G        75Be.B,Z
 89Y(g,n)88Y                  -11540       40      -11483.491     1.538     1.4  U                 hPhi     63Ge02
 89Rh(p)88Ru                    1400#     200#                                   3                 g        S-u211
 89Br(B-)89Kr                   8140      140        8261.523     3.904      .9  U                 hStu     81Ho17
 89Br(B-)89Kr                   8120      120        8261.523     3.904     1.2o o                 hBwg     87Gr.B
 89Br(B-)89Kr                   8155       30        8261.523     3.904     3.6C C                 HBwg     92Gr.A
 89Kr(B-)89Rb                   5150       30        5176.604     5.834      .9  U                 H        67Ki01
 89Kr(B-)89Rb                   5191       60        5176.604     5.834     -.2  U                 HTrs     78Wo15,*
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 89Kr(B-)89Rb                 5140       120        5176.604     5.834      .3   U                  HStu      81Ho17,*
 89Rb(B-)89Sr                 4486        12        4496.628     5.427      .9  -1-                           66Ki06
 89Rb(B-)89Sr                 4491        15        4496.628     5.427      .4o  o                  hGsn      80Bl.A
 89Rb(B-)89Sr                 4510         9        4496.628     5.427    -1.5  -1-                 NGsn      80De02,*
 89Rb(B-)89Sr           ave   4501.360     7.200    4496.628     5.427     -.7   1    57  57  89Rb          average
 89Sr(B-)89Y                  1463         5        1502.176     0.351     7.8B  B                  h         49La06
 89Sr(B-)89Y                  1488         4        1502.176     0.351     3.5B  B                  H         70Wo05
 89Zr(B+)89Y                  2841        10        2833.228     2.765     -.8   U                  m         51Hy24,*
 89Zr(B+)89Y                  2832        10        2833.228     2.765      .1   U                  m         53Sh48,*
 89Zr(B+)89Y                  2828         7        2833.228     2.765      .7  -1-                           60Ha26,*
 89Y(p,n)89Zr                -3612.8       4.      -3615.575     2.765     -.7  -1-                 mTkm      63Ok01,Z
 89Y(p,n)89Zr                -3619.4       6.      -3615.575     2.765      .6  -1-                 mOak      64Jo11,Z
 89Zr(B+)89Y            ave   2831.657     3.006    2833.228     2.765      .5   1    85  84  89Zr          average
 89Nb(B+)89Zr                 3870       100        4252.219    23.720     3.8B  B                  h         55Ma13
 89Nb(B+)89Zr                 4340        50        4252.219    23.720    -1.8   1    23  22  89Nb H         74Vo08
 89Mo(B+)89Nb                 5970       300        5610.811    23.951    -1.2   U                  h         64Bu12
 89Tc(B+)89Mo                 7510       210        7620.088     5.467      .5   U                  H         91He04,*
*89Nb-u                     M-A=-80656(28) keV  for mixture gs+m at 0#30 keV                        g         Nub211**
*89Kr(B-)89Rb               E-=4970(60) to 220.948 level                                            H         GAu051**
*89Kr(B-)89Rb               Splitting Table 3a into 3 groups yields 4610(120) 4867(152) 5135(123) keVH        GAu051**
*89Rb(B-)89Sr               Original error 8 corr in ref.                                           N         94Ha.A**
*89Zr(B+)89Y                E+=910(10) 901(10) 897(7) resp, to 89Yxm at 908.97 keV                  g         Nub211**
*89Tc(B+)89Mo               E+=6370(210) to 118.8 level; no Fermi-Kurie plot                        m         91He04**


 90Ge-u                     -30564#      537#                                    2                  g    1.0 S-u212
 90As-u                     -44005#      429#                                    2                  g    1.0 S-u212
 90Se-u                     -59904       236      -59904.000  \354.000           2                  HGT1 1.5 04Ma.A
 90Rb-u                     -85420       210      -85202.443     6.927     1.0   U                  GTG2 1.0 20Gr.1
 C4 H10 O2-90Zr             163377         6      163380.802     0.126      .3   U                  mM15 2.5 63Ri07
 90Zr-u                     -95301.36      0.23   -95301.245     0.126      .5   1    30  30  90Zr KMS1 1.0 15Gu09
 90Nb-u                     -88872        50      -88740.799     3.561     2.6   U                  hGS2 1.0 05Li24,*
 90Mo-C7 H6                -133018.9       4.7   -133018.921     3.717     -.0   1    63  63  90Mo HCP1 1.0 11Fa10
 90Mo1.033-C7 H9           -159318        23     -159334.284     3.840     -.7   U                  HCP1 1.0 11Fa10
 90Tc-C7 H6                -122880.3       6.7   -122876.272     1.100      .6   U                  HCP1 1.0 11Fa10
 90Tc1.033-C7 H9           -148835        22     -148856.930     1.136    -1.0   U                  HCP1 1.0 11Fa10
 90Tc1.033-C7 H9           -148854.2       8.5   -148856.930     1.136     -.3   U                  HCP1 1.0 11Fa10
 90Ru1.033-C7 H9           -142382        11     -142379.544     4.137      .2   1    14  14  90Ru HCP1 1.0 11Fa10
 90Pd-u                     -42630#      429#                                    2                  k    1.0 S-u168
 90Kr-85Rb1.059              12942.6       2.0                                   2                  HMA8 1.0 06De36
 90Rb-85Rb1.059               8211         9        8212.228     6.927      .1   1    59  59  90Rb MMA4 1.0 02Ra23,*
 90Tc-85Rb1.059              17489.2       8.0     17488.590     1.100     -.1   U                  HSH1 1.0 08We10
 90Tc-85Rb1.059              17489.8       4.2     17488.590     1.100     -.3   U                  HJY1 1.0 08We10
 90Ru-85Rb1.059              23775        11       23759.049     4.005    -1.5  -1-                 HSH1 1.0 08We10
 90Ru-85Rb1.059              23756.6       4.7     23759.049     4.005      .5  -1-                 HJY1 1.0 08We10
 90Ru-85Rb1.059         ave  23759.441     4.322   23759.049     4.005     -.1   1    86  86  90Ru          average
 90Tc-86Kr1.047              17664.6       1.1                                   2                  HJY1 1.0 12Ka12
 90Tcm-86Kr1.047             17819.2       1.4                                   2                  HJY1 1.0 12Ka12
 90Zr-87Rb1.034              -1393.79      0.16    -1393.908     0.126     -.7   1    62  62  90Zr KMS1 1.0 15Gu09
 90Br-88Rb1.023              22017.0       3.6                                   2                  HJY1 1.0 07Ra23
 89Rb-90Rbx.791 85Rb.209     -1826        24       -1817.416    12.066      .1   U                  nP21 2.5 82Au01
 90Zr(a,8He)86Zr            -40136        30      -39988.291     3.569     4.9B  B                  HINS      90Ka01
 90Zr(3He,6He)87Zr          -12083         8      -12086.277     4.147     -.4   1    27  27  87Zr  MSU     78Pa11
 90Zr(p,t)88Zr              -12805        10      -12804.513     5.404      .0   1    29  29  88Zr  Oak     71Ba43
 89Y(n,g)90Y                  6857.1       1.0      6857.028     0.102     -.1   U                  hORn      81Ra07
 89Y(n,g)90Y                  6857.26      0.30     6857.028     0.102     -.8  -1-                           83De17
 89Y(n,g)90Y                  6856.98      0.17     6857.028     0.102      .3  -1-                 mILn      93Mi04,Z
 89Y(n,g)90Y                  6857.01      0.14     6857.028     0.102      .1  -1-                 MBdn      06Fi.A
 89Y(d,p)90Y                  4635         5        4632.462     0.102     -.5   U                  h         64Wa14
 89Y(n,g)90Y            ave   6857.028     0.102    6857.028     0.102      .0   1   100 100  90Y           average
 89Y(p,g)90Zr                 8351         4        8350.316     0.359     -.2   U                  G         75Be.B,W
 90Zr(g,n)89Zr              -11940        50      -11965.892     2.781     -.5   U                  hPhi      63Ge02
 90Zr(p,d)89Zr               -9728        10       -9741.325     2.781    -1.3   U                  mOak      71Ba43
 90Zr(d,t)89Zr               -5719.2       7.1     -5708.662     2.781     1.5   1    15  15  89Zr  SPa     79Bo37
 90Zr(3He,a)89Zr              8580        50        8611.729     2.781      .6   U                  hPhi      67Fo04
 90Br(B-)90Kr                 9800       400       10958.953     3.840     2.9   U                  hStu      81Ho17
 90Br(B-)90Kr                10280       110       10958.953     3.840     6.2C  C                  hBwg      87Gr.B
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90Br(B-)90Kr		10350	75	10958.953	3.840	8.1C	C				HBwg		92Gr.A
90Kr(B-)90Rb		4410	30	4406.313	6.716	-.1	U				H		70Ma11
90Kr(B-)90Rb		4390	40	4406.313	6.716	.4	U				HTrs		78Wo15
90Kr(B-)90Rb		4380	25	4406.313	6.716	1.1	U				HBwg		87Gr.A
90Rbx(IT)90Rb		71	12				2						82Au01,W
90Rb(B-)90Sr		6550	60	6585.372	6.481	.6	U				hTrs		78Wo15
90Rb(B-)90Sr		6560	150	6585.372	6.481	.2	U				hBwg		78St02
90Rb(B-)90Sr		6585	15	6585.372	6.481	.0o	o				hGsn		80Bl.A
90Rb(B-)90Sr		6578	15	6585.372	6.481	.5o	o				hGsn		80De02
90Rb(B-)90Sr		6587	10	6585.372	6.481	-.2	1	42	41	90Rb	Gsn		92Pr03,G
90Sr(B-)90Y		546	2	545.967	1.406	-.0	-1-						64Da16
90Sr(B-)90Y		546	2	545.967	1.406	-.0	-1-						83Ha35
90Sr(B-)90Y	ave	546.000	1.414	545.967	1.406	-.0	1	99	99	90Sr			average
90Y(B-)90Zr		2271	2	2275.635	0.373	2.3B	B						61Ni02,W
90Y(B-)90Zr		2284	5	2275.635	0.373	-1.7	U				G		64Da16
90Y(B-)90Zr		2273	5	2275.635	0.373	.5	U				G		64La13
90Y(B-)90Zr		2280	5	2275.635	0.373	-.9	U				G		66Ri01
90Y(B-)90Zr		2278	8	2275.635	0.373	-.3	U				hGsn		80Bl.A
90Y(B-)90Zr		2279.5	2.9	2275.635	0.373	-1.3	U				G		83Ha35
90Nb(B+)90Zr		6111	4	6111.017	3.316	.0	1	69	69	90Nb			68Pe01,*
90Mo(B+)90Nb		2489	4	2489.017	3.316	.0	1	69	37	90Mo			66Pe10,*
90Tc(B+)90Mo		8920	410	9447.818	3.611	1.3	U				H		74Ia01,*
90Tc(B+)90Mo		9270	300	9447.818	3.611	.6	U				H		81Ox01,*
90Tc(B+)90Mo		8726	300	9447.818	3.611	2.4	U				H		81Ox01,*
90Rh(e)90Ru		13410	1330	13250#	200#	-.1D	D				G		19Pa16,*
90Rh(e)90Ru		13250#	200#				2				g		S-u212
*90Nb-u		M-A=-82721(29) keV for mixture gs+n at 124.67 keV									g		Nub211**
*90Rb-85Rb1.059		D_M=8326(9) uu for 90Rbm at 106.90 keV; M-A=-79260(9) keV									g		Nub211**
*		~ original error (9) + 10 for possible weak ground-state mixture									m		GAu944*W
*89Y(p,g)90Zr		No details given. Error may be optimistic!											AHW92a*W
*89Y(p,g)90Zr		Maybe we can increase all errors to 6keV ?											GAu92c*W
*90Rbx(IT)90Rb		Using 90Rbm at 106.90 keV									g		Nub211*W
*90Rb(B-)90Sr		Independent: 80De02 at ILL and 92Pr03 at ISOLDE											GAu92c*G
*90Rb(B-)90Sr		Not true: same calibration error and response fct. error									n		AHW94b*G
*90Y(B-)90Zr		Value for 32P low too											AHW *W
*90Y(B-)90Zr		Here unmentioned authors use deviating spectrum shapes											AHW *W
*90Nb(B+)90Zr		E+=1500(4) to 6^+ level at 3589.419 keV									h		Ens981**
*90Mo(B+)90Nb		E+=1085(4) to 1^+ level at 382.01 keV									h		Ens981**
*90Tc(B+)90Mo		E+=7900(400) from 90Tcm at 144.1 to gs (85%) and 947.97 (15%) level									H		74Ia01**
*90Tc(B+)90Mo		E+=5300(300) to 2946.82 level									H		Ens981**
*90Tc(B+)90Mo		E+=6900(300) from 90Tcm at 144.0(1.7) to 2^+ level a 947.97 keV									H		Ens981**
*90Rh(e)90Ru		Symmetrized from 13190(+1500--1160)									G		HWJ199**
*90Rh(e)90Ru		Trends from Mass Surface TMS suggest 90Rh 160 keV more bound									G		GAu212**

91As-u		-39184#	429#				2				g	1.0	S-u212
91Se-u		-54040	540	-54300.000	465.000	-.2	Z				k	2.5	S-h03b
91Se-u		-54300	186	-54300.000	\465.000		2				KGT3	2.5	16Kn03
91Rb-u		-83532	21	-83462.738	8.375	1.3	U				mPb1	2.5	89Al33
91Rb-u		-83330	170	-83462.738	8.375	-.8	U				GTG2	1.0	20Gr.1
C7 H7-91Zr		149143.1	4.4	149135.018	0.102	-.7	U				mM15	2.5	63Ri07
91Zr-u		-94359.85	0.25	-94359.794	0.102	.2	1	17	17	91Zr	KMS1	1.0	15Gu09
91Nb-u		-93064	46	-93009.744	3.141	1.2	U				MGS2	1.0	05Li24,*
91Mo-C7 H7		-143031.3	8.3	-143030.032	6.697	.2	1	65	65	91Mo	HCP1	1.0	11Fa10
91Tc-C7 H7		-136340.9	6.7	-136350.251	2.537	-1.4	-1-				HCP1	1.0	11Fa10
91Tc-C7 H7		-136353.6	4.6	-136350.251	2.537	.7	-1-				HCP1	1.0	11Fa10
91Tc-C7 H7	ave	-136349.531	3.792	-136350.251	2.537	-.2	1	45	45	91Tc			average
91Ru1.011-C7 H8		-136730	620	-136664.571	2.410	.1	U				kCP1	1.0	11Fa10
91Ru-C7 H7		-128035.6	3.9	-128033.693	2.384	.5	1	37	37	91Ru	HCP1	1.0	11Fa10
91Ru1.022-C7 H9		-145260	23	-145295.440	2.437	-1.5	U				kCP1	1.0	11Fa10
91Rh-u		-62877#	320#				2				k	1.0	S-u169
91Kr-85Rb1.071		18279.5	2.4				2				HMA8	1.0	06De36
91Rb-85Rb1.071		11003	10	11010.453	8.375	.7	1	70	70	91Rb	NMA4	1.0	02Ra23
91Sr-85Rb1.071		4702	9	4669.134	5.854	-3.7B	B				HMA4	1.0	02Ra23
91Tc-85Rb1.071		12898.3	5.4	12898.163	2.537	-.0	1	22	22	91Tc	HSH1	1.0	08We10
91Ru-85Rb1.071		21223	11	21214.721	2.384	-.8	-1-				HSH1	1.0	08We10
91Ru-85Rb1.071		21215.5	4.2	21214.721	2.384	-.2	-1-				HJY1	1.0	08We10

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 91Ru-85Rb1.071             ave   21216.454     3.924    21214.721     2.384    -.4   1    37  37  91Ru          average
 91Zr-87Rb1.046                     637.32      0.19       637.372     0.102     .3   1    29  29  91Zr KMS1 1.0 15Gu09
 91Br-88Rb1.034                   26098.3       3.8                                   2                  HJY1 1.0 07Ra23
 91Tc-94Mo.968                    10303.0       4.4      10304.060     2.538     .2   1    33  33  91Tc HJY1 1.0 08We10
 91Ru-94Mo.968                    18620.9       4.7      18620.618     2.386    -.1   1    26  26  91Ru HJY1 1.0 08We10
 91Zr-90Zr                          942        12          941.450     0.157    -.0   U                  hM15 2.5 63Ri07
 90Rbx-91Rb.824 85Rb.176           -686        24         -771.201    15.065   -1.4   U                  mP21 2.5 82Au01
 91Zr(p,t)89Zr                   -10677        10       -10678.458     2.781    -.1   U                  hOak     71Ba43
 90Zr(n,g)91Zr                     7194.4       0.5       7194.363     0.146    -.1  -1-                 m        81Lo.A,Z
 90Zr(n,g)91Zr                     7192.7       0.8       7194.363     0.146    2.1  -1-*                HBdn     06Fi.A
 90Zr(d,p)91Zr                     4959        20         4969.797     0.146     .5   U                  hPit     64Co11
 90Zr(d,p)91Zr                     4969         8         4969.797     0.146     .1   U                  hMIT     72Gr12
 90Zr(d,p)91Zr                     4970.3       2.2       4969.797     0.146    -.2   U                  hSPa     79Bo37
 91Zr(p,d)90Zr                    -4977        10        -4969.797     0.146     .7   U                  hOak     71Ba43
 91Zr(d,t)90Zr                     -932        20         -937.133     0.146    -.3   U                  hPit     64Co11
 91Zr(d,t)90Zr                     -940.3       3.7       -937.133     0.146     .9   U                  hSPa     79Bo37
 90Zr(n,g)91Zr              ave    7193.922     0.424     7194.363     0.146    1.0   1    12   7  90Zr          average
 90Zr(p,g)91Nb                     5167         5         5154.451     2.928   -2.5B  B                  k        71Ra08
 90Zr(p,g)91Nb                     5167         4         5154.451     2.928   -3.1C  C                  h        75Be.B,Z
 90Zr(3He,d)91Nb                   -227        20         -339.024     2.928   -5.6B  B                  hHei     70Kn05
 90Zr(a,t)91Nb                   -14643        27       -14659.415     2.928    -.6   U                  hBrk     71Zi03
 91Rum(ep)90Mo                     4300       500                                     2                  M        83Ha06,G
 91Br(B-)91Kr                      9790       100         9866.672     4.190     .8   U                  HBwg     89Gr03
 91Br(B-)91Kr                      9805        50         9866.672     4.190    1.2   U                  HBwg     92Gr.A
 91Kr(B-)91Rb                      6420        80         6771.075     8.115    4.4B  B                  HTrs     78Wo15
 91Kr(B-)91Rb                      6450        80         6771.075     8.115    4.0B  B                  HBwg     89Gr03
 91Rb(B-)91Sr                      5830        45         5906.901     8.873    1.7   U                  HTrs     78Wo15,*
 91Rb(B-)91Sr                      5927        24         5906.901     8.873    -.8o  o                  HGsn     80De02,*
 91Rb(B-)91Sr                      5920        28         5906.901     8.873    -.5  -1-                 HMcG     83Ia02,*
 91Rb(B-)91Sr                      5930        22         5906.901     8.873   -1.0  -1-                 HGsn     92Pr03,*
 91Rb(B-)91Sr               ave    5926.183    17.299     5906.901     8.873   -1.1   1    26  18  91Rb          average
 91Sr(B-)91Y                       2669        10         2699.371     5.247    3.0B  B                  H        53Am08,*
 91Sr(B-)91Y                       2684        10         2699.371     5.247    1.5  -1-                 M        73Ha11,*
 91Sr(B-)91Y                       2704         8         2699.371     5.247    -.6  -1-                 MGsn     80De02,*
 91Sr(B-)91Y                       2709        15         2699.371     5.247    -.6  -1-                 MMcG     83Ia02
 91Sr(B-)91Y                       2691         9         2699.371     5.247     .9   Z                  m        Averag,G
 91Sr(B-)91Y                ave    2698.088     5.767     2699.371     5.247     .2   1    83  81  91Sr          average
 91Y(B-)91Zr                       1545         5         1544.271     1.840    -.1  -1-                 N        64La13
 91Y(B-)91Zr                       1544         2         1544.271     1.840     .1  -1-                          75Ra08
 91Y(B-)91Zr                ave    1544.138     1.857     1544.271     1.840     .1   1    98  98  91Y           average
 91Zr(p,n)91Nb                    -2045         6        -2039.911     2.924     .8  -1-                  Oak     70Ki01
 91Zr(p,n)91Nb                    -2038.8       3.4      -2039.911     2.924    -.3  -1-                  Kyu     71Ma47
 91Zr(p,n)91Nb              ave   -2040.307     2.958    -2039.911     2.924     .1   1    98  98  91Nb          average
 91Mo(B+)91Nb                      4460        30         4429.193     6.744   -1.0  -1-                 H        56Sm96
 91Mo(B+)91Nb                      4435        23         4429.193     6.744    -.3  -1-                 H        93Os06
 91Mo(B+)91Nb               ave    4444.255    18.253     4429.193     6.744    -.8   1    14  11  91Mo          average
 91Tc(B+)91Mo                      6220       200         6222.177     6.671     .0   U                  H        74Ia01
 91Pd(e)91Rh                      11800      2200        12400#      300#        .3D  D                  G        18Pa20,*
 91Pd(e)91Rh                      12400#      300#                                    3                  g        S-u212
*91Nb-u                          M-A=-86636(30) keV  for mixture gs+m at 104.60 keV                      g        Nub211**
*91Rum(ep)90Mo                   May be lower limit; probably 1/2- isomer <-- yes.. changed 983          m        83Ha06*G
*91Rb(B-)91Sr                    E-=5760(40) to 91Sr gs <8% and 93.628 keV (3/2)^+ level 25%             k        Ens13a**
*91Rb(B-)91Sr                    Original error 8 corr to 13 keV in ref.                                 H        94Ha.A**
*91Rb(B-)91Sr                    E-=5857 to mixture 91Sr gs <8% and 93.628 (3/2)^+ level 25%             k        Ens13a**
*91Rb(B-)91Sr                    E-=5850(20) and E-=5860(10) resp, to 91Sr gs <8% and 93.628 level 25%   k        Ens13a**
*91Rb(B-)91Sr                    Corrected then by 70(20) keV                                            h        AHW94b*W
*91Sr(B-)91Y                     E-=2665(10), 2030(20), 1359(10), 1093(10) to                            h        53Am08**
*                                 ~ gs, 3/2^- level at 653.02 keV, (5/2)^+ at 1305.39, (5/2)^- at 1545.90 k        Ens13a**
*91Sr(B-)91Y                     Original error 4 increased: in disagreement with other results          m        AHW94b**
*91Sr(B-)91Y                     Original error 3 corr in ref.                                           N        94Ha.A**
*91Sr(B-)91Y                     Adopted: simple average and dispersion of 4 data                        m        GAu94b*G
*91Sr(B-)91Y                     Weighted aver. of 3 =2690.0(4.68) Re=8.39                               m        GAu94b*G
*91Sr(B-)91Y                     Simple average of 3 =2691.5(9.2)                                        m        GAu94b*G
*91Pd(e)91Rh                     Trends from Mass Surface TMS suggest  91Pd   600 keV less bound         G        GAu212**
*91Pd(e)91Rh                      fromm AHW's IMME : 91Pd(e)=11700(400)                                  g        IMME  *G
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92As-u		-32614#	537#				2				g	1.0	S-u212
92Se-u		-50160#	429#				2				k	1.0	S-u169
92Br-u		-60711	103	-60368.404	7.202	1.3	U				HGT2	2.5	08Kn.A
92Rb-u		-80323	32	-80271.522	6.573	.6	U				mPb1	2.5	89Al33
C7 H8-92Zr		157569.4	3.8	157564.918	0.101	-.5	U				mM15	2.5	63Ri07
92Zr-u		-94964.66	0.18	-94964.663	0.101	-.0	1	32	32	92Zr	KMS1	1.0	15Gu09
92Nb-u		-92851	56	-92811.420	1.915	.7	U				MGS2	1.0	05Li24,*
C7 H8-92Mo		155790.0	3.2	155793.102	0.168	.4	U				HM15	2.5	63Ri07
92Mo1.011-C7 H9		-164641.3	7.0	-164643.259	0.170	-.3	U				HCP1	1.0	11Fa10
92Mo-u		-93193.14	0.47	-93192.847	0.168	.6	1	13	13	92Mo	KMS1	1.0	15Gu09
92Tc-C7 H8		-147328	13	-147330.478	3.331	-.2	U				HCP1	1.0	11Fa10
92Tc.989-C7 H7		-138569	10	-138573.416	3.294	-.4	-1-				HCP1	1.0	11Fa10
92Tc1.011-C7 H9		-156087.6	6.1	-156087.546	3.367	.0	-1-				HCP1	1.0	11Fa10
92Tc.989-C7 H7	ave	-138572.253	5.208	-138573.416	3.294	-.2	1	40	40	92Tc			average
92Ru-C7 H8		-142352	18	-142365.882	2.918	-.8o	o				HCP1	1.0	08Fa11
92Ru-C7 H8		-142352	18	-142365.882	2.918	-.8	U				HCP1	1.0	11Fa10
92Ru-C7 H8		-142377	10	-142365.882	2.918	1.1o	o				HCP1	1.0	08Fa11
92Ru-C7 H8		-142378	10	-142365.882	2.918	1.2	U				HCP1	1.0	11Fa10
92Ru1.011-C7 H9		-151074.5	5.6	-151068.339	2.950	1.1o	o				HCP1	1.0	08Fa11
92Ru1.011-C7 H9		-151074.5	5.6	-151068.339	2.950	1.1	1	28	28	92Ru	HCP1	1.0	11Fa10
92Rh1.011-C7 H9		-138825	23	-138801.557	4.752	1.0	U				HCP1	1.0	11Fa10
92Rh1.011-C7 H9		-138818	17	-138801.557	4.752	1.0	U				HCP1	1.0	11Fa10
92Ag-u		-40290#	429#				2				g	1.0	S-u212
92Kr-85Rb1.082		21616.6	2.9				2				HMA8	1.0	06De36
92Rb-85Rb1.082		15176	9	15171.985	6.573	-.4	1	53	53	92Rb	NMA4	1.0	02Ra23
92Sr-85Rb1.082		6482	9	6481.730	3.675	-.0	-1-				NMA4	1.0	02Ra23
92Sr-85Rb1.082		6484.0	4.3	6481.730	3.675	-.5	-1-				MMA8	1.0	05Gu37
92Sr-85Rb1.082	ave	6483.628	3.880	6481.730	3.675	-.5	1	90	90	92Sr			average
92Mo-85Rb1.082		2251.43	0.85	2250.660	0.168	-.9	U				KJY1	1.0	12Ka13
92Tc-85Rb1.082		10728	12	10713.284	3.331	-1.2	U				HSH1	1.0	08We10
92Tc-85Rb1.082		10712.5	4.3	10713.284	3.331	.2	1	60	60	92Tc	HJY1	1.0	08We10
92Ru-85Rb1.082		15684.3	5.7	15677.881	2.918	-1.1	-1-				HSH1	1.0	08We10
92Ru-85Rb1.082		15677.9	4.3	15677.881	2.918	-.0	-1-				HJY1	1.0	08We10
92Ru-85Rb1.082	ave	15680.221	3.433	15677.881	2.918	-.7	1	72	72	92Ru			average
92Rh-85Rb1.082		27841	37	27811.200	4.700	-.8	U				HSH1	1.0	08We10
92Rh-85Rb1.082		27811.2	4.7				2				HJY1	1.0	08We10
92Zr-87Rb1.057		1031.51	0.21	1031.521	0.101	.1	1	23	23	92Zr	KMS1	1.0	15Gu09
92Mo-87Rb1.057		2803.38	0.18	2803.338	0.168	-.2	1	87	87	92Mo	KMS1	1.0	15Gu09
92Br-88Rb1.045		32306.8	7.2				2				HJY1	1.0	07Ra23
92Zr 35Cl-90Zr 37Cl		3285	2	3286.706	0.172	.2	U				hH13	4.0	63Ba20
92Zr-91Zr		-603	12	-604.869	0.042	-.1	U				hM15	2.5	63Ri07
88Rb-92Rb.410 85Rb.592		-3258	22	-3309.234	2.515	-.9	U				hP21	2.5	82Au01
89Rb-92Rb.553 85Rb.449		-3457	24	-3470.100	6.394	-.2	U				nP21	2.5	82Au01
91Rb-92Rb.848 85Rb.153		-1703	25	-1766.409	9.283	-1.0	U				nP21	2.5	82Au01
90Rbx-92Rb.699 85Rb.303		-2059	24	-2131.926	14.281	-1.2	U				mP21	2.5	82Au01
90Rbx-92Rb.326 89Rb.674		209	24	155.405	14.248	-.9	U				mP21	2.5	82Au01
92Mo(a,8He)88Mo		-43278	20	-43306.801	3.823	-1.4	U				HINS		90Ka01
92Mo(p,a)89Nb		-1306	50	-1318.777	23.630	-.3R	R	q-q=	12.777		mANL		75Se.A
92Mo(3He,6He)89Mo		-14465	15	-14454.519	3.916	.7	U				HMSU		80Pa02
92Zr(p,t)90Zr		-7372	14	-7347.316	0.147	1.8	U				hBld		66St15
92Zr(p,t)90Zr		-7350	10	-7347.316	0.147	.3	U				hOak		71Ba43
92Mo(p,t)90Mo		-14330	30	-14296.913	3.466	1.1	U				hVUn		76Ka08
92Rb(B-n)91Sr		785	15	808.182	7.585	1.5	1	26	15	92Rb			84Kr.B
91Zr(n,g)92Zr		8634.91	0.20	8634.750	0.039	-.8	U				GILn		79Br25,Z
91Zr(n,g)92Zr		8634.64	0.15	8634.750	0.039	.7	U				G		81Su.A,Z
91Zr(n,g)92Zr		8635.00	0.24	8634.750	0.039	-1.0	U				GBdn		06Fi.A
91Zr(n,g)92Zr		8634.75	0.04	8634.750	0.039	-.0	1	96	50	91Zr	GILn		18Rz01
91Zr(d,p)92Zr		6470	30	6410.184	0.039	-2.0	U				h		62Ma06
91Zr(d,p)92Zr		6395	20	6410.184	0.039	.8	U				hPit		64Co11
91Zr(d,p)92Zr		6410.9	4.3	6410.184	0.039	-.2	U				hSPa		79Bo37
92Zr(p,d)91Zr		-6410	11	-6410.184	0.039	-.0	U				hBld		66St15
92Zr(p,d)91Zr		-6410	10	-6410.184	0.039	-.0	U				hOak		71Ba43
92Zr(d,t)91Zr		-2363	25	-2377.520	0.039	-.6	U				hPit		64Co11
92Mo(p,d)91Mo		-10446	15	-10446.505	6.239	-.0	-1-				Tex		73Ko03
92Mo(p,d)91Mo		-10432	25	-10446.505	6.239	-.6	-1-				Grn		73Mo03
92Mo(p,d)91Mo	ave	-10442.294	12.862	-10446.505	6.239	-.3	1	24	24	91Mo			average
92Br(B-)92Kr		12155	100	12536.516	7.232	3.8B	B				HBwg		89Gr03

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 92Br(B-)92Kr                   12220        55         12536.516     7.232     5.8C  C                 HBwg      92Gr.A
 92Kr(B-)92Rb                    6160        80          6003.121     6.692    -2.0   U                 hTrs      78Wo15
 92Kr(B-)92Rb                    6045        80          6003.121     6.692    -.5o   o                 hBwg      89Gr03
 92Kr(B-)92Rb                    5987        10          6003.121     6.692    1.6o   o                 HBwg      92Gr.A
 92Kr(B-)92Rb                    5993        27          6003.121     6.692     .4    U                 HBwg      92Gr06
 92Rb(B-)92Sr                    8080       160          8094.921     6.419     .1    U                 hTrs      78Wo15
 92Rb(B-)92Sr                    8091        15          8094.921     6.419     .3o   o                 hGsn      80Bl.A
 92Rb(B-)92Sr                    8111        15          8094.921     6.419    -1.1o  o                 hGsn      80De02
 92Rb(B-)92Sr                    8080        30          8094.921     6.419     .5   -1-                 McG      83Ia02
 92Rb(B-)92Sr                    8095        25          8094.921     6.419    -.0o   o                 hBwg      87Gr.A
 92Rb(B-)92Sr                    8096        16          8094.921     6.419    -.1   -1-                 Bwg      92Gr.A
 92Rb(B-)92Sr                    8107        15          8094.921     6.419    -.8   -1-                 Gsn      92Pr03
 92Rb(B-)92Sr              ave   8099.288    10.280      8094.921     6.419    -.4    1    39  32  92Rb           average
 92Sr(B-)92Y                     1929        50          1949.124     9.384     .4    U                 m         57He39,*
 92Sr(B-)92Y                     1930        30          1949.124     9.384     .6   -1-                 Trs      78Wo15,*
 92Sr(B-)92Y                     1920        20          1949.124     9.384    1.5   -1-                 McG      83Ia02
 92Sr(B-)92Y               ave   1923.077    16.641      1949.124     9.384    1.6    1    32  29  92Y            average
 92Y(B-)92Zr                     3640        20          3642.529     9.127     .1   -1-                          62Bu16
 92Y(B-)92Zr                     3630        15          3642.529     9.127     .8   -1-                 McG      83Ia02
 92Y(B-)92Zr               ave   3633.600    12.000      3642.529     9.127     .7    1    58  58  92Y            average
 92Nb(B+)92Zr                    2005         6          2005.733     1.782     .1    U                 h         59We30,*
 92Nb(B+)92Zr                    2008         6          2005.733     1.782    -.4    U                 h         62Bu16,*
 92Zr(p,n)92Nb                  -2790.7       2.3       -2788.080     1.782    1.1   -1-                 Kyu      74Ku01
 92Zr(p,n)92Nb                  -2792         5         -2788.080     1.782     .8   -1-                          75Ke12
 92Zr(p,n)92Nb             ave  -2790.927     2.090     -2788.080     1.782    1.4    1    73  73  92Nb           average
 92Tc(B+)92Mo                    7880       100          7882.884     3.106     .0    U                 h         64Va05
 92Mo(p,n)92Tc                  -8672        50         -8665.231     3.106     .1    U                 hTal      66Mo06,*
 92Mo(3He,t)92Tc                -7882        30         -7901.476     3.106    -.6    U                 HChR      73Ha02
 92Pd(e)92Rh                     8220       345                                       3                 G         19Pa16,*
*92Nb-u                       M-A=-86422(34) keV  for mixture gs+m at 135.5 keV                          g         Nub211**
*92Sr(B-)92Y                  E-=545(50) 546(30) resp, to 1^+ level at 1383.91 keV                      k         Ens12a**
*92Nb(B+)92Zr                 p+=56(6)e-5, 60(6)e-5 resp, to 2^+ level at 934.51 keV                    k         Ens12a**
*                              ~ recalculated Q+=2140(6) 2143(6) resp, from 92Nbm at 135.5 keV          h         AHW900**
*92Mo(p,n)92Tc                T=9040(50) to (4^+) level at 270.09 keV                                   k         Ens12a**
*92Pd(e)92Rh                  Qec=8170(330) keV decays to the daughter excited state at 50#(100#) keV  G         HWJ202**

 93Se-u                        -43865#      429#                                      2                 g    1.0 S-u20b
 93Br-u                        -56866       322        -56780.000   462.500     .2o   o                 KGT1 1.5 04Ma.A
 93Br-u                        -56780       185        -56780.000  \462.500           2                 KGT3 2.5 16Kn03,G
 93Rb-u                        -78036        21        -77960.666     8.406    1.4    U                 mPb1 2.5 89Al33
 93Rb-u                        -77868       100        -77960.666     8.406    -.4    U                 HGT2 2.5 08Kn.A
 93Rb-u                        -77940       130        -77960.666     8.406    -.2    U                 GTG2 1.0 20Gr.1
 93Sr-u                        -87010       420        -85975.685     8.110    2.5    U                 GTG2 1.0 20Gr.1
 C7 H9-93Nb                    164046.9       3.5      164052.117     1.600     .6    U                 mM15 2.5 63Ri07
 93Mo-u                        -93194        30        -93191.228     0.194     .1    U                 MGS2 1.0 05Li24,*
 93Tc-u                        -89729        31        -89754.853     1.087    -.8    U                 MGS2 1.0 05Li24
 93Tc-C7 H9                   -160189.5       7.7     -160180.140     1.087    1.2    U                 HCP1 1.0 11Fa10
 93Tc-C7 H9                   -160170        22       -160180.140     1.087    -.5    U                 HCP1 1.0 11Fa10
 93Tc-C7 H9                   -160189.4       8.5     -160180.140     1.087    1.1    U                 HCP1 1.0 11Fa10
 93Tc.989-C7 H8               -151270       190       -151367.807     1.075    -.5    U                 HCP1 1.0 11Fa10
 93Ru-C7 H9                   -153318.2       6.4     -153320.845     2.217    -.4   -1-                HCP1 1.0 11Fa10
 93Ru-C7 H9                   -153307        23       -153320.845     2.217    -.6    U                 HCP1 1.0 11Fa10
 93Ru-C7 H9                   -153324.0       4.8     -153320.845     2.217     .7   -1-                HCP1 1.0 11Fa10
 93Ru-C7 H9                   -153321.9       3.5     -153320.845     2.217     .3   -1-                HCP1 1.0 11Fa10
 93Ru-u                        -82853        47        -82895.558     2.217    -.9    U                 GGR1 1.0 19An10
 93Ru-C7 H9                ave -153321.905    2.587   -153320.845     2.217     .4    1    73  73  93Ru           average
 93Rh-C7 H9                   -144485        25       -144512.508     2.822   -1.1o   o                 HCP1 1.0 08Fa11
 93Rh-C7 H9                   -144485        26       -144512.508     2.822   -1.1    U                 HCP1 1.0 11Fa10
 93Rh-C7 H9                   -144527.7       5.3     -144512.508     2.822    2.9    U                 HCP1 1.0 08Fa11
 93Rh-C7 H9                   -144527.7       5.2     -144512.508     2.822    2.9    U                 HCP1 1.0 11Fa10
 93Rh-C7 H9                   -144512.9       3.8     -144512.508     2.822     .1    1    55  55  93Rh HCP1 1.0 11Fa10
 93Ag-u                        -49812#      430#                                      2                 g    1.0 S-u212
 93Kr-85Rb1.094                 27649.2       2.7                                     2                 HMA8 1.0 06De36
 93Rb-85Rb1.094                 18549        10         18541.362     8.406    -.8    1    71  71  93Rb NMA4 1.0 02Ra23
 93Sr-85Rb1.094                 10526        10         10526.342     8.110     .0    1    66  66  93Sr NMA4 1.0 02Ra23
 93Ru-85Rb1.094                 13609.4       4.3       13606.469     2.217    -.7    1    27  27  93Ru HJY1 1.0 08We10
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93Rh-85Rb1.094		22428	12	22414.806	2.822	-1.1	-1-				HSH1	1.0	08We10
93Rh-85Rb1.094		22413.5	4.5	22414.806	2.822	.3	-1-				HJY1	1.0	08We10
93Rh-85Rb1.094	ave	22415.288	4.213	22414.806	2.822	-.1	1	45	45	93Rh			average
91Rb-93Rb.489 89Rb.511		-471	9	-478.884	8.807	-.4	1	15	12	91Rb	P31	2.5	86Au02
91Rb-93Rb.326 90Rbx.674		-656	23	-626.417	12.223	.5	U				mP21	2.5	82Au01
92Rb-93Rb.495 91Rb.505		465	23	435.651	8.293	-.5	U				nP21	2.5	82Au01
93Rb(B-n)92Sr		2220	30	2176.153	8.545	-1.5	U				h		84Kr.B
92Sr(n,g)93Sr		5230	6	5289.791	8.293	10.0B	B				h		80Kr07
92Zr(n,g)93Zr		6733.7	1.1	6734.322	0.446	.6	-1-				m		72Gr23,Z
92Zr(n,g)93Zr		6734.0	0.7	6734.322	0.446	.5	-1-				m		79Ke.D,Z
92Zr(n,g)93Zr		6735.3	0.7	6734.322	0.446	-1.4	-1-				MBdn		06Fi.A
92Zr(d,p)93Zr		4493	20	4509.756	0.446	.8	U				hPit		64Co11
92Zr(n,g)93Zr	ave	6734.490	0.451	6734.322	0.446	-.4	1	98	98	93Zr			average
93Nb(g,n)92Nb		-8780	60	-8830.868	1.986	-.8	U				hPhi		60Ge01
93Nb(g,n)92Nb		-8825	3	-8830.868	1.986	-2.0	1	44	27	92Nb	McM		79Ba06
93Nb(d,t)92Nb		-2581	20	-2573.638	1.986	.4	U				hPit		64Co11
93Nb(d,t)92Nb		-2571	10	-2573.638	1.986	-.3	U				hTal		64Sh04
92Mo(n,g)93Mo		8067.4	1.5	8069.810	0.090	1.6	U				h		73Wa17
92Mo(n,g)93Mo		8066	2	8069.810	0.090	1.9	U				h		77Ri04
92Mo(n,g)93Mo		8069.81	0.09				2				mMMn		91Is02,Z
92Mo(n,g)93Mo		8070.0	0.3	8069.810	0.090	-.6	U				MBdn		06Fi.A
92Mo(d,p)93Mo		5853	20	5845.244	0.090	-.4	U				hPit		64Co11
92Mo(p,g)93Tc		4081	5	4086.500	1.000	1.1	U				h		75Be.B
92Mo(p,g)93Tc		4086.5	1.0				2						83Ay01
92Mo(3He,d)93Tc		-1411	4	-1406.975	1.000	1.0	U				hHei		83Wi.A
93Kr(B-)93Rb		8700	500	8483.898	8.224	-.4	U				hTrs		78Wo15
93Kr(B-)93Rb		8600	100	8483.898	8.224	-1.2	U				HBwg		87Gr.A
93Rb(B-)93Sr		7560	120	7465.943	8.876	-.8	U				hTrs		78Wo15
93Rb(B-)93Sr		7488	15	7465.943	8.876	-1.5o	o				hGsn		80Bl.A
93Rb(B-)93Sr		7485	15	7465.943	8.876	-1.3o	o				hGsn		80De02
93Rb(B-)93Sr		7440	30	7465.943	8.876	.9	-1-				McG		83Ia02
93Rb(B-)93Sr		7455	35	7465.943	8.876	.3	-1-				Bwg		87Gr.A
93Rb(B-)93Sr		7456	15	7465.943	8.876	.7	-1-				Gsn		92Pr03
93Rb(B-)93Sr	ave	7453.082	12.528	7465.943	8.876	1.0	1	50	26	93Rb			average
93Sr(B-)93Y		4130	100	4141.312	11.697	.1	U				hBwg		78St02
93Sr(B-)93Y		4110	20	4141.312	11.697	1.6	1	34	24	93Y	McG		83Ia02
93Y(B-)93Zr		2890	20	2894.872	10.483	.2	-1-						59Kn38
93Y(B-)93Zr		2880	15	2894.872	10.483	1.0	-1-				McG		83Ia02
93Y(B-)93Zr	ave	2883.600	12.000	2894.872	10.483	.9	1	76	76	93Y			average
93Zr(B-)93Nb		93.8	2.	90.812	1.484	-1.5	1	55	53	93Nb			53Gl.A,*
93Mo(e)93Nb		158	15	405.761	1.501	16.5B	B				h		64Ho08,*
93Nb(p,n)93Mo		-1188	10	-1188.108	1.501	-.0	U				K		68Fi01
93Nb(p,n)93Mo		-1190	5	-1188.108	1.501	.4	U				K		75Ch05
93Tc(B+)93Mo		3185.1	5.	3200.963	1.004	3.2B	B				h		51Bo48,*
93Tc(B+)93Mo		3192.1	3.	3200.963	1.004	3.0B	B				k		74An24,*
93Ru(B+)93Tc		6337	85	6389.393	2.299	.6	U				H		83Ay01
93Pd(e)93Rh		10030	370				2				G		19Pa16
*93Br-u		Trends from Mass Surface TMS suggest 93Br 40 keV less bound									g		GAu212*G
*93Mo-u		M-A=-84385(28) keV for 93Mom at 2424.95 keV									h		Ens115**
*93Zr(B-)93Nb		E-=63(2) to 1/2^- level at 30.77 keV									k		Ens115**
*93Mo(e)93Nb		L/K=0.36(0.04) to 1/2^- level at 30.82 keV, recalculated Q									h		Ens115**
*93Tc(B+)93Mo		E+=800(5) 807(3) resp, to 7/2^+ level 1363.048 keV									h		Ens115**
94Se-u		-39510#	537#				2				k	1.0	S-u169
94Br-u		-50242	429	-51154#	215#	-.9D	D				KGT3	2.5	16Kn03,*
94Br-u		-51154#	215#				2				g	1.0	S-u212
94Kr-u		-66238	247	-65859.547	13.000	1.0	U				HGT1	1.5	04Ma.A
94Kr-85Rb1.106		31701	13				2				HMA8	1.0	06De36
94Kr-85Rb1.106		31665	24	31701.000	13.000	1.5	U				HMA8	1.0	10Na13
94Kr-85Rb1.106		31649	97	31701.000	13.000	.5	U				HMA9	1.0	10Na13,*
94Rb-u		-73602	54	-73605.180	2.178	-.0F	F				hPb1	2.5	89Al33,*
94Rb-85Rb1.106		23958	10	23955.367	2.178	-.3	U				HMA4	1.0	02Ra23
94Rb-85Rb1.106		23955.6	2.6	23955.367	2.178	-.1	1	70	70	94Rb	HTT1	1.0	12Si10,*
94Sr-85Rb1.106		12924	10	12916.189	1.785	-.8	U				HMA4	1.0	02Ra23
94Sr-85Rb1.106		12916.0	1.8	12916.189	1.785	.1	1	98	98	94Sr	HTT1	1.0	12Si10,*
C7 H10-94Zr		171929.4	3.9	171937.795	0.176	.9	U				HM15	2.5	63Ri07

94Zr-u		-93687.34	0.20	-93687.476	0.176	-.7	1	77	77	94Zr	KMS1	1.0	15Gu09
94Mo-85Rb1.106		2645.6	1.0	2644.134	0.152	-1.5	U				KJY1	1.0	12Ka13
C7 H10-94Mo		173159.6	3.2	173166.732	0.152	.9	U				HM15	2.5	63Ri07
94Mo-u		-94916.31	0.42	-94916.413	0.152	-.2	1	13	13	94Mo	KMS1	1.0	15Gu09
94Tc-u		-90362	39	-90347.681	4.371	.4	U				MGS2	1.0	05Li24,*
94Ru-85Rb1.106		8891	25	8903.408	3.374	.5	U				HSH1	1.0	08We10
94Ru-85Rb1.106		8907.1	4.5	8903.408	3.374	-.8	1	56	56	94Ru	HJY1	1.0	08We10
94Ru-C7 H10		-166912.2	5.1	-166907.458	3.374	.9	1	44	44	94Ru	HCP1	1.0	11Fa10
94Ru-u		-88618	28	-88657.139	3.374	-1.4	U				GGR1	1.0	19An10
94Rh-85Rb1.106		19291.2	4.6	19290.998	3.628	-.0	1	62	62	94Rh	HJY1	1.0	08We10
94Rh-C7 H10		-156520.2	5.9	-156519.868	3.628	.1	1	38	38	94Rh	HCP1	1.0	11Fa10
94Rh.989-C7 H9		-147834	30	-147833.873	3.588	.0	U				HCP1	1.0	11Fa10
94Rh-u		-78370	140	-78269.549	3.628	.7	U				GGR1	1.0	19An10,*
94Cd-u		-43414#	537#				2				g	1.0	S-u212
94Kr-86Kr1.093		31710	110	31843.045	13.000	1.2	U				HMA9	1.0	10Na13
94Zr-87Rb1.080		4397.13	0.37	4397.556	0.176	1.2	1	23	23	94Zr	KMS1	1.0	15Gu09
94Mo-87Rb1.080		3168.68	0.35	3168.619	0.152	-.2	1	19	19	94Mo	KMS1	1.0	15Gu09
94Rb-88Rb1.068		21109.1	4.0	21109.766	2.181	.2	1	30	30	94Rb	HJY1	1.0	07Ra23
94Zr 35Cl-92Zr 37Cl		4235.0	2.	4227.311	0.214	-1.0	U				hH13	4.0	63Ba20
94Mo 35Cl-92Mo 37Cl		1234.0	2.	1226.558	0.236	-.9	U				HH11	4.0	63Bi12
94Pd-94Mo		23952.7	4.6				2				HJY1	1.0	08We10
92Rb-94Rb.587 89Rb.413		-764	24	-778.871	6.623	-.2	U				MP21	2.5	82Au01,Y
92Rb-94Rb.489 90Rbx.511		-717	23	-725.720	9.323	-.2	U				MP21	2.5	82Au01,Y
93Rb-94Rb.742 90Rbx.258		-1296	25	-1288.311	8.714	.1	U				MP21	2.5	82Au01,Y
93Rb-94Rb.495 92Rb.505		-840	40	-921.232	8.476	-.8F	F				hP31	2.5	86Au02,*
94Zr(d,a)92Y		8278	25	8257.970	9.128	-.8	1	13	13	92Y	Grn		74Gi09
94Zr(p,t)92Zr		-6466	12	-6471.148	0.189	-.4	U				hBld		66St15
94Zr(p,t)92Zr		-6470	10	-6471.148	0.189	-.1	U				hOak		71Ba43
94Agn(2p)92Rh		3449	100	2518.007	370.409	-9.3F	F				H		06Mu03,*
94Rb(B-n)93Sr		3580	80	3451.734	7.822	-1.6	U				h		84Kr.B
94Zr(p,d)93Zr		-5983	15	-5994.056	0.484	-.7	U				hBld		66St15
94Zr(p,d)93Zr		-6000	10	-5994.056	0.484	.6	U				hOak		71Ba43
94Zr(d,t)93Zr		-1969	20	-1961.392	0.484	.4	U				hPit		64Co11
94Zr(d,t)93Zr		-1960.2	2.4	-1961.392	0.484	-.5	U				KSPa		79Bo37
93Nb(n,g)94Nb		7229.13	0.12	7227.541	0.077	-13.2C	C				h		84Bo.C,G
93Nb(n,g)94Nb		7227.51	0.09	7227.541	0.077	.3	-1-				mMMn		88Ke09,Z
93Nb(n,g)94Nb		7227.63	0.15	7227.541	0.077	-.6	-1-				MBdn		06Fi.A
93Nb(n,g)94Nb	ave	7227.542	0.077	7227.541	0.077	-.0	1	100	69	94Nb			average
94Mo(d,t)93Mo		-3441	20	-3421.088	0.229	1.0	U				hPit		64Co11
94Agn(p)93Pd		5780	30	5789.692	16.641	.3	-3-				H		05Mu15,*
94Agn(p)93Pd		5794	20	5789.692	16.641	-.2	-3-				H		09Ce04,*
94Agn(p)93Pd	ave	5789.692	16.641				3						average
94Rb(B-)94Sr		10304	20	10282.930	2.623	-1.1o	o				hGsn		80Bl.A
94Rb(B-)94Sr		10322	100	10282.930	2.623	-.4o	o				hGsn		80De02,*
94Rb(B-)94Sr		10353	140	10282.930	2.623	-.5	U				hTrs		82Br23,*
94Rb(B-)94Sr		10335	45	10282.930	2.623	-1.2	U				mBwg		82Pa24,*
94Rb(B-)94Sr		10312	20	10282.930	2.623	-1.5	U				HGsn		92Pr03,*
94Sr(B-)94Y		3512	10	3505.752	6.422	-.6	1	41	40	94Y	NGsn		80De02,*
94Y(B-)94Zr		4920	9	4917.859	6.380	-.2	1	50	50	94Y	NGsn		80De02,*
94Nb(B-)94Mo		2043.3	6.	2045.016	1.494	.3	-1-				h		66Sn02,*
94Nb(B-)94Mo		2046.3	3.	2045.016	1.494	-.4	-1-				h		68Ho10,*
94Nb(B-)94Mo	ave	2045.700	2.683	2045.016	1.494	-.3	1	31	31	94Nb			average
94Tc(B+)94Mo		4261	5	4255.748	4.069	-1.1	-2-						64Ha29,*
94Mo(p,n)94Tc		-5027.8	7.	-5038.095	4.069	-1.5	-2-						73Mc04,*
94Tc(B+)94Mo	ave	4255.748	4.069				2						average
94Rh(B+)94Ru		9930	400	9675.979	4.615	-.6	U				H		80Ox01,*
94Rh(B+)94Ru		9750	320	9675.979	4.615	-.2	U				H		06Ba55
94Pd(B+)94Rh		6700	320	6805.343	5.459	.3	U				H		06Ba55
94Ag(e)94Pd		13400	650	13700#	400#	.5D	D				G		19Pa16,*
94Ag(e)94Pd		13700#	400#				3				g		S-J199
94Agn(B+)94Pd		17700	500	20199.134	370.408	5.0B	B				g		04Mu30,*
*94Br-u		Trends from Mass Surface TMS suggest 94Br 850 keV more bound									G		GAu212**
*94Kr-85Rb1.106		Typo in original paper, ratio should read 1.00625564(114)									H		GAu115**
*94Rb-u		F : possibly isomeric mixture									h		92Al.B**
*94Rb-u		If so, does this not affect 94Rb in triplets????											AHW935*W
*94Rb-85Rb1.106		D_M=23956.4(2.6) uu M-A=-68561.8(2.4)keV corr for e- binding=-775 eV									H		12Si10**
*94Sr-85Rb1.106		D_M=12916.7(1.8) uu M-A=-78845.2(1.7)keV corr for e- binding=-625 eV									H		12Si10**

*94Tc-u	M-A=-84133(29) keV for mixture gs+m at 76(3) keV	g	Nub211**
*94Rh-u	M-A=-72848(24) keV for mixture gs+n at 300#(200#) keV	G	Nub211**
*93Rb-94Rb.495 92Rb.505	F : rejection based on line-shape analysis	h	86Au02**
*94Agn(2p)92Rh	Q(2p)=1900(100) to (11^+) level at 1548.6 keV	k	Ens12a**
*94Agn(2p)92Rh	F : no evidence from He-jet experiment	H	09Ce04**
*94Agn(2p)92Rh	F : ~ possibly misidentified 92Rh gamma rays	H	09Je05**
*94Agn(2p)92Rh	arguments from 2009Ce04 and 2009Je05 are quite convincing	h	WgM127*W
*93Nb(n,g)94Nb	Judgment suspended, see GAu#59 and AHW#26 (Mar89)		GAu *G
*94Agn(p)93Pd	E(p)=790(30), 1010(30) to (33/2^+) at 4995.6, (33/2^-,35/2^-) at 4752.7	H	Ens115**
*94Agn(p)93Pd	E(p)=790(20) to level (33/2^+) at 4995.6 keV	H	Ens115**
*94Rb(B-)94Sr	Original value 10304(30) corr in ref.	h	94Ha.A**
*94Rb(B-)94Sr	Original error 100 keV increased by 100 in ref. for lower level feeding	h	94Ha.A**
*94Rb(B-)94Sr	As corrected in ref.	n	87Gr.A**
*94Rb(B-)94Sr	E-=9475(20) to 2^+ level at 836.91 keV	h	Ens116**
*94Sr(B-)94Y	Original error 6 corrected in ref.	N	94Ha.A**
*94Y(B-)94Zr	Original error 5 corrected in ref.	N	94Ha.A**
*94Nb(B-)94Mo	E-=470(6) 473(3) resp, to level 4^+ at 1573.76 keV	h	Ens069**
*94Tc(B+)94Mo	E+=816(5) to 6^+ level at 2423.45 keV	h	Ens069**
*94Mo(p,n)94Tc	T=5158(7) to 94Tcm at 76(3) keV	g	Nub211**
*94Rh(B+)94Ru	E+=6400(400) to (3,4,5) level at 2503.2 keV	h	Ens069**
*94Ag(e)94Pd	Symmetried from 13350(+690--610)	G	HWJ199**
*94Ag(e)94Pd	Trends from Mass Surface TMS suggest 94Ag 300 keV less bound	G	HWJ199**
*94Agn(B+)94Pd	Q+ larger than 17.7 MeV, uncertainty not given	H	04Mu30**

95Se-u		-32700#	537#				2				k	1.0	S-u169
95Br-u		-47075#	322#				2				g	1.0	S-u211
95Kr-u		-60183	150	-60289.078	20.000	-.5	U				HGT1	1.5	04Ma.A
95Kr-85Rb1.118		38330	20				2				HMA8	1.0	06De36
95Rb-u		-70618	86	-70736.151	21.734	-.5	U				hPb1	2.5	89Al33
95Sr-85Rb1.118		17987	10	17977.360	6.237	-1.0	1	39	39	95Sr	NMA4	1.0	02Ra23
95Mo-85Rb1.118		4457.6	1.0	4456.514	0.133	-1.1	U				KJY1	1.0	12Ka13
C7 H11-95Mo		180236.5	3.5	180237.914	0.133	.2	U				mM15	2.5	63Ri07
95Mo-u		-94161.96	0.38	-94162.563	0.133	-1.6	1	12	12	95Mo	KMS1	1.0	15Gu09
95Tc-u		-92417	32	-92347.718	5.453	2.2	U				hGS2	1.0	05Li24,*
95Rh-85Rb1.118		14515.1	4.5	14516.971	4.172	.4	1	86	86	95Rh	HJY1	1.0	08We10
95Rh.989-C7 H10		-161416	11	-161427.304	4.126	-1.0	1	14	14	95Rh	HCP1	1.0	11Fa10
95Mo-87Rb1.092		5012.33	0.44	5012.300	0.133	-.1	U				KMS1	1.0	15Gu09
95Sr-97Zr.979		6529	10	6524.717	6.237	-.4	1	39	39	95Sr	HJY1	1.0	06Ha03
95Y-97Zr.979		-32.4	6.7	-13.867	7.278	2.8B	B				HJY1	1.0	07Ha32
95Pd-94Mo1.011		20848.9	4.7	20849.004	3.250	.0	-2-				HJY1	1.0	08We10
95Pd-94Mo1.011		20849.1	4.5	20849.004	3.250	-.0	-2-				HJY1	1.0	08We10,*
95Pd-94Mo1.011	ave	20849.004	3.250				2						average
95Mo-94Mo		757	12	753.850	0.101	-.1	U				hM15	2.5	63Ri07
93Rb-95Rb.653 89Rb.348		-1323	25	-1157.616	15.359	2.6	U				hP21	2.5	82Au01
93Rb-95Rb.587 90Rbx.413		-1376	24	-1193.631	15.177	3.0B	B				hP21	2.5	82Au01
94Rb-95Rb.792 90Rbx.209		-16	28	194.898	16.372	3.0B	B				hP21	2.5	82Au01,Y
92Rb-95Rb.242 91Rb.758		80	23	103.753	9.750	.4	U				nP21	2.5	82Au01
93Rb-95Rb.489 91Rb.511		-654	12	-671.822	12.980	-.6F	F				hP31	2.5	86Au02,*
94Rb-95Rb.660 92Rb.341		433	15	422.218	13.636	-.3	1	13	13	95Rb	P31	2.5	86Au02
94Rb-95Rb.660 92Rb.341		462	28	422.218	13.636	-.6	U				mP31	2.5	86Au02
95Mo(n,a)92Zr		6405	30	6393.554	0.155	-.4	U				hILL		75Em04
95Rb(B-n)94Sr		5120	100	4884.096	20.313	-2.4	U				h		84Kr.B
94Zr(n,g)95Zr		6461.6	1.0	6461.927	0.857	.3	-1-				m		79Ke.D,Z
94Zr(n,g)95Zr		6357.8	0.3	6461.927	0.857	347.1F	F				MBdn		06Fi.A,*
94Zr(n,g)95Zr		6460.3	0.5	6461.927	0.857	3.3C	C				HBdn		08Fi.A,*
94Zr(d,p)95Zr		4223	20	4237.361	0.857	.7	U				hPit		64Co11
94Zr(d,p)95Zr		4237.4	2.0	4237.361	0.857	-.0	-1-				SPa		79Bo37
94Zr(n,g)95Zr	ave	6461.673	0.894	6461.927	0.857	.3	1	92	91	95Zr			average
94Mo(n,g)95Mo		7367	2	7369.111	0.094	1.1	U				h		77Ri04
94Mo(n,g)95Mo		7369.10	0.10	7369.111	0.094	.1	1	89	68	94Mo	mMMn		91Is02,Z
94Mo(n,g)95Mo		7368.4	0.5	7369.111	0.094	1.4	U				MBdn		06Fi.A
94Mo(d,p)95Mo		5137	20	5144.545	0.094	.4	U				hPit		64Co11
95Pd(ep)94Ru		5116	300	5328.718	4.367	.7	U				H		82Ku15,*
95Rb(B-)95Sr		9224	30	9226.977	20.204	.1o	o				hGsn		80Bl.A
95Rb(B-)95Sr		9276	100	9226.977	20.204	-.5o	o				hGsn		80De02,*
95Rb(B-)95Sr		9300	30	9226.977	20.204	-2.4C	C				kGsn		84Bl.A

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 95Rb(B-)95Sr                    9280        45          9226.977     20.204     -1.2  -1-                Bwg       87Gr.A
 95Rb(B-)95Sr                    9272        35          9226.977     20.204     -1.3  -1-                Gsn       92Pr03
 95Rb(B-)95Sr              ave   9275.015    27.627      9226.977     20.204     -1.7   1     53  51  95Rb           average
 95Sr(B-)95Y                     6110       150          6090.653      7.239      -.1   U                h         70Ma.A
 95Sr(B-)95Y                     6060       100          6090.653      7.239       .3   U                hBwg      78St02
 95Sr(B-)95Y                     6082        10          6090.653      7.239       .9   1     52  32  95Y   Gsn     84Bl.A
 95Sr(B-)95Y                     6052        25          6090.653      7.239      1.5   U                m         90Ma03
 95Y(B-)95Zr                     4445         9          4452.003      6.772       .8   1     57  56  95Y  NGsn     80De02,*
 95Zr(B-)95Nb                    1125         8          1126.331      0.985       .2   U                m         54Za05
 95Zr(B-)95Nb                    1119         5          1126.331      0.985      1.5   U                K         55Dr43
 95Zr(B-)95Nb                    1122.7       3.         1126.331      0.985      1.2   1     11   8  95Zr           74An22,*
 95Nb(B-)95Mo                     925.5       0.5         925.601      0.494       .2   1     98  97  95Nb           63La06,*
 95Tc(B+)95Mo                    1683        10          1690.518      5.078       .8  -1-                          65Cr04,*
 95Tc(B+)95Mo                    1693         6          1690.518      5.078      -.4  -1-                          74An05,*
 95Mo(p,n)95Tc                  -2440        30         -2472.865      5.078     -1.1   U                h         57Le27
 95Mo(p,n)95Tc                  -2490         6         -2472.865      5.078      2.9B  B                hOak      70Ki01
 95Tc(B+)95Mo              ave   1690.353     5.145      1690.518      5.078       .0   1     97  97  95Tc           average
 95Ru(B+)95Tc                    2558        30          2563.596     10.531       .2   1     12  10  95Ru           68Pi03,*
 95Rh(B+)95Ru                    5110       150          5117.142     10.266       .0   U                H         75We03,*
 95Ag(e)95Pd                    10560       480         10060#       400#        -1.0D  D                G         19Pa16,*
 95Ag(e)95Pd                    10060#      400#                                        3                g         S-u212
 95Cd(e)95Ag                    10200      1700         12850#       400#         1.6D  D                G         18Pa20,*
 95Cd(e)95Ag                    12850#      400#                                        4                g         S-u212
*95Tc-u                     M-A=-86066(28) keV  for mixture gs+m at 38.91 keV                            g         Nub211**
*95Pd-94Mo1.011             D_M=22862.1(4.5) uu  for 95Pdm at 1875.13 keV; M-A=-68090.2(4.4) keV         g         Nub211**
*93Rb-95Rb.489 91Rb.511     F : Rejected by authors                                                      h         86Au02**
*94Zr(n,g)95Zr              F : value from 06*Fi.A retracted                                             H         08Fi.A**
*94Zr(n,g)95Zr              Weak evidence                                                                H         08Fi.A**
*95Pd(ep)94Ru               E(p)=4300(300) from 95Pdm at 1875.13 to 94Rum at 2644.1 keV                  g         Nub211**
*                            ~ same E(p); both from figures                                              m         82No06**
*95Rb(B-)95Sr               E-=8595(100) to (3/2^+,5/2^+) level at 680.70, corr in ref.                  h         92Pr03**
*95Rb(B-)95Sr               E- assumed to go to (7/2)+ level at 556.08 level gave 9151(100) {AHW}        h         Ens10a*W
*95Y(B-)95Zr                Original error 5 corrected in ref.                                           N         94Ha.A**
*                            ~ Q-=4417(10) given by same group, not used                                 N         84Bl.A**
*95Zr(B-)95Nb               E-=887(3) to 1/2^- level at 235.69 keV                                       h         Ens10a**
*95Nb(B-)95Mo               E-=159.7(0.5) to 7/2^+ level at 765.803 keV                                  h         Ens10a**
*95Tc(B+)95Mo               E+=700(10) 710(6) resp, from 95Tcm at 38.91 keV                              g         Nub211**
*95Ru(B+)95Tc               E+=1200(30) to 7/2^+ level at 336.413 keV                                    h         Ens10a**
*95Rh(B+)95Ru               E+=3150(150) to 7/2^+ level at 941.79 keV                                    h         Ens10a**
*95Ag(e)95Pd                Trends from Mass Surface TMS suggest  95Ag   500 keV more bound              G         GAu212**
*95Cd(e)95Ag                Trends from Mass Surface TMS suggest  95Cd  2650 keV less bound              G         GAu212**


 96Br-u                        -41020#      322#                                        2                g    1.0 S-u211
 96Kr-u                        -57002        61        -56985.526     20.695       .3   1     12  12  96Kr GTR1 1.0 20Sm.1
 96Kr-85Rb1.129                 42606        22         42603.857     20.695      -.1   1     88  88  96Kr HMA8 1.0 10Na13
 96Rb-u                        -65508        43        -65866.602      3.600     -3.3F  F                hPb1 2.5 89Al33,*
 96Zr-87Rb1.103                  8451.49      0.34       8451.496      0.123       .0   1     13  13  96Zr KMS1 1.0 15Gu09
 C7 H12-96Zr                   185628         6        185622.767      0.123      -.3   U                mM15 2.5 63Ri07
 96Zr-u                        -91691        43        -91722.384      0.123      -.7   U                HJY0 1.0 04Ri12
 96Zr-u                        -91722.60      0.17     -91722.384      0.123      1.3   1     52  52  96Zr KMS1 1.0 15Gu09
 96Mo-85Rb1.129                  4265.7       1.1        4264.154      0.129     -1.4   U                KJY1 1.0 12Ka13
 96Mo-87Rb1.103                  4848.96      0.43       4848.651      0.129      -.7   U                KMS1 1.0 15Gu09
 C7 H12-96Mo                   189226.9       3.0      189225.613      0.129      -.2   U                HM15 2.5 63Ri07
 96Mo-u                        -95324.94      0.47     -95325.230      0.129      -.6   U                KMS1 1.0 15Gu09
 96Tc-u                        -92192        32        -92133.324      5.525      1.8   U                hGS2 1.0 05Li24,*
 C7 H12-96Ru                   186304.6       3.8      186311.473      0.183       .7   U                HM16 2.5 63Da10
 96Pd-u                        -81853        41        -81786.261      4.503      1.6   U                GGR1 1.0 19An10
 96In-u                        -40891#      537#                                        2                g    1.0 S-u212
 96Rb-88Rb1.091                 30887.7       3.6       30888.086      3.595       .1   1    100 100  96Rb HJY1 1.0 07Ra23
 96Zr 35Cl-94Zr 37Cl             4929         3          4915.216      0.225     -1.1   U                hH13 4.0 63Ba20
 96Mo 35Cl-94Mo 37Cl             2539         2          2541.308      0.131       .3   U                hH11 4.0 63Bi12
 96Pd-94Mo1.021                 15123.4       4.5                                       2                HJY1 1.0 08We10
 96Sr-97Zr.990                   9868        10          9864.881      9.088      -.3   1     83  83  96Sr HJY1 1.0 06Ha03
 96Y-97Zr.990                    4053.7       6.8        4055.142      6.521       .2   1     92  92  96Y  HJY1 1.0 07Ha32
 96Yxm-97Zr.990                  5708.1       6.7                                       2                HJY1 1.0 07Ha32
 96Mo-97Mo.990                  -2280.5       5.8       -2281.963      0.174      -.3   U                HJY1 1.0 06Ka48
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96Zr-96Nb		176.02	0.13	176.029	0.107	.1	1	68	63	96Nb	KJY1	1.0	16Al03
96Zr-96Mo		3602.919	0.092	3602.846	0.080	-.8	1	75	46	96Mo	KJY1	1.0	16Al03
96Nb-96Mo		3426.80	0.17	3426.816	0.115	.1	1	46	37	96Nb	KJY1	1.0	16Al03
96Ru-96Mo		2914.14	0.13	2914.140	0.130	.0	1	100	100	96Ru	HSH1	1.0	11El04
96Mo-95Mo		-1161	12	-1162.666	0.053	-.1	U				hM15	2.5	63Ri07
93Rb-96Rb.554 89Rb.448		-2210	27	-2022.433	8.447	2.8	U				HP21	2.5	82Au01
95Rb-96Rb.848 89Rb.152		-1590	30	-1441.534	20.372	2.0	U				mP21	2.5	82Au01
94Rb-96Rb.699 89Rb.302		-1250	30	-998.957	3.504	3.3B	B				hP21	2.5	82Au01,Y
94Rb-96Rb.588 91Rb.413		-380	25	-377.729	4.286	.0	U				MP21	2.5	82Au01,G
95Rb-96Rb.742 92Rb.258		-1116	27	-1074.089	20.380	.6	U				HP21	2.5	82Au01
95Rb-96Rb.742 92Rb.258		-1143	16	-1074.089	20.380	1.7	1	26	26	95Rb	P31	2.5	86Au02
96Zr(d,a)94Y		7609	20	7623.420	6.381	.7	1	10	10	94Y	MGrn		74Gi09
96Zr(p,t)94Zr		-5825	10	-5830.368	0.200	-.5	U				hOak		71Ba43
96Ru(p,t)94Ru		-11165	10	-11157.623	3.148	.7	U				HOak		71Ba01
96Zr(t,a)95Y		8294	20	8293.972	6.779	-.0	1	11	11	95Y	MLAl		83Fl06
96Zr(p,d)95Zr		-5440	20	-5625.672	0.876	-9.3B	B				hBld		67St24
96Zr(p,d)95Zr		-5630	10	-5625.672	0.876	.4	U				hOak		71Ba43
96Zr(d,t)95Zr		-1603	20	-1593.008	0.876	.5	U				hPit		64Co11
96Zr(d,t)95Zr		-1595.8	2.8	-1593.008	0.876	1.0	U				KSPa		79Bo37
96Mo(t,a)95Nb		10524	20	10516.277	0.496	-.4	U				hLAl		83Fl06
95Mo(n,g)96Mo		9154.2	0.5	9154.335	0.049	.3	U				h		70He27
95Mo(n,g)96Mo		9154.32	0.05	9154.335	0.049	.3	1	96	67	95Mo	mMMn		91Is02,Z
95Mo(n,g)96Mo		9153.90	0.20	9154.335	0.049	2.2	U				hBdn		06Fi.A
96Mo(d,t)95Mo		-2923	20	-2897.105	0.049	1.3	U				hPit		64Co11
96Ru(p,d)95Ru		-8470	10	-8469.378	9.500	.1	1	90	90	95Ru	Oak		71Ba01
96Ag(ep)95Rh		6540	90				2				H		03Ba39,*
96Rb(B-)96Sr		10800	220	11563.897	9.106	3.5B	B				h		79Pe17
96Rb(B-)96Sr		11303	250	11563.897	9.106	1.0o	o				hGsn		80De02,W
96Rb(B-)96Sr		11547	100	11563.897	9.106	.2	U				hTrs		82Br23
96Rb(B-)96Sr		11553	45	11563.897	9.106	.2	U				hGsn		84Bl.A
96Rb(B-)96Sr		11590	80	11563.897	9.106	-.3	U				HBwg		87Gr.A
96Rb(B-)96Sr		11709	40	11563.897	9.106	-3.6B	B				HGsn		92Pr03,*
96Sr(B-)96Y		5332	30	5411.738	9.726	2.7F	F				M		79Pe17,*
96Sr(B-)96Y		5413	22	5411.738	9.726	-.1	-1-				NGsn		80De02,*
96Sr(B-)96Y		5345	50	5411.738	9.726	1.3	U				mBwg		87Gr.A
96Sr(B-)96Y		5354	40	5411.738	9.726	1.4	-1-						90Ma03
96Sr(B-)96Y	ave	5399.298	19.277	5411.738	9.726	.6	1	25	17	96Sr			average
96Y(B-)96Zr		7120	50	7108.874	6.074	-.2	U				HGsn		80De02,*
96Y(B-)96Zr		7030	70	7108.874	6.074	1.1	U				mBwg		87Gr.A
96Y(B-)96Zr		7067	30	7108.874	6.074	1.4	U				H		90Ma03,*
96Yxm(B-)96Zr		8030	150	8648.595	6.241	4.1C	C				hBwg		87Gr.A
96Yxm(B-)96Zr		8600	200	8648.595	6.241	.2	U				h		88St.A
96Yxm(B-)96Zr		8237	21	8648.595	6.241	19.6C	C				HBwg		92Gr.A
96Nb(B-)96Mo		3186.8	3.2	3192.059	0.107	1.6	U				K		68An03,*
96Mo(p,n)96Tc		-3760	10	-3755.588	5.145	.4	-2-						74Do09
96Mo(p,n)96Tc		-3754	6	-3755.588	5.145	-.3	-2-						78Ke10
96Mo(p,n)96Tc	ave	-3755.588	5.145				2						average
96Rh(B+)96Ru		6472	200	6392.653	10.000	-.4	U				h		75Gu01,*
96Ru(p,n)96Rh		-7175	10				2				M		70As08,Z
96Pd(B+)96Rh		3450	150	3504.313	10.844	.4	U				H		85Ry02,*
96Cd(e)96Ag		8480	460	8940#	400#	1.0D	D				G		19Pa16,*
96Cd(e)96Ag		8940#	400#				3				g		S-u095

*96Rb-u	F : possibly isomeric mixture	h	92Al.B**
*96Rb-u	If so, does this not affect 96Rb in triplets????		AHW935*W
*96Tc-u	M-A=-85860(28) keV for mixture gs+m at 34.23 keV	g	Nub211**
*94Rb-96Rb.588 91Rb.413	,Y - in Ame'93 second coef. was 0.587 and Q=-441(25)		GAu039*G
*96Ag(ep)95Rh	Original 6430(60) corr by --110 keV for mx of two beta-decaying 96Ag	H	03Ba39**
*	~ states, to two isomeric states in 95Rh	H	03Ba39**
*96Rb(B-)96Sr	Lower limit	h	80De02*W
*96Rb(B-)96Sr	E-=10894(40) to 2^+ level at 814.93 keV	h	Ens08a**
*96Sr(B-)96Y	E-=4400(30) to 1^+ level at 931.70 keV, and other E-	h	Ens08a**
*96Sr(B-)96Y	F : all other results of ref. are strongly conflicting	m	79Pe17**
*96Sr(B-)96Y	Original error 20 corrected in ref.	N	94Ha.A**
*	~ Q-=5362(10) given by same group, not used	N	84Bl.A**
*96Y(B-)96Zr	Q-=7079(15) given by same group, not used	n	84Bl.A**
*96Y(B-)96Zr	E-=5326(36) to 2^+ level at 1750.497 keV, and other E-	h	Ens08a**
*96Nb(B-)96Mo	E-=748.4(3.1) to 5^+ level at 2438.477 keV	h	Ens08a**

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*96Rh(B+)96Ru                   E+=3300(200) to 6^+ level at 2149.74 keV                        h        Ens08a**
*96Pd(B+)96Rh                   p+=0.257(0.03) to 1^+ level at 1274.78 keV                      h        Ens08a**
*96Cd(e)96Ag                    Decays to the daughter excited state at 0#(100#) keV            G        19Pa16**
*96Cd(e)96Ag                    Trends from Mass Surface TMS suggest  96Cd   460 keV less bound G        HWJ199**


 97Br-u                          -36501#     429#                                 2                     g    1.0 S-u211
 97Kr-86Kr1.128                   49920      140                                  2                     HMA9 1.0 10Na13,G
 97Rb-u                          -62512       64      -62822.883     2.052   -1.9 U                     mPb1 2.5 89Al33
 97Rb-88Rb1.102                   34908.0      5.7     34907.337     2.059    -.1 1    13  13  97Rb HJY1 1.0 07Ra23
 97Rb-85Rb1.141                   37824.9      2.2     37825.032     2.052     .1 1    87  87  97Rb HTT1 1.0 12Si10,*
 97Sr-85Rb1.141                   27022.9      3.9     27023.536     3.633     .2 1    87  87  97Sr HTT1 1.0 12Si10,*
 97Sr-u                          -73599       99      -73624.378     3.633    -.1 U                     HGT2 2.5 08Kn.A
 97Mo-85Rb1.141                    6666.9      1.2      6664.817     0.177   -1.7 U                     KJY1 1.0 12Ka13
 97Mo-87Rb1.115                    7280.86     0.39     7280.614     0.177    -.6 1    21  21  97Mo KMS1 1.0 15Gu09
 C5 H5 O2-97Mo                   122937.6      2.3    122937.495     0.177    -.0 U                     HM15 2.5 63Ri07
 97Mo-u                          -93982.95     0.36   -93983.097     0.177    -.4 1    24  24  97Mo KMS1 1.0 15Gu09
 97Ru-u                          -92471       30      -92454.224     2.966     .6 U                     MGS2 1.0 05Li24
 97Pd-85Rb1.141                   17119.9      5.2                                2                     HJY1 1.0 09El08
 97Pd-u                          -83511       40      -83528.014     5.200    -.4 U                     GGR1 1.0 19An10
 97Ag-u                          -76118.6     12.9                                2                     GGR1 1.0 20Ho03
 97Agm-u                         -75455.1     38.6                                2                     GGR1 1.0 20Ho03,*
 97In-u                          -50875#     430#                                 2                     g    1.0 S-u212
 97Mo 35Cl-95Mo 37Cl               3138        2        3129.591     0.193   -1.1 U                     hH11 4.0 63Bi12
 97Sr-97Zr                        15416       10       15411.819     3.635    -.4 1    13  13  97Sr HJY1 1.0 06Ha03
 97Y-97Zr                          7322.9      7.2                                2                     HJY1 1.0 07Ha32,*
 97Mo-96Mo                         1346       12        1342.133     0.175    -.1 U                     hM15 2.5 63Ri07
 94Rb-97Rb.485 91Rb.516             -21       25         -64.562     4.602    -.7 U                     HP21 2.5 82Au01,Y
 96Rb-97Rb.792 92Rb.209             650       30         620.254     3.897    -.4 U                     HP21 2.5 82Au01
 95Rb-97Rb.490 93Rb.511            -165       25        -107.158    20.572     .9 1    11  10  95Rb  P21 2.5 82Au01
 96Rb-97Rb.742 93Rb.258             848       19         802.787     4.161   -1.0 U                     HP31 2.5 86Au02
 96Zr(n,g)97Zr                     5574        5        5569.151     0.040   -1.0 U                     M        77Ba33
 96Zr(n,g)97Zr                     5575.1      0.4      5569.151     0.040  -14.9C C                     GBdn     06Fi.A
 96Zr(n,g)97Zr                     5569.15     0.04     5569.151     0.040     .0 1   100 100  97Zr GILn     18Rz01
 96Zr(d,p)97Zr                     3338       20        3344.585     0.040     .3 U                     hPit     64Co11
 96Mo(n,g)97Mo                     6821.1      1.0      6821.129     0.163     .0 U                     h        73De39
 96Mo(n,g)97Mo                     6820        2        6821.129     0.163     .6 U                     h        77Ri04
 96Mo(n,g)97Mo                     6821.15     0.25     6821.129     0.163    -.1 -1-                   mMMn     91Is02,Z
 96Mo(n,g)97Mo                     6821.5      0.4      6821.129     0.163    -.9 -1-                   MBdn     06Fi.A
 96Mo(d,p)97Mo                     4582       20        4596.563     0.163     .7 U                     hPit     64Co11
 96Mo(n,g)97Mo               ave   6821.248    0.212    6821.129     0.163    -.6 1    59  44  97Mo              average
 96Mo(3He,d)97Tc                    229        8         225.043     4.117    -.5 -1-                    ANL     74Co27
 96Mo(3He,d)97Tc                    220        8         225.043     4.117     .6 -1-                    Pit     74Co27
 96Mo(3He,d)97Tc             ave    224.500    5.657     225.043     4.117     .1 1    53  53  97Tc              average
 96Ru(d,p)97Ru                     5886        3        5886.931     2.757     .3 -2-                    Can     77Ho02
 96Ru(d,p)97Ru                     5892        7        5886.931     2.757    -.7 -2-                    ANL     77Me04
 96Ru(d,p)97Ru               ave   5886.931    2.757                              2                              average
 97Rb(B-)97Sr                     10020       50       10061.530     3.887     .8 U                     hGsn     80De02,W
 97Rb(B-)97Sr                     10450       30       10061.530     3.887  -12.9C C                     hGsn     84Bl.A
 97Rb(B-)97Sr                     10440       60       10061.530     3.887   -6.3C C                     HBwg     87Gr.A
 97Rb(B-)97Sr                     10462       40       10061.530     3.887  -10.0B B                     HGsn     92Pr03
 97Sr(B-)97Y                       7452       40        7534.781     7.513    2.1 U                     HGsn     84Bl.A
 97Sr(B-)97Y                       7420       80        7534.781     7.513    1.4o o                     hBwg     87Gr.A
 97Sr(B-)97Y                       7480       18        7534.781     7.513    3.0C C                     HBwg     92Gr.A
 97Y(B-)97Zr                       6702       25        6821.238     6.707    4.8C C                     HGsn     84Bl.A
 97Y(B-)97Zr                       6640       70        6821.238     6.707    2.6o o                     hBwg     87Gr.A,*
 97Y(B-)97Zr                       6689       13        6821.238     6.707   10.2C C                     HBwg     92Gr.A,*
 97Zr(B-)97Nb                      2657.3      6.       2666.104     4.244    1.5 1    50  50  97Nb K        74Ra.A,*
 97Nb(B-)97Mo                      1933.1      6.       1941.904     4.244    1.5 1    50  50  97Nb K        74Ra.A,*
 97Mo(p,n)97Tc                    -1128        9       -1102.611     4.117    2.8B B                     kOak     70Ki01
 97Mo(p,n)97Tc                    -1102        6       -1102.611     4.117    -.1 1    47  47  97Tc  ANL     74Co27
 97Ru(B+)97Tc                      1150      100        1103.872     4.956    -.5 U                     h        70Ho01,*
 97Rh(B+)97Ru                      3533       50        3523.000    35.355    -.2 -3-                            62Ba28,*
 97Rh(B+)97Ru                      3513       50        3523.000    35.355     .2 -3-                            62Ch21,*
 97Rh(B+)97Ru                ave   3523.000   35.355                              3                              average
 97Pd(B+)97Rh                      4790      300        4791.712    35.792     .0 U                     H        80Go11,*
 97Ag(B+)97Pd                      6980      110        6901.825    12.956    -.7 U                     G        99Hu10
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97Cd(e)97Ag		10170	420				3				G		19Pa16
97In(e)97Cd		10000	3000	13344#	580#	1.1	U				G		18Pa20

*97Kr-86Kr1.128	Trends from Mass Surface TMS suggest 97Kr 120 keV more bound	g	GAu212*G
*97Rb-85Rb1.141	D_M=37825.7(2.2) uu M-A=-58518.5(2.1)keV corr for e- binding=-703eV	H	12Si10**
*97Sr-85Rb1.141	D_M=27023.5(3.9) uu M-A=-68580.7(3.7)keV corr for e- binding=-553eV	H	12Si10**
*97Agm-u	reconstruced from Ex=618(38) keV	G	20Ho03**
*97Y-97Zr	D_M=8039.5(7.2) uu for 97Yxm at 667.52(0.23) keV; M-A=-75453.9(6.7) keV	g	Nub211**
*97Rb(B-)97Sr	E-=9335(50); lower limit ???? ***	h	GAu129*W
*97Y(B-)97Zr	E-=6645(70); and 7280(150) from 97Yxm at 667.52 keV	g	Nub211**
*97Y(B-)97Zr	E-=6688(13); and 7361(26) from 97Yxm at 667.52 keV	g	Nub211**
*97Zr(B-)97Nb	E-=1914(2) to 1/2^- level at 743.35 keV; error increased	K	Ens104**
*97Nb(B-)97Mo	E-=1275(2) to 7/2^+ level at 658.13 keV; error increased	K	Ens104**
*97Ru(B+)97Tc	p^+<0.0001 (see fig 1), decay to 7/2^+ level at 970.03 keV	h	Ens104**
*97Rh(B+)97Ru	E+=2090(50) 2070(50) resp, to 7/2^+ level at 421.54 keV	h	Ens104**
*97Pd(B+)97Rh	E+=3500(300) to 7/2^+ level at 265.36 keV	h	Ens104**

98Br-u		-30113#	429#				2				g	1.0	S-u20b
98Kr-u		-47365#	322#				2				g	1.0	S-u211
98Rb-85Rb1.153		43331	32	43338.751	17.265	.2	1	29	29	98Rb	KTT1	1.0	12Si10,*
98Rb-u		-58359	29	-58367.683	17.265	-.3	-1-				KMA8	1.0	13Ma81
98Rb-u		-58370	29	-58367.683	17.265	.1	-1-				KTT1	1.0	16Kl04,*
98Rb-u	ave	-58364.500	20.506	-58367.683	17.265	-.2	1	71	71	98Rb			average
98Rbm-u		-58289	22				2				KTT1	1.0	12Si10,*
98Sr-85Rb1.153		30396.7	4.3	30399.071	3.463	.6	-1-				HTT1	1.0	12Si10,*
98Sr-85Rb1.153		30405.3	7.2	30399.071	3.463	-.9	-1-				KTT1	1.0	16Kl04,*
98Sr-85Rb1.153	ave	30398.961	3.692	30399.071	3.463	.0	1	88	88	98Sr			average
98Zr-u		-87247	43	-87259.551	9.066	-.3	U				HJY0	1.0	04Ri12
98Mo-85Rb1.153		7105.8	5.3	7110.043	0.187	.8	Z				hMA8	1.0	04He.A
98Mo-85Rb1.153		7104.1	5.7	7110.043	0.187	1.0	U				HMA8	1.0	11He10
98Mo-85Rb1.153		7111.6	1.3	7110.043	0.187	-1.2	U				KJY1	1.0	12Ka13
98Mo-87Rb1.126		7665.96	0.64	7666.337	0.187	.6	U				KMS1	1.0	15Gu09
C5 H6 O2-98Mo		131375.4	2.8	131375.821	0.187	.1	U				HM15	2.5	63Ri07
98Mo-u		-94596.21	0.53	-94596.391	0.187	-.3	1	12	12	98Mo	KMS1	1.0	15Gu09
C7 H14-98Ru		204263.5	2.9	204263.737	6.938	.0	1	92	92	98Ru	M16	2.5	63Da10
98Rh-u		-89300	37	-89292.265	12.782	.2	U				GGS2	1.0	05Li24,*
98Pd-85Rb1.153		14404.5	5.1	14404.770	5.091	.1	1	100	100	98Pd	HJY1	1.0	09El08
98Ag-85Rb1.153		23283	13	23266.405	35.327	-1.3	Z				hMA8	1.0	04He.A
98Ag-85Rb1.153		23283	40	23266.405	35.327	-.4	1	78	78	98Ag	HMA8	1.0	11He10
98Mo 35Cl-96Mo 37Cl		3690	2	3678.963	0.198	-1.4	U				hH11	4.0	63Bi12
98Sr-97Zr1.010		18620	10	18619.195	3.465	-.1	1	12	12	98Sr	HJY1	1.0	06Ha03
98Y-97Zr1.010		12321.4	8.5				2				HJY1	1.0	07Ha32
98Zr-97Zr1.010		2668	10	2667.007	9.065	-.1	1	82	82	98Zr	HJY1	1.0	06Ha03
98Mo-97Mo1.010		327.9	5.8	326.536	0.070	-.2	U				HJY1	1.0	06Ka48
98Yxn-98Y		499.99	0.78				3				GJY1	1.0	17Ur03
98Mo-97Mo		-614	12	-613.294	0.069	.0	U				hM15	2.5	63Ri07
94Rb-98Rb.411 91Rb.590		-290	40	-347.492	8.306	-.6	U				MP21	2.5	82Au01,Y
97Rb-98Rb.792 93Rb.209		-250	60	-281.216	12.984	-.2	U				mP21	2.5	82Au01
96Rb-98Rb.490 94Rb.511		330	30	322.119	8.626	-.1	U				MP21	2.5	82Au01,Y
97Rb-98Rb.660 95Rb.340		-300	50	-232.798	12.790	.5	U				mP21	2.5	82Au01
97Rb-98Rb.660 95Rb.340		-232	27	-232.798	12.790	-.0	U				HP31	2.5	86Au02
96Zr(t,p)98Zr		3508	20	3503.737	8.444	-.2	1	18	18	98Zr	LAl		69Bl01
96Zr(3He,p)98Nb		5728	5				2				Phi		75Me13
96Ru(16O,14C)98Pd		-12529	20	-12516.295	4.745	.6	U				HBNL		82Th01
98Mo(t,a)97Nb		10019	20	10011.711	4.244	-.4	U				hLAl		83Fl06
97Mo(n,g)98Mo		8642.4	0.5	8642.598	0.065	.4	U				h		71He10
97Mo(n,g)98Mo		8642.60	0.07	8642.598	0.065	-.0	-1-				mMMn		91Is02,Z
97Mo(n,g)98Mo		8642.57	0.18	8642.598	0.065	.2	-1-				MBdn		06Fi.A
98Mo(d,t)97Mo		-2379	20	-2385.368	0.065	-.3	U				hPit		64Co11
97Mo(n,g)98Mo	ave	8642.596	0.065	8642.598	0.065	.0	1	98	87	98Mo			average
97Mo(3He,d)98Tc		680	8	683.009	3.377	.4	-1-				ANL		74Co27
97Mo(3He,d)98Tc		686	10	683.009	3.377	-.3	-1-				McM		76Ma16
97Mo(3He,d)98Tc	ave	682.341	6.247	683.009	3.377	.1	1	29	29	98Tc			average
98Rb(B-)98Sr		11200	110	12053.236	16.403	7.8B	B						79Pe17
98Rb(B-)98Sr		12343	150	12053.236	16.403	-1.9	U				hTrs		82Br23
98Rb(B-)98Sr		12519	60	12053.236	16.403	-7.8C	C				hGsn		84Bl.A
98Rb(B-)98Sr		12270	30	12053.236	16.403	-7.2C	C				mMcG		84Ia.A

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 98Rb(B-)98Sr                  12440        75        12053.236     16.403     -5.2C  C                HBwg     87Gr.A
 98Rb(B-)98Sr                  12380        65        12053.236     16.403     -5.0B  B                HGsn     92Pr03
 98Rbm(B-)98Sr                 12710       120        12126.529     20.745     -4.9C  C                KBwg     87Gr.A
 98Sr(B-)98Y                    5730        40         5866.359      8.550      3.4C  C                h        79Pe17
 98Sr(B-)98Y                    5821        10         5866.359      8.550      4.5C  C                HGsn     84Bl.A
 98Sr(B-)98Y                    5815        40         5866.359      8.550      1.3   U                mBwg     87Gr.A
 98Y(B-)98Zr                    8974       100         8993.010     11.575       .2   U                h        79Pe17,*
 98Y(B-)98Zr                    8780        30         8993.010     11.575      7.1C  C                HGsn     84Bl.A
 98Y(B-)98Zr                    8840        55         8993.010     11.575      2.8C  C                hBwg     87Gr.A,*
 98Y(B-)98Zr                    8963        41         8993.010     11.575       .7   U                H        88Ma.A
 98Y(B-)98Zr                    8830        17         8993.010     11.575      9.6C  C                HBwg     92Gr.A
 98Y(B-)98Zr                    9062        27         8993.010     11.575     -2.6C  C                GBwg     92Gr.A,*
 98Zr(B-)98Nb                   2300       200         2242.855      9.813      -.3   U                h        76He10
 98Nb(B-)98Mo                   4300       200         4591.368      5.003      1.5   U                h        66Gu05
 98Nb(B-)98Mo                   4300       200         4591.368      5.003      1.5   U                h        67Hu07
 98Nb(B-)98Mo                   4800       200         4591.368      5.003     -1.0   U                h        76He10
 98Nb(B-)98Mo                   4580       100         4591.368      5.003       .1   U                hBwg     78St02
 98Mo(p,n)98Tc                 -2458        10        -2466.113      3.377      -.8   1    11  11  98Tc  ANL     74Co27
 98Tc(B-)98Ru                   1795        22         1792.658      7.157      -.1   1    11   8  98Ru          73Ok.A,*
 98Rh(B+)98Ru                   5120       100         5049.653     10.000      -.7   U                h        72Ba37,*
 98Rh(B+)98Ru                   5151        50         5049.653     10.000     -2.0   U                N        94Ba06,*
 98Ru(p,n)98Rh                 -5832        10                                        2                m        70As08,Z
 98Ag(B+)98Pd                   8420       150         8254.561     33.098     -1.1   U                H        79Ve.A,*
 98Ag(B+)98Pd                   8200        70         8254.561     33.098       .8   1    22  22  98Ag M        00Hu17
 98Cd(B+)98Ag                   5330       140         5430.000     40.000       .7   U                h        92Pl01
 98Cd(e)98Ag                    5430        40                                        2                M        01St.A
 98In(e)98Cd                   12930       400        13730#       300#         2.0D  D                G        19Pa16,*
 98In(e)98Cd                   13730#      300#                                       3                g        S-u169
*98Rb-85Rb1.153                Original D_M=43394.0(3.7) uu  M-A=-54317.7(3.4) keV corr for gs+m mx     K        16Kl04**
*98Rb-85Rb1.153                D_M=43394.0(3.7) uu  M-A=-54317.7(3.4) keV corr for e- binding=-679eV    k        12Si10*G
*98Rb-85Rb1.153                gs+m correction not needed : possible mx R<0.05 and E=600(120) > line widh        GAu127*G
*98Rb-85Rb1.153                Original M-A=-54309.4(4.0) corrected for isom mx Ex=80(30) R=0.65(0.15)  K        16Kl04**
*98Rb-u                        Original M-A=-54319.5(5.5) corrected for isom mx Ex=80(30) R=0.65(0.15)  K        16Kl04**
*98Rbm-u                       Data re-analysis                                                         K        16Kl04**
*98Sr-85Rb1.153                D_M=30397.3(4.3) uu  M-A=-66424.0(4.0)keV corr for e- binding=-529eV     H        12Si10**
*98Sr-85Rb1.153                Former measured using 15^+ ion; latter with 10^+ ion                     K        16Kl04**
*98Rh-u                        M-A=-83154(30) keV  for mixture gs+m at 56.3(1.0) keV                    g        Nub211**
*98Y(B-)98Zr                   E-=4810(100) to 1^- level at 4164.60 keV                                 h        Ens035**
*98Y(B-)98Zr                   also Q-=9780(200) from 98Yxm at 170.76 keV                               G        87Gr.A**
*98Y(B-)98Zr                   Q-=9233(27) from 98Yxm at 170.76 keV                                     G        HWJ189**
*98Tc(B-)98Ru                  E-=397(22) to 4^+ level at 1397.82 keV                                   h        Ens035**
*98Rh(B+)98Ru                  E+=3450(100) to 2^+ level at 652.44 keV, and others                      h        Ens035**
*98Rh(B+)98Ru                  E+=3476(50) to 2^+ level at 652.44 keV                                   h        Ens035**
*98Ag(B+)98Pd                  Q+=6880(150) to 4^+ level at 1541.40 keV                                 h        Ens035**
*98In(e)98Cd                   Trends from Mass Surface TMS suggest  98In   600 keV less bound          G        HWJ199**


 99Kr-u                       -41224#      429#                                       2                g    1.0 S-u211
 99Rb-85Rb1.165                47885.1       4.8      47884.145      4.327      -.2  -2-               KMA8 1.0 13Ma81
 99Rb-85Rb1.165                47880        10        47884.145      4.327       .4  -2-               KTT1 1.0 16Kl04
 99Rb-85Rb1.165           ave  47884.145     4.327                                    2                         average
 99Sr-85Rb1.165                35663        21        35648.558      5.086      -.7o  o                KTT1 1.0 12Si10,*
 99Sr-85Rb1.165                35644.5       7.0      35648.558      5.086       .6   1    53  53  99Sr KTT1 1.0 16Kl04
 99Zr-u                       -83323        19       -83324.919     11.271      -.1   1    35  35  99Zr HJY0 1.0 04Ri12
 C7 H15-99Ru                  211442.8       3.0     211445.194      0.368       .3   U                HM16 2.5 63Da10
 99Ag-85Rb1.165                20421.4       5.5      20410.721      6.726     -1.9   Z                hMA8 1.0 04He.A
 99Ag-85Rb1.165                20401.0       8.5      20410.721      6.726      1.1  -2-               HSH1 1.0 07Ma92
 99Ag-85Rb1.165                20427        11        20410.721      6.726     -1.5  -2-               HMA8 1.0 11He10
 99Ag-85Rb1.165           ave  20410.721     6.726                                    2                         average
 99Cd-85Rb1.165                27690.8       1.7                                      2                HMA8 1.0 09Br09
 99In-u                       -65890#      320#                                       2                k    1.0 S-u169
 99Pd-96Mo1.031                10052.8       5.5      10053.387      5.481       .1   1    99  99  99Pd HJY1 1.0 09El08
 99Sr-97Zr1.021                23794.1       7.4      23789.564      5.086      -.6   1    47  47  99Sr HJY1 1.0 06Ha03
 99Y-97Zr1.021                 15066.8       7.1                                      2                HJY1 1.0 07Ha32
 99Zr-97Zr1.021                 7580        14         7581.042     11.271       .1   1    65  65  99Zr HJY1 1.0 06Ha03
 99Ru-98Ru                       652        11          643.575      6.947      -.3   U                HM16 2.5 63Da10
 97Rb-99Rb.653 93Rb.348          100       100          134.692      4.245       .1   U                HP21 2.5 82Au01
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98Rb-99Rb.742 95Rb.258		690	180	562.438	17.172	-.3	U				mP21	2.5	82Au01
97Rb-99Rb.490 95Rb.511		350	60	200.167	10.695	-1.0	U				KP31	2.5	86Au02
99Ru(n,a)96Mo		6822	5	6815.907	0.363	-1.2	U				M		01Wa50
96Ru(16O,13C)99Pd		-11723	20	-11759.535	5.107	-1.8	U				HBNL		82Th01
98Mo(n,g)99Mo		5927.7	1.	5925.444	0.150	-2.3	U				h		73De39
98Mo(n,g)99Mo		5927	1	5925.444	0.150	-1.6	U				h		74Er.A
98Mo(n,g)99Mo		5924.6	0.6	5925.444	0.150	1.4	U				h		76Ch02
98Mo(n,g)99Mo		5923	2	5925.444	0.150	1.2	U				h		77Ri04
98Mo(n,g)99Mo		5925.42	0.15	5925.444	0.150	.2	1	100	99	99Mo	mMMn		91Is02,Z
98Mo(n,g)99Mo		5927.7	0.5	5925.444	0.150	-4.5C	C				hBdn		06Fi.A
98Mo(d,p)99Mo		3687	20	3700.878	0.150	.7	U				hPit		64Co11
98Mo(3He,d)99Tc		1010	20	1007.385	0.898	-.1	U				hMcM		77Ch06
99Tc(p,d)98Tc		-6740	5	-6742.407	3.357	-.5	-1-						76Sl06
99Tc(p,d)98Tc		-6755	9	-6742.407	3.357	1.4	-1-				Bld		77Em02
99Tc(p,d)98Tc	ave	-6743.538	4.371	-6742.407	3.357	.3	1	59	57	98Tc			average
99Rb(B-)99Sr		11340	120	11397.377	6.220	.5	U				KMcG		84Ia.A
99Rb(B-)99Sr		10960	130	11397.377	6.220	3.4C	C				kBwg		87Gr.A
99Sr(B-)99Y		8030	80	8125.204	8.135	1.2	U				HMcG		84Ia.A
99Sr(B-)99Y		8360	75	8125.204	8.135	-3.1C	C				kBwg		87Gr.A
99Y(B-)99Zr		7605	60	6972.940	12.408	-10.5C	C				hBwg		87Gr.A
99Y(B-)99Zr		7568	14	6972.940	12.408	-42.5C	C				HBwg		92Gr.A
99Zr(B-)99Nb		4550	35	4718.674	15.947	4.8C	C				hBwg		87Gr.A
99Zr(B-)99Nb		4559	15	4718.674	15.947	10.6C	C				HBwg		92Gr.A
99Nb(B-)99Mo		3740	200	3634.762	12.006	-.5	U				h		70Ei02,*
99Mo(B-)99Tc		1356.7	1.0	1357.763	0.890	1.1	1	79	78	99Tc			71Na01,*
99Tc(B-)99Ru		292	3	297.516	0.945	1.8	U				K		51Ta05
99Tc(B-)99Ru		290	4	297.516	0.945	1.9	U				K		52Fe16
99Tc(B-)99Ru		293.5	2.0	297.516	0.945	2.0	1	22	20	99Tc	n		80Al02,*
99Rh(B+)99Ru		2038	10	2040.863	19.453	.3C	C				G		52Sc11,*
99Rh(B+)99Ru		2053	10	2040.863	19.453	-1.2	U *				G		59To25,*
99Rh(B+)99Ru		2170	30	2040.863	19.453	-4.3	U *				G		74An23,*
99Rh(B+)99Ru		2111	58	2040.863	19.453	-1.2	1	11	11	99Rh	G		averag,*
99Pd(B+)99Rh		3410	20	3401.660	18.915	-.4	1	89	89	99Rh	N		69Ph01,*
99Ag(B+)99Pd		5430	150	5470.378	8.083	.3	U				H		81Hu03
99Sn(e)99In		14700	3600	13400#	500#	-.4D	D				G		18Pa20,*
99Sn(e)99In		13400#	500#				3				g		S-u127
*99Sr-85Rb1.165		Original D_M=35661.6(4.4) uu M-A=-62506.3(4.1)keV re-evaluated									K		16Kl04**
*99Sr-85Rb1.165		D_M=35661.6(4.4) uu M-A=-62506.3(4.1)keV corr for e- binding=-505eV									k		12Si10*G
*99Nb(B-)99Mo		E-=3500(200) to 7/2^+ level at 235.508 keV									h		Ens112**
*99Mo(B-)99Tc		E-=1214(1) to 1/2^- level at 142.6832 keV									h		Ens112**
*99Tc(B-)99Ru		E+=434.8(2.6), 346.7(2.0) from 99Tcm at 142.6832 to gs, 89.57 level									h		Ens112**
*99Rh(B+)99Ru		E+=740(10) from 99Rhm at 64.5 to 340.90 7/2^+ level									k		Ens112**
*99Rh(B+)99Ru		E+=1030(10), 710(10), 590(10), 420(20) keV									n		59To25**
*		~ to gs, 321.99 3/2^+, 442.59 3/2^+, 618.13 1/2^+ levels									h		Ens112**
*99Rh(B+)99Ru		Q+ larger than 2059.34 keV because that state populated via beta decay									k		Ens112**
*99Rh(B+)99Ru		Ref. proposed that E+=1030(10) keV decays to 89.57 3/2^+ level									k		74An23**
*99Rh(B+)99Ru		E+=1100(50), 680(30) and 540(30) to 89.57, 442.59 and 618.13 levels									K		Ens112**
*99Rh(B+)99Ru		unweighted average 59*To*25=2053(10) 74*An*23=2170(30) keV									G		WgM20b**
*99Pd(B+)99Rh		E+=2180(20), 1930(20), 1510(20) keV									N		69Ph01**
*		~ to 200.7 7/2^+, 464.4 (5/2,7/2)^+, 874.5 5/2^+ levels above (1/2^-) gsh											Ens112**
*99Sn(e)99In		Trends from Mass Surface TMS suggest 99Sn 1300 keV more bound									G		HWJ202**
100Kr-u		-37005#	429#				2				g	1.0	S-u212
100Rb-u		-49970	210	-49668.467	14.089	.6	Z				k	2.5	S-u095
100Rb-u		-49685	19	-49668.467	14.089	.9	1	55	55	100Rb	GMA8	1.0	17De18,*
100Rb-85Rb1.176		54087	21	54066.803	14.089	-1.0	1	45	45	100Rb	KMA8	1.0	13Ma81
100Rb-85Rb1.176		54150	140	54066.803	14.089	-.6	U				KTT1	1.0	16Kl04
100Sr-85Rb1.176		39520	12	39518.541	7.426	-.1	-1-				KTT1	1.0	16Kl04
100Sr-85Rb1.176		39515	29	39518.541	7.426	.1	-1-				GMA8	1.0	17De18
100Sr-85Rb1.176	ave	39519.269	11.088	39518.541	7.426	-.1	1	45	45	100Sr			average
100Y-u		-72270	110	-72272.321	12.001	-.0o	o				HGT2	2.5	08Kn.A,*
100Y-u		-72290	140	-72272.321	12.001	.1	U				HGT2	2.5	08Su19,*
100Zr-u		-82016	18	-81989.500	8.742	1.5	1	24	24	100Zr	HJY0	1.0	04Ri12
100Mo-85Rb1.176		11216	27	11203.253	0.323	-.5	Z				hMA8	1.0	04He.A
100Mo-85Rb1.176		11216	27	11203.253	0.323	-.5	U				HMA8	1.0	11He10
100Mo-85Rb1.176		11205.5	1.4	11203.253	0.323	-1.6	U				KJY1	1.0	12Ka13

100Mo-87Rb1.149		11820.25	0.57	11819.559	0.323	-1.2	1	32	32	100Mo	KMS1	1.0	15Gu09
C7 H16-100Mo		217730.3	4.2	217732.528	0.323	.2	U				HM15	2.5	63Ri07
100Mo-u		-92532.51	0.40	-92532.018	0.323	1.2	1	65	65	100Mo	KMS1	1.0	15Gu09
C7 H16-100Ru		220983.8	3.7	220990.050	0.367	.7	U				HM16	2.5	63Da10
100Rh-u		-91855	46	-91885.853	19.458	-.7	1	18	18	100Rh	MGS2	1.0	05Li24,*
100Ag-85Rb1.176		19856.7	3.4	19850.714	5.368	-1.8	Z				hMA8	1.0	04He.A
100Ag-85Rb1.176		19849.9	7.1	19850.714	5.368	.1	-2-				HJY1	1.0	09El08,*
100Ag-85Rb1.176		19851.8	8.2	19850.714	5.368	-.1	-2-				HMA8	1.0	11He10,*
100Ag-85Rb1.176	ave	19850.714	5.368				2						average
100Ag-u		-83902	44	-83884.556	5.368	.4	U				GGR1	1.0	19An10,*
100Cd-u		-79636	214	-79651.170	1.800	-.1	U				HCS1	1.0	96Ch32
100Cd-85Rb1.176		24084.1	1.8				2				HMA8	1.0	09Br09
100In-u		-69405	322	-68898.070	2.400	1.6	U				GCS1	1.0	96Ch32,W
100In-85Rb1.176		34837.2	2.4				2				GMA8	1.0	19Lu.A
100Sn-u		-62020	1020	-61351.055	257.662	.7	U				HCS1	1.0	96Ch32,W
100Sr-97Zr1.031		27579	10	27579.592	7.426	.1	1	55	55	100Sr	HJY1	1.0	06Ha03
100Y-97Zr1.031		19524	12				2				HJY1	1.0	07Ha32
100Yxm-97Zr1.031		19679	12				2				HJY1	1.0	07Ha32
100Zr-97Zr1.031		9815	10	9806.821	8.742	-.8	1	76	76	100Zr	HJY1	1.0	06Ha03
100Nbm-97Zr1.031		6472.6	2.1				2				HJY1	1.0	07Ha32
100Mo 35Cl-98Mo 37Cl		5019	2	5014.498	0.378	-.6	U				HH11	4.0	63Bi12
100Nb-100Nbm		-335.7	8.3				3				HJY1	1.0	07Ha32
100Mo-100Ru		3257.55	0.18	3257.522	0.179	-.2	1	99	97	100Ru	HJY1	1.0	08Ra09
100Ru-99Ru		-1718	11	-1719.825	0.028	-.1	U				hM16	2.5	63Da10
96Ru(16O,12C)100Pd		-5599	26	-5604.715	17.637	-.2	1	46	46	100Pd	BNL		82Th01
100Mo(d,3He)99Nb		-5639	15	-5653.181	12.000	-.9	-2-				Tex		74Bi08
100Mo(t,a)99Nb		8642	20	8667.210	12.000	1.3	-2-				LAl		83Fl06
100Mo(d,3He)99Nb	ave	-5653.181	12.000				2						average
100Mo(d,t)99Mo		-2038	20	-2037.011	0.376	.0	U				hPit		64Co11
99Tc(n,g)100Tc		6764.4	1.				2						79Pi08
99Tc(n,g)100Tc		6765.20	0.04	6764.400	1.000	-20.0C	C				H		04Fu.A,G
99Ru(n,g)100Ru		9673.2	0.7	9673.324	0.026	.2	U				h		74Ri03
99Ru(n,g)100Ru		9672.65	0.06	9673.324	0.026	11.2B	B				hILn		88Co18,Z
99Ru(n,g)100Ru		9673.39	0.05	9673.324	0.026	-1.3	-1-				mMMn		91Is02,Z
99Ru(n,g)100Ru		9673.30	0.03	9673.324	0.026	.8	-1-				MILn		00Ge01
99Ru(n,g)100Ru		9673.41	0.19	9673.324	0.026	-.5	U				MBdn		06Fi.A
99Ru(n,g)100Ru	ave	9673.324	0.026	9673.324	0.026	.0	1	100	98	99Ru			average
100Sr(B-)100Y		7460	140	7503.737	13.145	.3	U				hMcG		84Ia.A,*
100Sr(B-)100Y		7075	100	7503.737	13.145	4.3C	C				HBwg		87Gr.A
100Y(B-)100Zr		7920	100	9051.495	13.829	11.3C	C				McG		84Ia.A,*
100Y(B-)100Zr		9310	70	9051.495	13.829	-3.7C	C				HBwg		87Gr.A
100Zr(B-)100Nb		3335	25	3418.510	11.398	3.3C	C				HBwg		87Gr.A
100Nb(B-)100Mo		6245	25	6401.783	7.982	6.3C	C				HBwg		87Gr.A
100Nbm(B-)100Mo		6745	75	6714.486	1.983	-.4	U				HBwg		87Gr.A
100Mo(t,3He)100Nbm		-6690	30	-6695.893	1.983	-.2	U				HLAl		79Aj03
100Rh(B+)100Ru		3630	20	3636.261	18.123	.3	1	82	82	100Rh			53Ma64,W
100Ag(B+)100Pd		7075	90	7074.703	18.332	-.0	U				H		79Ve.A,*
100Ag(B+)100Pd		7022	200	7074.703	18.332	.3	U				H		80Ha20,*
100Cd(B+)100Ag		3890	70	3943.374	5.273	.8	U				H		89Ry02
100In(B+)100Cd		10900	930	10016.449	2.794	-1.0	U				MLvp		95Sz01,*
100In(B+)100Cd		10080	230	10016.449	2.794	-.3	U				G		02Pl03
100Sn(B+)100In		7390	660	7030.000	240.000	-.5o	o				HGSI		97Su06,*
100Sn(B+)100In		7840	660	7030.000	240.000	-1.2o	o				HGSI		02Fa13,*
100Sn(B+)100In		7030	240				3				GGSI		12Hi07,*
100Sn(B+)100In		7690	160	7030.000	240.000	-4.1B	B				G		19Lu08

*100Rb-u	MR-TOF data in the paper recalculated by evaluators	G	HWJ187**
*100Y-u	M-A=-67245(93) keV for mixture gs+m at 144(16) keV	g	Nub211**
*100Y-u	M-A=-67264(119) keV for mixture gs+m at 144(16) keV	g	Nub211**
*100Rh-u	M-A=-85508(29) keV for mixture gs+m at 107.6 keV	g	Nub211**
*100Ag-85Rb1.176	D_M=19858.2(5.2) uu for mixture gs+m at 15.52 keV; M-A=-78131.0(4.9) keV	g	Nub211**
*100Ag-85Rb1.176	D_M=19860.2(6.6) uu for mixture gs+m at 15.52 keV; M-A=-78129.1(6.2) keV	g	Nub211**
*100Ag-u	M-A=-78146(41) keV for mixture gs+m at 15.52 keV	g	Nub211**
*100In-u	SYST would prefer -64100#300 keV	m	AHW031*W
*100Sn-u	SYST would prefer -57000#500 keV	m	AHW031*W
*99Tc(n,g)100Tc	Poorly documented	h	GAu092*G
*100Sr(B-)100Y	E-=7450(140) assumed by evaluator to 1^+ level at 10.70 keV	h	Ens082**
*100Y(B-)100Zr	Not unambiguously gs transition		GAu **

*100Rh(B+)100Ru	Analysis lower branches does not fit decay scheme		AHW *W
*100Ag(B+)100Pd	From 5^+ gs to high spin level at 2920.4 keV	N	79Ve.A**
*100Ag(B+)100Pd	E+=5350(200) from 100Agm 2^+ at 15.52 to 2^+ level at 665.50 keV	h	Ens082**
*100In(B+)100Cd	From lower and upper limits 9300--12500	N	GAu953**
*100In(B+)100Cd	Q+=9530(100 stat., 350 syst.) from masses of ref.	m	96Ch32*W
*100Sn(B+)100In	Q+=7200(+800--500); also E+=3400(+700--300) keV to 2760(430) level	g	97Su06**
*100Sn(B+)100In	E+=3800(+700--300) to 2760(430) level	H	96Ki23**
*100Sn(B+)100In	E+=3290(200) to 1^+ level at 2721+x, with x<80 keV	H	12Hi07**

101Kr-u		-30682#	537#				2				g	1.0	S-u212
101Rb-u		-45698	22				2				GMA8	1.0	17De18
101Sr-85Rb1.188		45410	22	45400.055	9.104	-.5	-2-				gMA8	1.0	17De18
101Sr-85Rb1.188		45398	10	45400.055	9.104	.2	-2-				KTT1	1.0	16Kl04
101Sr-85Rb1.188	ave	45400.055	9.104				2						average
101Zr-u		-78573	20	-78541.546	8.945	1.6	1	20	20	101Zr	HJY0	1.0	04Ri12
C8 H5-101Ru		133549.5	2.2	133552.073	0.444	.5	U				HM16	2.5	63Da10
101Rh-u		-93821	58	-93841.097	6.270	-.3	U				MGS2	1.0	05Li24,*
101Pd-u		-91816	30	-91715.175	4.926	3.4C	C				hGS2	1.0	05Li24
101Ag-85Rb1.188		17483.6	6.0	17477.742	5.194	-1.0	Z				hMA8	1.0	04He.A
101Ag-85Rb1.188		17470.5	7.2	17477.742	5.194	1.0	-2-				HSH1	1.0	07Ma92
101Ag-85Rb1.188		17485.6	7.5	17477.742	5.194	-1.0	-2-				HMA8	1.0	11He10
101Ag-85Rb1.188	ave	17477.742	5.194				2						average
101Cd-85Rb1.188		23367	11	23380.000	1.600	1.2	U				HSH1	1.0	07Ma92
101Cd-85Rb1.188		23380.0	1.6				2				HMA8	1.0	09Br09
101In-u		-73660	210	-73585.975	12.520	.1	Z				k	2.5	S-u169
101In-u		-73591.4	15.4	-73585.975	12.520	.4	-2-				GLZ1	1.0	19Xu13
101In-u		-73575.4	21.5	-73585.975	12.520	-.5	-2-				GGR1	1.0	20Ho03
101In-u	ave	-73585.975	12.520				2						average
101Inm-u		-72884.0	52.0	-72901.433	38.507	-.3	-2-				GLZ1	1.0	19Xu13
101Inm-u		-72922.6	57.3	-72901.433	38.507	.4	-2-				GGR1	1.0	20Ho03,*
101Inm-u	ave	-72901.433	38.507				2						average
101Pd-96Mo1.052		8567.4	5.1	8566.971	4.924	-.1	1	93	93	101Pd	HJY1	1.0	09El08
101Cd-96Mo1.052		18872.7	5.5	18868.356	1.606	-.8	U				HJY1	1.0	09El08
101Y-97Zr1.041		22847.5	7.6				2				HJY1	1.0	07Ha32
101Zr-97Zr1.041		14153	10	14145.136	8.944	-.8	1	80	80	101Zr	HJY1	1.0	06Ha03
101Nb-102Ru.990		10009.6	4.0				2				HJY1	1.0	07Ha32
101Ru-100Ru		1368	11	1362.627	0.252	-.2	U				hM16	2.5	63Da10
100Mo(n,g)101Mo		5398.4	0.5	5398.241	0.068	-.3	U				hILn		75Ka.A
100Mo(n,g)101Mo		5399.6	0.7	5398.241	0.068	-1.9	U				hORn		79We07,Z
100Mo(n,g)101Mo		5398.23	0.08	5398.241	0.068	.1	-2-				mILn		90Se17,Z
100Mo(n,g)101Mo		5398.27	0.13	5398.241	0.068	-.2	-2-				MBdn		06Fi.A
100Mo(d,p)101Mo		3161	6	3173.675	0.068	2.1	U				h		72Si25
100Mo(n,g)101Mo	ave	5398.241	0.068				2						average
100Ru(n,g)101Ru		6802.0	0.7	6802.039	0.235	.1	-1-						82Ba69
100Ru(n,g)101Ru		6802.04	0.25	6802.039	0.235	-.0	-1-				MBdn		06Fi.A
100Ru(d,p)101Ru		4581	4	4577.473	0.235	-.9	U				h		77Ho02
100Ru(n,g)101Ru	ave	6802.035	0.235	6802.039	0.235	.0	1	99	98	101Ru			average
101Sn(ep)100Cd		6600	300				3				H		10St.A
101Rb(B-)101Sr		11810	110	12757.497	22.178	8.6B	B				GBwg		92Ba28
101Sr(B-)101Y		9505	80	9729.872	11.047	2.8B	B				KBwg		92Ba28
101Y(B-)101Zr		8545	90	8106.200	10.933	-4.9B	B				HBwg		92Ba28
101Zr(B-)101Nb		5520	45	5730.501	9.137	4.7B	B				hBwg		87Gr18
101Zr(B-)101Nb		5485	25	5730.501	9.137	9.8C	C				HBwg		92Gr.A
101Nb(B-)101Mo		4575	30	4628.464	3.738	1.8	U				hBwg		87Gr.A
101Nb(B-)101Mo		4590	30	4628.464	3.738	1.3	U				hBwg		87Gr18
101Nb(B-)101Mo		4569	18	4628.464	3.738	3.3C	C				HBwg		92Gr.A
101Mo(B-)101Tc		2836	40	2824.641	24.002	-.3R	R	q-q=	11.359		m		57Ok.A,*
101Tc(B-)101Ru		1620	30	1613.520	24.000	-.2	-2-						71Ar23,*
101Tc(B-)101Ru		1602	40	1613.520	24.000	.3	-2-	q-q=	-11.520		h		101Mo+0
101Tc(B-)101Ru	ave	1613.520	24.000				2						average
101Pd(B+)101Rh		1980	4	1980.283	3.903	.1	1	95	88	101Rh			71Ib01,*
101Ag(B+)101Pd		4100	200	4097.761	6.668	-.0	U				H		72We.A
101Ag(B+)101Pd		4350	200	4097.761	6.668	-1.3	U				H		78Ha11
101Ag(B+)101Pd		4180	150	4097.761	6.668	-.5	U				H		79Ve.A,*
101Cd(B+)101Ag		5530	130	5497.919	5.063	-.2	U				H		70Be.A,*
101Cd(B+)101Ag		5350	200	5497.919	5.063	.7	U				H		72We.A

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*101Rh-u                          M-A=-87315(29) keV  for mixture gs+m at 157.32 keV                   g        Nub211**
*101Inm-u                         reconstructed from Ex=608(57) keV                                     G        20Ho03**
*101Mo(B-)101Tc                   E-=2230(40) to (1/2^+,3/2^+) level at 606.47 keV                      h        Ens06a**
*101Tc(B-)101Ru                   E-=1320(30) to 306.858 7/2^+ and 1070(30) to 545.115 7/2^+ levels    h        Ens06a**
*101Pd(B+)101Rh                   E+=776(4) to 7/2^+ level at 181.78 keV                                h        Ens06a**
*101Ag(B+)101Pd                   E+=2895(150) to 7/2^+ level at 261.0 keV, and others                  h        Ens06a**
*101Cd(B+)101Ag                   Measured E+ may go to excited state                                            70Be.A**


 102Rb-u                           -39992      89                                        2                  GMA8 1.0 17De18
 102Sr-85Rb1.200                    49857      72                                        2                  gMA8 1.0 17De18
 102Y-120Sn.850                     17456.3     4.3                                      2                  HJY1 1.0 11Ha48,*
 102Zr-u                           -76780      43      -76845.819     9.402    -1.5     U                  HJY0 1.0 04Ri12
 C8 H6-102Ru                       142604.8     3.2    142609.879     0.447      .6     U                  HM16 2.5 63Da10
 C8 H6-102Pd                       141324      19      141317.899     0.449     -.1     U                  hM16 2.5 63Da10
 C8 H6-102Pd                       141346      18      141317.899     0.449    -1.0     U                  hR12 1.5 83De51
 C7 N H4-102Pd                     128775      19      128741.839     0.449    -1.2     U                  hR12 1.5 83De51
 102Pd-u                           -94370.9    15.6    -94367.708     0.449      .2     U                  KGS4 1.0 14Ya.A
 102Ag-u                           -88315      30      -88295.461     8.772      .7     U                  hGS2 1.0 05Li24,*
 102Cd-85Rb1.200                    20320.9     7.3     20334.118     1.785     1.8     U                  HSH1 1.0 07Ma92
 102Cd-85Rb1.200                    20334.2     1.9     20334.118     1.785     -.0     1    88   88 102Cd HMA8 1.0 09Br09
 102In-85Rb1.200                    29959      13       29958.233     4.909     -.1     1    14   14 102In HSH1 1.0 07Ma92
 102Sb-u                           -54858#    429#                                       2                  g    1.0 S-u212
 102Cd-96Mo1.063                    15811.9     5.2     15812.513     1.789      .1     1    12   12 102Cd HJY1 1.0 09El08
 102In-96Mo1.063                    25436.5     5.3     25436.628     4.908      .0     1    86   86 102In HJY1 1.0 09El08
 102Zr-97Zr1.052                    16822.0     9.8     16820.265     9.401     -.2     1    92   92 102Zr HJY1 1.0 06Ha03
 102Nb-97Zr1.052                    11756.4     2.7     11756.532     2.692      .0     1    99   99 102Nb HJY1 1.0 07Ha32
 102Mo-97Zr1.052                     3961.0     9.8      3959.809     8.915     -.1     1    83   83 102Mo HJY1 1.0 06Ha03
 102Nbm-102Nb                         100.2     7.9       101.327     7.692      .1     1    95   94 102NbmHJY1 1.0 07Ha32
 102Pd-102Ru                         1291.76    0.39     1291.980     0.048      .6     U                  GSH1 1.0 11Go23,G
 102Pd-102Ru                         1291.980   0.048    1291.980     0.048     -.0     1   100  100 102Pd GJY1 1.0 19Ne08
 102Ru-101Ru                        -1233      11       -1232.774     0.054      .0     U                  hM16 2.5 63Da10
 100Mo(t,p)102Mo                     5034      20        5028.677     8.309     -.3     1    17   17 102Mo  LAl     72Ca10
 100Mo(3He,p)102Tc                   6054      20        6022.140     9.164    -1.6     1    21   21 102Tc  Pri     82De03
 102Pd(p,t)100Pd                   -10356      24      -10351.130    17.637      .2     1    54   54 100Pd HWin     74De31,*
 101Ru(n,g)102Ru                     9220.4     0.9      9219.640     0.050     -.8     U                  h        74Ri03
 101Ru(n,g)102Ru                     9219.64    0.05     9219.640     0.050      .0     1   100   98 102Ru mMMn     91Is02,Z
 101Ru(n,g)102Ru                     9219.63    0.19     9219.640     0.050      .1     U                  MBdn     06Fi.A
 102In(ep)101Ag                      3420     310        3350.517     6.657    -.2o     o                  mLvp     91Re.A,*
 102Sr(B-)102Y                       8815      70        9013.330    67.192     2.8B    B                  KBwg     92Ba28
 102Y(B-)102Zr                       9850      70       10408.786     9.662     8.0B    B                  HBwg     92Ba28
 102Zr(B-)102Nbm                     4605      30        4622.452    11.135      .6     1    14    8 102Zr HBwg     87Gr18
 102Nb(B-)102Mo                      7300      50        7262.601     8.675    -.7o     o                  hBwg     87Gr.A
 102Nb(B-)102Mo                      7335      40        7262.601     8.675    -1.8     U                  HBwg     87Gr18
 102Nbm(B-)102Mo                     7215      40        7356.987    11.222     3.5C    C                  hBwg     87Gr.A
 102Nbm(B-)102Mo                     7210      35        7356.987    11.222     4.2B    B                  HBwg     87Gr18
 102Tc(B-)102Ru                      4420     100        4533.514     9.165     1.1     U                  h        69Bl16,W
 102Rh(B+)102Ru                      2317      10        2323.119     6.396      .6   -2-                           61Hi06
 102Rh(B+)102Ru                      2325      10        2323.119     6.396     -.2   -2-                           63Bo17
 102Ru(p,n)102Rh                    -3115      15       -3105.466     6.396      .6   -2-                           83Do11
 102Rh(B+)102Ru               ave    2323.119   6.396                                    2                           average
 102Rh(B-)102Pd                      1150       6        1119.647     6.396    -5.1B    B                  K        61Hi06
 102Ag(B+)102Pd                      5800     200        5656.261     8.182     -.7     U                  h        67Ch05,W
 102Ag(B+)102Pd                      5966     100        5656.261     8.182    -3.1B    B                  k        67Ch05,*
 102Ag(B+)102Pd                      4910     140        5656.261     8.182     5.3C    C                  N        70Be.A,*
 102Ag(B+)102Pd                      5350     200        5656.261     8.182     1.5     U                  m        72We.A
 102Ag(B+)102Pd                      5880     110        5656.261     8.182    -2.0     U                  M        79Ve.A,W
 102Cd(B+)102Ag                      2554      57        2587.000     8.000      .6     U                  h        72We.A,W
 102Cd(B+)102Ag                      2587       8                                        2                   GSI     91Ke08,*
 102In(B+)102Cd                      9250     380        8964.806     4.865     -.8     U                  HLvp     95Sz01,*
 102In(B+)102Cd                      8970     150        8964.806     4.865     -.0     U                  HGSI     98Ka.A
 102In(B+)102Cd                      8910     170        8964.806     4.865      .3     U                  HGSI     03Gi06,*
 102Sn(B+)102In                      5780      70        5760.000   100.000    -.3o     o                  HGSI     01St.A
 102Sn(B+)102In                      5760     100                                        2                  HGSI     02Fa13
*102Y-120Sn.850                   Associated with low-spin isomer                                       H        11Ha48**
*102Ag-u                          M-A=-82260(28) keV  for mixture gs+m at 9.40 keV                      g        Nub211**
*102Pd-102Ru                      10 sigma away from other data! (see text)                             kSH1     11Go23*G
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*102Pd-102Ru	Needs further study ****	h	WgM110*W
*102Pd(p,t)100Pd	Original error 12; added systematic error 21 keV	H	GAu092**
*102In(ep)101Ag	Estimated using proton spectrum from 1450 to 3200 keV	m	GAu919**
*102Tc(B-)102Ru	Reanalyzed		AHW *W
*102Ag(B+)102Pd	E+=2260(40) does not fit with later decay scheme	h	EnsAHW*W
*102Ag(B+)102Pd	From combination with decay scheme in ref.	h	Ens983*W
*102Ag(B+)102Pd	E+=3340(100), 3070(130) from 102Agm at 9.40 to 1534.48, 2017.8 levels	h	Ens098**
*102Ag(B+)102Pd	Q+=4920(100) from 102Agm at 9.40 keV	g	Nub211**
*	~ considers all data from this ref. not dependable	m	AHW935*W
*102Ag(B+)102Pd	From E+ coinc. with gamma's from well-fed levels	m	EnsAHW*W
*102Cd(B+)102Ag	From E+, 2500(100); from B+/e, 2580(70)	m	AHW983*W
*102Cd(B+)102Ag	E+=1075(8) to 1^+ level at 490.44 keV	h	Ens098**
*102In(B+)102Cd	From 9900 keV upper and 8600 keV lower limits	h	GAu953**
*102In(B+)102Cd	Good agreement with authors' earlier measurement, average=8950(120) keV	M	03Gi06**

103Rb-u		-35599#	429#				2				g	1.0	S-u20c
103Sr-u		-50757#	215#				2				g	1.0	S-u20b
103Y-u		-63060	183	-62756.203	12.030	1.1o	o				HGT1	1.5	04Ma.A
103Y-u		-62803	106	-62756.203	12.030	.2	U				HGT2	2.5	08Kn.A
103Y-120Sn.858		21154	12				2				HJY1	1.0	11Ha48,G
103Zr-u		-72765	64	-72795.945	9.901	-.5	U				HJY0	1.0	04Ri12
C8 H7-103Rh		149263.5	3.3	149281.141	2.470	2.1	U				HM16	2.5	63Da10
C8 H7-103Rh		149261	19	149281.141	2.470	.7	U				hR12	1.5	83De51
C7 N H5-103Rh		136681	18	136705.082	2.470	.9	U				hR12	1.5	83De51
103Pd-u		-93894.8	14.5	-93888.925	0.942	.4	U				KGS4	1.0	14Ya.A
103Ag-u		-91091	52	-91039.441	4.400	1.0	U				MGS2	1.0	05Li24,*
103Ag-85Rb1.212		15871.4	4.4	15871.400	4.400	-.0	Z				hMA8	1.0	04He.A
103Ag-85Rb1.212		15875	14	15871.400	4.400	-.3	U				HSH1	1.0	07Ma92
103Ag-85Rb1.212		15871.4	4.4				2				HMA8	1.0	11He10
103Cd-85Rb1.212		20328	11	20327.763	1.944	-.0	U				HSH1	1.0	07Ma92
103Cd-85Rb1.212		20328.2	2.1	20327.763	1.944	-.2	1	86	86	103Cd	HMA8	1.0	09Br09
103In-85Rb1.212		26785	11	26789.671	9.641	.4	1	77	77	103In	HSH1	1.0	07Ma92
103In-u		-80119.7	26.8	-80121.170	9.641	-.1	1	13	13	103In	GGR1	1.0	20Ho03
103Sb-u		-60838#	322#				2				g	1.0	S-u211
103Cd-96Mo1.073		15699.2	5.2	15700.889	1.947	.3	1	14	14	103Cd	HJY1	1.0	09El08
103Zr-97Zr1.062		21760.5	9.9				2				HJY1	1.0	06Ha03
103Mo-97Zr1.062		7648.4	9.9				2				HJY1	1.0	06Ha03
103Nb-102Ru1.010		16069.7	4.2				2				HJY1	1.0	07Ha32
103Cd-102Cd		-1534	154	-1064.875	2.639	2.0	U				MCR2	1.5	92Sh.A,*
103Rh(p,t)101Rh		-8275	17	-8280.117	6.177	-.3	1	13	12	101Rh	Pri		64Th05
102Ru(n,g)103Ru		6232.2	0.3	6232.051	0.148	-.5	-1-				m		82Ba69,Z
102Ru(n,g)103Ru		6232.00	0.17	6232.051	0.148	.3	-1-				MBdn		06Fi.A
102Ru(d,p)103Ru		4005	15	4007.485	0.148	.2	U				hANL		71Fo01
102Ru(n,g)103Ru	ave	6232.049	0.148	6232.051	0.148	.0	1	100	99	103Ru			average
103Rh(g,n)102Rh		-9307	32	-9319.707	6.785	-.4	U				hPhi		60Ge01
103Rh(p,d)102Rh		-7144	16	-7095.141	6.785	3.1B	B				hPri		64Th05
102Pd(n,g)103Pd		7624.6	1.5	7625.335	0.772	.5	-2-						70Bo29
102Pd(n,g)103Pd		7625.6	0.9	7625.335	0.772	-.3	-2-				MBdn		06Fi.A
102Pd(n,g)103Pd	ave	7625.335	0.772				2						average
103Zr(B-)103Nb		6945	85	7219.674	10.027	3.2B	B				kBwg		87Gr18
103Nb(B-)103Mo		5535	35	5925.664	10.027	11.2C	C				hBwg		87Gr.A
103Nb(B-)103Mo		5530	30	5925.664	10.027	13.2B	B				HBwg		87Gr18
103Mo(B-)103Tc		3750	60	3649.589	13.465	-1.7	U				HBwg		87Gr18
103Tc(B-)103Ru		2615	45	2663.248	9.809	1.1	U				hBwg		87Gr.A
103Ru(B-)103Rh		764	4	764.538	2.260	.1	-1-						58Ro09,*
103Ru(B-)103Rh		760	6	764.538	2.260	.8	-1-						65Mu09,*
103Ru(B-)103Rh		762	5	764.538	2.260	.5	-1-						70Pe04,*
103Ru(B-)103Rh		769	4	764.538	2.260	-1.1	-1-						82Oh04
103Ru(B-)103Rh	ave	764.630	2.278	764.538	2.260	-.0	1	98	98	103Rh			average
103Pd(e)103Rh		564	20	574.725	2.393	.5	U				K		54Ri09,*
103Pd(e)103Rh		543.0	0.8	574.725	2.393	39.7B	B				K		86Be53
103Ag(B+)103Pd		2580	100	2654.278	4.192	.7	U				h		62Pa05,*
103Ag(B+)103Pd		2700	100	2654.278	4.192	-.5	U				h		66Ja12
103Ag(B+)103Pd		2320	50	2654.278	4.192	6.7B	B				h		69Ba02,W
103Ag(B+)103Pd		2622	34	2654.278	4.192	.9	U				KDlf		88Bo28,*
103Cd(B+)103Ag		4200	130	4151.076	4.481	-.4	U				h		70Be.A

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 103Cd(B+)103Ag                    4250      200        4151.076     4.481     -.5  U                 h       72We.A
 103Cd(B+)103Ag                    4131       23        4151.076     4.481      .9  U                 KDlf    88Bo28,*
 103In(B+)103Cd                    5380      200        6019.229     9.124     3.2B B                  Brk    83Wo04
 103In(B+)103Cd                    6050       28        6019.229     9.124    -1.1  1    11  10 103In KDlf    88Bo28,*
 103In(B+)103Cd                    6040       60        6019.229     9.124     -.3  U                 M       98Ka42
 103Sn(B+)103In                    7500      600        7540#      100#        .1o  o                 HGSI    04Mu32
 103Sn(B+)103In                    7660       70        7540#      100#       -1.7D D                 GGSI    05Ka34,*
 103Sn(B+)103In                    7540#     100#                                   2                 g       GAu212
*103Y-120Sn.858                  Trends from Mass Surface TMS suggest 103Y    200 keV less bound       g       GAu212*G
*103Ag-u                         M-A=-84784(29) keV  for mixture gs+m at 134.45 keV                    g       Nub211**
*103Cd-102Cd                     From 102Cd/103Cd=0.99029800(150)                                              AHW928**
*103Ru(B-)103Rh                  E-=227(4) to 5/2^+ level at 536.840 keV, and other E-                 h       Ens09a**
*103Ru(B-)103Rh                  E-=112(6) to 5/2^+ level at 650.064 keV, and other E-                 h       Ens09a**
*103Ru(B-)103Rh                  E-=225(5) to 5/2^+ level at 536.840 keV, and other E-                 h       Ens09a**
*103Pd(e)103Rh                   IBE=500(20) to 103Rhm 7/2^+ at 39.753 keV                             g       Nub211**
*103Ag(B+)103Pd                  E+=1290(100) to 5/2^+ level at 266.861 keV, and other E+              h       Ens09a**
*103Ag(B+)103Pd                  Scint.value (to 266.86) trusted less than B-spectr. and coinc                 AHW   *W
*103Ag(B+)103Pd                  E+=1601(27), plus systematic error 20 keV estimated by evaluator      K       GAu158**
*103Cd(B+)103Ag                  E+=3109(11), plus systematic error 20 keV estimated by evaluator      K       GAu158**
*103In(B+)103Cd                  E+=4841(20), plus systematic error 20 keV estimated by evaluator      k       Ens09a**
*103Sn(B+)103In                  Original 7640(70) recalibrated                                        H       05Ka34**
*103Sn(B+)103In                  Trends from Mass Surface TMS suggest 103Sn   120 keV more bound       G       HWJ20a**


 104Rb-u                         -29469#     537#                                   2                 g    1.0 S-u20c
 104Sr-u                         -46978#     322#                                   2                 g    1.0 S-u211
 104Y-u                          -58057#     215#                                   2                 g    1.0 S-u20b
 104Zr-u                         -70661       54      -70550.806    10.001     2.0  U                 HJY0 1.0 04Ri12
 104Nb-u                         -77355      100      -77092.272     1.915     1.1  U                 KGT2 2.5 08Kn.A,*
 104Nb-52Cr2.000                  41898.3      1.9                                  2                 GCP2 1.0 18Or.A
 104Nbm-52Cr2.000                 41908.8      2.0                                  2                 GCP2 1.0 18Or.A
 C8 H8-104Ru                     157171.5      3.4    157174.942     2.682      .4  1    10  10 104Ru  M16 2.5 63Da10
 C8 H8-104Pd                     158612       10      158569.862     1.435    -1.7  U                 mM16 2.5 63Da10
 C8 H8-104Pd                     158599       12      158569.862     1.435    -1.6  U                 hR12 1.5 83De51
 C7 N H6-104Pd                   146013        8      145993.803     1.435    -1.6  U                 hR12 1.5 83De51
 C6 13C N H5-104Pd               141552       20      141523.606     1.435     -.9  U                 hR12 1.5 83De51
 104Pd-u                         -95938       30      -95969.607     1.435    -1.1  U                 MGS2 1.0 05Li24
 104Ag-u                         -91410       30      -91376.284     4.528     1.1  U                 MGS2 1.0 05Li24,*
 104Cd-u                         -90147       30      -90143.771     1.796      .1  U                 MGS2 1.0 05Li24
 104Cd-85Rb1.224                  17813.7      5.5     17825.590     1.796     2.2  U                 HSH1 1.0 07Ma92
 104Cd-85Rb1.224                  17825.5      1.9     17825.590     1.796      .0  1    89  89 104Cd HMA8 1.0 09Br09
 104In-85Rb1.224                  26183.9      6.2                                  2                 HSH1 1.0 07Ma92,G
 104In-85Rb1.224                  26140.3     29.6     26183.900     6.200     1.5  U                 HJY1 1.0 09El08,*
 104Sn-87Rb1.195                  31636.9      6.4     31634.468     6.168     -.4  1    93  93 104Sn HJY1 1.0 09El07
 104Cd-96Mo1.083                  13094.2      5.5     13093.447     1.800     -.1  1    11  11 104Cd HJY1 1.0 09El08
 104Zr-97Zr1.072                  24896       10                                    2                 HJY1 1.0 06Ha03
 104Nb-97Zr1.072                  18352.8      2.9     18354.534     1.920      .6B B                 GJY1 1.0 07Ha32,*
 104Mo-97Zr1.072                   9194.0      9.7      9194.250     9.565      .0  1    97  97 104Mo HJY1 1.0 06Ha03
 104In-103In                      -1241      231       -1664.291    11.462    -1.2  U                 mCR2 1.5 91Sh19,*
 104Pd-102Pd                      -1617       30       -1601.899     1.498      .3  U                 hR12 1.5 83De51
 104Te(a)100Sn                     5096.4    208.0                                  4                 GAra     18Au04
 104Ru(d,a)102Tc                   7180       10        7187.965     8.958      .8  1    80  79 102Tc  Pri     82De03
 102Ru(t,p)104Ru                   6648       30        6650.168     2.492      .1  U                 hLAl    72Ca10
 104Ru(d,3He)103Tc                -5289       10       -5287.339     9.487      .2  -2-                VUn    83De20
 104Ru(t,a)103Tc                   9048       30        9033.052     9.487     -.5  -2-                LAl    81Fl02
 104Ru(d,3He)103Tc          ave   -5287.339    9.487                                2                         average
 104Ru(d,t)103Ru                  -2644        4       -2642.684     2.492      .3  Z                 mJul    86Ru04,W
 104Ru(d,t)103Ru-148Gd()147Gd        85        3          83.895     2.415     -.4  1    65  58 104Ru MJul    86Ru04,*
 103Rh(n,g)104Rh                   6998.96     0.10     6998.957     0.081     -.0  -2-               mMMn    81Ke03,Z
 103Rh(n,g)104Rh                   6998.95     0.14     6998.957     0.081      .0  -2-               MBdn    06Fi.A
 103Rh(d,p)104Rh                   4786       10        4774.390     0.081    -1.2  U                 hMIT    64Sp12
 103Rh(n,g)104Rh            ave    6998.957    0.081                                2                         average
 104Pd(d,t)103Pd                  -3762       25       -3752.231     1.595      .4  U                 hPit    64Co11
 104Sb(p)103Sn                      510      100         508.687    14.543     -.0  U                 G       94Pa12,*
 104Nb(B-)104Mo                    8105       90        8532.751     9.088     4.8B B                 HBwg    87Gr18
 104Nbm(B-)104Mo                   8320       80        8542.532     9.106     2.8B B                 HBwg    87Gr18,*
 104Mo(B-)104Tc                    4800      200        2155.221    24.166   -13.2B B                 h       64Te02
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 104Mo(B-)104Tc                  2155       40        2155.221    24.166      .0  -1-                HBwg      87Gr18
 104Mo(B-)104Tc                  2160       40        2155.221    24.166     -.1  -1-                HJyv      94Jo.A
 104Mo(B-)104Tc            ave   2157.500   28.284    2155.221    24.166     -.1   1     73  70 104Tc          average
 104Tc(B-)104Ru                  5620       70        5596.794    24.937     -.3  -1-                          78Su03
 104Tc(B-)104Ru                  5590       60        5596.794    24.937      .1  -1-                 Bwg      87Gr18
 104Tc(B-)104Ru            ave   5602.706   45.555    5596.794    24.937     -.1   1     30  30 104Tc          average
 104Rh(B-)104Pd                  2440       30        2435.779     2.660     -.1   U                 h         55Bu.A
 104Ag(B+)104Pd                  4276       15        4278.653     4.000      .2   U                 h         60Nu02,*
 104Ag(B+)104Pd                  4350      200        4278.653     4.000     -.4   U                 h         72We.A
 104Ag(B+)104Pd                  4306       31        4278.653     4.000     -.9   U                 kDlf      88Bo28,*
 104Pd(p,n)104Ag                -5061        4                                     3                           79De44
 104Cd(B+)104Ag                  1587       60        1148.079     4.537    -7.3B  B                 h         70Mu17,*
 104Cd(B+)104Ag                  1403       26        1148.079     4.537    -9.8B  B                 hGSI      79Pl06,*
 104In(B+)104Cd                  7100      200        7785.717     6.013     3.4B  B                           78Hu06,*
 104In(B+)104Cd                  7260      250        7785.717     6.013     2.1   U                 hBrk      83Wo04,*
 104In(B+)104Cd                  7800      250        7785.717     6.013     -.1   U                 HDlf      88Bo28,G
 104In(B+)104Cd                  7890      120        7785.717     6.013     -.9   U                 hDlf      90Re08,G
 104In(B+)104Cd                  7880      100        7785.717     6.013     -.9   U                 HGSI      98Ka.A
 104Sn(B+)104In                  4550      300        4555.617     8.146      .0   U                 h         88Ba10,*
 104Sn(B+)104In                  4515       60        4555.617     8.146      .7   U                 HGSI      91Ke11,G
*104Nb-u                      D_M=-77350(100) uu  for mixture gs+m at 9.8(2.6) keV; M-A=-72051(93) keV G       Nub211**
*104Ag-u                      M-A=-85144(28) keV  for mixture gs+m at 6.90 keV                         g       Nub211**
*104In-85Rb1.224              meas.# 1-2-6-7adopted;  #3-4-5(uglies) -76157.7(5.1) all=-76170.0(6.9)   h       GAu06c*G
*104In-85Rb1.224              D_M=26190.5(5.5) uu for mixture gs+m at 93.48 keV; M-A=-76176.5(5.1) keV g       Nub211**
*104Nb-97Zr1.072              Only long-lived state is measured                                        H       07Ri01**
*104In-103In                  From 103In/104In=0.99038900(222)                                                 AHW   **
*104Ru(d,t)103Ru              From Q-Q(148Gd(d,t))=-82(3)                                              m       AHW   *W
*104Ru(d,t)103Ru-148Gd(       Q=82(3) to 5/2^+ level at 2.81 keV                                       h       Ens09a**
*104Sb(p)103Sn                Below 550 keV; value and error estimated by evaluator                    h       94Pa12**
*104Nbm(B-)104Mo              Better use the difference of the two Q- 's                               H       GAu094**
*104Ag(B+)104Pd               E+=2705(15) from 104Agm at 6.90 to 2^+ level at 555.81 keV               h       Ens079**
*104Ag(B+)104Pd               E+=2012(71) to 4^+ level at 1323.59 keV                                  h       Ens079**
*                               ~ and E+=2729(24) from 104Agm at 6.90 to 2^+ level at 555.81 keV       h       Ens079**
*                               ~ plus systematic error 20 keV estimated by evaluator                  K       GAu158**
*104Cd(B+)104Ag               p+=0.011(0.003) 0.0019(0.0005) resp, to 1^+ lvl at 90.6 keV; rclcld E+   h       Ens079**
*104Cd(B+)104Ag               See also ref.                                                                    84Gr.A**
*104In(B+)104Cd               E+=4600(200) 4750(250) resp, to 4^+ level at 1492.1 keV                  h       Ens079**
*104In(B+)104Cd               E+=4302(56) to unknown level                                                     GAu931*G
*104In(B+)104Cd               Average of 88Bo28 and 91Sh19 data. Do not use                            h       GAu931*G
*104Sn(B+)104In               p+=0.71(0.07) to 1139.25 level                                           h       Ens079**
*104Sn(B+)104In               And E+=2400(60) and 2400(66) to 1139 level                                       GAu   *G

 105Sr-u                        -40999#    537#                                    2                 g    1.0 S-u211
 105Y-u                         -55041     574      -54289#      429#        .5D   D                 GGT3 2.5 16Kn03,*
 105Y-u                         -54289#    429#                                    2                 g    1.0 S-u212
 105Rh-u                        -94378      53      -94312.213     2.686     1.2   U                 MGS2 1.0 05Li24,*
 C8 H9-105Pd                    165357      14      165345.807     1.222     -.3   U                 hM16 2.5 63Da10
 C8 H9-105Pd                    165360       9      165345.807     1.222    -1.1   U                 hR12 1.5 83De51
 C7 N H7-105Pd                  152773      18      152769.748     1.222     -.1   U                 hR12 1.5 83De51
 C6 13C N H6-105Pd              148309      26      148299.551     1.222     -.2   U                 hR12 1.5 83De51
 C7 O H5-105Pd                  128970      18      128960.299     1.222     -.4   U                 hR12 1.5 83De51
 105Ag-u                        -93534      31      -93474.396     4.878     1.9   U                 hGS2 1.0 05Li24,*
 105Cd-u                        -90496      32      -90536.107     1.494    -1.3   Z                 mGS2 1.0 02Sc.C,G
 105Cd-96Mo1.094                 13748.5     5.4     13749.693     1.501      .2   U                 HJY1 1.0 09El08
 105Cd-85Rb1.235                 18403.4     1.5     18403.571     1.494      .1   1     99  99 105Cd HMA8 1.0 09Br09
 105In-85Rb1.235                 23442      11                                     2                 HSH1 1.0 07Ma92
 105In-u                        -85536.8    33.3    -85497.677    11.000     1.2   U                 GGR1 1.0 20Ho03
 105Sn-85Rb1.235                 30204.1     7.1     30208.098     4.263      .6   1     36  36 105Sn HSH1 1.0 07Ma92
 105Sn-87Rb1.207                 30890.0     5.6     30887.524     4.263     -.4   1     58  58 105Sn HJY1 1.0 09El07
 105Zr-97Zr1.082                 30359      13                                     2                 HJY1 1.0 06Ha03
 105Mo-97Zr1.082                 13319.4     9.8     13319.156     9.720     -.0   1     98  98 105Mo HJY1 1.0 06Ha03
 105Nb-102Ru1.029                23376.4     4.3                                   2                 HJY1 1.0 07Ha32
 105Pd-104Pd                      1049      35        1049.087     0.751      .0   U                 hR12 1.5 83De51
 105In-104In                     -3618     144       -3712.216    12.627     -.4   U                 HCR2 1.5 91Sh19,*
 105Te(a)101Sn                    5079      50        5069.200     3.000     -.2   U                 H         06Se08,*
 105Te(a)101Sn                    5061.1     5.       5069.200     3.000     1.6o  o                 H         06Li41,*
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 105Te(a)101Sn               5069.2      3.                                  4              H        10Da17,*
 104Ru(n,g)105Ru             5909.9      0.5       5910.098     0.112     .4  -1-                    74Hr01
 104Ru(n,g)105Ru             5910.1      0.2       5910.098     0.112    -.0  -1-                    78Gu14
 104Ru(n,g)105Ru             5910.11     0.14      5910.098     0.112    -.1  -1-               MBdn   06Fi.A
 104Ru(d,p)105Ru             3684       15         3685.531     0.112     .1  U                 hANL   71Fo01
 104Ru(d,p)105Ru             3684.5      1.0       3685.531     0.112    1.0  U                 hMun   76Ma49
 104Ru(n,g)105Ru         ave 5910.096    0.112     5910.098     0.112     .0  1    100  69 105Ru         average
 104Pd(n,g)105Pd             7094.1      0.7                                  2                          70Bo29
 104Pd(d,p)105Pd             4867       20         4869.534     0.700     .1  U                 hPit   64Co11
 105Pd(d,t)104Pd             -851       30         -836.870     0.700     .5  U                 hPit   64Co11
 105Sb(p)104Sn                482.6     15.         322.595    22.471  -10.7F  F                HBkp   94Ti03,*
 105Nb(B-)105Mo              6485       70         7415.241     9.911   13.3B  B                HBwg   87Gr18
 105Mo(B-)105Tc              4950       45         4955.516    35.031     .1  1     61  59 105Tc  Bwg  87Gr18
 105Tc(B-)105Ru              3640       55         3648.239    35.279     .1  1     41  41 105Tc  Bwg  87Gr18
 105Ru(B-)105Rh              1916        4         1916.727     2.851     .2  1     51  25 105Rh         67Sc01
 105Rh(B-)105Pd               570        5          566.635     2.346    -.7  -1-                    51Du03
 105Rh(B-)105Pd               560        5          566.635     2.346    1.3  -1-                    56La24
 105Rh(B-)105Pd               568        4          566.635     2.346    -.3  -1-                    64Ka23
 105Rh(B-)105Pd          ave  566.316    2.649      566.635     2.346     .1  1     78  75 105Rh         average
 105Ag(e)105Pd               1347       25         1347.056     4.670     .0  U                 H      67Pi03
 105Ag(e)105Pd               1310       25         1347.056     4.670    1.5  U                 H      67Sc26,*
 105Cd(B+)105Ag              2738        5         2736.999     4.362    -.2  -1-                    53Jo20,*
 105Cd(B+)105Ag              2600      200         2736.999     4.362     .7  U                 h      72We.A
 105Cd(B+)105Ag              2742       11         2736.999     4.362    -.5  -1-                    86Bo28,*
 105Cd(B+)105Ag          ave 2738.685    4.552     2736.999     4.362    -.4  1     92  91 105Ag         average
 105In(B+)105Cd              5140      200         4693.267    10.341   -2.2  U                 hBrk   83Wo04
 105In(B+)105Cd              4849       13         4693.267    10.341  -12.0B  B                H      86Bo28,*
 105Sn(B+)105In              6230       80         6302.581    10.989     .9  U                 HGSI   06Ka74
*105Y-u                   Trends from Mass Surface TMS suggest 105Y    700 keV less bound       G      GAu212**
*105Rh-u                  M-A=-87847(32) keV  for mixture gs+m at 129.742 keV                   g      Nub211**
*105Ag-u                  M-A=-87113(28) keV  for mixture gs+m at 25.468 keV                    g      Nub211**
*105Cd-u                  used as reference. See p.86-89 of thesis                              m      02Sc.C*G
*105In-104In              From 104In/105In=0.99050293(139)                                             AHW   **
*105Te(a)101Sn            E(a)=4720(50), 4703(5) to 7/2^+ level at 171.7 keV (same group as next)  H   Ens07a**
*105Te(a)101Sn            E(a)=4711(3) to 7/2^+ level at 171.7 keV; also E(a)=4880(20) to gs    H      Ens07a**
*105Sb(p)104Sn            F : expected 150 protons, no proton peak observed                     H      05Li47**
*105Ag(e)105Pd            L/K=0.152(0.002) -> Q=222(12+theor.error) to 3/2^- lvl at 1087.96 keV h      Ens05b**
*105Cd(B+)105Ag           E+=1691(5) to 105Agm at 25.468 keV                                    g      Nub211**
*105Cd(B+)105Ag           E+=1695(11) to 105Agm at 25.468 keV                                   g      Nub211**
*105In(B+)105Cd           E+=3696(13) to 7/2^+ level at 131.11 keV                              h      Ens05b**


 106Sr-u                    -36823#    644#                                   2                 g    1.0 S-u212
 106Y-u                     -49158#    537#                                   2                 g    1.0 S-u20c
 106Zr-u                    -62674     322       -63070#      215#       -.8o  o                KGT1 1.5 04Ma.A
 106Zr-u                    -62856     186       -63070#      215#       -.5D  D                GGT3 2.5 16Kn03,*
 106Zr-u                    -63070#    215#                                   2                 g    1.0 S-u212
 106Nb-u                    -70843     258       -71071.495     1.520    -.6  U                 HGT1 1.5 04Ma.A
 106Nb-52Cr2.038             50180.0     1.6      50179.904     1.505    -.1  1     88  88 106Nb GCP2 1.0 18Or.A
 106Mo-97Zr1.093             15589.8     9.8                                  2                 HJY1 1.0 06Ha03
 106Ru-u                    -92568      33       -92671.819     5.787   -3.1  Z                 mGS2 1.0 02Sc.C,G
 C8 H10-106Pd               174764.0     4.3     174770.031     1.187     .6  U                 HM16 2.5 63Da10
 C8 H10-106Pd               174751      32       174770.031     1.187     .4  U                 hR12 1.5 83De51
 C8 H10-106Pd               174766       8       174770.031     1.187     .3  U                 hR12 1.5 83De51
 C7 13C H9-106Pd            170285      32       170299.835     1.187     .3  U                 hR12 1.5 83De51
 C7 13C H9-106Pd            170298      30       170299.835     1.187     .0  U                 hR12 1.5 83De51
 C7 N H8-106Pd              162186      18       162193.972     1.187     .3  U                 hR12 1.5 83De51
 C7 O H6-106Pd              138378      20       138384.523     1.187     .2  U                 hR12 1.5 83De51
 106Pd-u                    -96495      30       -96519.712     1.187    -.8  U                 MGS2 1.0 05Li24
 106Pd-u                    -96521.0     1.9     -96519.712     1.187     .5  -1-               HTG1 1.5 12Sm01
 106Pd-u                    -96524.9     4.7     -96519.712     1.187     .7  -1-               HTG1 1.5 12Sm01
 106Pd-u                 ave -96521.548  2.642   -96519.712     1.187     .7  1     20  20 106Pd          average
 106Ag-u                    -93318      44       -93336.500     3.238    -.4  U                 MGS2 1.0 05Li24,*
 C8 H10-106Cd               171789.3     2.7     171790.528     1.185     .2  U                 HM16 2.5 63Da10
 C8 H10-106Cd               171841      17       171790.528     1.185   -2.0  U                 hR12 1.5 83De51
 C7 N H8-106Cd              159210      15       159214.468     1.185     .2  U                 hR12 1.5 83De51
 106Cd-u                    -93581      32       -93540.209     1.185    1.3  Z                 mGS2 1.0 02Sc.C,G
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106Cd-u		-93540.6	1.7	-93540.209	1.185	.2	-1-				HTG1	1.5	12Sm01
106Cd-u		-93545.7	3.47	-93540.209	1.185	1.1	-1-				HTG1	1.5	12Sm01
106Cd-u	ave	-93541.587	2.290	-93540.209	1.185	.6	1	27	27	106Cd			average
106Cd-85Rb1.247		16459.8	1.8	16457.989	1.185	-1.0	1	43	43	106Cd	HMA8	1.0	09Br09
106In-u		-86516	32	-86536.404	13.126	-.6	U				HGS2	1.0	05Li24,*
106Sn-85Rb1.247		26959.4	8.7	26955.591	5.465	-.4	1	39	39	106Sn	HSH1	1.0	07Ma92
106Sn-87Rb1.218		27578.0	7.6	27575.515	5.465	-.3	1	52	52	106Sn	HJY1	1.0	09El07
106Sb-87Rb1.218		39256.1	8.0				2				HJY1	1.0	09El07
106I-u		-46484#	429#				2				g	1.0	S-u211
106Nb-102Ru1.039		28318.2	4.4	28318.924	1.573	.2	1	13	12	106Nb	HJY1	1.0	07Ha32
106Tc-102Ru1.039		13780.7	4.7	13747.093	13.155	-7.2F	F				HJY1	1.0	07Ha20,*
106Ru-105Ru1.010		511.8	9.1	505.247	5.887	-.7	1	42	37	106Ru	HJY1	1.0	07Ha20
106Cd-106Pd		2979.50	0.11	2979.504	0.110	.0	1	100	70	106Pd	HSH1	1.0	11Go23
106Cd-106Pd		2979.08	0.60	2979.504	0.110	.5	U				HTG1	1.5	12Sm01
106Pd-105Pd		-1608	25	-1599.192	0.303	.2	U				hR12	1.5	83De51
106Pd-104Pd		-508	32	-550.105	0.810	-.9	U				hR12	1.5	83De51
106Te(a)102Sn		4323.5	30.	4290.221	9.354	-1.1	U				m		81Sc17
106Te(a)102Sn		4290.2	9.				3				N		94Pa11
106Te(a)102Sn		4323.5	30.	4290.221	9.354	-1.1	U				M		02Ma19
106Te(a)102Sn		4261.0	62.4	4290.221	9.354	.5	U				K		16Ca33
106Cd(3He,6He)103Cd		-9173	17	-9141.403	2.121	1.9	U				HMSU		78Pa11,*
104Ru(t,p)106Ru		5892	20	5888.329	5.478	-.2	U				HLAl		72Ca10
104Pd(3He,p)106Ag		5153	6	5189.524	2.913	6.1F	F				Bld		75An07,*
106Cd(p,t)104Cd		-10802	15	-10824.601	2.004	-1.5	U				HMSU		82Cr01
106Cd(p,t)104Cd		-10829	12	-10824.601	2.004	.4	U				HPri		83De03
106Cd(p,t)104Cd		-10819	12	-10824.601	2.004	-.5	U				HOrs		84Ro.A
105Pd(n,g)106Pd		9562.8	1.1	9560.956	0.282	-1.7	U				H		70Bo29
105Pd(n,g)106Pd		9560.5	0.4	9560.956	0.282	1.1	-1-				MBNn		87Fo20,*
105Pd(n,g)106Pd		9561.4	0.4	9560.956	0.282	-1.1	-1-				MBdn		06Fi.A
105Pd(d,p)106Pd		7349	30	7336.390	0.282	-.4	U				hPit		64Co11
106Pd(d,t)105Pd		-3311	25	-3303.726	0.282	.3	U				hPit		64Co11
105Pd(n,g)106Pd	ave	9560.950	0.283	9560.956	0.282	.0	1	100	96	105Pd			average
105Pd(3He,d)106Ag		322	8	319.991	2.828	-.3	1	12	12	106Ag	Bld		75An07
106Cd(d,t)105Cd		-4661	50	-4612.391	1.773	1.0	U				m		73De16
106Cd(3He,a)105Cd		9728	25	9708.000	1.773	-.8	U				HMan		75Ch21
106Mo(B-)106Tc		3510	45	3648.249	15.278	3.1B	B				GBwg		87Gr18
106Mo(B-)106Tc		3520	17	3648.249	15.278	7.5C	C				HBwg		92Gr.A
106Mo(B-)106Tc		3520	17	3648.249	15.278	7.5C	C				HJyv		94Jo.A
106Tc(B-)106Ru		6545	45	6547.000	11.000	.0o	o				hBwg		87Gr18
106Tc(B-)106Ru		6547	11				2				Bwg		92Gr.A
106Ru(B-)106Rh		39.2	0.3	39.404	0.212	.7	-1-						50Ag01
106Ru(B-)106Rh		39.6	0.3	39.404	0.212	-.7	-1-						58Gr07
106Ru(B-)106Rh	ave	39.400	0.212	39.404	0.212	.0	1	100	63	106Ru			average
106Rh(B-)106Pd		3530	10	3544.887	5.335	1.5	-1-						52Al06
106Rh(B-)106Pd		3550	10	3544.887	5.335	-.5	-1-						58Gr07
106Rh(B-)106Pd		3550	20	3544.887	5.335	-.3	-1-						60Se05
106Rh(B-)106Pd	ave	3541.111	6.667	3544.887	5.335	.6	1	64	63	106Rh			average
106Rhm(B-)106Pd		3677	10				2						66De11,*
106Ag(B+)106Pd		2980	20	2965.143	2.817	-.7	U				h		53Be42
106Ag(B+)106Pd		3011	72	2965.143	2.817	-.6	U				h		86Bo28
106Ag(e)106Pd		2961	4	2965.143	2.817	1.0	-1-						78Ge01,*
106Pd(p,n)106Ag		-3754	13	-3747.490	2.817	.5	U				hOak		64Jo11
106Pd(p,n)106Ag		-3756	5	-3747.490	2.817	1.7	-1-						79De44
106Ag(e)106Pd	ave	2965.938	3.123	2965.143	2.817	-.3	1	81	81	106Ag			average
106In(B+)106Cd		6516	30	6524.003	12.176	.3	-2-						66Ca09,*
106In(B+)106Cd		6507	29	6524.003	12.176	.6	-2-						86Bo28,*
106Cd(p,n)106In		-7312.9	15.	-7306.350	12.176	.4	-2-				ANL		84Fi05,*
106In(B+)106Cd	ave	6524.003	12.176				2						average
106Sn(B+)106In		3195	60	3254.452	13.244	1.0	U				HGSI		79Pl06,*
106Sn(B+)106In		3200	100	3254.452	13.244	.5	U				H		88Ba10

*106Zr-u	Trends from Mass Surface TMS suggest 106Zr 200 keV more bound	G	GAu212**
*106Ru-u	close m/q contaminance cf. p.38 of thesis	m	02Sc.C*G
*106Ag-u	M-A=-86880(32) keV for mixture gs+m at 89.66 keV	g	Nub211**
*106Cd-u	used as reference. See p.86-89 of thesis	m	02Sc.C*G
*106In-u	M-A=-80575(29) keV for mixture gs+m at 28.6 keV	g	Nub211**
*106Tc-102Ru1.039	F : unidentified impurities in the trap	H	07Ha20**
*106Cd(3He,6He)103Cd	First excited state at 187.89 keV yields Q=-9146 keV	H	GAu06c**

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*104Pd(3He,p)106Ag          F : withdrawn by authors                                        h        AHW   **
*105Pd(n,g)106Pd            Calculated from 13 gamma energies in 2 keV n-capture             n        AHW94a**
*                            ~ to levels in 106Pd; corr for recoil                           p        Ens086**
*105Pd(n,g)106Pd            The value 9562.6(0.4) in Ame'95 was wrong!                       m        AHW98a*W
*106Rhm(B-)106Pd            E-=920(10) to 5^+ level at 2757.06 keV                           h        Ens086**
*106Ag(e)106Pd              L/K=0.203(0.003) gives Q+=99(4), recalculated Q                           AHW900**
*                            ~ from 106Agm 6^+ at 89.66 keV to 5^+ level at 2951.84 keV      h        Ens086**
*106In(B+)106Cd             E+=4890(30) from 106Inm 2^+ at 28.6 to 2^+ level at 632.64 keV   h        Ens086**
*                            ~ and E+=2700(100) to mixture of states around 2900 (not used)  h        Ens086*W
*106In(B+)106Cd             E+=2965(30) to 6^+ level at 2491.66 keV and 4908(29) from        h        Ens086**
*                            ~ 106Inm (2)^+ at 28.6 to 2^+ level at 632.64 keV               h        Ens086**
*106Cd(p,n)106In            T=7535(15) to 2^+ level at 151.1 keV                             h        Ens086**
*106Sn(B+)106In             p+=0.253(0.021) to 1^+ level at 893.0 keV                        h        Ens086**
*106Sn(B+)106In             Original yields 1240+892+1022=3154, diff=41 ***                           GAu   *G


 107Sr-u                     -30328#     751#                                   2                 g    1.0 S-u212
 107Y-u                      -45057#     537#                                   2                 g    1.0 S-u212
 107Zr-u                     -58379      482       -57993#       322#      .3D  D                 GGT3 2.5 16Kn03,*
 107Zr-u                     -57993#     322#                                   2                 g    1.0 S-u212
 107Nb-u                     -68326      279       -68410.315     8.613    -.2  U                 HGT1 1.5 04Ma.A
 107Mo-97Zr1.103              20326.7      9.9                                  2                 HJY1 1.0 06Ha03
 107Pd-u                     -95013       95       -94871.941     1.290    1.5  U                 MGS2 1.0 05Li24,*
 C8 H11-107Ag                180986.4      3.1     180983.842     2.557    -.3  1    11  11 107Ag  M16 2.5 63Da10
 C8 H11-107Ag                180994       17       180983.842     2.557    -.4  U                 hR12 1.5 83De51
 C7 N H9-107Ag               168415        8       168407.782     2.557    -.6  U                 hR12 1.5 83De51
 C7 O H7-107Ag               144595       18       144598.334     2.557     .1  U                 hR12 1.5 83De51
 C6 13C O H6-107Ag           140131       16       140128.137     2.557    -.1  U                 hR12 1.5 83De51
 C6 N O H5-107Ag             132025       16       132022.274     2.557    -.1  U                 hR12 1.5 83De51
 107Cd-u                     -93410       30       -93387.951     1.782     .7  U                 MGS2 1.0 05Li24
 107Cd-u                     -93359       97       -93387.951     1.782    -.3  U                 GGR1 1.0 19An10
 107Cd-85Rb1.259              17668.7      1.9      17668.766     1.782     .0  1    88  88 107Cd HMA8 1.0 09Br09
 107In-u                     -89710       30       -89712.502    10.364    -.1 -1-                GGS2 1.0 05Li24
 107In-u                     -89730.0     29.0     -89712.502    10.364     .6 -1-                GGR1 1.0 20Ho03
 107In-u                 ave -89720.339   20.851   -89712.502    10.364     .4  1    25  25 107In          average
 107Sn-87Rb1.230              27421.6      5.7                                  2                 HJY1 1.0 09El07
 107Sb-87Rb1.230              35866.2      5.8      35858.573     4.453   -1.3  1    59  59 107Sb HJY1 1.0 09El07
 107Sb-133Cs.805                251.8      9.7        261.796     4.453    1.0  1    21  21 107Sb HSH1 1.0 07Ma92
 107I-u                      -53065#     322#                                   2                 k    1.0 S-u168
 107Nb-102Ru1.049             31936.7      8.6                                  2                 HJY1 1.0 07Ha32
 107Tc-105Ru1.019              9465.8      8.9                                  2                 HJY1 1.0 07Ha20
 107Ru-105Ru1.019              3977.2      8.9                                  2                 HJY1 1.0 07Ha20
 107Sn-106Sn                  -1148       86        -1243.745     7.897    -.7  U                 HCR2 1.5 92Sh.A,*
 107Te(a)103Sn                 3982.2     15.        4010.353     4.610    1.9  U                 G        79Sc22
 107Te(a)103Sn                 4011.3      5.        4010.353     4.610    -.2 -3-                N        91He21
 107Te(a)103Sn                 4007       10         4010.353     4.610     .3 -3-                GAra     19Au02
 107Te(a)103Sn                 4001       17         4010.353     4.610     .6  U                 G        20Ca01
 107Te(a)103Sn           ave   4010.353    4.610                                3                          average
 107Ag(p,t)105Ag              -9015       15        -8996.691     5.028    1.2  1    11   9 105Ag  Min     75Ku14,*
 106Pd(n,g)107Pd               6536.4      0.5       6536.429     0.497     .1  1    99  94 107Pd MBdn     06Fi.A
 107Ag(g,n)106Ag              -9353       34        -9535.618     3.556   -5.4B B                 hPhi     60Ge01
 107Ag(p,d)106Ag              -7305       11        -7311.052     3.556    -.6  1    10   7 106Ag  Bld     75An07
 107Mo(B-)107Tc                6160       60         6204.992    12.660     .7  U                 HBwg     89Gr23
 107Tc(B-)107Ru                4820       85         5112.599    11.724    3.4B B                 HBwg     89Gr23
 107Ru(B-)107Rh                3140      300         3001.146    14.847    -.5  U                 H        62Pi02,*
 107Ru(B-)107Rh                2900      135         3001.146    14.847     .7  U                 HBwg     89Gr23
 107Rh(B-)107Pd                1510       40         1508.943    12.111    -.0  U                 H        62Pi02,*
 107Pd(B-)107Ag                  33        3           34.046     2.317     .3  1    60  53 107Ag          49Pa.B
 107Cd(B+)107Ag                1417        4         1416.374     2.565    -.2  1    41  30 107Ag          62La10,*
 107In(B+)107Cd                3426       11         3423.659     9.580    -.2  1    76  75 107In          86Bo28,*
*107Zr-u                    Trends from Mass Surface TMS suggest 107Zr   360 keV less bound      G        GAu212**
*107Pd-u                    M-A=-88397(62) keV  for mixture gs+n at 214.6 keV                g        Nub211**
*107Sn-106Sn                From 107Sn/106Sn=1.00943053(81)                                           AHW928**
*107Ag(p,t)105Ag            Recalibrated with (p,t) results on 104Pd, 105Pd, 106Pd and 108Pd          AHW   **
*107Ru(B-)107Rh             E-=2100(300) to (5/2^+,7/2^+) level at 1041.950 keV              h        Ens085**
*107Rh(B-)107Pd             E-=840(40) to 5/2^+ level at 670.06 keV                          h        Ens085**
*107Cd(B+)107Ag             E+=302(4) to 107Agm at 93.125 keV                                g        Nub211**
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*107In(B+)107Cd E+=2199(11) to 5/2^+ level at 204.98 keV h Ens085**

108Y-u		-39485#	644#				2				g	1.0	S-u20c
108Zr-u		-54697#	429#				2				g	1.0	S-u20c
108Nb-u		-64413	440	-63924.396	8.845	.7o	o				HGT1	1.5	04Ma.A
108Nb-u		-63945	112	-63924.396	8.845	.1	U				HGT2	2.5	08Kn.A
108Nb-120Sn.900		24093.3	8.8				2				HJY1	1.0	11Ha48
108Mo-97Zr1.113		23144.8	9.9				2				HJY1	1.0	06Ha03
108Mo-u		-76039	215	-75952.491	9.901	.3	U				HGT1	1.5	04Ma.A
108Rh-120Sn.900		-3267	15				2				HJY1	1.0	07Ha20
108Rhm-120Sn.900		-3144	13				2				HJY1	1.0	07Ha20
C8 H12-108Pd		190014	6	190008.576	1.189	-.4	U				HM16	2.5	63Da10
C8 H12-108Pd		190005	19	190008.576	1.189	.1	U				hR12	1.5	83De51
C7 13C H11-108Pd		185532	30	185538.380	1.189	.1	U				hR12	1.5	83De51
C7 N H10-108Pd		177422	17	177432.517	1.189	.4	U				hR12	1.5	83De51
C6 13C N H9-108Pd		172943	18	172962.320	1.189	.7	U				hR12	1.5	83De51
C7 O H8-108Pd		153611	17	153623.068	1.189	.5	U				hR12	1.5	83De51
C6 N O H6-108Pd		141031	16	141047.008	1.189	.7	U				hR12	1.5	83De51
108Pd-u		-96109.6	1.3	-96108.193	1.189	.7	-1-				HTG1	1.5	12Sm01
108Pd-u		-96108.1	4.7	-96108.193	1.189	-.0	-1-				HTG1	1.5	12Sm01
108Pd-u	ave	-96109.493	1.879	-96108.193	1.189	.7	1	40	40	108Pd			average
108Ag-u		-93973	50	-94049.754	2.563	-1.5	U				MGS2	1.0	05Li24,*
108Ag-133Cs.812		-17218	84	-17276.747	2.563	-.7	U				HMA8	1.0	08Br.A,*
C8 H12-108Cd		189715.6	2.9	189716.795	1.205	.2	U				HM16	2.5	63Da10
C8 H12-108Cd		189695	16	189716.795	1.205	.9	U				hR12	1.5	83De51
C7 N H10-108Cd		177140	30	177140.735	1.205	.0	U				hR12	1.5	83De51
C6 13C N H9-108Cd		172653	15	172670.539	1.205	.8	U				hR12	1.5	83De51
C6 N O H6-108Cd		140746	15	140755.227	1.205	.4	U				hR12	1.5	83De51
108Cd-85Rb1.271		16298.5	2.3	16298.836	1.205	.1	1	27	27	108Cd	HMA8	1.0	09Br09
108Cd-u		-95818.3	1.7	-95816.412	1.205	.7	-1-				HTG1	1.5	12Sm01
108Cd-u		-95817.1	4.87	-95816.412	1.205	.1	-1-				HTG1	1.5	12Sm01
108Cd-u	ave	-95818.170	2.408	-95816.412	1.205	.7	1	25	25	108Cd			average
108In-u		-90277	31	-90306.346	9.277	-.9	U				HGS2	1.0	05Li24,*
108Sn-u		-88102	32	-88105.710	5.778	-.1	U				HGS2	1.0	05Li24
108Sn-87Rb1.241		24599.8	5.9	24601.259	5.778	.2	1	96	96	108Sn	HJY1	1.0	09El07
108Sb-87Rb1.241		34933.7	5.9				2				HJY1	1.0	09El07
108Te-87Rb1.241		42085.3	6.0	42087.438	5.809	.4	1	94	94	108Te	HJY1	1.0	09El07
108Tc-105Ru1.029		13423.4	9.0				2				HJY1	1.0	07Ha20
108Ru-105Ru1.029		5115.7	8.9				2				HJY1	1.0	07Ha20
108Pd-108Cd		-292.05	0.59	-291.781	0.823	.3	1	87	46	108Cd	HTG1	1.5	12Sm01
108Sn-107Sn		-3650	76	-3819.359	8.117	-1.5	U				HCR2	1.5	92Sh.A,*
108Pd-106Pd		425	40	411.519	1.680	-.2	U				hR12	1.5	83De51
108Cd-106Cd		-2232	32	-2276.203	1.690	-.9	U				hR12	1.5	83De51
108Te(a)104Sn		3406.4	30.	3420.465	7.604	.5	U				h		65Ma12
108Te(a)104Sn		3448.0	20.	3420.465	7.604	-1.3	1	13	7	104Sn	H		81Sc17
108Te(a)104Sn		3444.9	4.	3420.465	7.604	-6.1B	B				H		91He21
108Te(a)104Sn		3406.4	25.	3420.465	7.604	.6	U				h		91Pa05
108I(a)104Sb		4034.7	25.	4098.666	4.608	1.1F	F				h		91Pa05,*
108I(a)104Sb		4099.1	5.	4098.666	4.608	-.1	-5-				N		94Pa12
108I(a)104Sb		4097	10	4098.666	4.608	.2	-5-				GAra		19Au02
108I(a)104Sb	ave	4098.666	4.608				5						average
108Xe(a)104Te		4569.6	208.0				5				GAra		18Au04
108Pd(d,3He)107Rh		-4456	12				2				Grn		86Ka43
108Pd(d,t)107Pd		-2977	30	-2965.649	1.634	.4	U				hPit		64Co11
107Ag(n,g)108Ag		7269.6	0.6	7271.410	0.170	3.0B	B				hILn		85Ma54,Z
107Ag(n,g)108Ag		7271.41	0.17				2				MBdn		06Fi.A
107Ag(d,p)108Ag		5051	7	5046.844	0.170	-.6	U				hMIT		67Sp09
108I(p)107Te		400	200	597.000	13.000	1.0	Z				m		AHW952,W
108I(p)107Te		597	13				4				GAra		19Au02
108Mo(B-)108Tc		5135	60	5173.533	12.726	.6	U				HBwg		92Gr.A
108Mo(B-)108Tc		5120	40	5173.533	12.726	1.3o	o				m		94Jo.A
108Mo(B-)108Tc		5100	60	5173.533	12.726	1.2	U				H		95Jo02
108Tc(B-)108Ru		7720	50	7738.574	11.790	.4	U				HBwg		89Gr23
108Ru(B-)108Rh		1315	100	1369.752	16.470	.5	U				H		62Pi02,*
108Ru(B-)108Rh		1420	185	1369.752	16.470	-.3	U				HBwg		89Gr23
108Ru(B-)108Rh		1380	80	1369.752	16.470	-.1o	o				mJyv		92Jo05

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 108Ru(B-)108Rh                 1350       60         1369.752   16.470      .3  U                  HJyv      94Jo.A
 108Rh(B-)108Pd                 4500      600         4493.060   14.041     -.0  U                  h         62Pi02
 108Rh(B-)108Pd                 4505      105         4493.060   14.041     -.1  U                  HBwg      89Gr23
 108Rhm(B-)108Pd                4434       50         4607.633   12.188     3.5B  B                 H         69Pi08,*
 108Rhm(B-)108Pd                4510      100         4607.633   12.188     1.0  U                  H         84Bh02,*
 108Ag(B+)108Pd                 1902       25         1917.424    2.632      .6  U                  h         62Fr07
 108Pd(p,n)108Ag               -2675      100        -2699.771    2.632     -.2  U                  hOak      64Jo11
 108Ag(B-)108Cd                 1650       40         1645.631    2.639     -.1  U                  h         60Wa10
 108In(B+)108Cd                 5124       50         5132.594    8.584      .2  U                  M         62Ka23,*
 108In(B+)108Cd                 5125       14         5132.594    8.584      .5  -1-                         86Bo28,*
 108Cd(p,n)108In               -5927       12        -5914.941    8.584     1.0  -1-                MANL      84Fi05,*
 108In(B+)108Cd           ave   5136.329    9.111     5132.594    8.584     -.4  1     89  89 108In           average
 108Sn(B+)108In                 2078       25         2049.879    9.836    -1.1  1     15  11 108In HGSI      79Pl06,*
*108Ag-u                     M-A=-87480(34) keV  for mixture gs+m at 109.466 keV                    g         Nub211**
*108Ag-u                     M-A=-87480(34) keV assumed by evaluator to be the 6+ isomer at 109.466keVh       GAu126*G
*108Ag-133Cs.812             D_M=-17159(77) uu   for mixture gs+m at 109.466 keV; M-A=-87497(72) keV  g       Nub211**
*108In-u                     M-A=-84078(28) keV  for mixture gs+m at 29.75 keV                      g         Nub211**
*108Sn-107Sn                 From 107Sn/108Sn=0.99076701(70)                                                  AHW928**
*108I(a)104Sb                F : Same authors say: Consistent with new value, if recalibrated       h         94Pa12**
*108I(p)107Te                Q(p)<500                                                               n         92He.A*W
*108I(p)107Te                Q(p)<600                                                               n         94Pa12*W
*108I(p)107Te                Q(p)<780 from 104Sb E(p)<550 and alpha's                               n         94Pa12*W
*108I(p)107Te                Remarkable since for 109I Q(p)=820!                                    n         AHW94c*W
*108Ru(B-)108Rh              E-=1150(100) to 1^+ level at 164.98 keV                                h         Ens08a**
*108Rhm(B-)108Pd             E-=1570(50) to (4^+,5^+,6^+) level at 2863.70 keV                      h         Ens08a**
*108Rhm(B-)108Pd             E-=1970(100) to 4^+ level at 2540.2 keV                                h         Ens08a**
*108In(B+)108Cd              E+=1290(80) to 6^+ level at 2807.81 keV, and E+=3500(50) from 108Inm   h         Ens08a**
*                             ~ at 29.75 to 2^+ level at 632.986 keV                                g         Nub211**
*108In(B+)108Cd              E+=1887(28) to 4^+ level at 2239.35 keV, and E+=3494(14) from 108Inm   h         Ens08a**
*                             ~ at 29.75 to 2^+ level at 632.986 keV                                g         Nub211**
*108Cd(p,n)108In             Q(not T, PrvCom Fi)=-6191(8), --6244(9), errors statistical only,      M         AHW961**
*                             ~ to 3^+ levels at resp, 198.36 and 266.06 keV                        h         Ens08a**
*108Sn(B+)108In              p+=35(6)e-4 to 1^+ level at 698.85 keV                                 h         Ens08a**
*108Sn(B+)108In              calculates 357+699+1022=2078, AHW had 2089, why ??                     h         GAu127*G


 109Y-u                      -34869#     751#                                    2                  g     1.0 S-u20c
 109Zr-u                     -49093#     537#                                    2                  g     1.0 S-u20b
 109Nb-u                     -60784      376        -60859.000  462.500    -.1o  o                  KGT1 1.5 04Ma.A
 109Nb-u                     -60859      185        -60859.000 \462.500          2                  GGT3 2.5 16Kn03
 109Mo-97Zr1.124              28515       12                                     2                  HJY1 1.0 06Ha03
 109Mo-u                     -71552      247        -71561.682   12.001     -.0  U                  HGT1 1.5 04Ma.A
 109Rh-120Sn.908              -2463.6      7.2       -2450.368    4.361     1.8  1     37  36 109Rh HJY1 1.0 07Ha20
 C8 H13-109Ag                196972.1      3.8      196969.636    1.381     -.3  U                  HM16 2.5 63Da10
 C8 H13-109Ag                196972        6        196969.636    1.381     -.3  U                  hR12 1.5 83De51
 C6 13C O H8-109Ag           156110       16        156113.931    1.381      .2  U                  hR12 1.5 83De51
 C6 N O H7-109Ag             148006       16        148008.068    1.381      .1  U                  hR12 1.5 83De51
 109Ag-133Cs.820             -17766       83        -17714.828    1.381      .6  U                  HMA8 1.0 08Br.A,*
 109Cd-85Rb1.282              18072.9      1.9       18072.252    1.649     -.3  1     75  75 109Cd HMA8 1.0 09Br09
 109In-u                     -92885.2     36.5      -92850.320    4.261     1.0  U                  GTR1 1.0 20Ho03
 109Sn-u                     -88747       30        -88707.143    8.534     1.3  U                  MGS2 1.0 05Li24
 109Sb-87Rb1.253              31937.9      5.9       31938.002    5.652      .0  1     92  92 109Sb HJY1 1.0 09El07
 109Sb-133Cs.820              -4360       19         -4329.403    5.652     1.6  U                  HSH1 1.0 07Ma92
 109Te-87Rb1.253              41101.6      6.4       41101.331    4.705     -.0  1     54  54 109Te HJY1 1.0 09El07
 109Te-133Cs.820               4835.6      8.3        4833.926    4.705     -.2  1     32  32 109Te HSH1 1.0 07Ma92
 109Tc-105Ru1.038             16014.3     10.0                                   2                  HJY1 1.0 07Ha20
 109Ru-105Ru1.038              9083.9      9.2                                   2                  HJY1 1.0 07Ha20
 109Ag-107Ag                   -335       28          -335.731    2.906     -.0  U                  hR12 1.5 83De51
 109Te(a)105Sn                 3197.6     30.         3197.686    5.700      .0  U                  h         65Ma12
 109Te(a)105Sn                 3197.6     15.         3197.686    5.700      .0  1     13   7 109Te H         79Sc22
 109Te(a)105Sn                 3225.6      4.         3197.686    5.700    -7.0C  C                 H         91He21
 109I(a)105Sb                  3918.1     20.8                                   3                  HORa      07Ma35
 109Xe(a)105Te                 4217.0      7.3                                   5                  H         06Li41,*
 109Ag(p,t)107Ag              -7995       15         -7973.571    2.707     1.4  U                  HMin      75Ku14,*
 108Pd(n,g)109Pd               6153.8      0.3        6153.586    0.148     -.7  -1-                mILn      80Ca02,Z
 108Pd(n,g)109Pd               6153.54     0.17       6153.586    0.148      .3  -1-                MBdn      06Fi.A
 108Pd(d,p)109Pd               3936       30          3929.020    0.148     -.2  U                  hPit      64Co11
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108Pd(n,g)109Pd	ave	6153.603	0.148	6153.586	0.148	-.1	1	100	81	109Pd			average
109Ag(g,n)108Ag		-9196	26	-9183.957	2.712	.5	U				hPhi		60Ge01
109Ag(d,t)108Ag		-2947	30	-2926.727	2.712	.7	U				hPit		64Co11
108Cd(3He,d)109In-110Cd()111In		-806.5	2.6	-806.977	2.479	-.2	1	91	70	109In			80Ta07
109Te(ep)108Sn		7140	60	7065.578	6.941	-1.2	U				H		73Bo20
109I(p)108Te		819	5	820.200	4.000	.2o	o				K		84Fa04
109I(p)108Te		819.6	2.0	820.200	4.000	.3o	o				K		92He.A
109I(p)108Te		820.2	4.0				2				K		95Ho26
109Tc(B-)109Ru		6315	70	6455.627	12.657	2.0	U				HBwg		89Gr23
109Ru(B-)109Rh		4160	65	4260.796	9.823	1.6	U				HBwg		89Gr23
109Rh(B-)109Pd		2577	50	2607.233	4.187	.6	U				h		78Ka10,*
109Pd(B-)109Ag		1116	2	1112.947	1.402	-1.5	1	49	30	109Ag			62Br15,*
109Cd(e)109Ag		182	3	215.100	1.780	11.0C	C						68Go.A,*
109Cd(e)109Ag		214	3	215.100	1.780	.4	1	35	22	109Cd	n		Averag,*
109In(B+)109Cd		2015	8	2014.805	4.066	-.0	-1-						62No06,*
109In(B+)109Cd		2030	15	2014.805	4.066	-1.0	-1-						71Ba08,*
109In(B+)109Cd	ave	2018.322	7.059	2014.805	4.066	-.5	1	33	30	109In			average
109Sn(B+)109In		4120	50	3859.345	8.887	-5.2B	B				h		70Sh05
109Sb(B+)109Sn		6380	16	6379.194	8.807	-.1	1	30	22	109Sn			82Jo03,*
*109Ag-133Cs.820		D_M=-17719(78) uu for mixture gs+m at 88.0337 keV; M-A=-88723(73) keV									g		Nub211**
*109Xe(a)105Te		Also E(a)=3918(9) keV to 150(13) level									H		06Li41**
*109Ag(p,t)107Ag		Recalibrated with (p,t) results on 104Pd, 105Pd, 106Pd and 108Pd											AHW **
*109Rh(B-)109Pd		E-=2250(50) to 5/2^+ level at 326.869 keV									h		Ens062**
*109Pd(B-)109Ag		E-=1028(2) to 109Agm at 88.0337 keV									g		Nub211**
*109Cd(e)109Ag		IBE=68(3) gives 94(3) to 109Agm at 88.0337 keV									g		Nub211**
*109Cd(e)109Ag		From avg LM/K=0.2265(0.0026) -> Q+=126(3); recalculated Q									n		AHW93b**
*		~ to 109Agm at 88.0337 keV									g		Nub211**
*		~ LMN/K=0.228(0.003)									n		65Le06**
*		~ L/K=0.195(0.005) -> LMN/K=0.258(0.006) -> Q+=109(5) not used									n		65Le06**
*		~ LMN/K=0.226(0.003)									n		70Go39**
*109In(B+)109Cd		E+=790(8) 805(15) resp, to 7/2^+ level at 203.30 keV									h		Ens062**
*109Sb(B+)109Sn		E+=4416(21) to 3/2^+ level at 925.6 keV, and other E+									h		Ens062**

110Zr-u		-45325#	537#				2				g	1.0	S-u20b
110Nb-u		-55970	210	-56157.000	900.000	-.4	Z				k	2.5	S-u123
110Nb-u		-56157	360	-56157.000	\900.000		2				KGT3	2.5	16Kn03
110Mo-97Zr1.134		31685	26				2				HJY1	1.0	06Ha03
110Mo-u		-69544	268	-69282.043	26.000	.7	U				HGT1	1.5	04Ma.A
110Ru-u		-85897	78	-85961.498	9.581	-.8	U				kJY0	1.0	03Ko.A,G
110Rh-u		-88835	130	-88920.255	19.114	-.7	U				kJY0	1.0	03Ko.A,*
110Rh-120Sn.917		815	110	759.999	19.135	-.5	U				HJY1	1.0	07Ha20,*
C8 H14-110Pd		204389	9	204377.568	0.657	-.5	U				HM16	2.5	63Da10
C8 H14-110Pd		204380	20	204377.568	0.657	-.1	U				hR12	1.5	83De51
C7 13C H13-110Pd		199913	20	199907.371	0.657	-.2	U				hR12	1.5	83De51
C6 N O H8-110Pd		155418	17	155416.000	0.657	-.1	U				hR12	1.5	83De51
C5 13C N O H7-110Pd		150946	17	150945.804	0.657	-.0	U				hR12	1.5	83De51
C6 O2 H6-110Pd		131609	18	131606.551	0.657	-.1	U				hR12	1.5	83De51
110Pd-u		-94829.7	1.5	-94827.121	0.657	1.7	-1-				HMA8	1.0	12Fi01
110Pd-u		-94829.5	1.7	-94827.121	0.657	.9	-1-				HTG1	1.5	12Sm01
110Pd-u		-94830.9	3.0	-94827.121	0.657	.8	-1-				HTG1	1.5	12Sm01
110Pd-u	ave	-94829.744	1.243	-94827.121	0.657	2.1	1	28	28	110Pd			average
C8 H14-110Cd		206548.4	4.6	206542.976	0.408	-.5	U				HM16	2.5	63Da10
C8 H14-110Cd		206550	45	206542.976	0.408	-.1	U				hR12	1.5	83De51
C8 H14-110Cd		206569	13	206542.976	0.408	-1.3	U				hR12	1.5	83De51
C7 13C H13-110Cd		202093	14	202072.780	0.408	-1.0	U				hR12	1.5	83De51
C7 13C H13-110Cd		202053	28	202072.780	0.408	.5	U				hR12	1.5	83De51
C7 O H10-110Cd		170156	16	170157.468	0.408	.1	U				hR12	1.5	83De51
C6 N O H8-110Cd		157614	17	157581.408	0.408	-1.3	U				hR12	1.5	83De51
C5 13C N O H7-110Cd		153131	17	153111.212	0.408	-.8	U				hR12	1.5	83De51
C6 O2 H6-110Cd		133801	18	133771.960	0.408	-1.1	U				hR12	1.5	83De51
C9 H2-110Cd		112661	19	112642.594	0.408	-.6	U				hR12	1.5	83De51
110Cd-u		-96993.6	1.5	-96992.530	0.408	.7	-1-				HMA8	1.0	12Fi01
110Cd-u		-96997.0	1.5	-96992.530	0.408	2.0	-1-				HTG1	1.5	12Sm01
110Cd-u		-96992.2	2.4	-96992.530	0.408	-.1	-1-				HTG1	1.5	12Sm01
110Cd-u	ave	-96994.384	1.179	-96992.530	0.408	1.6	1	12	12	110Cd			average
110In-u		-92898	36	-92829.326	12.403	1.9	U				hGS2	1.0	05Li24,*

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 110Sn-u                      -92189       30       -92155.165    14.790     1.1  -2-                MGS2 1.0 05Li24
 110Sn-u                      -92144.3     17.      -92155.165    14.790     -.6  -2- q-q=    10.121  H1.0 1.0  112Sn-2
 110Sn-u                 ave  -92155.165   14.790                                2                           average
 110Sb-87Rb1.264               31650.1      6.4                                   2                  HJY1 1.0 09El07
 110Te-133Cs.827                 643.8      7.7        649.335     7.059      .7  1     84  84 110Te HSH1 1.0 07Ma92
 110Tc-105Ru1.048              20424.0      9.8                                   2                  HJY1 1.0 07Ha20
 110Ru-105Ru1.048              10719.5      9.3      10721.238     9.181      .2  1     97  97 110Ru HJY1 1.0 07Ha20
 110Cd 35Cl-108Cd 37Cl          1764        5         1774.007     1.257      .5  U                  hH11 4.0 63Bi12
 110Pd-110Cd                    2166.24     0.69      2165.408     0.582    -1.2  -1-                HMA8 1.0 12Fi01
 110Pd-110Cd                    2166.2      1.3       2165.408     0.582     -.4  -1-                HTG1 1.5 12Sm01
 110Pd-110Cd             ave    2166.236    0.650     2165.408     0.582    -1.3  1     80  71 110Pd          average
 110Pd-108Pd                    1288       35         1281.072     1.343     -.1  U                  hR12 1.5 83De51
 110Cd-108Cd                   -1219       34        -1176.118     1.255      .8  U                  hR12 1.5 83De51
 110Te(a)106Sn                  2723.2     15.6       2698.961     7.751    -1.6  1     25  16 110Te          81Sc17
 110I(a)106Sb                   3574.2     10.        3580.541    61.490      .1  -3-                         81Sc17
 110I(a)106Sb                   3586.7      5.        3580.541    61.490     -.1  -3-                N        91He21
 110I(a)106Sb            ave    3580.541   35.791                                3                           average
 110Xe(a)106Te                  3878.3     30.        3872.207     9.499     -.2  -4-                         81Sc17
 110Xe(a)106Te                  3886.6     15.        3872.207     9.499     -.9  -4-                         92He.A
 110Xe(a)106Te                  3871.0     30.        3872.207     9.499      .0  -4-                H        02Ma19
 110Xe(a)106Te                  3857.5     19.7       3872.207     9.499      .7  -4-                HJya     07Sa36
 110Xe(a)106Te                  3860.7     20.8       3872.207     9.499      .6  -4-                K        16Ca33
 110Xe(a)106Te           ave    3872.207    9.499                                4                           average
 110Pd(p,t)108Pd               -6495       15        -6467.529     1.251     1.8  U                  HMin     75Ku14,*
 110Pd(d,3He)109Rh             -5134        5        -5127.149     4.025     1.4  1     65  64 109Rh  VUn     87Ka29
 110Pd(t,a)109Rh                9206       25         9193.242     4.025     -.5  U                  mLAl     82Fl09
 109Ag(n,g)110Ag                6809.2      0.1       6809.194     0.100     -.1  1    100  57 109Ag          81Bo.B
 109Ag(n,g)110Ag                6808.20     0.16      6809.194     0.100     6.2C C                  hBdn     06Fi.A
 109Ag(d,p)110Ag                4590        5         4584.627     0.100    -1.1  U                  hMIT     64Sp12
 110Cd(d,t)109Cd               -3664       30        -3657.727     1.570      .2  U                  hPit     64Ro17
 110Tc(B-)110Ru                 6680      120         9038.065    12.509    19.7C C                  hJyv     89Jo.A,G
 110Tc(B-)110Ru                 9021       55         9038.065    12.509      .3  U                  HJyv     00Kr.A
 110Ru(B-)110Rh                 2810       50         2756.064    19.404    -1.1  1     15  12 110Rh  Jyv     91Jo11,*
 110Rh(B-)110Pd                 5500      500         5502.212    17.797      .0  U                  H        63Ka21
 110Rh(B-)110Pd                 5400      100         5502.212    17.797     1.0  U                  H        70Pi01,*
 110Rh(B-)110Pd                 5510       19         5502.212    17.797     -.4  1     88  88 110Rh HBwg     00Kr.A
 110Ag(B-)110Cd                 2891.4      3.0       2890.663     1.277     -.2  -1-                         63Da03,*
 110Ag(B-)110Cd                 2892.9      2.0       2890.663     1.277    -1.1  -1-                         67Mo12,*
 110Ag(B-)110Cd          ave    2892.438    1.664     2890.663     1.277    -1.1  1     59  57 110Ag          average
 110In(B+)110Cd                 3928       20         3878.000    11.547    -2.5  -2-                         51Mc11,*
 110In(B+)110Cd                 3868       20         3878.000    11.547      .5  -2-                         53Bl44,*
 110In(B+)110Cd                 3838       20         3878.000    11.547     2.0  -2-                         62Ka08,*
 110In(B+)110Cd          ave    3878.000   11.547                                2                           average
 110Sb(B+)110Sn                 8750      200         8392.248    15.012    -1.8  U                  H        72Mi26,*
 110Sb(B+)110Sn                 9085      100         8392.248    15.012    -6.9B B                  H        72Si28,*
*110Ru-u                     110Ru-(96Zr0).982 does not work cf.ptrap/jyfl/ptjyf3.03ko               h        GAu094*G
*110Rh-u                     M-A=-82639(73) keV  for mixture gs+m at 220#(150#) keV                  g        Nub211**
*110Rh-120Sn.917             D_M=933.3(7.2) uu   for mx gs+m at 220#(150#) keV; M-A=-82668.1(6.8) keV g       Nub211**
*110In-u                     M-A=-86503(28) keV  for mixture gs+m at 62.08 keV                       g        Nub211**
*110Pd(p,t)108Pd             Recalibrated with (p,t) results on 104Pd, 105Pd, 106Pd and 108Pd                 AHW   **
*110Tc(B-)110Ru              coming only from Annual Report                                          h        GAu935*G
*110Ru(B-)110Rh              E-=2700(50) to 1^+ level at 112.19 keV                                  h        Ens126**
*110Rh(B-)110Pd              E-=2600(100) to (4^+) levels at 2790.64 and 2805.03 keV                 h        Ens126**
*110Ag(B-)110Cd              E-=529(3) from 110Agn at 117.59 to 6^+ level at 2479.9339 keV           h        Ens126**
*110Ag(B-)110Cd              E-=2891(4); and 531(2) from 110Agn at 117.59 to 6^+ lvl at 2479.9339 keV h       Ens126**
*110In(B+)110Cd              E+=2310(20) 2250(20) 2220(20) resp, from 110Inm at 62.08(0.04) keV      g        Nub211**
*                             ~ to 2^+ level at 657.7623 keV                                         h        Ens126**
*110Sb(B+)110Sn              E+=6500(200) 6850(100) resp, to 2^+ level at 1211.72; and other E+      h        Ens126**


 111Zr-u                      -39163#     644#                                    2                  g    1.0 S-u211
 111Nb-u                      -52561#     322#                                    2                  g    1.0 S-u185
 111Mo-u                      -64348      279       -64348.033    13.503     -.0  U                  HGT1 1.5 04Ma.A
 111Ru-u                      -82302       79       -82432.433    10.394    -1.7  U                  kJY0 1.0 03Ko.A
 111Rh-u                      -88282       79       -88356.835     7.357     -.9  U                  kJY0 1.0 03Ko.A
 111Rh-120Sn.925                2105.8      7.3                                   2                  HJY1 1.0 07Ha20
 111Ag-u                      -94741       51       -94703.173     1.566      .7  U                  MGS2 1.0 05Li24,*
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C8 H15-111Cd		213184.4	3.9	213191.702	0.384	.7	U				HM16	2.5	63Da10
C8 H15-111Cd		213197	40	213191.702	0.384	-.1	U				hR12	1.5	83De51
C7 13C H14-111Cd		208719	19	208721.505	0.384	.1	U				hR12	1.5	83De51
C7 O H11-111Cd		176814	16	176806.193	0.384	-.3	U				hR12	1.5	83De51
C9 H3-111Cd		119317	18	119291.319	0.384	-1.0	U				hR12	1.5	83De51
C8 N H-111Cd		106723	17	106715.259	0.384	-.3	U				hR12	1.5	83De51
111Cd-u		-95774	30	-95816.223	0.384	-1.4	U				hGS2	1.0	05Li24,*
111Sb-u		-86837	30	-86781.813	9.500	1.8	U				HGS2	1.0	05Li24
111Sb-133Cs.835		-7834.2	9.5				2				HSH1	1.0	07Ma92
111Te-133Cs.835		-51.8	6.9				2				HSH1	1.0	07Ma92
111I-87Rb1.276		46150.4	6.1	46154.884	5.103	.7	1	70	70	111I	HJY1	1.0	09El07
111I-133Cs.835		9197	19	9216.849	5.103	1.0	U				HSH1	1.0	07Ma92
111Cs-u		-46055#	215#				2				g	1.0	S-u212
111Tc-105Ru1.057		23412	11				2				HJY1	1.0	07Ha20
111Ru-105Ru1.057		15080.6	10.0				2				HJY1	1.0	07Ha20
110Cd H-111Cd		6638	18	6648.726	0.178	.4	U				hR12	1.5	83De51
111Mo-111Tc		9753.0	7.3				3				HJY1	1.0	11Ha48,*
111Cd-110Cd		1180	11	1176.306	0.178	-.1	U				hM16	2.5	63Da10
111Cd-110Cd		1208	34	1176.306	0.178	-.6	U				hR12	1.5	83De51
111Cd H-110Cd		8994	35	9001.338	0.178	.1	U				hR12	1.5	83De51
111I(a)107Sb		3270.1	10.	3274.538	5.187	.4	-1-				H		79Sc22
111I(a)107Sb		3293.0	10.	3274.538	5.187	-1.8	-1-				H		92He.A
111I(a)107Sb	ave	3281.499	7.336	3274.538	5.187	-.9	1	50	30	111I			average
111Xe(a)107Te		3693.3	25.	3712.150	56.893	.3	-4-						79Sc22
111Xe(a)107Te		3714.1	30.	3712.150	56.893	-.0	-4-						81Sc17
111Xe(a)107Te		3723.5	10.	3712.150	56.893	-.2	-4-				N		91He21
111Xe(a)107Te		3715.2	17.	3712.150	56.893	-.1	-4-				G		20Ca01
111Xe(a)107Te	ave	3712.150	27.143				4						average
110Pd(n,g)111Pd		5726.3	0.4				2				MBdn		06Fi.A
110Cd(n,g)111Cd		6980	100	6975.596	0.165	-.0	U				h		61Ja21
110Cd(n,g)111Cd		6975.5	0.5	6975.596	0.165	.2	-1-						86Ba72
110Cd(n,g)111Cd		6975.9	0.2	6975.596	0.165	-1.5	-1-						90Ne.B
110Cd(n,g)111Cd		6975.1	0.4	6975.596	0.165	1.2	-1-				HBdn		06Fi.A
111Cd(g,n)110Cd		-6975	3	-6975.596	0.165	-.2	U				hMcM		79Ba06
110Cd(d,p)111Cd		4740	30	4751.029	0.165	.4	U				hPit		64Ro17
110Cd(d,p)111Cd		4750.68	0.88	4751.029	0.165	.4	U				hRez		90Pi05,*
111Cd(d,t)110Cd		-745	30	-718.366	0.165	.9	U				hPit		64Co11
110Cd(n,g)111Cd	ave	6975.713	0.168	6975.596	0.165	-.7	1	97	77	110Cd			average
111Te(ep)110Sn		5070	70	4965.535	15.203	-1.5	U				H		68Ba53
111Tc(B-)111Ru		7480	80	7760.650	13.848	3.5B	B				hJyv		96Kl.A
111Tc(B-)111Ru		7449	80	7760.650	13.848	3.9B	B				HJyv		00Kr.A
111Ru(B-)111Rh		5039	50	5518.546	11.862	9.6C	C				MJyv		00Kr.A
111Rh(B-)111Pd		3640	50	3682.015	6.890	.8	U				HJyv		00Kr.A
111Rh(B-)111Pd		3650	33	3682.015	6.890	1.0	U				HBwg		00Kr.A
111Pd(B-)111Ag		2210	100	2229.561	1.572	.2	U				M		52Mc34,*
111Pd(B-)111Ag		2190	50	2229.561	1.572	.8	U				M		57Kn.A,*
111Pd(B-)111Ag		2160	100	2229.561	1.572	.7	U				M		60Pr07,*
111Ag(B-)111Cd		1028	3	1036.800	1.414	2.9B	B				h		67Le06
111Ag(B-)111Cd		1035	2	1036.800	1.414	.9	-2-						71Na02
111Ag(B-)111Cd		1038.6	2.	1036.800	1.414	-.9	-2-						77Re12
111Ag(B-)111Cd	ave	1036.800	1.414				2						average
111Cd(p,n)111In		-1635	20	-1642.544	3.417	-.4	U				hOak		74Ki02
111Sn(B+)111In		2530	30	2453.469	6.337	-2.6	U				h		51Mc11
111Sb(B+)111Sn		4470	50	5101.834	10.334	12.6B	B				M		72Si28,*

*111Ag-u	M-A=-88221(44) keV for mixture gs+m at 59.82 keV	g	Nub211**
*111Cd-u	M-A=-88817(28) keV for 111Cdm 11/2^- at 396.214 keV	g	Nub211**
*111Mo-111Tc	Taken as low-spin isomer (see also 102Y and 114Tc doublets in same work)	H	GAu11c**
*110Cd(d,p)111Cd	Estimated systematic error 0.5 added to statistical error 0.73 keV	h	AHW **
*111Pd(B-)111Ag	Q-=2150(100) 2130(50) 2100(100) resp, to 111Agm at 59.82 keV	g	Nub211**
*111Sb(B+)111Sn	E+=3290(50) to 5/2^+ level at 154.48 keV	h	Ens095**

112Zr-u	-34804#	751#				2	g	1.0	S-u211
112Nb-u	-47311#	322#				2	g	1.0	S-u185
112Mo-u	-61707#	215#				2	g	1.0	S-u20b
112Tc-102Ru1.098	34976.0	5.9				2	HJY1	1.0	07Ha20
112Ru-u	-81033	78	-81193.077	10.306	-2.1	U	kJY0	1.0	03Ko.A

112Rh-u		-85506	119	-85594.800	47.328	-.7	1	16	16	112Rh	kJY0	1.0	03Ko.A,*
112Ag-133Cs.842		-13342.0	2.6				2				HMA8	1.0	10Br02
C8 H16-112Cd		222445.3	3.9	222436.614	0.269	-.9	U				HM16	2.5	63Da10
C7 O H12-112Cd		186063	16	186051.106	0.269	-.5	U				hR12	1.5	83De51
C9 H4-112Cd		128541	19	128536.231	0.269	-.2	U				hR12	1.5	83De51
C9 H4-112Cd		128550	10	128536.231	0.269	-.9	U				hR12	1.5	83De51
C8 N H2-112Cd		115979	14	115960.172	0.269	-.9	U				hR12	1.5	83De51
112In-u		-94366	58	-94461.282	4.563	-1.6	U				hGS2	1.0	05Li24,*
C8 H16-112Sn		220384	9	220375.615	0.316	-.4	U				mM16	2.5	63Da10
C8 H16-112Sn		220385	8	220375.615	0.316	-.8	U				hR13	1.5	83De51
112Sn-86Kr1.302		21210.3	2.5	21209.866	0.316	-.2	U				HJY1	1.0	11Ha48
112Sb-u		-87597	30	-87600.096	19.141	-.1	-2-				MGS2	1.0	05Li24
112Sb-u		-87630.2	54.	-87600.096	19.141	.6	-2-	q-q=	-28.041		H1.0	1.0	112Sn+0
112Sb-u		-87594.7	28.	-87600.096	19.141	-.2	-2-	q-q=	5.027		H1.0	1.0	112Sn+0
112Sb-u	ave	-87600.096	19.141				2						average
112Te-133Cs.842		-3662.7	9.0				2				HSH1	1.0	07Ma92
112I-133Cs.842		7614	11				2				HSH1	1.0	07Ma92
112Rh-120Sn.933		5640	110	5650.216	47.323	.1	1	19	19	112Rh	HJY1	1.0	07Ha20,*
112Pd-120Sn.933		-1423.7	7.4	-1424.426	6.980	-.1	1	89	89	112Pd	HJY1	1.0	07Ha20
112Sn-120Sn.933		-3930.2	1.9	-3930.089	0.949	.1	1	25	23	120Sn	HJY1	1.0	11Ha48
112Ru-105Ru1.067		17242.5	9.9				2				HJY1	1.0	07Ha20
112Cd 35Cl-110Cd 37Cl		2701	2	2706.550	0.348	.7	U				hH11	4.0	63Bi12
111Cd H-112Cd		9255	20	9244.912	0.304	-.3	U				hR12	1.5	83De51
112Sn-112Cd		2061.01	0.17	2060.999	0.169	-.1	1	99	97	112Sn	HJY1	1.0	09Ra11
112Cd-110Cd H		-8060	40	-8068.606	0.342	-.1	U				hR12	1.5	83De51
112Cd-111Cd		-1419	11	-1419.880	0.304	-.0	U				hM16	2.5	63Da10
112Cd-111Cd		-1410	42	-1419.880	0.304	-.2	U				hR12	1.5	83De51
112Cd-110Cd		-238	39	-243.574	0.342	-.1	U				hR12	1.5	83De51
112Cd H-111Cd		6402	35	6405.151	0.304	.1	U				hR12	1.5	83De51
112I(a)108Sb		2986.9	31.1	2957.086	11.627	-.5	U				H		81Sc17
112Xe(a)108Te		3329.1	20.	3330.413	6.271	.1	-2-						81Sc17
112Xe(a)108Te		3308.4	15.6	3330.413	6.271	1.4	-2-						92He.A
112Xe(a)108Te		3335.4	7.	3330.413	6.271	-.7	-2-				N		94Pa11
112Xe(a)108Te	ave	3330.413	6.271				2						average
112Sn(3He,6He)109Sn		-8686	9	-8685.745	7.946	.0	1	78	78	109Sn	MSU		78Pa11
110Pd(t,p)112Pd		5659	20	5650.975	6.567	-.4	1	11	11	112Pd	LAl		72Ca10
112Cd(14C,16O)110Pd		5543	29	5512.943	0.596	-1.0	U				HLAl		84Co19
110Cd(t,p)112Cd		7888	20	7887.728	0.318	-.0	U				hAld		67Hi01
112Cd(p,t)110Cd		-7891	5	-7887.728	0.318	.7	U				mMin		73Oo01
112Sn(p,t)110Sn		-10485	15	-10473.896	13.780	.7R	R	q-q=	-11.104		mRoc		70Fl08
111Cd(n,g)112Cd		9460	50	9393.928	0.283	-1.3	U				h		61Ja21
111Cd(n,g)112Cd		9394.3	0.3	9393.928	0.283	-1.2	1	89	81	111Cd	gILn		97Dr03
112Cd(g,n)111Cd		-9403	5	-9393.928	0.283	1.8	U				mMcM		79Ba06
111Cd(d,p)112Cd		7183	30	7169.362	0.283	-.5	U				hPit		64Co11
111Cd(d,p)112Cd		7170	10	7169.362	0.283	-.1	U				mYal		67Ba15
111Cd(d,p)112Cd		7171	5	7169.362	0.283	-.3	U				mMIT		67Sp09
112Cd(d,t)111Cd		-3129	30	-3136.698	0.283	-.3	U				hPit		64Ro17
112Sn(d,3He)111In		-2050	50	-2058.495	3.430	-.2	U				hSac		69Co03
112Sn(p,d)111Sn		-8574	15	-8563.220	5.328	.7	-2-				MHar		70Ca01
112Sn(d,t)111Sn		-4529.0	5.7	-4530.557	5.328	-.3	-2-				SPa		75Be09
112Sn(p,d)111Sn	ave	-8563.220	5.328				2						average
112Cs(p)111Xe		814.3	7.	816.286	4.069	.3	-5-				N		94Pa12,W
112Cs(p)111Xe		817.3	5.	816.286	4.069	-.2	-5-				H		12Wa10
112Cs(p)111Xe	ave	816.286	4.069				5						average
112Tc(B-)112Ru		6060	130	10371.941	11.060	33.2C	C				hJyv		89Jo.A,G
112Tc(B-)112Ru		9484	100	10371.941	11.060	8.9C	C				HJyv		00Kr.A
112Ru(B-)112Rh		4520	80	4100.179	45.119	-5.2B	B				MJyv		91Jo11,*
112Rh(B-)112Pd		6200	500	6589.987	43.927	.8	U				MJyv		88Ay02,W
112Rh(B-)112Pd		6573	54	6589.987	43.927	.3	1	66	66	112Rh	MBwg		00Kr.A
112Rhm(B-)112Pd		6929	56				2				MBwg		00Kr.A
112Pd(B-)112Ag		299	20	262.690	6.980	-1.8	U				H		55Nu11,*
112Ag(B-)112Cd		4057	20	3991.128	2.435	-3.3C	C				h		57Je.A,*
112Ag(B-)112Cd		3940	40	3991.128	2.435	1.3	U				H		62In01,*
112In(B+)112Cd		2582	20	2584.731	4.243	.1	U				h		62Ru05
112Cd(p,n)112In		-3399.3	20.	-3367.078	4.243	1.6	U				hOak		64Jo11
112Cd(p,n)112In		-3376	6	-3367.078	4.243	1.5	1	50	50	112In	kTky		80Ad04,W
112In(B-)112Sn		656	6	664.922	4.243	1.5	1	50	50	112In			53Bl44

112Sb(B+)112Sn		7530	100	7056.076	17.832	-4.7B	B			h		72Mi27,*
112Sb(B+)112Sn		7029	50	7056.076	17.832	.5R	R	q-q=	-27.076	m		72Si28,*
112Sb(B+)112Sn		7062	26	7056.076	17.832	-.2R	R	q-q=	5.924	m		82Jo03,*
112Sn(p,n)112Sb		-7995	55	-7838.423	17.832	2.8	U			hVUn		76Ka19
*112Rh-u	Average of 2 values; M-A=-79479(36) keV for mixture gs+m at 340(70) keV									g		Nub211**
*112In-u	M-A=-87823(30) keV for mixture gs+m at 156.592 keV									g		Nub211**
*112Rh-120Sn.933	D_M=5822.6(7.4) uu for mx gs+m at 340(70) keV; M-A=-79571.2(7.0) keV									g		Nub211**
*112Cs(p)111Xe	112Cs E(p)<800, smaller than 113Cs) 990 !!									n		92He.A*W
*112Cs(p)111Xe	But compare situation for 108-109I(p)									n		AHW951*W
*112Tc(B-)112Ru	coming only from Annual Report											GAu935*G
*112Ru(B-)112Rh	E-=4190(80) to 1^+ level at 327.03 keV									k		Ens14c**
*112Rh(B-)112Pd	Sum of 2 systs in Ame'95=10470#550 instead of 10720(500).									m		AHW997*W
*112Pd(B-)112Ag	E-=280(20) to (1^+) level at 18.5 keV									k		Ens14c**
*112Ag(B-)112Cd	E-=3440(20) to 2^+ level at 617.518 keV									k		Ens14c**
*112Ag(B-)112Cd	E-=3350(20) to 2^+ lvl at 617.518 keV; error increased by evaluator									k		Ens14c**
*112Cd(p,n)112In	T=3583(6) to gs; 3376(6) to 2^+ level at 206.717 keV [GAu158:not clear/nek											Ens14c*W
*	~ see 114*Sb(B+),scint,pile up with ann.rad?											AHW *W
*112Sb(B+)112Sn	E+=5200(100) 4750(50) 4783(26) resp, to 2^+ level at 1256.69 keV									k		Ens14c**
113Zr-u		-28277#	322#				2			g	1.0	S-u211
113Nb-u		-43167#	429#				2			g	1.0	S-u185
113Mo-u		-57317	337	-56522#	322#	.9D	D			KGT3	2.5	16Kn03,*
113Mo-u		-56522#	322#				2			g	1.0	S-u212
113Tc-u		-67633	268	-67430.968	3.600	.5o	o			HGT1	1.5	04Ma.A
113Tc-u		-67502	106	-67430.968	3.600	.3	U			HGT2	2.5	08Kn.A
113Tc-129Xe.876		15981.0	3.6				2			HJY1	1.0	11Ha48
113Ru-u		-77032	94	-77153.270	41.097	-1.3	-1-			gJY0	1.0	03Ko.A,*
113Ru-u		-77240	110	-77153.270	41.097	.3o	o			HGT2	2.5	08Kn.A
113Ru-u		-77295	140	-77153.270	41.097	.4	-1-			kGT2	2.5	08Su19
113Ru-u	ave	-77049.694	90.783	-77153.270	41.097	-1.1	1	20	20 113Ru			average
113Rh-u		-84464	83	-84559.788	7.657	-1.2	U			kJY0	1.0	03Ko.A
C9 H5-113Cd		134721.1	3.9	134717.054	0.262	-.4	U			HM16	2.5	63Da10
C9 H5-113Cd		134727	19	134717.054	0.262	-.3	U			hR12	1.5	83De51
C9 H5-113Cd		134728	5	134717.054	0.262	-1.5	U			hR12	1.5	83De51
C7 O H13-113Cd		192250	16	192231.929	0.262	-.8	U			hR12	1.5	83De51
C6 13C O H12-113Cd		187772	17	187761.732	0.262	-.4	U			hR12	1.5	83De51
C8 N H3-113Cd		122161	19	122140.995	0.262	-.7	U			hR12	1.5	83De51
113Cd-u		-95506	93	-95591.895	0.262	-.9	U			MGS2	1.0	05Li24,*
C9 H5-113In		135015	9	135064.708	0.202	2.2	U			hM16	2.5	63Da10
C9 H5-113In		135087	6	135064.708	0.202	-2.5	U			hR12	1.5	83De51
C8 N H3-113In		122506	14	122488.648	0.202	-.8	U			hR12	1.5	83De51
113In-u		-95969	126	-95939.548	0.202	.2	U			MGS2	1.0	05Li24,*
113Sn-u		-94796	39	-94824.142	1.691	-.7	U			MGS2	1.0	05Li24,*
113Sb-u		-90635	30	-90625.335	18.457	.3R	R	q-q=	-9.665	MGS2	1.0	05Li24
113Te-u		-84109	30				2			MGS2	1.0	05Li24
113I-133Cs.850		4015.9	8.6				2			HSH1	1.0	07Ma92
113Xe-133Cs.850		13585.5	8.1	13587.501	7.343	.2	1	82	82 113Xe	HSH1	1.0	07Ma92
113Ba-u		-42630#	322#				2			g	1.0	S-u211
113Ru-105Ru1.076		22086	46	22112.593	41.037	.6	1	80	80 113Ru	gJY1	1.0	07Ha20,*
113Rh-120Sn.942		7565.4	7.6				2			HJY1	1.0	07Ha20
113Pd-120Sn.942		2387.1	7.4				2			HJY1	1.0	07Ha20
113Cd 35Cl-111Cd 37Cl		3174	2	3174.453	0.380	.1	U			hH11	4.0	63Bi12
112Cd H-113Cd		6164	20	6180.823	0.233	.6	U			hR12	1.5	83De51
113Cd-112Cd1.009		2519.36	0.29	2519.328	0.234	-.1	1	65	35 112Cd	KMS1	1.0	16Ga33
113In-112Cd1.009		2171.26	0.32	2171.675	0.258	1.3	1	65	48 112Cd	KMS1	1.0	16Ga33
113Cd-111Cd H		-7623	42	-7600.703	0.374	.4	U			hR12	1.5	83De51
113Cd-112Cd		1642	11	1644.209	0.233	.1	U			hM16	2.5	63Da10
113Cd-112Cd		1620	40	1644.209	0.233	.4	U			hR12	1.5	83De51
113In-112Cd		1297	45	1296.556	0.256	-.0	U			hR12	1.5	83De51
113Cd-110Cd H		-6412	32	-6424.397	0.402	-.3	U			hR12	1.5	83De51
113Cd-111Cd		242	35	224.329	0.374	-.3	U			hR12	1.5	83De51
113Cd H-112Cd		9467	35	9469.241	0.233	.0	U			hR12	1.5	83De51
113I(a)109Sb		2706.0	41.5	2706.554	9.586	.0	U			H		81Sc17
113Xe(a)109Te		3094.8	15.	3086.857	7.659	-.5	1	24	18 113Xe	H		79Sc22
111Cd(t,p)113Cd		7456	20	7451.879	0.348	-.2	U			hAld		67Hi01
113Cd(p,t)111Cd		-7456	5	-7451.879	0.348	.8	U			mMin		73Oo01

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 113In(p,t)111In-115In()113In       -810        10          -805.840     3.425      .4   1     12  12 111In  Roc      74Ma09
 113In(p,t)111In-112Cd()110Cd       -746.3       4.1        -748.186     3.408     -.5   1     69  69 111In  SPa      80Ta07
 112Cd(n,g)113Cd                    6550       100          6539.747     0.217     -.1   U                   h        61Ja21
 112Cd(n,g)113Cd                    6542.0       0.2        6539.747     0.217   -11.3C  C                   M        90Ne.A,W
 112Cd(d,p)113Cd                    4318        30          4315.181     0.217     -.1   U                   hPit     64Ro17
 112Cd(d,p)113Cd                    4315.56      0.64       4315.181     0.217     -.6   1     11   6 112Cd  Rez      90Pi05,*
 113Cd(d,t)112Cd                    -254        30          -282.517     0.217    -1.0   U                   hPit     64Co11
 113In(d,t)112In                   -3180        25         -3191.085     4.250     -.4   U                   hPit     67Hj03
 112Sn(n,g)113Sn                    7741.9       2.3        7744.398     1.562     1.1  -1-                   ORn     75Sl.A
 112Sn(d,p)113Sn                    5504        25          5519.832     1.562      .6   U                   hPit     64Co11
 112Sn(d,p)113Sn                    5518.2       3.2        5519.832     1.562      .5  -1-                   SPa     75Be09
 112Sn(n,g)113Sn              ave   7742.195     1.868      7744.398     1.562     1.2   1     70  69 113Sn           average
 112Sn(3He,d)113Sb                 -2400        40         -2442.588    17.192    -1.1R  R  q-q=   42.588  mSac     68Co22
 113Xe(ep)112Te                     7920       150          8074.921    10.819     1.0o  o                   H        82Pl05
 113Xe(ep)112Te                     8300       150          8074.921    10.819    -1.5   U                   H        05Ja10
 113Cs(p)112Xe                       967         4           972.838     2.228     1.5o  o                   K        84Fa04,*
 113Cs(p)112Xe                       982.7       4.          972.838     2.228    -2.5  -3-                  N        92He.A
 113Cs(p)112Xe                       967.6       6.          972.838     2.228      .9  -3-                  N        94Pa12
 113Cs(p)112Xe                       968.6       3.          972.838     2.228     1.4  -3-                  K        95Ho26
 113Cs(p)112Xe                ave    972.838     2.228                                   3                            average
 113Ru(B-)113Rh                     6480        50          6899.128    38.941     8.4C  C                   HJyv     00Kr.A,W
 113Rh(B-)113Pd                     5008        50          4823.556     9.881    -3.7C  C                   HJyv     00Kr.A
 113Pd(B-)113Ag                     3360       150          3436.325    18.034      .5   U                   h        75Br.A
 113Pd(B-)113Ag                     3340        35          3436.325    18.034     2.8B  B                   kStu     90Fo07
 113Ag(B-)113Cd                     2010        20          2016.462    16.641      .3  -2-                           57Je.A
 113Ag(B-)113Cd                     2070       150          2016.462    16.641     -.4   U                   h        70Ma47,*
 113Ag(B-)113Cd                     2031        30          2016.462    16.641     -.5  -2-                   Stu     90Fo07,*
 113Ag(B-)113Cd               ave   2016.462    16.641                                   2                            average
 113Cd(B-)113In                      326.4      15.          323.837     0.265     -.2   U                   h        51Ca43,*
 113Cd(B-)113In                      316.4      30.          323.837     0.265      .2   U                   h        54De13,*
 113Cd(B-)113In                      320        10           323.837     0.265      .4   U                   HCIT     88Mi13
 113Cd(B-)113In                      344.9      21.0         323.837     0.265    -1.0   U                   H        07Be61,G
 113Cd(B-)113In                      322.2       0.9         323.837     0.265     1.8   U                   K        09Da03
 113Sn(B+)113In                     1034.6       5.0        1038.994     1.573      .9  -1-                           93Li10,*
 113In(p,n)113Sn                   -1809         6         -1821.341     1.573    -2.1  -1-                   Oak     73Ra13
 113Sn(B+)113In               ave   1031.343     3.841      1038.994     1.573     2.0   1     17  17 113Sn           average
 113Sb(B+)113Sn                     3934        30          3911.164    17.121     -.8  -2-                  m        61Se08,*
 113Sb(B+)113Sn                     3945        50          3911.164    17.121     -.7  -2-                  m        69Ki16,*
 113Sb(B+)113Sn                     3902.3      28.         3911.164    17.121      .3  -2- q-q=   -9.516   H         113Sb-C
 113Sb(B+)113Sn                     3867        40          3911.164    17.121     1.1  -2- q-q=  -44.164             112Sn+1
 113Sb(B+)113Sn               ave   3911.164    17.121                                   2                            average
 113Te(B+)113Sb                     5520       300          6069.928    32.810     1.8   U                   M        74Bu21
 113Te(B+)113Sb                     5720       200          6069.928    32.810     1.7   U                   M        74Ch17
*113Mo-u                          Trends from Mass Surface TMS suggest 113Mo   740 keV less bound          G        GAu212**
*113Ru-u                          M-A=-71689(77) keV  for mixture gs+m at 131(33) keV                      g        Nub211**
*113Ru-u                          M-A=-71882(93) keV  for mixture gs+m at 131(33) keV                      g        Nub211**
*113Ru-u                          M-A=-71931(120) keV for mixture gs+m at 131(33) keV                      g        Nub211**
*113Cd-u                          M-A=-88832(41) keV  for mixture gs+m at 263.54 keV                       g        Nub211**
*113In-u                          M-A=-89199(30) keV  for mixture gs+m at 391.699 keV                      g        Nub211**
*113Sn-u                          M-A=-88263(29) keV  for mixture gs+m at 77.389 keV                       g        Nub211**
*113Ru-105Ru1.076                 D_M=22157(12) uu    for mixture gs+m at 131(33) keV; M-A=-71822(12) keV  g        Nub211**
*112Cd(n,g)113Cd                  has 6540.2(0.6). ConsX for their 110Cd(n,g) ??                           m        Ame95 *W
*112Cd(n,g)113Cd                   Not impossibly they mean errors 2 not 0.2 !!                            M        AHW973*W
*112Cd(d,p)113Cd                  Estimated systematic error 0.5 added to statistical error 0.40                    AHW   **
*113Cs(p)112Xe                    E(p) from another GSI work; superseded by 95*Ho*26                       K        87Gi07**
*113Ru(B-)113Rh                   not said whether 113Ru or 113Rum                                         m        AHW988*W
*113Ag(B-)113Cd                   E-=1530(150) from 113Agm at 43.50 to 5/2^+ level at 583.962 keV          h        Ens106**
*113Ag(B-)113Cd                   Q-=2075(30) from 113Agm at 43.50 keV                                     g        Nub211**
*113Cd(B-)113In                   Q-=590(15) 580(30) resp, from 113Cdm at 263.54 keV                       g        Nub211**
*113Cd(B-)113In                   PrvCom Tretyak : original error 0.2 (already included FWHM) increased    h        GAu081*G
*113Sn(B+)113In                   Q+=642.9(5.0) to 1/2^- level at 391.699 keV                              h        Ens106**
*113Sb(B+)113Sn                   E+=2420(20) 2430(50) resp, to 3/2^+ level at 498.06 keV,                 h        Ens106**
*                                  ~ plus 6% to 5/2^+ at 409.83 keV                                        h        Ens106**
*113Sb(B+)113Sn                   for first one, possibly too 1800(50)->1018.09 Q=3940(50)                 m        AHW985*W


 114Nb-u                            -37531#      537#                                    2                   g    1.0 S-u185
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114Mo-u		-53334#	322#				2				g	1.0	S-u20b
114Tc-u		-62459	365	-62910.000	465.000	-.8o	o				KGT1	1.5	04Ma.A
114Tc-u		-62910	186	-62910.000	\465.000		2				KGT3	2.5	16Kn03
114Ru-105Ru1.086		24805	13	24802.838	4.802	-.2	U				HJY1	1.0	07Ha20
114Ru-u		-75642	236	-75385.569	3.817	.7	U				HGT1	1.5	04Ma.A
114Rh-u		-81193	120	-81278.319	76.824	-.7	1	41	41	114Rh	kJY0	1.0	03Ko.A,*
114Ag-133Cs.857		-10149.3	4.9				2				HMA8	1.0	10Br02
C8 H18-114Cd		237487.6	4.	237485.575	0.297	-.2	U				HM16	2.5	63Da10
C6 O2 H10-114Cd		164713	15	164714.559	0.297	.1	U				hR12	1.5	83De51
C6 O2 H10-114Cd		164711	15	164714.559	0.297	.2	U				hR12	1.5	83De51
C9 H6-114Cd		143591	5	143585.193	0.297	-.8	U				hR12	1.5	83De51
C9 H6-114Cd		143586	8	143585.193	0.297	-.1	U				hR12	1.5	83De51
C8 13C H5-114Cd		139117	17	139114.996	0.297	-.1	U				hR12	1.5	83De51
C8 N H4-114Cd		131017	12	131009.133	0.297	-.4	U				hR12	1.5	83De51
C8 N H4-114Cd		131009	20	131009.133	0.297	.0	U				hR12	1.5	83De51
114Cd-133Cs.857		-15611.4	4.2	-15607.330	0.297	1.0	U				HMA8	1.0	10Br02
114Cd-133Cs.857		-15479	48	-15607.330	0.297	-2.7	Z				hMA8	1.0	08Br.A,G
114In-u		-94986	68	-95083.594	0.323	-1.4	U				MGS2	1.0	05Li24,*
C8 H18-114Sn		238092	10	238070.444	0.031	-.9	U				hM16	2.5	63Da10
C8 H18-114Sn		238066	8	238070.444	0.031	.4	U				hR13	1.5	83De51
114Sb-u		-90731	30	-90710.844	21.227	.7	-1-				MGS2	1.0	05Li24
114Sb-u		-90711	50	-90710.844	21.227	.0	-1-				GGR1	1.0	19An10
114Sb-u	ave	-90725.706	25.725	-90710.844	21.227	.6	1	68	68	114Sb			average
114Te-u		-87911	30	-87912.179	26.225	-.0	-2-				MGS2	1.0	05Li24
114Te-u		-87916	54	-87912.179	26.225	.1	-2-				GGR1	1.0	19An10
114Te-u	ave	-87912.179	26.225				2						average
114I-u		-77981.1	21.5				2				GGR1	1.0	20Ay05
114Xe-133Cs.857		9008	12				2				MMA6	1.0	04Di18
114Ru-120Sn.950		17522.0	3.7				2				HJY1	1.0	11Ha48
114Rh-120Sn.950		11570	100	11629.250	76.823	.6	1	59	59	114Rh	HJY1	1.0	07Ha20,*
114Pd-120Sn.950		3277.0	7.4				2				HJY1	1.0	07Ha20
114Cd 35Cl-112Cd 37Cl		3546	3	3551.227	0.282	.4	U				hH11	4.0	63Bi12
114Cd 35Cl-112Cd 37Cl		3547	3	3551.227	0.282	.6	U				hH20	2.5	66Ma05
114Cd 35Cl-112Cd 37Cl		3548.5	1.0	3551.227	0.282	1.1	U				mH26	2.5	73Me28
113Cd H-114Cd		8859	18	8868.138	0.147	.3	U				hR12	1.5	83De51
114Tcm-114Ru		12651	13				3				HJY1	1.0	11Ha48,*
114Cd-112Cd H		-7225	33	-7223.929	0.273	.0	U				hR12	1.5	83De51
114Cd-113Cd		-1040	11	-1043.106	0.147	-.1	U				hM16	2.5	63Da10
114Cd-113Cd		-1032	33	-1043.106	0.147	-.2	U				hR12	1.5	83De51
114Cd-113In		-679	45	-695.453	0.317	-.2	U				hR12	1.5	83De51
114Cd-111Cd H		-8651	35	-8643.810	0.400	.1	U				hR12	1.5	83De51
114Cd-112Cd		587	33	601.103	0.273	.3	U				hR12	1.5	83De51
114Cd H-113Cd		6821	35	6781.925	0.147	-.7	U				hR12	1.5	83De51
114Ba(g,12C)102Sn		18110	780	19029.459	22.836	1.2	U				H		95Gu01,G
114Cs(a)110I		3343.5	30.	3357.000	58.310	.2o	o				HGSa		80Ro04
114Cs(a)110I		3357.0	30.				4				hGSa		81Sc17
114Ba(a)110Xe		3534.2	40.	3592.284	18.540	1.4	-5-				M		02Ma19
114Ba(a)110Xe		3606.8	20.	3592.284	18.540	-.7	-5-				K		16Ca33
114Ba(a)110Xe	ave	3592.284	18.540				5						average
112Cd(t,p)114Cd		7105	20	7100.916	0.255	-.2	U				hAld		67Hi01
114Cd(p,t)112Cd		-7106	5	-7100.916	0.255	1.0	U				hMin		73Oo01
112Sn(t,p)114Sn		9579	15	9565.526	0.295	-.9	U				hAld		69Bj01
114Sn(p,t)112Sn		-9582	15	-9565.526	0.295	1.1	U				hRoc		70Fl08
113Cd(n,g)114Cd		9042.76	0.20	9042.966	0.137	1.0	-1-				mILn		79Br25,Z
113Cd(n,g)114Cd		9043.18	0.19	9042.966	0.137	-1.1	-1-				MBdn		06Fi.A
114Cd(g,n)113Cd		-9050	4	-9042.966	0.137	1.8	U				hMcM		79Ba06
113Cd(d,p)114Cd		6817	30	6818.399	0.137	.0	U				hPit		64Co11
113Cd(d,p)114Cd		6822	8	6818.399	0.137	-.5	U				hMIT		67Co15
114Cd(d,t)113Cd		-2801	30	-2785.735	0.137	.5	U				hPit		64Ro17
113Cd(n,g)114Cd	ave	9042.981	0.138	9042.966	0.137	-.1	1	98	93	114Cd			average
113In(n,g)114In		7274.0	1.2	7274.002	0.253	.0	U				M		75Ra07,Z
113In(n,g)114In		7273.83	0.27	7274.002	0.253	.6	1	88	82	114In	MBdn		06Fi.A
113In(d,p)114In		5082	25	5049.436	0.253	-1.3	U				hPit		67Hj03
114Sn(d,3He)113In		-2980	50	-2988.108	0.190	-.2	U				hSac		69Co03
114Sn(p,d)113Sn		-8101	15	-8078.358	1.575	1.5	U				hHar		70Ca01
114Sn(d,t)113Sn		-4052	20	-4045.694	1.575	.3	U				hPit		64Co11
114Sn(d,t)113Sn		-4043.7	4.2	-4045.694	1.575	-.5	1	14	14	113Sn	SPa		75Be09

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 114Cs(ep)113I                      8730      150         9144.617    85.444     2.8B  B                  H         82Pl05
 114Tcm(IT)114Tc                     330      100          163.413   433.329    -1.7   Z                  k         S-u125
 114Ru(B-)114Rh                     6100      200         5489.062    71.643    -3.1B  B                  hJyv      92Jo05,*
 114Ru(B-)114Rh                     6120      200         5489.062    71.643    -3.2C  C                  HJyv      94Jo.A
 114Rh(B-)114Pd                     6500      500         7780.071    71.891     2.6   U                  hJyv      88Ay02
 114Rh(B-)114Pd                     6217       80         7780.071    71.891    19.5   Z                  hJyv      95Li.A,G
 114Rh(B-)114Pd                     7392       53         7780.071    71.891     7.3C  C                  MJyv      00Kr.A
 114Pd(B-)114Ag                     1450      100         1440.464     8.313     -.1   U                  h         75Br.A
 114Pd(B-)114Ag                     1450      100         1440.464     8.313     -.1o  o                  hJyv      89Ay.A
 114Pd(B-)114Ag                     1450      100         1440.464     8.313     -.1o  o                  hJyv      89Ko22
 114Pd(B-)114Ag                     1414       30         1440.464     8.313      .9   U                  HStu      90Fo07
 114Pd(B-)114Ag                     1451       25         1440.464     8.313     -.4   U                  HJyv      94Jo.A
 114Ag(B-)114Cd                     4850      150         5084.123     4.573     1.6   U                  h         71Ro19
 114Ag(B-)114Cd                     4900      260         5084.123     4.573      .7   U                  h         72Wa06
 114Ag(B-)114Cd                     5160      110         5084.123     4.573     -.7o  o                  mStu      84Lu02
 114Ag(B-)114Cd                     5018       35         5084.123     4.573     1.9   U                  HStu      90Fo07
 114In(B+)114Cd                     1422       25         1445.127     0.382      .9   U                  h         56Gr35
 114In(B+)114Cd                     1417       20         1445.127     0.382     1.4   U                  h         57Dz64
 114In(B-)114Sn                     1987        2         1989.928     0.302     1.5   U                  K         61Da01
 114In(B-)114Sn                     1989        1         1989.928     0.302      .9  -1-                           61Ni02
 114In(B-)114Sn                     1980        2         1989.928     0.302     5.0B  B                  h         64An12
 114In(B-)114Sn                     1988.5      1.0       1989.928     0.302     1.4  -1-                           68Ze04
 114In(B-)114Sn                ave  1988.750    0.707     1989.928     0.302     1.7   1     18  18 114In           average
 114Sb(B+)114Sn                     5690      100         6063.119    19.772     3.7C  C                  h         69Bu.A,*
 114Sb(B+)114Sn                     6370      100         6063.119    19.772    -3.1B  B                  h         72Mi27,*
 114Sn(p,n)114Sb                   -6875       35        -6845.466    19.772      .8   1     32  32 114Sb HVUn      76Ka19
*114Rh-u                          Average of 2 values; M-A=-75531(60) keV for mixture gs+m at 200#150 keV  g         Nub211**
*114Cd-133Cs.857                  Taken out because of contaminations (bad Z-class) also ref. is at 7 hoursh        GAu08c*G
*114In-u                          M-A=-88384(31) keV  for mixture gs+m at 190.2682 keV                     g         Nub211**
*114Rh-120Sn.950                  D_M=11678.0(7.8) uu for mx gs+m at 200#150 keV; M-A=-75665.6(7.3) keV    g         Nub211**
*114Tcm-114Ru                     Mixture of two isomeric states with stronger component of low-spin state H         11Ri01**
*                                  ~ however, estimates from TMS suggest this is 114Tcm                    H         GAu125**
*114Tcm-114Ru                     (see also 102Y doublet in same paper)                                    h         GAu11c*G
*114Ba(g,12C)102Sn                E(12C)=16200(700)                                                        n         GAu952*G
*114Ba(g,12C)102Sn                Most probably background                                                 h         GAu952*G
*114Ru(B-)114Rh                   E-=5910(120) doublet to (2)^+ level at 127.0, 1^+ at 255.2 keV           k         Ens123**
*114Rh(B-)114Pd                   We cannot mention this item, reference has been lost                     h         GAu128*G
*114Sb(B+)114Sn                   E+=3365(50) to 2^+ at 1299.907, original error doubled see 114Sn(p,n)    k         Ens123**
*114Sb(B+)114Sn                   E+=4050(100) to 2^+ at 1299.907 level, see 112Sb(B+)                     k         Ens123**


 115Nb-u                          -33151#     537#                                     2                  g    1.0 S-u211
 115Mo-u                          -47826#     429#                                     2                  g    1.0 S-u185
 115Tc-u                          -60462      339       -59900#      210#        .7D   D                  GGT3 2.5 16Kn03,*
 115Tc-u                          -59900#     210#                                     2                  g    1.0 S-J20a
 115Rh-u                          -79664       85       -79688.350     7.857     -.3   U                  kJY0 1.0 03Ko.A
 115Ag-133Cs.865                   -9439       24        -9448.498    19.611     -.4   1     67  67 115Ag HMA8 1.0 10Br02,*
 C9 H7-115In                      150910        8       150896.451     0.012     -.7   U                  MM16 2.5 63Da10
 C9 H7-115In                      150932       16       150896.451     0.012    -1.5   U                  hR12 1.5 83De51
 C6 O2 H11-115In                  172055       16       172025.817     0.012    -1.2   U                  hR12 1.5 83De51
 C8 N H5-115In                    138355       13       138320.391     0.012    -1.8   U                  hR12 1.5 83De51
 115In-u                          -96095       30       -96121.227     0.012     -.9   U                  MGS2 1.0 05Li24
 C9 H7-115Sn                      151411        8       151430.527     0.016     1.0   U                  MM16 2.5 63Da10
 C9 H7-115Sn                      151440        8       151430.527     0.016     -.8   U                  hR13 1.5 83De51
 115Sb-u                          -93402       30       -93402.000    17.204      .0  -2-                 MGS2 1.0 05Li24
 115Sb-u                          -93402       21       -93402.000    17.204      .0  -2- q-q=     0.000  m1.0 1.0  115Sn+0
 115Sb-u                       ave  -93402.000   17.204                                2                            average
 115Te-u                          -88098       30                                      2                  MGS2 1.0 05Li24,*
 115I-u                           -81952       31                                      2                  MGS2 1.0 05Li24
 115Xe-133Cs.865                    8078       13                                      2                  MMA6 1.0 04Di18
 115Cs-u                          -64090#     110#                                     2                  k    1.0 S-u169
 115Ba-u                          -52518#     215#                                     2                  g    1.0 S-u20c
 115Ru-120Sn.958                   22723       27                                      2                  GJY1 1.0 07Ha20,*
 115Rh-120Sn.958                   14001.6      7.8                                    2                  HJY1 1.0 07Ha20
 115Pd-120Sn.958                    7347       15         7349.283    14.516      .2   1     94  94 115Pd HJY1 1.0 07Ha20,*
 115Sn-120Sn.958                   -2963.9      2.0      -2965.354     0.946     -.7   1     22  22 120Sn HJY1 1.0 11Ha48
 113Cd-115In.983                   -1104.76     0.34     -1104.730     0.262      .1   1     59  59 113Cd KMS1 1.0 16Ga33
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 113In-115In.983                  -1452.08      0.23     -1452.384     0.202    -1.3   1    77  77 113In KMS1 1.0 16Ga33
 115In-115Sn                        534.0768    0.0104     534.077     0.010    -.0   1   100 100 115Sn HFS1 1.0 09Mo23
 115In-115Sn                        534.28      0.18       534.077     0.010   -1.1   U               HJY1 1.0 09Wi10
 115In-114Cd                        483        45          513.774     0.296     .5   U               hR12 1.5 83De51
 115Sn-114Sn                        573        11          564.566     0.027    -.3   U               hM16 2.5 63Da10
 115In-113In                       -200        28         -181.679     0.202     .4   U               hR12 1.5 83De51
 115In-129Xe                       -902.0845    0.0111    -902.085     0.011    -.0   1   100 100 115In HFS1 1.0 09Mo23
 115Sn-129Xe                      -1436.1613    0.0130   -1436.162     0.015    -.0o  o               HFS1 1.0 09Mo23,*
 113Cd(t,p)115Cd                   6702        20         6702.033     0.606     .0   U               hAld     67Hi01
 114Cd(n,g)115Cd                   6160       100         6140.864     0.590    -.2   U               h        61Ja21
 114Cd(d,p)115Cd                   3923        30         3916.298     0.590    -.2   U               hPit     64Ro17
 114Cd(d,p)115Cd                   3929        20         3916.298     0.590    -.6   U               hOak     64Si18
 114Cd(d,p)115Cd                   3916.30      0.59      3916.298     0.590    -.0   1   100 100 115Cd  Rez     90Pi05,*
 114Cd(3He,d)115In                 1320        15         1316.919     0.276    -.2   U               h        70Th.A
 115In(g,n)114In                  -9025        29        -9037.867     0.301    -.4   U               hPhi     60Ge01
 115In(g,n)114In                  -9039         5        -9037.867     0.301     .2   U               HMcM     79Ba06
 115In(d,t)114In                  -2789        30        -2780.637     0.301     .3   U               hPit     64Co11
 115In(d,t)114In                  -2766        25        -2780.637     0.301    -.6   U               hPit     67Hj03
 114Sn(n,g)115Sn                   7545.5       2.0       7545.429     0.025    -.0   U               KORn     78Ra16,Z
 114Sn(n,g)115Sn                   7545.427     0.025     7545.429     0.025     .1   1   100 100 114Sn K        16Ur03
 114Sn(d,p)115Sn                   5329        25         5320.862     0.025    -.3   U               hPit     64Co11
 114Sn(d,p)115Sn                   5320.6       3.4       5320.862     0.025     .1   U               KSPa     75Be09
 115Sn(d,t)114Sn                  -1304        30        -1288.198     0.025     .5   U               hPit     64Co11
 115Xe(ep)114Te                    6200       130         5943.948    27.265    -2.0   U               M        72Ho18
 115Ru(B-)115Rh                    7780       100         8123.933    26.179    3.4C  C               KJyv     00Kr.A,W
 115Rh(B-)115Pd                    6000       500         6196.594    15.350     .4   U               MJyv     88Ay01,W
 115Rh(B-)115Pd                    6566        50         6196.594    15.350   -7.4C  C               MJyv     00Kr.A,W
 115Pd(B-)115Ag                    4584        50         4556.765    21.650    -.5   1    19  12 115Ag  Stu     90Fo07
 115Ag(B-)115Cd                    3180       100         3101.893    18.274    -.8   U               H        64Ba36,*
 115Ag(B-)115Cd                    3118       100         3101.893    18.274    -.2   U               K        78Ma18,*
 115Ag(B-)115Cd                    3091        40         3101.893    18.274     .3   1    21  21 115Ag          90Fo07,*
 115Cd(B-)115In                    1460         4         1451.877     0.651   -2.0   U               H        74Bo26,*
 115Cd(B-)115In                    1431         5         1451.877     0.651    4.2B  B               H        75Bo29,*
 115Cd(B-)115In                    1440         2         1451.877     0.651    5.9B  B               H        76Ra16,*
 115In(B-)115Sn                     494        20          497.489     0.010     .2   U               m        49Be53,*
 115In(B-)115Sn                     630        30          497.489     0.010   -4.4B  B               h        50Ma76
 115In(B-)115Sn                     625        70          497.489     0.010   -1.8   U               h        61Be15
 115In(B-)115Sn                     494        30          497.489     0.010     .1   U               n        62Se03,*
 115In(B-)115Sn                     480        30          497.489     0.010     .6   U               n        62Wa15
 115In(B-)115Sn                     495        20          497.489     0.010     .1   U               m        72Mu02
 115In(B-)115Sn                     482        15          497.489     0.010    1.0   U               m        78Pf01,*
 115Sb(B+)115Sn                    3030        20         3030.434    16.025     .0R  R  q-q=   -0.434  m        61Se08,*
*115Tc-u                         Trends from Mass Surface TMS suggest 115Tc   530 keV less bound      G        HWJ20a**
*115Ag-133Cs.865                 D_M=-9416.7(9.2) uu for gs or 115Agm at 41.16 keV; M-A=-84952.9(8.6) keV g  Nub211**
*115Te-u                         M-A=-82058(28) keV  for mixture gs+m at 10(6) keV                    g        Nub211**
*115Ru-120Sn.958                 D_M=22767.3(7.3) uu for mx gs+m at 82(6) keV; M-A=-66064.8(6.9) keV  g        Nub211**
*115Pd-120Sn.958                 D_M=7348(15), 7442(15) uu for gs, 89.21 isomer                       g        Nub211**
*115Pd-120Sn.958                 M-A=-80435(14) and -80348(14) keV                                    h        GAu094*G
*115Sn-129Xe                     Used are the equations for the 115In-129Xe and 115In-115Sn doublets  H        GAu09b**
*114Cd(d,p)115Cd                 Estimated systematic error 0.5 added to statistical error 0.32 keV            AHW   **
*115Ru(B-)115Rh                  Preliminary Q- gives severe disagreement with SYST                   m        AHW018*W
*115Rh(B-)115Pd                  Only from fig3                                                                AHW   *W
*115Rh(B-)115Pd                   Q+=6250#100 would fit SYST much better                              M        AHW018*W
*115Ag(B-)115Cd                  E-=2950(100) to (3/2)^+ level at 229.1 keV, and other E-             k        Ens12a**
*115Ag(B-)115Cd                  E-=721(100) to (23/2^-) level at 2397.2 keV, and other E-            K        Ens12a**
*115Ag(B-)115Cd                  Q-=3132(40) from 115Agm at 41.16 keV                                 g        Nub211**
*115Cd(B-)115In                  E-=593(2), 636(2) to 1/2^+ level at 864.139, 3/2^+ at 828.588 keV    k        Ens12a**
*115Cd(B-)115In                  E-=320(5), 679(6) from 115Cdm 181.0 to 13/2^+ 1290.592, 7/2^+ 933.780  k       Ens12a**
*115Cd(B-)115In                  Q-=1621(2) from 115Cdm at 181.0 keV                                  g        Nub211**
*115Cd(B-)115In                  Wrongly assigned to 76Ra33 in Ame2003        {by BPf095}             k        GAu095*W
*115In(B-)115Sn                  Q-=830(20) from 115Inm at 336.244 keV                                g        Nub211**
*115In(B-)115Sn                  Q-=830(30) from 115Inm at 336.244 keV                                g        Nub211**
*115In(B-)115Sn                  Q- is larger than first excitation energy 497.334(0.023) in 115Sn    h        05Ca03**
*115Sb(B+)115Sn                  E+=1510(20) to 3/2^+ level at 497.334 keV                            k        Ens12a**


 116Nb-u                         -27086#      322#                                      2                g    1.0 S-u211
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116Mo-u		-44241#	537#				2				g	1.0	S-u211
116Tc-u		-54980#	320#				2				g	1.0	S-J20a
116Ru-129Xe.899		16821.2	4.0				2				HJY1	1.0	11Ha48
116Rh-u		-75936	140	-75937.939	79.262	-.0	-1-				kJY0	1.0	03Ko.A,*
116Rh-u		-75960	140	-75937.939	79.262	.1	-1-				HGT2	2.5	08Kn.A,*
116Rh-u	ave	-75939.310	129.987	-75937.939	79.262	.0	1	37	37	116Rh			average
116Ag-133Cs.872		-6167.3	3.5				2				HMA8	1.0	10Br02
C9 H8-116Cd		157837.4	2.9	157837.025	0.172	-.1	U				HM16	2.5	63Da10
C9 H8-116Cd		157851	5	157837.025	0.172	-1.9	U				hR12	1.5	83De51
C9 H8-116Cd		157846	22	157837.025	0.172	-.3	U				hR12	1.5	83De51
C6 O2 H12-116Cd		178982	15	178966.391	0.172	-.7	U				hR12	1.5	83De51
C8 13C H7-116Cd		153376	8	153366.828	0.172	-.8	U				hR12	1.5	83De51
C8 13C H7-116Cd		153382	22	153366.828	0.172	-.5	U				hR12	1.5	83De51
C8 N H6-116Cd		145262	17	145260.965	0.172	-.0	U				hR12	1.5	83De51
C9 H8-116Sn		160861	8	160857.430	0.103	-.2	U				mM16	2.5	63Da10
C9 H8-116Sn		160857	8	160857.430	0.103	.0	U				hR13	1.5	83De51
116Sb-u		-93128	129	-93207.267	5.533	-.6	U				hGS2	1.0	05Li24,*
116Te-u		-91540	30	-91534.442	25.986	.2	-1-				MGS2	1.0	05Li24
116Te-u		-91539	55	-91534.442	25.986	.1	-1-				GGR1	1.0	19An10
116Te-u	ave	-91539.771	26.337	-91534.442	25.986	.2	1	97	97	116Te			average
116I-u		-83005	126	-83114.486	80.556	-.9	1	41	41	116I	GGR1	1.0	20Ay05
116Xe-133Cs.872		4027	14	4026.846	13.974	-.0	1	100	100	116Xe	MMA6	1.0	04Di18
116Ba-u		-58379#	215#				2				g	1.0	S-u211
116Rh-120Sn.967		18633	100	18632.188	79.260	-.0	1	63	63	116Rh	HJY1	1.0	07Ha20,*
116Pd-120Sn.967		8868.0	7.6				2				HJY1	1.0	07Ha20
116Cd 35Cl-114Cd 37Cl		4353	3	4348.356	0.342	-.4	U				hH11	4.0	63Bi12
116Cd 35Cl-114Cd 37Cl		4344	2	4348.356	0.342	.9	U				hH20	2.5	66Ma05
116Cd 35Cl-114Cd 37Cl		4348.7	1.2	4348.356	0.342	-.1o	o				HH26	2.5	73Me28
116Cd 35Cl-114Cd 37Cl		4347.46	0.44	4348.356	0.342	.8	1	10	7	114Cd	HH49	2.5	10Mc04
116Cd-116Sn		3020.42	0.14	3020.405	0.139	-.1	1	99	98	116Cd	HJY1	1.0	11Ra24
116Cd-114Cd H		-6452	32	-6426.800	0.336	.5	U				hR12	1.5	83De51
116Sn-115Sn		-1602	11	-1601.871	0.102	.0	U				hM16	2.5	63Da10
116Cd-113Cd H		-7458	32	-7469.906	0.308	-.2	U				hR12	1.5	83De51
116Cd-114Cd		1370	32	1398.232	0.336	.6	U				hR12	1.5	83De51
116Cs(ea)112Te		12300	400	13100#	100#	2.0D	D				M		77Bo28
116Cs(ea)112Te		12400	900	13100#	100#	.8D	D				M		76Jo.A,*
116Cs(ea)112Te		13100#	100#				3				g		S-u212
116La(a)112Cs		3940#	300#				6				g		S-u212
116Cd(14C,16O)114Pd		2497	29	2534.753	6.950	1.3	U				HLAl		84Co19
114Cd(t,p)116Cd		6362	20	6358.395	0.313	-.2	U				hAld		67Hi01
116Cd(p,t)114Cd		-6363	5	-6358.395	0.313	.9	U				HMin		73Oo01
116Sn(p,t)114Sn		-8619	15	-8627.083	0.098	-.5	U				hRoc		70Fl08
116Cd(g,n)115Cd		-8702	4	-8699.328	0.668	.7	U				HMcM		79Ba06
116Cd(d,t)115Cd		-2458	30	-2442.097	0.668	.5	U				hPit		64Ro17
115In(n,g)116In		6783.8	1.2	6784.720	0.220	.8	U				M		72Ra39,Z
115In(n,g)116In		6784.4	1.1	6784.720	0.220	.3	U				M		74Co35
115In(n,g)116In		6784.72	0.22				2				MBdn		06Fi.A
115In(d,p)116In		4494	25	4560.154	0.220	2.6	U				hPit		64Co11
115In(d,p)116In		4580	30	4560.154	0.220	-.7	U				hPit		67Hj03
116Sn(d,3He)115In		-3740	50	-3785.118	0.095	-.9	U				hSac		69Co03
115Sn(n,g)116Sn		9562.2	1.5	9563.451	0.095	.8	U				h		72Mc08
115Sn(n,g)116Sn		9563.5	0.5	9563.451	0.095	-.1	U				h		84Ga.B
115Sn(n,g)116Sn		9563.41	0.11	9563.451	0.095	.4	-1-				mORn		91Ra01,Z
115Sn(n,g)116Sn		9563.55	0.19	9563.451	0.095	-.5	-1-				MBdn		06Fi.A
115Sn(d,p)116Sn		7358	30	7338.885	0.095	-.6	U				hPit		64Co11
116Sn(p,d)115Sn		-7344	15	-7338.885	0.095	.3	U				hHar		70Ca01
116Sn(d,t)115Sn		-3309	20	-3306.221	0.095	.1	U				hPit		64Co11
116Sn(d,t)115Sn		-3305.0	2.5	-3306.221	0.095	-.5	U				hSPa		75Be09
115Sn(n,g)116Sn	ave	9563.445	0.095	9563.451	0.095	.1	1	99	99	116Sn			average
115Sn(3He,d)116Sb-120Sn()121Sb		-1722	10	-1713.242	5.437	.9	1	30	25	116Sb	VUn		78Ka12
116Cs(ep)115I		6350	300	7006#	104#	2.2	U				h		78Da07,*
116Rh(B-)116Pd		8000	500	9095.284	74.169	2.2	U				hJyv		88Ay02,G
116Pd(B-)116Ag		2615	100	2711.638	7.845	1.0	U				h		75Br.A
116Pd(B-)116Ag		2620	100	2711.638	7.845	.9o	o				hJyv		89Ay.A
116Pd(B-)116Ag		2607	30	2711.638	7.845	3.5B	B				HStu		90Fo07
116Pd(B-)116Ag		2620	100	2711.638	7.845	.9	U				MJyv		94Jo.A
116Ag(B-)116Cd		6062	130	6169.825	3.264	.8o	o				HStu		82Al29,*

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 116Ag(B-)116Cd               5800       200        6169.825      3.264     1.8  U              h        82Br10
 116Ag(B-)116Cd               6194        50        6169.825      3.264     -.5  U              HStu     90Fo07,*
 116In(B-)116Sn               3290        60        3276.220      0.240     -.2  U              h        54Bo39
 116Sb(B+)116Sn               4586       100        4703.959      5.154     1.2  U              h        61Fi05,*
 116Sb(B+)116Sn               4606        50        4703.959      5.154     2.0  U              h        68Ki07,*
 116Sn(p,n)116Sb             -5515        40       -5486.306      5.154      .7  U              hVUn     76Ka19
 116Sn(p,n)116Sb             -5483.2       6.      -5486.306      5.154     -.5  1    75  75 116Sb  Oak   77Jo03
 116Sbn(B+)116Sn              5090        40                                     2              h        60Je03,*
 116Te(B+)116Sb               1554       100        1558.227     24.749      .0  U              M        61Fi05,*
 116I(B+)116Te                7760       130        7843.139     75.323      .6 -1-             G        70Be.A
 116I(B+)116Te                7710       200        7843.139     75.323      .7 -1-             G        76Go02
 116I(B+)116Te          ave   7745.149   108.998    7843.139     75.323      .9  1    48  45 116I          average
 116Xe(B+)116I                4340       200        4373.776     75.844      .2  1    14  14 116I   M        76Go02
*116Rh-u                   M-A=-70634(96) keV  for mixture gs+m at 200#150 keV                    g        Nub211**
*116Rh-u                   M-A=-70662(93) keV  for mixture gs+m at 200#150 keV                    g        Nub211**
*116Sb-u                   M-A=-86553(34) keV  for mixture gs+n at 390(40) keV                    g        Nub211**
*116Rh-120Sn.967           D_M=18740.7(8.4) uu for mx gs+m at 200#150 keV ; M-A=-70635.5(7.9) keV  g        Nub211**
*116Cs(ea)112Te            (ea) dominates in gs (700ms)                                           n        77Bo28*W
*116Cs(ea)112Te            Q=12500(900) from 116Csm estimated at 100#60 keV                       g        Nub211**
*116Cs(ea)112Te            Trends from Mass Surface TMS suggest 116Cs   780 keV less bound        G        GAu212**
*116Cs(ep)115I             Q=6450(300) from 116Csm at estimated 100#60 keV                        g        Nub211**
*116Rh(B-)116Pd            Q- from fig.3 only. DELETE???                                          n        AHW934*W
*116Ag(B-)116Cd            Q-=6110(130) from 116Agm at 47.90 keV                                  g        Nub211**
*116Ag(B-)116Cd            Q-=6199(100); and 6241(50) from 116Agm at 47.90 keV                    g        Nub211**
*116Sb(B+)116Sn            E+=2270(100) 2290(50) resp, to 2^+ level at 1293.560 keV               h        Ens104**
*116Sbn(B+)116Sn           E+=1160(40) to 7^- level at 2908.85 keV                                h        Ens104**
*116Te(B+)116Sb            E+=440(100) to 1^+ level at 93.99 keV                                  h        Ens104**


 117Mo-u                    -38314#      537#                                    2              g    1.0 S-u211
 117Tc-u                    -51680#      429#                                    2              g    1.0 S-u211
 117Ru-u                    -63897       419      -63865.000    465.000      .1o  o             KGT1 1.5 04Ma.A
 117Ru-u                    -63865       186      -63865.000   \465.000          2              KGT3 2.5 16Kn03,G
 117Rh-u                    -73903       408      -73963.708      9.549     -.1  U              HGT1 1.5 04Ma.A
 117Ag-133Cs.880             -5029        16       -5023.637     14.570      .3  1    83  83 117Ag HMA8 1.0 10Br02,*
 C9 H9-117Sn                167486        12      167471.250      0.519     -.5  U              hM16 2.5 63Da10
 C9 H9-117Sn                167471         8      167471.250      0.519      .0  U              hR13 1.5 83De51
 C 35Cl3-117Sn                3596         2        3604.043      0.531     1.0  U              HH14 4.0 62Ba24
 117Te-u                    -91318        30      -91353.772     14.445    -1.2 -1-             MGS2 1.0 05Li24
 117Te-u                    -91359        30      -91353.772     14.445      .2 -1-             MGS2 1.0 05Li24,*
 117Te-u                    -91348        24      -91353.772     14.445     -.2  Z  q-q=    5.377  h1.0 1.0  117Sb+0
 117Te-u                    -91413        34      -91353.772     14.445     1.7  Z  q-q=  -55.170  h1.0 1.0  117Sb+0
 117Te-u                ave -91338.500    21.213  -91353.772     14.445     -.7  1    46  46 117Te         average
 117I-u                     -86350        30      -86354.350     27.437     -.1 -1-             MGS2 1.0 05Li24
 117I-u                     -86407        50      -86354.350     27.437      .4 -1-             GGr1 2.5 19An10
 117I-u                 ave -86353.104    29.172  -86354.350     27.437     -.0  1    88  88 117I          average
 117Xe-u                    -79647        30      -79641.242     11.142      .2R  R  q-q=   -5.758  MGS2 1.0 05Li24
 117Xe-133Cs.880              3562        12        3561.034     11.142     -.1 -2-             MMA6 1.0 04Di18
 117Xe-133Cs.880              3555        30        3561.034     11.142      .2 -2- q-q=   -6.034  m1.0 1.0  117Xe-C
 117Xe-133Cs.880        ave   3561.034    11.142                                 2                       average
 117Cs-133Cs.880             11819        67                                     2              HMA4 1.0 99Am05,*
 117Rh-120Sn.975             21388.8       9.5                                   2              HJY1 1.0 07Ha20
 117Pd-120Sn.975             13309.4       7.9     13308.093      7.734     -.2  1    96  96 117Pd HJY1 1.0 07Ha20
 117Sn-116Sn                  1219        11        1211.212      0.509     -.3  U              hM16 2.5 63Da10
 116Cd(d,p)117Cd              3538        30        3552.660      1.000      .5  U              hPit     64Ro17
 116Cd(d,p)117Cd              3550        20        3552.660      1.000      .1  U              hOak     64Si18
 116Cd(d,p)117Cd              3552.66      1.0                                   2               Rez     90Pi05,*
 116Sn(n,g)117Sn              6943.5       2.0      6943.082      0.474     -.2  U              M        75Bh01,Z
 116Sn(n,g)117Sn              6943.3       1.5      6943.082      0.474     -.1  U              MORn     78Ra16,Z
 116Sn(n,g)117Sn              6942.9       0.5      6943.082      0.474      .4 -1-             MBdn     06Fi.A
 116Sn(d,p)117Sn              4721.0       1.8      4718.515      0.474    -1.4 -1-              SPa     75Be09
 116Sn(n,g)117Sn        ave   6943.091     0.482    6943.082      0.474     -.0  1    97  97 117Sn         average
 116Sn(3He,d)117Sb           -1091        10       -1090.919      8.436      .0  1    71  71 117Sb  VUn     78Ka12,*
 117Xe(ep)116Te               4100       200        3789.475     26.337    -1.6  U              M        72Ho18
 117Ba(ep)116Xe               7900       300        8300.000    250.000     1.3F  F              K        78Bo20,*
 117Ba(ep)116Xe               8300       250                                     2              HGSI     05Ja06
 117La(p)116Ba                 789.8       6.        820.100      3.000     5.0B  B              H        01So02,*
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 117La(p)116Ba                   813.0      5.        820.100     3.000     1.4o  o                  HArp     01Ma69
 117La(p)116Ba                   820.1      3.                                    3                  HArp     11Li28,G
 117Pd(B-)117Ag                 5735       32        5758.028    14.767      .7   1     21  17 117Ag MJyv     00Kr.A
 117Ag(B-)117Cd                 4160       50        4236.479    13.610     1.5   U                  HStu     82Al29,*
 117Cd(B-)117In                 2535       20        2524.638     4.983     -.5   U                  h        75Ta06,*
 117In(B-)117Sn                 1456.6      5.       1454.707     4.857     -.4   1     94  94 117In          55Mc17,*
 117Sb(B+)117Sn                 1751       40        1758.179     8.445      .2   U                  h        64Ba46,*
 117Sn(p,n)117Sb               -2525       20       -2540.526     8.445     -.8   1     18  18 117Sb  Oak     71Ke21
 117Te(B+)117Sb                 3552       20        3544.063    13.079     -.4  -1-                 h        62Kh05,*
 117Te(B+)117Sb                 3492       30        3544.063    13.079     1.7  -1-                 h        67Be46,*
 117Te(B+)117Sb           ave   3533.538   16.641    3544.063    13.079      .6   1     62  51 117Te          average
 117I(B+)117Te                  4680      100        4656.932    28.128     -.2  -1-                 H        69La33,*
 117I(B+)117Te                  4610      110        4656.932    28.128      .4  -1-                 H        70Be.A,*
 117I(B+)117Te            ave   4648.326   73.994    4656.932    28.128      .1   1     14  12 117I           average
 117Xe(B+)117I                  6270      300        6253.221    27.585     -.1   U                  M        85Le10,*
 117Csx(IT)117Cs                  50       50                                     3                  m        AHW
*117Ru-u                       Trends from Mass Surface TMS suggest 117Ru   120 keV less bound       g        GAu212*G
*117Ag-133Cs.880               D_M=-5013.3(4.0) uu for gs or 117Agm at 28.6 keV; M-A=-82172.3(3.7) keV  g    Nub211**
*117Te-u                       M-A=-84804(28) keV  for 117Tem 11/2^- at 296.1 keV                     g        Nub211**
*117Cs-133Cs.880               D_M=11900(21) uu    for mixture gs+m at 150#80 keV; M-A=-66418(19) keV  g    Nub211**
*116Cd(d,p)117Cd               Estimated systematic error 0.5 added to statistical error 0.85 keV              AHW   **
*116Sn(3He,d)117Sb             Q-Q(120Sn(3He,d))= 1373(10,Ka), Q(120)=282.1(2.0) keV                          AHW   **
*117Ba(ep)116Xe                F : disagrees with next and with TMS                                  G        GAu212**
*117La(p)116Ba                 Reports also an isomer 117Lam E(p)=933(10) Q(p)=941.1 keV T=10(5) ms,  H       01So02**
*                               ~ not observed in ref. using similar set-up and far greater statistics H      11Li28**
*117La(p)116Ba                 Trends from Mass Surface TMS suggest 117La   100 keV more bound       g        GAu212*G
*117Ag(B-)117Cd                Q-=4260(110); and 4170(50) from 117Agm at 28.6 keV                    g        Nub211**
*117Cd(B-)117In                Q-=2220(20) to 117Inm at 315.303 keV                                  g        Nub211**
*117In(B-)117Sn                E-=740(10) to 7/2^+ level at 711.54; and 1772(5), 1616(5) from                 Ens111**
*                               ~ 117Inm at 315.303 to 1/2^+ gs, 3/2^+ level at 158.56 keV           g        Nub211**
*117Sb(B+)117Sn                E+=570(40) to 3/2^+ level at 158.562 keV                              h        Ens111**
*117Te(B+)117Sb                E+=1810(20) 1750(30) resp, to 1/2^+ level at 719.7 keV                h        Ens111**
*117I(B+)117Te                 E+=3500(50), 3250(50) to 5/2^+ level at 274.4, (3/2)^+ at 325.9 keV   h        Ens111**
*117I(B+)117Te                 Q+=4310(100) assumed to 5/2^+ lvl at 274.4, (3/2)^+ at 325.9 keV      h        Ens111**
*117Xe(B+)117I                 May be lower limit                                                             AHW   **


 118Mo-u                       -34751#    537#                                    2                  g    1.0 S-u211
 118Tc-u                       -46474#    429#                                    2                  g    1.0 S-u211
 118Ru-u                       -61879     196      -61192#      215#        1.4D  D                  KGT3 2.5 16Kn03,*
 118Ru-u                       -61192#    215#                                    2                  g    1.0 S-u212
 118Rh-u                       -69598     290      -69658.884    26.018     -.1   U                  HGT1 1.5 04Ma.A
 118Pd-129Xe.915                 6193.6     4.3      6192.791     2.677     -.2   1     39  39 118Pd HJY1 1.0 11Ha48
 118Ag-133Cs.887                -1540.4     2.7                                   2                  HMA8 1.0 10Br02,*
 C9 H10-118Sn                  176645       7      176643.688     0.536     -.1   U                  mM16 2.5 63Da10
 C9 H10-118Sn                  176637       8      176643.688     0.536      .6   U                  hR13 1.5 83De51
 118Te-u                       -94162      30      -94139.892    19.652      .7R  R  q-q=   -22.108  MGS2 1.0 05Li24
 118I-u                        -86932      30      -86926.000    21.213      .2  -2-                 MGS2 1.0 05Li24
 118I-u                        -86920      30      -86926.000    21.213     -.2  -2-                 MGS2 1.0 05Li24,*
 118I-u                   ave  -86926.000  21.213                                 2                           average
 118Xe-u                       -83785      30      -83821.322    11.142    -1.2R  R  q-q=    36.322  MGS2 1.0 05Li24
 118Xe-133Cs.887                   37      12          42.793    11.142      .5  -2-                 MMA6 1.0 04Di18
 118Xe-133Cs.887                   79      30          42.793    11.142    -1.2  -2- q-q=    36.207  m1.0 1.0  118Xe-C
 118Xe-133Cs.887          ave      42.793  11.142                                 2                           average
 118Csx-133Cs.887               10424      16       10429.000    13.000      .3o  o                  kMA1 1.0 90St25
 118Csx-133Cs.887               10429      13                                     2                   MA1 1.0 99Am05
 118Ba-u                       -66774#    215#                                    2                  g    1.0 S-u211
 118La-u                       -53269#    322#                                    2                  g    1.0 S-u20b
 118Rh-120Sn.983                26476      26                                     2                  HJY1 1.0 07Ha20
 118Pd-120Sn.983                15199.7     7.9     15202.157     2.630      .3  -1-                 HJY1 1.0 07Ha20
 118Pd-120Sn.983                15202.1     3.6     15202.157     2.630      .0  -1-                 HJY1 1.0 11Ha48
 118Pd-120Sn.983          ave   15201.687   3.276   15202.157     2.630      .1   1     64  61 118Pd          average
 118Sn 35Cl-116Sn 37Cl           2814       2        2813.930     0.531     -.0   U                  hH15 4.0 62Ba23
 118Sn-117Sn                    -1338      11       -1347.406     0.139     -.3   U                  hM16 2.5 63Da10
 117Csx-118Csx.496 116Cs.504    -1160     400       -1245#       95#        -.1   U                  MP32 2.5 86Au02
 118Cs(ea)114Te                 10600     200       11055.384    27.557      2.3  U                  h        77Bo28,G
 118Cs(ea)114Te                 10750     200       11055.384    27.557      1.5  U                  h        78Da07,*
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116Cd(t,p)118Cd	5650	20				2				Ald		67Hi01
116Sn(t,p)118Sn	7769	15	7787.704	0.491	1.2	U				hAld		68Bj02
118Sn(p,t)116Sn	-7790	10	-7787.704	0.491	.2	U				hRoc		70Fl08
118Sn(d,3He)117In	-4440	40	-4505.304	4.858	-1.6	U				hSac		69Co03
118Sn(d,3He)117In	-4481	15	-4505.304	4.858	-1.6	U				hMSU		71We01
117Sn(n,g)118Sn	9326.5	2.	9326.419	0.130	-.0	U				H		70Or.A
117Sn(n,g)118Sn	9324.8	2.1	9326.419	0.130	.8	U				HORn		75Sl.A
117Sn(n,g)118Sn	9326.42	0.13	9326.419	0.130	-.0	1	100	97	118Sn	H		02Bo11
117Sn(n,g)118Sn	9327.9	1.1	9326.419	0.130	-1.3	U				HBdn		06Fi.A
117Sn(d,p)118Sn	7090	12	7101.852	0.130	1.0	U				hTal		64No06
118Sn(p,d)117Sn	-7097	15	-7101.852	0.130	-.3	U				hHar		70Ca01
118Cs(ep)117I	4700	300	4740.220	28.563	.1	U				h		78Da07
118Pd(B-)118Ag	4100	200	4165.444	3.542	.3	U				HJyv		89Ko22,*
118Ag(B-)118Cd	7122	100	7147.847	20.158	.3	U				HStu		82Al29,*
118Ag(B-)118Cd	7110	470	7147.847	20.158	.1	U				NStu		82Al29,*
118Ag(B-)118Cd	7155	76	7147.847	20.158	-.1	U				H		95Ap.A
118In(B-)118Sn	4200	400	4424.666	7.740	.6	U				h		61Gl02
118In(B-)118Sn	4200	300	4424.666	7.740	.7	U				h		64Ka10
118In(B-)118Sn	4310	100	4424.666	7.740	1.1	U				h		87Ga.A
118Inm(B-)118Sn	4270	100	4525#	50#	2.5D	D				H		64Ka10,*
118Inm(B-)118Sn	4525#	50#				2				h		S-u128
118Sb(B+)118Sn	3610	50	3656.639	2.975	.9	U				h		61Fi05
118Sn(p,n)118Sb	-4477.7	5.7	-4438.986	2.975	6.8F	F				hTkm		63Ok01,*
118Sn(p,n)118Sb	-4439.0	3.				2				Oak		77Jo03
118Sbn(B+)118Sn	3907	5				2						61Bo13,*
118I(B+)118Te	7080	150	6719.697	26.936	-2.4	U				h		68La18,*
118I(B+)118Te	7068	100	6719.697	26.936	-3.5C	C				m		70Be.A,*
118Xe(B+)118I	3720	110	2891.989	22.320	-7.5F	F				h		70Be.A,*
118Cs(B+)118Xe	9300	1000	9669.690	16.442	.4	U				M		76Da.C
118Csm(IT)118Cs	100#	60#				4				n		S
118Csx(IT)118Cs	5	4				3				h		82Au01,*

*118Ru-u	Trends from Mass Surface TMS suggest 118Ru 640 keV less bound	G	GAu212**
*118Ag-133Cs.887	D_M=-1403.5(2.7) uu for 118Agn at 127.63(0.10) keV; M-A=-79426.3(2.5) keV	g	Nub211**
*118I-u	M-A=-80775(28) keV for 118Ixm 7^- at 188.8 keV	g	Nub211**
*118Cs(ea)114Te	As read from Fig.~2 (p.401)	M	GAu006**
*118Cs(ea)114Te	AHW:Q=11100(500) error not in paper; Qec=9.6 Ba=-1.5 probably	m	GAu002*G
*	~ not from their work; maybe from our tables??	m	GAu002*G
*118Pd(B-)118Ag	Original value 4000(200) corr for new branching ratios		93Ja03**
*118Ag(B-)118Cd	E-=4330(240), 3960(170), 3810(150) reinterpreted as feeding	h	95Ap.A**
*	~ (1) level at 2788.72, (1) at 3224.32, (2,3,4) at 3265.77 keV	h	Ens959**
*118Ag(B-)118Cd	E-=3990(720), 3910(630) reinterpreted as 118Agn at 127.63(0.10) keV	h	95Ap.A**
*	~ to (2,3,4) level at 3181.73, 3381.8 keV	h	Ens959**
*118Inm(B-)118Sn	E-=2000(100) to 4^+ level at 2280.342 level, and other E-	h	Ens959**
*118Inm(B-)118Sn	Trends from Mass Surface TMS suggest 118Inm 255 keV less bound	H	GAu128**
*118Sn(p,n)118Sb	F : see note added in proof to ref.	h	77Jo03**
*118Sbn(B+)118Sn	p+=16(1)e-4 to 7^- level at 2574.91 keV, recalculated Q	h	Ens959**
*118I(B+)118Te	E+=5450(150) to 2^+ level at 605.70 keV	h	Ens959**
*	~ ; and 4900(300), 4300(300) from 118Ixm (7-) at 188.8(0.7) to 4+ at 120	g	Nub211*W
*	~ If spin 7^-, no E+(118Ixm) to 4+ level at 1206.41 keV	n	AHW953*W
*118I(B+)118Te	E+=5440(100) to 2^+ level at 605.70 keV	h	Ens959**
*	~ E+ not in 70Be but from Lederer-Shirley (PrvCom?)	n	AHW953*W
*118I(B+)118Te	Better not use any 70Be.A!	m	AHW95b*W
*118Xe(B+)118I	F : probably contaminated by isobars	h	GAu934**
*118Csx(IT)118Cs	Original 24(19) corr for new estimated IT=100(60)#	g	Nub211**

119Mo-u	-28535#	322#				2				g	1.0	S-u211
119Tc-u	-43124#	537#				2				g	1.0	S-u211
119Ru-u	-55910#	322#				2				g	1.0	S-u211
119Rh-u	-67698	268	-67443.049	10.000	.6	U				HGT1	1.5	04Ma.A
119Rh-129Xe.922	20349	10				2				HJY1	1.0	11Ha48
119Pd-u	-76844	208	-76658.861	8.854	.6	U				HGT1	1.5	04Ma.A
119Ag-133Cs.895	188	16	190.805	15.784	.2	1	97	97	119Ag	HMA8	1.0	10Br02,*
C9 H11-119Sn	182778	7	182764.084	0.779	-.8	U				mM16	2.5	63Da10
C9 H11-119Sn	182762	8	182764.084	0.779	.2	U				hR13	1.5	83De51
119Sn-u	-96726	39	-96688.733	0.779	1.0	U				GGR1	1.0	19Mi18,*
119Sb-u	-96063	18	-96055.938	7.513	.4	1	17	17	119Sb	GGR1	1.0	19Mi18

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 119Te-u                         -93731      190      -93594.301     7.814     .7  U                 GGR1 1.0 19Mi18,*
 119I-u                          -89926       30      -89939.089    23.303    -.4 -2-                MGS2 1.0 05Li24
 119I-u                          -89959       37      -89939.089    23.303     .5 -2-                GGR1 1.0 19An10
 119I-u                      ave -89939.089   23.303                               2                           average
 119Xe-u                         -84601       30      -84589.358    11.142     .4  1     14  14 119Xe gGS2 1.0 05Li24
 119Xe-u                         -84613       61      -84589.358    11.142     .4  U                 GGR1 1.0 19An10
 119Xe-133Cs.895                     33       12          31.137    11.142    -.2  1     86  86 119Xe MMA6 1.0 04Di18
 119Cs-u                         -77532       57      -77622.672    14.965   -1.6  U                 hGS2 1.0 05Li24,*
 119Csx-133Cs.895                  7011       16        7015.000     9.192    .2o  o                 kMA1 1.0 90St25
 119Csx-133Cs.895                  7018       13        7015.000     9.192    -.2 -2-                 MA1 1.0 99Am05
 119Csx-133Cs.895                  7012       13        7015.000     9.192     .2 -2-                NMA4 1.0 99Am05
 119Csx-133Cs.895            ave   7015.000    9.192                               2                           average
 119La-u                         -59066#     322#                                  2                 g    1.0 S-u211
 119Ce-u                         -47043#     537#                                  2                 g    1.0 S-u211
 119Sn 35Cl-117Sn 37Cl             3306        2        3307.355     0.605     .2  U                 hH15 4.0 62Ba23
 119Pd-120Sn.992                  20356.2      8.8                                 2                 HJY1 1.0 07Ha20
 119Sn-118Sn                       1709       12        1704.636     0.586    -.1  U                 hM16 2.5 63Da10
 119I-118I                        -2747      155       -3013.089    31.512   -1.1  U                 MCR2 1.5 92Sh.A,*
 119I-117I                        -3570      155       -3584.739    35.997    -.1  U                 MCR2 1.5 92Sh.A,*
 118Csx-119Csx.661 116Cs.339        530       80         411#       37#       -.6  U                 MP32 2.5 86Au02
 118Csx-119Csx.496 117Csx.504       870       50         938.321    42.298     .5  U                 nP22 2.5 82Au01
 118Csx-119Csx.496 117Csx.504       980       40         938.321    42.298    -.4  U                 nP32 2.5 86Au02
 119Sn(t,a)118In-118Sn()117In      -127        6        -127.000     6.000    -.0  1    100 100 118In  McM      85Pi03
 118Sn(n,g)119Sn                   6484.6      1.5      6483.460     0.546    -.8 -1-                 ORn      78Ra16
 118Sn(n,g)119Sn                   6483.3      0.6      6483.460     0.546     .3 -1-                MBdn      06Fi.A
 118Sn(d,p)119Sn                   4238       12        4258.893     0.546    1.7  U                 hMIT      67Sp09
 118Sn(n,g)119Sn             ave   6483.479    0.557    6483.460     0.546    -.0  1     96  93 119Sn          average
 118Sn(3He,d)119Sb                 -388       10        -381.808     6.987     .6  1     49  49 119Sb mVUn      78Ka12,*
 119Ba(ep)118Xe                    6200      200                                   3                           78Bo20
 119Ag(B-)119Cd                    5350       40        5331.180    35.926    -.5  1     81  78 119Cd  Stu      82Al29
 119Cd(B-)119In                    3797       80        3721.720    38.088    -.9  1     23  22 119Cd  Stu      82Al29,*
 119In(B-)119Sn                    2387      100        2366.326     7.338    -.2  U                 h         60Yu01,*
 119In(B-)119Sn                    2413      200        2366.326     7.338    -.2  U                 h         61Gl06,*
 119Sb(e)119Sn                      579       20         589.445     6.994     .5 -1-                          57Ol05,*
 119Sn(p,n)119Sb                  -1369       15       -1371.792     6.994    -.2 -1-                 Oak      71Ke21
 119Sb(e)119Sn               ave    583.898   12.000     589.445     6.994     .5  1     34  34 119Sb          average
 119Te(B+)119Sb                    2293        2                                   2                           60Ko12,*
 119I(B+)119Te                     3630      100        3404.808    22.894   -2.3  U                 M         69La33,*
 119I(B+)119Te                     3370      100        3404.808    22.894     .3  U                 M         70Be.A,W
 119Xe(B+)119I                     4990      120        4983.243    24.060    -.1  U                 M         70Be.A
 119Cs(B+)119Xe                    6260      290        6489.427    17.379     .8  U                 M         83Pa.A,*
 119Csm(IT)119Cs                     50#      30#                                  4                 n         S
 119Csx(IT)119Cs                     16       11                                   3                 N         82Au01,*
*119Ag-133Cs.895            D_M=198.4(5.7) uu   for gs or 119Agm at 20#20 keV; M-A=-78638.7(5.3) keV g         Nub211**
*119Sn-u                    could be mixture of gs+iso, not corrected                           G         WgM209**
*119Te-u                    could be mixture of gs+iso, not corrected                           G         WgM209**
*119Cs-u                    M-A=-72195(48) keV  for mixture gs+m at 50#30 keV                   g         Nub211**
*119Cs-u                    Not necessarily same mixture as Csx                                 m         AHW036*W
*119I-118I                  From 118I/119I=0.99161584(117), originally D_M=-3039(139) uu, revised by          GAu92c**
*                            ~ authors: --2849(139) uu for 118I gs+m mixture at 188.8 keV       g         Nub211**
*119I-117I                  From 117I/119I=0.98321059(130)                                                GAu92c**
*118Sn(3He,d)119Sb          Q-Q(120Sn(3He,d)121Sb)=-673(10), Q(120)=285.1(2.1) keV              m         AHW038**
*119Cd(B-)119In             Q-=3800(90); and 3940(80) from 119Cdm at 146.54 keV                 g         Nub211**
*119In(B-)119Sn             E-=1600(100) to 7/2^+ level at 787.01 keV                           h         Ens09a**
*119In(B-)119Sn             E-=2700(200) from 119Inm at 311.37(0.03) to 3/2^+ level at 23.871 keV   h     Ens09a**
*119Sb(e)119Sn              IBE=526(20) to 3/2^+ level at 23.871 keV                            h         Ens09a**
*119Te(B+)119Sb             E+=627(2) to 1/2^+ level at 644.03 keV                              h         Ens09a**
*119I(B+)119Te              E+=2350(100) to 3/2^+ level at 257.484 keV                          h         Ens09a**
*119I(B+)119Te              ? It seems not certain that this is not the Q to the 257.5 level    n         AHW956*W
*119Cs(B+)119Xe             E+=4980(290) to 9/2^+ level at 257.84 keV                           h         Ens09a**
*119Csx(IT)119Cs            Original 33(22) corr for new estimated IT=50(30)#                   N         GAu94b**


 120Tc-u                         -37574#     537#                                  2                 g    1.0 S-u211
 120Ru-u                         -53377#     429#                                  2                 g    1.0 S-u211
 120Rh-u                         -62931#     215#                                  2                 g    1.0 S-u211
 120Pd-129Xe.930                  13107.0      4.4     13105.549     2.465    -.3  1     31  31 120Pd HJY1 1.0 11Ha48
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120Ag-133Cs.902		4067.1	4.8				2				HMA8	1.0	10Br02
120Ag-133Cs.902		4086	12	4067.100	4.800	-1.6o	o				HMA8	1.0	10Br02
120Cd-133Cs.902		-4849.6	4.0				2				HMA8	1.0	10Br02
C9 H12-120Sn		191709	11	191697.825	0.988	-.4	U				hM16	2.5	63Da10
C9 H12-120Sn		191705	8	191697.825	0.988	-.6	U				hR13	1.5	83De51
13C 35Cl2 37Cl-120Sn		4758	3	4760.233	0.992	.2	U				HH14	4.0	62Ba24
120Sb-u		-94796	76	-94919.692	7.728	-1.6	U				hGS2	1.0	05Li24,*
C9 H12-120Te		189879	9	189834.599	1.880	-2.0	U				HM16	2.5	63Da10
C9 H12-120Te		189868	8	189834.599	1.880	-2.8	U				hR13	1.5	83De51
120I-u		-90222	104	-89906.266	16.213	3.0C	C				hGS2	1.0	05Li24,*
120Xe-u		-88231	30	-88215.732	12.687	.5R	R	q-q=	-15.268		MGS2	1.0	05Li24
120Xe-133Cs.902		-2930	14	-2933.398	12.687	-.2	-2-				MMA6	1.0	04Di18
120Xe-133Cs.902		-2949	30	-2933.398	12.687	.5	-2-	q-q=	-15.602		m1.0	1.0	120Xe-C
120Xe-133Cs.902	ave	-2933.398	12.687				2						average
120Cs-u		-79342	54	-79322.723	10.703	.4	U				MGS2	1.0	05Li24,*
120Csx-133Cs.902		5947	16	5964.979	9.804	1.1o	o				kMA1	1.0	90St25
120Csx-133Cs.902		5956	12	5964.979	9.804	.7	-2-				MA1	1.0	99Am05
120Csx-133Cs.902		5983	17	5964.979	9.804	-1.1	-2-				NMA4	1.0	99Am05
120Csx-133Cs.902	ave	5964.979	9.804				2						average
120La-u		-61804#	322#				2				k	1.0	S-u168,*
120Ce-u		-53387#	537#				2				g	1.0	S-u211
120Sn 35Cl-118Sn 37Cl		3546	2	3546.051	1.093	.0	U				hH15	4.0	62Ba23
120Pd-120Sn		22317.1	9.7	22349.188	2.379	3.3B	B				HJY1	1.0	07Ha20
120Pd-120Sn		22348.6	2.8	22349.188	2.379	.2	1	72	69	120Pd	HJY1	1.0	11Ha48
120Te-120Sn		1842.2	1.7	1863.226	1.887	12.4B	B				kCP1	1.0	09Sc19
120Te-120Sn		1839.7	1.7	1863.226	1.887	13.8B	B				kCP1	1.0	09Sc19,G
120Sn-119Sn		-1113	11	-1108.709	1.191	.2	U				hM16	2.5	63Da10
118Csx-120Csx.328 117Csx.672		460	120	479.221	55.168	.1	U				nP22	2.5	82Au01
119Csx-120Csx.661 117Csx.339		-940	50	-927.755	29.063	.1	U				nP22	2.5	82Au01
119Csx-120Csx.496 118Csx.504		-1220	30	-1166.968	11.449	.7	U				nP22	2.5	82Au01
119Csx-120Csx.496 118Csx.504		-1180	60	-1166.968	11.449	.1	U				hP32	2.5	86Au02
119Csx-120Csx.496 118Csx.504		-1200	30	-1166.968	11.449	.4	U				nP32	2.5	86Au02
119Csx-120Csx.496 118Csx.504		-1270	50	-1166.968	11.449	.8F	F				hP32	2.5	86Au02,*
120Cs(ea)116Te		9200	300	8950.228	26.179	-.8	U				M		76Jo.A
118Sn(t,p)120Sn		7107	15	7105.737	1.016	-.1	U				hAld		68Bj02
120Sn(p,t)118Sn		-7109	10	-7105.737	1.016	.3	U				hRoc		70Fl08
120Te(p,t)118Te		-9343	24	-9332.242	18.222	.4	-2-				HWin		74De31,*
120Te(p,t)118Te		-9317.6	28.	-9332.242	18.222	-.5	-2-	q-q=	15.719		H		118Te-C
120Te(p,t)118Te	ave	-9332.242	18.222				2						average
120Sn(d,3He)119In		-5160	40	-5194.578	7.253	-.9	U				hSac		69Co03
120Sn(d,3He)119In		-5169	20	-5194.578	7.253	-1.3	1	13	13	119In	MSU		71We01
120Sn(t,a)119In-118Sn()117In		-692	6	-689.274	5.751	.5	1	92	86	119In	McM		85Pi03
119Sn(d,p)120Sn		6890	12	6879.508	1.110	-.9	U				hTal		64No06
120Sn(p,d)119Sn		-6889	15	-6879.508	1.110	.6	U				hHar		70Ca01
120Sn(d,t)119Sn		-2847.0	2.5	-2846.844	1.110	.1	1	20	12	120Sn	SPa		75Be09
120Pd(B-)120Ag		5500	100	5371.908	5.026	-1.3	U				HJyv		94Jo.A
120Ag(B-)120Cd		8200	100	8305.853	5.820	1.1	U				HStu		82Al29
120Ag(B-)120Cd		8450	100	8305.853	5.820	-1.4	U				H		95Ap.A,W
120In(B-)120Sn		5300	170	5370.000	40.000	.4	U				hStu		78Al18
120In(B-)120Sn		5370	40				2						87Ga.A
120Inm(B-)120Sn		5280	200	5420#	50#	.7D	D				M		64Ka10,*
120Inm(B-)120Sn		5340	170	5420#	50#	.5D	D				MStu		78Al18,*
120Inm(B-)120Sn		5420#	50#				2				m		S-u037
120Sb(B+)120Sn		2720	20	2680.608	7.140	-2.0	U	*			h		50Bl92
120Sb(B+)120Sn		2770	30	2680.608	7.140	-3.0B	B				k		69Ki15
120Sn(p,n)120Sb		-3462.9	7.1				2				Tkm		63Ok01
120I(B+)120Te		5615	15				2						70Ga32,*
120I(B+)120Te		5608	150	5615.000	15.000	.0	U				H		68La18,*
120Xe(B+)120I		1960	40	1574.722	19.176	-9.6B	B				h		74Mu10,*
120Cs(B+)120Xe		7300	500	8283.786	15.461	2.0	U				h		76Ba.A,*
120Cs(B+)120Xe		7800	1000	8283.786	15.461	.5	U				h		76Da.C,*
120Cs(B+)120Xe		7380	230	8283.786	15.461	3.9C	C				h		83Pa.A,*
120Cs(B+)120Xe		8210	200	8283.786	15.461	.4	U				hIRS		93Al03
120Csm(IT)120Cs		100#	60#				4				n		S
120Csx(IT)120Cs		5	4				3				N		82Au01,*
120Ba(B+)120Cs		5000	300				4						92Xu04

*120Sb-u M-A=-88302(50) keV for mixture gs+m at 0#100 keV g Nub211**

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*120I-u                       M-A=-83881(28) keV  for mixture gs+n at 320(15) keV                     g         Nub211**
*120Cs-u                      M-A=-73856(29) keV  for mixture gs+m at 100#60 keV                       g         Nub211**
*120Cs-u                      Not necessarily same mixture                                             m         AHW036*W
*120La-u                      p-stable 120La                                                                     84Ni03**
*120Te-120Sn                  shrinks this D_M by 22 keV, increases chi2 very strongly (913 to 950) ; ph         GAu101*G
*119Csx-120Csx.496 118C       F : rejection based on line-shape analysis                               h         86Au02**
*120Te(p,t)118Te              Original error 12; added systematic error 21 keV                         H         GAu092**
*120Te(p,t)118Te              AHW uses -9394(12)                                                                 GAu921*G
*120Ag(B-)120Cd               Insufficient information                                                 m         AHW006*W
*120Inm(B-)120Sn              E-=3100(200),2200(200) to 4^+ levels at 2194.299,3057.946 keV            h         Ens029**
*120Inm(B-)120Sn              E-=3100(170) to 4^+ level at 2194.299 keV, and other E-                  h         Ens029**
*120Inm(B-)120Sn              Trends from Mass Surface TMS suggest 120Inm  105 keV less bound          M         GAu037**
*120I(B+)120Te                E+=4595(15), 4030(20) to gs, 2^+ level at 560.438 keV                    h         Ens029**
*120I(B+)120Te                Expresses some doubt about correctness                                   h         Ens029*W
*120I(B+)120Te                E+=3130(150) from 120Ixn at 320(15) to 6^+ level at 1776.23 keV          h         Ens029**
*                              ~ and 3750(150) to ??                                                   m         AHW037*W
*                              ~ Careful: some other 68La18 results not nice (118I)                    m         AHW87c*W
*120Xe(B+)120I                p+=0.07(0.01) to 1^+ level at 25.1 keV, recalculated Q                   h         Ens029**
*120Cs(B+)120Xe               E+=6000(500) 6500(1000) 6040(230), resp, to 2^+ level at 322.61 keV      h         Ens029**
*120Csx(IT)120Cs              Original 24(19) corr for new estimated IT=100(60)#                       g         Nub211**


 121Tc-u                       -33860#     537#                                        2                   g    1.0 S-u211
 121Ru-u                       -47902#     429#                                        2                   g    1.0 S-u211
 121Rh-u                       -60580      320      -60387.000   665.000      .2   Z                       k    2.5 S-u095
 121Rh-u                       -60387      266      -60387.000  \665.000           2                       KGT3 2.5 16Kn03
 121Pd-u                       -71820      311      -71049.658     3.600     1.7   U                       HGT1 1.5 04Ma.A
 121Ag-133Cs.910                 6164       13                                     2                       HMA8 1.0 10Br02,*
 121Ag-133Cs.910                 6170       17        6164.000    13.000     -.4o  o                       HMA8 1.0 10Br02,*
 121Cd-130Xe.931                 2796.2      3.0      2796.458     2.085      .1  -2-                      HJY1 1.0 12Ha25
 121Cd-130Xe.931                 2796.7      2.9      2796.458     2.085     -.1  -2-                      HJY1 1.0 13Ka08,*
 121Cd-130Xe.931          ave    2796.458    2.085                                 2                            average
 C9 H13-121Sb                  197910.5      3.7    197914.060     2.691      .4   U                       HM16 2.5 63Da10
 C9 H13-121Sb                  197910        8      197914.060     2.691      .3   U                       hR13 1.5 83De51
 121Sb-C 35Cl 37Cl2              3162        3        3153.523     2.693     -.7   U                       mH14 4.0 62Ba24
 121Sb-u                       -96180       30      -96188.646     2.691     -.3   U                       MGS2 1.0 05Li24
 121I-u                        -92609       30      -92588.504     5.070      .7   U                       HGS2 1.0 05Li24
 121Xe-u                       -88562       30      -88546.987    10.996      .5R  R  q-q=  -15.013  MGS2 1.0 05Li24
 121Xe-133Cs.910                -2495       13       -2508.267    10.996    -1.0  -1-                      MMA6 1.0 04Di18
 121Xe-133Cs.910                -2523       30       -2508.267    10.996      .5  -1- q-q=  -14.733  m1.0 1.0  121Xe-C
 121Xe-133Cs.910          ave   -2499.427   11.928   -2508.267    10.996     -.7   1    85   85 121Xe        average
 121Cs-133Cs.910                 3247       25        3265.956    15.341      .8o  o                       hMA1 1.0 90St25,*
 121Cs-133Cs.910                 3248       25        3265.956    15.341      .7   1    38   38 121Cs hMA1 1.0 99Am05,*
 121Cs-u                       -82821       38      -82772.764    15.341     1.3   1    16   16 121Cs MGS2 1.0 05Li24,*
 121La-u                       -66764#     322#                                    2                       k    1.0 S-u168
 121Ce-u                       -56565#     430#                                    2                       k    1.0 S-u169
 121Pd-129Xe.938                18265.9      3.6                                   2                       HJY1 1.0 11Ha48,*
 121Sb 35Cl-119Sn 37Cl           3452        2        3450.212     2.787     -.2   U                       HH14 4.0 62Ba24
 119Csx-121Csx.328 118Csx.672   -1080       30       -1046.838    12.977      .4   U                       nP22 2.5 82Au01
 120Csx-121Csx.661 118Csx.339     280       30         239.678    14.745     -.5   U                       nP22 2.5 82Au01
 120Csx-121Csx.496 119Csx.504     790       30         769.983    12.961     -.3   U                       hP22 2.5 82Au01
 120Csx-121Csx.496 119Csx.504     860       50         769.983    12.961     -.7   U                       hP32 2.5 86Au02
 120Csx-121Csx.496 119Csx.504     813       14         769.983    12.961    -1.2   U                       MP32 2.5 86Au02
 120Sn(n,g)121Sn                 6170.3      2.       6170.203     0.339     -.0   U                       M        76Ca24
 120Sn(n,g)121Sn                 6170.5      0.7      6170.203     0.339     -.4  -1-                               81Ba53
 120Sn(n,g)121Sn                 6170.1      0.4      6170.203     0.339      .3  -1-                      MBdn     06Fi.A
 120Sn(d,p)121Sn                 3946.2      1.7      3945.637     0.339     -.3  -1-                       SPa     75Be09
 120Sn(n,g)121Sn          ave    6170.221    0.340    6170.203     0.339     -.1   1    99   97 121Sn         average
 121Sb(g,n)120Sb                -9310       60       -9253.341     7.566      .9   U                       hPhi     60Ge01
 121Sb(g,n)120Sb                -9240       25       -9253.341     7.566     -.5   U                       hMcM     79Ba06
 120Te(3He,d)121I               -1320.5      4.4     -1321.015     4.388     -.1   1    99   99 121I   Hei      78Sz09
 121Ba(ep)120Xe                  4200      300        4138.616   142.389     -.2R  R  q-q=   61.384  m        78Bo20
 121Pr(p)120Ce                    837       50         889.600    10.000     1.1F  F                       H        90Bo39,*
 121Pr(p)120Ce                    889.6     10.                                3                       HArp     05Ro19,*
 121Ag(B-)121Cd                  6400      120        6671.006    12.264     2.3   U                       HStu     82Al29
 121Cd(B-)121In                  4780       80        4760.756    27.488     -.2   U                       HStu     82Al29,*
 121In(B-)121Sn                  3426      200        3362.033    27.410     -.3   U                       h        60Yu01,*
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 121In(B-)121Sn                3406       50         3362.033     27.410     -.9R  R  q-q=   43.967   Stu       78Al18,*
 121Sn(B-)121Sb                 383        5          402.530      2.524     3.9B  B                   H         49Du15
 121Sn(B-)121Sb                 383.4      3.         402.530      2.524     6.4B  B                   H         68Sn01,*
 121Te(B+)121Sb                1080       30         1056.047     25.759     -.8   1     74  74 121Te            75Me23,*
 121I(B+)121Te                 2364       50         2297.464     25.986    -1.3   1     27  26 121Te            53Fi.A,*
 121I(B+)121Te                 2384      100         2297.464     25.986     -.9   U                   m         65Bu03,*
 121Xe(B+)121I                 3790      100         3764.648     11.279     -.3   U                   h         60Mo.A
 121Xe(B+)121I                 4160      140         3764.648     11.279    -2.8   U                   h         70Be.A
 121Cs(B+)121Xe                5650      490         5378.655     13.979     -.6   U                   h         75We23
 121Cs(B+)121Xe                5400       20         5378.655     13.979    -1.1  -1-                  h         81So06
 121Cs(B+)121Xe                5210      220         5378.655     13.979      .8   U                   h         83Pa.A,*
 121Cs(B+)121Xe                5300      100         5378.655     13.979      .8   U                   hIRS      93Al03,*
 121Cs(B+)121Xe                5400       40         5378.655     13.979     -.5  -1-                  hJAE      96Os04,*
 121Cs(B+)121Xe          ave   5400.000   17.889     5378.655     13.979    -1.2   1     61  46 121Cs            average
 121Csx(IT)121Cs                 46        8                                       2                   H         GAu931
 121Ba(B+)121Cs                6340      160         6357.495    141.176      .1  -2-                  MJAE      96Os04
 121Ba(B+)121Cs                6419      300         6357.495    141.176     -.2  -2- q-q=   61.505   H          120Xe+1
 121Ba(B+)121Cs          ave   6357.495  141.176                                   2                             average
*121Ag-133Cs.910            D_M=6175.1(5.0) uu  for gs or 121Agm at 20#20 keV; M-A=-74392.5(4.7) keV g         Nub211**
*121Ag-133Cs.910            D_M=6180(12) uu     for gs or 121Agm at 20#20 keV; M-A=-74388(11) keV    g         Nub211**
*121Cd-130Xe.931            D_M=3027.4(2.9) uu  for 121Cdm at 214.86(0.15) keV; M-A=-80858.7(2.7) keVg         Nub211**
*121Cs-133Cs.910            D_M=3284(16) uu     for mixture gs+m at 68.5 keV                         g         Nub211**
*121Cs-133Cs.910            D_M=3285(13) uu     for mixture gs+m at 68.5 keV; M-A=-77084(12) keV     g         Nub211**
*121Cs-u                    M-A=-77113(29) keV  for mixture gs+m at 68.5 keV                         g         Nub211**
*121Pd-129Xe.938            Taken as low-spin isomer (see also 102Y and 114Tc doublets in same paper)H         GAu11c**
*121Pr(p)120Ce              F : misassigned according to ref.                                        H         05Ro19**
*121Pr(p)120Ce              E(p)=882(10); in publication Q(p)=900(10) keV                            h         WgM10c**
*121Pr(p)120Ce              Trends from Mass Surface TMS suggest 121Pr   100 keV less bound          G         GAu212**
*121Cd(B-)121In             Q-=4890(150); and 4960(80) from 121Cdm at 214.86 keV                     g         Nub211**
*121In(B-)121Sn             E-=3700(200) from 121Inm at 313.68(0.07) to gs and 1/2^+ lvl at 60.34 keVh         Ens106**
*121In(B-)121Sn             E-=2480(50) to 7/2^+ level at 925.59 keV                                 h         Ens106**
*121Sn(B-)121Sb             E-=383(3); and 354(5) from 121Snm at 6.31 to 7/2^+ level at 37.1298 keV  h         Ens106**
*121Te(B+)121Sb             p+=0.024(0.011) gives Q+=315(30), recalculated Q+                                  AHW900**
*                            ~ from 121Tem at 293.974 to 7/2^+ level at 37.1298 keV                            Ens106**
*121I(B+)121Te              E+=1130(50) 1150(100) resp, to 3/2^+ level at 212.191 keV                h         Ens106**
*121Cs(B+)121Xe             E+=3730(220) to 7/2^+ level at 459.59 keV                                h         Ens106**
*121Cs(B+)121Xe             Q+=5370(100) 5470(40) resp, from 121Csm at 68.5 keV                      h         Ens106**


 122Tc-u                     -28240#     322#                                      2                   g    1.0 S-u20b
 122Ru-u                     -44853#     537#                                      2                   g    1.0 S-u20c
 122Rh-u                     -55695#     322#                                      2                   g    1.0 S-u20c
 122Pd-u                     -69308      397       -69368.307     21.000     -.1   U                   HGT1 1.5 04Ma.A
 122Ag-u                     -76280      110       -76335.554     41.000     -.2o  o                   HGT2 2.5 08Kn.A,*
 122Ag-u                     -76340      130       -76335.554     41.000      .0   U                   HGT2 2.5 08Su19,*
 122Ag-133Cs.917              10365       41                                       2                   HMA8 1.0 10Br02,*
 122Cd-133Cs.917                155.1      4.7        159.604      2.468     1.0   1     28  28 122Cd HMA8 1.0 10Br02,G
 C8 H12 N-122Sn              193541        8       193528.893      2.628     -.6   U                   hM16 2.5 63Da10
 C8 H12 N-122Sn              193558        8       193528.893      2.628    -2.4   U                   hR13 1.5 83De51
 C8 H12 N-122Te              193925        9       193929.678      1.457      .2   U                   hM16 2.5 63Da10
 C8 H12 N-122Te              193926        8       193929.678      1.457      .3   U                   hR13 1.5 83De51
 122Xe-u                     -91637       30       -91632.344     11.928      .2R  R  q-q=   -4.656   MGS2 1.0 05Li24
 122Xe-133Cs.917              -4931       13        -4931.790     11.928     -.1  -2-                  MMA6 1.0 04Di18
 122Xe-133Cs.917              -4936       30        -4931.790     11.928      .1  -2- q-q=   -4.210   m1.0 1.0  122Xe-C
 122Xe-133Cs.917         ave  -4931.790   11.928                                   2                             average
 122Cs-133Cs.917               2812       48         2808.698     36.164     -.1o  o                   hMA1 1.0 90St25,*
 122Cs-133Cs.917               2805       48         2808.698     36.164      .1   1     57  57 122Cs HMA1 1.0 99Am05,*
 122Cs-u                     -83887       55       -83891.855     36.164     -.1   1     43  43 122Cs hGS2 1.0 05Li24,*
 122Csn-133Cs.917              2952       16         2959.005      9.804      .4o  o                   kMA1 1.0 90St25
 122Csn-133Cs.917              2961       12         2959.005      9.804     -.2  -2-                  hMA1 1.0 99Am05
 122Csn-133Cs.917              2955       17         2959.005      9.804      .2  -2-                  hMA4 1.0 99Am05
 122Csn-133Cs.917        ave   2959.005    9.804                                   2                             average
 122Ba-u                     -80096       30                                       2                   MGS2 1.0 05Li24
 122La-u                     -69290#     320#                                      2                   m    1.0 S-u035
 122Ce-u                     -62130#     430#                                      2                   h    1.0 S-u127
 122Pr-u                     -48073#     537#                                      2                   k    1.0 S-u169
 122Cd-130Xe.938               3969.0      2.9        3967.285      2.468     -.6   1     72  72 122Cd HJY1 1.0 12Ha25
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 122Pd-129Xe.946                   20709        21                                    2                 HJY1 1.0 11Ha48
 122Sn 35Cl-120Sn 37Cl              4196         2       4193.061     2.523     -.4   U                 hH15 4.0 62Ba23
 119Csx-122Csx.244 118Csx.756      -1600        80      -1511.448    15.087      .4   U                 hP32 2.5 86Au02
 120Csx-122Csx.492 118Csx.508       -724        27       -693.884    20.194      .4   U                 nP32 2.5 86Au02
 120Csx-122Csx.328 119Csx.672        350        50        321.490    15.616     -.2   U                 hP22 2.5 82Au01
 120Csx-122Csx.328 119Csx.672        360        17        321.490    15.616     -.9   U                 mP32 2.5 86Au02
 121Csx-122Csx.496 120Csx.504      -1100        40      -1066.121    24.096      .3   U                 hP32 2.5 86Au02
 121Csx-122Csx.496 120Csx.504      -1169        15      -1066.121    24.096     2.7   U                 hP32 2.5 86Au02
 122Sn(p,t)120Sn                   -6504        15      -6503.052     2.349      .1   U                 hRoc     70Fl08
 122Te(p,t)120Te                   -8560        24      -8611.965     1.107    -2.2   U                 HWin     74De31,*
 122Te(p,t)120Te-132Ba()130Ba        227.0       0.2      227.005     0.200      .0   1   100  98 120Te H        08Su14
 122Te(p,t)120Te-144Sm()142Sm       2032.6       0.4     2032.575     0.400     -.1   1   100  97 142Sm H        09Bu.A
 122Sn(d,3He)121In                 -5910        50      -5900.856    27.309      .2  -2-                 Sac      69Co03
 122Sn(d,3He)121In                 -5861        43      -5900.856    27.309     -.9  -2-                 MSU      71We01
 122Sn(d,3He)121In                 -5945.6      50.     -5900.856    27.309      .9  -2- q-q=  -44.744  H         121Sn-0
 122Sn(d,3He)121In          ave    -5900.856    27.309                                2                          average
 122Sn(p,d)121Sn                   -6587        15      -6590.078     2.344     -.2   U                 hHar     70Ca01
 122Sn(d,t)121Sn                   -2558.8       3.0    -2557.415     2.344      .5   1    61  58 122Sn  SPa     75Be09
 121Sb(n,g)122Sb                    6806.4       0.3     6806.366     0.134     -.1  -1-                H        72Sh.A,Z
 121Sb(n,g)122Sb                    6806.36      0.15    6806.366     0.134      .0  -1-                MBdn     06Fi.A
 121Sb(n,g)122Sb            ave     6806.368     0.134   6806.366     0.134     -.0   1   100  96 121Sb          average
 122In(B-)122Sn                     6440       200       6368.592    50.000     -.4   U                 h        71Ta07,*
 122In(B-)122Sn                     6510       230       6368.592    50.000     -.6   U                 hStu     78Al18
 122Sn(t,3He)122In                 -6350        50                                    2                  LAl     78Aj01
 122Inn(B-)122Sn                    6736       200       6655.337   133.793     -.4  -2-                         71Ta07,*
 122Inn(B-)122Sn                    6590       180       6655.337   133.793      .4  -2-                 Stu     78Al18
 122Inn(B-)122Sn            ave     6655.337   133.793                                2                          average
 122Sb(B+)122Sn                     1587        25       1605.748     3.213      .7   U                 h        58Pe17
 122Sb(B-)122Te                     1970         5       1979.077     2.127     1.8  -1-                K        55Fa33
 122Sb(B-)122Te                     1980         3       1979.077     2.127     -.3  -1-                         68Hs02
 122Sb(B-)122Te             ave     1977.353     2.572   1979.077     2.127      .7   1    68  68 122Sb          average
 122I(B+)122Te                      4140        40       4234.000     5.000     2.3   U                 h        54Ma75
 122I(B+)122Te                      4140        40       4234.000     5.000     2.3   U                 h        60Mo.A
 122I(B+)122Te                      4234         5                                    2                          77Re.A
 122Cs(B+)122Xe                     7150       700       7210.220    35.472      .1   U                 h        75We23,*
 122Cs(B+)122Xe                     7050       180       7210.220    35.472      .9   U                 M        83Pa.A,*
 122Cs(B+)122Xe                     7000       150       7210.220    35.472     1.4   U                 MIRS     93Al03
 122Cs(B+)122Xe                     7080        50       7210.220    35.472     2.6B  B                 kJAE     96Os04
 122Csn(B+)122Xe                    6950       250       7350.229    14.382     1.6   U                 h        83Pa.A,*
 122Csn(B+)122Xe                    7300       150       7350.229    14.382      .3   U                 hIRS     93Al03
 122Csx(IT)122Cs                      14         7                                    2                 h        82Au01,*
*122Ag-u                          M-A=-71014(94) keV  for mixture gs+m at 80#(50#) keV                  g        Nub211**
*122Ag-u                          M-A=-71065(120) keV for mixture gs+m at 80#(50#) keV                  g        Nub211**
*122Ag-133Cs.917                  D_M=10408(18) uu    for mixture gs+m at 80#(50#) keV; M-A=-71066(17) keV g     Nub211**
*122Cd-133Cs.917                  Conflicting seriously with 124Sn(18O,20Ne)122Cd                       h        GAu08c*G
*122Cs-133Cs.917                  D_M=2887(12) uu     for mixture gs+n at 140(30) keV                   g        Nub211**
*122Cs-133Cs.917                  D_M=2880(12) uu     for mixture gs+n at 140(30) keV; M-A=-78078(12) keV  g     Nub211**
*122Cs-u                          M-A=-78070(28) keV  for mixture gs+m at 140(30) keV                   g        Nub211**
*122Te(p,t)120Te                  Original error 12; added systematic error 21 keV                      H        GAu092**
*122In(B-)122Sn                   E-=5300(200) to 2^+ level at 1140.51 keV                              h        Ens074**
*122Inn(B-)122Sn                  E-=4400(200) to 4^+ level at 2331.09 keV                              h        Ens074**
*122Cs(B+)122Xe                   E+=5800(700) 5690(180) resp, to 2^+ level at 331.28 keV               h        Ens074**
*122Csn(B+)122Xe                  E+=3710(250) to 8^+ level at 2217.69 keV                              h        Ens074**
*122Csx(IT)122Cs                  Original was 45(33); revised using 122Csn=140(30) keV                 g        Nub211**
*                                  ~ would for physical reasons expect Csx above Csy                    n        AHW938*W
*                                  ~ without this input, AME93 gives 78(29)                             n        Ame93 *W


 123Ru-u                          -39238#      537#                                       2                 g    1.0 S-u212
 123Rh-u                          -52808#      429#                                       2                 g    1.0 S-u185
 123Pd-u                          -64423       290     -64874.000   847.500   -1.0o   o                 KGT1 1.5 04Ma.A
 123Pd-u                          -64874       339     -64874.000  \847.500           2                 KGT3 2.5 16Kn03,G
 123Ag-u                          -74729       215     -74684.939    35.000     .1o   o                 HGT1 1.5 04Ma.A
 123Ag-u                          -74479       130     -74684.939    35.000     -.6   U                 HGT2 2.5 08Su19,*
 123Ag-133Cs.925                   12700       120      12772.000    35.000      .6   U                 HMA8 1.0 10Br02
 123Ag-133Cs.925                   12772        35                                    2                 HMA8 1.0 10Br02,*
 123Cd-133Cs.925                    4491        52       4349.400     2.894    -2.7   U                 KMA8 1.0 10Br02,*
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C8 H13 N-123Sb		200580.0	3.3	200584.126	1.456	.5	U				mM16	2.5	63Da10
C8 H13 N-123Sb		200615	8	200584.126	1.456	-2.6	U				hR13	1.5	83De51
C8 H13 N-123Te		200538	16	200528.396	1.454	-.2	U				hM16	2.5	63Da10
C8 H13 N-123Te		200515	8	200528.396	1.454	1.1	U				hR13	1.5	83De51
123Te-u		-95615	83	-95728.977	1.454	-1.4	U				MGS2	1.0	05Li24,*
123I-u		-94444	30	-94410.246	3.957	1.1	U				MGS2	1.0	05Li24
123Xe-133Cs.925		-4048	13	-4060.825	10.235	-1.0	1	62	62	123Xe	MMA6	1.0	04Di18
123Cs-u		-87007	57	-87003.939	13.000	.1	U				MGS2	1.0	05Li24,*
123Cs-133Cs.925		447	17	453.000	13.000	.4o	o				kMA1	1.0	90St25
123Cs-133Cs.925		453	13				2				MA1	1.0	99Am05
123Ba-133Cs.925		6238	13				2				MMA5	1.0	00Be42
123Ba-u		-81327	30	-81218.939	13.000	3.6C	C				MGS2	1.0	05Li24
123La-u		-73700#	210#				2				h	1.0	S-u125
123Ce-u		-64720#	320#				2				h	1.0	S-u127
123Pr-u		-53924#	429#				2				k	1.0	S-u169
123Cd-130Xe.946		8172.5	2.9	8172.616	2.894	.0	1	100	100	123Cd	HJY1	1.0	12Ha25
123Cdm-130Xe.946		8326.5	3.3				2				HJY1	1.0	13Ka08
123Sb 35Cl-121Sb 37Cl		3343	2	3354.063	2.289	1.4	U				HH14	4.0	62Ba24
123Te-123Sb		55.729	0.071	55.731	0.071	.0	1	100	98	123Sb	KSH2	1.0	16Fi07
119Csx-123Csx.193 118Csx.807		-1480	60	-1446.657	13.224	.2	U				hP32	2.5	86Au02
123Te(n,a)120Sn		7564	30	7573.166	1.363	.3	U				hILL		75Em04
121Sb(t,p)123Sb		7295	20	7284.574	2.131	-.5	U				hAld		67Hi01
122Sn(n,g)123Sn		5948	3	5946.048	1.155	-.7	-1-						75Bh01
122Sn(n,g)123Sn		5945.8	1.5	5946.048	1.155	.2	-1-						77Ca09
122Sn(d,p)123Sn		3726	12	3721.481	1.155	-.4	U				hTal		64Ne10
122Sn(d,p)123Sn		3716	11	3721.481	1.155	.5	U				h		72Ca33
122Sn(d,p)123Sn		3721.8	2.6	3721.481	1.155	-.1	-1-				SPa		75Be09
122Sn(n,g)123Sn	ave	5946.267	1.192	5946.048	1.155	-.2	1	94	52	123Sn			average
123Sb(g,n)122Sb		-8980	50	-8960.004	2.128	.4	U				hPhi		60Ge01
123Sb(g,n)122Sb		-8966	4	-8960.004	2.128	1.5	1	28	28	122Sb	McM		79Ba06
122Te(n,g)123Te		6937	5	6929.014	0.080	-1.6	U				n		68Ch.A
122Te(n,g)123Te		6929.1	0.5	6929.014	0.080	-.2	U				H		91Ho08
122Te(n,g)123Te		6928.97	0.09	6929.014	0.080	.5	-1-				H		00Bo24
122Te(n,g)123Te		6929.16	0.17	6929.014	0.080	-.9	-1-				MBdn		06Fi.A
122Te(d,p)123Te		4706	6	4704.448	0.080	-.3	U				nMIT		75Li22
122Te(n,g)123Te	ave	6929.012	0.080	6929.014	0.080	.0	1	100	99	122Te			average
122Te(3He,d)123I		-574.2	3.5	-575.198	3.444	-.3	1	97	96	123I	Hei		78Sz04
123Cd(B-)123In		6033	35	6014.850	19.898	-.5	1	32	32	123In	HStu		87Sp09,*
123In(B-)123Sn		4400	30	4385.649	19.839	-.5	1	44	43	123In	Stu		87Sp09,*
123Sn(B-)123Sb		1395	10	1408.208	2.420	1.3	-1-						49Du15,*
123Sn(B-)123Sb		1420	10	1408.208	2.420	-1.2	-1-						50Ke11
123Sn(B-)123Sb		1399	20	1408.208	2.420	.5	U				m		66Au04,*
123Sn(B-)123Sb	ave	1407.500	7.071	1408.208	2.420	.1	1	12	10	123Sn			average
123I(B+)123Te		1260	7	1228.390	3.445	-4.5C	C				M		86Ag.A
123Xe(B+)123I		2720	100	2694.330	9.683	-.3	U				h		54Ma75
123Xe(B+)123I		2676	15	2694.330	9.683	1.2	1	42	38	123Xe			60Mo.A,*
123Cs(B+)123Xe		4110	310	4204.601	15.412	.3	U				h		75We23,*
123Cs(B+)123Xe		4000	140	4204.601	15.412	1.5	U				h		81So06,*
123Cs(B+)123Xe		4050	180	4204.601	15.412	.9	U				h		83Pa.A,*
123Cs(B+)123Xe		4200	100	4204.601	15.412	.0	U				hIRS		93Al03
123Cs(B+)123Xe		4110	30	4204.601	15.412	3.2B	B				MJAE		96Os04
123Csx(IT)123Cs		7	4				3						82Au01,*
123Ba(B+)123Cs		5330	100	5388.693	17.125	.6	U				MJAE		96Os04

*123Pd-u	Trends from Mass Surface TMS suggest 123Pd 70 keV less bound	g	GAu212*G
*123Ag-u	Isomer should be expected, but 123Agm at 20#(20#) keV, corrn. negligible	h	GAu096**
*123Ag-133Cs.925	D_M=12805(30) uu for mixture gs+m at 59.5(0.5) keV; M-A=-69538(28)	g	Nub211**
*123Cd-133Cs.925	D_M=4568(26) uu for mixture gs+m at 143(4) keV; M-A=-77210(25)	g	Nub211**
*123Te-u	M-A=-88941(30) keV for mixture gs+m at 247.47 keV	g	Nub211**
*123Cs-u	M-A=-80968(28) keV for mixture gs+m at 156.27 keV	g	Nub211**
*123Cd(B-)123In	Q=3590(51) 3464(41) 3547(36) from gs to 2393 2529 2541 levels	H	89Hu03**
*123Cd(B-)123In	Q=3624(21) 3710(37) 3513(59) from 123Cdm at 143(4) to 2529 2461 2602 lvls	g	Nub211*G
*123In(B-)123Sn	Q-=4410(31); and 4645(72) from 123Inm at 327.21 keV	g	Nub211**
*	~ work at OSIRIS in Studsvik		87Sp09*W
*123Sn(B-)123Sb	E-=1260(10) from 123Snm at 24.6 to 5/2^+ level at 160.33 keV	h	Ens04a**
*123Sn(B-)123Sb	E-=310(20) to 9/2^+ level at 1088.64 keV	h	Ens04a**
*123Xe(B+)123I	E+=1505(15) to 1/2^+ level at 148.92 keV	h	Ens04a**
*123Cs(B+)123Xe	E+=2990(310) to 3/2^+ level at 97.30 keV	h	Ens04a**

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*123Cs(B+)123Xe             E+=2370(140) to (1/2,3/2)^+ level at 596.65 keV, and other E+         h       Ens04a**
*123Cs(B+)123Xe             E+=2930(180) to 3/2^+ level at 97.30 keV                              h       Ens04a**
*123Csx(IT)123Cs            Based on 123Csm(IT)=156.27 and isomeric ratio R<0.1                   g       Nub211**
*                            ~ thinks that all triplets containing 123Csx should be U             n       AHW956*W

 124Ru-u                     -36060#     644#                             2                      g    1.0 S-u212
 124Rh-u                     -47998#     429#                             2                      g    1.0 S-u20c
 124Pd-u                     -64617      399      -62695#     322#    1.9D  D                    KGT3 2.5 16Kn03,*
 124Pd-u                     -62695#     322#                             2                      g    1.0 S-u212
 124Ag-133Cs.932              17018      270                              2                      GMA8 1.0 10Br02,*
 124Cd-133Cs.932               5781       10        5778.545    2.801    -.2  -1-                HMA8 1.0 10Br02
 124Cd-133Cs.932               5786.1      5.7      5778.545    2.801   -1.3  -1-                GMA8 1.0 20Ma09
 124Cd-133Cs.932        ave    5784.849    4.952    5778.545    2.801   -1.3   1      32  32 124Cd          average
 C7 13C H13 N-124Sn          202886        8      202874.634    1.410    -.6   U                 hM16 2.5 63Da10
 C7 13C H13 N-124Sn          202891        8      202874.634    1.410   -1.4   U                 hR13 1.5 83De51
 124Sn-13C 37Cl3               4210.47     0.71     4217.078    1.421    2.3   U                 GH39 4.0 84Ha20
 124Sn-133Cs.932              -6598       21       -6601.607    1.410    -.2   U                 HMA8 1.0 05Si34
 124Te-13C 37Cl3               1754.63     1.26     1755.800    1.462     .2   U                 GH39 4.0 84Ha20
 124Te-54Fe 35Cl2             25501.65     2.56    25504.766    1.499     .3   U                 HH39 4.0 84Ha20
 C7 13C H13 N-124Te          205336       13      205335.912    1.451    -.0   U                 hM16 2.5 63Da10
 C7 13C H13 N-124Te          205325        8      205335.912    1.451     .9   U                 hR13 1.5 83De51
 124I-u                      -93786       30      -93789.702    2.468    -.1   U                 MGS2 1.0 05Li24
 124Xe-13C 37Cl3               4831.15     1.58     4822.633    1.468   -1.3   U                 GH39 4.0 84Ha20
 124Xe-54Fe 35Cl2             28575.78     0.99    28571.599    1.505   -1.1   U                 GH39 4.0 84Ha20
 124Xe-133Cs.932              -5986       13       -5996.052    1.458    -.8   U                 MMA6 1.0 04Di18
 124Cs-133Cs.932                361       16         366.140    9.824     .3o  o                 kMA1 1.0 90St25
 124Cs-133Cs.932                370       13         366.140    9.824    -.3  -2-                gMA1 1.0 99Am05
 124Cs-133Cs.932                361       15         366.140    9.824     .3  -2-                gMA8 1.0 05Gu37
 124Cs-133Cs.932        ave     366.140    9.824                               2                          average
 124Cs-u                     -87696       30      -87752.633    9.824   -1.9   U                 GGS2 1.0 05Li24
 124Cs-u                     -87693       30      -87752.633    9.824   -2.0   U                 GGS2 1.0 05Li24,*
 124Cs-u                     -87708       42      -87752.633    9.824   -1.1   U                 GGR1 1.0 19An10,*
 124Ba-133Cs.932               3212       15        3212.400   13.416     .0  -2-                 MA1 1.0 99Am05
 124Ba-133Cs.932               3214       30        3212.400   13.416    -.1  -2- q-q=     1.600  m1.0 1.0  124Ba-C
 124Ba-133Cs.932        ave    3212.400   13.416                          2                               average
 124Ba-u                     -84905       30      -84906.373   13.416    -.0R  R  q-q=     1.373  MGS2 1.0 05Li24
 124La-u                     -75464       71      -75425.724   60.836     .5  -2-                MGS2 1.0 05Li24,*
 124La-u                     -75320      118      -75425.724   60.836    -.9  -2- q-q=    98.481  m1.0 1.0  124Ba+0
 124La-u                ave  -75425.724   60.836                          2                               average
 124Ce-u                     -69690#     320#                             2                      h    1.0 S-u125
 124Pr-u                     -57060#     430#                             2                      h    1.0 S-u127
 124Nd-u                     -48127#     537#                             2                      g    1.0 S-u20b
 124Cd-130Xe.954               9708.9      3.4      9711.855    2.801     .9   1      68  68 124Cd HJY1 1.0 12Ha25
 124Sn-129Xe.961              -3214.3      2.1     -3214.781    1.410    -.2   1      45  45 124Sn HJY1 1.0 11Ha48
 124Sn-120Sn1.033              6305.1      2.1      6304.377    1.427    -.3   1      46  34 124Sn HJY1 1.0 11Ha48
 124Sn 35Cl-122Sn 37Cl         4784        2        4784.250    2.580     .0   U                 HH15 4.0 62Ba23
 124Te 35Cl-122Te 37Cl         2728        2        2723.757    0.149    -.5   U                 mH16 4.0 63Ba47
 124Sn-124Te                   2458.51     0.89     2461.278    0.417     .8   U                 GH39 4.0 84Ha20
 124Sn-124Te                   2461.26     0.42     2461.278    0.417     .0   1      99  83 124Te GSH1 1.0 12Ne10
 124Xe-124Te                   3076.00     1.78     3066.833    0.140   -1.3   U                 GH39 4.0 84Ha20
 124Xe-124Te                   3066.83     0.14     3066.833    0.140     .0   1     100  99 124Xe GSH1 1.0 12Ne10
 124Sn-122Sn                   1838       22        1834.126    2.579    -.1   U                 hM16 2.5 63Da10
 120Csx-124Csx.194 119Csx.807   310       30         305.567   12.221    -.1   U                 nP22 2.5 82Au01
 121Csx-124Csx.244 120Csx.756 -1360       30       -1262.805   18.565    1.3   U                 nP22 2.5 82Au01
 123Csx-124Csx.744 120Csx.256 -1390       30       -1329.410   20.878     .8   U                 mP22 2.5 82Au01
 124Sn(d,6Li)120Cd            -5216       24       -5225.267    3.951    -.4   U                 H             79Ja21
 124Sn(3He,7Be)120Cd          -5098       30       -5111.888    3.951    -.5   U                 HMSU          76St11
 124Sn(18O,20Ne)122Cd         -1266       39       -1359.975    2.648   -2.4   U                 H             97Gu32,*
 122Sn(t,p)124Sn               5931       15        5952.362    2.402    1.4   U                 hRoc          70Fl05
 124Sn(p,t)122Sn              -5956       10       -5952.362    2.402     .4   U                 h             64Al29
 124Sn(d,3He)123In            -6610       50       -6597.938   19.831     .2  -1-                hSac          69Co03
 124Sn(d,3He)123In            -6572       66       -6597.938   19.831    -.4  -1-                hMSU          71We01
 124Sn(d,3He)123In      ave   -6596.144   39.855   -6597.938   19.831    -.0   1      25  25 123In          average
 124Sn(p,d)123Sn              -6279       15       -6263.544    2.398    1.0   U                 hHar          70Ca01
 124Sn(d,t)123Sn              -2260       35       -2230.881    2.398     .8   U                 hPit          64Co11
 124Sn(d,t)123Sn              -2233.4      3.7     -2230.881    2.398     .7   1      42  37 123Sn  SPa          75Be09
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 123Sb(n,g)124Sb                  6467.55      0.10      6467.496     0.063      -.5  -2-                MBdn    73Sh.A,Z
 123Sb(n,g)124Sb                  6467.40      0.10      6467.496     0.063      1.0  -2-                m       81Su.A,Z
 123Sb(n,g)124Sb                  6467.58      0.14      6467.496     0.063      -.6  -2-                MBdn    06Fi.A
 123Sb(n,g)124Sb             ave  6467.496     0.063                                  2                          average
 123Te(n,g)124Te                  9425         2         9424.482     0.095      -.3  U                  M       69Bu05
 123Te(n,g)124Te                  9423.7       1.5       9424.482     0.095       .5  U                  M       70Or.A
 123Te(n,g)124Te                  9424.05      0.30      9424.482     0.095      1.4  -1-                MLtn    95Ge06,Z
 123Te(n,g)124Te                  9423.89      0.20      9424.482     0.095      3.0C C                  HBdn    06Fi.A
 123Te(n,g)124Te                  9424.53      0.10      9424.482     0.095      -.5  -1-                H       06Vo09
 123Te(n,g)124Te             ave  9424.482     0.095     9424.482     0.095       .0  1   100  97 123Te          average
 124Cd(B-)124In                   4166        39         4168.342    30.536       .1  1    61  61 124In HStu    87Sp09
 124In(B-)124Sn                   7180        50         7363.697    30.567      3.7B B                  hStu    78Al18
 124In(B-)124Sn                   7360        49         7363.697    30.567       .1  1    39  39 124In  Stu    87Sp09
 124Sn(t,3He)124In               -7590        50        -7345.105    30.567      4.9B B                  hLAl    78Aj01,W
 124Inm(B-)124Sn                  7370       210         7341.000    51.000      -.1o o                  hStu    78Al18
 124Inm(B-)124Sn                  7341        51                                      2                   Stu    87Sp09,W
 124Sb(B-)124Te                   2907.7       5.        2905.073     0.132      -.5  U                  K       65Hs02,*
 124Sb(B-)124Te                   2903.7       4.        2905.073     0.132       .3  U                  K       66Ca10,*
 124Sb(B-)124Te                   2904.7       2.        2905.073     0.132       .2  U                  K       69Na05,*
 124I(B+)124Te                    3157         4         3159.587     1.859       .6  -2-                        71Bo01,*
 124I(B+)124Te                    3160.3       2.1       3159.587     1.859      -.3  -2-                        92Wo03
 124I(B+)124Te               ave  3159.587     1.859                                  2                          average
 124Cs(B+)124Xe                   5920       460         5926.344     9.251       .0  U                  h       75We23,G
 124Cs(B+)124Xe                   5900        90         5926.344     9.251       .3  U                  hIRS    93Al03
 124Cs(B+)124Xe                   5910        30         5926.344     9.251       .5  U                  MJAE    96Os04
 124Csx(IT)124Cs                    30        20                                      3                  AHW   ,*
 124La(B+)124Ba                   8930       110         8831.169    58.030      -.9R R  q-q=   98.831  MJAE    98Ko66
*124Pd-u                    Trends from Mass Surface TMS suggest 124Pd  1790 keV less bound       G       GAu212**
*124Ag-133Cs.932            D_M=17050(270) uu   for mixture gs+m at 50#(50#); M-A=-66200(250) keV   g       Nub211**
*124Cs-u                    M-A=-81223(28) keV  for 124Csm at 462.63 keV                          g       Nub211**
*124Cs-u                    gs should be seperated from iso. if exc.>300 keV. Same for other nuclidesg    HWJ207**
*124La-u                    M-A=-70244(32) keV  for mixture gs+m at 100#100 keV                   g       Nub211**
*124Sn(18O,20Ne)122Cd       Original Q=-1250(39) calibrated with 120Cd=-83973(19) keV             h       GAu08c**
*                            ~ now 120Cd=-83957(4) keV                                            g       Nub211*G
*124Sn(t,3He)124In          Not clear whether to gs or upper isomer or mixture                    m       78Aj01*W
*124Inm(B-)124Sn            8^- assumed upper-isomer as in other o-o In                           n       AHW955*W
*124Sb(B-)124Te             E-=2305(5) 2301(4) 2302(2) resp, to 2^+ level at 602.7271 keV         h       Ens087**
*124I(B+)124Te              Original error increased, see 84Rb(B+)                                        AHW   **
*124Cs(B+)124Xe             E+=4240(460) to 2+ level at 846.50 keV, and other E+  yields 6109 !!!!! ?h    Ens087*G
*124Csx(IT)124Cs            Based on 124Csm(IT)=462.63 keV                                        g       Nub211**
*124Csx(IT)124Cs            Isomeric ratio assumed <0.1 as for 118Cs, 120Cs, 122Cs                        AHW   **
*                            ~ thinks that all triplets containing 124Csx should be U             n       AHW956*W

 125Ru-u                        -30456#      322#                                     2                  g    1.0 S-u212
 125Rh-u                        -44906#      537#                                     2                  g    1.0 S-u185
 125Pd-u                        -57928#      429#                                     2                  g    1.0 S-u20c
 125Ag-u                        -68954       429       -69265.000   465.000      -.5o o                  KGT1 1.5 04Ma.A
 125Ag-u                        -69265       186       -69265.000  \465.000           2                  KGT3 2.5 16Kn03,*
 125Cd-u                        -78770       120       -78742.410     3.100       .1o o                  HGT2 2.5 08Kn.A,*
 125Cd-u                        -78780       140       -78742.410     3.100       .1  U                  HGT2 2.5 08Su19,*
 C7 H6 35Cl-125Te               111363         6       111371.706     1.452       .6  U                  hM16 2.5 63Da10
 C7 H6 35Cl-125Te               111368         8       111371.706     1.452       .3  U                  hR13 1.5 83De51
 125I-u                         -95374        30       -95369.389     1.453       .2  U                  MGS2 1.0 05Li24
 125Cs-u                        -90280        30       -90274.047     8.305       .2  U                  MGS2 1.0 05Li24
 125Cs-u                        -90221        45       -90274.047     8.305      -1.2 U                  GGR1 1.0 19An10
 125Ba-u                        -85569        30       -85528.159    11.801      1.4R R  q-q=  -40.841  MGS2 1.0 05Li24
 125La-u                        -79191        30       -79184.068    27.909       .2  1    87  87 125La MGS2 1.0 05Li24
 125Ce-u                        -71560#      210#                                     2                  m    1.0 S-h03b
 125Pr-u                        -62341#      322#                                     2                  g    1.0 S-u211
 125Nd-u                        -51605#      429#                                     2                  g    1.0 S-u20b
 125Cd-133Cs.940                 10133        29        10132.749     3.100      -.0  U                  GTT1 1.0 17La16
 125Cdm-133Cs.940                10337        11        10332.749     3.400      -.4  U                  GTT1 1.0 17La16
 125In-133Cs.940                  2549.0       1.9                                    2                  GTT1 1.0 18Ba08
 125Inm-133Cs.940                 2927        13                                      2                  GTT1 1.0 18Ba08
 125Cs-133Cs.940                 -1392        17        -1398.888     8.305      -.4o o                  kMA1 1.0 90St25
 125Cs-133Cs.940                 -1382        14        -1398.888     8.305      -1.2 -1-                 MA1 1.0 99Am05
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 125Cs-133Cs.940                 -1386        14        -1398.888     8.305     -.9  -1-                NMA4 1.0 99Am05
 125Cs-133Cs.940            ave  -1384.000     9.899    -1398.888     8.305    -1.5   1     70  70 125Cs         average
 125Ba-133Cs.940                  3356        13         3347.000    11.801     -.7  -1-                MMA5 1.0 00Be42
 125Ba-133Cs.940                  3306        30         3347.000    11.801     1.4  -1- q-q=  -41.000  m1.0 1.0  125Ba-C
 125Ba-133Cs.940            ave   3348.095    11.928     3347.000    11.801     -.1   1     98  98 125Ba         average
 125Cd-130Xe.962                 14081.6       3.1                                    2                HJY1 1.0 12Ha25
 125Cdm-130Xe.962                14281.6       3.4                                    2                HJY1 1.0 13Ka08
 125Te 35Cl-123Te 37Cl            3090         2         3110.280     0.127     2.5   U                hH16 4.0 63Ba47
 122Csx-125Cs.244 121Csx.756       715        23          641.722    36.615    -1.3   U                MP32 2.5 86Au02
 123Sb(t,p)125Sb                  6696        20         6693.043     2.125     -.1   U                hAld     67Hi01
 124Sn(n,g)125Sn                  5733.1       1.5       5733.500     0.200      .3   U                H        77Ca09,Z
 124Sn(n,g)125Sn                  5733.1       0.6       5733.500     0.200      .7   U                H        81Ba53
 124Sn(n,g)125Sn                  5733.5       0.2                                    2                H        11To04
 124Sn(d,p)125Sn                  3530        30         3508.934     0.200     -.7   U                hPit     64Co11
 124Sn(d,p)125Sn                  3506        12         3508.934     0.200      .2   U                hTal     64Ne10
 124Sn(d,p)125Sn                  3515        11         3508.934     0.200     -.6   U                h        72Ca33
 124Sn(d,p)125Sn                  3509.4       3.6       3508.934     0.200     -.1   U                mSPa     75Be09
 124Te(n,g)125Te                  6569.0       1.0       6568.970     0.030     -.0   U                M        71Gr.A,W
 124Te(n,g)125Te                  6568.97      0.03      6568.970     0.030      .0   1    100  86 125Te MPrn     99Ho01
 124Te(n,g)125Te                  6569.39      0.19      6568.970     0.030    -2.2   U                hBdn     06Fi.A
 125Te(g,n)124Te                 -6560        60        -6568.970     0.030     -.1   U                hPhi     60Ge01
 124Te(d,p)125Te                  4344         8         4344.404     0.030      .1   U                mMIT     69Gr24
 124Te(3He,d)125I                  115.1       3.0        107.378     0.067    -2.6   U                hHei     78Sz04
 124Te(a,t)125I                 -14203         7       -14213.013     0.067    -1.4   U                hHei     78Sz04
 124Xe(n,g)125Xe                  7603.3       0.4       7603.274     0.400     -.1   1    100  99 125Xe         82Ka.A
 125Cd(B-)125In                   7122        62         7064.218     3.387     -.9   U                GStu     87Sp09,*
 125Cdm(B-)125In                  7172        35         7250.517     3.628     2.2B  B                kStu     87Sp09,*
 125In(B-)125Sn                   5418        30         5481.349     2.213     2.1   U                GStu     87Sp09,*
 125Sn(B-)125Sb                   2330        10         2361.437     2.166     3.1B  B                k        50Ha58
 125Sn(B-)125Sb                   2370        20         2361.437     2.166     -.4   U                h        50Ke11
 125Sn(B-)125Sb                   2335        40         2361.437     2.166      .7   U                h        64De02,*
 125Sb(B-)125Te                    767.7       3.         766.700     2.121     -.3  -2-                         64Ma30,*
 125Sb(B-)125Te                    765.7       3.         766.700     2.121      .3  -2-                         66Ma49,*
 125Sb(B-)125Te             ave    766.700     2.121                                  2                         average
 125I(e)125Te                      184         7          185.770     0.060      .3   U                h        64Le05,*
 125I(e)125Te                      185         8          185.770     0.060      .1   U                h        66Sm05,*
 125I(e)125Te                      177.2       2.         185.770     0.060     4.3C  C                h        68Go.A,*
 125I(e)125Te                      186.1       0.3        185.770     0.060    -1.1   U                n        86Bo46,W
 125I(e)125Te                      179.3       2.0        185.770     0.060     3.2B  B                h        90Li14,*
 125I(e)125Te                      185.77      0.06                                   2                N        94Hi04,W
 125Xe(e)125I                     1735        40         1636.663     0.426    -2.5   U                h        69Lu09,*
 125Cs(B+)125Xe                   3072        20         3109.618     7.788     1.9  -1-                         54Ma54
 125Cs(B+)125Xe                   3082        20         3109.618     7.788     1.4  -1-                         75We23
 125Cs(B+)125Xe                   3100       100         3109.618     7.788      .1   U                hIRS     93Al03
 125Cs(B+)125Xe             ave   3077.000    14.142     3109.618     7.788     2.3   1     30  30 125Cs         average
 125Ba(B+)125Cs                   4560       250         4420.766    13.441     -.6   U                M        68Da09,*
 125Ba(B+)125Cs                   4380        50         4420.766    13.441      .8   U                MJAE     96Os04
 125La(B+)125Ba                   5950        70         5909.484    27.631     -.6   1     16  13 125La HJAE     98Ko66
*125Ag-u                        Trends from Mass Surface TMS suggest 125Ag   160 keV less bound          G        GAu212**
*125Cd-u                        M-A=-73274(93) keV  for mixture gs+m at 186(4) keV                       g        Nub211**
*125Cd-u                        M-A=-73287(120) keV for mixture gs+m at 186(4) keV                       g        Nub211**
*124Te(n,g)125Te                Original error was increased to 3.0 in Ame'95, abstract only             m        GAu996*W
*125Cd(B-)125In                 E-=4625(62) to (1/2^+,3/2^+) level at 2497.43 keV                        h        Ens112**
*125Cdm(B-)125In                E-=5009(109), 4581(126), 4533(39) to 2101.40, 2640.29, 2641.26 levels    h        Ens112**
*125In(B-)125Sn                 Q-=5443(31); and 5730(43) from 125Inm at 360.12 keV                      g        Nub211**
*125In(B-)125Sn                 dont know why the input differs from Q- in the paper                     g        HWJ211**
*125Sn(B-)125Sb                 E-=2030(40) from 125Snm at 27.50(0.14) to 5/2^+ level at 332.06 keV      h        Ens112**
*125Sb(B-)125Te                 E-=623(3) 621(3) resp, to 1/2^- level at 144.775 keV                     h        Ens112**
*125I(e)125Te                   LMK=0.254(0.003) 0.253(0.005) IBE=110(2) 150.6(0.3) resp, all to         h        AHW   **
*                                ~ 3/2^+ level at 35.4925 keV. Q(LMK) recalculated, error mainly theory  h        Ens112**
*125I(e)125Te                   IBE=112.0(2.0)(1s)+31.8 to 3/2^+ level at 35.4925 keV                    h        Ens112**
*125I(e)125Te                   IBE to 3/2+ level at 35.4925 keV                                         n        94Hi04*W
*125Xe(e)125I                   E+=470(40) to 3/2^+ at 188.416 and 1/2^+ at 243.382 keV, ratio 1:2      h        Ens112**
*125Ba(B+)125Cs                 E+=3450(250) to (5/2^+) level at 84.82 level                             h        Ens112**


 126Rh-u                        -39936#     537#                                      2                g    1.0 S-u211
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126Pd-u		-55599#	429#				2				g	1.0	S-u20c
126Ag-u		-65926	329	-65186#	215#	.9D	D				KGT3	2.5	16Kn03,*
126Ag-u		-65186#	215#				2				g	1.0	S-u212
C10 H6-126Te		143623	9	143638.047	1.453	.7	U				hM16	2.5	63Da10
C10 H6-126Te		143640	8	143638.047	1.453	-.2	U				hR13	1.5	83De51
126Xe-u		-95647	30	-95702.578	0.006	-1.9	U				hGS2	1.0	05Li24
126Cs-u		-90543	49	-90554.178	11.120	-.2	U				GGR1	1.0	19An10
126Ba-u		-88745	30	-88749.798	13.416	-.2R	R	q-q=	4.798		MGS2	1.0	05Li24
126La-u		-80503	232	-80487.333	97.164	.1	-2-				MGS2	1.0	05Li24,*
126La-u		-80484	107	-80487.333	97.164	-.0	-2-	q-q=	3.104		m1.0	1.0	126Ba+0
126La-u	ave	-80487.333	97.164				2						average
126Ce-u		-76029	30				2				MGS2	1.0	05Li24
126Pr-u		-64760#	210#				2				h	1.0	S-u127
126Nd-u		-57306#	322#				2				g	1.0	S-u20b
126Pm-u		-42673#	537#				2				g	1.0	S-u20b
126Xe-134Xe.940		-6772.8	2.9	-6772.02647	0.00437	.3o	o				HMA8	1.0	05He.A
126Xe-134Xe.940		-6773.2	3.8	-6772.02647	0.00437	.3	1	0	0	126Xe	HMA8	1.0	06He29
126Cd-133Cs.947		11966.5	4.5	11967.288	2.473	.2	-1-				HMA8	1.0	10Br02
126Cd-133Cs.947		11956	15	11967.288	2.473	.8	U				HMA8	1.0	10Br02
126Cd-133Cs.947		11962	11	11967.288	2.473	.5	U				GTT1	1.0	17La16
126Cd-133Cs.947		11973.7	6.7	11967.288	2.473	-1.0	-1-				GMA8	1.0	20Ma09
126Cd-133Cs.947	ave	11968.738	3.736	11967.288	2.473	-.4	1	44	44	126Cd			average
126In-133Cs.947		6005.2	4.5				2				GTT1	1.0	18Ba08
126Inm-133Cs.947		6101.7	5.5				2				GTT1	1.0	18Ba08
126Cs-133Cs.947		-1027	17	-1017.180	11.120	.6o	o				kMA1	1.0	90St25
126Cs-133Cs.947		-1011	13	-1017.180	11.120	-.5	1	73	73	126Cs	MA1	1.0	99Am05
126Ba-133Cs.947		786	15	787.200	13.416	.1	-2-				MA1	1.0	99Am05
126Ba-133Cs.947		792	30	787.200	13.416	-.2	-2-	q-q=	4.800		m1.0	1.0	126Ba-C
126Ba-133Cs.947	ave	787.200	13.416				2						average
126Cd-130Xe.969		15928.6	3.3	15929.732	2.473	.3	1	56	56	126Cd	HJY1	1.0	12Ha25
126Te 35Cl-124Te 37Cl		3432	2	3443.927	0.114	1.5	U				hH16	4.0	63Ba47
126Te 35Cl-124Te 37Cl		3441.28	1.54	3443.927	0.114	1.1	U				MH43	1.5	90Dy04
126Xe-128Xe.984		-776.8366	0.0025	-776.83660	0.00250	-.0	1	100	100	126Xe	GHep	1.0	20Ri04
123Csx-126Cs.390 121Csx.610		-1160	30	-1135.522	16.696	.3	U				nP22	2.5	82Au01
124Csx-126Cs.590 121Csx.410		-340	30	-351.060	23.794	-.1	U				mP22	2.5	82Au01
124Csx-126Cs.492 122Csx.508		-570	30	-520.092	28.552	.7	U				mP22	2.5	82Au01
124Csx-126Cs.328 123Csx.672		390	30	412.594	23.848	.3	U				mP22	2.5	82Au01
125Cs-126Cs.496 124Csx.504		-1130	30	-1069.429	14.461	.8	U				nP22	2.5	82Au01
124Sn(t,p)126Sn		5445	15	5444.500	10.607	-.0	-2-				Ald		69Bj01
124Sn(t,p)126Sn		5444	15	5444.500	10.607	.0	-2-				Roc		70Fl05
124Sn(t,p)126Sn	ave	5444.500	10.607				2						average
125Te(n,g)126Te		9113.7	0.4	9113.692	0.080	-.0	U				M		77Ko.A
125Te(n,g)126Te		9113.69	0.08	9113.692	0.080	.0	1	100	86	126Te	M		03Vo03
126Te(g,n)125Te		-8840	120	-9113.692	0.080	-2.3	U				hPhi		60Ge01
125Te(d,p)126Te		6892	6	6889.126	0.080	-.5	U				hMIT		71Gr01
126Cd(B-)126In		5486	36	5553.650	4.783	1.9	U				GStu		87Sp09
126In(B-)126Sn		8207	39	8205.758	11.480	-.0	U				GStu		87Sp09
126Inm(B-)126Sn		8309	51	8295.647	11.852	-.3	U				GStu		87Sp09
126Sn(B-)126Sb		378	30				3						71Or04,*
126Sb(B-)126Te		3667	150	3671.032	31.822	.0	U				h		71Or04,*
126I(B+)126Te		2151	5	2153.671	3.672	.5	1	54	52	126I			59Ha27
126I(B-)126Xe		1258	5	1235.891	3.778	-4.4B	B				h		55Ko14,*
126Cs(B+)126Xe		4670	140	4795.704	10.359	.9	U				h		75We23,*
126Cs(B+)126Xe		4810	100	4795.704	10.359	-.1	U				h		76Pa11,*
126Cs(B+)126Xe		4830	40	4795.704	10.359	-.9	U				hJAE		92Os07
126Cs(B+)126Xe		4730	100	4795.704	10.359	.7	U				hIRS		93Al03
126Cs(B+)126Xe		4780	20	4795.704	10.359	.8	1	27	27	126Cs	HJAE		96Os04
126La(B+)126Ba		7700	100	7696.438	91.366	-.0R	R	q-q=	3.562		MJAE		98Ko66
126Lam(B+)126Ba		7910	400				3				MJAE		98Ko66
*126Ag-u		Trends from Mass Surface TMS suggest 126Ag 690 keV less bound									G		GAu212**
*126La-u		M-A=-74883(28) keV for mixture gs+m at 210(410) keV									g		Nub211**
*126Sn(B-)126Sb		E-=250(30) to 2^+ level at 127.9 keV									h		Ens031**
*126Sb(B-)126Te		E-=1900(150) from mixture gs and 126Sbm at 17.7 to 6^+ lvl at 1776.19 keV									h		Ens031**
*126I(B-)126Xe		E-=865(5) to 2^+ level at 388.631 keV, and other E-									h		Ens031**
*126Cs(B+)126Xe		E+=3260(140) 3400(100) resp, to 2^+ level at 388.631 keV									h		Ens031**

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 127Rh-u                         -36211#      644#                                 2                   g    1.0 S-u185
 127Pd-u                         -50693#      537#                                 2                   g    1.0 S-u20c
 127Ag-u                         -62963#      215#                                 2                   g    1.0 S-u20c
 C10 H7-127I                     150297         6      150302.630     3.887     .4  U                  HM16 2.5 63Da10
 C10 H7-127I                     150305.3       3.4    150302.630     3.887    -.3  1     21  21 127I   M16 2.5 63Da10
 C10 H7-127I                     150322         8      150302.630     3.887   -1.6  U                  hR13 1.5 83De51
 127Cs-u                         -92571        30      -92582.472     5.988    -.4  U                  MGS2 1.0 05Li24
 127Ba-u                         -88923        39      -88908.727    12.192     .4R R  q-q=  -14.273   MGS2 1.0 05Li24,*
 127La-u                         -83640        30      -83624.916    27.912     .5  1     87  87 127La MGS2 1.0 05Li24,*
 127Ce-u                         -77273        31                                  2                   HGS2 1.0 05Li24,*
 127Pr-u                         -69290#      210#                                 2                   h    1.0 S-u127
 127Nd-u                         -60022#      322#                                 2                   g    1.0 S-u20b
 127Pm-u                         -48642#      429#                                 2                   g    1.0 S-u20b
 127Cd-133Cs.955                  16494.3       8.0     16496.669     6.656     .3 -2-                 GTT1 1.0 17La16
 127Cd-133Cs.955                  16502        12       16496.669     6.656    -.4 -2-                 GIS1 1.0 20Ma09
 127Cd-133Cs.955            ave   16496.669     6.656                              2                        average
 127Cdm-133Cs.955                 16798.7       8.0     16802.961     4.696     .5 -2-                 GTT1 1.0 17La16
 127Cdm-133Cs.955                 16805.2       5.8     16802.961     4.696    -.4 -2-                 GIS1 1.0 20Ma09
 127Cdm-133Cs.955           ave   16802.961     4.696                              2                        average
 127In-133Cs.955                   7763        12        7759.418    10.737    -.3  1     80  80 127In GTT1 1.0 18Ba08
 127Inm-133Cs.955                  8182        16                                  2                   GTT1 1.0 18Ba08
 127Inn-133Cs.955                  9585        52        9654.744    39.557    1.3  1     58  58 127InnGTT1 1.0 18Ba08
 127Sn 34S-133Cs1.211             -7237        12       -7243.587     9.904    -.5  1     68  68 127Sn HMA8 1.0 08Dw01,*
 127Cs-133Cs.955                  -2303        17       -2289.094     5.988     .8o o                  kMA1 1.0 90St25
 127Cs-133Cs.955                  -2287        13       -2289.094     5.988    -.2 -1-                  MA1 1.0 99Am05
 127Cs-133Cs.955                  -2293.3       7.7     -2289.094     5.988     .5 -1-                 MMA8 1.0 05Gu37
 127Cs-133Cs.955            ave   -2291.664     6.625   -2289.094     5.988     .4  1     82  82 127Cs          average
 127Ba-133Cs.955                   1389        13        1384.651    12.192    -.3 -1-                 MMA5 1.0 00Be42
 127Ba-133Cs.955                   1371        39        1384.651    12.192     .4 -1- q-q=  -13.651   m1.0 1.0  127Ba-C
 127Ba-133Cs.955            ave    1387.200    12.333    1384.651    12.192    -.2  1     98  98 127Ba          average
 127Cd-130Xe.977                  20598        89       20474.659     6.656   -1.4  U                  GJY1 1.0 12Ha25,*
 125Cs-127Cs.591 122Csx.410       -1098        18       -1088.270    16.420     .2  U                  mP32 2.5 86Au02
 126Te(n,g)127Te                   6289         3        6287.647     0.179    -.5  U                  M        72Mu.A
 126Te(n,g)127Te                   6287.8       0.4      6287.647     0.179    -.4 -1-                 MBdn     06Fi.A
 126Te(n,g)127Te                   6287.6       0.2      6287.647     0.179     .2 -1-                 HPrn     05Ho15
 126Te(d,p)127Te                   4044         8        4063.081     0.179    2.4  U                  hMIT     68Gr16
 126Te(n,g)127Te            ave    6287.640     0.179    6287.647     0.179     .0  1    100  98 127Te          average
 127I(g,n)126I                    -9135        22       -9144.038     2.740    -.4  U                  hPhi     60Ge01
 127I(g,n)126I                    -9145         3       -9144.038     2.740     .3  1     83  48 126I   MMn     86Ts04
 127Cdm(B-)127In                   8468        63        8424.006    10.916    -.7  U                  GStu     87Sp09,*
 127In(B-)127Sn                    6514        31        6589.681    12.026    2.4o o                  HStu     87Sp09,*
 127In(B-)127Sn                    6579        20        6589.681    12.026     .5  1     36  20 127In HStu     04Ga24,*
 127Inn(B-)127Sn                   8442        56        8355.165    37.013   -1.6  1     44  42 127InnHStu     04Ga24
 127Sn(B-)127Sb                    3201        24        3228.716    10.167    1.2  1     18  14 127Sn  Stu     77Lu06,*
 127Sb(B-)127Te                    1581         5        1582.203     4.910     .2  1     96  96 127Sb          67Ra13,*
 127Te(B-)127I                      683        10         702.720     3.565    2.0 -1-                          55Da37
 127Te(B-)127I                      695        10         702.720     3.565     .8 -1-                          56Kn20
 127Te(B-)127I              ave     689.000     7.071     702.720     3.565    1.9  1     25  24 127I           average
 127Xe(e)127I                       663.3       2.2       662.334     2.044    -.4 -1-                          68Sc14,W
 127I(3He,t)127Xe                  -676         6        -680.926     2.044    -.8 -1-                  Pri     89Ch01
 127Xe(e)127I               ave     662.602     2.066     662.334     2.044    -.1  1     98  91 127Xe          average
 127Cs(B+)127Xe                    2115        25        2080.856     6.411   -1.4 -1-                          54Ma54,*
 127Cs(B+)127Xe                    2076        20        2080.856     6.411     .2 -1-                          67Sp08,*
 127Cs(B+)127Xe                    2089        20        2080.856     6.411    -.4 -1-                          75We23,*
 127Cs(B+)127Xe             ave    2090.379    12.309    2080.856     6.411    -.8  1     27  18 127Cs          average
 127Ba(B+)127Cs                    3450       100        3422.072    12.653    -.3  U                  M        76Be11,*
 127La(B+)127Ba                    5010        70        4921.839    27.740   -1.3  1     16  13 127La HJAE     98Ko66
*127Ba-u                         M-A=-82791(28) keV  for mixture gs+m at 80.32 keV                     g        Nub211**
*127La-u                         M-A=-77903(28) keV  for mixture gs+m at 14.2 keV                      g        Nub211**
*127Ce-u                         M-A=-71976(29) keV  for mixture gs+m at 7.3 keV                       g        Nub211**
*127Sn 34S-133Cs1.211            D_M=-7234.3(11.6) uu for mixture gs+m at 5.07(0.06) keV               g        Nub211**
*127Sn 34S-133Cs1.211            Contamination pb -> result do not seem trustable                      h        GAu075*G
*127Cd-130Xe.977                 D_M=20741(14) uu for mixture of gs+m at 283 keV                       G        WgM204**
*127Cd-130Xe.977                 Re-assigned to 127Cdm by the evaluator in AME2016                     g        GAu169*W
*127Cdm(B-)127In                 Also E-=7910(200) to 127Inm at 394(18) keV                            g        Nub211**
*127Cdm(B-)127In                 Re-assigned to 127Cdm by the evaluator                                K        GAu169**
*127In(B-)127Sn                  Also E-=6976(64) from 127Inm at 394(18) keV                           g        Nub211**
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*127In(B-)127Sn	Also E-=6999(63) from 127Inm at 394(18) keV	g	Nub211**
*127Sn(B-)127Sb	Q-=3206(24) from 127Snm at 5.07 keV	g	Nub211**
*127Sb(B-)127Te	E-=1493(5) to 11/2^- level at 88.23 keV, and other E-	h	Ens118**
*127Xe(e)127I	pK(618.4)/pK(375.0)=0.40(0.07). Recalculated Q	AHW	*W
*127Cs(B+)127Xe	E+=1063(10), 685(25) to mixture gs+124.751 and 1/2^+ level at 411.965 keV	h	Ens118**
*127Cs(B+)127Xe	E+=1068(20), 910(30), 650(30) to gs, 3/2^+ at 124.751, 1/2^+ at 411.965	h	Ens118**
*127Cs(B+)127Xe	E+=1040(20), 650(20) to mixture gs+124.751 and 1/2^+ level at 411.965 keV	h	Ens118**
*127Ba(B+)127Cs	E+=2230(100) to 3/2^+ level at 180.92 keV, and other E+	h	Ens118**

128Rh-u		-29351#	322#				2				g	1.0	S-u20c
128Pd-u		-47655#	537#				2				g	1.0	S-u20b
128Ag-u		-58734#	322#				2				g	1.0	S-u20c
128Sn-u		-89512	25	-89492.171	18.982	.8	1	58	58	128Sn	HGS3	1.0	12Ch19
C10 H8-128Te		158112	9	158139.016	0.758	1.2	U				hM16	2.5	63Da10
C10 H8-128Te		158141.2	7.	158139.016	0.758	-.1	U				hC3	2.5	70Ke05
C10 H8-128Te		158151	8	158139.016	0.758	-1.0	U				hR13	1.5	83De51
C10 H8-128Xe		159068.2	4.2	159069.50178	0.00558	.1	U				mM16	2.5	63Da10
C10 H8-128Xe		159069.7	0.7	159069.50178	0.00558	-.1	1	0	0	128Xe	C3	2.5	70Ke05
128Cs-u		-92181	30	-92251.548	5.772	-2.4	U				hGS2	1.0	05Li24
128Ba-u		-91663	30	-91647.549	1.729	.5	U				GGS2	1.0	05Li24
128La-u		-84436	69	-84407.876	58.452	.4	-2-				MGS2	1.0	05Li24,*
128La-u		-84336.4	110.	-84407.876	58.452	-.6	-2-	q-q=	66.580		H1.0	1.0	128Ba+0
128La-u	ave	-84407.876	58.452				2						average
128Ce-u		-81089	30				2				MGS2	1.0	05Li24
128Pr-u		-71209	32				2				MGS2	1.0	05Li24
128Nd-u		-64982#	215#				2				g	1.0	S-u20b
128Pm-u		-51766#	322#				2				g	1.0	S-u20b,W
128Sm-u		-42029#	537#				2				g	1.0	S-u211
128Cd-133Cs.962		18759	11	18771.996	6.905	1.2	-1-				HMA8	1.0	10Br02
128Cd-133Cs.962		18787	15	18771.996	6.905	-1.0	-1-				GMA8	1.0	20Ma09
128Cd-133Cs.962	ave	18768.792	8.870	18771.996	6.905	.4	1	61	61	128Cd			average
128In-133Cs.962		11329	11	11308.857	1.420	-1.8	U				GTT1	1.0	18Ba08
128Inn-133Cs.962		11610.9	9.8	11614.957	2.139	.4	U				GTT1	1.0	18Ba08
128Sn 34S-133Cs1.218		-6396	14	-6465.640	18.982	-5.0F	F				HMA8	1.0	08Dw01,*
128Cs-133Cs.962		-1306	17	-1296.331	5.772	.6o	o				kMA1	1.0	90St25
128Cs-133Cs.962		-1293	13	-1296.331	5.772	-.3	1	20	20	128Cs	MA1	1.0	99Am05
128Ba-133Cs.962		-720	13	-692.332	1.729	2.1	1	2	2	128Ba	MA1	1.0	99Am05
128Ba-133Cs.962		-1168	21	-692.332	1.729	22.7	Z				MMA8	1.0	03Gu.A,G
128Ba-133Cs.962		-708	30	-692.332	1.729	.5	Z	q-q=	-15.668		g1.0	1.0	128Ba-C
128Cd-130Xe.985		22865	11	22860.073	6.905	-.4	1	39	39	128Cd	HJY1	1.0	12Ha25
128Te 35Cl-126Te 37Cl		4106	2	4099.219	1.604	-.8	U				HH16	4.0	63Ba47
128Te 35Cl-126Te 37Cl		4102.3	1.8	4099.219	1.604	-.7	1	13	10	126Te	C3	2.5	70Ke05
128Xe-129Xe.992		-2011.8587	0.0015	-2011.85870	0.00150	.0	1	100	100	128Xe	GHep	1.0	20Ri04
128In-128Te		15892.4	1.2				2				GJY1	1.0	20Ne06
128Inn-128Te		16198.5	2.0				2				GJY1	1.0	20Ne06
128Inp-128Te		17822.2	1.3				2				GJY1	1.0	20Ne06
128Te-128Xe		931.26	1.20	930.486	0.758	-.4	-1-				hH43	1.5	90Dy04
128Te-128Xe		929.6	1.4	930.486	0.758	.6	-1-				kCP1	1.0	09Sc19
128Te-128Xe	ave	930.226	1.105	930.486	0.758	.2	1	47	47	128Te			average
128Xe-126Xe		-774	45	-766.66872	0.00250	.1	U				hM16	2.5	63Da10
126Cs-128Cs.656 122Csx.344		-1130	30	-1102.453	16.119	.4	U				nP22	2.5	82Au01
124Csx-128Cs.323 122Csx.678		-1070	30	-982.438	32.108	1.2	U				mP22	2.5	82Au01
126Cs-128Cs.591 123Csx.410		-350	30	-339.976	12.031	.1	U				nP22	2.5	82Au01
124Csx-128Cs.194 123Csx.807		370	50	356.283	24.305	-.1	U				nP22	2.5	82Au01
125Cs-128Cs.244 124Csx.756		-1440	30	-1348.827	18.386	1.2	U				mP22	2.5	82Au01
126Cs-128Cs.492 124Csx.508		-610	30	-563.031	15.464	.6	U				nP22	2.5	82Au01
127Cs-128Cs.661 125Cs.339		-965	16	-932.703	7.111	.8	U				mP32	2.5	86Au02
127Cs-128Cs.496 126Cs.504		-1160	30	-1105.123	8.092	.7	U				nP22	2.5	82Au01
128Te(g,n)127Te		-8410	120	-8784.614	1.503	-3.1B	B				hPhi		60Ge01
127I(n,g)128I		6825.7	0.5	6826.131	0.047	.9	U				h		71Sc07
127I(n,g)128I		6826.12	0.05	6826.131	0.047	.2	-1-				mMMn		90Is03,Z
127I(n,g)128I		6826.22	0.14	6826.131	0.047	-.6	-1-				MBdn		06Fi.A
127I(n,g)128I	ave	6826.131	0.047	6826.131	0.047	.0	1	100	87	128I			average
128Cd(B-)128In		7070	290	6951.870	6.567	-.4	U				GStu		87Sp09
128In(B-)128Sn		9280	180	9171.314	17.719	-.6	U				GStu		78Al18,*
128In(B-)128Sn		8984	37	9171.314	17.719	5.1F	F				HStu		87Sp09,*

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 128In(B-)128Sn                  8950      103        9171.314    17.719     2.1F  F              HGsn      90St13,*
 128Inn(B-)128Sn                 9390      220        9456.444    17.782      .3o  o              HStu      78Al18,*
 128Inn(B-)128Sn                 9306       30        9456.444    17.782     5.0F  F              GStu      87Sp09,*
 128Inn(B-)128Sn                 9230       90        9456.444    17.782     2.5   U              GGsn      90St13,*
 128Sn(B-)128Sbm                 1265       30        1258.422    11.889     -.2  -1-                       76Nu01,*
 128Sn(B-)128Sbm                 1290       40        1258.422    11.889     -.8  -1-              Stu      77Lu06,*
 128Sn(B-)128Sbm                 1260       15        1258.422    11.889     -.1  -1-              Gsn      90St13,*
 128Sn(B-)128Sbm            ave  1263.933   12.720    1258.422    11.889     -.4   1    87  45 128Sbm       average
 128Sbm(IT)128Sb                   10        6                                     2                        AHW956,*
 128Sb(B-)128Te                  4640      100        4363.941    18.786    -2.8   U              h         71Ki15,*
 128Sbm(B-)128Te                 4391       40        4373.941    17.802     -.4  -1-              Stu      77Lu06,*
 128Sbm(B-)128Te                 4395       30        4373.941    17.802     -.7  -1-              Gsn      90St13,*
 128Sbm(B-)128Te            ave  4393.560   24.000    4373.941    17.802     -.8   1    55  55 128Sbm       average
 128I(B+)128Te                   1277       13        1255.762     3.681    -1.6   U              h         61La16,W
 128I(B-)128Xe                   2116       10        2122.504     3.621      .7   1    13  13 128I         56Be18,*
 128Cs(B+)128Xe                  3855       90        3928.762     5.376      .8   U              h         75We23,*
 128Cs(B+)128Xe                  3928        6        3928.762     5.376      .1   1    80  80 128Cs        76Cr.B
 128Cs(B+)128Xe                  3907       40        3928.762     5.376      .5o  o              hIRS      83Al06
 128Cs(B+)128Xe                  3930      100        3928.762     5.376     -.0   U              hIRS      93Al03
 128La(B+)128Ba                  6650      400        6743.713    54.472      .2   U              M         66Li04,*
 128La(B+)128Ba                  6820      100        6743.713    54.472     -.8R  R  q-q=   76.287 MJAE      98Ko66,*
*128La-u                      M-A=-78601(28) keV  for mixture gs+m at 100#100 keV                 g         Nub211**
*128Pm-u                      Sp>-700                                                             n         93Li40*W
*128Sn 34S-133Cs1.218         F : authors say ‘‘possible contamination, measurement abandoned"    H         GAu075**
*128Sn 34S-133Cs1.218         also in old version D_M=-4194(61) uu for 2091.50(0.11) keV level M-A=-812h    GAu075*G
*128Ba-133Cs.962              Contaminated: width increased, side-bands badly shaped              m         03Gu.A*G
*128In(B-)128Sn               E-=4980(180) to (2)^+ level at 4297.70 keV                          k         Ens15a**
*128In(B-)128Sn               E-=5464(37) to (2)^+ at 3519.86; others 6986(170), 7857(109) to 2104.07, k    Ens15a**
*                              ~ 1168.82; different equipment/method than in previous; low E- not seen H    FGK126**
*128In(B-)128Sn               E-=4650(120), 5440(200) to 4297, 3520 levels and others             H         FGK126**
*128In(B-)128Sn               F : abv 2 items conflict with 1st one and with trends in Ex of 8^- isomerH    GAu123**
*128Inn(B-)128Sn              E-=5430(220) to 3958 level                                          H         FGK126**
*128Inn(B-)128Sn              E-=5239(40), 5350(44) to 4066, 3958 level                           H         FGK126**
*128Inn(B-)128Sn              Qb of 128In labelled as "F" from same ref.; might be mixture of n+p stateg    WgM209**
*128Inn(B-)128Sn              E-=5160(170), 5250(130) to 4066, 3958 levels                        H         FGK126**
*128Sn(B-)128Sbm              E-=630(30) 655(40) 625(15), to 1^+ level 635.2 above 128Sbm at 10(7) keV k    Ens15a**
*128Sbm(IT)128Sb              From 3.6% IT for M*3 transition                                     k         Ens15a**
*128Sb(B-)128Te               E-=2300(100) to (7)^- level at 2337.68 keV                          k         Ens15a**
*128Sbm(B-)128Te              E-=2580(40) 2585(30) resp, to 6^+ level at 1811.13 keV              k         Ens15a**
*128I(B+)128Te                Recalculated Q                                                                AHW   *W
*128I(B-)128Xe                E-=2120(10) and E-=1665(15) to gs and 2^+ level at 442.911 keV      k         Ens15a**
*128Cs(B+)128Xe               E+=2390(90) to 2^+ level at 442.911 keV                             k         Ens15a**
*128La(B+)128Ba               E+=3200(400) 3370(100) resp, to (4^-,5^+) level at 2425.45 keV      k         Ens15a**


 129Pd-u                        -40666#     644#                                   2              g    1.0 S-u211
 129Ag-u                        -55685#     429#                                   2              g    1.0 S-u20b
 129Cd-u                        -67789      186      -67764.403     5.700      .1  U              KGT3 2.5 16Kn02
 129Sn-u                        -86521       31      -86517.560    18.540      .1  1    36  36 129Sn HMA8 1.0 05Si34,*
 129Xe-120Sn1.075                 9913.3      2.4      9913.112     1.062     -.1  1    20  20 120Sn HJY1 1.0 11Ha48
 C10 H9-129Xe                   165643.6      3.6    165644.42966   0.00542     .1  U              hM16 2.5 63Da10
 129Xe-u                        -95228.7      5.4    -95219.14258   0.00542     .7  U              hACC 2.5 90Me08
 129Xe-C2 35Cl3                  -1777.98     0.68    -1777.223     0.114      .7  U              hH47 1.5 94Hy01
 129Xe2-86Kr3                    77729.8547   0.0250  77729.841     0.013     -.6  1    28  16  86Kr HFS1 1.0 05Sh38,*
 129La-u                        -87300       30      -87304.408    22.913     -.1  1    58  58 129La MGS2 1.0 05Li24
 129Ce-u                        -81898       30                                    2              MGS2 1.0 05Li24
 129Pr-u                        -74905       32                                    2              MGS2 1.0 05Li24,*
 129Pm-u                        -57091#     322#                                   2              g    1.0 S-u20b
 129Sm-u                        -45443#     537#                                   2              g    1.0 S-u20b
 129Xe-134Xe.963                 -4114.7      3.8     -4112.63069   0.00334    .5o  o              HMA8 1.0 05He.A
 129Xe-134Xe.963                 -4119.3      5.1     -4112.63069   0.00334   1.3   U              HMA8 1.0 06He29
 129Cd-133Cs.970                 23831      107       23947.200     5.700     1.1   U              GMA8 1.0 15At03,*
 129Cd-133Cs.970                 23947.2      5.7                                   2              GIS1 1.0 20Ma09
 129Cdm-133Cs.970                24315.5      6.0                                   2              GIS1 1.0 20Ma09
 129In-133Cs.970                 13518.6      6.7     13520.138     2.116      .2   1    10  10 129In GTT1 1.0 18Ba08
 129Inm-133Cs.970                13995       15       14004.017     2.118      .6   U              GTT1 1.0 18Ba08
 129Cs-133Cs.970                 -2234       18       -2222.486     4.888      .6o  o              kMA1 1.0 90St25
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 129Cs-133Cs.970               -2216       14         -2222.486     4.888     -.5  1     12  12 129Cs  MA1 1.0 99Am05
 129In-130Xe.992               17523.9      2.9       17527.261     2.116     1.2  1     53  53 129In HJY1 1.0 12Ha25
 129Inm-130Xe.992              18016.5      3.5       18011.141     2.118    -1.5  1     37  37 129InmHJY1 1.0 13Ka08
 C10 H10-129Xe                173469.4660   0.0147  173469.46156   0.00541   -.3  1     14  14 129Xe HFS1 1.0 09Re03
 129Xe-128Xe                    1247       12          1250.10402   0.00150    .1  U                hM16 2.5 63Da10
 C3 O6-129Xe                   64706.8420   0.0255   64706.85812   0.00543   .6o  o                HFS1 1.0 05Sh38,*
 C3 O6-129Xe                   64706.8516   0.0181   64706.85812   0.00543    .4  1      9   8 129Xe HFS1 1.0 09Re03
 129Xe2-84Kr3                  75068.5115   0.0405   75068.534      0.014      .5  1     11   7  84Kr HFS1 1.0 05Sh38,*
 128Cs-129Cs.661 126Cs.339       510       30           499.981     7.092     -.1  U                hP22 2.5 82Au01
 128Te(n,g)129Te                6085        3          6082.409     0.081     -.9  U                M        72Mu.A
 128Te(n,g)129Te                6082.42     0.09       6082.409     0.081     -.1 -1-               MPrn     03Wi02
 128Te(n,g)129Te                6082.36     0.19       6082.409     0.081      .3 -1-               MBdn     06Fi.A
 128Te(d,p)129Te                3857       10          3857.842     0.081      .1  U                hMIT     67Mo22
 128Te(n,g)129Te          ave   6082.409    0.081      6082.409     0.081     -.0  1    100  99 129Te          average
 129Nd(ep)128Ce                 5300      300          5870#      200#        1.9D D                N        78Bo.A,*
 129Nd(ep)128Ce                 5870#     200#                                     3                g        S-u212
 129Inm(IT)129In                 450.72     0.16        450.731     0.160      .1  1    100  63 129InmG        FGK20c,*
 129In(B-)129Sn                 7655       32          7755.708    17.238     3.1B B                HStu     87Sp09
 129In(B-)129Sn                 7780       26          7755.708    17.238     -.9  1     44  44 129Sn HStu     04Ga24,*
 129Inm(B-)129Sn                8033       66          8206.439    17.238     2.6B B                kStu     87Sp09
 129Inm(B-)129Sn                8149       38          8206.439    17.238     1.5  1     21  20 129Sn KStu     04Ga24
 129Inp(B-)129Sn                9410       50                                      2                HStu     04Ga24
 129Sn(B-)129Sb                 3996      120          4038.786    27.363      .4  U                MStu     77Lu06,*
 129Sb(B-)129Te                 2345       30          2375.500    21.213     1.0 -2-                        70Oh05,*
 129Sb(B-)129Te                 2406       30          2375.500    21.213    -1.0 -2- q-q=   30.500  m         130Te-1
 129Sb(B-)129Te           ave   2375.500   21.213                                  2                         average
 129Te(B-)129I                  1453       28          1502.293     3.136     1.8  U                h        56Gr10,*
 129Te(B-)129I                  1485       10          1502.293     3.136     1.7  U                m        64De10,*
 129Te(B-)129I                  1503        4          1502.293     3.136     -.2  1     61  60 129I           68Go34,*
 129I(B-)129Xe                   190        5           188.895     3.153     -.2  1     40  40 129I           54De17,*
 129Cs(B+)129Xe                 1197        5          1197.020     4.553      .0  1     83  83 129Cs          76Ma35,W
 129Ba(B+)129Cs                 2446       15          2438.184    10.563     -.5  1     50  45 129Ba          61Ar05,*
 129La(B+)129Ba                 3720       50          3737.325    21.628      .3 -1-               H        79Br05,*
 129La(B+)129Ba                 3740       40          3737.325    21.628     -.1 -1-               HJAE     98Ko66
 129La(B+)129Ba           ave   3732.195   31.235      3737.325    21.628      .2  1     48  42 129La          average
 129Ce(B+)129La                 5600      200          5036.037    35.163    -2.8  U                hIRS     93Al03
*129Sn-u                      M-A=-80576(27) keV  for mixture gs+m at 35.15 keV                     g        Nub211**
*129Xe2-86Kr3                 Corrected in ref. of same group                                       H        09Re03**
*129Pr-u                      Isomer at 382.57 with estimated T=26# ms not considered               g        Nub211**
*129Cd-133Cs.970              D_M=24016(18) uu for mixture of gs+m at 343(8) keV; M-A=-63058(17)    G        WgM204**
*C3 O6-129Xe                  Corrected in ref. of same group                                       H        09Re03**
*129Xe2-84Kr3                 Corrected in ref. of same group                                       H        09Re03**
*129Nd(ep)128Ce               Trends from Mass Surface TMS suggest 129Nd   570 keV less bound       G        GAu212**
*129Inm(IT)129In              from a least-squares fit to the level scheme in 15*Ta*13             G        FGK20c**
*129In(B-)129Sn               E-=7780(26), 9410(50) from gs, 1688.0(0.5) levels                     H        03Ge04**
*129Sn(B-)129Sb               E-=3350(120) to (5/2^+) level at 645.14 keV                           k        Ens148**
*129Sb(B-)129Te               E-=1800(30) to 5/2^+ level at 544.585 keV, and other E-               k        Ens148**
*129Te(B-)129I                E-=1453(5) to 5/2^+ level at 27.793 keV and 1530(5) from 129Tem       k        Ens148**
*                              ~ at 105.51 to gs (Birge=8.0: arithmetic average used)               g        Nub211**
*129Te(B-)129I                E-=1452(10) to 5/2^+ lvl at 27.793 keV and 1595(10) from 129Tem at 105.51k     Ens148**
*129Te(B-)129I                E-=1476(4) to 5/2^+ level at 27.793 keV and 1607(7) from 129Tem at 105.51k     Ens148**
*129I(B-)129Xe                E-=150(5) to 3/2^+ level at 39.5774 keV                               k        Ens148**
*129Cs(B+)129Xe               Recalculated Q                                                                 AHW   *W
*129Ba(B+)129Cs               E+=1425(15); and 1243(35), 975(60) from 129Bam at 8.42(0.06) keV      g        Nub211**
*                              ~ to 7/2^+ level at 188.91, (9/2)^+ at 426.47 keV                    k        Ens148**
*129La(B+)129Ba               E+=2420(50) to 1/2^+ level at 278.57 keV, and other E+                k        Ens148**


 130Pd-u                      -35137#     322#                                     2                g    1.0 S-u211
 130Cd-u                      -66700      441        -65612.436    24.000     1.0  U                KGT3 2.5 16Kn02
 130Sn-u                      -86028       19        -86025.469     2.011      .1  Z                hMA8 1.0 01Si.A
 130Sn-u                      -86031       15        -86025.469     2.011      .4  Z                hMA8 1.0 01Si.A,G
 C9 H8 N-130Te                159446       10        159451.514     0.012      .2  U                hM16 2.5 63Da10
 13C C8 N H7-130Te            154990.6      7.       154981.318     0.012     -.5  U                hC3  2.5 70Ke05
 C9 H8 N-130Te                159449        8        159451.514     0.012      .2  U                hR13 1.5 83De51
 C10 H10-130Xe                174743.6      4.2      174740.972     0.010     -.3  U                hM16 2.5 63Da10
 13C C8 N H7-130Xe            157695.4      0.7      157694.716     0.010     -.4  U                hC3  2.5 70Ke05
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130Xe-C 13C 35Cl3		-6407.63	1.21	-6403.568	0.115	2.2	U				hH47	1.5	94Hy01
130Cs-u		-93181	60	-93290.719	8.971	-1.8	U				hGS2	1.0	05Li24,*
C10 H10-130Ba		171926	68	171924.316	0.308	-.0	U				hR07	1.5	68De17
130Ba-u		-93672	32	-93673.997	0.308	-.1	Z				mGS2	1.0	02Sc.C,G
130Ba-85Rb1.529		41195.8	3.4	41199.500	0.308	1.1	1	1	1	130Ba	MMA8	1.0	05Gu37
130La-u		-87635	30	-87630.586	27.854	.1	-2-				MGS2	1.0	05Li24
130La-u		-87603	75	-87630.586	27.854	-.4	-2-	q-q=	25.696		H1.0	1.0	130Ba+0
130La-u	ave	-87630.586	27.854				2						average
130Ce-u		-85264	30				2				MGS2	1.0	05Li24
130Pr-u		-76410	69				2				MGS2	1.0	05Li24,*
130Nd-u		-71494	30				2				MGS2	1.0	05Li24
130Pm-u		-59549#	215#				2				g	1.0	S-u20b
130Sm-u		-51208#	429#				2				g	1.0	S-u20b
130Xe-134Xe.970		-4726.6	5.6	-4721.890	0.009	.8o	o				HMA8	1.0	05He.A
130Xe-134Xe.970		-4724.8	7.0	-4721.890	0.009	.4	U				HMA8	1.0	06He29
130Cd-133Cs.977		26761	24				2				KMA8	1.0	15At03
130In-133Cs.977		17437	93	17325.694	1.921	-1.2	U				GCP1	1.0	13Va12,*
130In-133Cs.977		17338	30	17325.694	1.921	-.4	U				GTT1	1.0	18Ba08,*
130In-133Cs.977		17325.7	2.0	17325.694	1.921	-.0	1	92	92	130In	GCP2	1.0	18Or.A
130Inm-133Cs.977		17399.0	2.4	17397.115	2.139	-.8	1	79	79	130Inm	GCP2	1.0	18Or.A
130Inn-133Cs.977		17757	31	17739.427	2.224	-.6	U				GTT1	1.0	18Ba08
130Inn-133Cs.977		17739.3	3.6	17739.427	2.224	.0	-1-				GCP2	1.0	18Or.A
130Inn-133Cs.977		17737.6	4.8	17739.427	2.224	.4	-1-				GJY2	1.0	20Ne06
130Inn-133Cs.977	ave	17738.688	2.880	17739.427	2.224	.3	1	60	60	130Inn			average
130Sn-133Cs.977		6346	17	6347.968	2.011	.1	U				KMA8	1.0	05Si34
130Sn-133Cs.977		6344	12	6347.968	2.011	.3	U				KMA8	1.0	05Si34,*
130Sn-133Cs.977		6349.5	3.9	6347.968	2.011	-.4	1	27	27	130Sn	KCP1	1.0	13Va12
130Xe-133Cs.977		-4114	13	-4117.217	0.011	-.2	U				MMA6	1.0	04Di18
130Cs-133Cs.977		-928	17	-917.283	8.971	.6o	o				kMA1	1.0	90St25
130Cs-133Cs.977		-916	13	-917.283	8.971	-.1	1	48	48	130Cs	MA1	1.0	99Am05
130Nd 19F-133Cs1.120		32902	130	32802.969	30.000	-.8	U				MMA5	1.0	00Be42,*
130Te 35Cl-128Te 37Cl		4715	2	4711.630	0.759	-.4o	o				hH16	4.0	63Ba47
130Te 35Cl-128Te 37Cl		4711.7	1.8	4711.630	0.759	-.0	U				mC3	2.5	70Ke05
130Te 35Cl-128Te 37Cl		4711.57	0.72	4711.630	0.759	.1	1	49	49	128Te	H43	1.5	90Dy04
130Xe-129Xe1.008		-509.78	0.34	-509.756	0.009	.1	U				kCP1	1.0	09Sc19
130Xe-129Xe1.008		-509.96	0.26	-509.756	0.009	.8	U				KSH2	1.0	13El01,*
130Xe-129Xe1.008		-509.02	0.94	-509.756	0.009	-.8	U				KSH1	1.0	13El01,*
130In-130Inn		-413.8	6.5	-413.733	2.790	.0	1	18	11	130Inn	GJY2	1.0	20Ne06
130Inm-130Inn		-351.8	6.0	-342.312	2.879	1.6	1	23	12	130Inn	GJY2	1.0	20Ne06
130Inm-130Te		18797.9	6.9	18800.933	2.139	.4	1	10	10	130Inm	GJY1	1.0	20Ne06
130Inn-130Te		19138.3	5.3	19143.245	2.224	.9	1	18	18	130Inn	GJY1	1.0	20Ne06
130Sn-130Xe		10463.9	3.6	10465.185	2.011	.4	-1-				HJY1	1.0	12Ha25
130Sn-130Xe		10465.4	3.1	10465.185	2.011	-.1	-1-				HJY1	1.0	13Ka08,*
130Sn-130Xe	ave	10464.761	2.349	10465.185	2.011	.2	1	73	73	130Sn			average
130Te-130Xe		2706.2	7.	2713.399	0.012	.4	U				hC3	2.5	70Ke05
130Te-130Xe		2712.98	3.02	2713.399	0.012	.1	U				HH43	1.5	90Dy04
130Te-130Xe		2713.416	0.034	2713.399	0.012	-.5	-1-				HFS1	1.0	09Re07
130Te-130Xe		2713.402	0.026	2713.399	0.012	-.1	-1-				HFS1	1.0	09Re07,*
130Te-130Xe		2713.402	0.014	2713.399	0.012	-.2o	o				HFS1	1.0	09Re07,*
130Te-130Xe		2712.86	0.34	2713.399	0.012	1.6	U				kCP1	1.0	09Sc19
130Te-130Xe		2712.82	0.25	2713.399	0.012	2.3	U				HJY1	1.0	11Ra24
130Te-130Xe		2713.44	0.14	2713.399	0.012	-.3	U				GSH1	1.0	12Ne10
130Te-130Xe	ave	2713.407	0.021	2713.399	0.012	-.4	1	35	22	130Te			average
130Ba-130Xe		2816.71	0.31	2816.656	0.308	-.2	1	99	99	130Ba	GSH1	1.0	12Ne10
130Te-129Xe		1441.885	0.012	1441.888	0.011	.2	1	78	78	130Te	HFS1	1.0	09Re07
130Xe-129Xe		-1277	12	-1271.511	0.009	.2	U				hM16	2.5	63Da10
130Xe-129Xe		-1271.517	0.012	-1271.511	0.009	.5	1	51	50	130Xe	HFS1	1.0	09Re07
129Cs-130Csx.794 125Cs.206		-1270	40	-1199.593	14.462	.7	U				nP22	2.5	82Au01
130Ag(g,2n)128Ag		-7330#	300#				3				g		S-j183
130Ba(p,t)128Ba		-9482	32	-9548.465	1.534	-2.1	U				HWin		74De31,*
130Ba(p,t)128Ba-144Sm()142Sm		1095.9	1.0	1096.076	0.997	.2	1	99	98	128Ba	H		09Pa25
130Te(d,3He)129Sb		-4550	30	-4519.073	21.225	1.0R	R	q-q=	-30.927		Oak		68Au04
129I(n,g)130I		6500.33	0.04				2				ILn		89Sa11,Z
129Xe(n,g)130Xe		9255.3	1.0	9255.723	0.008	.4	U				M		71Gr28,Z
129Xe(n,g)130Xe		9256.1	0.8	9255.723	0.008	-.5	U				H		74Ge05,Z
129Xe(n,g)130Xe		9255.57	0.30	9255.723	0.008	.5	U				HBdn		06Fi.A
129Xe(3He,d)130Cs		5	20	-0.819	8.357	-.3	1	17	17	130Cs	ChR		81Ha08

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 130Ba(d,t)129Ba              -4001       15       -4009.999    10.504     -.6  1    49  49 129Ba  Tal      74Gr22
 130Eu(p)129Sm                 1028.0     15.0      1528#       200#      33.3D  D                 GArp     04Da04,*
 130Eu(p)129Sm                 1528#     200#                                   3                 g        S-u212
 130Cd(B-)130In                8350      160       8788.932    22.427     2.7B  B                 KBwg     03Di06,*
 130In(B-)130Sn               10249       38      10225.687     2.590     -.6  U                 GStu     87Sp09
 130In(B-)130Sn                9880       90      10225.687     2.590     3.8B  B                  Gsn     90St13
 130Inm(B-)130Sn              10300       37      10292.215     2.734     -.2  U                 GStu     87Sp09
 130Inm(B-)130Sn              10170      170      10292.215     2.734      .7  U                 hGsn     90St13
 130Inn(B-)130Sn              10650       49      10611.077     2.793     -.8  U                 GStu     87Sp09
 130Inn(B-)130Sn               9880      200      10611.077     2.793     3.7B  B                  Gsn     90St13
 130Sn(B-)130Sb                2195       35       2153.470    14.113    -1.2  -1-                NStu     77Lu06,*
 130Sn(B-)130Sb                2080       40       2153.470    14.113     1.8  -1-                N        77Nu01,*
 130Sn(B-)130Sb                2149       18       2153.470    14.113      .2  -1-                NGsn     90St13,*
 130Sn(B-)130Sb        ave     2147.769   14.861   2153.470    14.113      .4  1    90  90 130Sb           average
 130Sb(B-)130Te                5046      100       5067.273    14.212      .2  U                 M        71Ki15,*
 130Sb(B-)130Te                5015      100       5067.273    14.212      .5  U                 MStu     77Lu06,*
 130Sb(B-)130Te                4990       70       5067.273    14.212     1.1  U                 MGsn     90St13,*
 130Sb(B-)130Te                5015       45       5067.273    14.212     1.2  1    10  10 130Sb MStu     95Me16,*
 130I(B-)130Xe                 2983       10       2944.287     3.154    -3.9B  B                 h        65Da01,*
 130I(B-)130Xe                 2964       50       2944.287     3.154     -.4  U                 H        70Qa03,*
 130Cs(B+)130Xe                2992       20       2980.720     8.357     -.6  -1-                         52Sm41
 130Cs(B+)130Xe                2972       20       2980.720     8.357      .4  -1-                         75We23
 130Cs(B+)130Xe        ave     2982.000   14.142   2980.720     8.357     -.1  1    35  35 130Cs           average
 130Csx(IT)130Cs                 27       15                                   2                          AHW   ,*
 130Cs(B-)130Ba                 442       50        357.022     8.362    -1.7  U                 h        52Sm41,*
 130La(B+)130Ba                5660       70       5629.402    25.948     -.4R  R  q-q=    30.598  MJAE     98Ko66
*130Sn-u                     Original --83941(15) for the 1946.88 isomer                         h        01Si.A*G
*130Cs-u                     M-A=-86716(30) keV  for mixture gs+m at 163.25 keV                  g        Nub211**
*130Ba-u                     used as reference. See p.86-89 of thesis                            m        02Sc.C*G
*130Pr-u                     M-A=-71125(29) keV  for mixture gs+m at 100#100 keV                 g        Nub211**
*130In-133Cs.977             D_M=17599(21) uu  for mixture gs+m+n at 66.5(2.7) and 385.4(2.6) keV;  g     Nub211**
*130In-133Cs.977             ~ M-A=-69652(20) keV                                                g        Nub211**
*130In-133Cs.977             D_M=17373(20) uu  for mixture gs+m at 66.5(2.7) keV; M-A=-69862(20) keV  G   Nub211**
*130Sn-133Cs.977             D_M=8434(12) uu      for 130Snm at 1946.88 keV; M-A=-78189(11) keV  g        Nub211**
*130Nd 19F-133Cs1.120        Tentative result, low statistics                                    M        00Be42**
*130Xe-129Xe1.008            Respectively for PI-ICR and Ramsey ToF-ICR techniques               K        13El01**
*130Sn-130Xe                 D_M=12555.5(3.1) uu  for 130Snm at 1946.88 keV; M-A=-78185.1(2.9) keV  g     Nub211**
*130Te-130Xe                 First item 1 ion; second item 2 ions - considered independent       H        GAu101**
*130Te-130Xe                 Combination of 130Xe-129Xe and 130Te-129Xe                          H        GAu101**
*130Ba(p,t)128Ba             Not resolved peak. ~ Original uncertainty 16 increased to 24 keV and  H      GAu921**
*                             ~ added systematic error 21 keV                                    H        GAu092**
*130Eu(p)129Sm               Trends from Mass Surface TMS suggest 130Eu   500 keV less bound     G        GAu212**
*130Cd(B-)130In              E-=6224(+165--157) to 1^+ level at 2120.2 keV                       k        Ens086**
*130Sn(B-)130Sb              E-=1490(90), 1150(35) to 1^+ levels at 702.32, 1047.67 keV          h        Ens017**
*                             ~ and Q-=4000(310) from 130Snm at 1946.88; carries no weight       g        Nub211*W
*130Sn(B-)130Sb              E-=1280(80), 1060(40) to 1^+ levels at 702.32, 1047.67 keV          h        Ens017**
*130Sn(B-)130Sb              E-=1415(30), 1112(18) to 1^+ levels at 702.32, 1047.67 keV          m        Ens017**
*                             ~ and a 3 sigma conflicting 3955(50) from 130Snm at 1946.88 keV    g        Nub211**
*130Sb(B-)130Te              E-=2900(100) to 130Tem at 2146.41 keV                               g        Nub211**
*130Sb(B-)130Te              Q=5020(100) from 130Sbm at 4.80 keV                                 g        Nub211**
*130Sb(B-)130Te              Also 4960(25) from 130Sbm at 4.80, in disagreement                  g        Nub211**
*130Sb(B-)130Te              Derived from given average=5008(38) with 90*St*13=4990(70) keV      M        GAu993**
*130Sb(B-)130Te              Carefull, attributed to 130Sbm, much more precise (25) in 90St13    m        GAu018*W
*130I(B-)130Xe               E-=1702(10) 1042(10) 618(10) to 4^+ 1204.614, 6^+ 1944.140, 5^+ 2362.073 h   Ens017**
*130I(B-)130Xe               E-=2480(50), 1850(80) from 130Ixm at 39.9525 to 2^+ levels at 536.068,  h    GAu12a**
*                             ~ and 1122.112 keV                                                 h        Ens017**
*130Csx(IT)130Cs             Combining isomer ratio of ref.                                               82Au01**
*                             ~ with 130Csm(IT)=163.25 keV                                       g        Nub211**
*                             ~ all triplets containing 130Csx should be made U or W             n        AHW956*W
*130Cs(B-)130Ba              Value given without associated error                                h        AHW92a**
*130Cs(B-)130Ba              (B-)spectrum from substracted (B+)spectrum                                   GAu   *G

 131Pd-u                     -27633#     322#                                   2                 g    1.0 S-u212
 131Ag-u                     -43747#     537#                                   2                 g    1.0 S-u20b
 131Cd-u                     -59671     1023      -59272.260    20.653      .2  U                 KGT3 2.5 16Kn02
 131Cd-u                     -59280      110      -59272.260    20.653      .1  U                 GMR1 1.0 15At03
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131Cd-u		-59300	26	-59272.260	20.653	1.1	1	63	63	131Cd	GMR1	1.0	20Ma09
131Sn-u		-82966	34	-82946.932	3.887	.6	Z				hMA8	1.0	01Si.A,G
131Sn-u		-82958	26	-82946.932	3.887	.4	U				HMA8	1.0	05Si34,*
131Sn-u		-82950	130	-82946.932	3.887	.0	U				HGT2	2.5	08Su19,*
131Sb-u		-88170	530	-88010.661	2.237	.1	U				HGT2	2.5	08Kn.A,*
C10 H11-131Xe		180991.6	3.0	180991.22280	0.00549	-.1	U				mM16	2.5	63Da10
131Xe-u		-94925.5	5.7	-94915.87192	0.00549	.7	U				hACC	2.5	90Me08
131Xe-C2 35Cl2 37Cl		1472.65	0.80	1476.172	0.093	2.9B	B				hH47	1.5	94Hy01
131Ba-u		-92955	66	-93053.684	0.446	-1.5	U				hGS2	1.0	05Li24,*
131La-u		-89930	30				2				MGS2	1.0	05Li24
131Ce-u		-85579	36	-85570.534	35.215	.2	1	96	96	131Ce	hGS2	1.0	05Li24,*
131Pr-u		-79741	56	-79765.039	50.451	-.4	1	81	81	131Pr	MGS2	1.0	05Li24,*
131Nd-u		-72753	30	-72751.980	29.541	.0	1	97	97	131Nd	MGS2	1.0	05Li24
131Pm-u		-64166#	215#				2				g	1.0	S-u20b
131Sm-u		-53978#	429#				2				g	1.0	S-u20b
131Cd-133Cs.985		33905	34	33857.562	20.653	-1.4	1	37	37	131Cd	GMA8	1.0	20Ma09
131In-133Cs.985		20262	37	20102.662	2.368	-4.3C	C				KCP1	1.0	13Va12,*
131In-133Cs.985		20104.1	4.1	20102.662	2.368	-.4	1	33	33	131In	GCP2	1.0	18Or.A
131Inm-133Cs.985		20507.9	2.8	20506.282	2.631	-.6	1	88	88	131Inm	GCP2	1.0	18Or.A
131Sn 34S-133Cs1.241		2253	11	2254.203	3.887	.1	-1-				HMA8	1.0	08Dw01,*
131Sn-133Cs.985		10188.2	4.7	10182.890	3.887	-1.1	-1-				KCP1	1.0	13Va12
131Sn 34S-133Cs1.241	ave	2258.508	4.322	2254.203	3.887	-1.0	1	81	81	131Sn			average
131Sb-133Cs.985		5114	11	5119.161	2.237	.5	U				KCP1	1.0	13Va12
131Xe-129Xe1.016		1826.7855	0.0096	1826.78002	0.00142	-.6	U				GFS1	1.0	13Ho22
131Xe-129Xe1.016		1826.7797	0.0015	1826.78002	0.00142	.2	1	89	48	129Xe	GHep	1.0	20Ri04
131Cs-133Cs.985		-1429	18	-1401.720	0.190	1.5o	o				kMA1	1.0	90St25
131Cs-133Cs.985		-1419	14	-1401.720	0.190	1.2o	o				GMA1	1.0	99Am05
131Cs-133Cs.985		-1401.72	0.19				2				GIS1	1.0	19Ka48,*
131Ba-133Cs.985		72	14	76.138	0.446	.3	U				HMA5	1.0	00Be42
131In-130Xe1.008		24234.7	2.9	24235.420	2.368	.2	1	67	67	131In	HJY1	1.0	12Ha25
131Inm-130Xe1.008		24626.8	7.7	24639.039	2.631	1.6	1	12	12	131Inm	HJY1	1.0	13Ka08
131Sn-132Xe.992		12134	21	12131.223	3.887	-.1	U				HJY1	1.0	12Ha25,*
131Sb-130Xe1.008		9250.7	2.3	9251.919	2.237	.5	1	95	95	131Sb	HJY1	1.0	12Ha25
131Xe-132Xe.992		162.283	0.030	162.28373	0.00165	.0	U				GSH1	1.0	14Ne15
131Xe-132Xe.992		162.292	0.014	162.28373	0.00165	-.6	U				GFS1	1.0	13Ho22
131Xe-132Xe.992		162.2842	0.0018	162.28373	0.00165	-.3	1	84	58	131Xe	GHep	1.0	20Ri04
131Xe-130Xe		1574	11	1574.781	0.009	.0	U				hM16	2.5	63Da10
128Cs-131Cs.391 126Cs.610		-100	30	-48.126	8.297	.7	U				hP22	2.5	82Au01
128Cs-131Cs.244 127Cs.756		783	21	751.247	6.833	-.6F	F				hP33	2.5	86Au02,*
129Cs-131Cs.328 128Cs.672		-1030	30	-870.671	5.813	2.1	U				hP22	2.5	82Au01
130Te(n,g)131Te		5929.7	0.5	5929.380	0.060	-.6	U				M		77Ko.A
130Te(n,g)131Te		5929.5	0.4	5929.380	0.060	-.3	U				M		80Ho29,Z
130Te(n,g)131Te		5929.38	0.06				2				MPrn		03To08
130Te(n,g)131Te		5930.16	0.19	5929.380	0.060	-4.1C	C				hBdn		06Fi.A
130Te(d,p)131Te		3703	6	3704.814	0.060	.3	U				hMIT		67Gr21
130Ba(n,g)131Ba		7493.5	0.3				2						82Ka.A
130Ba(d,p)131Ba		5269	15	5268.934	0.300	-.0	U				hANL		70Vo04
131Nd(ep)130Ce		4600	400	4365.902	39.219	-.6	U				M		78Bo.A
131Eu(p)130Sm		957.4	8.	947.092	5.268	-1.3	-3-				H		98Da03
131Eu(p)130Sm		939.2	7.	947.092	5.268	1.1	-3-				M		99So17,*
131Eu(p)130Sm	ave	947.092	5.268				3						average
131In(B-)131Sn		8820	200	9240.209	4.240	2.1	U				h		80De35
131In(B-)131Sn		8930	150	9240.209	4.240	2.1o	o				hStu		84Fo19
131In(B-)131Sn		9184	33	9240.209	4.240	1.7o	o				HStu		88Fo05
131In(B-)131Sn		9165	30	9240.209	4.240	2.5o	o				hStu		95Me16
131In(B-)131Sn		9174	22	9240.209	4.240	3.0B	B				HStu		99Fo01,G
131In(B-)131Sn		9222	18	9240.209	4.240	1.0	U				KStu		04Fo06
131Inm(B-)131Sn		9230	220	9616.179	4.373	1.8o	o				hStu		84Fo19
131Inm(B-)131Sn		9547	46	9616.179	4.373	1.5o	o				HStu		88Fo05
131Inm(B-)131Sn		9480	70	9616.179	4.373	1.9o	o				HStu		95Me16
131Inm(B-)131Sn		9524	26	9616.179	4.373	3.5B	B				kStu		04Fo06
131Inn(B-)131Sn		13000	500	12986.000	86.000	-.0o	o				hStu		84Fo19
131Inn(B-)131Sn		13450	163	12986.000	86.000	-2.8B	B				HStu		88Fo05
131Inn(B-)131Sn		13230	80	12986.000	86.000	-3.0B	B				HStu		95Me16
131Inn(B-)131Sn		12986	86				2				HStu		04Fo06
131Sn(B-)131Sb		4582	120	4716.833	3.962	1.1o	o				HBwg		79Ke02,*
131Sn(B-)131Sb		4640	20	4716.833	3.962	3.8B	B				HStu		84Fo19,*

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 131Sn(B-)131Sb                4610      110         4716.833     3.962     1.0  U                hBwg     87Gr.A,*
 131Sn(B-)131Sb                4689       14         4716.833     3.962     2.0o o                hStu     95Me16
 131Sn(B-)131Sb                4688       14         4716.833     3.962     2.1o o                HStu     99Fo01
 131Sn(B-)131Sb                4701        8         4716.833     3.962     2.0  1     25  19 131Sn HStu     04Fo06,*
 131Sb(B-)131Te                3190       70         3229.610     2.085      .6o o                hStu     77Lu06
 131Sb(B-)131Te                3217       20         3229.610     2.085      .6o o                hStu     95Me16
 131Sb(B-)131Te                3200       26         3229.610     2.085     1.1  U                HStu     99Fo01
 131Te(B-)131I                 2275       10         2231.706     0.608    -4.3B  B                         61Be20,*
 131Te(B-)131I                 2278       15         2231.706     0.608    -3.1B  B                         65De22,*
 131I(B-)131Xe                  971.0      0.7        970.848     0.605     -.2 -2-                         51Ve05,*
 131I(B-)131Xe                  970.4      1.2        970.848     0.605      .4 -2-                         52Ro16,*
 131I(B-)131Xe           ave    970.848    0.605                                2                           average
 131Cs(e)131Xe                  355       10          358.001     0.177      .3  U                G        54Sa22
 131Cs(e)131Xe                  355       10          358.001     0.177      .3  U                G        56Ho66
 131Cs(e)131Xe                  360       15          358.001     0.177     -.1  U                G        57Mi63
 131Ba(B+)131Cs                1370       16         1376.616     0.452      .4  U                G        76Ge14,*
 131Ba(B+)131Cs                1371       12         1376.616     0.452      .5  U                G        78Va04,*
 131La(B+)131Ba                2960      100         2909.693    27.948     -.5  U                M        60Cr01,W
 131Ce(B+)131La                4020      400         4060.817    43.092      .1  U                M        66No05,*
 131Pr(B+)131Ce                5250      150         5407.784    55.446     1.1  1     14   9 131Pr HIRS     93Al03
 131Nd(B+)131Pr                6560      150         6532.623    53.081     -.2  1     13   9 131Pr HIRS     93Al03
*131Sn-u                        M-A=-77242(15) keV  for mixture gs+m at 65.1 keV                 g        Nub211**
*                                ~ next 131Sn 34S-133Cs1.241 also from 1.4 GeV p on UC target    H        GAu064**
*131Sn-u                        M-A=-77238(120) keV for mixture gs+m at 65.1 keV                 g        Nub211**
*131Sb-u                        M-A=-81291(96) keV  for mixture gs+m at 1676.06 keV              g        Nub211**
*131Ba-u                        M-A=-86494(30) keV  for mixture gs+m at 187.995 keV              g        Nub211**
*131Ce-u                        M-A=-79685(28) keV  for mixture gs+m at 63.09 keV                g        Nub211**
*131Pr-u                        M-A=-74202(28) keV  for mixture gs+m at 152.4 keV                g        Nub211**
*131In-133Cs.985                Freq. ratio mistyped, derived from mass excess in col.3 Table 1 of paper K   GAu167**
*131Sn 34S-133Cs1.241           D_M=2300.3(3.6) uu  for mixture 131Sn gs+m at 65.1 keV with R=0.65(0.15) g   Nub211**
*131Cs-133Cs.985                freq. ratio from three methods, PI-ICR (dominant), ToF-ICR, Ramsey      G    19Ka48**
*131Sn-132Xe.992                D_M=12168.7(3.4) uu  for mixture gs+m at 65.1 keV;  M-A=-77229.6(3.2) keVg  Nub211**
*                                ~ identical to result given in ref.                             HJY1     13Ka08**
*128Cs-131Cs.244 127Cs.         F : rejection based on line-shape analysis                       h        86Au02**
*131Eu(p)130Sm                  Diff. with their earlier E(p) noticed, not explained             m        99So17*W
*131Eu(p)130Sm                  Trends from Mass Surface TMS suggest 131Eu   240 keV less bound  G        GAu212**
*131In(B-)131Sn                 In principle from 95Me16, but not true in 131In case             m        GAu039*G
*131Sn(B-)131Sb                 E-=3870(120), 2620(180) from 131Snm at 65.1 keV                  g        Nub211**
*                                ~ to (5/2^+) level at 798.494, (13/2^-) at 1980.39 keV          h        Ens06c**
*131Sn(B-)131Sb                 Q-=4638(20); and 4796(80) from 131Snm at 65.1 keV                g        Nub211**
*131Sn(B-)131Sb                 Q-=4600(110); and 4680(120) from 131Snm at 65.1 keV              g        Nub211**
*131Sn(B-)131Sb                 Q-=4698(11); and 4767(8)from 131Snm at 65.1 keV                  g        Nub211**
*131Te(B-)131I                  Q-=2457(10) 2460(15) resp, from 131Tem at 182.258 keV            g        Nub211**
*131I(B-)131Xe                  E-=606.5(0.7) 605.9(1.2) resp, to 5/2^+ level at 364.490 keV     h        Ens06c**
*131Ba(B+)131Cs                 p+=22(11)e-6 to 3/2^+ level at 216.086, recalculated p^+ and Q   h        Ens06c**
*131Ba(B+)131Cs                 L/K=0.165(0.001) to 3/2^+ level at 1047.682 keV                  h        Ens06c**
*131Ba(B+)131Cs                 corr. with same 373.23 one, recalculated                         h        AHW   *W
*131La(B+)131Ba                 From unresolved E+ to various levels                                      AHW   *W
*131Ce(B+)131La                 E+=2800(400) to 7/2^+ level at 195.68 keV                        h        Ens06c**


 132Ag-u                      -36930#    537#                                   2                g    1.0 S-u20c
 132Cd-u                      -54213      77       -54176.864    64.485      .5 -2-               GMR1 1.0 20Ma09
 132Cd-u                      -54092     118       -54176.864    64.485     -.7 -2-               GMR1 1.0 20Ma09
 132Cd-u                 ave  -54176.864  64.485                                2                          average
 132Sn-u                      -82171      18       -82176.101     2.121     -.3  Z                hMA8 1.0 01Si.A
 132Sb-u                      -85820     140       -85491.987     2.648      .9  U                GGT2 2.5 08Su19,*
 C10 H12-132Xe                189740.8     3.3     189745.29932   0.00544    .5  U                mM16 2.5 63Da10
 132Xe-u                      -95856.2     4.0     -95844.91654   0.00544   1.1  U                hACC 2.5 90Me08
 132Xe-C 13C 35Cl2 37Cl        -2807.67    1.08     -2807.707     0.093     -.0  Z                 H47 1.5 93Ba.A
 132Xe-C 13C 35Cl2 37Cl        -2803.73    1.40     -2807.707     0.093    -1.9  U                hH47 1.5 94Hy01
 132Xe-C3 O6                  -65332.6117  0.0248 -65332.63209    0.00545   -.8o o                HFS1 1.0 05Sh38,*
 132Xe-C3 O6                  -65332.6238  0.0140 -65332.63209    0.00545   -.6  1     15  14 132Xe HFS1 1.0 09Re03
 C10 H12-132Ba                188863      70       188839.155     1.131     -.2  U                hR07 1.5 68De17
 C10 H12-132Ba                188821      88       188839.155     1.131      .1  U                hR07 1.5 68De17
 132La-u                      -89874      67       -89880.955    39.033     -.1  1     34  34 132La MGS2 1.0 05Li24,*
 132Ce-u                      -88542      30       -88533.762    21.908      .3  1     53  53 132Ce MGS2 1.0 05Li24
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 132Ce O-142Sm1.042              -5258       32       -5267.373   21.914    -.3   1    47   47 132Ce MMA7 1.0 01Bo59,*
 132Pr-u                        -80760       31                                   2                  KGS2 1.0 05Li24,*
 132Nd-u                        -76690       30      -76678.762   25.986     .4  -2-                 MGS2 1.0 05Li24
 132Nd-u                        -76645       52      -76678.762   25.986    -.6  -2- q-q=   33.762  m1.0 1.0  132Nd-x
 132Nd-u                    ave -76678.762  25.986                                2                           average
 132Pm-u                        -66160#     160#                                  2                  h    1.0 S-u127
 132Sm-u                        -59799       35      -59195#     322#      17.3   Z                  mGS2 1.0 02Sc.C,G
 132Sm-u                        -59195#     322#                                  2                  g    1.0 S-u20b
 132Eu-u                        -45304#     429#                                  2                  k    1.0 S-u169,W
 132Xe-129Xe1.023                 1564.20     0.32     1564.26650   0.00202   .2   U                  HCP1 1.0 09Sc19
 132Xe-129Xe1.023                 1565.4      1.0      1564.26650   0.00202  -1.1  U                  HCP1 1.0 09Sc19
 132Sb-130Xe1.015                12445.7      2.9     12446.025     2.648     .1   1    83   83 132Sb HJY1 1.0 12Ha25
 132Te-130Xe1.015                 6482.9      4.3      6484.725     3.743     .4   1    76   76 132Te HJY1 1.0 12Ha25
 132Sn-133Cs.992                 11621       19       11615.555     2.121    -.3   U                  HMA8 1.0 05Si34
 132Sn-133Cs.992                 11613.1      2.9     11615.555     2.121     .8  -1-                 KCP1 1.0 13Va12
 132Sn 34S-133Cs1.248             3686.3      7.7      3686.868     2.122     .1  -1-                 HMA8 1.0 08Dw01
 132Sn-133Cs.992            ave  11613.334    2.714   11615.555     2.121     .8   1    61   61 132Sn            average
 132Sb-133Cs.992                  8301.3      6.5      8299.669     2.648    -.3   1    17   17 132Sb KCP1 1.0 13Va12
 132Cs-133Cs.992                   223       18         229.396     1.112     .4o  o                  kMA1 1.0 90St25
 132Cs-133Cs.992                   232       14         229.396     1.112    -.2   U                  hMA1 1.0 99Am05
 132Cs-133Cs.992                   246.9      5.9       229.396     1.112   -3.0C  C                  HMA8 1.0 09Bo.A
 132Cs-133Cs.992                   230.8      1.3       229.396     1.112   -1.1   1    73   73 132Cs gMA8 1.0 17At01
 132Nd-133Cs.992                 17147       52       17112.893    25.986    -.7R  R  q-q=   34.107  MMA5 1.0 00Be42
 132Sn-132Xe                     13672.3      3.4     13668.815     2.121   -1.0   1    39   39 132Sn HJY1 1.0 12Ha25
 132Xe-131Xe                      -930       11        -929.04462   0.00166   .0   U                  hM16 2.5 63Da10
 132Xe-C10 H10                -174095.2367    0.0095 -174095.23552  0.00544   .1   1    33   33 132Xe HFS1 1.0 09Re03
 132Xe-130Xe                       645.724    0.014     645.737     0.009     .9   1    38   37 130Xe HFS1 1.0 09Re07
 132Ba-130Ba                     -1241        4       -1264.775     1.170   -2.4   U                  HM17 2.5 66Be10
 132Ba-130Ba                     -1253       68       -1264.775     1.170    -.1   U                  hR07 1.5 68De17
 132Xe-129Xe                      -625.7755   0.0156   -625.77396   0.00200   .1o  o                  HFS1 1.0 05Sh38,*
 132Xe-129Xe                      -625.7703   0.0119   -625.77396   0.00200  -.3  -1-                 HFS1 1.0 09Re03,*
 132Xe-129Xe                      -625.7732   0.0125   -625.77396   0.00200  -.1  -1-                 HFS1 1.0 09Re03,*
 132Xe-129Xe                      -625.771    0.013    -625.77396   0.00200  -.2  -1-                 HFS1 1.0 09Re07
 132Xe-129Xe                      -625.7771   0.0083   -625.77396   0.00200   .4  -1-                 HFS1 1.0 10Mo30
 132Xe-129Xe                ave   -625.77388  0.00543  -625.77396   0.00200  -.0   1    14    7 132Xe            average
 132Xe2-84Kr3                    73816.9775   0.0594  73816.986     0.014     .1   U                  HFS1 1.0 05Sh38,*
 132Xe2-86Kr3                    76478.3099   0.0412  76478.293     0.013    -.4   1    11    6  86Kr HFS1 1.0 05Sh38,*
 14N10-132Xe                    126584.9632   0.0168 126584.95906   0.00558  -.2   1    11   10 132Xe HFS1 1.0 09Re03
 131Cs-132Cs.794 127Cs.206       -1118       16       -1090.888     1.424     .7F  F                  hP33 2.5 86Au02,*
 131Cs-132Cs.744 128Cs.256       -1200       30       -1215.434     1.587    -.2   U                  hP22 2.5 82Au01
 130Csx-132Cs.492 128Cs.508       -210       40        -340.286    17.394   -1.3   U                  nP22 2.5 82Au01
 131Xe(n,g)132Xe                  8936.3      1.0      8936.71765   0.00161   .4   U                  M        71Ge05
 131Xe(n,g)132Xe                  8935        2        8936.71765   0.00161   .9   U                  M        71Gr28
 131Xe(n,g)132Xe                  8936.65     0.22     8936.71765   0.00161   .3   U                  KBdn     06Fi.A
 132In(B-)132Sn                  13600      400       14135.000    60.000    1.3   U                           86Bj01
 132In(B-)132Sn                  14135       60                                   2                  NStu     95Me16
 132Sn(B-)132Sb                   3080       40        3088.728     3.161     .2o  o                  hStu     77Al09
 132Sn(B-)132Sb                   3103       10        3088.728     3.161   -1.4o  o                  hStu     95Me16
 132Sn(B-)132Sb                   3115       10        3088.728     3.161   -2.6   U                  HStu     99Fo01
 132Sb(B-)132Te                   5530       70        5552.915     4.271     .3o  o                  hStu     77Al09
 132Sb(B-)132Te                   5486       24        5552.915     4.271    2.8   U                  hStu     95Me16
 132Sb(B-)132Te                   5491       20        5552.915     4.271    3.1B  B                  HStu     99Fo01
 132Te(B-)132I                     493        4         515.305     3.483    5.6B  B                  M        65Iv01,*
 132Te(B-)132I                     517        4         515.305     3.483    -.4   1    76   52 132I  MStu     99Fo01,*
 132I(B-)132Xe                    3596       15        3575.473     4.065   -1.4  -1-                          61De17,*
 132I(B-)132Xe                    3558       15        3575.473     4.065    1.2  -1-                          65Jo13,*
 132I(B-)132Xe                    3580        7        3575.473     4.065    -.6  -1-                 MStu     99Fo01
 132I(B-)132Xe              ave   3579.090    5.842    3575.473     4.065    -.6   1    48   48 132I           average
 132Ixm(B-)132Xe                  3685       10                                   2                           74Di03,*
 132Cs(B+)132Xe                   2090       25        2126.281     1.036    1.5   U                  h        63Ta05,*
 132Cs(B+)132Xe                   2127.7      6.       2126.281     1.036    -.2   U                  H        87De33,*
 132La(B+)132Ba                   4820      100        4711.327    36.354   -1.1  -1-                 H        60Wa03
 132La(B+)132Ba                   4680       50        4711.327    36.354     .6  -1-                 h        67Fr02
 132La(B+)132Ba             ave   4708.000   44.721    4711.327    36.354     .1   1    66   66 132La           average
*132Sb-u                        M-A=-79870(124) keV for mixture gs+m at 150#(50#) keV                G        Nub211**
*132Xe-C3 O6                    Corrected in ref. of same group                                      H        09Re03**
*132La-u                        M-A=-83623(30) keV  for mixture gs+m at 188.20 keV                   g        Nub211**
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*132Ce O-142Sm1.042	Original error (22 keV) increased by 23 for BaF contamination in trap	M	GAu984**
*132Pr-u	M-A=-75213(28) keV for mixture gs+m at 30#30 keV	g	Nub211**
*132Sm-u	seen only once in spectra. To be remeasured	m	02Sc.C*G
*132Eu-u	p=0% -> S(p)>-700 Qp<700	k	Nub16b*W
*132Xe-129Xe	Corrected in ref. of same group	H	09Re03**
*132Xe-129Xe	First item 5^+ ions; second item 3^+ ions - considered to be independent	H	09Re03**
*132Xe2-84Kr3	Corrected in ref. of same group	H	09Re03**
*132Xe2-86Kr3	Corrected in ref. of same group	H	09Re03**
*131Cs-132Cs.794 127Cs.	F : Rejection based on line-shape analysis	h	86Au02**
*132Te(B-)132I	E-=215(4) 239(4) resp, to 1^+ level at 277.86 keV	h	Ens054**
*132I(B-)132Xe	E-=2156(15) 2118(15) resp, to 4^+ level at 1440.323 keV	h	Ens054**
*132Ixm(B-)132Xe	E-=1465(10) to 7^- level at 2214.01 level, and other E-	h	Ens054**
*132Cs(B+)132Xe	E+=400(25) to 2^+ level at 667.715 keV	h	Ens054**
*132Cs(B+)132Xe	p+=0.0042(0.0001) gives E+=438(6) recalculated Q		AHW900**
*	~ to 2^+ level at 667.715 keV		Ens054**
*	~ p+=0.0120(0.0040)		61Jh03**
*	~ p+=0.0039(0.0010)		68Ca12**
*	~ p+=0.0037(0.0005)		70Qa03**
*	~ p+=0.0151(0.0020)		74Go18**

133Ag-u		-31219#	537#				2				g	1.0	S-u211
133Cd-u		-47386#	215#				2				g	1.0	S-j183
133In-u		-61933#	215#				2				g	1.0	S-u211
133Sb-u		-84766	100	-84727.872	3.358	.2o	o				HGT2	2.5	08Kn.A
133Sb-u		-84795	129	-84727.872	3.358	.2	U				HGT2	2.5	08Su19
133Sb-u		-84702	25	-84727.872	3.358	-1.0	U				HGS3	1.0	12Ch19
133Te-u		-89031	43	-89036.670	2.218	-.1	U				GGR1	1.0	19An10
133I-u		-92166	16	-92171.600	6.336	-.4	1		16	16 133I	GGR1	1.0	19An10
C10 H13-133Cs		196266	64	196273.456	0.009	.1	U				hR07	1.5	68De17
C10 H13-133Cs		196279	25	196273.456	0.009	-.1	U				hR07	1.5	68De17
C9 13C H12-133Cs		191796	34	191803.260	0.009	.1	U				hR07	1.5	68De17
C8 O N H7-133Cs		147321	25	147311.888	0.009	-.2	U				hR07	1.5	68De17
C7 13C N O H6-133Cs		142835	31	142841.692	0.009	.1	U				hR07	1.5	68De17
133Cs-85Rb1.565		43500	13	43501.027	0.011	.1	U				MMA5	1.0	00Be42
133Cs-85Rb1.565		43499.3	1.6	43501.027	0.011	1.1	U				hMA8	1.0	07Ke09
133Cs-85Rb1.565		43500.9	6.7	43501.027	0.011	.0	U				MMA8	1.0	02Ke.A
133Cs-85Rb1.565		43501.2	1.7	43501.027	0.011	-.1	Z				hMA8	1.0	04He.A
133Cs-85Rb1.565		43500.1	6.7	43501.027	0.011	.1	U				HMA8	1.0	09Na.A
133Cs-85Rb1.565		43470	47	43501.027	0.011	.7	U				HMA9	1.0	09Na.A,G
133Cs-85Rb1.565		43501.2	1.7	43501.027	0.011	-.1	U				HMA8	1.0	11He10
133Cs-u		-94548.41	0.41	-94548.041	0.009	.9	U				MST2	1.0	99Ca46,*
133La-u		-91810	120	-91782.000	30.000	.2	U				MGS1	1.0	00Ra23
133La-u		-91782	30				2				MGS2	1.0	05Li24
133Ce-u		-88471	32	-88479.597	17.557	-.3	-2-				MGS2	1.0	05Li24,*
133Ce-u		-88483.3	21.	-88479.597	17.557	.2	-2-	q-q=		-3.703	H1.0	1.0	133Ce-x
133Ce-u	ave	-88479.597	17.557				2						average
133Ce O-142Sm1.049		-4618	21	-4619.677	17.682	-.1R	R	q-q=		1.677	MMA7	1.0	01Bo59,*
133Pr-u		-83663	30	-83669.441	13.416	-.2R	R	q-q=		6.441	MGS2	1.0	05Li24
133Nd-u		-77652	50				2				MGS2	1.0	05Li24,*
133Pm-u		-70218	54				2				MGS2	1.0	05Li24,*
133Sm-u		-61440#	320#				2				h	1.0	S-u127
133Eu-u		-50710#	320#				2				h	1.0	S-u127
133Gd-u		-38712#	537#				2				g	1.0	S-u20c
133Sb-136Xe.978		6022	10	6016.371	3.358	-.6	1		11	11 133Sb	HCP1	1.0	12Va02
133Sb-130Xe1.023		13984.7	4.0	13982.066	3.358	-.7	1		70	70 133Sb	HJY1	1.0	12Ha25
133Te-130Xe1.023		9672.1	2.3	9673.269	2.218	.5	1		93	93 133Te	KJY1	1.0	12Ha25
133Tem-130Xe1.023		10039.7	2.6	*			Z				kJY1	1.0	13Ka08,G
133Sn-134Xe.993		17856.5	2.4	17858.471	2.044	.8	1		73	73 133Sn	HJY1	1.0	12Ha25
133Sn 34S-133Cs1.256		10562	25	10533.108	2.045	-1.2	U				HMA8	1.0	08Dw01
133Sn-133Cs		18467.0	3.9	18461.795	2.044	-1.3	1		27	27 133Sn	KCP1	1.0	13Va12
133Sb-133Cs		9818	13	9820.169	3.358	.2	U				KCP1	1.0	13Va12
133Te-133Cs		5551.4	6.9	5511.372	2.218	-5.8B	B				KCP1	1.0	13Va12
133I-133Cs		2375.4	6.9	2376.441	6.336	.2	1		84	84 133I	KCP1	1.0	13Va12
133Pr-133Cs		10877	15	10878.600	13.416	.1	-2-				MMA5	1.0	00Be42
133Pr-133Cs		10885	30	10878.600	13.416	-.2	-2-	q-q=		6.400	m1.0	1.0	133Pr-C
133Pr-133Cs	ave	10878.600	13.416				2						average

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 133Cs-C3 O6                   -64035.786     0.026   -64035.757     0.009     1.1   1    11  11 133Cs MMI2 1.0 99Br47
 133Cs-C10 H12                -188448.445     0.057  -188448.424     0.009      .4   U              HMI2 1.0 99Br47
 133Cs-132Xe                     1296.8803    0.0103    1296.875     0.007     -.5   1    47  45 133Cs HFS1 1.0 10Mo30
 133Cs-129Xe                      671.1007    0.0103     671.101     0.007      .0   1    47  45 133Cs HFS1 1.0 10Mo30
 133Cs(g,n)132Cs                -8988        33        -8989.568     1.036     -.0   U              hPhi     60Ge01
 133Cs(g,n)132Cs                -8986         2        -8989.568     1.036    -1.8   1    27  27 132Cs  MMn     85Ts02
 132Ba(n,g)133Ba                 7189.91      0.36      7189.927     0.360      .0   1   100  98 132Ba  MMn     90Is07,Z
 132Ba(d,p)133Ba                 4977        15         4965.360     0.360     -.8   U              hANL     70Vo04
 133Sn(B-)133Sb                  7830        70         8049.623     3.662    3.1B   B              nStu     83Bl16,*
 133Sn(B-)133Sb                  8013        50         8049.623     3.662     .7o   o              hStu     92Sp.A,*
 133Sn(B-)133Sb                  7990        25         8049.623     3.662    2.4    U              HStu     95Me16
 133Sb(B-)133Te                  3966        50         4013.620     3.518    1.0o   o              hStu     70Ru.A,*
 133Sb(B-)133Te                  4003        10         4013.620     3.518    1.1o   o              hStu     95Me16
 133Sb(B-)133Te                  4002         7         4013.620     3.518    1.7    1    25  18 133Sb MStu     99Fo01
 133Te(B-)133I                   2960       100         2920.169     6.253     -.4   U              m        68Mc09
 133Te(B-)133I                   2876       100         2920.169     6.253      .4   U              m        68Pa03,*
 133Te(B-)133I                   3392       100         2920.169     6.253   -4.7C   C              hStu     70Ru.A,*
 133Te(B-)133I                   2890        15         2920.169     6.253    2.0o   o              kStu     95Me16
 133Te(B-)133I                   2942        24         2920.169     6.253     -.9   U              HStu     99Fo01
 133I(B-)133Xe                   1800        50         1786.281     6.371     -.3   U              m        59Ho97,*
 133I(B-)133Xe                   1760        30         1786.281     6.371      .9   U              m        66Ei01,*
 133I(B-)133Xe                   1757         4         1786.281     6.371    7.3B   B              KStu     99Fo01
 133Xe(B-)133Cs                   428.0       4.         427.360     2.400     -.2  -2-                      52Be55,*
 133Xe(B-)133Cs                   427.0       3.         427.360     2.400      .1  -2-                      61Er04,*
 133Xe(B-)133Cs                   424        11          427.360     2.400      .3   U              MStu     99Fo01
 133Xe(B-)133Cs            ave    427.360     2.400                                 2                       average
 133Ba(e)133Cs                    517.3       1.0        517.428     0.992      .1   1    98  98 133Ba          67Sc10,*
 133Ba(e)133Cs                    498         5          517.428     0.992    3.9F   F              h        68Mc06,*
 133Ba(e)133Cs                    486         2          517.428     0.992   15.7F   F              h        69Bo49,*
 133Ba(e)133Cs                    521         5          517.428     0.992     -.7   U              h        69To14,*
 133Ba(e)133Cs                    517.99      9.99       517.428     0.992     -.1   Z                       90Bh01,G
 133La(B+)133Ba                  2230       200         2059.123    27.962     -.9   U              M        50Na09,*
 133Nd(B+)133Pr                  4800       200         5605.211    48.222    4.0B   B              G        95Br24,G
*133Cs-85Rb1.565              Not published in ref.  {GAu115}                                       h        10Na13*G
*133Cs-u                      As revised in ref.. ~ Original: --94548.20(0.28) uu                   h        02Bf02**
*133Ce-u                      M-A=-82392(28) keV  for mixture gs+m at 37.2 keV                      g        Nub211**
*133Ce O-142Sm1.049           D_M=-4599(16) uu    for mixture gs+m at 37.2 keV; M-A=-87150(16) keV  g        Nub211**
*133Nd-u                      M-A=-72268(28) keV  for mixture gs+m at 127.97 keV                    g        Nub211**
*133Nd-u                       SYST does not favor correction                                       m        AHW008*W
*133Pm-u                      M-A=-65342(33) keV  for mixture gs+m at 129.7 keV                     g        Nub211**
*133Tem-130Xe1.023            D_M=10039.7(2.6) uu  for 133Tem at 334.26 keV; M-A=-82595.8(2.4) keV  g        Nub211*G
*133Sn(B-)133Sb               E-=6870(70) to 5/2^+ level at 962.30 keV                              h        Ens114**
*133Sn(B-)133Sb               Private commmunication to ref.                                        h        92Ch09**
*133Sb(B-)133Te               E-=1210(50) to (5/2^+) level at 2755.51 keV; re-evaluated             h        Ens114**
*133Te(B-)133I                Q-=3210(100) from 133Tem at 334.26 keV                                g        Nub211**
*                              ~ reported as belonging to gs, reinterpreted                                  AHW   **
*133Te(B-)133I                E-=850(100) to (3/2^+,5/2^+) level at 2541.74 keV                     h        Ens114**
*133I(B-)133Xe                E-=1270(50) 1230(30) resp, to 5/2^+ level at 529.872 keV              h        Ens114**
*133Xe(B-)133Cs               E-=347(4) 346(3) resp, to 5/2^+ level at 80.9979 keV                  h        Ens114**
*133Ba(e)133Cs                From L/K=0.371(0.007) to 1/2^+ level at 437.0113; recalculated Q      h        Ens114**
*                              ~ and L/K=0.221(0.005) to 3/2^+ level at 383.8491 keV: Q=521(5) keV  h        Ens114**
*133Ba(e)133Cs                F : badly resolved L-peak                                             h        Ens114**
*133Ba(e)133Cs                L/K=0.67(0.15) LM/K=1.11(0.05) 0.45(0.04) resp, to 1/2^+ 437.0113 keV h        Ens114**
*133Ba(e)133Cs                pK=0.730(0.012) to 437.01 level        ****                                    GAu936*G
*133La(B+)133Ba               E+=1200(200) to 3/2^+ level at 12.327 keV                             h        Ens114**
*133Nd(B+)133Pr               e/+=0.27(0.05) from 133Ndm to level at 402 keV                        g        GAu176*G


 134Cd-u                       -42362#      322#                                    2              g    1.0 S-u20c
 134In-u                       -55792#      215#                                    2              g    1.0 S-u211
 134Sb-u                       -79351       131       -79462.665     3.300     -.9   U              GGR1 1.0 19An10
 134Te-u                       -88844       130       -88603.623     2.948      .7   U              HGT2 2.5 08Su19
 134Te-u                       -88614        44       -88603.623     2.948      .2   U              GGR1 1.0 19An10
 134I-u                        -90244        58       -90224.339     5.214      .3   U              GGR1 1.0 19An10
 C10 H14-134Xe                 204155.5       3.2     204157.416     0.006      .2   U              hM16 2.5 63Da10
 134Xe-u                       -94634.4       5.4     -94606.970     0.006     2.0   U              hACC 2.5 90Me08
 134Xe-C 13C 35Cl 37Cl2          1381.76      0.60      1380.364     0.116    -1.6   U              KH47 1.5 94Hy01,G
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C10 H14-134Ba		205025	20	205042.197	0.269	.3	U				hM17	2.5	66Be10
C10 H14-134Ba		205010	46	205042.197	0.269	.5	U				hR07	1.5	68De17
C11 H2-134Ba		111125	48	111141.814	0.269	.2	U				hR07	1.5	68De17
C8 N O H8-134Ba		156063	78	156080.629	0.269	.2	U				hR07	1.5	68De17
C12 H6-134Ba O		147531	64	147527.323	0.269	-.0	U				hR07	1.5	68De17
134La-u		-91456	34	-91485.989	21.395	-.9	-2-				MGS2	1.0	05Li24
134La-u		-91442	54	-91485.989	21.395	-.8	-2-	q-q=	40.975		m1.0	1.0	134Ba+0
134La-u		-91528	32	-91485.989	21.395	1.3	-2-	q-q=	-39.133		m1.0	1.0	134Ba+0
134La-u	ave	-91485.989	21.395				2						average
134Ce-u		-91190	130	-91071.858	21.886	.9	U				MGS1	1.0	00Ra23
134Ce-u		-91056	30	-91071.858	21.886	-.5	-2-				MGS2	1.0	05Li24
134Ce-u		-91089.9	32.	-91071.858	21.886	.6	-2-	q-q=	-18.042		H1.0	1.0	134Ce-x
134Ce-u	ave	-91071.858	21.886				2						average
134Ce O-142Sm1.056		-6631	32	-6618.405	21.988	.4R	R	q-q=	-12.595		MMA7	1.0	01Bo59,*
134Pr-u		-84285	37	-84303.271	21.810	-.5	-2-				HGS2	1.0	05Li24,*
134Pr-u		-84313	27	-84303.271	21.810	.4	-2-	q-q=	-9.729		h1.0	1.0	134Pr-x
134Pr-u	ave	-84303.271	21.810				2						average
134Nd-u		-81234	30	-81209.792	12.687	.8R	R	q-q=	-24.208		MGS2	1.0	05Li24
134Pm-u		-71674	45				2				GGS2	1.0	05Li24,*
134Sm-u		-65890#	210#				2				h	1.0	S-u127
134Eu-u		-53463#	322#				2				g	1.0	S-u20c
134Gd-u		-44584#	429#				2				g	1.0	S-u20b
134Sb-130Xe1.031		20016.8	2.2	20019.200	3.300	1.1o	o				GJY1	1.0	12Ha25
134Sb-130Xe1.031		20019.2	3.3				2				HJY1	1.0	13Ka08,*
134Te-130Xe1.031		10877.1	3.5	10878.242	2.948	.3	1	71	71	134Te	HJY1	1.0	12Ha25
134Sb-136Xe.985		11906	36	11931.079	3.300	.7	U				HCP1	1.0	12Va02,*
134Te-136Xe.985		2791.4	6.5	2790.121	2.948	-.2	1	21	21	134Te	HCP1	1.0	12Va02
134Xe-132Xe1.015		2675.6193	0.0084	2675.61910	0.00280	-.0	U				GFS1	1.0	13Ho22
134Xe-132Xe1.015		2675.6191	0.0028	2675.61910	0.00280	.0	1	100	100	134Xe	GHep	1.0	20Ri04
134Sn 34S-133Cs1.263		16080	160	15961.618	3.400	-.7	U				HMA8	1.0	08Dw01
134Sn-133Cs1.008		23974	17	23984.858	3.400	.6	U				KCP1	1.0	13Va12
134Sb-133Cs1.008		15850	11	15841.762	3.300	-.7	U				KCP1	1.0	13Va12
134I-133Cs1.008		5083.0	6.8	5080.088	5.214	-.4	1	59	59	134I	KCP1	1.0	13Va12
134Cs-133Cs1.008		2025	18	2022.929	0.015	-.1o	o				kMA1	1.0	90St25
134Cs-133Cs1.008		2033	14	2022.929	0.015	-.7	U				hMA1	1.0	99Am05
134Pr-133Cs1.008		10992	27	11001.157	21.810	.3R	R	q-q=	-9.157		HMA5	1.0	00Be42,*
134Nd-133Cs1.008		14100	14	14094.635	12.687	-.4	-2-				MMA5	1.0	00Be42
134Nd-133Cs1.008		14070	30	14094.635	12.687	.8	-2-	q-q=	-24.635		m1.0	1.0	134Nd-C
134Nd-133Cs1.008	ave	14094.635	12.687				2						average
134Sn-134Xe		23287.4	3.4				2				HJY1	1.0	12Ha25
134Ba-C10 H13		-197229	20	-197217.165	0.269	.2	U				hM17	2.5	66Be10
134Ba-132Ba		-553	4	-552.979	1.162	.0	U				hM17	2.5	66Be10
134Ba-132Ba		-550	121	-552.979	1.162	-.0	U				hR07	1.5	68De17
131Cs-134Cs.244 130Csx.756		-1313	50	-1178.329	12.982	1.1	U				nP22	2.5	82Au01,*
133Cs(n,g)134Cs		6891.540	0.017	6891.540	0.014	.0	-1-				mMMn		84Ke11,Z
133Cs(n,g)134Cs		6891.540	0.027	6891.540	0.014	.0	-1-				mILn		87Bo24,Z
133Cs(n,g)134Cs		6891.39	0.14	6891.540	0.014	1.1	U				MBdn		06Fi.A
133Cs(n,g)134Cs	ave	6891.540	0.014	6891.540	0.014	.0	1	100	100	134Cs			average
134Sn(B-)134Sb		7370	90	7585.245	4.414	2.4	U				HStu		95Me16
134Sb(B-)134Te		8306	210	8514.748	4.122	1.0o	o				HStu		72Ke21,*
134Sb(B-)134Te		7960	240	8514.748	4.122	2.3o	o				HStu		77Lu06,*
134Sb(B-)134Te		8310	80	8514.748	4.122	2.6	U				HBwg		79Ke02,*
134Sb(B-)134Te		8390	45	8514.748	4.122	2.8	U				HStu		95Me16
134Te(B-)134I		1560	90	1509.687	4.933	-.6	U				Stu		77Lu06,*
134Te(B-)134I		1550	30	1509.687	4.933	-1.3	U				MStu		95Me16
134Te(B-)134I		1513	7	1509.687	4.933	-.5	1	50	41	134I	MStu		99Fo01
134I(B-)134Xe		4170	60	4082.395	4.857	-1.5	U				n		61Jo08,*
134I(B-)134Xe		4175	15	4082.395	4.857	-6.2B	B				MStu		95Me16
134I(B-)134Xe		4052	8	4082.395	4.857	3.8B	B				KStu		99Fo01
134Cs(B-)134Ba		2058.6	0.4	2058.837	0.251	.6	1	39	39	134Ba			68Hs01,*
134La(B+)134Ba		3772	50	3731.344	19.931	-.8R	R	q-q=	40.656		M		65Bi12
134La(B+)134Ba		3692	30	3731.344	19.931	1.3R	R	q-q=	-39.344		M		73Al20
134Ce(e)134La		500	200	385.761	28.510	-.6	U				h		76Gr09,*
134Pr(B+)134Ce		6190	90	6304.899	28.781	1.3	U				HDbn		95Ve08,*
134Nd(B+)134Pr		2770	150	2881.557	23.503	.7	U				M		77Ko.B
134Pm(B+)134Nd		9170	200	8882.534	43.551	-1.4	U				hDbn		95Ve08,*

*134Xe-C 13C 35Cl 37Cl2 Doublet equation as written in paper is most probably a misprint n GAu959*G

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*134Ce O-142Sm1.056           Original error (22 keV) increased by 23 for BaF contamination in trap    M        GAu984**
*134Pr-u                      M-A=-78477(28) keV  for mixture gs+m at 67.7(0.4) keV                    g        Nub211**
*134Pm-u                      M-A=-66739(30) keV  for mixture gs+m at 50#(50#) keV                     g        Nub211**
*134Sb-130Xe1.031             D_M=20318.7(3.1) uu  for 134Sbm at 279(1) keV; M-A=-73740.0(2.9) keV     g        Nub211**
*134Sb-136Xe.985              D_M=12206(36) uu     for 134Sbm at 279(1) keV; M-A=-73762(33) keV        g        Nub211**
*                              ~ assuming high spin is favored, as for 136Ixm                          H        GAu124**
*134Pr-133Cs1.008             Most certainly gs. ~ Mixture with isomer not completely excluded         M        00Be42**
*134Pr-133Cs1.008             D_M=11029(16) uu    for mixture gs+m at 67.7(0.4) keV; M-A=-78503(15) keVg        Nub211**
*131Cs-134Cs.244 130Csx       D_M=-1330(50) keV   for mixture gs+m at 138.7441 keV                     k        Nub211**
*134Sb(B-)134Te               E-=8400(300), and 6800(300) from 134Sbm at 279(1) to 134Tem at 1691.34   g        Nub211**
*134Sb(B-)134Te               E-=5840(240) from 134Sbm at 279(1) to (6)^+ level at 2397.70 keV         H        Ens04a**
*134Sb(B-)134Te               E-=8420(120), and 6710(210),6980(210),6070(150) from 134Sbm at 279(1)    g        Nub211**
*                              ~ to 6^+ levels at 1691.34, 1691.34, 2397.70 keV                        h        Ens04a**
*134Te(B-)134I                E-=730(110) 610(160) to 1^+ levels at 846.688 923.432 keV                h        Ens04a**
*134I(B-)134Xe                E-=2410(60) 1680(60) 1250(60) to 4^+ lvls at 1731.17 2588.46 2867.38 keV h        Ens04a**
*134Cs(B-)134Ba               E-=658.0(0.4) to 4^+ level at 1400.590 keV                              h        Ens04a**
*134Ce(e)134La                LK=0.798(0.04); also Q+>375 keV                                          h        76Gr09**
*134Pr(B+)134Ce               E+=4120(90) to 4^+ level at 1048.68 keV                                  h        Ens04a**
*134Pm(B+)134Nd               E+=7360(200) to 4^+ level at 788.92 keV                                  h        Ens04a**
*                              ~ Says Q+=9200(200). 22.6 s 5^+ activity                                n        95Ve08*W
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 135Cd-u                        -35234#     429#                                     2                  g    1.0 S-u211
 135In-u                        -50575#     322#                                     2                  g    1.0 S-u211
 135Sb-u                        -74932      103       -74815.645      2.834     .5o  o                  HGT2 2.5 08Kn.A
 135Sb-u                        -74943      130       -74815.645      2.834     .4   U                  HGT2 2.5 08Su19
 135Te-u                        -83643      106       -83445.284      1.849     .7   U                  HGT2 2.5 08Kn.A
 135Te-u                        -83441      132       -83445.284      1.849    -.0   U                  HGT2 2.5 08Su19
 C8 N O H9-135Ba                162731       48       162725.463      0.263    -.1   U                  hR07 1.5 68De17
 C11 H3-135Ba                   117822       77       117786.649      0.263    -.3   U                  hR07 1.5 68De17
 C12 H7-135Ba O                 154160       46       154172.157      0.263     .2   U                  hR07 1.5 68De17
 135Ce-u                        -90779       30       -90839.338     11.021   -2.0   1     13   13 135Ce HGS2 1.0 05Li24,*
 135Pr-u                        -86897       30       -86888.228     12.687     .3R  R  q-q=   -8.772  MGS2 1.0 05Li24
 135Nd-u                        -81800      130       -81818.682     20.534    -.1o  o                  MGS1 1.0 00Ra23
 135Nd-u                        -81811       36       -81818.682     20.534    -.2R  R  q-q=    7.682  MGS2 1.0 05Li24,*
 135Pm-u                        -75215       89                                      2                  KGS2 1.0 05Li24,*
 135Sm-u                        -67480      166                                      2                  MGS2 1.0 05Li24,*
 135Eu-u                        -58130#     210#                                     2                  h    1.0 S-u127
 135Gd-u                        -47504#     429#                                     2                  g    1.0 S-u20b
 135Sn-130Xe1.038                35065.9      3.3                                    2                  HJY1 1.0 12Ha25
 135Sb-130Xe1.038                25342.4      3.1      25341.652      2.834    -.2   1     84   84 135Sb HJY1 1.0 12Ha25
 135Te-130Xe1.038                16713.0      2.9      16712.012      1.849    -.3   1     41   41 135Te HJY1 1.0 12Ha25
 135Sn-133Cs1.015                30927       37        30874.864      3.300   -1.4   U                  KCP1 1.0 13Va12
 135Sb-133Cs1.015                21146.8      7.0      21150.616      2.834     .5   1     16   16 135Sb KCP1 1.0 13Va12
 135Te-133Cs1.015                12520.3      2.4      12520.976      1.849     .3   1     59   59 135Te KCP1 1.0 13Va12
 135I-133Cs1.015                  6026.6      2.3       6025.616      2.211    -.4   1     92   92 135I  KCP1 1.0 13Va12
 135Cs-133Cs1.015                 1958       18         1943.167      0.390    -.8o  o                  kMA1 1.0 90St25
 135Cs-133Cs1.015                 1957       14         1943.167      0.390   -1.0   U                   MA1 1.0 99Am05
 135Pr-133Cs1.015                 9080       14         9078.033     12.687    -.1  -2-                 MMA5 1.0 00Be42
 135Pr-133Cs1.015                 9069       30         9078.033     12.687     .3  -2- q-q=   -9.033  m1.0 1.0  135Pr-C
 135Pr-133Cs1.015           ave   9078.033   12.687                              2                           average
 135Nd-133Cs1.015                14144       25        14147.579     20.534     .1  -2-                 MMA5 1.0 00Be42,*
 135Nd-133Cs1.015                14155       36        14147.579     20.534    -.2  -2- q-q=    7.421  m1.0 1.0  135Nd-C
 135Nd-133Cs1.015           ave  14147.579   20.534                              2                           average
 135Te-136Xe.993                  8686       10         8690.740      1.849     .5   U                  HCP1 1.0 12Va02
 135I-136Xe.993                   2186.3      8.3       2195.380      2.211    1.1   U                  KCP1 1.0 12Va02
 135Cs-135Ba                       288.43     0.32       288.459      0.307     .1   1     92   87 135Cs GJY2 1.0 20De20
 135Ba-C10 H14                 -203860       20      -203861.999      0.263    -.0   U                  hM17 2.5 66Be10
 135Ba-134Ba                      1177        2         1180.198      0.107     .6   U                  hM17 2.5 66Be10
 135Ba-134Ba                      1161       70         1180.198      0.107     .2   U                  hR07 1.5 68De17
 135Ba-134Ba                      1168       78         1180.198      0.107     .1   U                  hR07 1.5 68De17
 134Cs(n,g)135Cs                  8762        1         8762.110      0.364     .1   1     13   13 135Cs  ILn      92Ul.A
 134Ba(n,g)135Ba                  6973.2      0.4       6971.971      0.100   -3.1C  C                  hBNn      77Ko.A
 134Ba(n,g)135Ba                  6972.17     0.18      6971.971      0.100   -1.1  -1-                 mMMn      90Is07,Z
 134Ba(n,g)135Ba                  6971.84     0.17      6971.971      0.100     .8  -1-                 MLtn      93Bo01,Z
 134Ba(n,g)135Ba                  6973.24     0.22      6971.971      0.100   -5.8B  B                  MBNn      93Ch21
 134Ba(n,g)135Ba                  6971.87     0.18      6971.971      0.100     .6  -1-                 MBdn      06Fi.A
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 134Ba(d,p)135Ba                4746       15        4747.405     0.100      .1  U                  hANL      70Vo04
 134Ba(n,g)135Ba           ave  6971.955    0.102    6971.971     0.100      .2  1    96   61 134Ba           average
 135Tb(p)134Gd                  1188        7                                    3                  HArp      04Wo07,*
 135Sb(B-)135Te                 8120       50        8038.458     3.152    -1.6  U                  HStu      89Ho08
 135Te(B-)135I                  5950      240        6050.389     2.685     .4o  o                  hStu      77Lu06
 135Te(B-)135I                  5950      100        6050.389     2.685    1.0o  o                  hBwg      79Ke02,*
 135Te(B-)135I                  5970      200        6050.389     2.685      .4  U                  H         85Sa15,*
 135Te(B-)135I                  5960      100        6050.389     2.685      .9  U                  HBwg      87Gr.A
 135Te(B-)135I                  5888       13        6050.389     2.685   12.5B  B                  HStu      07Fo02
 135I(B-)135Xe                  2780       80        2634.185     3.828    -1.8  U                  M         70Ma19
 135I(B-)135Xe                  2590       50        2634.185     3.828      .9  U                  MStu      76Lu04,*
 135I(B-)135Xe                  2627        6        2634.185     3.828     1.2  1    41   33 135Xe MStu      99Fo01
 135Xe(B-)135Cs                 1155       10        1168.592     3.662     1.4 -1-                           52Be55,*
 135Xe(B-)135Cs                 1167        5        1168.592     3.662      .3 -1-                 MStu      99Fo01,*
 135Xe(B-)135Cs            ave  1164.600    4.472    1168.592     3.662      .9  1    67   67 135Xe           average
 135Cs(B-)135Ba                  205        5         268.698     0.286   12.7B  B                  h         53Li01
 135La(B+)135Ba                 1200       10        1207.197     9.430      .7  1    89   89 135La           71Ba18,*
 135Ce(B+)135La                 2027        5        2027.150     4.610      .0 -1-                           76Ga.A,*
 135Ce(B+)135La                 2016       13        2027.150     4.610      .9 -1-                           81Sa09,*
 135Ce(B+)135La            ave  2025.582    4.667    2027.150     4.610      .3  1    98   87 135Ce           average
 135Pr(B+)135Ce                 3720      150        3680.436    15.654     -.3  U                  M         54Ha68,*
 135Pmm(B+)135Nd                6040      150        6386#       50#       2.3D  D                  HDbn      95Ve08,*
 135Pmm(B+)135Nd                6386#      50#                                   3                  h         S-u071
*135Ce-u                       M-A=-84114(28) keV  for 135Cem at 445.81 keV                         g         Nub211**
*135Nd-u                       M-A=-76174(28) keV  for mixture gs+m at 64.95 keV                    g         Nub211**
*135Pm-u                       M-A=-69952(28) keV  for mixture gs+m at 220#90 keV                   g         Nub211**
*135Sm-u                       M-A=-62857(38) keV  for mixture gs+m at 0#300 keV                    g         Nub211**
*135Nd-133Cs1.015              D_M=14179(14) uu    for gs+m mixture at 64.95 keV; M-A=-76185(13) keV   g      Nub211**
*135Tb(p)134Gd                 Trends from Mass Surface TMS suggest 135Tb   300 keV less bound      G         GAu212**
*135Te(B-)135I                 E-=5120(120) to 5/2^- level at 870.52 keV and other E-               h         Ens083**
*135Te(B-)135I                 E-=5370(100) to 5/2^+ level at 603.68 keV                            h         Ens083**
*135I(B-)135Xe                 E-=1320(50) to 5/2^+ level at 1260.416 keV, and other E-             h         Ens083**
*135Xe(B-)135Cs                E-=905(10) 917(5) resp, to 5/2^+ level at 249.767 keV                k         Ens083**
*135La(B+)135Ba                p+=7(1)e-5, from reanalysis                                          h         AHW   **
*135La(B+)135Ba                But 65*Mo*05 says p^+<0.002% (2e-5) or E+<125 keV                    h         65Mo05**
*135Ce(B+)135La                E+=705(5) 694(13) resp, to 1/2^+ level at 300.052 keV                h         Ens083**
*135Pr(B+)135Ce                E+=2500(100) to lvls (5/2^+) 296.11 and 3/2(^+) 82.67 keV, roughly equal h     Ens083**
*135Pmm(B+)135Nd               E+=4920(150) to mixture gs and (11/2^-) level at 198.5 keV           h         Ens083**
*135Pmm(B+)135Nd               Trends from Mass Surface TMS suggest 135Pmm  350 keV less bound      H         GAu071**


 136In-u                       -43983#    322#                                   2                  g     1.0 S-u211
 136Sn-u                       -60301#    215#                                   2                  g     1.0 S-u211
 136Te-u                       -79945      25       -79898.820     2.449     1.8  U                  HGS3 1.0 12Ch19
 136Xe-120Sn1.133               18019.8     3.1      18018.978     1.119     -.3  U                  HJY1 1.0 11Ha48
 C10 H16-136Xe                 217982.      3.9     217986.036     0.007      .4  U                  HM16 2.5 63Da10
 136Xe-u                       -92793.6     9.0     -92785.526     0.007      .4  U                  hACC 2.5 90Me08
 136Xe-u                       -92785.516   0.011   -92785.526     0.007     -.9  Z                  kFS1 1.0 07Re03
 136Xe-28Si4 D12              -169712.9828  0.0162 -169712.998     0.007     -.9  1    20   19 136Xe KFS1 1.0 07Re03
 C11 H4-136Ba                  126737      56       126724.328     0.263     -.2  U                  hR07 1.5 68De17
 C8 N O H10-136Ba              171635      56       171663.143     0.263      .3  U                  hR07 1.5 68De17
 C12 H8-136Ba O                163094      40       163109.836     0.263      .3  U                  hR07 1.5 68De17
 136La-u                       -92394      88       -92365.037    57.081      .3 -2-                 HGS2 1.0 05Li24,*
 136La-u                       -92344      75       -92365.037    57.081     -.3 -2- q-q=    19.596  m1.0 1.0  136Ba+0
 136La-u                   ave -92365.037  57.081                                2                            average
 C10 H16-136Ce                 218128      50       218071.255     0.348     -.3  U                  hR05 4.0 65De13
 C12 H8-136Ce O                160563      36       160556.380     0.348     -.0  U                  hR05 4.0 65De13
 136Ce-u                       -92852      32       -92870.744     0.348     -.6  Z                  mGS2 1.0 02Sc.C,G
 136Pr-u                       -87297      32       -87322.529    12.297     -.8  Z                  mGS2 1.0 02Sc.C,G
 136Nd-u                       -85044      30       -85023.939    12.687     .7R  R  q-q=   -20.061  MGS2 1.0 05Li24
 136Pm-u                       -76378      79       -76404.051    74.153     -.3 -2-                 KGS2 1.0 05Li24,*
 136Pm-u                       -76597     215       -76404.051    74.153      .9 -2- q-q= -179.731  m1.0 1.0  136Nd+0
 136Pm-u                   ave -76404.051  74.153                                2                            average
 136Sm-u                       -71768      30       -71724.447    13.416     1.5R  R  q-q=   -43.553  MGS2 1.0 05Li24
 136Eu-u                       -60380#    210#                                   2                  h     1.0 S-u127
 136Gd-u                       -52700#    320#                                   2                  h     1.0 S-u127
 136Tb-u                       -38540#    537#                                   2                  g     1.0 S-u20c
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136Sb-130Xe1.046		31675.1	6.8	31678.233	6.258	.5	1	85	85	136Sb	HJY1	1.0	12Ha25
136Te-130Xe1.046		21029.9	3.1	21030.404	2.449	.2	1	62	62	136Te	HJY1	1.0	12Ha25
136Sb-133Cs1.023		27489	16	27471.656	6.258	-1.1	1	15	15	136Sb	KCP1	1.0	13Va12
136Te-133Cs1.023		16827.7	6.8	16823.827	2.449	-.6	1	13	13	136Te	KCP1	1.0	13Va12
136Xe-133Cs1.023		3936.5	1.9	3937.121	0.011	.3	U				HMA8	1.0	09Ne11
136Cs-133Cs1.023		4007	18	4034.078	2.011	1.5o	o				kMA1	1.0	90St25
136Cs-133Cs1.023		4021	14	4034.078	2.011	.9	U				hMA1	1.0	99Am05
136Pr-133Cs1.023		9418	15	9400.117	12.297	-1.2	1	67	67	136Pr	MMA5	1.0	00Be42
136Nd-133Cs1.023		11703	14	11698.708	12.687	-.3	-2-				MMA5	1.0	00Be42
136Nd-133Cs1.023		11679	30	11698.708	12.687	.7	-2-	q-q=	-19.708		m1.0	1.0	136Nd-C
136Nd-133Cs1.023	ave	11698.708	12.687				2						average
136Pmm-133Cs1.023		20429	100				2				MMA5	1.0	00Be42,*
136Sm-133Cs1.023		25009	15	24998.200	13.416	-.7	-2-				MMA5	1.0	00Be42
136Sm-133Cs1.023		24955	30	24998.200	13.416	1.4	-2-	q-q=	-43.200		m1.0	1.0	136Sm-C
136Sm-133Cs1.023	ave	24998.200	13.416				2						average
136Xe-134Xe1.015		3245.8	3.8	3240.547	0.009	-1.4o	o				HMA8	1.0	05He.A
136Xe-134Xe1.015		3244.3	4.0	3240.547	0.009	-.9	U				HMA8	1.0	06He29
136Te-136Xe		12887.9	5.0	12886.706	2.449	-.2	1	24	24	136Te	HCP1	1.0	12Va02
136Ixm-136Xe		7611.2	4.9				2				HCP1	1.0	12Va02,*
136Xe-136Ba		2639.6	0.6	2638.674	0.263	-.6	-1-				HH49	2.5	10Mc04
136Xe-136Ba		2638.62	0.52	2638.674	0.263	.1	-1-				HJY1	1.0	11Ko03
136Xe-136Ba	ave	2638.725	0.491	2638.674	0.263	-.1	1	29	29	136Ba			average
136Ce-136Ba		2553.46	0.29	2553.456	0.228	-.0	-1-				HJY1	1.0	11Ko03
136Ce-136Ba		2553.42	0.37	2553.456	0.228	.1	-1-				GSH1	1.0	12Ne10
136Ce-136Ba	ave	2553.445	0.228	2553.456	0.228	.0	1	100	100	136Ce			average
136Xe-13C3 O6		-72337.7553	0.0109	-72337.747	0.007	.7	-1-				KFS1	1.0	07Re03
136Xe-13C3 O6		-72337.7464	0.0109	-72337.747	0.007	-.1	-1-				KFS1	1.0	07Re03
136Xe-13C3 O6	ave	-72337.751	0.008	-72337.747	0.007	.4	1	82	81	136Xe			average
136Ba-135Ba		-1115	3	-1112.647	0.042	.3	U				hM17	2.5	66Be10
136Ba-135Ba		-1119	50	-1112.647	0.042	.1	U				hR07	1.5	68De17
136Ba-135Ba		-1074	50	-1112.647	0.042	-.5	U				hR07	1.5	68De17
136Ba-134Ba		67	5	67.551	0.115	.0	U				hM17	2.5	66Be10
136Ba-134Ba		69	128	67.551	0.115	-.0	U				hR07	1.5	68De17
136Ba-134Ba		72	78	67.551	0.115	-.0	U				hR07	1.5	68De17
N10-136Xe		123525.5778	0.0235	123525.568	0.007	-.4	U				KFS1	1.0	07Re03
136Te(B-n)135I		1285	50	1282.582	3.073	-.0	U				H		84Kr.B
136Xe(d,3He)135I		-4438	30	-4445.486	2.060	-.2	U				HOak		71Wi04
136Xe(d,t)135Xe		-1723	40	-1829.893	3.668	-2.7	U				hOak		68Mo21,W
135Ba(n,g)136Ba		9106.4	0.8	9107.742	0.039	1.7	U				h		69Ge07
135Ba(n,g)136Ba		9107.74	0.04	9107.742	0.039	.1	-1-				MMn		90Is07,Z
135Ba(n,g)136Ba		9107.73	0.19	9107.742	0.039	.1	-1-				MBdn		06Fi.A
135Ba(d,p)136Ba		6886	15	6883.176	0.039	-.2	U				hANL		70Vo04
135Ba(n,g)136Ba	ave	9107.740	0.039	9107.742	0.039	.1	1	99	59	135Ba			average
136Te(B-)136I		5100	150	5119.945	14.188	.1	U				H		77Sc21
136Te(B-)136I		5095	100	5119.945	14.188	.2	U				HBwg		87Gr.A
136Te(B-)136I		5086	20	5119.945	14.188	1.7	1	50	50	136I	HStu		07Fo02
136I(B-)136Xe		6960	100	6883.945	14.188	-.8	U				H		59Jo37,*
136I(B-)136Xe		6690	150	6883.945	14.188	1.3	U				hStu		76Lu04,*
136I(B-)136Xe		6925	70	6883.945	14.188	-.6	U				HBwg		87Gr.A
136I(B-)136Xe		6850	20	6883.945	14.188	1.7	1	50	50	136I	HStu		07Fo02
136Ixm(B-)136Xe		7100	230	7089.788	4.564	-.0o	o				HStu		76Lu04,*
136Ixm(B-)136Xe		7705	120	7089.788	4.564	-5.1C	C				HBwg		87Gr.A
136Ixm(B-)136Xe		7051	12	7089.788	4.564	3.2B	B				HStu		07Fo02
136Cs(B-)136Ba		2548.1	2.0	2548.224	1.857	.1	-2-						54Ol05,*
136Cs(B-)136Ba		2549	5	2548.224	1.857	-.2	-2-						65Re07,*
136Cs(B-)136Ba	ave	2548.224	1.857				2						average
136La(B+)136Ba		2870	70	2849.592	53.172	-.3R	R	q-q=	20.408		M		59Gi50
136Pr(B+)136Ce		5084	50	5168.130	11.456	1.7	U				m		68Zh04,*
136Pr(B+)136Ce		5114	75	5168.130	11.456	.7	U				m		71Ke07,*
136Pr(B+)136Ce		5134	20	5168.130	11.456	1.7	1	33	33	136Pr	IRS		83Al.B,*
136Nd(B+)136Pr		2501	50	2141.124	16.458	-7.2B	B				h		68Zh04,*
136Nd(B+)136Pr		2211	25	2141.124	16.458	-2.8B	B				h		75Br16,*
136Pm(B+)136Nd		7850	200	8029.375	70.076	.9R	R	q-q=	-179.375		mIRS		83Al06,*
*136La-u		M-A=-85935(32) keV for mixture gs+m at 259.3 keV									g		Nub211**
*136Ce-u		used as reference									m		02Sc.C*G
*136Pr-u		used as reference									m		02Sc.C*G
*136Pm-u		M-A=-71091(28) keV for mixture gs+m at 110(120) keV									g		Nub211**

*136Pmm-133Cs1.023	Slightly contaminated by gs, original error (20) increased	M	00Be42**
*136Ixm-136Xe	High spin isomer is preferred (see also 134Sb)	H	GAu124**
*136Xe(d,t)135Xe	Original error 20 increased, see comment on 136Xe(d,p)137Xe	m	AHW900*W
*136I(B-)136Xe	E-=7000(100), 5610(150), 4280(150) to gs, 2^+ lvls 1313.027, 2634.16 keV	h	Ens026**
*136I(B-)136Xe	E-=5370(400), 4700(320), 3920(220) to 2^+ lvls 1313.027, 2289.53, 2634.16	h	Ens026**
*136Ixm(B-)136Xe	E-=5170(400) 4670(270) to 136Xem 6^+ at 1891.703 and 2444.39 level	h	Ens026**
*136Cs(B-)136Ba	E-=341(2) 342(5) resp, to 6^+ level at 2207.077 keV	h	Ens026**
*136Pr(B+)136Ce	E+=2970(50) 3000(75) 3020(20) resp, to 2^+ level at 1092.09 keV	h	Ens026**
*136Nd(B+)136Pr	E+=1330(50) to 1^+ level at 149.11 keV	h	Ens026**
*136Nd(B+)136Pr	K/B+=13.2(0.5) to 1^+ level at 149.11 keV	h	Ens026**
*136Pm(B+)136Nd	E-=4732(70) probably from high spin isomer going to several	n	AHW944**
*	~ high spin levels around 2100 keV	n	AHW944**

137In-u		-38465#	429#				2				g	1.0	S-u211
137Sn-u		-53838#	322#				2				g	1.0	S-u211
137Sb-u		-64445	215	-64477.480	56.000	-.1o	o				KGT1	1.5	04Ma.A
137Sb-u		-65068	186	-64477.480	56.000	1.3	U				KGT3	2.5	16Kn03
137Te-u		-74528	101	-74400.645	2.255	.5o	o				HGT2	2.5	08Kn.A
137Te-u		-74386	129	-74400.645	2.255	-.0	U				HGT2	2.5	08Su19
137I-u		-82145	130	-81971.822	9.000	.5	U				HGT2	2.5	08Su19
C11 H5-137Ba		133366	24	133297.952	0.267	-1.9	U				hR07	1.5	68De17
C7 13C N O H10-137Ba		173792	73	173766.571	0.267	-.2	U				hR07	1.5	68De17
C12 H9-137Ba O		169692	39	169683.461	0.267	-.1	U				hR07	1.5	68De17
137La-u		-93556	30	-93549.563	1.761	.2	U				HGS2	1.0	05Li24
137Ce-u		-92101	85	-92237.585	0.386	-1.6	U				MGS2	1.0	05Li24,*
137Pr-u		-89302	32	-89320.817	8.734	-.6	Z				mGS2	1.0	02Sc.C,G
137Nd-u		-85438	30	-85436.901	12.587	.0	1	18	18	137Nd	MGS2	1.0	05Li24
137Pm-u		-79608	62	-79520.480	14.000	1.4	U				MGS2	1.0	05Li24,*
137Sm-u		-72982	51	-72992.041	30.719	-.2	1	36	36	137Sm	GGS2	1.0	05Li24,*
137Eu-u		-64540	210	-64569.280	4.700	-.1	Z				k	2.5	S-u127
137Gd-u		-54980#	320#				2				h	1.0	S-u125
137Tb-u		-43980#	430#				2				k	1.0	S-u169
137Te-130Xe1.054		27300.0	2.7	27300.505	2.255	.2	1	70	70	137Te	HJY1	1.0	12Ha25
137Sb-133Cs1.030		32907	56				2				KCP1	1.0	13Va12
137Te-133Cs1.030		22985.0	4.1	22983.835	2.255	-.3	1	30	30	137Te	KCP1	1.0	13Va12
137Xe-133Cs1.030		8943.6	2.0	8942.252	0.111	-.7	U				HMA8	1.0	09Ne11
137Cs-133Cs1.030		4452	19	4473.776	0.324	1.1o	o				kMA1	1.0	90St25
137Cs-133Cs1.030		4470	14	4473.776	0.324	.3	U				hMA1	1.0	99Am05
137Pr-133Cs1.030		8095	15	8063.663	8.734	-2.1	1	34	34	137Pr	MMA5	1.0	00Be42
137Nd-133Cs1.030		11947	14	11947.579	12.587	.0	1	81	81	137Nd	MMA5	1.0	00Be42
137Pm-133Cs1.030		17864	14				2				MMA5	1.0	00Be42,W
137Sm-133Cs1.030		24393	42	24392.439	30.719	-.0	1	53	53	137Sm	GMA5	1.0	00Be42,*
137Eu-133Cs1.030		32815.2	4.7				2				KMA8	1.0	13Wo05
137Ba 35Cl-135Ba 37Cl		3089.1	0.6	3088.884	0.109	-.1	U				HH49	2.5	10Mc04
137Te-136Xe1.007		19057	18	19034.377	2.255	-1.3	U				HCP1	1.0	12Va02
137I-136Xe1.007		11463.2	9.0				2				HCP1	1.0	12Va02
137Xe-136Xe1.007		5004	11	4992.793	0.111	-1.0	U				HCP1	1.0	12Va02
137Ba-136Ba		1249	3	1251.407	0.074	.3	U				hM17	2.5	66Be10
137Ba-136Ba		1222	50	1251.407	0.074	.4	U				hR07	1.5	68De17
137Ba-136Ba		1227	44	1251.407	0.074	.4	U				hR07	1.5	68De17
137Ba-135Ba		143	3	138.760	0.085	-.6	U				hM17	2.5	66Be10
137Ba-135Ba		69	63	138.760	0.085	.7	U				hR07	1.5	68De17
137Ba-135Ba		106	46	138.760	0.085	.5	U				hR07	1.5	68De17
137I(B-n)136Xe		1850	30	2001.584	8.383	5.1C	C				H		84Kr.B
136Xe(n,g)137Xe		4025.5	0.5	4025.562	0.103	.1	U				M		77Fo02,Z
136Xe(n,g)137Xe		4025.8	0.3	4025.562	0.103	-.8	-2-				H		77Pr07,Z
136Xe(n,g)137Xe		4025.53	0.11	4025.562	0.103	.3	-2-				MBdn		06Fi.A
136Xe(d,p)137Xe		1637	20	1800.996	0.103	8.2F	F				hOak		68Mo21,*
136Xe(n,g)137Xe	ave	4025.562	0.103				2						average
136Xe(3He,d)137Cs		1918	12	1912.099	0.302	-.5	U				HChR		81Ha08
136Ba(n,g)137Ba		6891	5	6905.640	0.069	2.9	U				h		69Gr31
136Ba(n,g)137Ba		6905.54	0.10	6905.640	0.069	1.0	-1-				mMMn		90Is07,Z
136Ba(n,g)137Ba		6905.70	0.12	6905.640	0.069	-.5	-1-				gLtn		95Bo03,Z
136Ba(n,g)137Ba		6905.74	0.16	6905.640	0.069	-.6	-1-				HBdn		06Fi.A
137Ba(g,n)136Ba		-6949	38	-6905.640	0.069	1.1	U				hPhi		60Ge01
136Ba(d,p)137Ba		4680	15	4681.073	0.069	.1	U				hANL		70Vo04

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 136Ba(n,g)137Ba          ave   6905.631     0.069      6905.640      0.069      .1   1    98  67 137Ba         average
 136Ce(n,g)137Ce                7481.3       0.4        7481.534      0.156      .6  -1-                 M        81Ko.A,Z
 136Ce(n,g)137Ce                7481.58      0.17       7481.534      0.156     -.3  -1-                 MBdn     06Fi.A
 136Ce(n,g)137Ce          ave   7481.537     0.156      7481.534      0.156     -.0   1   100 100 137Ce         average
 137Te(B-)137I                  7030       300          7052.506      8.643      .1   U                  H        85Sa15
 137Te(B-)137I                  6925       130          7052.506      8.643     1.0   U                  HBwg     87Gr.A
 137I(B-)137Xe                  5880        60          6027.146      8.384     2.5   U                  HBwg     87Gr.A
 137Xe(B-)137Cs                 4140        70          4162.359      0.319      .3   U                  h        64On03,W
 137Xe(B-)137Cs                 4150       100          4162.359      0.319      .1   U                  h        68Ho22
 137Cs(B-)137Ba                 1173.29      0.84       1175.629      0.172     2.8   U                  h        68Wo02,*
 137Cs(B-)137Ba                 1175.55      0.26       1175.629      0.172      .3  -2-                          78Ch22,*
 137Cs(B-)137Ba                 1175.69      0.23       1175.629      0.172     -.3  -2-                          83Be18,*
 137Cs(B-)137Ba           ave   1175.629     0.172                                    2                          average
 137Ce(B+)137La                 1222.1       1.6                                      2                          81Ar.A,*
 137Pr(B+)137Ce                 2702        10          2716.952      8.133     1.5   1    66  66 137Pr         73Bu17
 137Nd(B+)137Pr                 3497        40          3617.845     14.271     3.0B  B                  H        73Bu18,*
 137Nd(B+)137Pr                 3690        54          3617.845     14.271    -1.3   U                  H        85Af.A,*
 137Pmm(B+)137Nd                5690       130          5670.336     44.501     -.2  -1-                 NIRS     83Al06,*
 137Pmm(B+)137Nd                5650        60          5670.336     44.501      .3  -1-                 NDbn     95Ve08,*
 137Pmm(B+)137Nd          ave   5657.024    54.478      5670.336     44.501      .2   1    67  65 137Pmm        average
 137Sm(B+)137Pmm                5900        70          5921.978     46.991      .3   1    45  35 137PmmNDbn    95Ve08,G
*137Ce-u                    M-A=-85665(29) keV  for mixture gs+m at 254.29 keV                  g        Nub211**
*137Pr-u                    used as reference                                                   m        02Sc.C*G
*137Pm-u                    M-A=-74079(28) keV  for mixture gs+m at 150(50) keV                 g        Nub211**
*137Sm-u                    M-A=-67932(28) keV  for mixture gs+m at 100#50 keV                  g        Nub211**
*137Pm-133Cs1.030           Probably no isomer contributes                                      m        AHW008*W
*137Sm-133Cs1.030           Might be a mixture of gs and isomer say authors                     M        00Be42**
*                            ~ D_M=24447(14) uu for mixture gs+m at 100#50 keV; M-A=-67941(13) keV  g    Nub211**
*136Xe(d,p)137Xe            F : error severely underestimated and value low, see excitation energies h   AHW   **
*137Xe(B-)137Cs             Reanalyzing two given E-                                                     AHW   *W
*137Cs(B-)137Ba             E-=511.63(0.84) 513.89(0.26) 514.03(0.23) to 137Bam at 661.659 keV  g        Nub211**
*137Ce(B+)137La             E+=189.5(1.6) to 5/2^+ level at 10.59 keV                           h        Ens079**
*137Nd(B+)137Pr             E+=2400(40) E+=2592(54) resp, to 3/2^+ level at 75.5 keV            h        Ens079**
*137Pmm(B+)137Nd            E+=4132(+150--115) 4110(60) resp, to 11/2^- 137Ndm at 519.43 keV    g        Nub211**
*137Sm(B+)137Pmm            137Sm is (9/2-) to 137Pmm 11/2-, no need for 137Smm !!              n        GAu954*G
*                            ~ in isotones 9/2- below 1/2+: 131Ba=-187.14, 133Ce=-37.1, 135Nd=65.1  h    AHW953*W

 138Sn-u                      -48857#      429#                                       2                  g    1.0 S-u211
 138Sb-u                      -58208       457        -58669#      322#        -.4D   D                  GGT3 2.5 16Kn03,*
 138Sb-u                      -58669#      322#                                       2                  g    1.0 S-u212
 138Te-u                      -70940       247        -70527.548     4.065     1.1o   o                  HGT1 1.5 04Ma.A
 138Te-u                      -70583       106        -70527.548     4.065      .2o   o                  HGT2 2.5 08Kn.A
 138Te-u                      -70591       131        -70527.548     4.065      .2    U                  HGT2 2.5 08Su19
 C10 H18-138Ba                235609        20        235603.516     0.268     -.1    U                  hM17 2.5 66Be10
 C11 H7-138Ba H               141649        51        141703.133     0.268      .7    U                  hR07 1.5 68De17
 C11 H6-138Ba                 141701        30        141703.133     0.268      .0    U                  hR07 1.5 68De17
 C12 H10-138Ba O              178106        15        178088.641     0.268     -.8    U                  hR07 1.5 68De17
 C12 H10-138Ba O              178105        49        178088.641     0.268     -.2    U                  hR07 1.5 68De17
 C11 13C H9-138Ba O           173612        37        173618.445     0.268      .1    U                  hR07 1.5 68De17
 C10 H18-138Ce                234799        60        234856.394     0.536      .2    U                  hR05 4.0 65De13
 C12 H10-138Ce O              177382        46        177341.520     0.536     -.2    U                  hR05 4.0 65De13
 C9 13C H17-138Ce             230358        60        230386.197     0.536      .1    U                  hR05 4.0 65De13
 138Prm-u                     -88896        30        -88866.728    17.464     1.0    1    34  34 138PrmMGS2 1.0 05Li24
 138Nd-u                      -88060       130        -88049.062    12.456      .1o   o                  MGS1 1.0 00Ra23
 138Nd-u                      -88060        30        -88049.062    12.456      .4R   R  q-q=  -10.938  MGS2 1.0 05Li24
 138Pm-u                      -80226       140        -80423.880    12.456    -1.4o   o                  GGS1 1.0 00Ra23
 138Pm-u                      -80437        30        -80423.880    12.456      .4    1    17  17 138Pm GGS2 1.0 05Li24
 138Pm-u                      -80438       107        -80423.880    12.456      .1    Z  q-q=  -13.153  h1.0 1.0  138Nd+0
 138Pm-u                      -80449        64        -80423.880    12.456      .4    Z  q-q=  -23.399  h1.0 1.0  138Nd+0
 138Sm-u                      -76766        30        -76756.012    12.687      .3R   R  q-q=   -9.988  MGS2 1.0 05Li24
 138Eu-u                      -66291        30                                        2                  MGS2 1.0 05Li24
 138Gd-u                      -59753#      215#                                       2                  g    1.0 S-u20b
 138Tb-u                      -46807#      322#                                       2                  g    1.0 S-u20c,W
 138Dy-u                      -37500#      540#                                       2                  k    1.0 S-u169
 138Te-130Xe1.062              31945.3       4.7       31945.530     4.065      .0    1    75  75 138Te HJY1 1.0 12Ha25
 138Te-133Cs1.038              27614.0       8.1       27613.318     4.065     -.1    1    25  25 138Te KCP1 1.0 13Va12
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 138Xe-133Cs1.038                 12284.1      3.5     12287.135     3.010     .9   1    74   74 138Xe HMA8 1.0 09Ne11
 138Cs-133Cs1.038                  9158       14        9157.985     9.832    -.0   1    49   49 138Cs HMA1 1.0 99Am05
 138Ba-133Cs1.038                  3388       14        3387.924     0.268    -.0   U                  hMA1 1.0 99Am05
 138Nd-133Cs1.038                 10093       14       10091.804    12.456    -.1  -1-                 MMA5 1.0 00Be42
 138Nd-133Cs1.038                 10081       30       10091.804    12.456     .4  -1- q-q=  -10.804  m1.0 1.0  138Nd-C
 138Nd-133Cs1.038            ave  10090.854   12.687   10091.804    12.456     .1   1    96   96 138Nd           average
 138Pm-133Cs1.038                 17721       14       17716.986    12.456    -.3   1    79   79 138Pm GMA5 1.0 00Be42
 138Sm-133Cs1.038                 21387       14       21384.854    12.687    -.2  -2-                 MMA5 1.0 00Be42
 138Sm-133Cs1.038                 21375       30       21384.854    12.687     .3  -2- q-q=   -9.854  m1.0 1.0  138Sm-C
 138Sm-133Cs1.038            ave  21384.854   12.687                                2                            average
 138I-136Xe1.015                  16903.7      6.4                                  2                  HCP1 1.0 12Va02
 138Xe-136Xe1.015                  8332.2      5.9      8323.576     3.010    -1.5  1    26   26 138Xe HCP1 1.0 12Va02
 138Ba-136Xe1.015                  -575.98     0.48     -575.634     0.268     .7   1    31   31 138Ba GMS1 1.0 19Sa36
 138Ba 35Cl-136Ba 37Cl             3621.1      0.6      3621.383     0.109     .2   U                  HH49 2.5 10Mc04
 138Ce-136Xe1.015                   170.9      1.7       171.488     0.536     .3   1    10   10 138Ce GMS1 1.0 19Sa36
 138La-138Ba                       1877.29     0.40     1876.982     0.363    -.8   1    82   81 138La GMS1 1.0 19Sa36
 138Ce-138Ba                        746.12     0.77      747.122     0.476    1.3   1    38   37 138Ce GMS1 1.0 19Sa36
 138La-138Ce                       1129.36     0.51     1129.860     0.431    1.0   1    72   53 138Ce GMS1 1.0 19Sa36
 138Ba-137Ba                       -582        2        -580.149     0.043     .4   U                  hM17 2.5 66Be10
 138Ba-137Ba                       -480       27        -580.149     0.043   -2.5   U                  hR07 1.5 68De17
 138Ba-137Ba                       -553       40        -580.149     0.043    -.5   U                  hR07 1.5 68De17
 138Ba-136Ba                        676        3         671.259     0.085    -.6   U                  hM17 2.5 66Be10
 138Ba-136Ba                        658       98         671.259     0.085     .1   U                  hR07 1.5 68De17
 138Ba-136Ba                        628       43         671.259     0.085     .7   U                  hR07 1.5 68De17
 138Ce-136Ce                      -1040       47       -1135.076     0.534    -.5   U                  hR05 4.0 65De13,G
 138Ce-136Ce                      -1158       20       -1135.076     0.534     .5   U                  HM17 2.5 66Be10
 138Ba H-137Ba                     7399       88        7244.883     0.043   -1.2   U                  hR07 1.5 68De17
 138Ba H-137Ba                     7280       43        7244.883     0.043    -.5   U                  hR07 1.5 68De17
 137Ba(n,g)138Ba                   8611.3      0.8      8611.723     0.040     .5   U                  h        68Ma35
 137Ba(n,g)138Ba                   8611.72     0.04     8611.723     0.040     .1   1    99   67 138Ba  MMn     90Is07,Z
 137Ba(n,g)138Ba                   8611.5      0.15     8611.723     0.040    1.5   U                  NLtn     95Bo05
 137Ba(n,g)138Ba                   8611.63     0.18     8611.723     0.040     .5   U                  MBdn     06Fi.A
 137Ba(d,p)138Ba                   6398       15        6387.157     0.040    -.7   U                  hANL     70Vo04
 138I(B-)138Xe                     7820       70        7992.335     6.588    2.5   U                  HBwg     87Gr.A
 138Xe(B-)138Cs                    2700       50        2914.784     9.578    4.3B  B                  H        72Mo33,*
 138Xe(B-)138Cs                    2830       80        2914.784     9.578    1.1   U                  HTrs     78Wo15
 138Csx(IT)138Cs                     40       23                                    2                           82Au01,*
 138Cs(B-)138Ba                    5350       80        5374.778     9.158     .3   U                  hTrs     78Wo15
 138Cs(B-)138Ba                    5388       25        5374.778     9.158    -.5  -1-                  Gsn     81De25
 138Cs(B-)138Ba                    5370       15        5374.778     9.158     .3  -1-                  McG     84He.A
 138Cs(B-)138Ba              ave   5374.765   12.862    5374.778     9.158     .0   1    51   51 138Cs           average
 138La(e)138Ba                     1620       15        1748.398     0.338    8.6B  B                  h        56Tu17,*
 138La(B-)138Ce                     994       10        1052.458     0.402    5.8B  B                  h        57Gl20,*
 138La(B-)138Ce                    1159       40        1052.458     0.402   -2.7   U                  h        70El.A,*
 138La(B-)138Ce                    1052.7      4.3      1052.458     0.402    -.1   U                  G        16Qu01,*
 138Pr(B+)138Ce                    4437       10                                    2                           71Af05
 138Prm(B+)138Ce                   4801       20        4787.034    16.265    -.7   1    66   66 138PrmH        64Fu08,*
 138Nd(B+)138Pr                    2020      100        1111.685    15.326   -9.1C  C                  M        61Bo.B
 138Pm(B+)138Nd                    7090      100        7102.812    16.100     .1   U                  GIRS     83Al06
 138Pm(B+)138Nd                    7080       60        7102.812    16.100     .4   1 *   7    4 138Nd hDbn     95Ve08
 138Pm(B+)138Nd                    7000      250        7102.812    16.100     .4   U                  G        81De38,*
*138Sb-u                        Trends from Mass Surface TMS suggest 138Sb   430 keV more bound        G        GAu212**
*138Tb-u                        T>200ns Sp>-800                                                        k        Nub16b*W
*138Ce-136Ce                    Why is 136Ce of R05 rejected ?                                         h        GAu   *G
*                                ~ Since it makes no sense to use 2 out of 623 Georgian items that     n        AHW956*W
*                                ~ accidentally have been assigned not so large errors. Output CF=3.68!! n      AHW956*W
*138Xe(B-)138Cs                 E-=2460(50), 2270(50) to (1^- 2^-) level at 258.400, 1^- at 412.260 keV  h      Ens035**
*138Csx(IT)138Cs                Based on 138Csm(IT)=79.9 keV                                           g        Nub211**
*                                ~ 138Csx only occurs in triplets that should be made U                n        AHW956*W
*138La(e)138Ba                  L/K=1.40(0.25) to 2^+ level at 1435.816 keV                            h        Ens035**
*138La(B-)138Ce                 E-=205(10) 370(40) 264.0(4.3) resp, to 2^+ level at 788.744 keV        K        Ens035**
*138Prm(B+)138Ce                E+=1650(20) to 7^- level at 2129.17 keV                                h        Ens035**
*138Pm(B+)138Nd                 E+=3900(200) to 5^- level at 1990.4, 6^+ at 2134.3 and (5^-) at 2221.8keVk      Ens035**


 139Sn-u                         -42201#     429#                                   2                  g    1.0 S-u211
 139Sb-u                         -53731#     429#                                   2                  g    1.0 S-u211
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139Te-u		-64541	333	-64632.809	3.800	-.2	U				HGT1	1.5	04Ma.A
139Te-130Xe1.069		38515.7	3.8				2				HJY1	1.0	12Ha25
139I-u		-73838	102	-73506.599	4.300	1.3	U				HGT2	2.5	08Kn.A
139I-u		-73567	130	-73506.599	4.300	.2	U				HGT2	2.5	08Su19
C6 13C O3 H6-139La		128474	41	128685.957	0.651	1.3	U				hR05	4.0	65De13
C7 O3 H7-139La		133063	32	133156.153	0.651	.7	U				hR05	4.0	65De13
C6 N O3 H5-139La		120496	21	120580.094	0.651	1.0	U				hR05	4.0	65De13
C12 H11-139La O		184568	66	184797.804	0.651	.9	U				hR05	4.0	65De13
C11 13C H10-139La O		180100	58	180327.607	0.651	1.0	U				hR05	4.0	65De13
139Nd-u		-87840	79	-88048.791	29.545	-2.6	U				HGS2	1.0	05Li24,*
139Pm-u		-83168	32	-83200.772	14.587	-1.0	Z				mGS2	1.0	02Sc.C,G
139Sm-u		-77704	30	-77703.368	11.685	.0R	R	q-q=	-0.632		MGS2	1.0	05Li24
139Sm-u		-77711	30	-77703.368	11.685	.3R	R	q-q=	-7.632		MGS2	1.0	05Li24,*
139Eu-u		-70215	30	-70207.692	14.118	.2R	R	q-q=	-7.308		MGS2	1.0	05Li24
139Gd-u		-61870#	210#				2				h	1.0	S-u063
139Tb-u		-51670#	320#				2				h	1.0	S-u127
139Dy-u		-40473#	537#				2				g	1.0	S-u20c
139Te-133Cs1.045		34185	17	34169.891	3.800	-.9	U				KCP1	1.0	13Va12
139I-133Cs1.045		25296.1	4.3				2				KCP1	1.0	13Va12
139Xe-133Cs1.045		17594.9	2.3				2				HMA8	1.0	09Ne11,*
139Cs-133Cs1.045		12163	14	12166.521	3.364	.3	U				hMA1	1.0	99Am05
139Ba-133Cs1.045		7649	14	7643.863	0.271	-.4	U				hMA1	1.0	99Am05
139Pm-133Cs1.045		15604	15	15601.927	14.587	-.1	1	95	95	139Pm	MMA5	1.0	00Be42
139Sm-133Cs1.045		21101	14	21099.331	11.685	-.1	-2-				MMA5	1.0	00Be42
139Sm-133Cs1.045		21099	30	21099.331	11.685	.0	-2-	q-q=	-0.331		m1.0	1.0	139Sm-C
139Sm-133Cs1.045		21092	30	21099.331	11.685	.2	-2-	q-q=	-7.331		m1.0	1.0	139Sm-C
139Sm-133Cs1.045	ave	21099.331	11.685				2						average
139Eu-133Cs1.045		28597	16	28595.007	14.118	-.1	-2-				MMA5	1.0	00Be42
139Eu-133Cs1.045		28588	30	28595.007	14.118	.2	-2-	q-q=	-7.007		m1.0	1.0	139Eu-C
139Eu-133Cs1.045	ave	28595.007	14.118				2						average
139I-136Xe1.022		21333	31	21320.204	4.300	-.4	U				KCP1	1.0	12Va02
139Xe-136Xe1.022		13618	12	13619.004	2.300	.1	U				HCP1	1.0	12Va02
139La-136Xe1.022		1189.96	0.67	1189.731	0.651	-.3	1	94	94	139La	GMS1	1.0	19Sa39
139La-138La		-622	132	-761.113	0.790	-.3	U				hR05	4.0	65De13
139La-138Ce		485	74	368.748	0.843	-.4	U				hR05	4.0	65De13
133Cs-139Cs.239 131Cs.761		-1774	24	-1773.095	0.761	.0F	F				hP33	2.5	86Au02,*
138Csx-139Cs.496 137Cs.504		770	40	799.781	24.805	.3	U				mP23	2.5	82Au01
138Ba(n,g)139Ba		4723.4	0.7	4723.430	0.040	.0	U				h		69Mo13
138Ba(n,g)139Ba		4723.4	0.3	4723.430	0.040	.1	U				h		80Ba.A
138Ba(n,g)139Ba		4723.43	0.04				2				MMn		90Is07,Z
138Ba(n,g)139Ba		4723.20	0.14	4723.430	0.040	1.6	U				MBdn		06Fi.A
138Ba(d,p)139Ba		2495	10	2498.864	0.040	.4	U				hMIT		64Sp12
138Ba(d,p)139Ba		2496	15	2498.864	0.040	.2	U				hHei		67Wi08
138Ba(d,p)139Ba		2493	10	2498.864	0.040	.6	U				hANL		70Vo04
139La(g,n)138La		-8775	25	-8780.290	0.735	-.2	U				hPhi		60Ge01
138La(d,p)139La		6553	3	6555.724	0.735	.9	U				GTal		71Du02
139La(d,t)138La		-2522	5	-2523.060	0.735	-.2	U				GTal		72La20
139I(B-)139Xe		6815	100	7173.622	4.542	3.6C	C				hBwg		87Gr.A
139I(B-)139Xe		6806	23	7173.622	4.542	16.0B	B				HBwg		92Gr06
139Xe(B-)139Cs		5020	60	5056.503	3.796	.6	U				HTrs		78Wo15
139Xe(B-)139Cs		5062	22	5056.503	3.796	-.2	U				HBwg		92Gr06
139Cs(B-)139Ba		4290	70	4212.829	3.123	-1.1	U				hTrs		78Wo15
139Cs(B-)139Ba		4190	25	4212.829	3.123	.9o	o				hGsn		80Bl.A
139Cs(B-)139Ba		4213	5	4212.829	3.123	-.0o	o				hGsn		81De25
139Cs(B-)139Ba		4214	4	4212.829	3.123	-.3	-3-				McG		84He.A
139Cs(B-)139Ba		4211	5	4212.829	3.123	.4	-3-				Gsn		92Pr04
139Cs(B-)139Ba	ave	4212.829	3.123				3						average
139Ba(B-)139La		2307	5	2308.462	0.657	.3	U				G		75Fl07,*
139Ba(B-)139La		2336	25	2308.462	0.657	-1.1	U				hGsn		81De25
139Ba(B-)139La		2316	4	2308.462	0.657	-1.9	U				GMcG		84He.A
139Ce(B+)139La		264.6	2.0	264.640	1.999	.0	1	100	100	139Ce	G		96Hi14,*
139Ce(e)139La		278	7	264.640	1.999	-1.9	U				G		Averag,*
139Pr(B+)139Ce		2129	3	2129.089	2.996	.0	1	100	100	139Pr			81Ar.A
139Nd(B+)139Pr		2787	50	2811.722	27.617	.5	1	31	30	139Nd			75Vy02,*
139Pm(B+)139Nd		4450	100	4515.901	25.870	.7	-1-				m		77De06,*
139Pm(B+)139Nd		4540	40	4515.901	25.870	-.6	-1-				IRS		83Al06
139Pm(B+)139Nd		4470	50	4515.901	25.870	.9	-1-				NDbn		95Ve08

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 139Pm(B+)139Nd            ave    4507.111    29.814      4515.901    25.870      .3   1    75  70 139Nd         average
 139Sm(B+)139Pm                   5430       150          5120.799    17.410    -2.1   U                          82De06,*
 139Sm(B+)139Pm                   5510       150          5120.799    17.410    -2.6   U                 mIRS     83Al06,*
 139Eu(B+)139Sm                   6080        50          6982.178    17.071    18.0C  C                 MDbn     95Ve08,*
*139Nd-u                        M-A=-81707(30) keV  for mixture gs+m at 231.15 keV                      g        Nub211**
*139Pm-u                        used as reference                                                       m        02Sc.C*G
*139Sm-u                        M-A=-71930(28) keV  for 139Smm at 457.38 keV                            g        Nub211**
*139Xe-133Cs1.045               Typo in original paper, ratio should read 1.045 245 4357(175)           H        GAu10b**
*133Cs-139Cs.239 131Cs.         F : rejection based on line-shape analysis                              h        86Au02**
*139Ba(B-)139La                 E-=2141(5) to 5/2^+ level at 165.8576 keV                               h        Ens014**
*139Ce(B+)139La                 Q+=98.7(1.7stat)(1.0syst) to 5/2^+ lvl at 165.8576 keV                  G        Ens014**
*139Ce(e)139La                  Average pK=0.73(0.01) to 5/2^+ lvl at 165.8576 keV in 10 references:    h        Ens014**
*                                ~ pK=0.76 (0.04)                                                                54Pr31**
*                                ~ pK=0.73 (0.01)                                                                56Ke23**
*                                ~ pK=0.68 (0.02)                                                                67Ma07**
*                                ~ pK=0.75 (0.01)                                                                68Ad08**
*                                ~ pK=0.69 (0.02)                                                                68Va08**
*                                ~ pK=0.716(0.02)                                                                72Ca07**
*                                ~ pK=0.78 (0.02)                                                                72Sc08**
*                                ~ pK=0.726(0.010)                                                               75Ha43**
*                                ~ pK=0.801(0.034)                                                               75Pl06**
*                                ~ pK=0.705(0.020)                                                               76Ha36**
*139Nd(B+)139Pr                 E+=1770(50); and 1170(50) from 139Ndm at 231.15 to 1/2^- lvl at 821.98            Ens014**
*139Pm(B+)139Nd                 E+=3020(120), 2990(100) to 3/2^+ levels at 463.10, 402.77 keV           h        Ens014**
*139Sm(B+)139Pm                 E+=4100(150) to (1/2,3/2)^+ level at 306.69 keV                         h        Ens014**
*139Sm(B+)139Pm                 E+=4735(+180--130) from 139Smm at 457.40 to 139Pmm at 188.7 keV         g        Nub211**
*139Eu(B+)139Sm                 E+=4600(50) to 139Smm at 457.38 keV                                     g        Nub211**


 140Sn-u                         -37027#     322#                                      2                 g    1.0 S-u211
 140Sb-u                         -47655#     644#                                      2                 g    1.0 S-u211
 140Te-u                         -60827      225       -60512.943    15.435      .9   U                 HGT1 1.5 04Ma.A
 140Te-130Xe1.077                 43419       30        43407.493    15.435     -.4   1    26  26 140Te GJY1 1.0 12Ha25
 140I-u                          -68181      193       -68284.085    13.000     -.4o  o                 HGT1 1.5 04Ma.A
 140I-u                          -68463      102       -68284.085    13.000      .7o  o                 HGT2 2.5 08Kn.A
 140I-u                          -68273      130       -68284.085    13.000     -.0o  o                 KGT2 2.5 08Su19
 140I-u                          -68202      186       -68284.085    13.000     -.2   U                 KGT2 2.5 16Kn03
 140Xe-u                         -78449      103       -78354.185     2.500      .4o  o                 HGT2 2.5 08Kn.A
 140Xe-u                         -78229      130       -78354.185     2.500     -.4   U                 HGT2 2.5 08Su19
 C11 H8-140Ce                    157116       29       157151.817     1.409      .3   U                 hR05 4.0 65De13
 C10 13C H7-140Ce                152553       17       152681.620     1.409     1.9   U                 hR05 4.0 65De13
 C10 N H6-140Ce                  144599       35       144575.757     1.409     -.2   U                 hR05 4.0 65De13
 C10 N2 H8-140Ce O               168207       48       168385.206     1.409      .9   U                 hR05 4.0 65De13
 140Nd-u                         -90448       30       -90453.870     3.500     -.2   U                 KGS2 1.0 05Li24
 140Pmm-u                        -83532       30       -83503.260    14.118     1.0   1    22  22 140PmmhGS2 1.0 05Li24
 140Sm-u                         -81018       30       -81005.285    13.416      .4R  R  q-q=  -12.715  MGS2 1.0 05Li24
 140Gd-u                         -66326       30                                       2                 MGS2 1.0 05Li24
 140Dy-u                         -45980#     430#                                      2                 k    1.0 S-u169
 140Te-133Cs1.053                 38822       67        39046.143    15.435     3.3B  B                 GCP1 1.0 13Va12
 140Te-133Cs1.053                 39042       18        39046.143    15.435      .2   1    74  74 140Te GCP2 1.0 18Or.A
 140I-133Cs1.053                  31275       13                                       2                 KCP1 1.0 13Va12
 140Xe-133Cs1.053                 21204.9      2.5                                     2                 HMA8 1.0 09Ne11
 140Cs-133Cs1.053                 16837       14        16842.793     8.802      .4  -1-                 HMA1 1.0 99Am05
 140Cs-133Cs1.053                 16857       14        16842.793     8.802    -1.0  -1-                 NMA4 1.0 99Am05
 140Cs-133Cs1.053          ave    16847.000    9.899    16842.793     8.802     -.4   1    79  79 140Cs         average
 140Ba-133Cs1.053                 10150       14        10167.317     8.481     1.2   1    37  37 140Ba  MA1 1.0 99Am05
 140Ce O-133Cs1.173               11270.3      2.5      11267.908     1.409    -1.0   1    32  32 140Ce GMA8 1.0 19Hu15
 140Nd O-133Cs1.173               15365.6      3.5                                     2                 GMA8 1.0 19Hu15
 140Pmm-133Cs1.053                16064       16        16055.825    14.118     -.5   1    78  78 140PmmMMA5 1.0 00Be42
 140Sm-133Cs1.053                 18557       15        18553.800    13.416     -.2  -2-                 MMA5 1.0 00Be42
 140Sm-133Cs1.053                 18541       30        18553.800    13.416      .4  -2- q-q=  -12.800  m1.0 1.0  140Sm-C
 140Sm-133Cs1.053          ave    18553.800   13.416                                   2                          average
 140Xe-136Xe1.029                 17134       11        17122.125     2.500    -1.1   U                 HCP1 1.0 12Va02
 C11 H9-140Ce                    164956       40       164976.849     1.409      .2   U                 hM17 2.5 66Be10
 140Ce-139La                      -1029       80         -914.490     1.435      .4   U                 hR05 4.0 65De13
 C11 H10-140Ce                   172765       40       172801.881     1.409      .4   U                 hM17 2.5 66Be10
 140Ce-138Ce                       -497       83         -545.742     1.508     -.1   U                 hR05 4.0 65De13
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 140Ce-138Ce                      -543        8       -545.742     1.508     -.1   U                KM17 2.5 66Be10
 139Cs-140Cs.883 131Cs.118       -2280       40      -2275.611     7.889      .0   U                hP23 2.5 82Au01
 139Cs-140Cs.869 132Cs.132       -2210       40      -2240.710     7.785     -.3   U                hP23 2.5 82Au01
 138Ce(t,p)140Ce                  8184       15       8169.195     1.404    -1.0   U                GLAl     72Mu09
 140Ce(p,t)138Ce                 -8167       20      -8169.195     1.404     -.1   U                GBrk     77Sh06
 139La(n,g)140La                  5161.1      1.0     5160.997     0.019     -.1   U                h        70Ju04,W
 139La(n,g)140La                  5160        1       5160.997     0.019     1.0   U                h        72Fu10,W
 139La(n,g)140La                  5160.97     0.05    5160.997     0.019      .5  -1-               mMMn     90Is09,Z
 139La(n,g)140La                  5161.00     0.10    5160.997     0.019    -.0o   o                GBdn     06Fi.A
 139La(n,g)140La                  5161.001    0.021   5160.997     0.019     -.2  -1-               GBdn     19Hu07
 139La(d,p)140La                  2938        3       2936.430     0.019     -.5   U                hTal     67Ke02
 139La(n,g)140La            ave   5160.996    0.019   5160.997     0.019      .0   1    100  94 140La          average
 140Ho(p)139Dy                    1093.9     10.                                   3                M        99Ry04,*
 140Xe(B-)140Cs                   4060       60       4063.277     8.523      .1   U                HTrs     78Wo15
 140Cs(B-)140Ba                   6100      100       6218.167     9.867     1.2   U                hTrs     78Wo15
 140Cs(B-)140Ba                   6235       25       6218.167     9.867    -.7o   o                hGsn     80Bl.A
 140Cs(B-)140Ba                   6220       15       6218.167     9.867    -.1o   o                hGsn     81De25
 140Cs(B-)140Ba                   6212       20       6218.167     9.867      .3  -1-                Gsn     92Pr04
 140Cs(B-)140Ba                   6199       25       6218.167     9.867      .8  -1-               NIda     93Gr17
 140Cs(B-)140Ba             ave   6206.927   15.617   6218.167     9.867      .7   1     40  21 140Cs          average
 140Ba(B-)140La                   1060       20       1044.154     7.905     -.8  -1-                        49Be36,*
 140Ba(B-)140La                   1050       20       1044.154     7.905     -.3  -1-                        59Bo61,*
 140Ba(B-)140La                   1055       30       1044.154     7.905     -.4  -1-                        65Bu07,*
 140Ba(B-)140La             ave   1055.000   12.792   1044.154     7.905     -.8   1     38  38 140Ba          average
 140La(B-)140Ce                   3760.2      2.0     3762.163     1.336     1.0   1     45  39 140Ce          72Na04,*
 140Pr(B+)140Ce                   3388        6                                    2                         68Ab17
 140Nd(e)140Pr                     160       60        428.976     6.954     4.5B  B                M        72Ba91
 140Pm(B+)140Nd                   6080      100       6045.200    24.000     -.3   U                m        75Ke09
 140Pm(B+)140Nd                   6090       40       6045.200    24.000    -1.1  -3-                IRS     83Al06
 140Pm(B+)140Nd                   6020       30       6045.200    24.000      .8  -3-               NDbn     95Ve08
 140Pm(B+)140Nd             ave   6045.200   24.000                                3                         average
 140Pmm(B+)140Nd                  6484       70       6474.452    13.549     -.1   U                K        75Ke09,*
 140Sm(e)140Pm                    3400      300       2756.101    27.255    -2.1   U                h        87De04
 140Eu(B+)140Sm                   8400      400       8470.000    50.000      .2   U                NLBL     91Fi03,*
 140Eu(B+)140Sm                   8470       50                                    3                NDbn     95Ve08
 140Gd(B+)140Eu                   4800      400       5203.668    58.627     1.0   U                MLBL     91Fi03
 140Tb(B+)140Gd                  11300      800                                    3                MLBL     91Fi03,*
*139La(n,g)140La                Corrected for calibration                                                    AHW   *W
*140Ho(p)139Dy                  Trends from Mass Surface TMS suggest 140Ho   300 keV less bound          G        GAu212**
*140Ba(B-)140La                 E-=1022(20), 480(20) to 2^- level at 29.9641, 0^- at 581.07 keV          h        Ens077**
*140Ba(B-)140La                 E-=1020(20), 830(50), 590(50) to 2^- level at 29.9641, 2^- at 162.6591,  h        GAu12a**
*                                ~ and 1^- at 467.653 keV                                                h        Ens077**
*140Ba(B-)140La                 E-=1030(30), 1020(30) to 2^- level at 29.9641, 1^- at 43.844 keV         h        Ens077**
*140La(B-)140Ce                 E-=2164(2) to 2^+ level at 1596.237 keV                                  h        Ens077**
*140Pmm(B+)140Nd                E+=3240(70) to 7^- level at 2221.4 keV                                   h        Ens077**
*140Eu(B+)140Sm                 From p^+. ~ May be lower limit                                           h        91Fi03**
*140Tb(B+)140Gd                 Lower limit                                                                       91Fi03**


 141Sb-u                        -42448#     537#                                   2                g    1.0 S-u212
 141Te-u                        -54396#     429#                                   2                g    1.0 S-u211
 141I-u                         -64316      419     -64333.919    17.000    -.0o   o                HGT1 1.5 04Ma.A
 141I-u                         -64549      120     -64333.919    17.000     .7o   o                HGT2 2.5 08Kn.A
 141I-u                         -64736      137     -64333.919    17.000    1.2o   o                KGT2 2.5 08Su19
 141I-u                         -64445      186     -64333.919    17.000      .2   U                KGT3 2.5 16Kn03
 141Xe-u                        -73092      126     -73212.819     3.100    -.4o   o                HGT2 2.5 08Kn.A
 141Xe-u                        -73560      136     -73212.819     3.100     1.0   U                HGT2 2.5 08Su19
 141Ba-u                        -85603.5      7.5   -85596.346     5.710     1.0   1     58  58 141Ba HCP1 1.0 06Sa56
 C11 H9-141Pr                   162852       41     162765.674     1.608     -.5   U                hR05 4.0 65De13
 C10 N H7-141Pr                 150229       37     150189.614     1.608     -.3   U                hR05 4.0 65De13
 C9 13C N H6-141Pr              145722       65     145719.418     1.608     -.0   U                hR05 4.0 65De13
 141Pr-u                        -92374       30     -92340.387     1.608     1.1   U                MGS2 1.0 05Li24
 141Nd-u                        -90401       30     -90383.301     3.417      .6   U                MGS2 1.0 05Li24
 141Nd-u                        -90365       30     -90383.301     3.417     -.6   U                MGS2 1.0 05Li24,*
 141Pm-u                        -86428       32     -86444.919    15.000     -.5   Z                mGS2 1.0 02Sc.C,G
 141Sm-u                        -81496       62     -81518.445     9.163     -.4   U                MGS2 1.0 05Li24,*
 141Eu-u                        -75048       42     -75068.264    13.568     -.5   U                MGS2 1.0 05Li24,*
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141Gd-u		-67881	30	-67874.000	21.213	.2	-2-				MGS2	1.0	05Li24
141Gd-u		-67867	30	-67874.000	21.213	-.2	-2-				MGS2	1.0	05Li24,*
141Gd-u	ave	-67874.000	21.213				2						average
141Tb-u		-58552	113				2				MGS2	1.0	05Li24,*
141Dy-u		-48720#	320#				2				h	1.0	S-u127
141I-133Cs1.060		35887	17				2				KCP1	1.0	13Va12
141Xe-133Cs1.060		27008.1	3.1				2				HMA8	1.0	09Ne11
141Cs-133Cs1.060		20269	16	20266.198	9.871	-.2	1	38	38	141Cs	NMA4	1.0	99Am05
141Ba-133Cs1.060		14625	15	14624.572	5.710	-.0	-1-				MA1	1.0	99Am05
141Ba-133Cs1.060		14631	16	14624.572	5.710	-.4	-1-				MMA4	1.0	99Am05
141Ba-133Cs1.060	ave	14627.807	10.943	14624.572	5.710	-.3	1	27	27	141Ba			average
141Pm-133Cs1.060		13776	15				2				MMA5	1.0	00Be42
141Sm-133Cs1.060		18692	14	18702.474	9.163	.7	1	43	43	141Sm	MMA5	1.0	00Be42,*
141Eu-133Cs1.060		25164	15	25152.655	13.568	-.8	1	82	82	141Eu	MMA5	1.0	00Be42,*
141Xe-136Xe1.037		23003	10	23005.766	3.100	.3	U				HCP1	1.0	12Va02
141Cs-136Xe1.037		16277	22	16263.864	9.871	-.6	1	20	20	141Cs	HCP1	1.0	12Va02
139Cs-141Cs.789 131Cs.212		-3190	40	-3270.679	7.903	-.8	U				hP23	2.5	82Au01
140Cs-141Cs.894 131Cs.107		-970	40	-1045.040	11.494	-.8	U				nP23	2.5	82Au01
139Cs-141Cs.767 132Cs.234		-3210	40	-3183.229	7.721	.3	U				hP23	2.5	82Au01
141Cs(B-n)140Ba		735	30	719.236	11.632	-.5	1	15	9	141Cs			84Kr.B
140Ce(n,g)141Ce		5428.6	0.6	5428.149	0.103	-.8	U				MBNn		70Ge03,Z
140Ce(n,g)141Ce		5428.01	0.20	5428.149	0.103	.7	-1-				MPtn		80Ba.A,Z
140Ce(n,g)141Ce		5428.19	0.12	5428.149	0.103	-.3	-1-				MBdn		06Fi.A
140Ce(d,p)141Ce		3210	10	3203.582	0.103	-.6	U				hMIT		64Sp12
140Ce(d,p)141Ce		3202	15	3203.582	0.103	.1	U				hHei		67Wi08
140Ce(n,g)141Ce	ave	5428.142	0.103	5428.149	0.103	.1	1	100	75	141Ce			average
141Pr(g,n)140Pr		-9361	23	-9399.622	6.115	-1.7	U				hPhi		60Ge01
141Ho(p)140Dy		1177.4	8.	1176.779	7.428	-.1	-3-				M		98Da03
141Ho(p)140Dy		1172.9	20.	1176.779	7.428	.2	-3-				M		99Ry04,*
141Ho(p)140Dy	ave	1176.779	7.428				3						average
141Xe(B-)141Cs		6150	90	6280.042	9.638	1.4	U				HTrs		78Wo15
141Cs(B-)141Ba		5200	80	5255.141	9.617	.7	U				hTrs		78Wo15
141Cs(B-)141Ba		5264	15	5255.141	9.617	-.6o	o				hGsn		80Bl.A,*
141Cs(B-)141Ba		5252	15	5255.141	9.617	.2o	o				hGsn		81De25,W
141Cs(B-)141Ba		5242	15	5255.141	9.617	.9	1	41	33	141Cs	Gsn		92Pr04
141Ba(B-)141La		3010	60	3197.347	6.551	3.1B	B				hTrs		78Wo15
141Ba(B-)141La		3208	35	3197.347	6.551	-.3	U				HGsn		81De25
141Ba(B-)141La		3217	20	3197.347	6.551	-1.0	1	11	7	141Ba	McG		84He.A
141La(B-)141Ce		2430	30	2501.214	3.928	2.4	U				h		51Du19
141La(B-)141Ce		2502	4	2501.214	3.928	-.2	1	96	96	141La	McG		84He.A
141Ce(B-)141Pr		584	3	583.473	1.178	-.2	-1-						50Fr58,*
141Ce(B-)141Pr		585	4	583.473	1.178	-.4	-1-						52Ko27,*
141Ce(B-)141Pr		576.4	2.0	583.473	1.178	3.5B	B				K		55Jo02,*
141Ce(B-)141Pr		581.4	2.0	583.473	1.178	1.0	-1-						68Be06,*
141Ce(B-)141Pr		582.2	2.6	583.473	1.178	.5	-1-						79Ha09,*
141Ce(B-)141Pr	ave	582.506	1.323	583.473	1.178	.7	1	79	54	141Pr			average
141Nd(B+)141Pr		1816	8	1823.014	2.809	.9	-2-						73Bu21
141Nd(B+)141Pr		1824	3	1823.014	2.809	-.3	-2-				N		76Ga.A,*
141Nd(B+)141Pr	ave	1823.014	2.809				2						average
141Pm(B+)141Nd		3730	60	3668.580	14.330	-1.0	U				h		70Ch29,*
141Pm(B+)141Nd		3640	70	3668.580	14.330	.4	U				M		75Ke09
141Sm(B+)141Pm		4580	50	4588.981	16.373	.2	U				m		77Ke03,*
141Sm(B+)141Pm		4463	60	4588.981	16.373	2.1	U				mIRS		83Al06,*
141Sm(B+)141Pm		4524	80	4588.981	16.373	.8	U				mIRS		93Al03,*
141Eu(B+)141Sm		6030	100	6008.306	14.283	-.2	U				m		77De25,*
141Eu(B+)141Sm		5950	40	6008.306	14.283	1.5	-1-				NIRS		83Al06,*
141Eu(B+)141Sm		6035	60	6008.306	14.283	-.4	U				m		85Af.A
141Eu(B+)141Sm		5550	100	6008.306	14.283	4.6B	B				NIRS		93Al03
141Eu(B+)141Sm		5980	40	6008.306	14.283	.7	-1-				NDbn		95Ve08,*
141Eu(B+)141Sm	ave	5965.000	28.284	6008.306	14.283	1.5	1	26	18	141Eu			average

*141Nd-u	M-A=-83418(28) keV for 141Ndm at 756.51 keV	g	Nub211**
*141Pm-u	used as reference	m	02Sc.C*G
*141Sm-u	M-A=-75825(28) keV for mixture gs+m at 175.9 keV	g	Nub211**
*141Eu-u	M-A=-69858(28) keV for mixture gs+m at 96.45 keV	g	Nub211**
*141Gd-u	M-A=-62840(28) keV for 141Gdm at 377.76 keV	g	Nub211**
*141Tb-u	M-A=-54541(34) keV for mixture gs+m at 0#200 keV	g	Nub211**
*141Sm-133Cs1.060	D_M=18694(14) and D_M=18878(14) from 141Smm at 175.9 keV	g	Nub211**

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*141Eu-133Cs1.060          Slight (< 10%) isomeric contamination cannot be excluded              M        00Be42**
*141Eu-133Cs1.060          Presence of isomer 1/3 reported by J.Szerypo at higher T              m        00Be42*G
*141Ho(p)140Dy             E(p)=1230(20) from 141Hom at 66(2) keV                                g        Nub211**
*141Cs(B-)141Ba            E-=5215(15) to (5/2)^- level at  48.53 keV                            k        Ens141**
*141Cs(B-)141Ba            If no direct feeding to below (5/2)- level at 48.53 keV   {AHW}       k        Ens141*W
*141Ce(B-)141Pr            E-=442(3) 444(4) 432(2) 436(2) 436.7(2.6) resp, to 7/2^+ lvl at 145.4434 k     Ens141**
*                           ~ and some gs E-                                                     h        AHW   *W
*141Nd(B+)141Pr            Was erroneously quoted 77*Ga.A in the 1993 tables                     N        GAu952**
*141Pm(B+)141Nd            No information on calibration                                         m        GAu972*G
*141Pm(B+)141Nd            Original error 40 increased due to lack of information on calibration h        GAu071**
*141Sm(B+)141Pm            E+=3180(50), 3100(50) to 3/2^+ level at 403.82, (1/2)^+ at 438.69 keV k        Ens141**
*                           ~ and E+=1670(70), 1600(70) from 141Smm                              n        77Ke03**
*                           ~ at 175.9 to 11/2^- at 2091.71, (9/2,11/2,13/2)^- at 2119.05        k        Ens141**
*141Sm(B+)141Pm            E+=3020(60) 32% to 3/2^+ level at 403.82, 31% to (1/2)^+ 438.29 keV   k        Ens141**
*141Sm(B+)141Pm            Q+=4700(80) from 141Smm at 175.9 keV                                  g        Nub211**
*141Eu(B+)141Sm            E+=4620(110) to (5/2)^+ level at 395.56 keV, and other E+ (not given) k        Ens141**
*141Eu(B+)141Sm            E+=4925(40) to 3/2^+ level at 1.58 keV                                k        Ens141**
*141Eu(B+)141Sm            E+=4960(40) to 3/2^+ level at 1.58 keV                                k        Ens141**


 142Sb-u                        -36082#     322#                                    2                  g    1.0 S-u212
 142Te-u                        -49973#     537#                                    2                  g    1.0 S-u212
 142I-u                         -58798      268      -58833.404     5.300     -.1   U                  GGT1 1.5 04Ma.A
 142I-133Cs1.068                 42143.9      5.3                                   2                  GCP2 1.0 20Or02
 142Xe-u                        -70247      111      -70026.904     2.900      .8   U                  HGT2 2.5 08Kn.A
 142Xe-133Cs1.068                30950.4      2.9                                   2                  HMA8 1.0 09Ne11
 142Cs-133Cs1.068                25270       16       25276.819     7.586      .4  -1-                 NMA4 1.0 99Am05
 142Cs-133Cs1.068                25304       23       25276.819     7.586    -1.2  -1-                 KCP1 1.0 13Va12
 142Cs-133Cs1.068          ave   25281.088   13.134   25276.819     7.586     -.3   1     33  33 142Cs          average
 142Ba-133Cs1.068                17410       15       17410.209     6.356      .0  -1-                  MA1 1.0 99Am05
 142Ba-133Cs1.068                17420       16       17410.209     6.356     -.6  -1-                 MMA4 1.0 99Am05
 142Ba-133Cs1.068          ave   17414.678   10.943   17410.209     6.356     -.4   1     34  34 142Ba          average
 142Ba-u                        -83576.8      9.1    -83567.095     6.356     1.1   1     49  49 142Ba HCP1 1.0 06Sa56
 C11 H10-142Ce                  169111       15      169000.099     2.623    -1.8   U                  hR05 4.0 65De13
 C11 H10-142Ce                  168955       40      169000.099     2.623      .5   U                  hM17 2.5 66Be10
 C11 H10-142Ce                  168955       40      169000.099     2.623      .5   U                  hM17 2.5 66Be10
 C10 13C H9-142Ce               164528       82      164529.902     2.623      .0   U                  hR05 4.0 65De13
 C10 N H8-142Ce                 156558       42      156424.039     2.623     -.8   U                  hR05 4.0 65De13
 C11 H10-142Nd                  170509       36      170521.480     1.348      .1   U                  hR05 4.0 65De13
 C10 N H8-142Nd                 157870       43      157945.421     1.348      .4   U                  hR05 4.0 65De13
 C10 O H6-142Nd                 134076       36      134135.972     1.348      .4   U                  hR05 4.0 65De13
 C10 13C H9-142Nd               166021       32      166051.284     1.348      .2   U                  hR05 4.0 65De13,*
 142Pm-u                        -87136       30      -87109.015    25.331      .9  -1-                 MGS2 1.0 05Li24
 142Pm-u                        -87118.1     86.     -87109.015    25.331      .1  -1- q-q=    -8.463  H1.0 1.0  142Nd+0
 142Pm-u                        -87032.3     86.     -87109.015    25.331     -.9  -1- q-q=    71.459  H1.0 1.0  142Nd+0
 142Pm-u                   ave  -87124.099   26.904  -87109.015    25.331      .6   1     89  89 142Pm          average
 142Sm-133Cs1.068                16173       14       16186.743     2.002     1.0   U                  HMA5 1.0 00Be42
 142Eum-133Cs1.068               24909       15       24910.060    13.416      .1  -2-                 MMA5 1.0 00Be42
 142Eum-133Cs1.068               24914.3     30.      24910.060    13.416     -.1  -2- q-q=     4.240  H1.0 1.0 142Eum-C
 142Eum-133Cs1.068         ave   24910.060   13.416                                 2                            average
 142Eum-u                       -76063       30      -76067.244    13.416     -.1R  R  q-q=     4.244  MGS2 1.0 05Li24
 142Gd-u                        -71884       30                                     2                  MGS2 1.0 05Li24
 142Ho-u                        -39990#     430#                                    2                  k    1.0 S-u169,W
 142Er-u                        -29984#     537#                                    2                  g    1.0 S-u20c
 142Cs-136Xe1.044                21171       11       21167.606     7.586     -.3   1     48  48 142Cs HCP1 1.0 12Va02
 142Ce-C11 H9                  -161176       40     -161175.067     2.623      .0   U                  hM17 2.5 66Be10
 142Nd-C11 H9                  -162665       30     -162696.449     1.348     -.4   U                  hM17 2.5 66Be10
 142Ce-140Ce                      3818        3        3801.782     2.651    -2.2   U                  KM17 2.5 66Be10,G
 142Ce-138Ce                      3644       35        3256.040     2.677    -2.8B  B                  hR05 4.0 65De13
 139Cs-142Cs.685 132Cs.316        -4840       40       -4858.365     5.776     -.2   U                  hP23 2.5 82Au01
 140Cs-142Cs.789 132Cs.212        -2950       40       -2937.384     9.918      .1   U                  nP23 2.5 82Au01
 141Cs-142Cs.794 137Cs.206         -580       40        -660.362    10.772     -.8   U                  nP23 2.5 82Au01
 138Csx-142Cs.194 137Cs.806         550       40         588.688    24.794      .4   U                  mP23 2.5 82Au01
 140Cs-142Cs.329 139Cs.671          260       40         299.981     8.778      .4   U                  hP23 2.5 82Au01
 141Cs-142Cs.662 139Cs.338         -410       40        -519.747    10.371    -1.1   U                  hP23 2.5 82Au01
 141Cs-142Cs.496 140Cs.504         -640       40        -669.063    10.601     -.3   U                  hP23 2.5 82Au01
 141Cs-142Cs.496 140Cs.504         -663       19        -669.063    10.601     -.1   U                  mP33 2.5 86Au02
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142Ce(a)138Ba		1545	200	1304.006	2.456	-1.2	U				h	57Ri43
140Ce(t,p)142Ce		4112	5	4119.502	2.470	1.5	1	24	21	142Ce	LAl	72Mu09
142Ce(p,t)140Ce		-4170	20	-4119.502	2.470	2.5	U				hOsa	70Ya05
142Nd(p,t)140Nd		-9150	20	-9353.636	3.494	-10.2B	B				MOsa	71Ya10,*
142Ce(g,n)141Ce		-7240	70	-7173.150	2.470	1.0	U				hPhi	60Ge01
142Ce(d,t)141Ce		-909	15	-915.920	2.470	-.5	U				hMtr	72Le17
141Pr(n,g)142Pr		5843.14	0.10	5843.151	0.077	.1	-1-				mMMn	81Ke11,Z
141Pr(n,g)142Pr		5843.16	0.12	5843.151	0.077	-.1	-1-				MBdn	06Fi.A
141Pr(d,p)142Pr		3626	10	3618.585	0.077	-.7	U				hMIT	64Sp12
141Pr(n,g)142Pr	ave	5843.148	0.077	5843.151	0.077	.0	1	100	54	142Pr		average
142Xe(B-)142Cs		5040	100	5284.908	7.565	2.4	U				HTrs	78Wo15
142Cs(B-)142Ba		7230	70	7327.700	8.363	1.4	U				hTrs	78Wo15
142Cs(B-)142Ba		7329	20	7327.700	8.363	-.1o	o				hGsn	81De25
142Cs(B-)142Ba		7280	40	7327.700	8.363	1.2	U				mBwg	87Gr.A,G
142Cs(B-)142Ba		7315	15	7327.700	8.363	.8	1	31	19	142Cs	Gsn	92Pr04
142Ba(B-)142La		2200	25	2181.683	8.375	-.7	1	11	6	142La	H	83Ch39
142Ba(B-)142La		2216	5	2181.683	8.375	-6.9C	C				HMcG	84He.A
142La(B-)142Ce		4517	25	4508.945	5.845	-.3	U				h	65Pr03
142La(B-)142Ce		4510	6	4508.945	5.845	-.2	1	95	94	142La	McG	84He.A
142Pr(B-)142Nd		2164	2	2163.684	1.366	-.2	-1-					66Be12
142Pr(B-)142Nd		2158	3	2163.684	1.366	1.9	-1-					75Ra09
142Pr(B-)142Nd	ave	2162.154	1.664	2163.684	1.366	.9	1	67	46	142Pr		average
142Pm(B+)142Nd		4800	80	4808.509	23.622	.1R	R	q-q=	-8.509		m	60Ma.A
142Pm(B+)142Nd		4880	80	4808.509	23.622	-.9R	R	q-q=	71.491		mIRS	83Al06
142Pm(B+)142Nd		4880	160	4808.509	23.622	-.4	U				mLBL	91Fi03
142Sm(B+)142Pm		2050	70	2159.625	23.652	1.6	1	11	11	142Pm	H	60Ma.A
142Sm(B+)142Pm		2100	400	2159.625	23.652	.1	U				hLBL	91Fi03
142Eu(B+)142Sm		8000	300	7673.000	30.000	-1.1	U				h	75Ke08
142Eu(B+)142Sm		7400	100	7673.000	30.000	2.7	U				h	82Gr.A
142Eu(B+)142Sm		7000	300	7673.000	30.000	2.2	U				hLBL	91Fi03
142Eu(B+)142Sm		7673	30				2				NDbn	94Po26
142Eum(B+)142Sm		8150	100	8125.719	12.636	-.2	U				M	75Ke08,*
142Eum(B+)142Sm		8174	50	8125.719	12.636	-1.0	U				MIRS	83Al06,*
142Eum(B+)142Sm		7480	100	8125.719	12.636	6.5B	B				IRS	93Al03,*
142Eum(B+)142Sm		8150	60	8125.719	12.636	-.4	U				MDbn	94Po26,*
142Gd(B+)142Eu		4200	300	4349.386	41.041	.5	U				MLBL	91Fi03
142Tb(B+)142Gd		10400	700				3				HLBL	91Fi03
142Dy(B+)142Tb		7100	200	6440#	200#	-3.3D	D				HLBL	91Fi03,*
142Dy(B+)142Tb		6440#	200#				4				g	S-u212
*C10 13C H9-142Nd	Original 1002055(32) is certainly a typo; rebuilt from M=141.907760(36)u										h	WgM127**
*142Ho-u	Sp>-800										n	93Li40*W
*142Ce-140Ce	Last M17 left, with v/s=1.7 sign=11.5 infl142Ce=9.22										k	GAu168*G
*142Nd(p,t)140Nd	Disagrees strongly with 140Nd-u										M	AHW036**
*142Cs(B-)142Ba	Unc. is maybe a misprint. Check with authors											GAu921*G
*142Eum(B+)142Sm	E+=4760(100) 4782(50) resp, to 7^- level at 2372.1 keV										h	Ens118**
*142Eum(B+)142Sm	Measured half-life 73.4(0.5) s corresponds to 142Eum											GAu92b**
*142Eum(B+)142Sm	E+=4756(60) to 7^- level at 2372.1 keV										h	Ens118**
*142Dy(B+)142Tb	Trends from Mass Surface TMS suggest 142Dy 660 keV more bound										G	GAu212**

143Te-u	-43511#	537#				2				g	1.0	S-u212
143I-u	-53849	495	-54525#	215#	-.5D	D				KGT3	2.5	16Kn03,*
143I-u	-54525#	215#				2				g	1.0	S-u212
143Xe-u	-64649	290	-64630.449	5.000	.0o	o				HGT1	1.5	04Ma.A
143Xe-u	-64858	108	-64630.449	5.000	.8o	o				HGT2	2.5	08Kn.A
143Xe-u	-64684	133	-64630.449	5.000	.2	U				HGT2	2.5	08Su19
143Xe-133Cs1.075	37008.7	5.0				2				HMA8	1.0	09Ne11
143Cs-u	-72771	117	-72652.654	8.130	.4	U				HGT2	2.5	08Kn.A
143Cs-133Cs1.075	28985.6	8.5	28986.495	8.130	.1	1	91	91	143Cs	KCP1	1.0	13Va12
143Ba-133Cs1.075	22268	16	22264.299	7.253	-.2	1	21	21	143Ba	MA1	1.0	99Am05
143Ba-u	-79375.0	8.5	-79374.851	7.253	.0	1	73	73	143Ba	HCP1	1.0	06Sa56
143La-u	-83918.1	8.7	-83920.516	7.868	-.3	1	82	82	143La	HCP1	1.0	06Sa56
C10 N H9-143Nd	163719	31	163679.463	1.347	-.3	U				hR05	4.0	65De13
C10 O H7-143Nd	139814	42	139870.014	1.347	.3	U				hR05	4.0	65De13
143Pm-133Cs1.075	12567	15	12577.233	3.161	.7	U				MMA5	1.0	00Be42
143Sm-133Cs1.075	16268	15	16274.016	2.952	.4	U				MMA5	1.0	00Be42
143Sm-u	-85347	30	-85365.133	2.952	-.6	U				MGS2	1.0	05Li24,*

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 143Eu-133Cs1.075              21947      14       21937.828   11.794    -.7  -2-                MMA5 1.0 00Be42
 143Eu-133Cs1.075              21933      30       21937.828   11.794     .2  -2- q-q=   -4.828  m1.0 1.0  143Eu-C
 143Eu-133Cs1.075              21895.4    32.      21937.828   11.794    1.3  -2- q-q=  -39.521  H1.0 1.0  143Sm+0
 143Eu-133Cs1.075          ave  21937.828  11.794                              2                           average
 143Eu-u                      -79706      30      -79701.321   11.794    .2R  R  q-q=   -4.679  MGS2 1.0 05Li24
 143Gd-u                      -73012      56      -73249.321  215.032  -4.2C  C                  MGS2 1.0 05Li24,*
 143Tb-u                      -64879      64      -64862.668   55.000     .3  U                  hGS2 1.0 05Li24,*
 143Tb-85Rb1.682               83507      55                                   2                 HSH1 1.0 07Ra37,*
 143Dy-85Rb1.682               92364      14                                   2                 HSH1 1.0 07Ra37,*
 143Ho-u                      -45140#    320#                                  2                 k    1.0 S-u169
 143Er-u                      -33452#    429#                                  2                 g    1.0 S-u20c
 143Nd 35Cl-141Pr 37Cl          5116       4        5110.340    1.470    -.6  U                  hH21 2.5 70Ma05,W
 143Nd-C11 H10               -168422      30     -168430.490    1.347    -.1  U                  hM17 2.5 66Be10
 143Nd-142Nd                    2322      46        2090.990    0.075   -1.3  U                  hR05 4.0 65De13
 143Nd-142Nd                    2084       2        2090.990    0.075    1.4  U                  hM17 2.5 66Be10
 143Nd-C11 H9                -160594      30     -160605.458    1.347    -.2  U                  hM17 2.5 66Be10
 141Cs-143Cs.493 139Cs.507      -230      40        -197.866   10.051     .3  U                  nP23 2.5 82Au01
 141Cs-143Cs.493 139Cs.507      -115      22        -197.866   10.051   -1.5  U                  mP33 2.5 86Au02
 142Cs-143Cs.497 141Cs.504       647      15         656.763    9.251     .3  U                  KP33 2.5 86Au02
 143Nd(n,a)140Ce                9699      15        9718.327    1.452    1.3  U                  hILL     75Em.A
 143Nd(p,t)141Nd               -7450      20       -7471.626    3.124   -1.1  U                  hOsa     71Ya10
 142Ce(n,g)143Ce                5145.9     0.5      5144.801    0.094   -2.2  U                  H        76Ge02
 142Ce(n,g)143Ce                5144.78    0.15     5144.801    0.094     .1  -1-                mPtn     80Ba.A,Z
 142Ce(n,g)143Ce                5144.81    0.12     5144.801    0.094    -.1  -1-                MBdn     06Fi.A
 142Ce(d,p)143Ce                2945      15        2920.234    0.094   -1.7  U                  hMtr     72Le17
 142Ce(n,g)143Ce           ave   5144.798   0.094    5144.801    0.094     .0  1   100  78 142Ce          average
 142Nd(n,g)143Nd                6123.62    0.08     6123.573    0.069    -.6  -1-                mMMn     82Is05,Z
 142Nd(n,g)143Nd                6123.41    0.14     6123.573    0.069    1.2  -1-                MBdn     06Fi.A
 142Nd(d,p)143Nd                3916      15        3899.007    0.069   -1.1  U                  hKop     67Ch16
 142Nd(d,p)143Nd                3902      15        3899.007    0.069    -.2  U                  hTal     67Ne04
 142Nd(d,p)143Nd                3902      15        3899.007    0.069    -.2  U                  hHei     67Wi08
 142Nd(n,g)143Nd           ave   6123.568   0.069    6123.573    0.069     .1  1   100  77 142Nd          average
 142Nd(3He,d)143Pm             -1099      25       -1193.897    2.682  -3.8B  B                  hOak     71Wi04
 142Nd(3He,d)143Pm             -1195       5       -1193.897    2.682     .2  1    29  29 143Pm  McM      80St10,*
 143Cs(B-)143Ba                 6250      90        6261.687    9.730    .1o  o                  hGsn     81De25,*
 143Cs(B-)143Ba                 6240      70        6261.687    9.730     .3  U                  mBwg     87Gr.A
 143Cs(B-)143Ba                 6270      25        6261.687    9.730    -.3  1    15   9 143Cs  Gsn      92Pr04
 143Ba(B-)143La                 4240      50        4234.260    9.968    -.1  U                  H        79Sc11
 143Ba(B-)143La                 4259      40        4234.260    9.968    -.6  U                  HGsn     81De25
 143Ba(B-)143La                 4210      70        4234.260    9.968     .3  U                  mBwg     87Gr.A
 143La(B-)143Ce                 3425      17        3434.902    7.581     .6  1    20  18 143La           84Is09,*
 143Ce(B-)143Pr                 1460.6     2.       1461.820    1.865     .6  1    87  77 143Ce           77Ra18,*
 143Pr(B-)143Nd                  932       2         934.110    1.367    1.1  -1-                         49Fe18
 143Pr(B-)143Nd                  935       2         934.110    1.367    -.4  -1-                         76Ra33
 143Pr(B-)143Nd            ave    933.500   1.414     934.110    1.367     .4  1    93  90 143Pr           average
 143Pm(B+)143Nd                 1000      70        1041.648    2.683     .6  U                  h        67Va01,*
 143Sm(B+)143Pm                 3492      30        3443.532    3.560   -1.6  U                  h        66Be21
 143Sm(B+)143Pm                 3437      30        3443.532    3.560     .2  U                  hIRS     83Al06
 143Sm(B+)143Pm                 3500      60        3443.532    3.560    -.9  U                  hIRS     93Al03
 143Sm(B+)143Pm                 3461      40        3443.532    3.560    -.4  U                  NDbn     94Po26
 143Eu(B+)143Sm                 5100      50        5275.807   11.324   3.5B  B                  n        74Ch21
 143Eu(B+)143Sm                 5160      60        5275.807   11.324   1.9o  o                  hIRS     83Ve.A
 143Eu(B+)143Sm                 5240      70        5275.807   11.324    .5o  o                  hIRS     83Al06
 143Eu(B+)143Sm                 5250      80        5275.807   11.324     .3  U                  nIRS     93Al03
 143Eu(B+)143Sm                 5236      30        5275.807   11.324   1.3R  R  q-q=  -39.807  mDbn     94Po26
 143Gd(B+)143Eu                 6010     200                                   3                  IRS     93Al03,*
*143I-u                       Trends from Mass Surface TMS suggest 143I    630 keV more bound        G        GAu212**
*143Sm-u                      M-A=-78746(28) keV  for 143Smm at 753.99 keV                           g        Nub211**
*143Gd-u                      M-A=-67934(28) keV  for mixture gs+m at 152.6 keV                      g        Nub211**
*143Tb-u                      M-A=-60434(32) keV  for mixture gs+m at 0#100 keV                      g        Nub211**
*                              ~ outweighed by next item before correcting for isomeric mixture      H        GAu062**
*143Tb-85Rb1.682              M-A=-60419.5(7.8) keV for mixture gs+m at 0#100 keV                    g        Nub211**
*143Dy-85Rb1.682              D_M=92354(17) and D_M=92705(14) for 143Dym at 310.7 keV                g        Nub211**
*143Dy-85Rb1.682              M-A=-52178(16) and M-A=-51851(13) for 143Dym at 310.7 keV              h        GAu065*G
*143Nd 35Cl-141Pr 37Cl        Increased by 5 for systematic difference H21 with later data                    AHW   *W
*142Nd(3He,d)143Pm            Based on 146Nd(3He,d)147Pm Q=-87.6(0.9) keV                                     AHW   **
*143Cs(B-)143Ba               E-=6070(50) and 5847(100) to 3/2^- level at 228.83 keV                 h        Ens123**
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*143La(B-)143Ce	E-=3419(17) 64% to 3/2^- gs, 29% to 7/2^- level at 18.9 keV	h	Ens123**
*143Ce(B-)143Pr	E-=1110(2) to 3/2^+ level at 350.622 keV	h	Ens123**
*143Pm(B+)143Nd	pK=0.806(0.023) to 3/2^- level at 742.05 keV, and p^+<1e-6	h	Ens123**
*143Gd(B+)143Eu	Q+=6160(200) from 143Gdm at 152.6 keV	g	Nub211**

144Te-u		-38884#	322#				2				g	1.0	S-u212
144I-u		-48664#	429#				2				g	1.0	S-u212
144Xe-133Cs1.083		41340.6	5.7				2				HMA8	1.0	09Ne11
144Cs-133Cs1.083		34488	33	34470.926	21.612	-.5	1	43	43	144Cs	KCP1	1.0	13Va12
144Ba-133Cs1.083		25347	15	25350.345	7.661	.2	1	26	26	144Ba	MA1	1.0	99Am05
144Ba-u		-77045.3	9.1	-77045.179	7.661	.0	1	71	71	144Ba	HCP1	1.0	06Sa56
144La-u		-80337.1	19.3	-80354.411	13.888	-.9	-2-				HCP1	1.0	06Sa56
144La-u		-80373	20	-80354.411	13.888	.9	-2-				HGS3	1.0	12Ch19
144La-u	ave	-80354.411	13.888				2						average
C10 O H8-144Nd		147408	28	147422.063	1.346	.1	U				hR05	4.0	65De13
C10 O H8-144Nd		147384	29	147422.063	1.346	.3	U				hR05	4.0	65De13
C9 13C N H9-144Nd		166777	28	166761.315	1.346	-.1	U				hR05	4.0	65De13
C10 H8 O-144Sm		145450	50	145508.570	1.566	.3	U				hR04	4.0	64De15
C9 13C H9 N-144Sm		164955	46	164847.823	1.566	-.6	U				hR04	4.0	64De15
144Eu-133Cs1.083		21223	17	21215.012	11.581	-.5	1	46	46	144Eu	MMA5	1.0	00Be42
144Eu-u		-81117	30	-81180.512	11.581	-2.1	1	15	15	144Eu	HGS2	1.0	05Li24
144Gd-u		-77037	30				2				MGS2	1.0	05Li24
144Tb-u		-66955	30				2				MGS2	1.0	05Li24,*
144Dy-u		-60746	33	-60730.488	7.700	.5	U				hGS2	1.0	05Li24
144Dy-85Rb1.694		88697.7	7.7				2				HSH1	1.0	07Ra37
144Ho-85Rb1.694		101537.9	9.1				2				HSH1	1.0	07Ra37
144Er-u		-39300#	210#				2				h	1.0	S-u127
144Nd 35Cl-142Nd 37Cl		5329	3	5314.098	0.116	-1.2	U				hH12	4.0	64Ba15
144Nd 35Cl-142Nd 37Cl		5308	3	5314.098	0.116	.8	U				hH21	2.5	70Ma05
144Sm-144Nd		1951	3	1913.492	0.851	-3.1B	B				hH19	4.0	64Mc11
144Sm-144Nd		1911.9	1.1	1913.492	0.851	.6	-1-				H25	2.5	72Ba08
144Sm-144Nd		1913.68	0.94	1913.492	0.851	-.2	-1-				HSH1	1.0	11Go23
144Sm-144Nd	ave	1913.494	0.889	1913.492	0.851	-.0	1	92	86	144Sm			average
144Nd-143Nd		269	25	272.983	0.057	.0	U				hR05	4.0	65De13
144Nd-143Nd		273	3	272.983	0.057	-.0	U				hM17	2.5	66Be10
144Nd-142Nd		2366	3	2363.973	0.094	-.3	U				hM17	2.5	66Be10
142Cs-144Cs.592 139Cs.409		-60	40	-51.163	13.773	.1	U				nP23	2.5	82Au01
143Cs-144Cs.745 140Cs.255		-920	50	-890.671	16.931	.2	U				mP23	2.5	82Au01
142Cs-144Cs.329 141Cs.671		290	40	276.024	11.388	-.1	U				nP23	2.5	82Au01
143Cs-144Cs.662 141Cs.338		-651	21	-616.532	15.641	.7	U				KP33	2.5	86Au02
143Cs-144Cs.497 142Cs.504		-790	50	-690.314	13.108	.8	U				nP23	2.5	82Au01
144Nd(a)140Ce		1882.4	30.	1901.291	1.452	.6	U				h		61Ma05
144Nd(a)140Ce		1882.4	20.	1901.291	1.452	.9	U				h		65Is01
144Sm(3He,6He)141Sm		-8693	12	-8692.534	8.535	.0	1	51	50	141Sm	MSU		78Pa11
142Ce(t,p)144Ce		3582	15	3559.884	3.359	-1.5	U				hLAl		72Mu09
142Nd(t,p)144Nd		5450	30	5458.813	0.087	.3	U				hAld		72Ch11
144Nd(p,t)142Nd		-5470	20	-5458.813	0.087	.6	U				hOsa		71Ya10
144Sm(p,t)142Sm		-10649	15	-10644.540	1.174	.3	U				HHam		73Oe02
143Nd(n,g)144Nd		7817.11	0.07	7817.036	0.053	-1.1	-1-				mMMn		82Is05,Z
143Nd(n,g)144Nd		7816.93	0.08	7817.036	0.053	1.3	-1-				mILn		91Ro.A,Z
143Nd(n,g)144Nd		7816.94	0.23	7817.036	0.053	.4	U				MBdn		06Fi.A
144Nd(d,t)143Nd		-1555	15	-1559.806	0.053	-.3	U				hOrs		73Ga01
143Nd(n,g)144Nd	ave	7817.032	0.053	7817.036	0.053	.1	1	100	61	143Nd			average
143Nd(3He,d)144Pm		-804	5	-790.700	2.646	2.7B	B				HMcM		80St10,*
143Nd(3He,d)144Pm-142Nd()143Pm		402.7	1.6	403.197	1.527	.3	1	91	49	143Pm			75Ma04
144Sm(t,a)143Pm		13542	25	13519.936	2.715	-.9	U				hAld		68Ha13
144Sm(d,t)143Sm		-4262	10	-4262.579	2.349	-.1	U				h		72Ja28
144Sm(p,d)143Sm-148Gd()147Gd		-1536	2	-1536.000	2.000	.0	1	100	100	143Sm			86Ru04
144Tm(p)143Er		1712.0	16.				3				HORp		05Gr32,*
144Cs(B-)144Ba		8451	30	8495.768	20.416	1.5o	o				hGsn		81De25
144Cs(B-)144Ba		8560	80	8495.768	20.416	-.8	-1-				Bwg		87Gr.A
144Cs(B-)144Ba		8462	35	8495.768	20.416	1.0	-1-				Gsn		92Pr04
144Cs(B-)144Ba	ave	8477.744	32.066	8495.768	20.416	.6	1	41	38	144Cs			average
144Ba(B-)144La		3055	70	3082.530	14.774	.4	U				HBwg		87Gr.A
144La(B-)144Ce		4300	100	5582.270	13.243	12.8B	B				m		79Ik07,W
144La(B-)144Ce		5435	90	5582.270	13.243	1.6	U				HBwg		87Gr.A

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 144La(B-)144Ce                 5540       100        5582.270    13.243      .4o  o                MKur     02Sh.B
 144La(B-)144Ce                 5540       100        5582.270    13.243      .4   U                HKur     02Sh16
 144Ce(B-)144Pr                  315.6       1.5       318.646     0.832     2.0  -3-                        66Da04
 144Ce(B-)144Pr                  320         1         318.646     0.832    -1.4  -3-                        76Ra33
 144Ce(B-)144Pr            ave   318.646     0.832                               3                         average
 144Pr(B-)144Nd                 2996         3        2997.440     2.400      .5  -2-                        59Po77
 144Pr(B-)144Nd                 3000         4        2997.440     2.400     -.6  -2-                        66Da04
 144Pr(B-)144Nd            ave  2997.440     2.400                               2                         average
 144Eu(B+)144Sm                 6330        30        6346.441    10.809      .5  -1-                 IRS    83Al06
 144Eu(B+)144Sm                 6400        80        6346.441    10.809     -.7   U                hIRS     93Al03
 144Eu(B+)144Sm                 6287        30        6346.441    10.809     2.0  -1-                NDbn     94Po26
 144Sm(p,n)144Eu               -7110.0      30.      -7128.788    10.809     -.6  -1-                        65Me12
 144Eu(B+)144Sm            ave  6314.960    17.280    6346.441    10.809     1.8   1    39  39 144Eu         average
 144Gd(B+)144Eu                 4300       400        3859.657    29.955    -1.1   U                M        70Ar04
*144Tb-u                     M-A=-61971(28) keV  for 144Tbm at 396.9 keV                           g        Nub211**
*143Nd(3He,d)144Pm           Based on 146Nd(3He,d)147Pm Q=-87.6(0.9) keV                                    AHW   **
*144Tm(p)143Er               Trends from Mass Surface TMS suggest 144Tm   160 keV less bound          G        GAu212**
*144La(B-)144Ce              Disagrees badly with systematics                                               AHW900*W


 145Te-u                      -32217#      322#                                  2                g    1.0 S-u212
 145I-u                       -44155#      537#                                  2                g    1.0 S-u212
 145Xe-133Cs1.090              47777        12                                   2                HMA8 1.0 09Ne11
 145Cs-133Cs1.090              38588        12       38586.296     9.734     -.1  -1-               MMA8 1.0 08We02
 145Cs-133Cs1.090              38583        17       38586.296     9.734      .2  -1-               KCP1 1.0 13Va12
 145Cs-133Cs1.090          ave 38586.337     9.804   38586.296     9.734     -.0   1    99  99 145Cs         average
 145Ba-u                      -72481.6       9.1                                 2                HCP1 1.0 06Sa56
 145La-u                      -78188.8      13.3    -78191.934    13.171     -.2   1    98  98 145La HCP1 1.0 06Sa56
 145Ce-u                      -82771.8      92.2    -82734.877    36.394      .4   1    16  16 145Ce HCP1 1.0 06Sa56
 C10 O H9-145Nd               152641        55      152760.741     1.364      .5   U                hR05 4.0 65De13
 C10 O H9-145Nd               152653        30      152760.741     1.364      .9   U                hR05 4.0 65De13
 C9 13C O H8-145Nd            148231        31      148290.544     1.364      .5   U                hR05 4.0 65De13
 145Pm-u                      -87255        30      -87244.236     3.012      .4   U                MGS2 1.0 05Li24
 145Sm-u                      -86535        30      -86582.824     1.594    -1.6   U                hGS2 1.0 05Li24
 145Eu-133Cs1.090              19338        17       19330.072     3.284     -.5   U                MMA5 1.0 00Be42
 145Gd-u                      -78287        30      -78289.949    21.166     -.1  -1-               MGS2 1.0 05Li24
 145Gd-u                      -78294        30      -78289.949    21.166      .1  -1-               MGS2 1.0 05Li24,*
 145Gd-u                   ave -78290.500   21.213  -78289.949    21.166      .0   1   100 100 145Gd         average
 145Tb-u                      -71180       290      -71282.999   119.051     -.4   1    17  17 145Tb KGS2 1.0 05Li24,*
 145Dy-u                      -62575        49      -62526.008     7.000     1.0   U                hGS2 1.0 05Li24,*
 145Dy-85Rb1.706               87960.7       7.0                                 2                HSH1 1.0 07Ra37,*
 145Ho-85Rb1.706               97754.1       8.0                                 2                HSH1 1.0 07Ra37
 145Er-u                      -42126#      215#                                  2                k    1.0 S-u168
 145Nd 35Cl2-141Pr 37Cl2        10828         7       10819.801     1.495     -.5   U                hH21 2.5 70Ma05,W
 145Nd 35Cl-143Nd 37Cl           5744         5        5709.461     0.263    -1.7   U                hH12 4.0 64Ba15
 145Nd 35Cl-143Nd 37Cl           5703         4        5709.461     0.263      .6   U                hH21 2.5 70Ma05
 145Nd-144Nd                     2582        21        2486.354     0.248    -1.1   U                hR05 4.0 65De13
 145Nd-144Nd                     2480         2        2486.354     0.248     1.3   U                hM17 2.5 66Be10
 145Nd-143Nd                     2862        40        2759.337     0.254     -.6   U                hR05 4.0 65De13
 145Nd-143Nd                     2751         3        2759.337     0.254     1.1   U                hM17 2.5 66Be10
 142Cs-145Cs.490 139Cs.511        240        50         150.367     8.520     -.7   U                mP23 2.5 82Au01
 144Cs-145Cs.828 139Cs.173        450        50         414.989    21.072     -.3   U                mP23 2.5 82Au01
 143Cs-145Cs.592 140Cs.409       -700        80        -609.956     9.870      .5   U                hP23 2.5 82Au01
 143Cs-145Cs.493 141Cs.507       -310        40        -308.669     9.953      .0   U                mP23 2.5 82Au01
 144Cs-145Cs.662 142Cs.338        320        18         318.587    20.743     -.0   1    21  20 144Cs  P33 2.5 86Au02
 144Cs-145Cs.497 143Cs.503        600        40         616.475    20.721      .2   U                mP23 2.5 82Au01
 145Pm(a)141Pr                   2303.6      40.       2322.118     2.867      .5   U                h        62Nu01
 145Nd(n,a)142Ce                 8706        30        8747.295     2.210     1.4   U                hILL     75Em04
 145Nd(p,t)143Nd                -5100        20       -5090.534     0.237      .5   U                hOsa     71Ya10
 144Nd(n,g)145Nd                 5755.3       0.7      5755.294     0.231     -.0  -1-               H        75Na.A
 144Nd(n,g)145Nd                 5756.9       2.0      5755.294     0.231     -.8   U                M        77Mc09
 144Nd(n,g)145Nd                 5755.26      0.25     5755.294     0.231      .1  -1-               MBdn     06Fi.A
 144Nd(d,p)145Nd                 3521        15        3530.728     0.231      .6   U                hHei     67Wi08
 144Nd(d,p)145Nd                 3538        15        3530.728     0.231     -.5   U                hOrs     73Ga01
 144Nd(n,g)145Nd           ave   5755.265     0.235    5755.294     0.231      .1   1    96  84 145Nd         average
 144Nd(3He,d)145Pm               -680         5        -685.028     2.526    -1.0   1    26  25 145Pm  McM    80St10,*
 144Nd(3He,d)145Pm-143Nd()144Pm   105.2       1.6       105.672     1.526      .3   1    91  57 144Pm         75Ma04
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144Sm(n,g)145Sm		6757.1	0.3	6757.099	0.299	-.0	1	99	92	145Sm			79Wa22
144Sm(d,p)145Sm		4533	12	4532.533	0.299	-.0	U				hTal		65Ke09
144Sm(d,p)145Sm		4547	15	4532.533	0.299	-1.0	U				hKop		67Ch16
144Sm(3He,d)145Eu		-2184	4	-2178.630	2.707	1.3	-1-				Mun		82Sc25
144Sm(3He,d)145Eu		-2174	4	-2178.630	2.707	-1.2	-1-						84Ru.A
144Sm(3He,d)145Eu	ave	-2179.000	2.828	-2178.630	2.707	.1	1	92	91	145Eu			average
145Dy(ep)144Gd		6000	500	6227.933	28.695	.5	U				h		83La.A,*
145Tm(p)144Er		1740.1	10.	1736.100	7.071	-.4	-3-				MORp		98Ba13
145Tm(p)144Er		1732.1	10.	1736.100	7.071	.4	-3-				HArp		07Se06
145Tm(p)144Er	ave	1736.100	7.071				3						average
145Cs(B-)145Ba		7358	70	7461.759	12.412	1.5	U				HGsn		81De25,W
145Cs(B-)145Ba		7930	75	7461.759	12.412	-6.2C	C				MBwg		87Gr.A
145Cs(B-)145Ba		7865	50	7461.759	12.412	-8.1B	B				MGsn		92Pr04
145Ba(B-)145La		4925	80	5319.142	14.912	4.9C	C				MBwg		87Gr.A
145La(B-)145Ce		4110	80	4231.725	35.298	1.5	1	19	18	145Ce	Bwg		87Gr.A
145Ce(B-)145Pr		2490	100	2558.928	33.635	.7	-1-						67Ho19,*
145Ce(B-)145Pr		2600	100	2558.928	33.635	-.4	-1-						80Ya07,*
145Ce(B-)145Pr		2530	50	2558.928	33.635	.6	-1-				Bwg		87Gr.A
145Ce(B-)145Pr	ave	2535.000	40.825	2558.928	33.635	.6	1	68	67	145Ce			average
145Pr(B-)145Nd		1805	10	1806.014	7.037	.1	1	50	50	145Pr			59Dr.A
145Pm(e)145Nd		143	15	164.500	2.536	1.4	U				m		59Br65,*
145Pm(e)145Nd		150	5	164.500	2.536	2.9B	B				H		74To04,*
145Sm(e)145Pm		607	6	616.101	2.539	1.5	-1-						71My01,*
145Sm(e)145Pm		622	5	616.101	2.539	-1.2	-1-						83Vo10,*
145Sm(e)145Pm	ave	615.852	3.841	616.101	2.539	.1	1	44	41	145Pm			average
145Eu(B+)145Sm		2710	15	2659.908	2.722	-3.3B	B				H		68Ad04,*
145Eu(B+)145Sm		2647	12	2659.908	2.722	1.1	U				h		83Sc28,*
145Gd(B+)145Eu		5070	60	5064.857	19.952	-.1	U				H		79Fi07
145Gd(B+)145Eu		5090	90	5064.857	19.952	-.3o	o				MIRS		83Ve.A,*
145Gd(B+)145Eu		5070	80	5064.857	19.952	-.1	U				MIRS		85Al13
145Gd(e)145Eu		5000	70	5064.857	19.952	.9	U				h		77Ho18,W
145Tb(B+)145Gd		6700	200	6526.933	109.714	-.9	-1-				H		86Ve.A,*
145Tb(B+)145Gd		6400	150	6526.933	109.714	.8	-1-				HIRS		93Al03
145Tb(B+)145Gd	ave	6508.000	120.000	6526.933	109.714	.2	1	84	83	145Tb			average
145Dy(B+)145Tbm		7300	200				3				HIRS		93Al03
145Erm(IT)145Er		254	4	204.800	4.123	-12.3	Z				hORp		06Ta08
*145Gd-u	M-A=-72181(28) keV for 145Gdm at 749.1 keV										g		Nub211**
*145Tb-u	M-A=-65881(28) keV for mixture gs+m at 850(230) keV										g		Nub211**
*145Dy-u	M-A=-58230(30) keV for mixture gs+m at 118.2 keV										g		Nub211**
*145Dy-85Rb1.706	D_M=88054.7(6.8) uu for mixture gs+m at 118.2 keV with ratio R=0.741(13)										g		Nub211**
*145Dy-85Rb1.706	M-A=-58155.0(6.3) keV for mixture gs+m at 118.2 keV R=0.741(13) i/(g+i)										h		GAu065*G
*145Nd 35Cl2-141Pr 37Cl	Increased by 5 for systematic difference H21 with later data												AHW *W
*144Nd(3He,d)145Pm	Based on 146Nd(3He,d)147Pm Q=-87.6(0.9) keV												AHW **
*145Dy(ep)144Gd	As read from graph										h		AHW **
*145Cs(B-)145Ba	If E- to gs												AHW *W
*145Ce(B-)145Pr	E-=1700(100) 1810(100) resp, to (3/2)^- level at 786.91; and other E-										h		Ens092**
*145Pm(e)145Nd	LM/K=0.85(0.03) to 3/2^- level at 67.167 keV										h		Ens092**
*145Pm(e)145Nd	pK=0.554(0.025) to 5/2^- level at 72.486 keV, and other pK										h		Ens092**
*145Sm(e)145Pm	pK=0.27(0.03) 0.35(0.025) resp, to 3/2^+ level at 492.31 keV										h		Ens092**
*145Eu(B+)145Sm	E+=794(15) to 3/2^+ level at 893.788 keV										h		Ens092**
*145Eu(B+)145Sm	pK=0.72(0.02) to (5/2^-,7/2^-) level at 2508.31 and 9^- at 2513.37 levels										h		Ens092**
*145Gd(B+)145Eu	E+=2310(90) to 3/2^+ level at 1758.03 keV, and other E+										h		Ens092**
*145Gd(e)145Eu	Discusses IBE; AHW proposes not to trust them here												79Fi07*W
*145Tb(B+)145Gd	E+=3300(200) to (9/2^-) level at 2382.3(0.2) keV										H		Ens092**

146I-u		-38154#	322#				2				g	1.0	S-u212
146Xe-133Cs1.098		52332	26				2				HMA8	1.0	09Ne11
146Cs-133Cs1.098		44437.4	3.3	44435.622	3.106	-.5	-2-				gMA8	1.0	17At01
146Cs-133Cs1.098		44421.8	9.2	44435.622	3.106	1.5	-2-				KCP1	1.0	13Va12
146Cs-133Cs1.098	ave	44435.622	3.106				2						average
146Ba-u		-69618	112	-69636.800	1.900	-.1o	o				HGT2	2.5	08Kn.A
146Ba-u		-69963	141	-69636.800	1.900	.9	U				HGT2	2.5	08Su19
146Ba-u		-69717.5	23.7	-69636.800	1.900	3.4B	B				GCP1	1.0	06Sa56
146Ba-u		-69636.8	1.9				2				GCP2	1.0	18Or.A,*
146La-u		-74259	54	-74311.983	1.798	-1.0	U				GCP1	1.0	06Sa56,*
146La-u		-74311.9	1.8	-74311.983	1.798	-.0	1	100	100	146La	GCP2	1.0	20Or02,*

146Lam-u		-74160.1	1.8				2				GCP2	1.0	20Or02,*
146Ce-u		-81191.8	20.8	-81187.705	15.743	.2	-1-				HCP1	1.0	06Sa56
146Ce-u		-81171	40	-81187.705	15.743	-.4	-1-				HGS3	1.0	12Ch19
146Ce-u	ave	-81187.373	18.454	-81187.705	15.743	-.0	1	73	73	146Ce			average
C12 H2-146Nd		102453	31	102527.590	1.366	.6	U				hR05	4.0	65De13
C10 O H10-146Nd		160017	27	160042.465	1.366	.2	U				hR05	4.0	65De13
C10 O H10-146Nd		159971	50	160042.465	1.366	.4	U				hR05	4.0	65De13
C9 13C O H9-146Nd		155525	35	155572.268	1.366	.3	U				hR05	4.0	65De13
146Pm-u		-85289	30	-85297.745	4.589	-.3	U				MGS2	1.0	05Li24
146Eu-133Cs1.098		21029	15	21024.619	6.451	-.3	1	18	18	146Eu	MMA5	1.0	00Be42
146Tb-u		-72464	77	-72747.243	48.159	-3.7C	C				MGS2	1.0	05Li24,*
146Dy-u		-67150	30	-67155.473	7.187	-.2	U				hGS2	1.0	05Li24
146Dy-85Rb1.718		84390.0	7.2	84389.765	7.187	-.0	1	100	100	146Dy	HSH1	1.0	07Ra37
146Ho-133Cs1.098		48797	10	48807.258	7.071	1.0	1	50	50	146Ho	HSH1	1.0	07Ra37
146Ho-85Rb1.718		96549	10	96538.742	7.071	-1.0	1	50	50	146Ho	HSH1	1.0	07Ra37
146Er-85Rb1.718		103960.4	9.2	103963.596	7.198	.3	1	61	61	146Er	HSH1	1.0	07Ra37
146Nd 35Cl-144Nd 37Cl		6003	3	5979.786	0.272	-1.9	U				hH12	4.0	64Ba15
146Nd 35Cl-144Nd 37Cl		5966	4	5979.786	0.272	1.4	U				hH21	2.5	70Ma05
146Nd 35Cl-144Nd 37Cl		5982.8	1.1	5979.786	0.272	-1.1	U				mH25	2.5	72Ba08
146Nd-145Nd		526	33	543.308	0.094	.1	U				hR05	4.0	65De13
146Nd-145Nd		536	2	543.308	0.094	1.5	U				hM17	2.5	66Be10
146Nd-144Nd		3147	36	3029.662	0.263	-.8	U				hR05	4.0	65De13
146Nd-144Nd		3026	3	3029.662	0.263	.5	U				hM17	2.5	66Be10
145Cs-146Cs.828 140Cs.173		-580	80	-927.825	9.485	-1.7	U				MP23	2.5	82Au01
144Cs-146Cs.329 143Cs.671		320	50	336.028	20.785	.1	U				MP23	2.5	82Au01
145Cs-146Cs.662 143Cs.338		-440	30	-564.628	9.614	-1.7	U				KP33	2.5	86Au02
145Cs-146Cs.497 144Cs.503		-730	30	-739.668	13.264	-.1	U				KP33	2.5	86Au02
146Sm(a)142Nd		2529.5	20.	2528.780	2.813	-.0	U				h		64Nu02
146Sm(a)142Nd		2622.0	30.	2528.780	2.813	-3.1B	B				h		66Fr11
146Sm(a)142Nd		2524.2	4.	2528.780	2.813	1.1	1	47	46	146Sm	m		87Me08,Z
144Nd(t,p)146Nd		4834	30	4838.728	0.245	.2	U				hAld		72Ch11
144Sm(t,p)146Sm		6681	25	6691.578	2.847	.4	U				hAld		66Bj01
144Sm(3He,p)146Eu		2797	12	2794.230	5.949	-.2	1	25	24	146Eu			84Ru.A
144Sm(3He,n)146Gd		977	30	980.095	3.840	.1	U				hBld		79Al07
144Sm(12C,10Be)146Gd		-18476	25	-18487.293	3.841	-.5	U				hMSU		80Pa07
146Nd(d,3He)145Pr		-3095	10	-3095.422	7.037	-.0	1	50	50	145Pr	KVI		79Sa.A
145Nd(n,g)146Nd		7565.28	0.10	7565.230	0.087	-.5	-1-				mMMn		82Is05,Z
145Nd(n,g)146Nd		7565.05	0.18	7565.230	0.087	1.0	-1-				MBdn		06Fi.A
145Nd(n,g)146Nd	ave	7565.226	0.087	7565.230	0.087	.0	1	99	84	146Nd			average
146Sm(3He,a)145Sm		12161	5	12161.346	2.852	.1	1	33	30	146Sm			86Ru04,*
146Tm(p)145Er		895.2	8.	895.700	5.657	.1o	o				HORp		03Gi10
146Tm(p)145Er		896.2	8.	895.700	5.657	-.1	-3-				HArp		05Ro40,*
146Tm(p)145Er		895.2	8.	895.700	5.657	.1	-3-				HORp		06Ta08,*
146Tm(p)145Er	ave	895.700	5.657				3						average
146Tmm(p)145Er		1197.3	5.	1199.300	1.000	.4	U				HDap		93Li18,W
146Tmm(p)145Er		1198.3	10.	1199.300	1.000	.1o	o				HORp		01Ry01
146Tmm(p)145Er		1200.3	8.	1199.300	1.000	-.1	U				HArp		05Ro40
146Tmm(p)145Er		1199.3	1.				3				HORp		06Ta08
146Tmm(p)145Erm		994.5	4.				4				HORp		06Ta08
146Tmn(p)145Erm		1126.8	5.	1127.800	1.000	.2	U				HDap		93Li18
146Tmn(p)145Erm		1127.8	10.	1127.800	1.000	-.0o	o				HORp		01Ry01
146Tmn(p)145Erm		1129.8	8.	1127.800	1.000	-.3	U				HArp		05Ro40
146Tmn(p)145Erm		1127.8	1.				5				HORp		06Ta08
146Cs(B-)146Ba		9300	900	9555.888	3.392	.3o	o				hGsn		81De25,G
146Cs(B-)146Ba		9310	60	9555.888	3.392	4.1B	B				KBwg		87Gr.A
146Cs(B-)146Ba		9375	50	9555.888	3.392	3.6B	B				KGsn		92Pr04
146Ba(B-)146La		4280	100	4354.905	2.437	.7	U				GGsn		81De25,*
146Ba(B-)146La		4030	50	4354.905	2.437	6.5B	B				GBwg		87Gr.A
146La(B-)146Ce		6175	100	6404.694	14.715	2.3B	B				HGsn		81De25,*
146La(B-)146Ce		6380	30	6404.694	14.715	.8	1	24	24	146Ce	GTrs		82Br23,*
146La(B-)146Ce		6620	70	6404.694	14.715	-3.1B	B				GBwg		87Gr.A
146La(B-)146Ce		6580	80	6404.694	14.715	-2.2	U				G		01Ko07,*
146Ce(B-)146Pr		1100	80	1047.615	32.484	-.7	-1-						54Be10,*
146Ce(B-)146Pr		1050	100	1047.615	32.484	-.0	-1-						67Ho19,*
146Ce(B-)146Pr		951	50	1047.615	32.484	1.9	-1-						80Ya07,*
146Ce(B-)146Pr		1065	100	1047.615	32.484	-.2	-1-						81Eb01,*
146Ce(B-)146Pr	ave	1009.950	36.364	1047.615	32.484	1.0	1	80	76	146Pr			average

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 146Pr(B-)146Nd                4150      200        4252.420    34.369      .5  U                  m        54Be10,*
 146Pr(B-)146Nd                4250      200        4252.420    34.369      .0  U                  m        65Ra02,*
 146Pr(B-)146Nd                4080      100        4252.420    34.369     1.7  -1-                m        68Da13,*
 146Pr(B-)146Nd                4140      100        4252.420    34.369     1.1  -1-                m        78Ik03,*
 146Pr(B-)146Nd          ave   4110.000   70.711    4252.420    34.369     2.0  1    24  24 146Pr           average
 146Pm(B-)146Sm                1542        3                                    2                           74Sc06,*
 146Eu(B+)146Sm                3871       10        3878.755     5.868      .8  -1-                         62Fu16,*
 146Eu(B+)146Sm                3871       20        3878.755     5.868      .4  -1-                         64Ta11,*
 146Eu(B+)146Sm                3896       20        3878.755     5.868     -.9  -1-                 Got     88Sa06,*
 146Eu(B+)146Sm          ave   3875.167    8.165    3878.755     5.868      .4  1    52  46 146Eu           average
 146Gd(B+)146Eu                1757       30        1031.788     7.075   -24.2B B                  h        70Ag01,*
 146Gd(B+)146Eu                1300      200        1031.788     7.075    -1.3  U                  h        81Ka07,*
 146Tb(B+)146Gd                8240      150        8322.175    44.749      .5o o                  mIRS     83Al06
 146Tb(B+)146Gd                7910      150        8322.175    44.749     2.7  U                  hIRS     93Al03,*
 146Tb(B+)146Gd                8310       50        8322.175    44.749      .2  1    80  80 146Tb NDbn     94Po26
 146Dy(B+)146Tb                5160      100        5208.700    45.158      .5  1    20  20 146Tb MIRS     93Al03
*146Ba-u                      Represents frequency ratio 146Ba++/(C6H6)+=0.934887856(12)          G        HWJ208**
*146La-u                      D_M=-74182.5(30.6) uu for mx gs+m at 141.5(2.4) keV;                g        Nub211**
*146La-u                      ~ M-A=-69100.6(28.5) keV                                            g        Nub211**
*146La-u                      Represents frequency ratio 146La++/(C6H6)+=0.934857905(12)          G        HWJ206**
*146Lam-u                     Represents frequency ratio 146Lam++/(C6H6)+=0.934858878(12)         G        HWJ206**
*146Tb-u                      M-A=-67424(28) keV  for mixture gs+m at 150#100 keV                 g        Nub211**
*146Sm(3He,a)145Sm            Q-Q(148Gd(3He,a))=-567(5) keV                                                AHW   **
*146Tm(p)145Er                Trends from Mass Surface TMS suggest 146Tm   300 keV less bound      G        GAu212**
*146Tmm(p)145Er               146Tmm and 146Tmn both said to come from h11/2 proton               m        AHW937*W
*146Tmm(p)145Er               Penttilla ENAM(PB) says 1118(7) comes from UPPER isomer             h        AHW955*W
*146Cs(B-)146Ba               E-=3810(180) to which level ????   ****                             h        GAu129*G
*146Ba(B-)146La               E-=3910(100) to 1^+ level at 372.4 keV, and other E-                h        Ens97c**
*146La(B-)146Ce               E-=5919(100) 6120(30) resp, to 2^+ level at 258.46 keV, and other E-     h        Ens97c**
*146La(B-)146Ce               E-=6580(100) and 6320(80) to gs and 2^+ level at 258.46 keV         H        01Ko07**
*146Ce(B-)146Pr               E-=750(80) 700(100) 600(50) 715(100) resp, to 1^+ at 351.78 keV     h        Ens97c**
*146Pr(B-)146Nd               E-=3700(200) 3800(200) resp, to 2^+ level at 453.77 keV             h        Ens97c**
*146Pr(B-)146Nd               E-=4100(200), 3600(100), 2100(100) to gs, 2^+ 453.77, 2^+ 1978.45 levels h        Ens97c**
*146Pr(B-)146Nd               E-=4150(150), 3700(100), 2160(100) to gs, 2^+ 453.77, 2^+ 1978.45 levels h        Ens97c**
*146Pm(B-)146Sm               E-=795(3) to 2^+ level at 747.2 keV                                 h        Ens97c**
*146Eu(B+)146Sm               E+=2107(11) 2100(20) resp, to 2^+ level at 747.2 keV, and other E+  h        Ens97c**
*146Eu(B+)146Sm               e/B+ to 2045.8 level                                                h        Ens97c**
*146Gd(B+)146Eu               E+=350(30) to 1^- level at 384.79 keV                               h        Ens97c**
*146Gd(B+)146Eu               pK to 690.7 level, p^+<1e-4 to 384.8 level, see 150Dy(B+)           h        Ens97c**
*146Tb(B+)146Gd               Reported half-life 24.1(0.5)s corresponds to 146Tbm                          GAu92b**
*                              ~ Q-=8060(100) keV from 146Tbm at estimated 150#100 keV            g        Nub211**


 147I-u                       -33495#     322#                                  2                  g    1.0 S-u212
 147Xe-u                      -45518#     215#                                  2                  g    1.0 S-u212
 147Cs-133Cs1.105              48640       64       48737.100     9.000     1.5  U                  KMA8 1.0 08We02
 147Cs-133Cs1.105              48737.1      9.0                                 2                  gMA8 1.0 17At01
 147Ba-u                      -64696.1     21.2                                 2                  HCP1 1.0 06Sa56
 147La-u                      -71582.2     11.5                                 2                  HCP1 1.0 06Sa56
 147Ce-u                      -77309.2      9.6    -77310.098     9.211     -.1  1    92  92 147Ce HCP1 1.0 06Sa56
 C8 H5 N O2-147Sm             117197       40      117123.987     1.354     -.5  U                  hR04 4.0 64De15
 C9 H7 O2-147Sm               129703       17      129700.046     1.354     -.0  U                  hR04 4.0 64De15
 147Eu-133Cs1.105              21215       16       21228.042     2.758      .8  U                  MMA5 1.0 00Be42
 147Tb-u                      -75934       34      -75945.370     8.691     -.3  U                  MGS2 1.0 05Li24,*
 147Tb-133Cs1.105              28533       12       28530.217     8.691     -.2  1    52  52 147Tb HSH1 1.0 07Ra37,*
 147Dy-u                      -68909       30      -68917.288     9.500     -.3  U                  HGS2 1.0 05Li24
 147Dy-u                      -68908       30      -68917.288     9.500     -.3  U                  HGS2 1.0 05Li24,*
 147Dy-133Cs1.105              35558.3      9.5                                 2                  HSH1 1.0 07Ra37,*
 147Ho-u                      -59944       30      -59857.707     5.368     2.9B B                  hGS2 1.0 05Li24
 147Ho-133Cs1.105              44613.7      7.8     44617.881     5.368      .5  1    47  47 147Ho HSH1 1.0 07Ra37
 147Ho-85Rb1.729               92661.6      7.4     92657.837     5.368     -.5  1    53  53 147Ho HSH1 1.0 07Ra37
 147Er-133Cs1.105              54452       42       54440.044    41.000     -.3o o                  HSH1 1.0 07Ra37,*
 147Er-85Rb1.729              102480       41                                   2                  HSH1 1.0 07Ra37,*
 147Tm-85Rb1.729              113900       11      113895.431     7.342     -.4  1    45  45 147Tm HSH1 1.0 07Ra37
 147Eu-142Sm1.035               4516       17        4510.683     2.863     -.3  U                  HMA7 1.0 01Bo59
 147Sm 35Cl-145Nd 37Cl          5305        4        5275.374     0.567    -1.9  U                  hH12 4.0 64Ba15
 147Sm 35Cl-145Nd 37Cl          5264        4        5275.374     0.567     1.1  U                  hH21 2.5 70Ma05
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145Cs-147Cs.705 140Cs.296          -170       170         -644.049    11.092    -1.1   U                hP23 2.5 82Au01
144Cs-147Cs.490 141Cs.511            80       250          227.399    21.077      .2   U                hP23 2.5 82Au01
145Cs-147Cs.493 143Cs.507           -87        22         -146.339    10.679    -1.1   U                KP33 2.5 86Au02
147Sm(a)143Nd                      2292.5      10.        2311.347     0.498     1.9   U                h        62Si14,Z
147Sm(a)143Nd                      2296.7       5.        2311.347     0.498     2.9   U                h        66Ma05,Z
147Sm(a)143Nd                      2300.8       5.        2311.347     0.498     2.1   U                h        70Gu14,Z
147Sm(a)143Nd                      2310.5       0.5       2311.347     0.498     1.7o  o                G        16Ca43,*
147Eu(a)143Pm                      2990.6      10.        2991.136     3.112      .1   U                m        62Si14,Z
147Eu(a)143Pm                      2981.5      20.        2991.136     3.112      .5   U                h        64To04,Z
147Eu(a)143Pm                      2987.2       5.        2991.136     3.112      .8   1     37  22 143Pm  Dba  67Go32,Z
147Sm(n,a)144Nd                   10114         8        10128.383     0.495     1.8   U                hILL     74Em01
144Sm(12C,9Be)147Gd              -17832        30       -17957.149     1.234    -4.2B  B                hMSU     80Pa07
144Sm(12C,9Be)147Gd              -17921        25       -17957.149     1.234    -1.4   U                hOrs     85Be24,W
144Sm(14N,11Be)147Tb             -28280        50       -28536.696     8.108    -5.1B  B                hHei     85Gy01
147Sm(p,t)145Sm                   -6287         8        -6275.485     0.968     1.4   U                hMin     72De47
146Nd(n,g)147Nd                    5292.19      0.15      5292.196     0.088      .0  -1-               mILn     75Ro16,Z
146Nd(n,g)147Nd                    5292.19      0.11      5292.196     0.088      .1  -1-               MBdn     06Fi.A
146Nd(d,p)147Nd                    3070        15         3067.630     0.088     -.2   U                hHei     67Wi08
146Nd(n,g)147Nd              ave   5292.190     0.089     5292.196     0.088      .1   1     99  85 147Nd          average
147Sm(d,t)146Sm                     -98        10          -83.777     2.844     1.4   U                hMcM     75Si03
147Tb(p)146Gd                     -1945        18        -1945.833     8.627     -.0   1     23  19 147Tb h        87Sc.A
147Dy(ep)146Gd                     4800       900         4600.785     9.743     -.2   Z                         83La.A,W
147Er(ep)146Dy                     7000       900         8658.142    38.774     1.8   Z                         83La.A,W
147Tm(p)146Er                      1062.2       6.        1058.641     3.204     -.6o  o                h        82Kl03
147Tm(p)146Er                      1058.2       3.3       1058.641     3.204      .1   1     94  55 147Tm hDap     93Se04,*
147Tm(p)146Er                      1052.3      10.        1058.641     3.204      .6   U                G        93To02
147Tm(p)146Er                      1067.3      15.        1058.641     3.204     -.6   U                HORp     03Gi10
147Tmm(p)146Er                     1124.7       6.        1120.341     3.270     -.7  -2-               H        84Ho.A
147Tmm(p)146Er                     1118.5       3.9       1120.341     3.270      .5  -2-               MDap     93Se04
147Tmm(p)146Er               ave   1120.341     3.270                                  2                         average
147Ba(B-)147La                     5750        50         6414.362    22.466    13.3C  C                HBwg     87Gr.A
147La(B-)147Ce                     4945        55         5335.504    13.725     7.1C  C                hBwg     87Gr.A
147La(B-)147Ce                     5150        40         5335.504    13.725     4.6B  B                HKur     95Ik03
147La(B-)147Ce                     5370       100         5335.504    13.725     -.3o  o                HKur     02Sh.B
147La(B-)147Ce                     5366        40         5335.504    13.725     -.8   U                HKur     09Ha.B
147Ce(B-)147Pr                     3290        40         3430.186    15.532     3.5C  C                hBwg     87Gr.A
147Ce(B-)147Pr                     3426        20         3430.186    15.532      .2   1     60  52 147Pr MKur     95Ik03
147Ce(B-)147Pr                     3380       100         3430.186    15.532      .5   U                MKur     02Sh.B
147Pr(B-)147Nd                     2700       200         2702.695    15.857      .0   U                h        64Ho03
147Pr(B-)147Nd                     2790       100         2702.695    15.857     -.9   U                m        81Ya06,*
147Pr(B-)147Nd                     2669        40         2702.695    15.857      .8  -1- q-q=  -33.695          148Nd-1
147Pr(B-)147Nd                     2711        28         2702.695    15.857     -.3  -1-               MKur     95Ik03
147Pr(B-)147Nd               ave   2697.188    22.938     2702.695    15.857      .2   1     48  48 147Pr          average
147Nd(B-)147Pm                      894.6       1.0        895.190     0.566      .6   1     32  18 147Pm          67Ca18,*
147Pm(B-)147Sm                      223.2       0.5        224.064     0.294     1.7  -1-                        50La04
147Pm(B-)147Sm                      224.3       1.3        224.064     0.294     -.2  -1-                        58Ha32
147Pm(B-)147Sm                      224.5       0.4        224.064     0.294    -1.1  -1-                        66Hs01
147Pm(B-)147Sm               ave    224.009     0.304      224.064     0.294      .2   1     94  82 147Pm          average
147Eu(B+)147Sm                     1767        10         1721.438     2.283    -4.6B  B                h        67Ad03
147Eu(B+)147Sm                     1723         3         1721.438     2.283     -.5   1     58  57 147Eu          80Bu04
147Eu(B+)147Sm                     1702        13         1721.438     2.283     1.5   U                h        84Sc18,*
147Eu(B+)147Sm                     1692        18         1721.438     2.283     1.6   U                h        84Sc18,W
147Gd(B+)147Eu                     2185         5         2187.687     2.527      .5   1     26  19 147Eu          80Vy01,*
147Gd(B+)147Eu                     2199        17         2187.687     2.527     -.7   U                m        84Sc18,*
147Tb(B+)147Gd                     4700        90         4614.246     8.141    -1.0   U                N        83Ve06,*
147Tb(B+)147Gd                     4490        60         4614.246     8.141     2.1   U                hGot     85Ti01,W
147Tb(B+)147Gd                     4560        50         4614.246     8.141     1.1   U                h        Averag,*
147Tb(B+)147Gd                     4609        15         4614.246     8.141      .3   1     29  29 147Tb  GSI     91Ke11,*
147Tb(B+)147Gd                     4509        60         4614.246     8.141     1.8   U                hIRS     93Al03,*
147Tb(B+)147Gd                     4560        80         4614.246     8.141      .7   U                G        97Wa04
147Dy(B+)147Tb                     6334        60         6546.618    11.994     3.5B  B                hIRS     83Al06,*
147Dy(B+)147Tb                     6480       100         6546.618    11.994      .7   U                hIRS     83Al18,*
147Dy(B+)147Tb                     6334        60         6546.618    11.994     3.5C  C                M        85Af.A,*
147Dy(B+)147Tb                     6480       100         6546.618    11.994      .7   U                MIRS     85Al08,*
*147Tb-u                        M-A=-70707(28) keV  for mixture gs+m at 50.6 keV                        g        Nub211**
*147Tb-133Cs1.105               D_M=28574(12) uu    for mixture gs+m at 50.6 keV with ratio R=0.741(13)  g        Nub211**
*147Tb-133Cs1.105               M-A=-70702(11) uu   for mixture gs+m at 50.6 keV R=0.741(13) i/(g+i)     h        GAu065*G
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*147Dy-u	M-A=-63437(28) keV for 147Dym at 750.5 keV	g	Nub211**
*147Dy-u	we suppose that in ESR the 2 measurements do not have same syst errors	h	GAu062*G
*147Dy-133Cs1.105	D_M=35567(14) and D_M=36358.4(9.5) for 147Dym at 750.5 keV	g	Nub211**
*147Dy-133Cs1.105	M-A=-64188(14) and -63450.8(8.8) for 147Dym at 750.5 keV	h	GAu065*G
*147Er-133Cs1.105	D_M=54531(11) uu for mixture gs+m at 100#50 keV with ratio R=0.741(13)	g	Nub211**
*147Er-133Cs1.105	M-A=-46522.7(9.9) keV for mixture gs+m at 100#50 keV R=0.741(13) i/(g+i)	h	GAu065*G
*	~ error due to excitation energy, use only next item	H	GAu065**
*147Er-85Rb1.729	D_M=102559.5(8.3) uu for mixture gs+m at 100#50 keV with R=0.741(13)	g	Nub211**
*147Er-85Rb1.729	M-A=-46533.8(7.8) uu for mixture gs+m at 100#50 keV R=0.741(13) i/(g+i)	h	GAu065*G
*147Sm(a)143Nd	Used as calibrant, without the origin	G	16Ca43**
*144Sm(12C,9Be)147Gd	Q-Q(144Sm(12C,10Be)146Gd)=1426(21)		GAu *W
*144Sm(12C,9Be)147Gd	Remark made W: above difference is not in publication		AHW938*W
*147Dy(ep)146Gd	As read from graph		AHW *W
*147Er(ep)146Dy	As read from graph		AHW *W
*147Tm(p)146Er	Q(p) from E(p)=1051.0(3.3), no screening correction should be applied	h	GAu063**
*147Pr(B-)147Nd	E-=2760(100) to 49.93, 1450(100) to 1310.7 and 1350.5 keV	h	Ens092**
*147Nd(B-)147Pm	E-=803.5(1.0) to 5/2^+ level at 91.1047 keV	h	Ens092**
*147Eu(B+)147Sm	p+=2.9(0.3)e-3 to 3/2^- level at 197.284 keV	h	Ens092**
*147Eu(B+)147Sm	pK=0.724(0.026) to (3/2^+,5/2^+) level at 1548.634 keV	h	Ens092**
*147Gd(B+)147Eu	E+=933(5) to 7/2^+ level at 229.323 keV	h	Ens092**
*147Gd(B+)147Eu	pK=0.694(0.016) to 2073 level, recalculated by AHW	h	84Sc18**
*147Tb(B+)147Gd	E+=2460(80) to 3/2^+ lvl at 1152.56 and 1/2^+ at 1292.3 keV, reinterpretd	h	Ens092**
*147Tb(B+)147Gd	K/B+=4.77(0.55) ->KLM/B+=+5.57(0.64) to 1846.6 lvl; also KLM/B+=4.85(0.51	n	85Ti01*W
*147Tb(B+)147Gd	Avg KLM/B+=2.03(0.15) -> E+=2190(50) from 147Tbm at 50.6(0.9) to 9/2^-	h	Ens092**
*	~ lvl at 1397.00 from 3 ref.s (no side-feeding correction applied):	h	AHW931**
*	~ p+=0.32(0.07) gives KLM/B+=2.2(0.8)	h	84Ha.B**
*	~ KLM/B+=2.17(0.30)	h	85Al08**
*	~ B+/K=0.59(0.05) gives KLM/B+=1.99(0.17)	h	85Sc09**
*147Tb(B+)147Gd	Q+=4660(15) 4560(60) resp, from 147Tbm at 50.6(0.9) keV	g	Nub211**
*147Dy(B+)147Tb	E+=6012(60) from 147Dym at 750.5 to 147Tbm at 50.6(0.9) keV	g	Nub211**
*147Dy(B+)147Tb	Q+=7180(100) from 147Dym at 750.5 to 147Tbm at 50.6(0.9) keV	g	Nub211**
*147Dy(B+)147Tb	E+=6012(60) from 147Dym at 750.5 to 147Tbm at 50.6(0.9) keV	g	Nub211**
*147Dy(B+)147Tb	Q+=7180(100) from 147Dym at 750.5 to 147Tbm at 50.6(0.9) keV	g	Nub211**

148Xe-u		-41492#	322#				2				g	1.0	S-u212
148Cs-133Cs1.113		54871	14				2				gMA8	1.0	17At01
148Ba-u		-61777.0	1.6				2				GCP2	1.0	18Or.A,*
148La-u		-67320.6	20.9				2				HCP1	1.0	06Sa56
148Ce-u		-75578.2	13.0	-75575.812	12.018	.2	1	85	85	148Ce	HCP1	1.0	06Sa56
148Pr-u		-77781	41	-77870.004	16.148	-2.2B	B				KCP1	1.0	06Sa56,*
C12 H4-148Nd		114261	34	114401.090	2.204	1.0	U				hR05	4.0	65De13
C9 N O H10-148Nd		159186	59	159339.905	2.204	.7	U				hR05	4.0	65De13
C9 H8 O2-148Sm		137540	26	137600.246	1.337	.6	U				hR04	4.0	64De15
C9 H10 N O-148Sm		161275	31	161409.695	1.337	1.1	U				hR04	4.0	64De15
C8 13C H7 O2-148Sm		133030	60	133130.050	1.337	.4	U				hR04	4.0	64De15
148Eu-133Cs1.113		23315	15	23323.272	10.694	.6	1	51	51	148Eu	MMA5	1.0	00Be42
148Tb-u		-75692	41	-75722.516	13.277	-.7	U				MGS2	1.0	05Li24,*
148Dy-133Cs1.113		32394	16	32381.860	9.364	-.8	-1-				hMA5	1.0	00Be42
148Dy-133Cs1.113		32380	14	32381.860	9.364	.1	-1-				HSH1	1.0	07Ra37
148Dy-133Cs1.113	ave	32386.071	10.536	32381.860	9.364	-.4	1	79	79	148Dy			average
148Ho-u		-62201	100	-62256.075	90.000	-.6	U				HGS2	1.0	05Li24,*
148Ho-85Rb1.741		91318	90				2				HSH1	1.0	07Ra37,*
148Er-133Cs1.113		49967	11				2				HSH1	1.0	07Ra37
148Tm-133Cs1.113		63616	11				2				HSH1	1.0	07Ra37
148Yb-u		-32453#	429#				2				g	1.0	S-u211
148Eu-142Sm1.042		6451	17	6443.069	10.717	-.5	1	40	39	148Eu	MMA7	1.0	01Bo59
148Nd 35Cl2-144Nd 37Cl2		12690	9	12706.475	1.788	.7	U				hH21	2.5	70Ma05
148Nd 35Cl2-144Nd 37Cl2		12703.6	2.1	12706.475	1.788	.5	1	12	11	148Nd	H25	2.5	72Ba08
148Sm 35Cl2-144Sm 37Cl2		8710	10	8723.192	0.977	.3	U				hH12	4.0	64Ba15
148Sm 35Cl2-144Sm 37Cl2		8721.4	2.6	8723.192	0.977	.3	U				HH25	2.5	72Ba08
148Nd 35Cl-146Nd 37Cl		6740	5	6726.689	1.775	-.7	U				hH12	4.0	64Ba15
148Nd 35Cl-146Nd 37Cl		6721	4	6726.689	1.775	.6	U				hH21	2.5	70Ma05
148Nd 35Cl-146Nd 37Cl		6723.8	2.7	6726.689	1.775	.4	U				hH25	2.5	72Ba08
148Nd 35Cl-146Nd 37Cl		6725.7	0.9	6726.689	1.775	.4	1	62	61	148Nd	H26	2.5	73Me28
148Sm 35Cl-146Nd 37Cl		4656	3	4656.898	0.529	.1	U				hH12	4.0	64Ba15
148Sm-147Sm		110	44	-75.168	0.290	-1.1	U				hR04	4.0	64De15

148Nd-146Nd		3866	50	3776.564	1.776	-.4	U				hR05	4.0	65De13
148Nd-146Nd		3773	3	3776.564	1.776	.5	U				hM17	2.5	66Be10
145Cs-148Cs.392 143Cs.608		-370	90	-518.617	11.382	-.7	U				KP33	2.5	86Au02
148Sm(a)144Nd		2014.6	20.	1987.046	0.445	-1.4	U				h		70Gu14
148Sm(a)144Nd		1987.3	0.5	1987.046	0.445	-.5	1	79	44	144Nd	G		16Ca43,*
148Eu(a)144Pm		2703.2	30.	2693.714	10.224	-.3	1	11	10	148Eu	m		64To04
148Gd(a)144Sm		3271.29	0.03	3271.291	0.031	-.0	1	100	96	148Gd	k		73Go29,G
146Nd(t,p)148Nd		4139	30	4142.992	1.654	.1	U				hAld		72Ch11
148Sm(p,t)146Sm		-6011	8	-6000.547	2.835	1.3	1	13	12	146Sm	Min		72De47
148Sm(p,t)146Sm		-6018	15	-6000.547	2.835	1.2	U				mHam		74Oe03
148Gd(p,t)146Gd		-7844	14	-7844.439	3.840	-.0	U				hLAl		83Fl05
148Gd(p,t)146Gd-65Cu()63Cu		1500	4	1500.210	3.794	.1	1	90	89	146Gd	hLiv		86Ma40
148Nd(d,3He)147Pr		-3726	40	-3759.465	15.941	-.8R	R	q-q=	33.465		KVI		79Sa.A
148Nd(d,t)147Nd		-1072	4	-1075.362	1.655	-.8	1	17	17	148Nd	McM		77St22
147Sm(n,g)148Sm		8139.8	1.2	8141.337	0.271	1.3	U				h		69Re04,Z
147Sm(n,g)148Sm		8141.1	1.5	8141.337	0.271	.2	U				M		70Bu19,Z
147Sm(n,g)148Sm		8141.8	0.8	8141.337	0.271	-.6	-1-				M		71Gr37,Z
147Sm(n,g)148Sm		8141.3	0.3	8141.337	0.271	.1	-1-				MBdn		06Fi.A
147Sm(d,p)148Sm		5920	10	5916.771	0.271	-.3	U				hTal		64Ke03
148Sm(d,t)147Sm		-1890	15	-1884.107	0.271	.4	U				hKop		67Ve04
147Sm(n,g)148Sm	ave	8141.362	0.281	8141.337	0.271	-.1	1	93	72	147Sm			average
148Gd(p,d)147Gd		-6755	5	-6759.243	1.232	-.8	U				h		86Ru04,W
148Gd(p,d)147Gd-148Sm()147Sm		-842	2	-842.472	1.207	-.2	-1-						86Ru04
148Gd(d,t)147Gd-148Sm()147Sm		-843	2	-842.472	1.207	.3	-1-						86Ru04
148Gd(3He,a)147Gd-148Sm()147Sm		-842	3	-842.472	1.207	-.2	-1-						86Ru04
148Gd(p,d)147Gd-148Sm()147S	ave	-842.409	1.279	-842.472	1.207	-.0	1	89	86	147Gd			average
148Ba(B-)148La		5115	60	5163.831	19.525	.8	U				GBwg		90Gr10
148La(B-)148Ce		7310	140	7689.681	22.457	2.7	U				HTrs		82Br23,*
148La(B-)148Ce		7255	55	7689.681	22.457	7.9B	B				HBwg		90Gr10
148La(B-)148Ce		7650	100	7689.681	22.457	.4	U				HKur		02Sh.B
148La(B-)148Ce		7732	70	7689.681	22.457	-.6	U				HKur		09Ha.B
148Ce(B-)148Pr		2060	75	2137.026	12.566	1.0	U				NBwg		87Gr.A
148Ce(B-)148Pr		2140	14	2137.026	12.566	-.2	1	81	66	148Pr	MKur		95Ik03
148Pr(B-)148Nd		4800	200	4872.607	15.086	.4	U				m		79Ik06
148Pr(B-)148Nd		4965	100	4872.607	15.086	-.9	U				mBwg		87Gr.A
148Pr(B-)148Nd		4890	50	4872.607	15.086	-.3	-1-				M		88Ka14
148Pr(B-)148Nd		4880	30	4872.607	15.086	-.2	-1-				MKur		95Ik03,W
148Pr(B-)148Nd		4930	100	4872.607	15.086	-.6	U				MKur		02Sh.B
148Pr(B-)148Nd	ave	4882.647	25.725	4872.607	15.086	-.4	1	34	34	148Pr			average
148Pm(B-)148Sm		2480	15	2470.187	5.641	-.7R	R	q-q=	9.813		M		62Sc04,*
148Pm(B-)148Sm		2475	30	2470.187	5.641	-.2	U				h		63Ba31,*
148Eu(B+)148Sm		3122	30	3038.582	9.966	-2.8	U				h		63Ba32,*
148Eu(B+)148Sm		3150	30	3038.582	9.966	-3.7B	B				M		70Ag01,*
148Tb(B+)148Gd		5630	80	5734.325	12.426	1.3F	F				N		76Cr.B,*
148Tb(B+)148Gd		5835	70	5734.325	12.426	-1.4	U				m		83Ve06,*
148Tb(B+)148Gd		5710	100	5734.325	12.426	.2	U				mGot		85Sc09,*
148Tb(B+)148Gd		5390	100	5734.325	12.426	3.4B	B				Got		85Ti01,*
148Tb(B+)148Gd		5760	80	5734.325	12.426	-.3	U				mIRS		93Al03,*
148Tb(B+)148Gd		5752	40	5734.325	12.426	-.4	1	10	10	148Tb	NGSI		95Ke05,*
148Dy(B+)148Tb		2660	60	2675.626	9.456	.3	U				h		81Sc21
148Dy(B+)148Tb		2805	60	2675.626	9.456	-2.2	U				h		81Sp03,*
148Dy(B+)148Tb		2700	60	2675.626	9.456	-.4	U				hIRS		82Al.A
148Dy(B+)148Tb		2700	60	2675.626	9.456	-.4	U				h		82Ve.A
148Dy(B+)148Tb		2722	60	2675.626	9.456	-.8	U				h		83Ve06,*
148Dy(B+)148Tb		2835	95	2675.626	9.456	-1.7	U				h		84Ha.B,*
148Dy(B+)148Tb		2740	60	2675.626	9.456	-1.1	U				hGot		85Sc09,*
148Dy(B+)148Tb		2682	10	2675.626	9.456	-.6	1	89	83	148Tb	NGSI		95Ke05,*
148Hom(B+)148Dy		9400	250	10118#	131#	2.9B	B				MIRS		93Al03,G
148Hom(IT)148Ho		250#	100#				3				h		GAu06c

*148Ba-u	Represents frequency ratio 148Ba++/(C6H6)+=0.947751100(10)	G	HWJ208**
*148Pr-u	D_M=-77739.3(30.6) uu for mixture gs+m at 76.80; M-A=-72413.7(28.5) keV	g	Nub211**
*148Tb-u	M-A=-70462(28) keV for mixture gs+m at 90.1 keV	g	Nub211**
*148Ho-u	M-A=-57815(30) keV for mixture gs+m at 250#100 keV	g	Nub211**
*	~ outweighed by next item before correcting for isomeric mixture	H	GAu063**
*148Ho-85Rb1.741	D_M=91517.5(9.5) uu for mixture gs+m at 250#100 keV with R=0.74(15)	g	Nub211**
*148Ho-85Rb1.741	M-A=-57805.4(8.8) for mixture gs+m at 250#100 keV R=0.74(15) i/(g+i)	h	GAu065*G
*148Sm(a)144Nd	Using Qa(147Sm)=2310.5(0.5) as calibrant	G	16Ca43**

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*148Gd(a)144Sm            E(a)=3182.68(0.03,Z) plus recoil plus electron binding energy (0.079 keV)k       16Hu.A*G
*148Gd(a)144Sm            Ame2012 Q=3271.29(0.03)                                                  k       GAu169*G
*148Gd(a)144Sm            DANGER : up to now (Sep02,2016) phase1 converts to 3271.212(0.031) and   k       GAu169*G
*148Gd(a)144Sm              does not correct for Be=0.079                                          k       GAu169*G
*148Gd(p,d)147Gd          Q-Q(208Pb(p,d))=-1612(5)                                                         AHW   *W
*148La(B-)148Ce           E-=5862(100) supposed to go to levels around E=1450(100) keV                     90Gr10**
*148Pr(B-)148Nd           The low spin isomer                                                      m       95Ik03*W
*148Pm(B-)148Sm           E-=2460(20) 1020(15) to gs, 1^- level at 1465.137 keV                    k       Ens144**
*148Pm(B-)148Sm           E-=2480(30) 1930(30) 1020(30) to gs, 2^+ at 550.255, 1^- at 1465.137 keV k       Ens144**
*                           ~ and E-=400(30) from 148Pmm at 137.9 to 6^+ level at 2194.061 keV     g       Nub211**
*148Eu(B+)148Sm           E+=920(30) to 1180.261 keV 4^+ level                                     k       Ens144**
*148Eu(B+)148Sm           E+=540(30) to 1594.247 keV 5^- level, and other E+                       k       Ens144**
*148Tb(B+)148Gd           E+=4610(80) assumed to gs                                                N       76Cr.B**
*                           ~ F : since 148Tb gs 2^-, transition to 148Gd gs weak                  N       AHW955**
*                           ~ Possibly pile up?  DELETE: no good info                              n       AHW955*W
*148Tb(B+)148Gd           E+=2210(70) from 148Tbm at 90.1 to 8^+ level at 2693.35 keV and          g       Nub211**
*                           ~ E+=4560(80) mainly to 2^+ at 784.433 keV. Conflicting, not used      k       Ens144**
*148Tb(B+)148Gd           p+=0.271(0.10) -> E+=1920(30) from 148Tbm at 90.1 to 8^+ at 2693.35 keV  k       Ens144**
*                           ~ but assuming 5(5)% side-feeding; see ref.                                    90Sa32**
*148Tb(B+)148Gd           KL/B+=1.54(0.09) to 1863.42 level; yields Q+=5295(45) keV                        85Ti01**
*                           ~ but assuming 7(7)% side-feeding; see 1990*Sa*32                              AHW933**
*                           ~ 146Gd analysis: Q+=5735; then 25% sf is needed.                              92Ke.A*W
*148Tb(B+)148Gd           Q+=5700(80); and 5910(80) from 148Tbm at 90.1 keV                        g       Nub211**
*148Tb(B+)148Gd           Q+=5750(40); and 5846(50) from 148Tbm at 90.1 keV                        g       Nub211**
*148Dy(B+)148Tb           p+=0.069(0.014) to 1^+ level at 620.24 keV, recalculated Q               k       Ens144**
*148Dy(B+)148Tb           E+=1040(60), 1120(60) to 1^+ level at 620.24 keV                         k       Ens144**
*148Dy(B+)148Tb           p+=0.055(0.015) to 1^+ level at 620.24 keV                               k       Ens144**
*148Dy(B+)148Tb           B+/K=0.045(0.005) to 1^+ level at 620.24 keV, gives Q+=2680(30) keV      k       Ens144**
*148Dy(B+)148Tb            See 152Hom remark ref.                                                  n       90Sa32*W
*148Dy(B+)148Tb           GSI average of E+=1043(10) and 1036(10) of ref.                          N       91Ke11**
*                           ~ to 1^+ level at 620.24 keV                                           k       Ens144**
*148Hom(B+)148Dy          148Hom(IT)=250#100 corresponds to 148Hom(B+)=10120#                      h       GAu06c*G
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 149Xe-u                    -35427#     322#                                      2                g    1.0 S-u212
 149Cs-u                    -46484#     429#                                      2                g    1.0 S-u20b
 149Ba-u                    -56726      215     -56716.000     2.700      .0      Z                k    2.5 S-u168
 149Ba-u                    -57027      188     -56716.000     2.700      .7      U                GGT3 2.5 16Kn03
 149Ba-u                    -56716.0      2.7                                     2                GCP2 1.0 18Or.A,*
 149Ce-u                    -71573.1     11.0                                     2                HCP1 1.0 06Sa56
 149Pr-u                    -76263.9     10.6                                     2                HCP1 1.0 06Sa56
 C8 13C H8 O2-149Sm         138597       29     138593.107     1.241     -.0      U                hR04 4.0 64De15
 C9 H11 N O-149Sm           166820       33     166872.752     1.241      .4      U                hR04 4.0 64De15
 C8 13C H10 N O-149Sm       162408       46     162402.555     1.241     -.0      U                hR04 4.0 64De15
 149Eu-133Cs1.120            23849       17      23830.696     4.190    -1.1      U                MMA5 1.0 00Be42
 149Tb-u                    -76730       32     -76746.146     3.893     -.5      U                MGS2 1.0 05Li24,*
 149Dy-133Cs1.120            33278      109      33222.007     9.724     -.5      U                MMA5 1.0 00Be42,W
 149Dy-u                    -72698       30     -72671.800     9.724      .9      U                HGS2 1.0 05Li24,*
 149Ho-u                    -66179       34     -66179.468    12.851     -.0      1    14  14 149Ho hGS2 1.0 05Li24,*
 149Er-u                    -57694       30                                       2                MGS2 1.0 05Li24,*
 149Tm-u                    -47172#     215#                                      2                g    1.0 S-u20b
 149Yb-u                    -35781#     322#                                      2                g    1.0 S-u212
 149Eu-142Sm1.049             6909       18       6882.191     4.377    -1.5      U                HMA7 1.0 01Bo59
 149Dy-142Sm1.049            16249       16      16273.501     9.672     1.5      1    37  36 149Dy MMA7 1.0 01Bo59
 149Sm 35Cl-147Sm 37Cl        5257        4       5236.931     0.972    -1.3      U                hH12 4.0 64Ba15
 149Sm 35Cl-147Sm 37Cl        5231        3       5236.931     0.972      .8      U                hH21 2.5 70Ma05
 149Sm 35Cl-147Sm 37Cl        5239.8      0.8     5236.931     0.972    -1.4      1    24  15 147Sm  M21 2.5 75Ka25
 149Sm-148Sm                  2282       31       2361.975     0.951      .6      U                hR04 4.0 64De15
 149Sm-147Sm                  2320       60       2286.807     0.972     -.1      U                hR04 4.0 64De15
 149Gd(a)145Sm                3102.3     10.      3099.319     3.132     -.3     -1-               m         65Ma51,Z
 149Gd(a)145Sm                3096.1     10.3     3099.319     3.132      .3     -1-               mORa      66Wi12,Z
 149Gd(a)145Sm                3099.1      5.      3099.319     3.132      .0     -1-                Dba      67Go32,Z
 149Gd(a)145Sm           ave  3099.119    4.195   3099.319     3.132      .0      1    56  53 149Gd          average
 149Tb(a)145Eu                4074.4      3.      4077.984     2.165     1.2     -1-                Dba      67Go32,Z
 149Tb(a)145Eu                4074.4      3.      4077.984     2.165     1.2      Z                          68Go.C,Z
 149Tb(a)145Eu                4073.8      7.      4077.984     2.165      .6      U                mORa      74To07,*
 149Tb(a)145Eu                4074.6     10.      4077.984     2.165      .3      U                h         81Ho.A,Z
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 149Tb(a)145Eu                  4081.8      5.        4077.984     2.165    -.7  -1-                 Bka      82Bo04,Z
 149Tb(a)145Eu                  4082.8      4.        4077.984     2.165   -1.2  -1-                MDaa      96Pa01
 149Tb(a)145Eu           ave    4078.212    2.223     4077.984     2.165    -.1   1    95  86 149Tb           average
 149Sm(n,a)146Nd                9429        4         9436.418     0.974    1.9   U                 HMcM      67Oa01
 149Sm(n,a)146Nd                9421       15         9436.418     0.974    1.0   U                 hILL      75Em.A
 149Sm(p,t)147Sm               -5532        8        -5530.693     0.905     .2   U                 hMin      72De47
 149Sm(p,t)147Sm               -5532        7        -5530.693     0.905     .2   U                 hMcM      73Ga04
 148Nd(n,g)149Nd                5038.76     0.10      5038.787     0.074     .3  -2-                mILn      76Pi04,Z
 148Nd(n,g)149Nd                5038.82     0.11      5038.787     0.074    -.3  -2-                MBdn      06Fi.A
 148Nd(n,g)149Nd         ave    5038.787    0.074                                 2                           average
 148Nd(3He,d)149Pm               455        5          451.834     2.458    -.6   1    24  13 149Pm  McM      80St10,*
 149Sm(d,3He)148Pm             -2064        6        -2065.517     5.571    -.3  -2-                          88No02
 149Sm(d,3He)148Pm             -2075       15        -2065.517     5.571     .6  -2- q-q=    -9.483  m         148Sm-0
 149Sm(d,3He)148Pm       ave   -2065.517    5.571                                 2                           average
 148Sm(n,g)149Sm                5872.5      1.8       5871.152     0.886    -.7   1    24  15 148Sm           70Sm.A
 148Sm(n,g)149Sm                5850.8      0.6       5871.152     0.886   33.9C  C                           82Ba15
 149Sm(g,n)148Sm               -5890      160        -5871.152     0.886     .1   U                 hPhi      60Ge01
 148Sm(d,p)149Sm                3656       15         3646.586     0.886    -.6   U                 hKop      67Ve04
 149Er(ep)148Dy                 5758      900         6828.859    29.274     1.2  U                 h         83La.A,*
 149Er(ep)148Dy                 7080      470         6828.859    29.274    -.5   U                 MLBL      89Fi01
 149La(B-)149Ce                 6450      200                                     3                 HKur      02Sh.B
 149Ce(B-)149Pr                 4190       75         4369.453    14.230     2.4  U                 hBwg      87Gr.A
 149Ce(B-)149Pr                 4380       60         4369.453    14.230    -.2   U                 HKur      95Ik03
 149Ce(B-)149Pr                 4310      100         4369.453    14.230     .6   U                 HKur      02Sh.B
 149Pr(B-)149Nd                 3000      200         3336.152    10.085     1.7  U                 H         67Va14
 149Pr(B-)149Nd                 3390       90         3336.152    10.085    -.6   U                 HKur      95Ik03
 149Nd(B-)149Pm                 1669       10         1688.869     2.459     2.0  U                 H         64Go08,*
 149Pm(B-)149Sm                 1072        2         1071.493     1.875    -.3   1    88  87 149Pm           60Ar05
 149Pm(B-)149Sm                 1062        2         1071.493     1.875     4.7B B                 H         78Re01
 149Eu(e)149Sm                   680       10          694.584     3.788     1.5  1    14  14 149Eu           85Ad.A
 149Gd(e)149Eu                  1308        6         1314.148     4.136     1.0  1    48  30 149Eu NGot      84Sc.B
 149Tb(B+)149Gd                 3575       50         3638.572     4.338     1.3  U                 hGot      85Sc09,*
 149Tb(B+)149Gd                 3635       10         3638.572     4.338     .4   1    19  11 149Tb  GSI      91Ke06,*
 149Dy(B+)149Tb                 3930      150         3795.230     9.028    -.9   U                 h         84Al36,*
 149Dy(B+)149Tb                 3925       65         3795.230     9.028   -2.0   U                 hGot      90Sa32,*
 149Dy(B+)149Tb                 3797       13         3795.230     9.028    -.1   1    48  45 149Dy MGSI      91Ke11,*
 149Dy(B+)149Tb                 3950      100         3795.230     9.028   -1.5   U                 hIRS      93Al03
 149Ho(B+)149Dy                 6043       50         6047.570    12.758     .1  -1-                 IRS      83Al06,*
 149Ho(B+)149Dy                 5330      100         6047.570    12.758     7.2C C                 h         84Ha.B
 149Ho(B+)149Dy                 6000       90         6047.570    12.758     .5   U                 hIRS      93Al03
 149Ho(B+)149Dy                 6009       20         6047.570    12.758     1.9 -1-                 GSI      91Ke11,*
 149Ho(B+)149Dy          ave    6013.690   18.570     6047.570    12.758     1.8  1    47  32 149Ho           average
 149Er(e)149Ho                  8610      650         7904.163    30.401    -1.1  U                 mLBL      89Fi01,*
*149Ba-u                    Represents frequency ratio 149Ba++/(C6H6)+=0.954189968(17)              G         HWJ208**
*149Tb-u                    M-A=-71456(28) keV  for mixture gs+m at 35.78 keV                       g         Nub211**
*149Dy-133Cs1.120           D_M=33167(21) in preliminary 97Be63: observed contam. was not removed   m         97Be63*W
*149Dy-u                    M-A=-65057(28) keV  for 149Dym at 2661.1 keV                            g         Nub211**
*149Ho-u                    M-A=-61621(28) keV  for mixture gs+m at 48.80 keV                       g         Nub211**
*149Er-u                    M-A=-53000(28) keV  for 149Erm at 741.8 keV                             g         Nub211**
*149Tb(a)145Eu              E(a)=3999(7) from 149Tbm at 35.78 keV                                   g         Nub211**
*148Nd(3He,d)149Pm          Based on 146Nd(3He,d)147Pm Q=-87.6(0.9) keV                                       AHW   **
*149Er(ep)148Dy             As read from graph; Q=6500 from 149Erm at 741.8 keV                     g         Nub211**
*149Nd(B-)149Pm             E-=1555(10) to 5/2^+ level at 114.312 level                             h         Ens046**
*149Tb(B+)149Gd             B+/K=0.31(0.03) from 149Tbm at 35.78 to 9/2^- level at 795.82 keV       h         Ens046**
*                            ~ 10% side-feeding would raise Q+ by one error                         n         AHW933*W
*149Tb(B+)149Gd             E+=1853(10) from 149Tbm at 35.78 to 9/2^- level at 795.82 keV           k         Ens046**
*149Dy(B+)149Tb             E+=1030(150) to 1728.31-1876.96 levels                                  k         Ens046**
*149Dy(B+)149Tb             KL/B+=29.4(10.6), 14.5(3.7), 17.6(4.9) to 1883, 1735, 1728 levels       h         90Sa32**
*149Dy(B+)149Tb             Original Q=3812(10) from E+=1965(10) to 825.16 level corr               M         GAu984**
*                            ~ to E+=1950(13) for background substraction                           M         GAu984**
*149Ho(B+)149Dy             E+=3930(50) to 9/2^- level at 1090.76 keV                               h         Ens046**
*149Ho(B+)149Dy             E+=3896(20) to 9/2^- level at 1090.76 keV                               h         Ens046**
*149Er(e)149Ho              KLM/B+=0.68(0.34) from 149Erm at 741.8 to 4699.7 level                  h         Ens046**


 150Xe-u                      -31122#     322#                                    2                 g    1.0 S-u212
 150Cs-u                      -40977#     429#                                    2                 k    1.0 S-u168
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150Ba-u		-55309	371	-53558.900	6.100	1.9	U				GGT3	2.5	16Kn03
150Ba-u		-53558.9	6.1				2				GCP2	1.0	18Or.A,*
150La-u		-60258	187	-60452.500	2.700	-.4	U				GGT3	2.5	16Kn03
150La-u		-60452.5	2.7				2				GCP2	1.0	18Or.A,*
150Ce-u		-69618.6	13.1	-69615.967	12.557	.2	1	92	92	150Ce	HCP1	1.0	06Sa56
150Pr-u		-73322.9	10.6	-73323.607	9.678	-.1	1	83	83	150Pr	HCP1	1.0	06Sa56
C12 H6-150Nd		126194	43	126048.858	1.211	-.8	U				hR05	4.0	65De13
C8 13C N O H11-150Nd		166439	34	166517.476	1.211	.6	U				hR05	4.0	65De13
C9 N O H12-150Nd		170931	46	170987.673	1.211	.3	U				hR05	4.0	65De13
C12 H6-150Sm		129810	140	129668.188	1.193	-.3	U				hR04	4.0	64De15
C8 13C H11 N O-150Sm		170029	25	170136.806	1.193	1.1	U				hR04	4.0	64De15
C9 H12 N O-150Sm		174612	47	174607.002	1.193	-.0	U				hR04	4.0	64De15
150Tbm-u		-75850	30	-75840.474	28.340	.3	1	89	89	150Tbm	MGS2	1.0	05Li24
150Ho-133Cs1.128		40150	29	40148.771	14.797	-.0	-1-				MMA5	1.0	00Be42
150Ho-133Cs1.128		40113	30	40148.771	14.797	1.2	-1-	q-q=	-35.771		m1.0	1.0	158Lu-C
150Ho-133Cs1.128	ave	40132.127	20.851	40148.771	14.797	.8	1	50	50	150Ho			average
150Ho-u		-66504	40	-66501.422	14.797	.1	U				MGS2	1.0	05Li24,*
150Er-u		-62060	30	-62084.054	17.209	-.8	1	33	33	150Er	MGS2	1.0	05Li24
150Tm-u		-49910#	210#				2				h	1.0	S-u063
150Yb-150Dy		32931	48				2				JTR1	1.0	20Ly.A
150Yb-u		-41686	322	-41475.909	48.223	.3	W				j	2.5	S-u20b
150Nd 35Cl2-146Nd 37Cl2		13654	9	13679.109	1.063	1.1	U				hH21	2.5	70Ma05
150Nd 35Cl2-146Nd 37Cl2		13672.5	1.8	13679.109	1.063	1.5	U				HH25	2.5	72Ba08
150Nd 35Cl-148Nd 37Cl		7006	4	6952.420	2.018	-3.3B	B				hH12	4.0	64Ba15
150Nd 35Cl-148Nd 37Cl		6939	4	6952.420	2.018	1.3	U				hH21	2.5	70Ma05
150Sm 35Cl-148Sm 37Cl		5452	8	5402.881	0.945	-1.5	U				hH12	4.0	64Ba15
150Sm 35Cl-148Sm 37Cl		5400	4	5402.881	0.945	.3	U				hH21	2.5	70Ma05
150Sm 35Cl-148Sm 37Cl		5404.8	0.6	5402.881	0.945	-1.3	1	40	28	148Sm	M21	2.5	75Ka25
150Nd-150Sm		3633	4	3619.330	0.210	-.9	U				hH19	4.0	64Mc11
150Nd-150Sm		3617.0	1.2	3619.330	0.210	.8	U				HH25	2.5	72Ba08
150Nd-150Sm		3619.33	0.21	3619.330	0.210	-.0	1	100	100	150Nd	HJY1	1.0	10Ko28
150Sm-149Sm		149	30	90.781	0.405	-.5	U				hR04	4.0	64De15
150Nd-148Nd		3860	46	4002.296	2.016	.8	U				hR05	4.0	65De13
150Nd-148Nd		3988	3	4002.296	2.016	1.9	U				HM17	2.5	66Be10
150Sm-148Sm		2430	50	2452.757	0.945	.1	U				hR04	4.0	64De15
150Nd-146Nd		7719	67	7778.860	1.058	.2	U				hR05	4.0	65De13
150Gd(a)146Sm		2804.9	10.	2807.391	6.016	.2	-1-						62Si14
150Gd(a)146Sm		2792.6	18.	2807.391	6.016	.8	-1-						65Og01
150Gd(a)146Sm	ave	2802.065	8.982	2807.391	6.016	.6	1	45	39	150Gd			average
150Tb(a)146Eu		3585.5	5.	3586.898	4.926	.3	1	92	80	150Tb	Dba		67Go32,Z
150Dy(a)146Gd		4345.8	5.	4351.290	1.539	1.1	-1-				Dba		67Go32,Z
150Dy(a)146Gd		4349.5	5.	4351.290	1.539	.3	-1-				GSa		79Ho10,Z
150Dy(a)146Gd		4351.3	3.	4351.290	1.539	.0	-1-				Bka		82Bo04,*
150Dy(a)146Gd		4352.5	2.1	4351.290	1.539	-.6	-1-				Ora		82De11,Z
150Dy(a)146Gd	ave	4351.327	1.547	4351.290	1.539	-.0	1	99	92	150Dy			average
148Nd(t,p)150Nd		3935	30	3932.725	1.878	-.1	U				hAld		72Ch11
148Sm(t,p)150Sm		5372	25	5376.112	0.880	.2	U				hAld		66Bj01
150Sm(p,t)148Sm		-5379	8	-5376.112	0.880	.4	U				hMin		72De47
150Sm(p,t)148Sm		-5378	15	-5376.112	0.880	.1	U				hHam		74Oe03
150Nd(d,3He)149Pr		-4501	10	-4436.064	9.938	6.5C	C				MKVI		79Sa.A,W
150Nd(d,t)149Nd		-1122	10	-1118.504	1.879	.3	U				hMcM		73Bu02
149Sm(n,g)150Sm		7984.9	0.6	7986.756	0.377	3.1B	B				h		69Re04,Z
149Sm(n,g)150Sm		7986.7	1.5	7986.756	0.377	.0	-1-				m		70Bu19,Z
149Sm(n,g)150Sm		7986.7	0.4	7986.756	0.377	.1	-1-				MBdn		06Fi.A
149Sm(d,p)150Sm		5764	4	5762.190	0.377	-.5	U				hTal		64Ke03
150Sm(d,t)149Sm		-1738	15	-1729.526	0.377	.6	U				hKop		67Ve04
149Sm(n,g)150Sm	ave	7986.700	0.386	7986.756	0.377	.1	1	95	82	149Sm			average
150Lu(p)149Yb		1269.6	4.	1269.600	2.309	-.0	-3-						84Ho.A
150Lu(p)149Yb		1269.6	4.	1269.600	2.309	-.0	-3-				NDap		93Se04
150Lu(p)149Yb		1269.6	4.	1269.600	2.309	-.0	-3-				HORp		03Gi10,G
150Lu(p)149Yb	ave	1269.600	2.309				3						average
150Lum(p)149Yb		1303.8	15.	1291.424	4.800	-.8o	o				HORp		00Gi01
150Lum(p)149Yb		1285.6	8.	1291.424	4.800	.7	-3-				HORp		03Gi10
150Lum(p)149Yb		1294.7	6.	1291.424	4.800	-.5	-3-				HArp		03Ro21
150Lum(p)149Yb	ave	1291.424	4.800				3						average
150Ce(B-)150Pr		3010	90	3453.645	14.291	4.9C	C				hBwg		87Gr.A
150Ce(B-)150Pr		3480	40	3453.645	14.291	-.7	1	13	8	150Ce	HKur		95Ik03,W

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 150Pr(B-)150Nd                  5690        80          5379.433     9.068     -3.9C  C                 hBwg      87Gr.A
 150Pr(B-)150Nd                  5386        26          5379.433     9.068      -.3   1     12   12 150Pr MKur      95Ik03
 150Pr(B-)150Nd                  5290       100          5379.433     9.068       .9   U                 MKur      02Sh.B
 150Pm(B-)150Sm                  3454        20                                        2                           77Ho09
 150Eu(B+)150Sm                  2222        25          2258.967     6.180      1.5   U                 h         65Gu03,*
 150Eu(B-)150Gd                   978        10           971.681     3.543      -.6  -1-                          63Yo07,*
 150Eu(B-)150Gd                   968         4           971.681     3.543       .9  -1-                          65Gu03,*
 150Eu(B-)150Gd             ave   969.379     3.714       971.681     3.543       .6   1     91   53 150Eu         average
 150Tb(B+)150Gd                  4720        40          4658.263     8.378     -1.5   U                 h         68Wi21
 150Tb(B+)150Gd                  4670        15          4658.263     8.378      -.8   1     31   20 150Tb         76Cr.B
 150Tb(B+)150Gd                  4760        50          4658.263     8.378     -2.0   U                 h         77Ha31,*
 150Tb(B+)150Gd                  4620        60          4658.263     8.378       .6   U                 h         83Ve06
 150Tbm(B+)150Gd                 5040       100          5119.086    26.949       .8   U                 MIRS      93Al03
 150Dy(B+)150Tb                  1760        40          1796.180     8.388       .9   U                 h         81Ka07,*
 150Ho(B+)150Dy                  6980       150          7363.915    14.106      2.6   U                 h         84Al36,*
 150Ho(B+)150Dy                  6560       100          7363.915    14.106      8.0B  B                 MIRS      93Al03
 150Ho(e)150Dy                   7400       200          7363.915    14.106      -.2   U                 h         98Ag.A
 150Ho(e)150Dy                   7372        27          7363.915    14.106      -.3   1     27   25 150Ho M         00Ca.A
 150Ho(e)150Dy                   7444       126          7363.915    14.106      -.6   U                 M         01Ro35
 150Hom(B+)150Dy                 7360        50                                        2                  IRS      83Al06,*
 150Hom(B+)150Dy                 6575        75          7360.000    50.000     10.5C  C                 h         84Ha.B,*
 150Hom(B+)150Dy                 6625       120          7360.000    50.000      6.1B  B                  Got      85Sc09,*
 150Hom(B+)150Dy                 6900       130          7360.000    50.000      3.5B  B                 mGot      90Sa32,*
 150Hom(B+)150Dy                 7060        80          7360.000    50.000      3.7C  C                  IRS      93Al03
 150Er(B+)150Ho                  4010        80          4114.752    13.269      1.3o  o                 h         82No08,*
 150Er(B+)150Ho                  4105        75          4114.752    13.269       .1   U                 h         84Ha.B,*
 150Er(B+)150Ho                  4108        15          4114.752    13.269       .5   1     78   54 150Er  GSI      91Ke11,*
*150Ba-u                       Represent frequency ratio 150Ba++/(C6H6)+=0.960616639(39)            G         HWJ208**
*150La-u                       Represents frequency ratio 150La++/(C6H6)+=0.960572476(17)           G         HWJ208**
*150Ho-u                       M-A=-61948(28) keV  for mixture gs+m at --0(50) keV                  g         Nub211**
*150Dy(a)146Gd                 Recalibrated as in ref.                                                        91Ry01**
*150Nd(d,3He)149Pr             "Data set suspect"                                                   m         Ens859*W
*150Nd(d,3He)149Pr             Also not trusts this unpublished work                                m         AHW007*W
*150Lu(p)149Yb                 Trends from Mass Surface TMS suggest 150Lu    80 keV less bound      g         GAu212*G
*150Ce(B-)150Pr                Looks O.K. but strongly disagrees with SYST M-f                      m         AHW032*W
*150Eu(B+)150Sm                E+=1242(25) from 150Eum at 41.7 keV                                  g         Nub211**
*150Eu(B-)150Gd                Q-=1020(10) 1010(4) resp, from 150Eum at 41.7 keV                    g         Nub211**
*150Tb(B+)150Gd                E+=1655(80) to 2^+ at 2091.623, and other E+. Orig. error 35 increased  k      Ens136**
*150Dy(B+)150Tb                p+=2(10)e-3 to 1^+ 397.2 lvl combined with lower limit through 146Gd(e)  k     Ens136**
*150Ho(B+)150Dy                E+=4550(150) to 1395.0 and 1456.8 levels                             M         82No08**
*150Ho(B+)150Dy                Instead, to 803.4 2+ level (AHW:unlikely)                            n         80Li18*W
*150Hom(B+)150Dy               E+=3940(50) to 8^+ level at 2401.6 keV                               k         Ens136**
*150Hom(B+)150Dy               p+=0.56(0.02) 0.58(0.07) resp to 8^+ level at 2401.6 keV             k         Ens136**
*150Hom(B+)150Dy               Q+=6819(+117--100) from p^+ to 2401.6 level; could be raised 140     k         90Sa32**
*                               ~ if 4% feeding of higher Dy levels                                 h         90Sa32**
*150Hom(B+)150Dy               6819+8+70  +- (109*109 + 70*70)                                                GAu929*G
*150Hom(B+)150Dy               Q+=7385(65) from local mass relations including excited levels                 92Ke.A**
*150Er(B+)150Ho                p+=0.36(0.04) 0.39(0.04) to 1^+ level at 476.16 keV                  k         Ens136**
*150Er(B+)150Ho                E+=2610(15) to 1^+ level at 476.16 keV                               k         Ens136**


 151Cs-u                       -36801#      537#                                       2                 g    1.0 S-u211
 151Ba-u                       -48245#      429#                                       2                 k    1.0 S-u168
 151La-u                       -58734       397        -57231.000   467.500      2.5C  C                 KGT1 1.5 04Ma.A
 151La-u                       -57231       187        -57231.000  \467.500            2                 KGT3 2.5 16Kn03
 151Ce-u                       -65727.8      19.0                                      2                 HCP1 1.0 06Sa56
 151Pr-u                       -71697.5      14.3      -71690.931    12.507       .5   1     76   76 151Pr HCP1 1.0 06Sa56
 C12 H7-151Eu                  134920        37        134918.605     1.251      -.0   U                 hR04 4.0 64De15
 C10 H15 O-151Eu               192490        70        192433.479     1.251      -.2   U                 hR04 4.0 64De15
 151Eu-85Rb1.776                76520        15         76518.049     1.251      -.1   U                 MMA5 1.0 00Be42
 151Tb-u                       -76866        43        -76891.016     4.395      -.6   U                 MGS2 1.0 05Li24,*
 151Dy-u                       -73809        30        -73808.703     3.486       .0   U                 MGS2 1.0 05Li24
 151Ho-u                       -68323        33        -68301.814     8.908       .6   U                 MGS2 1.0 05Li24,*
 151Er-u                       -62528        30        -62553.520    16.575      -.9  -1-                MGS2 1.0 05Li24
 151Er-u                       -62540        30        -62553.520    16.575      -.5  -1-                MGS2 1.0 05Li24,*
 151Er-u                       -62591.1      32.       -62553.520    16.575      1.2  -1- q-q=  -37.580  H1.0 1.0  159Hf-C
 151Er-u                    ave -62551.432   17.681    -62553.520    16.575      -.1   1     88   88 151Er         average
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151Eu 35Cl-149Sm 37Cl		5620.3	2.6	5615.520	0.713	-.7	U				hH25	2.5	72Ba08
151Yb-151Er		18220	120	18187.865	112.486	-.3	1	88	88	151Yb	JTR1	1.0	20Ly.A
151Ybm-151Er		18947	50				2				JTR1	1.0	20Ly.A
151Eu-150Sm		2800	60	2574.615	0.587	-.9	U				hR04	4.0	64De15
151Eu(a)147Pm		1960	30	1963.968	1.066	.1	U				H		07Be48
151Eu(a)147Pm		1948.9	8.6	1963.968	1.066	1.8	U				K		14Ca13
151Gd(a)147Sm		2670.8	30.	2652.210	2.913	-.6	U				h		65Si06
151Tb(a)147Eu		3499.6	5.	3496.153	3.926	-.7	1	58	48	151Tb	mDba		67Go32
151Dy(a)147Gd		4175.5	5.	4179.624	2.643	.8	-2-				hDba		67Go32,Z
151Dy(a)147Gd		4179.0	10.	4179.624	2.643	.1	Z						81Ho.A
151Dy(a)147Gd		4181.1	3.	4179.624	2.643	-.5	-2-				Bka		82Bo04,Z
151Dy(a)147Gd		4178.9	5.	4179.624	2.643	.1	Z						87Ka.A
151Dy(a)147Gd	ave	4179.624	2.643				2						average
151Ho(a)147Tb		4696.3	5.	4695.012	1.819	-.3	-2-				mGSa		79Ho10,*
151Ho(a)147Tb		4695.8	3.	4695.012	1.819	-.3	-2-				NBka		82Bo04,*
151Ho(a)147Tb		4693.8	3.	4695.012	1.819	.4	-2-				NOra		82De11,*
151Ho(a)147Tb		4694.9	5.	4695.012	1.819	.0	-2-				MDaa		96Pa01,*
151Ho(a)147Tb	ave	4695.012	1.819				2						average
151Eu(n,a)148Pm		7870	20	7859.181	5.610	-.5	U				hILL		74Em01
151Sm(p,t)149Sm		-5100	4	-5101.422	0.392	-.4	U				hMcM		73Ga04
151Eu(p,t)149Eu		-5872	5	-5872.624	3.770	-.1	1	57	56	149Eu	Min		75Ta12
150Nd(n,g)151Nd		5334.55	0.2	5334.550	0.096	.0	-1-				mILn		76Pi13,Z
150Nd(n,g)151Nd		5334.55	0.11	5334.550	0.096	.0	-1-				MBdn		06Fi.A
150Nd(d,p)151Nd		3084	15	3109.984	0.096	1.7	U				hTal		67Ne08
150Nd(n,g)151Nd	ave	5334.550	0.096	5334.550	0.096	.0	1	100	100	151Nd			average
150Nd(3He,d)151Pm		1503	5	1501.805	4.472	-.2	1	80	80	151Pm	McM		80St10,*
150Sm(n,g)151Sm		5596.5	1.8	5596.462	0.109	-.0	U				h		70Sm.A,*
150Sm(n,g)151Sm		5596.	1.5	5596.462	0.109	.3	U				h		71Gr22
150Sm(n,g)151Sm		5596.42	0.20	5596.462	0.109	.2	-1-				mILn		86Va08,Z
150Sm(n,g)151Sm		5596.44	0.13	5596.462	0.109	.2	-1-				MBdn		06Fi.A
150Sm(d,p)151Sm		3369	16	3371.896	0.109	.2	U				hTal		65Ke09
150Sm(n,g)151Sm	ave	5596.434	0.109	5596.462	0.109	.3	1	100	66	150Sm			average
151Eu(g,n)150Eu		-8040	110	-7932.047	6.178	1.0	U				hPhi		60Ge01
151Eu(p,d)150Eu		-5721	9	-5707.481	6.178	1.5	1	47	47	150Eu			82So.B
151Yb(ep)150Er		9000	300	9215.613	106.548	.7	1	13	12	151Yb	ORa		86To12,*
151Lu(p)150Yb		1239.2	3.	1240.965	1.822	.6o	o				mDap		82Ho04
151Lu(p)150Yb		1241.0	2.8	1240.965	1.822	-.0	-3-				MDap		93Se04,G
151Lu(p)150Yb		1241.3	3.0	1240.965	1.822	-.1	-3-				HORp		03Gi10
151Lu(p)150Yb		1240.3	4.0	1240.965	1.822	.2	-3-				KMan		15Ta12
151Lu(p)150Yb	ave	1240.965	1.822				3						average
151Lum(p)150Yb		1318.8	10.	1297.541	3.123	-2.1B	B				kDap		98Ba.B
151Lum(p)150Yb		1318.8	10.	1297.541	3.123	-2.1	Z				kDap		99Bi14,G
151Lum(p)150Yb		1293.6	4.	1297.541	3.123	1.0	-3-				KMan		15Ta12
151Lum(p)150Yb		1303.7	5.	1297.541	3.123	-1.2	-3-				GJyp		17Wa18
151Lum(p)150Yb	ave	1297.541	3.123				3						average
151Ce(B-)151Pr		5270	100	5554.621	21.188	2.8	U				HKur		02Sh.B
151Pr(B-)151Nd		4170	75	4163.494	11.679	-.1	U				HBwg		90Gr10
151Pr(B-)151Nd		4136	40	4163.494	11.679	.7	-1-				MIda		93Gr17,*
151Pr(B-)151Nd		4210	30	4163.494	11.679	-1.6	-1-				MKur		95Ik03
151Pr(B-)151Nd	ave	4183.360	24.000	4163.494	11.679	-.8	1	24	24	151Pr			average
151Nd(B-)151Pm		2510	50	2443.077	4.473	-1.3	U				h		73Se12,*
151Nd(B-)151Pm		2480	50	2443.077	4.473	-.7	U				MKur		95Ik03
151Pm(B-)151Sm		1195	10	1190.220	4.476	-.5	1	20	20	151Pm			64Be10,*
151Sm(B-)151Eu		75.9	0.6	76.617	0.537	1.2	1	80	58	151Eu			59Ac28
151Gd(e)151Eu		463	3	464.178	2.779	.4	1	86	85	151Gd			83Vo10,*
151Tb(B+)151Gd		2562	5	2565.381	3.761	.7	-1-						77Cr05,*
151Tb(B+)151Gd		2566	12	2565.381	3.761	-.1	-1-						84Sc18,*
151Tb(B+)151Gd	ave	2562.592	4.615	2565.381	3.761	.6	1	66	52	151Tb			average
151Ho(B+)151Dy		5080	50	5129.634	8.751	1.0	U				hIRS		83Al06,*
151Ho(B+)151Dy		5100	80	5129.634	8.751	.4	U				hIRS		93Al03
151Er(B+)151Ho		5130	110	5354.502	17.525	2.0	U				h		98Fo06
151Tm(B+)151Er		6025	145	7497.011	23.939	10.2C	C				h		84Ha.B,*
151Tm(B+)151Er		7074	50	7497.011	23.939	8.5F	F				hGSI		91Ke11,*
151Tmm(IT)151Tm		96.4	7.0	92.531	5.686	-.6o	o				h		97Da07,*
151Lum(IT)151Lu		77	5	56.576	3.616	-4.1B	B				KDap		99Bi14
*151Tb-u		M-A=-71551(28) keV for mixture gs+m at 99.53 keV									g		Nub211**
*151Ho-u		M-A=-63622(28) keV for mixture gs+m at 41.0 keV									g		Nub211**

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*151Er-u                          M-A=-55670(28) keV  for 151Erm at 2586.0 keV                           g        Nub211**
*151Ho(a)147Tb                    E=4523.8(5,Z) to 147Tbm at 50.6(0.9); 4610.8(5,Z) from 151Hom 41.0(0.2)  g        Nub211**
*151Ho(a)147Tb                    E=4521.5(3,Z) to 147Tbm at 50.6(0.9); 4611.5(3,Z) from 151Hom 41.0(0.2)  g        Nub211**
*151Ho(a)147Tb                    E=4521.2(3,Z) to 147Tbm at 50.6(0.9); 4607.2(4,Z) from 151Hom 41.0(0.2)  g        Nub211**
*151Ho(a)147Tb                    E(a)=4521(5,Z) to 147Tbm at 50.6(0.9)                                  g        Nub211**
*                                  ~ No 87Ka.A and 87Li09 data in 91Rytz                                  n        AHW956*W
*                                  ~4642.2       5.      151Ho(a)147Tbm              4519       5     A           87Ka.A*G
*                                  ~4645.3       3.      151Ho(a)147Tbm              4522       3     A  n        87Li09*G
*                                  ~4731.6       5.      151Hom(a)147Tb              4606       5     A           87Ka.A*G
*                                  ~4734.7       3.      151Hom(a)147Tb              4609       5     A           87Li09*G
*150Nd(3He,d)151Pm                Based on 146Nd(3He,d)147Pm Q=-87.6(0.9) keV                                     AHW   **
*150Sm(n,g)151Sm                  E(g)=5591.7(1.8) to 3/2^- level at 4.821 keV                           h        Ens091**
*151Yb(ep)150Er                   E(p) estimated 7300(300) to levels around 1700 keV                              GAu935**
*                                  ~ advices not to trust 151Yb(ep)                                       n        AHW938*W
*151Yb(ep)150Er                     Has isomer 151Ybm at estimated 740#100 keV same T1/2                 g        Nub211*W
*151Yb(ep)150Er                     I read in paper: gs lim. p coinc. B+ ~7000; auth's: to Er gs         m        AHW973*W
*151Yb(ep)150Er                     is lim. p 208 gamma ~9000                                            m        AHW973*W
*                                  ~ ``Statistical p's originate from 11/2^- isomer."                              86To12**
*151Lu(p)150Yb                    Update of 82Ho04                                                       n        GAu942*G
*151Lu(p)150Yb                    Probably, the 11/2- ground-state                                       m        AHW   *W
*151Lum(p)150Yb                   Derived from 151Lum(IT)=77(5) keV                                      k        99Bi14*G
*151Pr(B-)151Nd                   Two highest Q-=4135(50),4137(40) keV                                   m        AHW97c**
*151Pr(B-)151Nd                   From lower E-'s less trustworthy. Q-=4082(40) in table 5               m        AHW97c*W
*151Nd(B-)151Pm                   E-=2260(90) 2100(90) 1210(50) to 3/2^+ lvl at 255.692, 1/2^+ at 426.451, h        Ens091**
*                                  ~ and 5/2^+ at 1297.682 keV                                            h        Ens091**
*151Pm(B-)151Sm                   E-=1190(10) to gs and 3/2^- level at 4.821 keV, and other E-           h        Ens091**
*151Gd(e)151Eu                    pK=0.652(0.007) to (5/2^-,7/2^-) level at 353.64 keV                   h        Ens091**
*151Tb(B+)151Gd                   E+=700(5) p+=104(5)e-4 resp, to 1/2^- level at 839.320 keV, and other E+ h        Ens091**
*151Ho(B+)151Dy                   E+=3530(50) to 9/2^- level at 527.40 keV                               h        Ens091**
*151Tm(B+)151Er                   p+=0.71(0.02) to 9/2^- level at 801.52 keV                             h        Ens091**
*151Tm(B+)151Er                   F : lower limit: positrons escape from detector; E+=5250(50) to 801.6 lvlh        91Ke11**
*151Tm(B+)151Er                    Same author 1997 146Gd analysis ->7493(63)                            m        AHW978*W
*151Tmm(IT)151Tm                  Only alpha-decay energies are used                                     h        GAu128**


 152Cs-u                           -31272#     537#                                   2                 g    1.0 S-u211
 152Ba-u                           -44670#     429#                                   2                 g    1.0 S-u211
 152La-u                           -52915#     322#                                   2                 k    1.0 S-u168
 152Ce-u                           -63318#     215#                                   2                 k    1.0 S-u168
 152Pr-u                           -68447.1     19.9                                  2                 HCP1 1.0 06Sa56
 C12 H8-152Sm                      142764       32     142861.600     1.091     .8   U                 hR04 4.0 64De15
 C12 H8-152Sm                      142867.0      5.0   142861.600     1.091    -.4   U                 mM22 2.5 75Ka25
 152Eu-u                           -78347       50     -78249.008     1.252    2.0   U                 hGS2 1.0 05Li24,*
 C12 H8-152Gd                      142870       50     142801.832     1.081    -.3   U                 hR04 4.0 64De15
 152Gd O-C14                       -85290.7      3.5   -85286.957     1.081     .7   U                 HTG1 1.5 11Ke03
 152Tb-u                           -76212      159     -75918.135    42.955    1.8   U                 hGS2 1.0 05Li24,*
 152Dy-u                           -75278       30     -75274.707     4.931     .1   U                 MGS2 1.0 05Li24
 152Ho-u                           -68247       58     -68280.335    13.343    -.6   U                 gGS2 1.0 05Li24,*
 152Er-u                           -64962       30     -64949.767     9.477     .4   U                 HGS2 1.0 05Li24
 152Tm-u                           -55524       58     -55497.169    54.435     .5   1    88   88 152Tm KGS2 1.0 05Li24,G
 152Yb-136Ce O                      48508       49      48488.850    46.870    -.4   1    91   91 152Yb JTR1 1.0 20Ly.A
 152Lu-u                           -35880#     210#                                   2                 m    1.0 S-h03b
 152Sm 35Cl2-148Sm 37Cl2            10802       10      10809.657     1.096     .3   U                 hH21 2.5 70Ma05
 152Sm 35Cl2-148Sm 37Cl2            10810.8      2.0    10809.657     1.096    -.2   U                 mH25 2.5 72Ba08
 152Sm 35Cl2-148Sm 37Cl2            10807.9      1.4    10809.657     1.096     .5   U                 HM21 2.5 75Ka25
 152Sm 35Cl-150Sm 37Cl               5429        4       5406.776     0.661   -1.4   U                 kH12 4.0 64Ba15
 152Sm 35Cl-150Sm 37Cl               5396        4       5406.776     0.661    1.1o  o                 hH21 2.5 70Ma05
 152Sm 35Cl-150Sm 37Cl               5402.7      0.8     5406.776     0.661    2.0   1    11    8 150Sm  M21 2.5 75Ka25
 152Gd-152Sm                           59.80     0.19      59.768     0.188    -.2   1    98   78 152Sm HSH1 1.0 11El02
 152Sm-151Eu                           95       42       -117.963     0.735   -1.3   U                 hR04 4.0 64De15
 152Sm-150Sm                         2563       31       2456.652     0.657    -.9   U                 hR04 4.0 64De15
 152Gd(a)148Sm                       2197.9     30.      2203.843     1.024     .2   U                 h        61Ma05
 152Dy(a)148Gd                       3728.0      8.      3726.540     4.355    -.2  -2-                         65Ma51,Z
 152Dy(a)148Gd                       3726.0      5.      3726.540     4.355     .1  -2-                 Dba      67Go32,Z
 152Dy(a)148Gd                 ave   3726.540    4.355                                2                          average
 152Ho(a)148Tb                       4506.9      3.      4507.432     1.337     .2  -1-                 Bka      82Bo04,*
 152Ho(a)148Tb                       4508.0      2.      4507.432     1.337    -.3  -1-                 Ora      82De11,Z
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152Ho(a)148Tb		4505.8	3.	4507.432	1.337	.5	-1-					82To14
152Ho(a)148Tb		4507.9	3.	4507.432	1.337	-.1	-1-					87St.A,Z
152Ho(a)148Tb	ave	4507.337	1.338	4507.432	1.337	.1	1	100	93	152Ho		average
152Er(a)148Dy		4935.2	5.	4934.210	1.618	-.2	-1-				GSa	79Ho10
152Er(a)148Dy		4934.6	3.	4934.210	1.618	-.1	-1-				Bka	82Bo04,Z
152Er(a)148Dy		4934.3	2.	4934.210	1.618	-.1	-1-				Ora	82De11,Z
152Er(a)148Dy	ave	4934.485	1.622	4934.210	1.618	-.2	1	99	85	152Er		average
150Nd(t,p)152Nd		4125	30	4130.553	24.455	.2	1	66	66	152Nd	Ald	72Ch11
150Sm(t,p)152Sm		5376	25	5372.483	0.612	-.1	U				hAld	66Bj01
152Sm(p,t)150Sm		-5378	8	-5372.483	0.612	.7	U				hMin	72De47
152Sm(p,t)150Sm		-5376	4	-5372.483	0.612	.9	U				hMcM	73Ga04
152Sm(p,t)150Sm		-5379	15	-5372.483	0.612	.4	U				hHam	74Oe03
151Sm(n,g)152Sm		8257.6	0.8	8257.817	0.606	.3	1	57	44	151Sm	m	71Gr22,Z
151Sm(p,g)152Eu		5604	4	5600.990	0.543	-.8	U				h	75Jo.A
151Eu(n,g)152Eu		6306.70	0.10	6306.720	0.100	.2	1	99	59	152Eu	ILn	85Vo15,Z
151Eu(n,g)152Eu		6307.11	0.14	6306.720	0.100	-2.8C	C				hBdn	06Fi.A
152Gd(d,t)151Gd		-2338	10	-2332.474	2.854	.6	U				hKop	67Tj01
152Pr(B-)152Nd		6350	120	6391.584	30.704	.3	U				HKur	95Ik03
152Nd(B-)152Pm		1088	27	1104.805	18.501	.6	-1-				M	93Sh23
152Nd(B-)152Pm		1120	30	1104.805	18.501	-.5	-1-				MKur	95Ik03
152Nd(B-)152Pm	ave	1102.320	20.069	1104.805	18.501	.1	1	85	51	152Pm		average
152Pm(B-)152Sm		3600	200	3508.510	25.886	-.5	U				m	71Da19
152Pm(B-)152Sm		3520	150	3508.510	25.886	-.1	U				m	72Wa04
152Pm(B-)152Sm		3400	200	3508.510	25.886	.5	U				m	75Wi08
152Pm(B-)152Sm		3500	100	3508.510	25.886	.1	-1-					77Ya07
152Pm(B-)152Sm		3500	40	3508.510	25.886	.2	-1-				MKur	95Ik03
152Pm(B-)152Sm	ave	3500.000	37.139	3508.510	25.886	.2	1	49	49	152Pm		average
152Pmm(B-)152Sm		3603	100	3649.154	83.205	.5	-2-					71Da19,*
152Pmm(B-)152Sm		3753	150	3649.154	83.205	-.7	-2-					72Wa04,*
152Pmm(B-)152Sm	ave	3649.154	83.205				2					average
152Eu(B+)152Sm		1871	5	1874.480	0.686	.7	U				n	58Al99,*
152Eu(B+)152Sm		1866	5	1874.480	0.686	1.7	U				h	62Lo10,*
152Eu(B+)152Sm		1870.8	2.	1874.480	0.686	1.8	-1-					72Sv02,*
152Eu(B+)152Sm		1872.8	1.5	1874.480	0.686	1.1	-1-					77Mi.A,*
152Eu(B+)152Sm	ave	1872.080	1.200	1874.480	0.686	2.0	1	33	28	152Eu		average
152Eu(B-)152Gd		1809	10	1818.806	0.700	1.0	U				m	58Al99,*
152Eu(B-)152Gd		1827	7	1818.806	0.700	-1.2	U				m	60La04,*
152Eu(B-)152Gd		1836	20	1818.806	0.700	-.9	U				h	60Sc14,*
152Eu(B-)152Gd		1806	4	1818.806	0.700	3.2B	B				h	69An18,*
152Tb(B+)152Gd		3990	40				2					76Cr.B,*
152Ho(B+)152Dy		6690	100	6515.217	13.225	-1.7	U				hIRS	83Al06,*
152Ho(B+)152Dy		6270	140	6515.217	13.225	1.8	U				n	Averag,*
152Ho(B+)152Dy		6225	90	6515.217	13.225	3.2B	B				IRS	93Al03,*
152Tm(B+)152Er		8820	240	8805.039	51.468	-.1	U				K	16Na02
152Tmm(B+)152Er		6850	110	8680.000	240.000	16.6C	C				H	84Ha.B,*
152Tmm(B+)152Er		8680	240				2				K	16Na02
152Yb(B+)152Tm		5065	165	5616.810	63.093	3.3C	C				G	84Ha.B,*
152Yb(B+)152Tm		5465	195	5616.810	63.093	.8	-1-				Got	90Sa.A,W
152Yb(B+)152Tm		5434	200	5616.810	63.093	.9	-1-				HGSI	04Na.A,*
152Yb(B+)152Tm	ave	5449.892	139.620	5616.810	63.093	1.2	1	20	12	152Tm		average

*152Eu-u	M-A=-72915(35) keV for mixture gs+m+r at 45.5998 and 147.86 keV	g	Nub211**
*152Tb-u	M-A=-70740(29) keV for mixture gs+n at 501.74 keV	g	Nub211**
*152Tb-u	Supposes 152Tbm at 501.74 does not contribute	m	AHW036*W
*152Tb-u	Contamination confirmed in 037-15 letter	m	03Li.A*G
*152Ho-u	M-A=-63492(28) keV for mixture gs+m at 160(3) keV	g	Nub211**
*152Tm-u	M-A=-51720(54) keV for mixture gs+m at -100#250 keV 152Tm	k	GAu168*G
*152Ho(a)148Tb	E(a)=4389.1(3,Z); and 4455.1(3,Z) from 152Hom to 148Tbm		82Bo04**
*	~ combined with 152Hom(IT)-148Tbm(IT)=160(1)-90.1(0.3) keV	n	87St.A**
*	~ therefore 152Hom(a)148Tbm=4456(3,Z) not used	n	87St.A*G
*152Pmm(B-)152Sm	E-=1800(100) 1950(150) resp, to 5^- level at 1803.94 keV	k	Ens13b**
*152Eu(B+)152Sm	E+=895(5) 890(5) resp, from 152Eum at 45.5998 keV	g	Nub211**
*152Eu(B+)152Sm	E+=727(2) 729(1.5) resp, to 2^+ level at 121.7818 keV	k	Ens13b**
*152Eu(B-)152Gd	Q-=1855(10) from 152Eum at 45.5998 keV	g	Nub211**
*152Eu(B-)152Gd	E-=1483(7) to 2^+ level at 344.2790 keV	k	Ens13b**
*152Eu(B-)152Gd	E-=1840(30) 1490(20) 1072(20) to gs, 2^+ at 344.2790, 4^+ at 755.3961 keV	k	Ens13b**
*152Eu(B-)152Gd	Q-=1852(4) from 152Eum at 45.5998 keV	g	Nub211**
*152Tb(B+)152Gd	E+=2830(15) 8(4)% to gs, 5.2(1)% to 2^+ level at 344.2790 keV	k	Ens13b**

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*152Ho(B+)152Dy             E+=3390(100) from 152Hom at 160(1) to 8^+ level at 2437.42 keV          k        Ens13b**
*152Ho(B+)152Dy             From adopted KLM/B+=0.97(0.13)                                                   AHW933**
*                            ~ from 152Hom at 160(1) to 8^+ level at 2437.42 keV                    k        Ens13b**
*                            ~ after extra 3(2)% side-feeding correction; see ref.                           90Sa32**
*                            ~ p+=0.52(0.04)/.967 gives KLM/B+=0.86(0.14)                                    85Sc09**
*                            ~ KLM/B+=1.12(0.10) after 0.967(0.008) side-feeding correction                  90Sa32**
*                            ~ 146Gd anal.->Q+=6674 -> KLM/B+=0.69 -> 14% extra side-feeding        n        92Ke.A*W
*                            ~ (combining their 148Tbm(B+) with 152Hom(a) and 152Dy(a))                      AHW937*W
*152Ho(B+)152Dy             Q+=6270(90); and 6330(100) from 152Hom at 160(3) keV                    g        Nub211**
*152Tmm(B+)152Er            p+=0.64(0.02) to 8^+ level at 2183.3 keV                                k        Ens13b**
*152Yb(B+)152Tm             p+=0.57(0.03) (1)^+ level at 482.32 keV                                 G        Ens13b**
*152Yb(B+)152Tm             To which level???                                                                AHW931*W
*152Yb(B+)152Tm             As reported in ref.                                                     H        11Es03**

 153Ba-u                      -39152#    429#                                  2                 k    1.0 S-u168
 153La-u                      -49447#    322#                                  2                 k    1.0 S-u168
 153Ce-u                      -58948#    215#                                  2                 k    1.0 S-u168
 153Pr-u                      -66110.5    15.3    -66096.489    12.756     .9  -1-               HCP1 1.0 06Sa56
 153Pr-u                      -66065      40      -66096.489    12.756    -.8  -1-               HCP1 1.0 12Va02,*
 153Pr-u                 ave  -66104.693  14.290  -66096.489    12.756     .6   1    80  80 153Pr         average
 153Pr-80Kr1.913               93906      40       93872.509    12.819    -.8   1    10  10 153Pr kCP1 1.0 12Va02
 153Pr-86Kr1.779               92958      40       92927.214    12.756    -.8   1    10  10 153Pr HCP1 1.0 12Va02
 153Nd-u                      -72283.3     5.2    -72282.132     2.949     .2   1    32  32 153Nd HCP1 1.0 12Va02,*
 153Nd-80Kr1.913               87687.9     4.7     87686.866     3.029    -.2   1    42  36 153Nd kCP1 1.0 12Va02
 153Nd-86Kr1.779               86740.7     5.3     86741.571     2.949     .2   1    31  31 153Nd HCP1 1.0 12Va02
 153Pm-u                      -75833      23      -75843.745     9.729    -.5   1    18  18 153Pm HCP1 1.0 12Va02,*
 153Pm-80Kr1.913               84139      23       84125.253     9.786    -.6   1    18  18 153Pm kCP1 1.0 12Va02
 153Pm-86Kr1.779               83192      23       83179.957     9.729    -.5   1    18  18 153Pm HCP1 1.0 12Va02
 C12 H9-153Eu                 149103      18      149188.486     1.257    1.2   U                hR04 4.0 64De15
 C11 13C H8-153Eu             144606      30      144718.290     1.257     .9   U                hR04 4.0 64De15
 C9 13C H16 O-153Eu           201934      38      202233.164     1.257    2.0   U                hR04 4.0 64De15
 153Eu-85Rb1.800               80021      16       80015.272     1.257    -.4   U                MMA5 1.0 00Be42
 153Ho-u                      -69814      37      -69793.267     5.437     .6   U                MGS2 1.0 05Li24,*
 153Er-u                      -64942      30      -64912.949     9.829    1.0   U                HGS2 1.0 05Li24
 153Yb-u                      -50628     215      -50566.256    49.188     .1   W                j    2.5 S-u211
 153Hf-u                      -29308#    322#                                  2                 k    1.0 S-u168
 153Eu 35Cl-151Eu 37Cl          4334       4        4330.307     0.181    -.4   U                hH21 2.5 70Ma05,*
 153Yb-153Dy                   23662      49                                   2                 JTR1 1.0 20Ly.A
 138La O-153Eu                -19266     123      -19198.141     1.333     .1   U                hR05 4.0 65De13
 153Eu O-C14                  -83849.6     5.8    -83848.580     1.257     .1   U                HTG1 1.5 11Ke03
 153Eu-152Sm                    1544      42        1498.145     0.744    -.3   U                hR04 4.0 64De15
 153Eu-151Eu                    1567      33        1380.182     0.167   -1.4   U                hR04 4.0 64De15
 153Dy(a)149Gd                  3560.0     8.       3559.057     3.617    -.1  -1-                        65Ma51,Z
 153Dy(a)149Gd                  3554.9     5.       3559.057     3.617     .8  -1-                Dba     67Go32,Z
 153Dy(a)149Gd           ave    3556.281   4.354    3559.057     3.617     .6   1    69  48 153Dy         average
 153Ho(a)149Tb                  4052.3     5.       4051.650     3.536    -.1  -2-                        68Go.C,*
 153Ho(a)149Tb                  4051.0     5.       4051.650     3.536     .1  -2-                ORa     71To01,*
 153Ho(a)149Tb           ave    4051.650   3.536                                2                         average
 153Er(a)149Dy                  4799.8    10.       4802.408     1.404     .3   U                h        81Ho.A
 153Er(a)149Dy                  4804.5     3.       4802.408     1.404    -.7  -1-                Bka     82Bo04,Z
 153Er(a)149Dy                  4802.0     2.       4802.408     1.404     .2  -1-                Ora     82De11,Z
 153Er(a)149Dy                  4802.8     3.       4802.408     1.404    -.1  -1-                        87Sc.A,Z
 153Er(a)149Dy                  4799.7     4.       4802.408     1.404     .6  -1-               MDaa     96Pa01
 153Er(a)149Dy           ave    4802.420   1.404    4802.408     1.404    -.0   1   100  95 153Er         average
 153Tm(a)149Ho                  5252.3     5.       5248.325     1.453    -.8   U                mGSa     79Ho10,*
 153Tm(a)149Ho                  5246.1     3.       5248.325     1.453     .7  -1-                Bka     82Bo04,*
 153Tm(a)149Ho                  5249.2     2.       5248.325     1.453    -.4  -1-                Ora     82De11,*
 153Tm(a)149Ho                  5247.7     3.       5248.325     1.453    .2o   o                h        87Sc.A,*
 153Tm(a)149Ho                  5247.7     3.       5248.325     1.453     .2  -1-               h        88Sc.A
 153Tm(a)149Ho                  5249.5     5.       5248.325     1.453    -.2   U                MDaa     96Pa01
 153Tm(a)149Ho           ave    5248.118   1.455    5248.325     1.453     .1   1   100  53 149Ho         average
 153Gd(n,a)150Sm                9790      30        9814.792     0.639     .8   U                hILL     81Wa31
 153Eu(p,t)151Eu               -6374       5       -6375.208     0.156    -.2   U                hMin     75Ta12
 152Sm(n,g)153Sm                5867.1     0.4      5868.400     0.134   3.2B   B                h        69Re04,Z
 152Sm(n,g)153Sm                5868.4     0.3      5868.400     0.134    -.0  -2-               m        71Be41,Z
 152Sm(n,g)153Sm                5868.4     0.7      5868.400     0.134    -.0   U                M        82Ba15,Z
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 152Sm(n,g)153Sm                 5868.40     0.15      5868.400     0.134      -.0  -2-                 MBdn     06Fi.A
 152Sm(d,p)153Sm                 3645       12         3643.834     0.134      -.1   U                  hTal     65Ke09
 152Sm(n,g)153Sm           ave   5868.400    0.134                                   2                           average
 152Eu(n,g)153Eu                 8550.28     0.12      8550.285     0.120       .0   1   100  86 153Eu  ILn      85Vo15,Z
 153Eu(g,n)152Eu                -8650      130        -8550.285     0.120       .8   U                  hPhi     60Ge01
 152Gd(n,g)153Gd                 6247.27     0.35      6246.959     0.129      -.9  -1-                  ILn     85Vo15,Z
 152Gd(n,g)153Gd                 6246.89     0.14      6246.959     0.129       .5  -1-                 mILn     93Sp.A
 152Gd(n,g)153Gd                 6247.48     0.21      6246.959     0.129     -2.5B  B                  kBdn     06Fi.A
 152Gd(d,p)153Gd                 4015       10         4022.392     0.129       .7   U                  hKop     67Tj01
 152Gd(n,g)153Gd           ave   6246.942    0.130     6246.959     0.129       .1   1    99  80 152Gd           average
 152Gd(3He,d)153Tb              -1634       30        -1598.203     3.845      1.2   U                  hMcM     76St10
 153Pr(B-)153Nd                  5720      100         5761.890    12.190       .4   U                  HKur     02Sh.B
 153Nd(B-)153Pm                  3336       25         3317.622     9.352      -.7   1    14  13 153Pm NIda     93Gr17
 153Nd(B-)153Pm                  3260      100         3317.622     9.352       .6   U                  MKur     02Sh.B
 153Pm(B-)153Sm                  1777       50         1912.050     9.083      2.7   U                  h        62Ko10,*
 153Pm(B-)153Sm                  1863       15         1912.050     9.083      3.3B  B                  HIda     93Gr17
 153Sm(B-)153Eu                   810       10          807.405     0.706      -.3   U                  h        54Gr19
 153Sm(B-)153Eu                   795       10          807.405     0.706      1.2   U                  h        54Le08
 153Sm(B-)153Eu                   820       10          807.405     0.706     -1.3   U                  h        55Ma62
 153Sm(B-)153Eu                   825       10          807.405     0.706     -1.8   U                  h        56Du31
 153Sm(B-)153Eu                   792       10          807.405     0.706      1.5   U                  h        57Jo24
 153Gd(e)153Eu                    242        2          484.520     0.715    121.3V  V                           Averag,*
 153Tb(B+)153Gd                  1573        5         1569.339     3.844      -.7   1    59  59 153Tb           78Cr02,*
 153Dy(B+)153Tb                  2171        2         2170.414     1.933      -.3   1    93  52 153Dy           78Gr13,*
 153Ho(B+)153Dy                  4153       50         4131.165     6.156      -.4o  o                  hIRS     83Al06,*
 153Ho(B+)153Dy                  4160       60         4131.165     6.156      -.5   U                  hIRS     93Al03
 153Lum(IT)153Lu                   80        5                                       4                  M        97Ir01,*
*153Pr-u                        Represents frequency ratio 153Pr++/(C12H4)+=0.99430250(26)              H        WgM124**
*153Pr-u                        Original equation -129072  40   153Pr-C12H4*2.013 -61539  37   m        h        GAu124*G
*153Nd-u                        Represents frequency ratio 153Pr++/(C12H4)+=0.994342.931(34)            H        WgM124**
*153Nd-u                        Original equation -135290.5 5.2 153Nd-C12H4*2.013 -67331.5 4.9 m        h        GAu124*G
*153Pm-u                        Represents frequency ratio 153Pm++/(C12H4)+=0.99436601(15)              H        WgM124**
*153Pm-u                        Original equation -138840  23   153Pm-C12H4*2.013 -70638  21   m        h        GAu124*G
*153Ho-u                        M-A=-64997(28) keV  for mixture gs+m at 68.7 keV                        g        Nub211**
*153Eu 35Cl-151Eu 37Cl          Increased by 5 for systematic difference of H*21 with later data        h        AHW   **
*153Ho(a)149Tb                  E(a)=4013.1(5,Z) from 153Hom at 68.7 keV                                g        Nub211**
*153Ho(a)149Tb                  E(a)=3910(5) to 149Tbm at 35.78 keV                                     g        Nub211**
*153Tm(a)149Ho                  E(a)=5114.2(5,Z) 5108.2(3,Z) 5111.2(2,Z) resp, contain a 8%                      AHW930**
*                                ~ 153Tm(a)149Ho-153Tmm(a)149Hom=48.80(0.20)-43.2(0.2)=                 g        Nub211**
*                                ~ =5.6(0.3) keV lower 153Tmm(a)149Hom branch, corr thus +0.5keV                 GAu957**
*153Tm(a)149Ho                  E(a)=5110.6(3,Z); and 5103.6(4,Z) for lower 153Tmm(a) branch                     87Sc.A**
*153Pm(B-)153Sm                 E-=1650(50) to 3/2^- level at 127.298 keV, and other E-                 h        Ens062**
*153Gd(e)153Eu                  Average pK=0.391(0.018) to 5/2+ level at 172.85316 from 5 references:   h        Ens062**
*                                ~ pK=0.42(0.03)                                                                 62Bl11**
*                                ~ pK=0.38(0.03)                                                                 64Cr08**
*                                ~ pK=0.31(0.07)                                                                 67Bo11**
*                                ~ pK=0.34(0.04)                                                                 80Se01**
*                                ~ pK=0.433(0.039)                                                               85Si03**
*                                ~ Rejects value 240 at C.L. 99%                                                 92Ch16*W
*153Gd(e)153Eu                  Last comment made Z: only REFERS to old not convincing measurement               AHW938*W
*153Tb(B+)153Gd                 E+=339(5) to 3/2^+ level at 212.0078 keV                                h        Ens062**
*153Dy(B+)153Tb                 E+=886(2) to 9/2^- level at 262.831 keV                                 h        Ens062**
*153Ho(B+)153Dy                 E+=2835(50) to 9/2^- level at 295.84 keV                                h        Ens062**
*153Lum(IT)153Lu                Trends from Mass Surface TMS suggest 153Lu   130 keV less bound         G        GAu212**

 154Ba-u                        -35341#     537#                                     2                  g    1.0 S-u211
 154La-u                        -44584#     322#                                     2                  k    1.0 S-u168
 154Ce-u                        -56404      619       -56060#      215#         .2D  D                  KGT3 2.5 16Kn03,*
 154Ce-u                        -56060#     215#                                     2                  g    1.0 S-u212
 154Nd-133Cs1.158                39061       27        39084.036     1.100       .9   U                  GJY1 1.0 20Vi04
 154Nd-82Kr1.878                 92079.8      1.1                                    2                  GCP2 1.0 18Or02
 C12 H10-154Sm                  155830       29       156034.556     1.400      1.8   U                  hR04 4.0 64De15
 C12 H10-154Sm                  156035.7      4.0     156034.556     1.400      -.1   U                  HM22 2.5 75Ka25
 C12 H10-154Gd                  157149       40       157377.336     1.066      1.4   U                  hR04 4.0 64De15
 C11 13C H9-154Gd               152550      110       152907.140     1.066       .8   U                  hR04 4.0 64De15
 C10 13C2 H8-154Gd              148030       90       148436.943     1.066      1.1   U                  hR04 4.0 64De15
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C10 H6 N2-154Gd		131980	240	132225.217	1.066	.3	U				hR04	4.0	64De15
154Gd-138La O		19005	80	18834.323	1.156	-.5	U				hR05	4.0	65De13
154Tb-u		-75420	120	-75316.310	48.641	.9R	R	q-q=	-103.690		gGS2	1.0	05Li24,*
154Dy-133Cs1.158		33903	19	33915.563	7.977	.7	1	18	18	154Dy	MMA5	1.0	00Be42,*
154Ho-u		-69350	83	-69393.211	8.820	-.5	U				KGS2	1.0	05Li24,*
154Tm-u		-58479	49	-58429.713	15.066	1.0	U				KGS2	1.0	05Li24,*
154Hf-u		-35137#	322#				2				g	1.0	S-u211
154Sm 35Cl2-150Sm 37Cl2		10832.9	5.2	10834.008	1.111	.1	U				hM21	2.5	75Ka25
154Sm 35Cl-152Sm 37Cl		5480	4	5427.232	0.895	-3.3B	B				hH12	4.0	64Ba15
154Sm 35Cl-152Sm 37Cl		5417	4	5427.232	0.895	1.0	U				hH21	2.5	70Ma05
154Sm 35Cl-152Sm 37Cl		5427.2	0.4	5427.232	0.895	.0	1	80	78	154Sm	M21	2.5	75Ka25
154Gd 35Cl-152Gd 37Cl		4019.5	2.	4024.683	0.234	1.0	U				hH25	2.5	72Ba08
154Gd 35Cl-152Gd 37Cl		4016	30	4024.683	0.234	.1	U				hH12	4.0	64Ba15
154Sm-154Gd		1338.2	3.8	1342.780	0.924	.5	U				hH25	2.5	72Ba08
154Sm-154Gd		1342.8	0.8	1342.780	0.924	-.0	1	21	21	154Sm	M21	2.5	75Ka25
154Yb-138Ce O		45485	48	45487.315	17.289	.0	1	13	13	154Yb	JTR1	1.0	20Ly.A
154Sm-C12 H9		-148211.0	8.0	-148209.524	1.400	.1	U				mM21	2.5	75Ka25
139La O-154Gd		-19616	55	-19595.435	1.228	.1	U				hR05	4.0	65De13
154Sm-153Eu		1082	42	978.962	1.162	-.6	U				hR04	4.0	64De15
154Sm-152Sm		2664	43	2477.107	0.897	-1.1	U				hR04	4.0	64De15
154Gd-152Gd		1400	50	1074.559	0.224	-1.6	U				hR04	4.0	64De15
154Gd O-C15		-84207.4	5.9	-84212.398	1.066	-.6	U				HTG1	1.5	09Ke.A
154Gd O-C15		-84206.6	4.3	-84212.398	1.066	-.9	U				HTG1	1.5	11Ke03
154Dy(a)150Gd		2946.4	5.	2945.120	4.946	-.3	1	93	82	154Dy	Dba		67Go32,Z
154Ho(a)150Tb		4041.3	5.	4041.495	3.630	.0	-2-						68Go.C,Z
154Ho(a)150Tb		4041.7	5.	4041.495	3.630	-.0	-2-				ORa		74Sc19,Z
154Ho(a)150Tb	ave	4041.495	3.630				2						average
154Hom(a)150Tbm		3819.2	10.	3823.310	4.585	.4	-1-				NORa		71To01,Z
154Hom(a)150Tbm		3824.0	5.	3823.310	4.585	-.1	-1-				NORa		74Sc19,Z
154Hom(a)150Tbm	ave	3823.070	4.592	3823.310	4.585	.1	1	100	89	154Hom			average
154Er(a)150Dy		4280.5	5.	4279.728	2.611	-.2	-1-						68Go.C,Z
154Er(a)150Dy		4279.5	3.	4279.728	2.611	.1	-1-				Bka		82Bo04,Z
154Er(a)150Dy	ave	4279.758	2.641	4279.728	2.611	-.0	1	98	92	154Er			average
154Tm(a)150Ho		5096.9	5.1	5093.834	2.641	-.6	-2-				MGSa		79Ho10,Z
154Tm(a)150Ho		5092.7	3.	5093.834	2.641	.4	-2-				MBka		82Bo04,W
154Tm(a)150Ho	ave	5093.834	2.641				2						average
154Tmm(a)150Hom		5174.8	5.	5171.827	1.621	-.6	-3-				GSa		79Ho10,Z
154Tmm(a)150Hom		5170.8	3.	5171.827	1.621	.3	-3-				Bka		82Bo04,Z
154Tmm(a)150Hom		5171.8	2.1	5171.827	1.621	.0	-3-				Ora		82De11,Z
154Tmm(a)150Hom	ave	5171.827	1.621				3						average
154Yb(a)150Er		5473.4	5.	5474.311	1.728	.2	-1-				GSa		79Ho10,Z
154Yb(a)150Er		5474.7	2.	5474.311	1.728	-.2	-1-				Ora		82De11,Z
154Yb(a)150Er		5473.4	4.	5474.311	1.728	.2	-1-				MDaa		96Pa01
154Yb(a)150Er	ave	5474.314	1.729	5474.311	1.728	-.0	1	100	87	154Yb			average
152Sm(t,p)154Sm		5361	25	5353.429	0.835	-.3	U				hAld		66Bj01
154Sm(p,t)152Sm		-5357	8	-5353.429	0.835	.4	U				hMin		72De47
154Sm(p,t)152Sm		-5353	15	-5353.429	0.835	-.0	U				hHam		74Oe03
154Gd(p,t)152Gd		-6660	5	-6659.895	0.208	.0	U				hMin		73Oo01
154Sm(d,3He)153Pm		-3623	25	-3603.053	9.093	.8	-1-						76Su.B
154Sm(t,a)153Pm		10748	20	10717.338	9.093	-1.5	-1-				LAl		78Bu18
154Sm(d,3He)153Pm	ave	-3592.141	15.617	-3603.053	9.093	-.7	1	34	33	153Pm			average
153Eu(n,g)154Eu		6442.2	0.3	6442.218	0.238	.1	-1-				mILn		87Ba52,Z
153Eu(n,g)154Eu		6442.2	0.4	6442.218	0.238	.0	-1-				MBdn		06Fi.A
153Eu(n,g)154Eu	ave	6442.200	0.240	6442.218	0.238	.1	1	99	85	154Eu			average
153Gd(n,g)154Gd		8895.25	0.30	8894.732	0.165	-1.7	-1-				ILn		85Vo15,Z
153Gd(n,g)154Gd		8894.47	0.20	8894.732	0.165	1.3	-1-				mILn		93Sp.A,Z
154Gd(d,t)153Gd		-2642	10	-2637.502	0.165	.4	U				hKop		67Tj01
153Gd(n,g)154Gd	ave	8894.710	0.166	8894.732	0.165	.1	1	98	80	153Gd			average
154Pr(B-)154Nd		7720	100				3				KKur		02Sh.B,*
154Nd(B-)154Pm		2687	25				3				KIda		93Gr17
154Pmm(IT)154Pm		-210	70	-225.756	51.262	-.2	W *				g		72Ta13,W
154Pmm(IT)154Pm		20	12	-225.756	51.262	-20.5	W *				g		90So08,*
154Pm(B-)154Sm		3900	200	4188.956	25.055	1.4	U				K		71Da28,W
154Pm(B-)154Sm		4396	180	4188.956	25.055	-1.2	U				K		72Ta13,W
154Pm(B-)154Sm		3880	200	4188.956	25.055	1.5	U				K		74Ya07,*
154Pmm(B-)154Sm		3900	200	3963.200	44.721	.3	U				G		71Da28,*
154Pmm(B-)154Sm		4190	170	3963.200	44.721	-1.3	U				G		72Ta13,*

154Pmm(B-)154Sm		3940	50	3963.200	44.721	.5	-2-				G		73Pr05,*
154Pmm(B-)154Sm		3940	200	3963.200	44.721	.1	U				G		74Ya07,*
154Pmm(B-)154Sm		4056	100	3963.200	44.721	-.9	-2-				GIda		93Gr17
154Pmm(B-)154Sm	ave	3963.200	44.721				2						average
154Eu(B-)154Gd		1978	5	1967.995	0.753	-2.0	U				m		60La04,*
154Eu(B-)154Gd		1967	2	1967.995	0.753	.5	1	14	12	154Eu			77Ra08,*
154Eu(B-)154Gd		1975	3	1967.995	0.753	-2.3	U				K		81Bu.A,*
154Tb(B+)154Gd		3562	50	3549.651	45.298	-.2	-2-						70Ag03,*
154Tb(B+)154Gd		3493.1	107.	3549.651	45.298	.5	-2-	q-q=	-60.710		H		154Tb-C
154Tb(B+)154Gd	ave	3549.651	45.298				2						average
154Ho(B+)154Dy		5700	80	5754.638	10.178	.7	U				hIRS		83Al06,*
154Ho(B+)154Dy		5750	80	5754.638	10.178	.1	U				hIRS		93Al03
154Hom(B+)154Dy		5994	100	5997.276	27.501	.0o	o				hIRS		83Al.A,*
154Hom(B+)154Dy		6070	80	5997.276	27.501	-.9	1	12	11	154Hom	HIRS		93Al03
154Tmm(B+)154Er		8234	150	8252.099	50.094	.1	U				hDbn		94Po26,*
154Lu(B+)154Yb		7556	450	10322.562	50.526	6.1C	C				h		84Ha.B,*
154Lum(IT)154Lu		58.7	9.3	62.232	12.103	.4o	o				hAra		97Da07,*
*154Ce-u		Trends from Mass Surface TMS suggest 154Ce 320 keV less bound									G		GAu212**
*154Tb-u		M-A=-70142(43) keV for mixture gs+m+n at 130#50 and 200#150 keV									g		Nub211**
*154Dy-133Cs1.158		No contamination observed, but contamination by 154Tb									M		00Be42**
*		~ cannot be excluded									M		00Be42**
*154Ho-u		M-A=-64478(28) keV for mixture gs+m at 243(28) keV									g		Nub211**
*154Tm-u		M-A=-54438(32) keV for mixture gs+m at 70(50) keV									g		Nub211**
*154Tm(a)150Ho		154Tm(a) to Ho ground-state! ~ Z recalibrated											92To.A*W
*154Pr(B-)154Nd		E-=7490(100) to 4^+ level at 233.2 keV									K		96To05**
*154Pmm(IT)154Pm		Difference of B- branches, higher one not certain											AHW *W
*154Pmm(IT)154Pm		Only use the two Q-'s to 154Sm, see below									g		GAu128*G
*154Pmm(IT)154Pm		Calculation, not measured									g		90So08**
*154Pmm(IT)154Pm		Original estimate 20(12) slightly increased to 30(20)									k		AHW93b*W
*		~ now back to original 20(12)									k		GAu071*G
*154Pmm(IT)154Pm		IT<200									k		71Da28*W
*154Pm(B-)154Sm		E-=2410(200) to 2+ level at 1440.04 keV									k		Ens09a*W
*154Pm(B-)154Sm		N : re-evaluated									k		AHW953*W
*154Pm(B-)154Sm		E-=2410(180) to 3^- level at 1986.59 keV									k		Ens09a*W
*154Pm(B-)154Sm		E-=2400(200), 1850(200) to 2^+ levels at 1440.04, 2069.07 keV									k		Ens09a**
*154Pm(B-)154Sm		N : re-evaluated (old 3840) Ame95=3910(200)									k		AHW953*W
*154Pmm(B-)154Sm		E-=3270, 3090, 2810 (all 170) to 921.345 1^-, 1099.26 0^+, 1475.81 1^-									k		Ens09a**
*154Pmm(B-)154Sm		N : re-evaluated (old 3980) AHW989*W Same for both Pm isomers									k		AHW953*W
*154Pmm(B-)154Sm		E-=2810(170) to 1^- level at 1475.81 keV, and other E-									k		Ens09a**
*154Pmm(B-)154Sm		E-=3950(50) 3010(80) to gs, 1^- level at 921.345 keV									k		Ens09a**
*154Pmm(B-)154Sm		E-=3000(200), 1900(200), 1800(200) to 1^- lvl at 921.345, 2^+ at 2069.07,									k		Ens09a**
*		~ and (1,2^+) at 2139.82 keV									k		Ens09a**
*154Eu(B-)154Gd		E-=1855(5) 1844(2) resp, to 2^+ level at 123.0709 keV									h		Ens09a**
*154Eu(B-)154Gd		E-=257(3) to 2^- level at 1719.5593 keV, and other E-									h		Ens09a**
*154Tb(B+)154Gd		E+=2540(50) 1860(50) to gs and 0^+ level at 680.6673 keV									h		Ens09a**
*154Ho(B+)154Dy		E+=4340(80) to 2^+ level at 334.34 keV									h		Ens09a**
*154Hom(B+)154Dy		E+=2500(100) to 7^+ level at 2472.40 keV									h		Ens09a**
*154Tmm(B+)154Er		E+=4882(150) to 8^+ level 2329.5 keV									h		Ens09a**
*154Lu(B+)154Yb		p+=0.75(0.05) Q=5710(450) from 154Lum at 200#150 to 8^+ lvl at 2046.2 keV									h		Ens09a**
*154Lum(IT)154Lu		Use only their Q(a)'s									h		GAu128**

155La-u		-40720#	429#				2				k	1.0	S-u168
155Ce-u		-51294#	322#				2				k	1.0	S-u168
155Pr-u		-59492	31	-59490.806	18.463	.0	1	35	35	155Pr	HCP1	1.0	12Va02,*
155Pr-80Kr1.938		102571	33	102568.741	18.484	-.1	1	31	31	155Pr	kCP1	1.0	12Va02
155Pr-86Kr1.802		101588	32	101588.852	18.463	.0	1	33	33	155Pr	HCP1	1.0	12Va02
155Nd-u		-66866	17	-66864.402	9.827	.1	1	33	33	155Nd	HCP1	1.0	12Va02,*
155Nd-80Kr1.938		95197	17	95195.145	9.862	-.1	1	34	33	155Nd	kCP1	1.0	12Va02
155Nd-86Kr1.802		94215	17	94215.257	9.827	.0	1	33	33	155Nd	HCP1	1.0	12Va02
155Pm-u		-71863.8	8.8	-71863.048	5.066	.1	1	33	33	155Pm	HCP1	1.0	12Va02,*
155Pm-80Kr1.938		90197.8	8.6	90196.499	5.130	-.2	1	36	34	155Pm	kCP1	1.0	12Va02
155Pm-86Kr1.802		89216.0	8.8	89216.610	5.066	.1	1	33	33	155Pm	HCP1	1.0	12Va02
155Sm-u		-75357	24	-75353.349	1.430	.2	U				HCP1	1.0	12Va02,*
155Sm-80Kr1.938		86704	24	86706.198	2.028	.1	U				kCP1	1.0	12Va02
155Sm-86Kr1.802		85722	24	85726.310	1.430	.2	U				HCP1	1.0	12Va02
C12 H11-155Gd		163530	70	163445.986	1.055	-.3	U				hR04	4.0	64De15

C11 13C H10-155Gd		158921	42	158975.790	1.055	.3	U				hR04	4.0	64De15
C10 13C2 H9-155Gd		154450	140	154505.593	1.055	.1	U				hR04	4.0	64De15
C10 H7 N2-155Gd		138213	38	138293.867	1.055	.5	U				hR04	4.0	64De15
155Gd-139La O		21252	32	21351.818	1.219	.8	U				hR05	4.0	65De13
155Tb-u		-76431	30	-76490.481	10.553	-2.0	U				hGS2	1.0	05Li24
155Dy-u		-74227	30	-74241.943	10.354	-.5	U				MGS2	1.0	05Li24
155Ho-u		-70867	30	-70896.631	18.754	-1.0	1	39	39	155Ho	MGS2	1.0	05Li24
155Er-u		-66785	30	-66784.271	6.520	.0	U				MGS2	1.0	05Li24
155Tm-u		-60814	33	-60790.414	10.651	.7	U				MGS2	1.0	05Li24,*
155Hf-u		-36833#	322#				2				g	1.0	S-u211
155Gd 35Cl3-149Sm 37Cl3		14282.4	6.3	14288.515	0.846	.4	U				hM21	2.5	75Ka25
155Gd 35Cl-153Eu 37Cl		4345.4	2.4	4342.688	0.803	-.5	U				mH25	2.5	72Ba08
155Yb-155Eu		22871	48	22881.246	16.729	.2	1	12	12	155Yb	JTR1	1.0	20Ly.A
155Gd-138La O		20558	49	20590.705	1.146	.2	U				hR05	4.0	65De13
155Gd-154Gd		1480	60	1756.382	0.195	1.2	U				hR04	4.0	64De15
155Gd O-C15		-82452.8	5.0	-82456.016	1.055	-.4o	o				HTG1	1.5	09Ke.A
155Gd O-C15		-82452.2	2.6	-82456.016	1.055	-1.0	1	7	7	155Gd	HTG1	1.5	11Ke03
155Er(a)151Dy		4118.3	5.				3				MORa		74To07,Z
155Tm(a)151Ho		4578.3	10.3	4571.909	5.439	-.6	-3-				hORa		71To01,*
155Tm(a)151Ho		4568.1	10.	4571.909	5.439	.4	-3-				ORa		71To01,*
155Tm(a)151Ho		4568.1	10.	4571.909	5.439	.4	Z						87Ka.A,W
155Tm(a)151Ho		4570.1	8.	4571.909	5.439	.2	-3-						92Ha10,*
155Tm(a)151Ho	ave	4571.909	5.439				3						average
155Yb(a)151Er		5344.1	5.	5338.740	2.072	-1.1	-1-				GSa		79Ho10
155Yb(a)151Er		5336.6	5.	5338.740	2.072	.4	-1-				Bka		82Bo04,Z
155Yb(a)151Er		5344.2	5.	5338.740	2.072	-1.1	-1-				H		87Ka.A
155Yb(a)151Er		5331.8	4.	5338.740	2.072	1.7	-1-				ORa		91To08
155Yb(a)151Er		5340.1	4.	5338.740	2.072	-.3	-1-				MDaa		96Pa01
155Yb(a)151Er	ave	5338.760	2.074	5338.740	2.072	-.0	1	100	88	155Yb			average
155Lu(a)151Tm		5796.9	5.	5801.641	2.237	.9	-1-				M		89Ho12,*
155Lu(a)151Tm		5797.9	5.	5801.641	2.237	.7	-1-				MORa		91To08
155Lu(a)151Tm		5805.1	5.	5801.641	2.237	-.7	-1-				MDaa		96Pa01
155Lu(a)151Tm		5811.2	5.	5801.641	2.237	-1.9	-1-				MAra		97Da07
155Lu(a)151Tm	ave	5802.794	2.566	5801.641	2.237	-.4	1	76	76	151Tm			average
155Lum(a)151Tmm		5723.0	10.	5730.560	2.847	.7	-3-				M		89Ho12
155Lum(a)151Tmm		5727.1	5.	5730.560	2.847	.7	-3-				MORa		91To08
155Lum(a)151Tmm		5732.2	5.	5730.560	2.847	-.3	-3-				MDaa		96Pa01,G
155Lum(a)151Tmm		5734.2	5.	5730.560	2.847	-.7	-3-				MAra		97Da07
155Lum(a)151Tmm	ave	5730.560	2.847				3						average
155Lun(a)151Tm		7574.9	15.	7581.942	2.550	.1	U				M		89Ho12,*
155Lun(a)151Tm		7586.2	5.	7581.942	2.550	-.8o	o				hDaa		96Pa01,*
155Lun(a)151Tm		7579.0	4.1	7581.942	2.550	.7	1	39	24	151Tm	G		18Pa37
155Gd(n,a)152Sm		8331	6	8339.081	0.324	1.3	U				hMcM		69Be17
155Gd(p,t)153Gd		-6850	7	-6848.194	0.245	.3	U				hMcM		73Lo08
155Gd(p,t)153Gd		-6853	5	-6848.194	0.245	1.0	U				hMin		73Oo01
154Sm(n,g)155Sm		5806.8	0.6	5806.960	0.268	.3	-2-				M		82Ba15,Z
154Sm(n,g)155Sm		5807.0	0.3	5806.960	0.268	-.1	-2-				mILn		82Sc03,Z
154Sm(d,p)155Sm		3584	12	3582.394	0.268	-.1	U				hTal		65Ke09
154Sm(n,g)155Sm	ave	5806.960	0.268				2						average
154Eu(n,g)155Eu		8151.3	0.4	8151.287	0.400	-.0	1	100	98	155Eu	ILn		86Pr03,G
154Gd(n,g)155Gd		6435.11	0.30	6435.258	0.182	.5	-1-				mILn		86Sc25,Z
154Gd(n,g)155Gd		6435.29	0.23	6435.258	0.182	-.1	-1-				MBdn		06Fi.A
154Gd(d,p)155Gd		4217	10	4210.692	0.182	-.6	U				hKop		67Tj01
155Gd(d,t)154Gd		-190	10	-178.028	0.182	1.2	U				hKop		67Tj01
154Gd(n,g)155Gd	ave	6435.223	0.183	6435.258	0.182	.2	1	99	80	154Gd			average
155Ta(p)154Hf		1776	10	1453.000	15.000	-32.3B	B				MArp		99Uu01,*
155Ta(p)154Hf		1453	15				3				HJya		07Pa27
155Nd(B-)155Pm		4222	150	4656.210	10.278	2.9	U				HIda		93Gr17
155Pm(B-)155Sm		3224	30	3251.194	4.902	.9	U				HIda		93Gr17
155Sm(B-)155Eu		1634	15	1627.125	1.202	-.5	U				h		63Kr04,*
155Sm(B-)155Eu		1624	15	1627.125	1.202	.2	U				h		65Fu13,*
155Sm(B-)155Eu		1607	25	1627.125	1.202	.8	U				NIda		93Gr17
155Eu(B-)155Gd		252	5	251.965	0.868	-.0	U				H		54Le08
155Eu(B-)155Gd		245	5	251.965	0.868	1.4	U				H		58Gl56
155Eu(B-)155Gd		245	5	251.965	0.868	1.4	U				H		59Am16
155Dy(B+)155Tb		2099	6	2094.500	1.897	-.8	-2-						63Pe13,*
155Dy(B+)155Tb		2094	2	2094.500	1.897	.2	-2-						80Bu04,*

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 155Dy(B+)155Tb              ave    2094.500     1.897                               2                           average
 155Ho(B+)155Dy                     3102        20         3116.138    16.589      .7   1     69   61 155Ho H        72To07,*
 155Lum(IT)155Lu                      23.0       6.2         21.450     4.384     -.2  -2-                  H        96Pa01
 155Lum(IT)155Lu                      19.9       6.2         21.450     4.384      .3  -2-                  M        97Da07,W
 155Lum(IT)155Lu             ave      21.450     4.384                               2                           average
 155Lun(IT)155Lu                    1781         2         1780.300     1.849     -.3   1     85   85 155LunM        96Pa01
*155Pr-u                        Represents frequency ratio 155Pr++/(C12H4)+=0.98142559(20)          H        WgM124**
*155Pr-u                        Original equation -123313  32   155Pr-C12H4*2.039 -55416  29   m        h        GAu124*G
*155Nd-u                        Represents frequency ratio 155Nd++/(C12H4)+=0.98147230(11)          H        WgM124**
*155Nd-u                        Original equation -130686  17   155Nd-C12H4*2.039 -62285  16   m        h        GAu124*G
*155Pm-u                        Represents frequency ratio 155Pm++/(C12H4)+=0.981503965(56)         H        WgM124**
*155Pm-u                        Original equation -135684.8 8.8 155Pm-C12H4*2.039 -66940.7 8.2 m        h        GAu124*G
*155Sm-u                        Represents frequency ratio 155Sm++/(C12H4)+=0.98152610(15)          H        WgM124**
*155Sm-u                        Original equation -139179  24   155Sm-C12H4*2.039 -70195  22   m        h        GAu124*G
*155Tm-u                        M-A=-56627(28) keV  for mixture gs+m at 41(6) keV                   g        Nub211**
*155Tm(a)151Ho                  First assigned to 156Tmm but belonging to 155Tm gs                  N        94To10**
*155Tm(a)151Ho                  Doublet from gs and isomer, less than 5 keV apart                            90Po13**
*155Lu(a)151Tm                  Original value E=5656(6) (Q=5806.1) recalibrated                    h        79Ho10**
*155Lum(a)151Tmm                151Tmm(IT)-155Lum(IT)=73(3) -> 155Lum(IT)=23.4                      m        96Pa01*G
*155Lun(a)151Tm                 Original value E=7408(10) recalibrated                              h        81Ho.A**
*155Lun(a)151Tm                 Replaced by authors' value for 155Lun(IT)                           m        AHW977**
*154Eu(n,g)155Eu                Is it ',Z' ?                                                                 GAu928*G
*155Ta(p)154Hf                  E(p)=1765(10) for (11/2^-) state; gs may be 1/2^+, slightly lower   h        99Uu01**
*                                ~ 1776 keV proton not observed in coincidence with feeding alpha   H        07Pa27**
*155Ta(p)154Hf                  Expects 11/2- 30#20 above 1/2+                                      h        AHW023*W
*155Sm(B-)155Eu                 E-=1530(15) E-=1520(15) resp, to 5/2^- level at 104.334 keV         h        Ens051**
*155Dy(B+)155Tb                 E+=850(6) 845(2) resp, to 5/2^- level at 226.918 keV, and other E+  h        Ens051**
*155Ho(B+)155Dy                 E+=1840(20) to 3/2^+ level at 240.196 keV                           h        Ens051**
*155Lum(IT)155Lu                1/2+ 155Lum above 11/2+ Lu                                          m        97Da07*W


 156La-u                         -35481#     429#                                    2                  k    1.0 S-u16a
 156Ce-u                         -48116#     322#                                    2                  k    1.0 S-u168
 156Pr-u                         -55233.1      1.1                                   2                  GCP2 1.0 18Or.A,*
 156Nd-136Xe1.147                 41786.8      2.6      41795.353     1.400     3.3B  B                  GJY1 1.0 18Vi02
 156Nd-82Kr1.902                  99929.2      1.4                                   2                  GCP2 1.0 18Or02
 156Pm-u                         -68883.4      6.9     -68885.941     1.276     -.4  -1-                 HCP1 1.0 12Va02,*
 156Pm-u                         -68887.8      2.5     -68885.941     1.276      .7  -1-                 GCP2 1.0 20Or03,*
 156Pm-u                     ave  -68887.289    2.350   -68885.941     1.276      .6   1    29   29 156Pm           average
 156Pm-80Kr1.950                  94181.7      6.4      94177.078     1.890     -.7   1     9    5  80Kr kCP1 1.0 12Va02
 156Pm-86Kr1.814                  93269.1      6.8      93266.387     1.276     -.4   1     4    4 156Pm HCP1 1.0 12Va02
 156Pmm-u                        -68724.4      1.6     -68724.586     1.274     -.1   1    63   63 156PmmGCP2 1.0 20Or03,*
 C12 H12-156Gd                   171923       44       171770.254     1.055     -.9   U                  hR04 4.0 64De15
 C11 13C H11-156Gd               167384       43       167300.057     1.055     -.5   U                  hR04 4.0 64De15
 C10 13C2 H10-156Gd              162810       60       162829.861     1.055      .1   U                  hR04 4.0 64De15
 C10 H8 N2-156Gd                 146661       38       146618.135     1.055     -.3   U                  hR04 4.0 64De15
 156Tb-u                         -75181       52       -75245.785     4.045    -1.2   U                  hGS2 1.0 05Li24,*
 C10 H8 N2-156Dy                 145130      100       144464.662     1.060    -1.7   U                  hR04 4.0 64De15
 156Dy-133Cs1.173                 35195.1      4.5      35188.452     1.060    -1.5   U                  GMA8 1.0 19Hu15
 156Ho-u                         -70130      120       -70358.358    41.250    -1.9o  o                  gGS1 1.0 00Ra23,*
 156Ho-u                         -70186       65       -70358.358    41.250    -2.7   Z                  hGS2 1.0 05Li24,G
 156Hon-u                        -70107       30                                     2                  HGS2 1.0 05Li24,*
 156Er-u                         -68907       30       -68933.312    26.433     -.9   1    78   78 156Er MGS2 1.0 05Li24
 156Tm-u                         -61044       30       -61011.053    15.096     1.1   U                  MGS2 1.0 05Li24
 156Yb-u                         -57202       30       -57183.289     9.983      .6   U                  HGS2 1.0 05Li24
 156Gd 35Cl-154Gd 37Cl             4199        5         4207.271     0.219      .4   U                  hH12 4.0 64Ba15
 156Gd 35Cl-154Gd 37Cl             4206       10         4207.271     0.219      .1   U                  hH21 2.5 70Ma05
 156Gd 35Cl-154Gd 37Cl             4204.8      1.4       4207.271     0.219      .7   U                  hH25 2.5 72Ba08
 156Gd 35Cl-154Gd 37Cl             4203.0      1.0       4207.271     0.219     1.7   U                  hM21 2.5 75Ka25
 156Dy-156Gd                       2153.47     0.11      2153.472     0.110      .0   1   100   99 156Dy HSH1 1.0 11El05
 156Yb-156Tm                       3761       58         3827.764    13.122     1.2   1     5    4 156Tm JTR1 1.0 20Ly.A
 156Gd-139La O                    20618       71        20852.582     1.218      .8   U                  hR05 4.0 65De13
 156Gd-155Gd                       -584       33         -499.236     0.070      .6   U                  hR04 4.0 64De15
 156Gd O-C15                     -82946.5      5.8     -82955.252     1.055    -1.0o  o                  HTG1 1.5 09Ke.A
 156Gd O-C15                     -82945.6      3.6     -82955.252     1.055    -1.8   U                  HTG1 1.5 11Ke03
 156Er(a)152Dy                     3109.9     70.        3482.057    25.044     5.3C  C                  m        95Ka.A,W
 156Tm(a)152Ho                     4341.6     10.        4346.377     7.145      .5  -1-                 MORa     71To10
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156Tm(a)152Ho		4345.6	10.	4346.377	7.145	.1	-1-				M	81Ga36
156Tm(a)152Ho	ave	4343.602	7.258	4346.377	7.145	.4	1	97	90	156Tm		average
156Tmm(a)152Ho		4737.5	10.	*			F				HORa	71To01,*
156Yb(a)152Er		4813.6	10.	4809.512	3.529	-.4	-1-					77Ha48
156Yb(a)152Er		4809.6	10.	4809.512	3.529	-.0	-1-				GSa	79Ho10
156Yb(a)152Er		4810.6	4.	4809.512	3.529	-.3	-1-				MDaa	96Pa01
156Yb(a)152Er	ave	4810.846	3.573	4809.512	3.529	-.4	1	98	82	156Yb		average
156Lu(a)152Tm		5593.7	10.	5595.813	3.206	.2	U				MGSa	79Ho10
156Lu(a)152Tm		5592.7	5.	5595.813	3.206	.6	-2-				MDba	92Po14
156Lu(a)152Tm		5597.9	4.	5595.813	3.206	-.5	-2-				MDaa	96Pa01
156Lu(a)152Tm	ave	5595.813	3.206				2					average
156Lum(a)152Tmm		5713.7	5.	5710.416	2.185	-.6	-3-				MGSa	79Ho10,Z
156Lum(a)152Tmm		5709.7	5.	5710.416	2.185	.1	-3-				MDba	92Po14
156Lum(a)152Tmm		5709.7	8.	5710.416	2.185	.1	-3-				M	92Ha10
156Lum(a)152Tmm		5711.7	4.	5710.416	2.185	-.3	-3-				MDaa	96Pa01,W
156Lum(a)152Tmm		5707.6	4.1	5710.416	2.185	.7	-3-				GJya	19Pa27
156Lum(a)152Tmm	ave	5710.416	2.185				3					average
156Hf(a)152Yb		6033.0	10.	6025.956	3.080	-.7	-1-				GSa	79Ho10
156Hf(a)152Yb		6027.9	4.	6025.956	3.080	-.5	-1-				MDaa	96Pa01
156Hf(a)152Yb	ave	6028.569	3.812	6025.956	3.080	-.7	1	65	65	156Hf		average
156Hfm(a)152Yb		8009.8	15.	7984.776	3.126	-1.7	U				hGSa	81Ho.A,W
156Hfm(a)152Yb		7987.2	4.	7984.776	3.126	-.6o	o				hDaa	96Pa01,*
156Hfm(a)152Yb		7980.0	5.1	7984.776	3.126	.9	1	37	37	156Hfm	G	18Pa37
154Sm(t,p)156Sm		4556	25	4566.007	8.500	.4	1	12	11	156Sm	Ald	66Bj01
154Eu(t,p)156Eu		6003	4	6005.318	3.371	.6	1	71	70	156Eu	KLAl	84La06,*
154Gd(t,p)156Gd		6495.1	3.6	6489.815	0.193	-1.5	U				hMcM	89Lo07
156Gd(p,t)154Gd		-6490	7	-6489.815	0.193	.0	U				hMcM	73Lo08
156Gd(p,t)154Gd		-6490	5	-6489.815	0.193	.0	U				hMin	73Oo01
155Gd(n,g)156Gd		8536.8	0.5	8536.353	0.066	-.9	U				mILn	82Ba28
155Gd(n,g)156Gd		8536.39	0.07	8536.353	0.066	-.5	-1-				MMMn	82Is05,Z
155Gd(n,g)156Gd		8536.04	0.19	8536.353	0.066	1.6	-1-				HBdn	06Fi.A
155Gd(d,p)156Gd		6319	10	6311.787	0.066	-.7	U				hKop	67Tj01
156Gd(d,t)155Gd		-2287	10	-2279.123	0.066	.8	U				hKop	67Tj01
155Gd(n,g)156Gd	ave	8536.348	0.066	8536.353	0.066	.1	1	100	70	155Gd		average
155Gd(a,t)156Tb-158Gd()159Tb		-821.9	3.6	-821.900	3.600	-.0	1	100	100	156Tb	McM	75Bu02
156Dy(d,t)155Dy		-3184	10	-3187.535	9.602	-.4	1	92	92	155Dy	Kop	70Gr46
156Ta(p)155Hf		1028.6	13.	1019.797	4.269	-.7o	o				MDap	92Pa05
156Ta(p)155Hf		1013.6	5.	1019.797	4.269	1.2o	o				HDap	96Pa01
156Ta(p)155Hf		1017.9	5.	1019.797	4.269	.4	-3-				HDap	11Da12
156Ta(p)155Hf		1024.9	8.2	1019.797	4.269	-.6	-3-	q-q=		5.103	h	160Re-1
156Ta(p)155Hf	ave	1019.797	4.269				3					average
156Tam(p)155Hf		1110.2	12.	1113.661	6.656	.3	-3-				MDap	93Li34
156Tam(p)155Hf		1115.2	8.	1113.661	6.656	-.2	-3-				MDap	96Pa01
156Tam(p)155Hf	ave	1113.662	6.656				3					average
156Nd(B-)156Pm		3690	200	3964.718	1.764	1.4	U				GKur	02Sh.B
156Pmm(IT)156Pm		150.3	0.1	150.301	0.100	.0	1	100	63	156Pm	G	07Sh05
156Pm(B-)156Sm		5155	35	5193.878	8.604	1.1	U				HStu	90He11
156Pm(B-)156Sm		5110	100	5193.878	8.604	.8	U				HKur	02Sh.B
156Sm(B-)156Eu		721	10	722.108	7.902	.1	-1-					63Gu04,*
156Sm(B-)156Eu		721	15	722.108	7.902	.1	-1-					65Wi08,*
156Sm(B-)156Eu	ave	721.000	8.320	722.108	7.902	.1	1	90	89	156Sm		average
156Eu(B-)156Gd		2430	10	2452.491	3.408	2.2	-1-					62Ew01
156Eu(B-)156Gd		2460	10	2452.491	3.408	-.8	-1-					63Th02
156Eu(B-)156Gd		2450	15	2452.491	3.408	.2	-1-					64Pe17
156Eu(B-)156Gd		2478	20	2452.491	3.408	-1.3	U				m	67Va23
156Eu(B-)156Gd	ave	2445.909	6.396	2452.491	3.408	1.0	1	28	28	156Eu		average
156Tb(B+)156Gd		3570	50	2444.321	3.677	-22.5B	B				h	70Ag02,*
156Ho(B+)156Dy		4400	400	4990.984	38.411	1.5	U				h	76Gr20,*
156Ho(B+)156Dy		5050	90	4990.984	38.411	-.7o	o				H	02Iz01
156Ho(B+)156Dy		5050	60	4990.984	38.411	-1.0	-2-				H	04Iz02,*
156Ho(B+)156Dy		4950	50	4990.984	38.411	.8	-2-				G	96By.A
156Ho(B+)156Dy	ave	4990.984	38.411				2					average
156Er(B+)156Ho		1670	70	1327.422	45.635	-4.9B	B				N	82Vy06,*
156Tm(B+)156Er		7458	50	7379.537	26.643	-1.6	1	28	22	156Er	HDbn	94Po26,*
156Tm(B+)156Er		7390	100	7379.537	26.643	-.1	U				M	95Ga.A
156Hfm(IT)156Hf		1959	1	1958.820	0.988	-.2	1	98	63	156Hfm	M	96Pa01
*156Pr-u		Represent frequency ratio 156Pr++/(C6H6)+=0.9990445852(69)									G	HWJ208**

*156Pm-u	Represents frequency ratio 156Pm++/(C12H4)+=0.975190689(43)	H	WgM124**
*156Pm-u	Original equation -133142.6 6.9 156Pm-C12H4*2.053 -64164.5 6.4 m	h	GAu124*G
*156Pm-u	Represents frequency ratio 156Pm++/(C6H6)+=0.998957107(16)	G	HWJ208**
*156Pmm-u	Represents frequency ratio 156Pmm++/(C6H6)+=0.998958154(10)	G	HWJ208**
*156Tb-u	M-A=-69968(32) keV for mixture gs+m+n at 88.4(0.2) and 100#50 keV	g	Nub211**
*156Ho-u	M-A=-65230(100) keV for mixture gs+m+n at 52.37 and 230(50) keV	g	Nub211**
*156Ho-u	M-A=-65304(28) keV for mixture gs+m+n at 52.37 and 230(50) keV	g	Nub211*G
*156Hon-u	Assuming high spin isomer is favored	H	GAu10b**
*156Er(a)152Dy	C : disagrees badly with other data and with systematics 3600#200	m	AHW956*W
*156Tmm(a)152Ho	F : originally E(a)=4460(10) to 152Hom at 160(1), reassigned to 155Tm	H	94To10**
*156Lum(a)152Tmm	156Lum(IT)-152Tmm(IT)=115(1)	m	96Pa01*W
*156Lum(a)152Tmm	IF Q(a)'s both labelled A	m	AHW008*W
*156Lum(a)152Tmm	Only one Q-value is used, not to average systematic uncertainties	g	HWJ19c*G
*156Hfm(a)152Yb	Probably not to ground-state	n	AHW936*W
*156Hfm(a)152Yb	Replaced by authors' value for 156Hfm(IT)	m	AHW977**
*154Eu(t,p)156Eu	Q=5569(4) to 3^- level at 434.23 keV		91Ba06**
*156Sm(B-)156Eu	E-=430(10) 430(15) resp, to 1^+ level at 291.3037 keV	k	Ens12a**
*156Tb(B+)156Gd	E+=2640(50) from 156Tbm at 88.4 to gs	g	Nub211**
*	~ output 2444(4)	n	Ame93 *W
*	~ Something is wrong here	n	AHW956*W
*156Ho(B+)156Dy	E+=1800(50) to levels around 1600	k	Ens12a**
*156Ho(B+)156Dy	Original error 20 is for statistics only, increased by evaluator	H	GAu10b**
*156Er(B+)156Ho	p+=0.0036(0.0017) to 2^- level at 82.23 keV, reanalyzed	k	Ens12a**
*156Tm(B+)156Er	E+=6091(50) to 2^+ level at 344.53 keV	k	Ens12a**

157La-u		-31208#	322#				2				g	1.0	S-u20c
157Ce-u		-42867#	429#				2				k	1.0	S-u168
157Pr-u		-51996.9	3.4				2				GCP2	1.0	18Or.A,*
157Nd-u		-60614	47	-60648.926	2.294	-.7	U				GCP1	1.0	12Va02,*
157Nd-u		-60649.1	2.3	-60648.926	2.294	.1	1	100	100	157Nd	GCP2	1.0	18Or.A,*
157Nd-80Kr1.963		103537	46	103501.181	2.720	-.8	1	0	0	157Nd	kCP1	1.0	12Va02
157Nd-86Kr1.826		102610	46	102576.071	2.294	-.7	1	0	0	157Nd	HCP1	1.0	12Va02
157Pm-u		-66880	13	-66878.701	7.521	.1	1	33	33	157Pm	HCP1	1.0	12Va02,*
157Pm-80Kr1.963		97273	13	97271.405	7.569	-.1	1	34	33	157Pm	kCP1	1.0	12Va02
157Pm-86Kr1.826		96346	13	96346.296	7.521	.0	1	33	33	157Pm	HCP1	1.0	12Va02
157Sm-u		-71582.2	8.3	-71581.402	4.760	.1	1	33	33	157Sm	HCP1	1.0	12Va02,*
157Sm-80Kr1.963		92570.0	8.0	92568.705	4.827	-.2	1	36	34	157Sm	kCP1	1.0	12Va02
157Sm-86Kr1.826		91643.0	8.3	91643.596	4.760	.1	1	33	33	157Sm	HCP1	1.0	12Va02
C10 H9 N2-157Gd		152720	60	152605.863	1.049	-.5	U				hR04	4.0	64De15
C9 13C H8 N2-157Gd		148170	70	148135.666	1.049	-.1	U				hR04	4.0	64De15
C10 H5 O2-157Gd		105080	60	104986.965	1.049	-.4	U				hR04	4.0	64De15
157Ho-u		-71724	30	-71748.024	25.195	-.8	1	71	71	157Ho	MGS2	1.0	05Li24
157Er-u		-68084	30	-68077.347	28.454	.2	1	90	90	157Er	MGS2	1.0	05Li24
157Tm-u		-63027	30	-63033.787	25.904	-.2	1	75	75	157Tm	MGS2	1.0	05Li24
157Yb-u		-57389	30	-57347.640	11.478	1.4	U				HGS2	1.0	05Li24
157Lu-u		-49842	31	-49855.129	12.947	-.4	1	17	17	157Lu	HGS2	1.0	05Li24,*
157W-u		-21138#	429#				2				g	1.0	S-u211
157Gd 35Cl-155Gd 37Cl		4318	4	4288.192	0.187	-1.9	U				hH12	4.0	64Ba15
157Gd 35Cl-155Gd 37Cl		4287	3	4288.192	0.187	.2	U				hH21	2.5	70Ma05
157Gd 35Cl-155Gd 37Cl		4289.0	0.7	4288.192	0.187	-.5	U				hM21	2.5	75Ka25
157Gd 35Cl-155Gd 37Cl		4288.83	0.66	4288.192	0.187	-.4	U				hH41	2.5	85Dy04
157Yb-157Tm		5705	50	5686.147	27.074	-.4	1	29	25	157Tm	JTR1	1.0	20Ly.A
157Gd-156Gd		1860	60	1837.304	0.160	-.1	U				hR04	4.0	64De15
157Gd O-C15		-81114.2	5.4	-81117.948	1.049	-.5o	o				HTG1	1.5	09Ke.A
157Gd O-C15		-81113.6	3.3	-81117.948	1.049	-.9	U				KTG1	1.5	11Ke03
157Yb(a)153Er		4622.0	7.	4622.126	5.827	.0	-1-				M		77Ha48
157Yb(a)153Er		4623.0	10.	4622.126	5.827	-.1	-1-				MGSa		79Ho10
157Yb(a)153Er	ave	4622.333	5.885	4622.126	5.827	-.0	1	98	93	157Yb			average
157Lu(a)153Tm		5097.2	5.	5107.869	2.854	2.1o	o				mDba		91Le15,*
157Lu(a)153Tm		5096.2	20.	5107.869	2.854	.6	U				hBka		91To09,*
157Lu(a)153Tm		5111.5	5.	5107.869	2.854	-.7o	o				hDba		92Po14,*
157Lum(a)153Tm		5128.9	10.	5128.810	2.044	-.0	U				mIRa		79Al16,Z
157Lum(a)153Tm		5131.8	5.	5128.810	2.044	-.6	-1-				GSa		79Ho10,Z
157Lum(a)153Tm		5133.7	5.	5128.810	2.044	-.9	-1-				ORa		83To01,Z
157Lum(a)153Tm		5128.9	5.	5128.810	2.044	-.0o	o				mDba		91Le15
157Lum(a)153Tm		5118.7	5.	5128.810	2.044	2.0	-1-				Bka		91To09

157Lum(a)153Tm		5125.8	6.	5128.810	2.044	.5	-1-					92Ha10
157Lum(a)153Tm		5132.0	5.	5128.810	2.044	-.6	-1-				MDba	92Po14
157Lum(a)153Tm		5127.9	4.	5128.810	2.044	.2	-1-				MDaa	96Pa01
157Lum(a)153Tm	ave	5128.399	2.051	5128.810	2.044	.2	1	99	54	153Tm		average
157Hf(a)153Yb		5869.4	10.	5880.007	3.060	1.0	-3-				M	73Ea01,Z
157Hf(a)153Yb		5884.1	5.	5880.007	3.060	-.8	-3-				MGSa	79Ho10,Z
157Hf(a)153Yb		5879.1	4.	5880.007	3.060	.2	-3-				MDaa	96Pa01
157Hf(a)153Yb	ave	5880.007	3.060				3					average
157Ta(a)153Lum		6277.2	4.	6274.599	8.033	-.6o	o				hAra	97Ir01,*
157Tam(a)153Lu		6381.9	10.	6376.599	3.811	-.5	-3-				MGSa	79Ho10
157Tam(a)153Lu		6375.8	4.	6376.599	3.811	.2	-3-				MDaa	96Pa01,*
157Tam(a)153Lu	ave	6376.599	3.811				3					average
157Tan(a)153Lu		7946.9	8.	7947.599	7.970	.0o	o				hDaa	96Pa01,*
155Gd(t,p)157Gd		6417.8	2.9	6414.437	0.163	-1.2	U				hMcM	89Lo07
157Gd(p,t)155Gd		-6414	7	-6414.437	0.163	-.1	U				hMcM	73Lo08
157Gd(p,t)155Gd		-6417	5	-6414.437	0.163	.5	U				hMin	73Oo01
156Gd(n,g)157Gd		6359.6	0.8	6359.881	0.149	.4	U				H	70Bo29
156Gd(n,g)157Gd		6360	1	6359.881	0.149	-.1	U				H	71Gr42
156Gd(n,g)157Gd		6359.80	0.15	6359.881	0.149	.5o	o				HILn	87Sp.A,Z
156Gd(n,g)157Gd		6359.86	0.15	6359.881	0.149	.1	1	99	74	156Gd	HILn	03Bo25
157Gd(g,n)156Gd		-6350	80	-6359.881	0.149	-.1	U				hPhi	60Ge01
156Gd(d,p)157Gd		4136	10	4135.314	0.149	-.1	U				hKop	67Tj01
157Gd(d,t)156Gd		-112	10	-102.651	0.149	.9	U				hKop	67Tj01
156Gd(a,t)157Tb-158Gd()159Tb		-616.2	2.0	-614.099	0.802	1.1	1	16	10	159Tb	McM	75Bu02
156Dy(d,p)157Dy		4748	10	4742.037	5.121	-.6	-1-				Tal	68Be.A
156Dy(d,p)157Dy		4753	10	4742.037	5.121	-1.1	-1-				Kop	70Gr46
156Dy(d,p)157Dy	ave	4750.500	7.071	4742.037	5.121	-1.2	1	52	52	157Dy		average
157Ta(p)156Hf		925.0	17.	934.596	9.674	.6o	o				MDap	96Pa01,W
157Ta(p)156Hf		933.0	7.	934.596	9.674	.2o	o				hAra	97Ir01,*
157Pm(B-)157Sm		4360	100	4380.538	8.265	.2	U				HKur	02Sh.B
157Sm(B-)157Eu		2700	200	2781.472	6.119	.4	U				n	73Ka23,*
157Sm(B-)157Eu		2734	50	2781.472	6.119	.9	U				HIda	93Gr17
157Eu(B-)157Gd		1350	20	1364.763	4.197	.7	U				H	64Sh21,*
157Eu(B-)157Gd		1370	20	1364.763	4.197	-.3	U				H	66Fu05,*
157Tb(e)157Gd		62.4	0.6	60.047	0.297	-3.9B	B				h	67Na08,*
157Tb(e)157Gd		62.2	0.6	60.047	0.297	-3.6B	B				h	83Be42,*
157Tb(e)157Gd		60.0	0.3	60.047	0.297	.2	1	98	94	157Tb		92Ra18
157Ho(B+)157Dy		2540	50	2591.803	23.784	1.0	1	23	22	157Ho	h	72To05,*
157Er(B+)157Ho		3470	80	3419.214	33.667	-.6	1	18	10	157Er	H	75Al.A
157Er(B+)157Ho		3805	100	3419.214	33.667	-3.9B	B				MDbn	94Po26,*
157Tm(B+)157Er		4480	100	4698.047	35.843	2.2B	B				kIRS	93Al03
157Tm(B+)157Er		4482	100	4698.047	35.843	2.2B	B				kDbn	94Po26
157Yb(B+)157Tm		5074	100	5296.613	25.219	2.2	U				hDbn	94Po26
157Lum(IT)157Lu		32	2	20.941	1.996	-5.5B	B				hDba	91Le15
157Lum(IT)157Lu		21	2	20.941	1.996	-.0	1	100	83	157Lu	MDba	92Po14,*
157Tam(IT)157Ta		22	5				3				M	97Ir01,W
157Tan(IT)157Tam		1571	7				3				MDaa	96Pa01,W

*157Pr-u	Represents frequency raio 157Pr++/(C6H6)+=1.005471763(22)	G	HWJ208**
*157Nd-u	Represents frequency ratio 157Nd++/(C12H4)+=0.96892546(29)	H	WgM124**
*157Nd-u	Original equation -125281 47 157Nd-C12H4*2.066 -56462 44 m	h	GAu124*G
*157Nd-u	Represents frequency ratio 157Nd++/(C6H6)+=1.005416333(17)	G	HWJ208**
*157Pm-u	Represents frequency ratio 157Pm++/(C12H4)+=0.968964141(81)	H	WgM124**
*157Pm-u	Original equation -131546 13 157Pm-C12H4*2.066 -62298 12 m	h	GAu124*G
*157Sm-u	Represents frequency ratio 157Sm++/(C12H4)+=0.968993178(51)	H	WgM124**
*157Sm-u	Original equation -136248.3 8.3 157Sm-C12H4*2.066 -66678.4 7.7 m	h	GAu124*G
*157Lu-u	M-A=-46417(28) keV for mixture gs+m at 20.9(2.0) keV	g	Nub211**
*157Lu(a)153Tm	E(a)=4925(5) to 153Tmm at 43.2(0.2) keV	g	Nub211**
*157Lu(a)153Tm	E(a)=4924(20) to 153Tmm at 43.2(0.2) keV	g	Nub211**
*157Lu(a)153Tm	E(a)=4939(5) to 153Tmm at 43.2(0.2) keV; replaced by 157Lum(IT)	g	Nub211**
*157Lu(a)153Tm	Use instead 157Lum(IT)	m	AHW00b*W
*157Ta(a)153Lum	Replaced by 153Lum(IT)	m	AHW002**
*157Tam(a)153Lu	Reassigned	m	97Ir01**
*157Tan(a)153Lu	Replaced by authors' value for 157Tan(IT)	m	AHW977**
*157Ta(p)156Hf	Not yet entirely certain. Same authors as next	M	96Pa01*W
*157Ta(p)156Hf	Use instead 157Tam(IT)		AHW002**
*157Sm(B-)157Eu	E-=2400(200) to 5/2^- level at 197.863 and 3/2^+ at 394.334 keV	k	Ens162**
*157Eu(B-)157Gd	E-=870(30) 910(20) resp, to 3/2^+ level at 474.630 keV, and other E-	k	Ens162**

*157Tb(e)157Gd	LK=2.65(0.20); original value 66(6) recalculated	h	92Ha03**
*157Tb(e)157Gd	LK=2.69(0.20); original value 62.9(0.7) recalculated	h	85Vo09**
*157Ho(B+)157Dy	E+=1180(50) to 5/2^- level at 341.118 keV	k	Ens162**
*157Er(B+)157Ho	E+=2525(100) to gs yielding 3547(100), rather 24% to (3/2^+)	k	94Po26**
*	~ level at 174.55 keV, 15% to 5/2^- at 391.32 keV -> +258 keV	k	Ens162**
*157Lum(IT)157Lu	Derived from 157Lum(a)-157Lu(a) difference	k	92Po14**
*157Lum(IT)157Lu	22 7 157Lum(IT)157Lu	m	93To07*W
*157Lum(IT)157Lu	Derived from 157Lum(a)-157Lu(a) difference	k	93To07**
*157Lum(IT)157Lu	Probably same E(a) as ref; there error 20 see above	m	91To08**
*157Tam(IT)157Ta	Q(a) 161Rem and 160W, Q(p) 161Rem and 157Ta	m	AHW002*W
*	~ gives 28(10), using quoted errors. But use this.	m	AHW002*W
*157Tan(IT)157Tam	Assumes this not to be M(Tan)-M(Ta)	m	AHW977*W

158Ce-u		-39227#	429#				2				g	1.0	S-u20c
158Pr-u		-47397#	322#				2				g	1.0	S-u211
158Nd-136Xe1.162		49956	39	50022.396	1.400	1.7	U				GJY1	1.0	18Vi02
158Nd-84Kr1.881		108678.4	1.4				2				GCP2	1.0	18Or02
158Pm-u		-63436	25	-63453.048	0.953	-.7	U				GCP1	1.0	12Va02,*
158Pm-u		-63453.7	1.1	-63453.048	0.953	.6	1	75	75	158Pm	GCP2	1.0	20Or03,*
158Pm-80Kr1.975		101720	25	101700.520	1.752	-.8	U				GCP1	1.0	12Va02
158Pm-86Kr1.837		100773	25	100755.236	0.953	-.7	U				GCP1	1.0	12Va02
158Sm-u		-70049.2	9.5	-70050.738	5.134	-.2	1	29	29	158Sm	HCP1	1.0	12Va02,*
158Sm-80Kr1.975		95106.5	9.1	95102.831	5.211	-.4	1	33	31	158Sm	kCP1	1.0	12Va02
158Sm-86Kr1.837		94159.3	9.4	94157.546	5.134	-.2	1	30	30	158Sm	HCP1	1.0	12Va02
158Eu-u		-72208	25	-72217.807	2.182	-.4	U				GCP1	1.0	12Va02,*
158Eu-u		-72218.2	2.2	-72217.807	2.182	.2	1	98	98	158Eu	GCP2	1.0	20Or03,*
158Eu-80Kr1.975		92949	25	92935.761	2.628	-.5	U				GCP1	1.0	12Va02
158Eu-86Kr1.837		92001	25	91990.477	2.182	-.4	U				GCP1	1.0	12Va02
C10 H6 O2-158Gd		112444	33	112668.222	1.048	1.7	U				hR04	4.0	64De15
C10 H6 O2-158Dy		112870	100	112364.609	2.509	-1.3	U				hR04	4.0	64De15
158Ho-u		-71101	67	-71055.086	29.099	.7R	R	q-q=	-45.914		MGS2	1.0	05Li24,*
158Er-u		-70220	110	-70106.526	27.074	1.0	U				MGS1	1.0	00Ra23
158Er-u		-70107	30	-70106.526	27.074	.0	1	81	81	158Er	MGS2	1.0	05Li24
158Tm-u		-63080	110	-63020.474	27.074	.5	U				MGS1	1.0	00Ra23
158Tm-u		-63020	30	-63020.474	27.074	-.0	1	81	81	158Tm	MGS2	1.0	05Li24
158Yb-142Sm1.113		34252	22	34243.121	8.548	-.4	1	15	15	158Yb	MMA7	1.0	01Bo59
158Lu-u		-50720	30	-50684.154	15.851	1.2R	R	q-q=	-35.846		MGS2	1.0	05Li24
158Gd 35Cl-156Gd 37Cl		4956	4	4931.204	0.187	-1.5	U				hH12	4.0	64Ba15
158Gd 35Cl-156Gd 37Cl		4929	3	4931.204	0.187	.3	U				hH21	2.5	70Ma05
158Gd 35Cl-156Gd 37Cl		4926.2	1.4	4931.204	0.187	1.4	U				hH25	2.5	72Ba08
158Gd 35Cl-156Gd 37Cl		4930.8	0.7	4931.204	0.187	.2	U				hM21	2.5	75Ka25
158Gd 35Cl-156Gd 37Cl		4930.13	1.36	4931.204	0.187	.3	U				hH41	2.5	85Dy04
158Dy 35Cl-156Dy 37Cl		3081.4	3.3	3081.343	2.575	-.0	U				HH25	2.5	72Ba08
158Pm-158Gd		12436.8	1.4	12435.744	1.081	-.8	1	60	35	158Gd	GJY1	1.0	18Vi02
158Gd-157Gd		392	48	143.776	0.069	-1.3	U				hR04	4.0	64De15
158Gd O-C15		-80968.3	5.4	-80974.172	1.048	-.7o	o				HTG1	1.5	09Ke.A
158Gd O-C15		-80967.8	3.2	-80974.172	1.048	-1.3	U				KTG1	1.5	11Ke03
158Gd O-C14		-80964.7	8.2	-80974.172	1.048	-.8	U				HTG1	1.5	11Ke03
158Yb(a)154Er		4174.9	10.	4170.436	7.031	-.4	-1-						77Ha48
158Yb(a)154Er		4164.6	12.	4170.436	7.031	.5	-1-						92Ha10
158Yb(a)154Er	ave	4170.705	7.882	4170.436	7.031	-.0	1	80	71	158Yb			average
158Lu(a)154Tm		4792.2	10.	4790.026	4.589	-.2	-3-				MIRa		79Al16,Z
158Lu(a)154Tm		4789.5	5.	4790.026	4.589	.1	-3-				MORa		83To01,Z
158Lu(a)154Tm	ave	4790.026	4.589				3						average
158Hf(a)154Yb		5406.0	5.	5404.777	2.718	-.2	-1-				GSa		79Ho10,Z
158Hf(a)154Yb		5401.4	5.	5404.777	2.718	.7	-1-				ORa		83To01,Z
158Hf(a)154Yb		5406.1	4.	5404.777	2.718	-.3	-1-				MDaa		96Pa01
158Hf(a)154Yb	ave	5404.777	2.718	5404.777	2.718	.0	1	100	100	158Hf			average
158Ta(a)154Lu		6124.4	8.	6123.604	4.350	-.1	-9-				MDaa		96Pa01

158Ta(a)154Lu		6123.3	5.	6123.604	4.350	.1	-9-			MAra	97Da07
158Ta(a)154Lu	ave	6123.604	4.350				9				average
158Tam(a)154Lum		6208.5	6.	6202.848	2.337	-.9	-10-			GSa	79Ho10
158Tam(a)154Lum		6203.4	4.	6202.848	2.337	-.1	-10-			MDaa	96Pa01,G
158Tam(a)154Lum		6205.4	5.	6202.848	2.337	-.5	-10-			MAra	97Da07
158Tam(a)154Lum		6198.2	4.1	6202.848	2.337	1.1	-10-			GJya	19Pa27
158Tam(a)154Lum	ave	6202.848	2.337				10				average
158Tan(a)154Lum		8869.0	11.3				11			KJya	14Ca03
158W(a)154Hf		6600.4	30.	6612.455	2.639	.4	U			MGSa	81Ho10,*
158W(a)154Hf		6609.7	30.	6612.455	2.639	.1	U			MDaa	96Pa01
158W(a)154Hf		6612.7	3.	6612.455	2.639	-.1	-3-			MAra	00Ma95
158W(a)154Hf		6611.7	5.1	6612.455	2.639	.1	-3-			GJya	19Hi06
158W(a)154Hf	ave	6612.455	2.639				3				average
158Wxm(a)154Hf		8495.5	30.	8501.668	7.182	.2	U			MGSa	89Ho12
158Wxm(a)154Hf		8506.8	24.	8501.668	7.182	-.2	U			MDaa	96Pa01
158Wxm(a)154Hf		8501.6	7.				3			MAra	00Ma95
158Gd(p,t)156Gd		-5818	5	-5815.476	0.162	.5	U			hMin	73Oo01
158Dy(p,t)156Dy		-7535	15	-7538.610	2.398	-.2	U			HPri	77Ko04
158Gd(t,a)157Eu		11296	6	11294.058	4.197	-.3	Z			mLAl	79Bu05,W
158Gd(t,a)157Eu-156Gd()155Eu		-512	5	-513.836	4.158	-.4	1	69	67 157Eu	mLAl	79Bu05
157Gd(n,g)158Gd		7937.39	0.07	7937.392	0.065	.0	-1-			MMMn	82Is05,Z
157Gd(n,g)158Gd		7937.39	0.17	7937.392	0.065	.0	-1-			MBdn	06Fi.A
157Gd(d,p)158Gd		5724	10	5712.826	0.065	-1.1	U			hKop	67Tj01
157Gd(d,p)158Gd		5706	5	5712.826	0.065	1.4	U			hTal	71Sh04
158Gd(d,t)157Gd		-1688	10	-1680.162	0.065	.8	U			hKop	67Tj01
157Gd(n,g)158Gd	ave	7937.390	0.065	7937.392	0.065	.0	1	100	63 157Gd		average
158Gd(d,t)157Gd-159Tb()158Tb		195.0	1.5	195.624	0.638	.4	1	18	18 158Tb	McM	84Bu14
157Gd(a,t)158Tb-158Gd()159Tb		-198.3	1.0	-195.624	0.638	2.7o	o			hMcM	75Bu02
157Gd(a,t)158Tb-158Gd()159Tb		-196.6	1.0	-195.624	0.638	1.0	1	41	40 158Tb	McM	84Bu14
158Tb(p,d)157Tb		-4560.3	4.2	-4553.789	1.010	1.6	U			hPri	85Al02,*
158Dy(d,t)157Dy		-2804	10	-2796.573	5.125	.7	-1-			Tal	68Be.A
158Dy(d,t)157Dy		-2804	10	-2796.573	5.125	.7	-1-			Kop	70Gr46
158Dy(d,t)157Dy	ave	-2804.000	7.071	-2796.573	5.125	1.1	1	53	47 157Dy		average
158Pm(B-)158Sm		6120	100	6145.709	4.863	.3o	o			HKur	02Sh.A
158Pm(B-)158Sm		6085	80	6145.709	4.863	.8o	o			HKur	07Ha57
158Pm(B-)158Sm		6060	80	6145.709	4.863	1.1	U			GKur	10Ha38
158Sm(B-)158Eu		1999	15	2018.612	5.115	1.3	1	12	10 158Sm	HIda	93Gr17
158Eu(B-)158Gd		3550	120	3419.501	2.255	-1.1	U			H	65Sc19,*
158Eu(B-)158Gd		3440	100	3419.501	2.255	-.2	U			H	66Da06,*
158Tb(e)158Gd		1237.542	0.018	1219.084	0.980	******F	F			h	83Ra25,*
158Tb(e)158Gd		1220	13	1219.084	0.980	-.1	U			h	87Br33
158Tb(e)158Gd		1222.1	3.	1219.084	0.980	-1.0	U			H	85Vo13,*
158Tb(B-)158Dy		952	10	936.271	2.475	-1.6	U			m	68Sc04,*
158Tb(B-)158Dy		933	6	936.271	2.475	.5	1	17	14 158Dy		85Vo03,*
158Ho(B+)158Dy		4350	100	4219.755	27.005	-1.3	U			n	61Bo24,*
158Ho(B+)158Dy		4230	30	4219.755	27.005	-.3	-2-				68Ab14,*
158Ho(B+)158Dy		4176	62	4219.755	27.005	.7	-2-	q-q=	-46.973	H	158Ho-C
158Ho(B+)158Dy	ave	4219.755	27.005				2				average
158Er(B+)158Ho		1940	80	883.578	37.024	-13.2	Z			n	61Bo24,W
158Er(B+)158Ho		1860	60	883.578	37.024	-16.3	Z			n	68Ab18,W
158Er(B+)158Ho		1710	40	883.578	37.024	-20.7F	F			N	82Vy06,*
158Tm(B+)158Er		6530	100	6600.615	31.341	.7	-1-			IRS	93Al03
158Tm(B+)158Er		6624	60	6600.615	31.341	-.4	-1-			NDbn	94Po26,*
158Tm(B+)158Er	ave	6599.118	51.450	6600.615	31.341	.0	1	37	19 158Er		average
158Lu(e)158Yb		8960	200	8797.611	16.556	-.8	U			m	95Ga.A
158Tam(IT)158Ta		140.8	8.7	141.476	11.050	.1	Z			m	97Da07
*158Pm-u		Represents frequency ratio 158Pm++/(C12H4)+=0.96280782(15)								H	WgM124**
*158Pm-u		Original equation -128508 25 158Pm-C12H4*2.079 -59090 23 m								h	GAu124*G
*158Pm-u		Represents frequency ratio 158Pm++/(C6H6)+=1.0118048112(69)								G	HWJ208**
*158Sm-u		Represents frequency ratio 158Sm++/(C12H4)+=0.962848141(58)								H	WgM124**
*158Sm-u		Original equation -135122.2 9.5 158Sm-C12H4*2.079 -65250.4 8.9 m								h	GAu124*G
*158Eu-u		Represents frequency ratio 158Eu++/(C12H4)+=0.96286130(15)								H	WgM124**
*158Eu-u		Original equation -137281 25 158Eu-C12H4*2.079 -67261 23 m								h	GAu124*G
*158Eu-u		Represents frequency ratio 158Eu++/(C6H6)+=1.011748662(14)								G	HWJ208**
*158Ho-u		M-A=-66148(29) keV for mixture gs+m+n at 67.2 and 180#70 keV								g	Nub211**
*158Tam(a)154Lum		158Tam(IT)-154Lum(IT)=79(7)								m	96Pa01*G
*158W(a)154Hf		Original value E=6450(30) (Q=6617.8) recalibrated to E=6433(30) keV								h	89Ho12**

*158Gd(t,a)157Eu	Q-Q(156Gd(t,a))=-512(5,Bu), Q(156)=11807.3(1.7)	m	AHW *W
*158Tb(p,d)157Tb	Q-Q(158Gd(p,d))=1152.5(4.2) keV	h	AHW **
*158Eu(B-)158Gd	E-=2520(120) 2430(100) resp, to 2^- level at 1023.6974 keV	h	Ens043**
*	~ and 3^- level at 1041.6376 keV, and other E-	h	Ens043**
*158Tb(e)158Gd	pK=0.00009(2) to 2^+ level at 1187.143, recalculated Q	h	Ens043**
*	~ F : pK<0.00002	h	87Br33**
*158Tb(e)158Gd	pL=0.689(0.01) to 2^+ level at 1187.143 keV, recalculated Q	h	Ens043**
*158Tb(B-)158Dy	E-=853(10) 834(6) resp, to 2^+ level at 98.9180 keV	h	Ens043**
*158Ho(B+)158Dy	E+=780(80) to 2436-2605 levels; originally assigned to 158Er(B+);	h	Ens043**
*	~ reinterpreted by evaluator	n	AHW926**
*158Ho(B+)158Dy	E+=2890(20), 700(60) to 317.139-637.712 and 2436.52-2605.96 levels, and		Ens043**
*	~ E+=1300(30), 1850(25) keV from 158Hom at 67.2 to 1920.43-1940.75	g	Nub211**
*	~ and 1441.75 levels; E+=700(60) was originally assigned to 158Er(B+);		68Ab14**
*	~ reinterpreted by evaluator	n	AHW926**
*158Er(B+)158Ho	Assumed positon data to 139.17 level now assigned to 158Ho daughter	n	AHW926*W
*158Er(B+)158Ho	p+=0.3(0.1) from annih. gamma coinc. to 146.90 level	m	96Go06**
*	~ F : Q<1550 from upper limit on p^+	N	75Bu.A**
*158Tm(B+)158Er	E+=5410(60) to 2^+ level at 192.15 keV	h	Ens07a**

159Ce-u		-33645#	537#				2				g	1.0	S-u212
159Pr-u		-43768#	429#				2				g	1.0	S-u20c
159Nd-133Cs1.195		59604	32				2				GCP2	1.0	18Or02
159Pm-u		-60715	18	-60713.590	10.777	.1	1	36	36	159Pm	HCP1	1.0	12Va02,*
159Pm-80Kr1.988		105529	19	105527.066	10.814	-.1	1	32	32	159Pm	kCP1	1.0	12Va02
159Pm-86Kr1.849		104567	19	104567.363	10.777	.0	1	32	32	159Pm	HCP1	1.0	12Va02
159Sm-u		-66784	11	-66782.870	6.370	.1	1	34	34	159Sm	HCP1	1.0	12Va02,*
159Sm-80Kr1.988		99459	11	99457.786	6.427	-.1	1	34	33	159Sm	kCP1	1.0	12Va02
159Sm-86Kr1.849		98498	11	98498.083	6.370	.0	1	34	34	159Sm	HCP1	1.0	12Va02
159Eu-u		-70899	10	-70900.483	4.638	-.1	1	22	22	159Eu	HCP1	1.0	12Va02,*
159Eu-80Kr1.988		95344	10	95340.173	4.771	-.4	1	23	21	159Eu	kCP1	1.0	12Va02
159Eu-86Kr1.849		94382	10	94380.469	4.638	-.2	1	22	22	159Eu	HCP1	1.0	12Va02
C9 13C H6 O2-159Tb		114840	50	114780.552	1.184	-.3	U				hR04	4.0	64De15
C10 H7 O2-159Tb		119238	25	119250.749	1.184	.1	U				hR04	4.0	64De15
159Dy-u		-74285	30	-74254.057	1.544	1.0	U				MGS2	1.0	05Li24
159Ho-u		-72365	71	-72281.312	3.268	1.2	U				MGS2	1.0	05Li24,*
159Er-u		-69290	30	-69309.205	3.911	-.6	U				MGS2	1.0	05Li24
159Tm-u		-65025	30				2				MGS2	1.0	05Li24
159Yb-142Sm1.120		35035	24	35025.712	18.741	-.4	-2-				MMA7	1.0	01Bo59
159Yb-142Sm1.120		35011.2	30.	35025.712	18.741	.5	-2-	q-q=	-14.512		H1.0	1.0	159Yb-C
159Yb-142Sm1.120	ave	35025.712	18.741				2						average
159Yb-u		-59960	30	-59939.718	18.875	.7R	R	q-q=	-20.282		MGS2	1.0	05Li24
159Lu-u		-53420	61	-53364.384	40.433	.9	-2-				MGS2	1.0	05Li24,*
159Lu-u		-53320.8	54.	-53364.384	40.433	-.8	-2-	q-q=	40.598		H1.0	1.0	155Tm+4
159Lu-u	ave	-53364.384	40.433				2						average
159Hf-u		-46044	32	-46006.272	16.932	1.2R	R	q-q=	-37.728		MGS2	1.0	05Li24
159Tb 35Cl2-155Gd 37Cl2		8625.64	1.03	8624.597	0.828	-.4	1	10	7	159Tb	H41	2.5	85Dy04
159Tb 35Cl-157Gd 37Cl		4333.3	1.2	4336.404	0.803	1.0	U				mH25	2.5	72Ba08
159Tb 35Cl-157Gd 37Cl		4337.01	0.61	4336.404	0.803	-.4	1	28	20	159Tb	H41	2.5	85Dy04
159Lu(a)155Tm		4534.3	10.	4492.387	38.948	-.8R	R	q-q=	41.913		mIRa		80Al14
159Lu(a)155Tm		4531.3	10.	4492.387	38.948	-.8R	R	q-q=	38.913		m		92Ha10
159Hf(a)155Yb		5221.2	10.	5225.092	2.669	.4	U				M		73Ea01,Z
159Hf(a)155Yb		5226.2	5.	5225.092	2.669	-.2	-2-				MGSa		79Ho10,Z
159Hf(a)155Yb		5223.0	5.	5225.092	2.669	.4	-2-				MORa		83To01,Z
159Hf(a)155Yb		5219.6	6.	5225.092	2.669	.9	-2-				M		92Ha10
159Hf(a)155Yb		5229.8	5.	5225.092	2.669	-.9	-2-				MDaa		96Pa01
159Hf(a)155Yb	ave	5225.092	2.669				2						average
159Ta(a)155Lum		5658.6	5.	5659.533	7.485	.2o	o				hDaa		96Pa01,*
159Ta(a)155Lum		5661.7	5.	5659.533	7.485	-.4o	o				hAra		97Da07,*
159Tam(a)155Lu		5745.8	6.	5744.683	3.125	-.2	-1-				MGSa		79Ho10
159Tam(a)155Lu		5743.8	5.	5744.683	3.125	.2	-1-				MDaa		96Pa01,G
159Tam(a)155Lu		5744.8	5.	5744.683	3.125	-.0	-1-				MAra		97Da07
159Tam(a)155Lu	ave	5744.683	3.125	5744.683	3.125	.0	1	100	100	155Lu			average
159W(a)155Hf		6444.5	6.	6450.888	3.552	1.0	-3-				HGSa		81Ho10,*
159W(a)155Hf		6440.3	5.1	6450.888	3.552	2.1o	o				hDaa		92Pa05
159W(a)155Hf		6454.7	5.	6450.888	3.552	-.7	-3-				MDaa		96Pa01
159W(a)155Hf		6452.6	8.2	6450.888	3.552	-.2	-3-				GJya		19Hi06,G

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 159W(a)155Hf                ave    6450.888     3.552                                      3                               average
 159Rem(a)155Ta                     6951.2      26.7        6968.294     22.584      .6R   R  q-q=   -17.098  HDaa       07Pa27,G
 157Gd(t,p)159Gd                    5398.9       2.3        5398.802      0.106     -.0    U                  hMcM       89Lo07
 158Gd(n,g)159Gd                    5942         1          5943.206      0.085     1.2    U                  h          71Gr42
 158Gd(n,g)159Gd                    5943.07      0.15       5943.206      0.085      .9   -1-                 MILn       87Sp.A,Z
 158Gd(n,g)159Gd                    5943.1       0.2        5943.206      0.085      .5   -1-                 MDbn       03Gr13
 158Gd(n,g)159Gd                    5943.32      0.12       5943.206      0.085    -1.0   -1-                 HBNn       03Gr27
 158Gd(d,p)159Gd                    3717        10          3718.640      0.085      .2    U                  hKop       67Tj01
 158Gd(n,g)159Gd             ave    5943.200     0.085      5943.206      0.085      .1    1    100  93 159Gd            average
 158Gd(a,t)159Tb                  -13686.6      10.       -13682.281      0.747      .4    U                  hMcM       75Bu02
 158Gd(a,t)159Tb-164Dy()165Ho        -85.7       2.2         -87.755      1.017     -.9    1     21  10 159Tb  McM       84Bu14
 159Tb(g,n)158Tb                   -8141        39         -8133.016      0.638      .2    U                  hPhi       60Ge01
 159Tb(d,t)158Tb                   -1870        15         -1875.786      0.638     -.4    U                  hTal       70Jo22
 159Tb(d,t)158Tb-164Dy()163Dy        -474.3      1.0        -474.907      0.639     -.6    1     41  40 158Tb  McM       84Bu14
 158Dy(d,p)159Dy                    4608        10          4606.819      2.587     -.1    U                  mTal       68Be.A
 158Dy(d,p)159Dy                    4600        10          4606.819      2.587      .7    U                  mKop       70Gr46
 159Rem(p)158W                      1816.4      20.         1808.839     16.675     -.4   -4-                 HDap       06Jo10
 159Rem(p)158W                      1791.6      30.2        1808.839     16.675      .6   -4- q-q=   -17.239  H           159Re-4
 159Rem(p)158W               ave    1808.839    16.675                                      4                               average
 159Pm(B-)159Sm                     5460       140          5653.498     11.644     1.4o   o                  HKur       07Ha57
 159Pm(B-)159Sm                     5430       140          5653.498     11.644     1.6    U                  HKur       10Ha38
 159Sm(B-)159Eu                     3840       100          3835.533      7.321     -.0o   o                  HKur       02Sh.A
 159Sm(B-)159Eu                     3805        65          3835.533      7.321      .5o   o                  HKur       07Ha57
 159Sm(B-)159Eu                     3800        65          3835.533      7.321      .5    U                  HKur       10Ha38
 159Eu(B-)159Gd                     2600        50          2518.468      4.366    -1.6    U                  H          65Iw01,*
 159Gd(B-)159Tb                      969.0       1.5         970.727      0.750     1.2    1     25  18 159Tb            77Bo.A
 159Dy(e)159Tb                       365.9       1.3         365.360      1.157     -.4    1     79  65 159Dy            68My.A,*
 159Ho(B+)159Dy                     1837.6       6.         1837.600      2.683     -.0   -2-                            79Ad08,*
 159Ho(B+)159Dy                     1837.6       3.         1837.600      2.683     -.0   -2-                            82Vy02,*
 159Ho(B+)159Dy              ave    1837.600     2.683                                      2                               average
 159Er(B+)159Ho                     2768.5       2.0                                        3                               84Ka.A,*
 159Er(B+)159Ho                     2810       100          2768.500      2.000     -.4    U                  hIRS       93Al03
 159Tm(B+)159Er                     3400       300          3990.712     28.181     2.0    U                  h          75St07
 159Tm(B+)159Er                     3850       100          3990.712     28.181     1.4    U                  MIRS       93Al03
 159Tm(B+)159Er                     3670       100          3990.712     28.181     3.2B   B                  NDbn       94Po26
 159Yb(B+)159Tm                     5050       200          4736.911     33.015    -1.6    U                  MIRS       93Al03
 159Yb(B+)159Tm                     4554       150          4736.911     33.015     1.2    U                  MDbn       94Po26,*
 159Lu(B+)159Yb                     5850       150          6124.884     41.565     1.8    U                  hIRS       93Al03
 159Lu(B+)159Yb                     5803       150          6124.884     41.565     2.1    U                  MDbn       94Po26
 159Tam(IT)159Ta                      63.7       5.2                                        2                  MAra       97Da07
 159Rem(IT)159Re                     210#       50#                                         5                  k          S-u168
*159Pm-u                          Represents frequency ratio 159Pm++/(C12H4)+=0.95673359(11)                   H          WgM124**
*159Pm-u                          Original equation -126195  18   159Pm-C12H4*2.092 -56556  17   m             h          GAu124*G
*159Sm-u                          Represents frequency ratio 159Sm++/(C12H4)+=0.956770122(65)                  H          WgM124**
*159Sm-u                          Original equation -132263  11   159Sm-C12H4*2.092 -62209  10   m             h          GAu124*G
*159Eu-u                          Represents frequency ratio 159Eu++/(C12H4)+=0.956794898(63)                  H          WgM124**
*159Eu-u                          Original equation -136379  10   159Eu-C12H4*2.092 -66042.1 9.7 m             h          GAu124*G
*159Ho-u                          M-A=-67304(28) keV  for mixture gs+m at 205.91 keV                           g          Nub211**
*159Lu-u                          M-A=-49710(28) keV  for mixture gs+m at 100#80 keV                           g          Nub211**
*159Ta(a)155Lum                   Replaced by 155Lum(IT)                                                       M          AHW01b**
*159Tam(a)155Lu                   159Tam(IT)-155Lum(IT)=85(3) -> 159Tam(IT)=61.6                               m          96Pa01*G
*159W(a)155Hf                     Original value E(a)=6299(6) recalibrated to E(a)=6282(6) keV                 H          89Ho12**
*159W(a)155Hf                     Trends from Mass Surface TMS suggest 159W    200 keV more bound              g          GAu212*G
*159Rem(a)155Ta                   If not replaced, the 4 masses 154Hf 155Ta 158W and 159Re will be estim. Th              GAu128*G
*159Eu(B-)159Gd                   E-=2350(50) to 7/2^- level at 227.412 level, and other E-                    H          Ens121**
*159Dy(e)159Tb                    From intensity of feeding 5/2^- level at 363.5449 keV                        h          Ens121**
*159Ho(B+)159Dy                   E+=506(6) 506(3) resp, to 5/2^- level at 309.593 keV                         h          Ens121**
*159Er(B+)159Ho                   E+=1122(3) to 13/2^+ level at 624.5 keV, and other E+                        h          Ens121**
*159Yb(B+)159Tm                   E+=3366(150) to 7/2^- level at 166.17 keV                                    h          Ens121**


 160Pr-u                          -38862#      429#                                         2                  g    1.0 S-u211
 160Nd-84Kr1.905                   118436       50                                          2                  GCP2 1.0 18Or02
 160Pm-136Xe1.176                   52377       18         52331.051      2.200    -2.6B   B                  GJY1 1.0 18Vi02,*
 160Pm-84Kr1.905                   111812.1      2.2                                        2                  GCP2 1.0 20Or03
 160Pmm-84Kr1.905                  112017       12                                          2                  GCP2 1.0 20Or03
 160Sm-u                          -64666        11        -64662.967      2.100      .3    U                  GCP1 1.0 12Va02,*
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160Sm-80Kr2.000		102581	11	102581.151	2.576	.0	U				GCP1	1.0	12Va02
160Sm-86Kr1.860		101599	11	101601.272	2.100	.2	U				GCP1	1.0	12Va02
160Sm-82Kr1.951		104135.3	2.1				2				GCP2	1.0	18Or.A
160Eu-u		-68150	17	-68163.017	0.970	-.8	U				GCP1	1.0	12Va02,*
160Eu-80Kr2.000		99096	18	99081.101	1.779	-.8	U				GCP1	1.0	12Va02
160Eu-86Kr1.860		98115	18	98101.222	0.970	-.8	U				GCP1	1.0	12Va02
160Eu-84Kr1.905		100433.81	0.97				2				GCP2	1.0	18Ha19
160Eum-84Kr1.905		100533.70	0.86				2				GCP2	1.0	18Ha19
C12 H16-160Gd		198150	50	198139.303	1.206	-.1	U				hR04	4.0	64De15
C12 H16-160Dy		200050	70	199996.930	0.752	-.2	U				hR04	4.0	64De15
160Er-u		-70916	30	-70922.807	26.029	-.2	-1-				MGS2	1.0	05Li24
160Er-u		-70908	59	-70922.807	26.029	-.3	-1-	q-q=	13.793		H1.0	1.0	162Er-2
160Er-u	ave	-70914.357	26.742	-70922.807	26.029	-.3	1	95	95	160Er			average
160Tm-u		-64770	120	-64735.823	35.090	.3	U				gGS1	1.0	00Ra23,*
160Tm-u		-64752	37	-64735.823	35.090	.4	1	90	90	160Tm	gGS2	1.0	05Li24,*
160Yb-142Sm1.127		33120	20	33118.172	6.317	-.1	U				GMA7	1.0	01Bo59
160Yb-142Sm1.127		33126.7	30.	33118.172	6.317	-.3	Z	q-q=	8.528		k1.0	1.0	160Yb-C
160Yb-u		-62440	120	-62440.789	5.900	-.0	U				MGS1	1.0	00Ra23
160Yb-u		-62438	30	-62440.789	5.900	-.1	U				KGS2	1.0	05Li24
160Yb-133Cs1.203		51300.5	5.9				2				GMA8	1.0	19Hu15
160Lu-u		-53967	61				2				MGS2	1.0	05Li24,*
160Hf-u		-49334	30	-49317.646	10.233	.5	U				HGS2	1.0	05Li24
160Gd 35Cl2-156Gd 37Cl2		10831.70	1.27	10831.327	0.807	-.1	U				HH41	2.5	85Dy04
160Gd 35Cl-158Gd 37Cl		5890	5	5900.124	0.783	.5	U				hH12	4.0	64Ba15
160Gd 35Cl-158Gd 37Cl		5899	3	5900.124	0.783	.1	U				hH21	2.5	70Ma05
160Gd 35Cl-158Gd 37Cl		5900.0	0.5	5900.124	0.783	.1	-1-				hM21	2.5	75Ka25
160Gd 35Cl-158Gd 37Cl		5899.88	0.96	5900.124	0.783	.1	-1-				hH41	2.5	85Dy04
160Gd 35Cl-158Gd 37Cl	ave	5899.974	1.109	5900.124	0.783	.1	1	50	39	160Gd			average
160Dy 35Cl-158Dy 37Cl		3731.8	2.3	3738.884	2.417	1.2	1	18	17	158Dy	H25	2.5	72Ba08
160Gd-160Dy		1854.5	0.8	1857.627	1.185	1.6	1	35	29	160Gd	H25	2.5	72Ba08
160Gd O-C15		-78020.1	5.8	-78024.173	1.206	-.5o	o				HTG1	1.5	09Ke.A
160Gd O-C15		-78019.9	3.6	-78024.173	1.206	-.8	U				KTG1	1.5	11Ke03
160Hf(a)156Yb		4892.2	10.	4901.885	2.586	.9	-1-						73Ea01,Z
160Hf(a)156Yb		4905.0	5.	4901.885	2.586	-.6	-1-				GSa		79Ho10,Z
160Hf(a)156Yb		4904.0	5.	4901.885	2.586	-.4	-1-				ORa		83To01,Z
160Hf(a)156Yb		4901.8	6.	4901.885	2.586	.0	-1-						92Ha10
160Hf(a)156Yb		4902.8	10.	4901.885	2.586	-.1	-1-				M		95Hi12
160Hf(a)156Yb		4900.8	6.	4901.885	2.586	.2	-1-				MDaa		96Pa01
160Hf(a)156Yb	ave	4902.447	2.601	4901.885	2.586	-.2	1	99	82	160Hf			average
160Ta(a)156Lu		5449.5	5.	5450.934	4.587	.3	-3-				HDaa		96Pa01
160Ta(a)156Lu		5456.6	10.	5450.934	4.587	-.6	-3-				HJya		09Ha42
160Ta(a)156Lu	ave	5450.934	4.587				3						average
160Tam(a)156Lum		5550.9	5.	5548.453	2.989	-.5	-4-				MGSa		79Ho10,Z
160Tam(a)156Lum		5538.7	6.	5548.453	2.989	1.6	-4-				M		92Ha10
160Tam(a)156Lum		5552.1	5.	5548.453	2.989	-.7	-4-				MDaa		96Pa01,W
160Tam(a)156Lum		5551.0	10.	5548.453	2.989	-.3	-4-				HJya		09Ha42
160Tam(a)156Lum	ave	5548.453	2.989				4						average
160W(a)156Hf		6072.1	10.	6065.526	4.587	-.6	-1-				GSa		79Ho10
160W(a)156Hf		6063.9	5.	6065.526	4.587	.3	-1-				MDaa		96Pa01
160W(a)156Hf	ave	6065.526	4.587	6065.526	4.587	.0	1	100	100	160W			average
160Re(a)156Ta		6704.9	16.	6697.753	4.103	-.4o	o				mDaa		92Pa05
160Re(a)156Ta		6711.1	16.	6697.753	4.103	-.8o	o				mDaa		96Pa01
160Re(a)156Ta		6697.7	4.				4				HDaa		11Da12
158Gd(t,p)160Gd		4912.0	2.2	4912.933	0.730	.4	U				HMcM		89Lo07
160Gd(p,t)158Gd		-4919	5	-4912.933	0.730	1.2	U				mMin		73Oo01
160Dy(p,t)158Dy		-6924	5	-6926.115	2.250	-.4	-1-				Min		73Oo01
160Dy(p,t)158Dy		-6925.1	3.4	-6926.115	2.250	-.3	-1-				McM		88Bu08,*
160Dy(p,t)158Dy	ave	-6924.752	2.812	-6926.115	2.250	-.5	1	64	63	158Dy			average
160Gd(t,a)159Eu-158Gd()157Eu		-666	5	-667.836	4.158	-.4	1	69	36	159Eu	LAl		79Bu05
160Gd(d,t)159Gd		-1200	10	-1194.293	0.735	.6	U				hKop		67Tj01
159Tb(n,g)160Tb		6375.45	0.3	6375.210	0.134	-.8	-1-				m		74Ke01,Z
159Tb(n,g)160Tb		6375.13	0.15	6375.210	0.134	.5	-1-				MBdn		06Fi.A
159Tb(d,p)160Tb		4165	20	4150.644	0.134	-.7	U				hMIT		64Sp12
159Tb(d,p)160Tb		4153	5	4150.644	0.134	-.5	U				hTal		67St14
159Tb(n,g)160Tb	ave	6375.194	0.134	6375.210	0.134	.1	1	99	93	160Tb			average
160Dy(d,t)159Dy		-2339	10	-2319.296	1.391	2.0	U				hTal		68Be.A
160Dy(d,t)159Dy		-2323	10	-2319.296	1.391	.4	U				hKop		70Gr46

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 160Re(p)159W                   1269.1      6.       1266.663     6.905    -.4o  o               mDap    92Pa05
 160Re(p)159W                   1271        9        1266.663     6.905    -.5o  o               HDap    96Pa01,*
 160Re(p)159W                   1272.2      6.       1266.663     6.905    -.9R  R  q-q=    5.537  HDap    11Da12,G
 160Eu(B-)160Gd                 3900      300        4448.606     1.442    1.8   U               H       73Da05
 160Eu(B-)160Gd                 4200      200        4448.606     1.442    1.2   U               H       73Mo18
 160Eu(B-)160Gd                 4705       60        4448.606     1.442   -4.3B  B               HKur    07Ha57
 160Eu(B-)160Gd                 4695       60        4448.606     1.442   -4.1C  C               HKur    10Ha38
 160Eu(B-)160Gd                 4480       35        4448.606     1.442    -.9   U               KKur    14Ha38
 160Tb(B-)160Dy                 1838       10        1835.955     1.101    -.2   U               h       57Na03,*
 160Tb(B-)160Dy                 1827       10        1835.955     1.101     .9   U               h       59Gr93,*
 160Tb(B-)160Dy                 1825       10        1835.955     1.101    1.1   U               h       63Wu01,*
 160Ho(B+)160Dy                 3290       15                                    2                       66Av03,*
 160Er(e)160Ho                   420      150         318.247    28.520    -.7   U               h       82Vy06,*
 160Tm(B+)160Er                 5600      300        5763.140    39.133     .5   U               M       75St12,*
 160Tm(B+)160Er                 5890      100        5763.140    39.133   -1.3   1     15  10 160Tm hIRS    93Al03,W
 160Lu(B+)160Yb                 7210      240        7893.285    57.086    2.8   U               h       83Ge08
 160Lu(B+)160Yb                 7340      100        7893.285    57.086    5.5C  C               hIRS    83Vi.A
 160Lu(B+)160Yb                 7300      100        7893.285    57.086    5.9B  B               MIRS    93Al03
*160Pm-136Xe1.176             Could be a mixture of gs and isomer                                G       HWJ208**
*160Sm-u                      Represents frequency ratio 160Sm++/(C12H4)+=0.950775181(67)        H       WgM124**
*160Sm-u                      Original equation -130553  11   160Sm-C12H4*2.105 -60236  10    m        h       GAu124*G
*160Eu-u                      Represents frequency ratio 160Eu++/(C12H4)+=0.95079589(10)         H       WgM124**
*160Eu-u                      Original equation -134036  17   160Eu-C12H4*2.105 -63481  16    m        h       GAu124*G
*160Tm-u                      M-A=-60300(110) keV for mixture gs+m at 67(14) keV                 g       Nub211**
*160Tm-u                      M-A=-60283(28) keV  for mixture gs+m at 67(12) keV                 g       Nub211**
*160Lu-u                      M-A=-50270(28) keV  for mixture gs+m at 0#100 keV                  g       Nub211**
*160Tam(a)156Lum              160Tam(IT)-156Lum(IT)=103(4)                                       m       96Pa01*W
*160Tam(a)156Lum               IF Q(a)'s both labelled A                                         m       AHW008*W
*160Dy(p,t)158Dy              Q-Q(164Dy(p,t))=-1477.9(3.4), see 164Dy(p,t)                               AHW   **
*160Re(p)159W                 Corrected : Ame*2003 assumed E(p)=1271(9) thus Q(p)=1279.1(9.) keV       H       WgM105**
*160Re(p)159W                 If not replaced, the 4 masses 155Hf 156Ta 159W and 160Re will be estim. Th        GAu128*G
*160Tb(B-)160Dy               E-=870(10) 858(10) 868(10) resp, to 8^+ level at 966.85 keV, and other E-h        Ens059**
*160Ho(B+)160Dy               E+=570(15) to 4^+ level at 1694.37 keV; and 1045(15) from                  Ens059**
*                              ~ 160Hom at 59.98 to 1^- level at 1285.602 and 3^- at 1286.711 keV      g       Nub211**
*160Er(e)160Ho                pK=0.795(0.2) to 1^+ level at 67.11 keV                            h       Ens059**
*160Tm(B+)160Er               E+=3700(300) to 854.4-1007.95 levels, reassigned by evaluator      h       Ens059**
*160Tm(B+)160Er               Prefers 75St; no reason given                                      m       Ame95 *W


 161Pr-u                      -34879#     537#                                   2               g    1.0 S-u20c
 161Nd-u                      -45336#     429#                                   2               g    1.0 S-u20c
 161Pm-136Xe1.184              56065       64       56087.902     9.700     .4   U               GJY1 1.0 20Vi04
 161Pm-84Kr1.917               115888.7      9.7                                 2               GCP2 1.0 18Or.A
 161Sm-u                      -60841       13      -60839.938     7.318     .1   1     32  32 161Sm HCP1 1.0 12Va02,*
 161Sm-80Kr2.013               107493       12      107491.268     7.358    -.1   1     38  37 161Sm kCP1 1.0 12Va02
 161Sm-86Kr1.872               106496       13      106496.971     7.318     .1   1     32  32 161Sm HCP1 1.0 12Va02
 161Eu-u                      -66336       19      -66336.009    11.164    -.0   1     35  35 161Eu HCP1 1.0 12Va02,*
 161Eu-80Kr2.013               101996       19      101995.197    11.196    -.0   1     35  34 161Eu kCP1 1.0 12Va02
 161Eu-86Kr1.872               101000       20      101000.900    11.164     .0   1     31  31 161Eu HCP1 1.0 12Va02
 C13 H5-161Dy                  112246       25      112185.732     0.748    -.6   U               hR04 4.0 64De15
 161Tm-u                      -66451       30                                    2               MGS2 1.0 05Li24,*
 161Yb-142Sm1.134               34071       19       34064.902    16.052    -.3  -2-              MMA7 1.0 01Bo59
 161Yb-142Sm1.134               34049.7     30.      34064.902    16.052     .5  -2- q-q=  -15.202  k1.0 1.0  161Yb-C
 161Yb-142Sm1.134         ave   34064.902   16.052                               2                        average
 161Yb-u                      -62120      110      -62087.590    16.211     .3   U               MGS1 1.0 00Ra23
 161Yb-u                      -62107       30      -62087.590    16.211     .6R  R  q-q=  -19.410  MGS2 1.0 05Li24
 161Lu-u                      -56428       30                                    2               MGS2 1.0 05Li24
 161Hf-u                      -49733       30      -49721.893    25.171     .4   1     70  70 161Hf MGS2 1.0 05Li24
 161Dy 35Cl-159Tb 37Cl           4535.0      1.0      4535.839     1.176     .3   1     22  18 159Tb  H25 2.5 72Ba08
 161Hf(a)157Yb                   4717.0     10.       4678.422    24.953    -.8  -1-              m       73Ea01,Z
 161Hf(a)157Yb                   4725.2     10.       4678.422    24.953    -.9  -1-              m       82Sc15,Z
 161Hf(a)157Yb                   4724.2      5.       4678.422    24.953    -.9  -1-              mORa    83To01,Z
 161Hf(a)157Yb                   4716.4      7.       4678.422    24.953    -.8  -1-              m       92Ha10
 161Hf(a)157Yb                   4721.5     10.       4678.422    24.953    -.8  -1-              M       95Hi12
 161Hf(a)157Yb            ave    4720.862   22.691    4678.422    24.953    -.8   1     21  18 161Hf          average
 161Tam(a)157Lum                 5278.9      5.       5276.414     5.959    -.5F  F               KGSa    79Ho10,*
 161Tam(a)157Lum                 5280.4      5.       5276.414     5.959    -.8F  F               K       92Ha10
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161Tam(a)157Lum		5271.2	7.	5276.414	5.959	.7F	F		KDaa		96Pa01,*
161Tam(a)157Lum		5282.5	7.	5276.414	5.959	-.9F	F		KJya		05Sc22,*
161Tam(a)157Lum		5273.2	6.	5276.414	5.959	.5	1	94 57 161Tam	KJya		12Th13
161W(a)157Hf		5923.4	5.	5922.882	3.626	-.1	-4-		GSa		79Ho10,Z
161W(a)157Hf		5922.4	5.	5922.882	3.626	.1	-4-		MDaa		96Pa01
161W(a)157Hf	ave	5922.882	3.626				4				average
161Rem(a)157Tam		6439.3	10.	6429.908	4.251	-.9	-2-		MGSa		79Ho10
161Rem(a)157Tam		6425.0	6.	6429.908	4.251	.8	-2-		MDaa		96Pa01
161Rem(a)157Tam		6432.1	7.	6429.908	4.251	-.3	-2-		MAra		97Ir01
161Rem(a)157Tam	ave	6429.908	4.251				2				average
161Os(a)157W		7065.9	12.	7068.857	10.553	.2	-3-		H		10Bi03
161Os(a)157W		7077.2	20.5	7068.857	10.553	-.4	-3-		GJya		19Hi06
161Os(a)157W	ave	7068.857	10.553				3				average
161Os(a)157Wxp		6748.0	30.				4		H		10Bi03
161Dy(p,t)159Dy		-6546	5	-6549.117	1.389	-.6	-1-		Min		73Oo01
161Dy(p,t)159Dy		-6547.9	2.5	-6549.117	1.389	-.5	-1-		McM		88Bu08,*
161Dy(p,t)159Dy	ave	-6547.520	2.236	-6549.117	1.389	-.7	1	39 35 159Dy			average
160Gd(n,g)161Gd		5635.4	1.0				2				71Gr42
160Gd(d,p)161Gd		3411	10	3410.834	1.000	-.0	U		hKop		67Tj01
160Gd(a,t)161Tb-158Gd()159Tb		678.0	1.0	677.104	0.745	-.9	1	55 31 160Gd	McM		75Bu02
160Tb(n,g)161Tb		7696.3	0.6	7696.623	0.550	.5	1	84 77 161Tb			75He.C
160Dy(n,g)161Dy		6451.5	2.	6454.387	0.076	1.4	U		h		77Be03
160Dy(n,g)161Dy		6454.40	0.09	6454.387	0.076	-.1	-1-		mILn		86Sc16,Z
160Dy(n,g)161Dy		6454.34	0.14	6454.387	0.076	.3	-1-		MBdn		06Fi.A
160Dy(d,p)161Dy		4231	10	4229.821	0.076	-.1	U		hTal		68Be.A
160Dy(d,p)161Dy		4237	10	4229.821	0.076	-.7	U		hKop		70Gr46
161Dy(d,t)160Dy		-205	10	-197.157	0.076	.8	U		hKop		70Gr46
160Dy(n,g)161Dy	ave	6454.382	0.076	6454.387	0.076	.1	1	100 93 160Dy			average
160Dy(3He,d)161Ho-164Dy()165Ho		-1406.5	2.0	-1406.500	2.000	.0	1	100 100 161Ho	McM		75Bu02
161Re(p)160W		1199.5	6.	1197.282	5.338	-.4	1	79 79 161Re	MAra		97Ir01
161Rem(p)160W		1323.3	7.	1320.978	5.428	-.3o	o		hAra		97Ir01,*
161Sm(B-)161Eu		5065	130	5119.558	12.415	.4o	o		HKur		07Ha57
161Sm(B-)161Eu		5050	130	5119.558	12.415	.5	U		HKur		10Ha38
161Eu(B-)161Gd		3705	60	3714.536	10.507	.2o	o		HKur		07Ha57
161Eu(B-)161Gd		3705	60	3714.536	10.507	.2	U		HKur		10Ha38
161Eu(B-)161Gd		3722	35	3714.536	10.507	-.2	U		KKur		14Ha38
161Gd(B-)161Tb		1977	30	1955.636	1.440	-.7	U		h		66Zy02,*
161Tb(B-)161Dy		584	6	593.720	1.201	1.6	U		h		63Ko08
161Tb(B-)161Dy		590	10	593.720	1.201	.4	U		h		64Fu11
161Er(B+)161Ho		2050	40	1994.996	9.004	-1.4	U		h		65Gr35,*
161Er(B+)161Ho		1980	18	1994.996	9.004	.8R	R	q-q= -14.996			84Ka.A,*
161Tm(B+)161Er		3100	200	3302.582	29.290	1.0	U		M		75Ad08,*
161Tm(B+)161Er		3180	100	3302.582	29.290	1.2	U		MIRS		93Al03
161Yb(B+)161Tm		3850	250	4064.491	31.764	.9	U		M		81Ad02,W
161Yb(B+)161Tm		3585	200	4064.491	31.764	2.4	U		MDbn		94Po26
161Lu(B+)161Yb		5300	100	5271.875	31.764	-.3o	o		hIRS		83Vi.A
161Lu(B+)161Yb		5300	100	5271.875	31.764	-.3	U		MIRS		93Al03
161Lu(B+)161Yb		5255	150	5271.875	31.764	.1	U		MDbn		94Po26,*
161Rem(IT)161Re		123.8	1.3	123.696	1.294	-.1	1	99 78 161RemM			97Ir01
*161Sm-u		Represents frequency ratio 161Sm++/(C12H4)+=0.944844874(74)							H		WgM124**
*161Sm-u		Original equation -127134 13 161Sm-C12H4*2.118 -56673 12 m							h		GAu124*G
*161Eu-u		Represents frequency ratio 161Eu++/(C12H4)+=0.94487714(11)							H		WgM124**
*161Eu-u		Original equation -132630 19 161Eu-C12H4*2.118 -61792 17 m							h		GAu124*G
*161Tm-u		M-A=-61895(28) keV for mixture gs+m at 7.51 keV							g		Nub211**
*161Tam(a)157Lum		Do not use, otherwise too many primaries (degree 161Tam=13 157Lum=4)							h		GAu071*G
*161Tam(a)157Lum		Do use it, otherwise the adjusted Q is 5352.6(28.6)							h		GAu094*G
*161Tam(a)157Lum		F : above 4 items are not unambiguously assigned							K		WgM151**
*161Dy(p,t)159Dy		Q-Q(164Dy(p,t))=-1100.7(2.5) keV									AHW **
*161Rem(p)160W		Replaced by author's result for 161Rem(IT)161Re							M		AHW01b**
*161Gd(B-)161Tb		E-=1560(30) mainly to 7/2^- level at 417.228 keV							h		Ens11b**
*161Er(B+)161Ho		E+=820(40) 748(18) resp, to 1/2^+ level at 211.15 keV							h		Ens11b**
*161Tm(B+)161Er		E+=1800(100) to several levels around 7/2^- one at 266.44 keV							h		Ens11b**
*161Yb(B+)161Tm		From EC/B+ no details							n		AHW955*W
*161Lu(B+)161Yb		E+=3866(150) to 367.28 level							h		Ens11b**
162Nd-u		-41879#	429#				2		g	1.0	S-u20c

162Pm-u		-49426#	322#				2					g	1.0	S-u20c
162Sm-136Xe1.191		52127.2	5.3	52129.248	3.783	.4	1		51	51	162Sm	GJY1	1.0	18Vi02
162Sm-84Kr1.929		112344.7	5.4	112342.574	3.783	-.4	1		49	49	162Sm	GCP2	1.0	18Or02
162Eu-136Xe1.191		47449	50	47465.890	1.411	.3	U					GJY1	1.0	18Vi02,*
162Eu-84Kr1.929		107678.2	1.6	107679.216	1.411	.6	1		78	78	162Eu	GCP2	1.0	18Ha19
162Eu-133Cs1.218		52124.0	6.0	52117.850	1.411	-1.0	1		6	6	162Eu	GJY1	1.0	20Vi04
162Eum-84Kr1.929		107850.1	2.0	107848.789	1.384	-.7	1		48	48	162Eum	GCP2	1.0	18Ha19
162Eum-133Cs1.218		52286.4	2.4	52287.422	1.384	.4	-1-					GJY2	1.0	20Vi04
162Eum-133Cs1.218		52292.4	8.1	52287.422	1.384	-.6	-1-					GJY1	1.0	20Vi04
162Eum-133Cs1.218	ave	52286.884	2.301	52287.422	1.384	.2	1		36	36	162Eum			average
162Tb-u		-70724.6	2.2				2					GCP2	1.0	20Or03,*
162Tbm-u		-70418.1	2.7				2					GCP2	1.0	20Or03,*
C13 H6-162Dy		120115	19	120145.682	0.746	.4	U					hR04	4.0	64De15
C12 H4 N-162Er		105590	70	105586.831	0.812	-.0	U					hR04	4.0	64De15
C13 H6-162Er		118430	170	118162.890	0.812	-.4	U					hR04	4.0	64De15
162Tm-u		-65942	55	-65998.787	27.975	-1.0R	R	q-q=	56.787			MGS2	1.0	05Li24,*
162Yb-142Sm1.141		32524	19	32525.403	16.052	.1	-2-					MMA7	1.0	01Bo59
162Yb-142Sm1.141		32528.9	30.	32525.403	16.052	-.1	-2-	q-q=	3.497			H1.0	1.0	162Yb-C
162Yb-142Sm1.141	ave	32525.403	16.052				2							average
162Yb-u		-64210	110	-64220.631	16.213	-.1	U					MGS1	1.0	00Ra23
162Yb-u		-64223	30	-64220.631	16.213	.1R	R	q-q=	-2.369			MGS2	1.0	05Li24
162Lu-u		-56758	234	-56717.223	80.554	.2o	o					MGS1	1.0	00Ra23,*
162Lu-u		-56781	190	-56717.223	80.554	.3	-2-					MGS2	1.0	05Li24,*
162Lu-u		-56753	107	-56717.223	80.554	.3	-2-	q-q=	-33.326			H1.0	1.0	162Yb+0
162Lu-u		-56592	160	-56717.223	80.554	-.8	-2-	q-q=	116.645			H1.0	1.0	162Yb+0
162Lu-u	ave	-56717.223	80.554				2							average
162Hf-u		-52756	30	-52784.454	9.610	-.9	U					HGS2	1.0	05Li24
162Er 35Cl2-158Gd 37Cl2		10577.5	2.7	10576.342	1.117	-.2	U					HH25	2.5	72Ba08
162Dy 35Cl-160Dy 37Cl		4555	6	4551.053	0.124	-.2	U					hH12	4.0	64Ba15
162Dy 35Cl-160Dy 37Cl		4552.1	1.1	4551.053	0.124	-.4	U					hH25	2.5	72Ba08
162Er 35Cl-160Gd 37Cl		4674.6	1.9	4676.218	1.230	.3	U					HH25	2.5	72Ba08
162Eum-162Eu		167.4	3.1	169.573	1.773	.7	1		33	17	162Eu	GJY2	1.0	20Vi04
162Er-162Dy		1982.79	0.32	1982.792	0.320	.0	1		100	100	162Er	HSH1	1.0	11El04
161Dy 37Cl-162Dy 35Cl		-3080	70	-2815.206	0.094	.9	U					hR04	4.0	64De15
162Dy-161Dy		150	70	-134.918	0.064	-1.0	U					hR04	4.0	64De15
162Dy-161Dy		78	23	-134.918	0.064	-2.3	U					hR04	4.0	64De15
162Dy-161Dy		22	40	-134.918	0.064	-1.0	U					hR04	4.0	64De15
162Hf(a)158Yb		4417.2	10.	4416.278	4.862	-.1	-1-							82Sc15
162Hf(a)158Yb		4420.4	10.3	4416.278	4.862	-.4	-1-					ORa		83To01
162Hf(a)158Yb		4414.2	9.	4416.278	4.862	.2	-1-							92Ha10
162Hf(a)158Yb		4416.3	10.3	4416.278	4.862	.0	-1-					M		95Hi12
162Hf(a)158Yb	ave	4416.875	4.983	4416.278	4.862	-.1	1		95	81	162Hf			average
162Ta(a)158Lu		5003.8	10.	5005.880	61.490	.0	-4-							86Ru05
162Ta(a)158Lu		5007.9	5.	5005.880	61.490	-.0	-4-							92Ha10
162Ta(a)158Lu	ave	5005.880	35.791				4							average
162W(a)158Hf		5669.9	10.	5678.267	2.400	.8	U					m		73Ea01,Z
162W(a)158Hf		5668.0	10.	5678.267	2.400	1.0	U					mORa		75To05,Z
162W(a)158Hf		5677.5	5.	5678.267	2.400	.2	-1-					GSa		81Ho10,Z
162W(a)158Hf		5674.5	4.	5678.267	2.400	.9	-1-					hOra		82De11,Z
162W(a)158Hf		5681.6	5.	5678.267	2.400	-.6	-1-					MDaa		96Pa01
162W(a)158Hf		5681.5	5.1	5678.267	2.400	-.6	-1-					KJya		15Li24
162W(a)158Hf	ave	5678.267	2.400	5678.267	2.400	.0	1		100	100	162W			average
162Re(a)158Ta		6240.3	5.				8					MAra		97Da07
162Rem(a)158Tam		6274.2	6.	6274.112	3.317	-.0	-9-					GSa		79Ho10
162Rem(a)158Tam		6278.3	6.	6274.112	3.317	-.7	-9-					MDaa		96Pa01
162Rem(a)158Tam		6271.1	5.	6274.112	3.317	.6	-9-					MAra		97Da07
162Rem(a)158Tam		6256	16	6274.112	3.317	1.1	U					KJya		16Ca15,*
162Rem(a)158Tam	ave	6274.112	3.317				9							average
162Os(a)158W		6778.8	30.	6767.783	2.880	-.4	U					MGSa		89Ho12,*
162Os(a)158W		6785.8	10.	6767.783	2.880	-1.8	U					MORa		96Bi07
162Os(a)158W		6767.4	3.	6767.783	2.880	.1	-4-					MAra		00Ma95
162Os(a)158W		6781.7	13.	6767.783	2.880	-1.1	U					HJya		04Jo12
162Os(a)158W		6770.5	8.2	6767.783	2.880	-.3	-4-					GJya		19Hi06
162Os(a)158W	ave	6767.783	2.880				4							average
160Gd(t,p)162Gd		3999.5	3.8				2					McM		89Lo07
160Dy(t,p)162Dy		6169.5	1.9	6169.584	0.097	.0	U					hMcM		88Bu08,*
162Dy(p,t)160Dy		-6168	5	-6169.584	0.097	-.3	U					hMin		73Oo01

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 162Dy(p,t)160Dy                  -6169.7       2.1      -6169.584      0.097       .1  U                   hMcM      88Bu08,*
 162Er(p,t)160Er                  -7944        55        -7930.872     24.258       .2R  R  q-q=  -13.128  hWin      74De31,*
 161Dy(n,g)162Dy                   8196.99      0.06      8196.993      0.060       .1  1    100  85 161Dy mMMn      82Is05,Z
 161Dy(n,g)162Dy                   8193         3         8196.993      0.060      1.3  U                   MBdn      06Fi.A
 161Dy(d,p)162Dy                   5969        10         5972.427      0.060       .3  U                   hTal      67Ba34
 161Dy(d,p)162Dy                   5981        10         5972.427      0.060      -.9  U                   hKop      70Gr46
 162Dy(d,t)161Dy                  -1944        10        -1939.763      0.060       .4  U                   hKop      70Gr46
 162Dy(d,t)161Dy                  -1943        10        -1939.763      0.060       .3  U                   hTal      77Be03
 161Dy(3He,d)162Ho-164Dy()165Ho    -945.3       3.0       -945.300      3.000       .0  1    100 100 162Ho  McM      75Bu02
 162Er(d,t)161Er                  -2952        10        -2947.000      8.742       .5  -2-                  Kop      69Tj01
 162Er(d,t)161Er                  -2930.8      18.       -2947.000      8.742      -.9  -2- q-q=   16.200  H          161Ho+0
 162Er(d,t)161Er           ave    -2947.000     8.742                                   2                            average
 162Eu(B-)162Gd                    5575        60         5557.771      4.175      -.3o  o                  HKur      07Ha57
 162Eu(B-)162Gd                    5585        60         5557.771      4.175      -.5o  o                  KKur      10Ha38
 162Eu(B-)162Gd                    5577        35         5557.771      4.175      -.5  U                   GKur      14Ha38
 162Gd(B-)162Tb                    1442       100         1598.833      4.461      1.6  U                   G         70Ch02,*
 162Tb(B-)162Dy                    2448       100         2301.620      2.164     -1.5  U                   G         66Fu08,*
 162Tb(B-)162Dy                    2523        50         2301.620      2.164     -4.4B  B                  G         66Sc24,*
 162Tb(B-)162Dy                    2528        80         2301.620      2.164     -2.8  U                   G         77Ka08,*
 162Ho(B+)162Dy                    2220        50         2140.606      3.093     -1.6  U                   h         69Ak01
 162Tm(B+)162Er                    4840        50         4856.728     26.047       .3  -2-                           63Ab02
 162Tm(B+)162Er                    4705        70         4856.728     26.047      2.2  -2-                           74De47,*
 162Tm(B+)162Er                    4900       100         4856.728     26.047      -.4  -2-                  IRS      93Al03
 162Tm(B+)162Er                    4892        50         4856.728     26.047      -.7  -2-                 NDbn      94Po26,*
 162Tm(B+)162Er                    4908.7      52.        4856.728     26.047     -1.0  -2- q-q=   55.794  H          162Tm-C
 162Tm(B+)162Er            ave     4856.728    26.047                                   2                            average
 162Lu(B+)162Yb                    6740       270         6989.380     76.541       .9  U                   m         83Ge08
 162Lu(B+)162Yb                    6990       120         6989.380     76.541      -.0o  o                  hIRS      83Vi.A
 162Lu(B+)162Yb                    6960       100         6989.380     76.541       .3R  R  q-q=  -29.380  NIRS      93Al03
 162Lu(B+)162Yb                    7111       150         6989.380     76.541      -.8R  R  q-q=  121.620  MDbn      94Po26,*
 162Rem(IT)162Re                    172.3       8.0        175.218      9.209       .4  Z                   m         97Da07
*162Eu-136Xe1.191               D_M=47536.0(3.8) uu  for mx gs+m at 158.2(1.7) keV; M-A=-58657.6(3.5) keVG         Nub211**
*162Tb-u                        Represents frequency ratio 162Tb++/(C6H6)+=1.037384012(14)            G         HWJ208**
*162Tbm-u                       Represents frequency ratio 162Tbm++/(C6H6)+=1.037385975(17)           G         HWJ208**
*162Tm-u                        M-A=-61359(28) keV  for mixture gs+m at 130(40) keV                   g         Nub211**
*162Lu-u                        M-A=-52730(130) keV for mixture gs+m+n at 120#200 and 300#200 keV     g         Nub211**
*162Lu-u                        M-A=-52751(28) keV  for mixture gs+m+n at 120#200 and 300#200 keV     g         Nub211**
*162Rem(a)158Tam                  E(a)=6037(16) keV to 10^+ level 66 keV above the 9^+ 158Tam         K         16Ca15**
*162Os(a)158W                   Original value E=6640(20) (Q=6808.4) recalibrated                     h         88Ho.B**
*160Dy(t,p)162Dy                Q-Q(162Dy(t,p))=722.3(1.9) keV                                        h         AHW   **
*162Dy(p,t)160Dy                Q-Q(164Dy(p,t))=-722.5(2.1) keV                                       h         AHW   **
*162Er(p,t)160Er                Not resolved peak. ~ Original uncertainty 28 increased to 51 keV and  h         GAu921**
*                                ~ added systematic error 21 keV                                      H         GAu092**
*162Gd(B-)162Tb                 E-=1000(100) to 1^+ level at 442.11 keV                               k         Ens162**
*162Tb(B-)162Dy                 E-=1300(100) 1375(50) 1380(80) resp, to 2^- level at 1148.232 keV     h         Ens078**
*162Tm(B+)162Er                 E+=2110(70) to 2^- level at 1572.84 keV                               h         Ens078**
*162Tm(B+)162Er                 E+=3768(50) to 2^+ level at 102.04 keV                                h         Ens078**
*162Lu(B+)162Yb                 E+=6006(150) to gs and 2^+ level at 166.8, unknown intensity ratio    h         Ens078**


 163Nd-u                        -36586#     537#                                        2                   g    1.0 S-u211
 163Pm-u                        -46119#     429#                                        2                   g    1.0 S-u20c
 163Sm-84Kr1.940                117373.5      7.9                                       2                   GCP2 1.0 18Or02
 163Sm-136Xe1.199                56980       39        56928.931      7.900     -1.3  U                   GJY1 1.0 20Vi04
 163Eu-133Cs1.226                55179.4      4.0      55181.405      0.970       .5  U                   GJY1 1.0 20Vi04
 163Eu-82Kr1.988                111264.98     0.97                                     2                   GCP2 1.0 18Or.A
 163Gd-u                        -65824       16       -65903.360      0.855     -5.0  U                   GCP1 1.0 12Va02,*
 163Gd-u                        -65849.5      3.7     -65903.360      0.855    -14.6F  F                   GJY1 1.0 18Vi02,*
 163Gd-80Kr2.038                104600       16       104518.405      1.744     -5.1F  F                   GCP1 1.0 12Va02,*
 163Gd-86Kr1.895                103569       15       103489.505      0.855     -5.3B  B                   GCP1 1.0 12Va02
 163Gd-136Xe1.199                45353       11        45346.486      0.855      -.6  U                   GJY1 1.0 20Vi04
 163Gd-82Kr1.988                106095.6      1.2     106096.110      0.855       .4  1     51  51 163Gd GCP2 1.0 20Or02
 163Gdm-136Xe1.199               45526       14        45494.866      0.855     -2.2  U                   GJY1 1.0 20Vi04
 163Gdm-82Kr1.988               106245.0      1.2     106244.490      0.855      -.4  1     51  51 163GdmGCP2 1.0 20Or02
 C13 H7-163Dy                   125906       36       126038.000      0.744       .9  U                   hR04 4.0 64De15
 163Tm-u                        -67327       30       -67341.716      5.921      -.5  U                   MGS2 1.0 05Li24
 163Yb-142Sm1.148                33686       19        33684.998     16.052      -.1  -2-                 MMA7 1.0 01Bo59
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163Yb-142Sm1.148		33682.5	30.	33684.998	16.052	.1	-2-	q-q= -2.498	H1.0	1.0	163Yb-C
163Yb-142Sm1.148	ave	33684.998	16.052				2				average
163Yb-u		-63663	30	-63654.567	16.215	.3R	R	q-q= -8.433	MGS2	1.0	05Li24
163Lu-u		-58730	110	-58821.000	30.000	-.8	U		MGS1	1.0	00Ra23
163Lu-u		-58821	30				2		MGS2	1.0	05Li24
163Hf-u		-52911	30	-52892.804	27.583	.6	1	85 85 163Hf	MGS2	1.0	05Li24
163Ta-u		-45855	54	-45662.805	40.861	3.6C	C		KGS2	1.0	05Li24,*
163Ir-u		-5701#	429#				2		g	1.0	S-u211
163Dy 35Cl-161Dy 37Cl		5200	60	4747.920	0.107	-1.9	U		hR04	4.0	64De15
163Dy 35Cl-161Dy 37Cl		4746	3	4747.920	0.107	.3	U		hH23	2.5	70Wh01
163Dy 35Cl-161Dy 37Cl		4744.7	1.2	4747.920	0.107	1.1	U		hH25	2.5	72Ba08
163Eu-163Dy		10693.5	3.7	10528.287	1.223	-44.7F	F		GJY1	1.0	18Vi02,*
163Ho O-163Dy O		2.72	0.77	3.039	0.024	.3	U		KTG1	1.5	15Sc13
163Ho-163Dy		3.042	0.037	3.039	0.024	-.1	1	42 22 163Ho	KSH2	1.0	15El03
162Dy 37Cl-163Dy 35Cl		-5069	42	-4882.838	0.085	1.1	U		hR04	4.0	64De15
163Dy-162Dy		2164	35	1932.714	0.050	-1.7	U		hR04	4.0	64De15
163Dy-162Dy		1985	38	1932.714	0.050	-.3	U		hR04	4.0	64De15
163Dy-162Dy		2174	40	1932.714	0.050	-1.5	U		hR04	4.0	64De15
163Dy O-C15		-76349.06	0.86	-76348.158	0.744	.7	1	33 33 163Dy	KTG1	1.5	15Sc13
163Ho O-C15		-76346.61	0.97	-76345.118	0.744	1.0	1	26 26 163Ho	KTG1	1.5	15Sc13
163Ta(a)159Lu		4741.5	15.	4749.059	5.492	.5	-3-		M		83Sc18,*
163Ta(a)159Lu		4746.7	10.	4749.059	5.492	.2	-3-		M		86Ru05
163Ta(a)159Lu		4751.8	7.	4749.059	5.492	-.4	-3-		M		92Ha10
163Ta(a)159Lu	ave	4749.059	5.492				3				average
163W(a)159Hf		5520.3	5.	5519.252	55.955	-.0	-3-				73Ea01,Z
163W(a)159Hf		5518.1	5.	5519.252	55.955	.0	-3-		GSa		79Ho10,Z
163W(a)159Hf		5519.9	3.	5519.252	55.955	-.0	-3-		Ora		82De11,Z
163W(a)159Hf		5525.9	10.3	5519.252	55.955	-.1	U *		h		84Sc06,*
163W(a)159Hf		5518.7	6.	5519.252	55.955	.0	-3-		MDaa		96Pa01
163W(a)159Hf	ave	5519.252	25.118				3				average
163Re(a)159Ta		6017.9	5.	6011.988	7.766	-1.2o	o		hAra		97Da07,*
163Rem(a)159Tam		6067.2	6.	6068.097	3.452	.2	-1-		NGSa		79Ho10
163Rem(a)159Tam		6067.2	7.	6068.097	3.452	.1	-1-		MDaa		96Pa01
163Rem(a)159Tam		6069.2	5.	6068.097	3.452	-.2	-1-		MAra		97Da07
163Rem(a)159Tam	ave	6068.097	3.452	6068.097	3.452	-.0	1	100 100 159Tam			average
163Os(a)159W		6674.1	30.	6672.566	7.104	-.0	-4-		KGSa		81Ho10
163Os(a)159W		6678.2	10.	6672.566	7.104	-.5	-4-		KORa		96Bi07
163Os(a)159W		6676.2	19.	6672.566	7.104	-.2	-4-		KDaa		96Pa01
163Os(a)159W		6674.1	30.	6672.566	7.104	-.0o	o		GJya		13Dr06,*
163Os(a)159W		6662.8	12.3	6672.566	7.104	.8	-4-		GJya		19Hi06
163Os(a)159W	ave	6672.566	7.104				4				average
161Dy(t,p)163Dy		5986.3	1.5	5986.203	0.076	-.1	U		hMcM		88Bu08,*
163Dy(p,t)161Dy		-5985	5	-5986.203	0.076	-.2	U		hMin		73Oo01
163Dy(p,t)161Dy		-5987.1	2.2	-5986.203	0.076	.4	U		hMcM		88Bu08,*
162Dy(n,g)163Dy		6270.98	0.06	6271.006	0.047	.4	-1-		mMMn		82Is05,Z
162Dy(n,g)163Dy		6271.00	0.09	6271.006	0.047	.1	-1-		mILn		89Sc31,Z
162Dy(n,g)163Dy		6271.14	0.13	6271.006	0.047	-1.0	-1-		MBdn		06Fi.A
163Dy(g,n)162Dy		-6320	110	-6271.006	0.047	.4	U		hPhi		60Ge01
162Dy(d,p)163Dy		4049	5	4046.440	0.047	-.5	U		hTal		67Sc05
162Dy(d,p)163Dy		4045	10	4046.440	0.047	.1	U		hKop		70Gr46
163Dy(d,t)162Dy		-14	5	-13.776	0.047	.0	U		h		67Ba34
163Dy(d,t)162Dy		-27	10	-13.776	0.047	1.3	U		hKop		70Gr46
162Dy(n,g)163Dy	ave	6271.006	0.047	6271.006	0.047	.0	1	100 106 162Dy			average
162Dy(3He,d)163Ho-164Dy()165Ho		-734.3	1.0	-733.512	0.748	.8	1	56 35 165Ho	MMcM		75Bu02
162Er(d,p)163Er		4682	10	4679.954	4.581	-.2	1	21 21 163Er	Kop		69Tj01
163Eu(B-)163Gd		4828	70	4814.772	1.205	-.2o	o		KKur		07Ha57,*
163Eu(B-)163Gd		4813	70	4814.772	1.205	.0o	o		KKur		10Ha38,*
163Eu(B-)163Gd		4829	65	4814.772	1.205	-.2	U		GKur		14Ha38
163Gdm(IT)163Gd		137.8	1.0	138.215	0.198	.4	U		G		14Ha38,*
163Gdm(IT)163Gd		138.2	0.2	138.215	0.198	.1	1	98 49 163Gd	G		20Za04
163Gd(B-)163Tb		3170	70	3207.161	4.137	.5o	o		HKur		07Ha57
163Gd(B-)163Tb		3150	70	3207.161	4.137	.8o	o		GKur		10Ha38
163Gd(B-)163Tb		3187	40	3207.161	4.137	.5	U		KKur		14Ha38
163Tb(B-)163Dy		1684	50	1785.104	4.001	2.0	U		h		66Fu08,*
163Tb(B-)163Dy		1721	100	1785.104	4.001	.6	U		h		71Ka22,*
163Ho(e)163Dy		2.83	0.05	2.831	0.022	.0	-1-		K		82An19,*
163Ho(e)163Dy		2.65	0.20	2.831	0.022	.9	U		h		83Ba32,W

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 163Ho(e)163Dy                        2.84       0.10          2.831      0.022      -.1  U                  K        84La.A,*
 163Ho(e)163Dy                        2.56       0.05          2.831      0.022      5.4B  B                 K        85Ha12,*
 163Ho(e)163Dy                        2.60       0.03          2.831      0.022      7.7B  B                 k        86Ya17
 163Ho(e)163Dy                        2.561      0.020         2.831      0.022     13.5B  B                 K        92Ha15
 163Ho(e)163Dy                        2.54       0.03          2.831      0.022      9.7C  C                 K        93Bo.A,*
 163Ho(e)163Dy                        2.71       0.10          2.831      0.022      1.2  U                  K        94Ya07,W
 163Ho(e)163Dy                        2.800      0.050         2.831      0.022       .6  -1-                K        97Ga12
 163Ho(e)163Dy                        2.849      0.030         2.831      0.022      -.6  Z                  G        14Ra.1,*
 163Ho(e)163Dy                        2.858      0.051         2.831      0.022      -.5  -1-                G        17Ra15
 163Ho(e)163Dy                  ave   2.829      0.029         2.831      0.022       .1  1     58   31 163Ho         average
 163Er(B+)163Ho                    1210          6          1210.614      4.575       .1  1     58   58 163Er         63Pe16
 163Tm(B+)163Er                    2439          3                                        2                         82Vy07,*
 163Tm(B+)163Er                    2360        100          2439.000      3.000       .8  U                  hIRS     93Al03
 163Yb(B+)163Tm                    3370        100          3434.557     16.069       .6  U                  h        75Ad09,*
 163Lu(B+)163Yb                    4860        170          4502.439     31.766     -2.1  U                  h        83Ge08
 163Lu(B+)163Yb                    4600        200          4502.439     31.766      -.5o  o                 hIRS     83Vi.A
 163Lu(B+)163Yb                    4600        200          4502.439     31.766      -.5  U                  MIRS     93Al03
 163Rem(IT)163Re                    115.1        4.0         119.809      4.620      1.2o  o                 HAra     97Da07,*
*163Gd-u                        Represents frequency ratio 163Gd++/(C12H4)+=0.933275822(91)                H        WgM124**
*163Gd-u                        Original equation -132963  16   163Gd-C12H4*2.145 -61315  15   m           h        GAu124*G
*163Gd-u                        M-A=-61200.6(3.4) for 163Gdm at 137.8(1.0)                                 G        HWJ188**
*163Gd-u                        reference ion 163Dy wrongly identified, most likely 146LaOH or mixture     G        20Vi04**
*163Gd-80Kr2.038                Probably mixture state                                                     G        HWJ205**
*163Gd-80Kr2.038                Probably mixture state                                                     G        HWJ205**
*163Ta-u                        M-A=-42644(28) keV for mixture gs+m at 138#(18#) keV                       g        Nub211**
*163Eu-163Dy                    reference ion 163Dy wrongly identified, most likely 146LaOH or mixture     G        20Vi04**
*163Ta(a)159Lu                  Original assignment to 13 s 164Ta changed to 163Ta                                  86Ru05**
*163W(a)159Hf                   Originally assigned to 166Re, re-assigned in ref.                          h        92Me10**
*                                ~ original E(a)=5372 recalibrated using their 168Os-170Os results         h        GAu931**
*163Re(a)159Ta                  Replaced by author's value for 159Tam(IT)                                  M        AHW01b**
*163Os(a)159W                   Error not given, estimated by evaluator                                    K        GAu151**
*161Dy(t,p)163Dy                Q-Q(162Dy(t,p))=539.1(1.5) keV                                             h        AHW   **
*163Dy(p,t)161Dy                Q-Q(164Dy(p,t))=-539.9(2.2) keV                                            h        AHW   **
*163Eu(B-)163Gd                 E-=4690(70) to 163Gdm at 137.8 keV                                         K        14Ha38**
*163Eu(B-)163Gd                 E-=4675(70) to 163Gdm at 137.8 keV                                         K        14Ha38**
*163Gdm(IT)163Gd                unc. estimated by evaluator                                                g        14Ha38**
*163Tb(B-)163Dy                 E-=800(50) to 1/2^+ level at 884.2943 keV                                  h        Ens105**
*163Tb(B-)163Dy                 E-=1300(100) to 3/2^- level at 421.8439 keV                                h        Ens105**
*163Ho(e)163Dy                  Original 2.58(0.10) from partial T=40(12)e+3 y, re-evaluated by authors    K        84La.A**
*163Ho(e)163Dy                  Partial M-half-life 4570(50) y                                                      AHW   *W
*163Ho(e)163Dy                  Original value 2.82(+0.11--0.08)                                           K        84La.A**
*163Ho(e)163Dy                  Original value 2.60(0.03) corr to 2.561(0.020) for dynamic effects         N        87Sp02**
*                                ~ error 0.020 is statistical only                                         N        87Sp02**
*163Ho(e)163Dy                  Original 2616<Q<2694 eV 68% CL for charge 66^+ Q+,                         h        92Ju01**
*                                ~ corr to 2511<Q+<2572 eV 68% CL                                          h        93Bo.A**
*163Ho(e)163Dy                  More precisely, 2.710(+0.100-0.005); AHW thinks the lower limit crazy      n        AHW957*W
*163Ho(e)163Dy                  ``Preliminary Qec=2.849(0.005)"; syst error estimated 0.030; unpublished   K        GAu15c*W
*163Tm(B+)163Er                 E+=884(3) to 1/2^+ level at 540.56 keV, and other E+                       h        Ens105**
*163Yb(B+)163Tm                 E+=1400(100) to 5/2^- level at 947.29 keV                                  h        Ens105**
*163Rem(IT)163Re                Redundant with 167Ir(a)163Re in same paper                                 H        GAu095**

 164Pm-u                         -41181#       429#                                       2                  g    1.0 S-u211
 164Sm-84Kr1.952                 121306.5        4.4                                      2                  GCP2 1.0 18Or02
 164Eu-136Xe1.206                 54753.5        3.9        54752.285     2.220      -.3  1     32   32 164Eu GJY1 1.0 20Vi04
 164Eu-84Kr1.952                 115608.8        2.7       115609.382     2.220       .2  1     68   68 164Eu GCP2 1.0 20Or03
 164Gd-84Kr1.952                 108672.5        1.2       108672.632     1.073       .1  1     80   80 164Gd GCP2 1.0 18Or.A
 164Tb-84Kr1.952                 106084.0        2.0                                      2                  GCP2 1.0 20Or03
 164Tbm-84Kr1.952                106240         13                                        2                  GCP2 1.0 20Or03
 C13 H8-164Dy                    133320         38         133419.434     0.746       .7  U                  hR04 4.0 64De15
 C12 13C H7-164Dy                128920         34         128949.237     0.746       .2  U                  hR04 4.0 64De15
 C12 H6 N-164Er                  120876         39         120816.455     0.756      -.4  U                  hR04 4.0 64De15
 164Tm-u                         -66446         31         -66461.980    26.845      -.5  1     75   75 164Tm gGS2 1.0 05Li24,*
 164Yb-142Sm1.155                 32429         19          32433.867    16.052       .3  -2-                MMA7 1.0 01Bo59
 164Yb-142Sm1.155                 32446         30          32433.867    16.052      -.4  -2- q-q=    12.133 H1.0 1.0  164Yb-C
 164Yb-142Sm1.155          ave    32433.867     16.052                                    2                           average
 164Yb-u                         -65690        104         -65499.230    16.217      1.8  U                  MGS1 1.0 00Ra23
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164Yb-u		-65493	30	-65499.230	16.217	-.2R	R	q-q=	6.230	MGS2	1.0	05Li24
164Lu-u		-58750	110	-58661.000	30.000	.8	U			MGS1	1.0	00Ra23
164Lu-u		-58661	30				2			MGS2	1.0	05Li24
164Hf-u		-55620	110	-55629.637	16.973	-.1	U			MGS1	1.0	00Ra23
164Hf-u		-55596	30	-55629.637	16.973	-1.1	1	32	32 164Hf	hGS2	1.0	05Li24
164Ta-u		-46466	30				2			MGS2	1.0	05Li24
164Gd-171Yb.959		-3025.2	2.4	-3025.730	1.073	-.2	1	20	20 164Gd	GJY1	1.0	18Vi02
164Tb-171Yb.959		-5597.6	3.6	-5614.362	2.000	-4.7B	B			GJY1	1.0	18Vi02,*
164Dy 35Cl-162Dy 37Cl		5347	5	5326.436	0.113	-1.0	U			hH12	4.0	64Ba15
164Dy 35Cl-162Dy 37Cl		5589	19	5326.436	0.113	-3.5B	B			hR04	4.0	64De15
164Dy 35Cl-162Dy 37Cl		5321	3	5326.436	0.113	.7	U			hH23	2.5	70Wh01
164Dy 35Cl-162Dy 37Cl		5326.5	0.9	5326.436	0.113	-.0	U			hH25	2.5	72Ba08
164Er 35Cl-162Er 37Cl		3373.3	1.3	3370.564	0.360	-.8	U			HH25	2.5	72Ba08
164Er-164Dy		26.92	0.12	26.920	0.120	-.0	1	100	100 164Er	HSH1	1.0	11El08
164Dy 35Cl-161Dy 37Cl		5610	48	5191.518	0.130	-2.2	U			hR04	4.0	64De15
163Dy 37Cl-164Dy 35Cl		-3360	50	-3393.722	0.102	-.2	U			hR04	4.0	64De15
164Dy-163Dy		392	48	443.598	0.075	.3	U			hR04	4.0	64De15
164Dy-163Dy		540	25	443.598	0.075	-1.0	U			hR04	4.0	64De15
164Dy-163Dy		446	28	443.598	0.075	-.0	U			hR04	4.0	64De15
164Er-162Er		556	48	420.440	0.353	-.7	U			hR04	4.0	64De15
164W(a)160Hf		5281.7	5.	5278.282	2.008	-.7	-1-					73Ea01,Z
164W(a)160Hf		5274.7	5.	5278.282	2.008	.7	-1-			ORa		75To05,Z
164W(a)160Hf		5268.7	10.	5278.282	2.008	1.0	U			h		78Sc26,*
164W(a)160Hf		5279.0	5.	5278.282	2.008	-.1	-1-			GSa		79Ho10
164W(a)160Hf		5279.2	3.	5278.282	2.008	-.3	-1-			Ora		82De11,Z
164W(a)160Hf		5283.0	8.	5278.282	2.008	-.6	U			h		84Sc06,*
164W(a)160Hf		5277.0	6.	5278.282	2.008	.2	-1-			MDaa		96Pa01
164W(a)160Hf	ave	5278.620	2.015	5278.282	2.008	-.2	1	99	81 164W			average
164Re(a)160Ta		5922.7	10.	5926.343	5.099	.4	-4-			HGSa		79Ho10
164Re(a)160Ta		5928.9	7.	5926.343	5.099	-.4	-4-			HDaa		96Pa01
164Re(a)160Ta		5924.7	10.	5926.343	5.099	.2	-4-			HJya		09Ha42
164Re(a)160Ta	ave	5926.343	5.099				4					average
164Rem(a)160Tam		5763.8	10.				5			HJya		09Ha42
164Os(a)160W		6478.3	20.	6479.434	5.257	.1	U			mGSa		81Ho10
164Os(a)160W		6473.2	10.	6479.434	5.257	.6	-1-			MORa		96Bi07
164Os(a)160W		6479.4	7.	6479.434	5.257	.0	-1-			MDaa		96Pa01
164Os(a)160W	ave	6477.305	5.878	6479.434	5.257	.4	1	80	80 164Os			average
164Ir(a)160Re		6970#	100#				5			m		S
164Irm(a)160Rem		7052.3	10.2				6			KJya		14Dr02
162Dy(t,p)164Dy		5447.3	1.9	5447.319	0.084	.0	U			hMcM		88Bu08,*
164Dy(p,t)162Dy		-5450	5	-5447.319	0.084	.5	U			hMin		73Oo01,W
164Er(p,t)162Er		-7262	10	-7269.203	0.329	-.7	U			hMin		73Oo01
164Dy(t,a)163Tb		11153	4				2			McM		92Ga15,*
163Dy(n,g)164Dy		7658.11	0.07	7658.109	0.070	-.0	1	99	73 164Dy	mMMn		82Is05,Z
163Dy(n,g)164Dy		7658.90	0.06	7658.109	0.070	-13.2C	C			M		99Fo.A
163Dy(n,g)164Dy		7655.0	0.9	7658.109	0.070	3.5C	C			hBdn		06Fi.A
163Dy(d,p)164Dy		5434	5	5433.543	0.070	-.1	U			hTal		64Sh06
163Dy(d,p)164Dy		5441	10	5433.543	0.070	-.7	U			hKop		70Gr46
164Dy(d,t)163Dy		-1407	10	-1400.879	0.070	.6	U			hKop		70Gr46
164Dy(d,t)163Dy		-1407	10	-1400.879	0.070	.6	U			hKop		70Gr46
163Dy(3He,d)164Ho-164Dy()165Ho		-331.6	1.4	-330.709	1.147	.6	1	67	67 164Ho	McM		75Bu02,*
164Er(d,t)163Er		-2593	10	-2589.248	4.577	.4	1	21	21 163Er	Kop		69Tj01
164Irm(p)163Os		1828	8	1823.914	5.515	-.5o	o			KJyp		01Ke05,W
164Irm(p)163Os		1818	14	1823.914	5.515	.4	-5-			MArp		02Ma61
164Irm(p)163Os		1825	6	1823.914	5.515	-.2	-5-			KJyp		14Dr02
164Irm(p)163Os	ave	1823.914	5.515				5					average
164Eu(B-)164Gd		6430	70	6461.542	2.297	.5o	o			HKur		07Ha57
164Eu(B-)164Gd		6440	70	6461.542	2.297	.3o	o			KKur		10Ha38
164Eu(B-)164Gd		6393	50	6461.542	2.297	1.4	U			GKur		14Ha38
164Tb(B-)164Dy		3890	100	3862.664	1.988	-.3	U			G		71Gu18,*
164Ho(B-)164Er		990	30	962.056	1.376	-.9	U			h		54Br96
164Ho(B-)164Er		965	20	962.056	1.376	-.1	U			h		66Se07
164Tm(B+)164Er		3985	20	4033.629	25.011	2.4B	B			k		67Vr04,*
164Tm(B+)164Er		3989	50	4033.629	25.011	.9	1	25	25 164Tm	HIRS		94Po26,*
164Lu(B+)164Yb		6390	140	6369.771	31.767	-.1	U			M		83Ge08
164Lu(B+)164Yb		6250	90	6369.771	31.767	1.3o	o			hIRS		83Vi.A
164Lu(B+)164Yb		6290	90	6369.771	31.767	.9	U *			MIRS		93Al03,*

164Lu(B+)164Yb		6255	120	6369.771	31.767	1.0	U			MDbn		94Po26,*

*164Tm-u	M-A=-61884(28) keV for mixture gs+m at 20(12) keV	g	Nub211**
*164Tb-171Yb.959	Could be a mixture of gs and iso.	G	HWJ208**
*164W(a)160Hf	Originally assigned to 168Re	h	AHW931**
*164W(a)160Hf	Originally assigned to 167Re, re-assigned in ref.	h	92Me10**
*	~ original E(a)=5136 recalibrated using their 168Os-170Os results	h	GAu931**
*162Dy(t,p)164Dy	Q-Q(160Dy(t,p))=-722.3(1.9) keV, see 162Dy(p,t)	h	88Bu08**
*164Dy(p,t)162Dy	Output 1992 -5447.24(0.17) used for calibrations		AHW926*W
*164Dy(t,a)163Tb	Q-Q(162Dy(t,a)=-123(4)+54-584=-653(4) keV		AHW92c**
*164Dy(t,a)163Tb	and 162Dy()=11806.1(1.3)		GAu92c*G
*163Dy(3He,d)164Ho-164D	See erratum		75Bu02**
*164Irm(p)163Os	May be upper isomer	m	Ens021*W
*164Tb(B-)164Dy	E-=1700(100) to 4^+ level at 2194.44 and 4^+ at 2205.63 keV, and other E-	h	Ens017**
*164Tm(B+)164Er	E+=2940(20) 29 to gs 10 to 2^+ level at 91.38 keV	h	Ens017**
*164Tm(B+)164Er	E+=2944(50) 29 to gs 10 to 2^+ level at 91.38 keV	h	Ens017**
*164Lu(B+)164Yb	Q+=6250(90) partly to 2^+ level at 123.31 keV	h	Ens017**
*164Lu(B+)164Yb	E+=5191(120) partly to 2^+ level at 123.31 keV	h	Ens017**

165Pm-u		-37220#	537#				2			g	1.0	S-u211
165Sm-u		-46710#	429#				2			g	1.0	S-u211
165Eu-136Xe1.213		58091.2	6.5	58088.919	5.596	-.4	1	74	74 165Eu	GJY1	1.0	20Vi04
165Eu-84Kr1.964		119352	11	119358.533	5.596	.6	1	26	26 165Eu	GCP2	1.0	18Or.A
165Gd-84Kr1.964		113134.9	1.5	113135.543	1.400	.4	1	87	87 165Gd	GCP2	1.0	18Or.A
165Tb-136Xe1.213		47497.3	4.2	47504.046	1.654	1.6	1	16	16 165Tb	GJY1	1.0	20Vi04
165Tb-84Kr1.964		108774.9	1.8	108773.661	1.654	-.7	1	84	84 165Tb	GCP2	1.0	18Or.A
C13 H9-165Ho		140043	29	140096.170	0.844	.5	U			hR04	4.0	64De15
C12 H7 N-165Ho		127537	28	127520.110	0.844	-.2	U			hR04	4.0	64De15
C11 13C H6 N-165Ho		122970	50	123049.914	0.844	.4	U			hR04	4.0	64De15
165Tm-142Sm1.162		30970	20	30968.473	2.856	-.1	U			HMA7	1.0	01Bo59
165Yb-u		-64721	30	-64729.758	28.491	-.3	1	90	90 165Yb	MGS2	1.0	05Li24
165Lu-u		-60602	30	-60593.242	28.491	.3	1	90	90 165Lu	MGS2	1.0	05Li24
165Hf-u		-55360	140	-55433.000	30.000	-.5	U			MGS1	1.0	00Ra23
165Hf-u		-55433	30				2			MGS2	1.0	05Li24
165Ta-u		-49191	30	-49219.781	14.571	-1.0	1	24	24 165Ta	hGS2	1.0	05Li24
165W-u		-41720	30	-41719.306	27.650	.0	1	85	85 165W	MGS2	1.0	05Li24
165Gd O-171Yb1.058		1597.3	3.9	1592.954	1.400	-1.1	1	13	13 165Gd	GJY1	1.0	18Vi02
165Ho 35Cl-163Dy 37Cl		4539	4	4542.018	0.808	.3	U			hH23	2.5	70Wh01,W
165W(a)161Hf		5031.0	5.	5029.447	32.014	-.0	-1-			mORa		75To05,Z
165W(a)161Hf		5034.2	10.	5029.447	32.014	-.1	-1-					84Sc06,*
165W(a)161Hf	ave	5032.577	35.791	5029.447	32.014	-.1	1	27	15 165W			average
165Re(a)161Ta		5629.6	6.	5694.306	6.149	10.8B	B			KJya		05Sc22
165Re(a)161Ta		5694.3	6.1				6			KJya		12Th13
165Rem(a)161Tam		5631.7	10.	5660.892	2.821	2.9	U			K		78Sc26,*
165Rem(a)161Tam		5643.0	10.	5660.892	2.821	1.8	U			KGSa		81Ho10
165Rem(a)161Tam		5664.5	4.	5660.892	2.821	-.9	-1-			HOra		82De11,*
165Rem(a)161Tam		5655.4	5.	5660.892	2.821	1.1	-1-			MDaa		96Pa01,*
165Rem(a)161Tam		5657.4	5.	5660.892	2.821	.7o	o			KJya		05Sc22
165Rem(a)161Tam		5657.4	6.	5660.892	2.821	.6	-1-			KJya		12Th13
165Rem(a)161Tam	ave	5660.222	2.840	5660.892	2.821	.2	1	99	55 165Rem			average
165Os(a)161W		6354.3	20.	6335.494	5.650	-.9	-5-			KOra		78Ca11
165Os(a)161W		6317.4	10.	6335.494	5.650	1.8	-5-			KGSa		81Ho10
165Os(a)161W		6342.1	7.	6335.494	5.650	-.9	-5-			KDaa		96Pa01
165Os(a)161W		6342.1	30.	6335.494	5.650	-.2	U			KJya		13Dr06,*
165Os(a)161W	ave	6335.494	5.650				5					average
165Irm(a)161Rem		6882.1	7.	6878.975	6.011	-.4	1	70	48 165Irm	MAra		97Da07
165Pt(a)161Os		7453.0	14.3				4			GJya		19Hi06
163Dy(t,p)165Dy		4890.6	2.9	4892.271	0.088	.6	U			hMcM		88Bu08,*
164Dy(n,g)165Dy		5716.36	0.20	5715.958	0.054	-2.0	U			hILn		79Br25,Z
164Dy(n,g)165Dy		5715.96	0.06	5715.958	0.054	-.0	-2-			mMMn		82Is05,Z
164Dy(n,g)165Dy		5715.70	0.30	5715.958	0.054	.9	U			MILn		90Ka21,Z
164Dy(n,g)165Dy		5715.95	0.12	5715.958	0.054	.1	-2-			MBdn		06Fi.A
164Dy(d,p)165Dy		3488	5	3491.392	0.054	.7	U			hTal		64Sh13
164Dy(d,p)165Dy		3496	10	3491.392	0.054	-.5	U			hKop		70Gr46
164Dy(n,g)165Dy	ave	5715.958	0.054				2					average
164Dy(3He,d)165Ho		717.3	10.	725.865	0.748	.9	U			hMcM		75Bu02
165Ho(g,n)164Ho		-8160	80	-7988.818	1.148	2.1	U			hPhi		60Ge01

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 165Ho(g,n)164Ho                -7987         2        -7988.818    1.148     -.9   1     33  33 164Ho  MMn      85Ts01
 165Ho(d,t)164Ho                -1730        15        -1731.588    1.148     -.1   U                   hTal     70Jo11
 164Er(n,g)165Er                 6650.1       0.6       6650.097    0.588     -.0   1     96  96 165Er m        70Bo29,Z
 164Er(d,p)165Er                 4431        10         4425.531    0.588     -.5   U                   hKop     69Tj01
 164Er(a,t)165Tm-168Er()169Tm   -1298.0       2.0      -1297.972    1.489      .0   1     55  48 165Tm  McM      75Bu02
 165Ir(p)164Os                   1818.1      15.        1541#      50#      -18.5   Z                   mAra     01Da.A,W
 165Irm(p)164Os                  1717.5       7.        1720.519    5.924      .4   1     72  52 165IrmhAra     97Da07,W
 165Eu(B-)165Gd                  5800       120         5796.679    5.373     -.0o  o                   HKur     07Ha57
 165Eu(B-)165Gd                  5800       120         5796.679    5.373     -.0o  o                   KKur     10Ha38
 165Eu(B-)165Gd                  5729        65         5796.679    5.373     1.0   U                   GKur     14Ha38
 165Gd(B-)165Tb                  4113        65         4063.067    2.019     -.8   U                   GKur     14Ha38
 165Dy(B-)165Ho                  1305        20         1285.729    0.750    -1.0   U                   h        59Bo52
 165Dy(B-)165Ho                  1285        10         1285.729    0.750      .1   U                   h        63Pe11
 165Er(e)165Ho                    370        10          376.665    0.958      .7   U                   m        63Ry01
 165Er(e)165Ho                    371         6          376.665    0.958      .9   U                   H        63Zy01
 165Tm(B+)165Er                  1591.3       2.0       1591.328    1.489      .0   1     55  52 165Tm           82Vy03,*
 165Yb(B+)165Tm                  2762        20         2634.635   26.591    -6.4B  B                            67Pa04,*
 165Lu(B+)165Yb                  4250       140         3853.140   35.432    -2.8B  B                            83Ge08
 165Lu(B+)165Yb                  3920        80         3853.140   35.432     -.8o  o                   hIRS     83Vi.A
 165Lu(B+)165Yb                  3920        80         3853.140   35.432     -.8   1     20  10 165Yb hIRS     93Al03
 165Irm(IT)165Ir                  180#       50#                                    2                   m        Su-02c
*165Ho 35Cl-163Dy 37Cl         Increased by 5 for systematic difference with H23, H27                        AHW   *W
*165W(a)161Hf                  Originally assigned to 168Re, re-assigned in ref.                             92Me10**
*                               ~ original E(a)=4894 recalibrated using their 168Os-170Os results    n        GAu931**
*165Rem(a)161Tam               Originally assigned to 166Re                                         k        AHW   **
*165Rem(a)161Tam               was assigned to 165Re gs in AME2012                                  k        WgM147*W
*165Rem(a)161Tam               was assigned to 165Re gs in AME2012                                  k        WgM147*W
*165Rem(a)161Tam               Originally assigned to 166Re                                                  AHW   **
*165Rem(a)161Tam               Due to a high spin isomer                                            M        99Po09**
*165Os(a)161W                  Error not given, estimated by evaluator                              K        GAu151**
*163Dy(t,p)165Dy               Q-Q(162Dy(t,p))=-556.6(2.9) keV                                      h        AHW   **
*165Ir(p)164Os                 60 us one. Poster only. Provisionally not accepted. Syst rather 1500 m        AHW017*W
*165Irm(p)164Os                Use instead 161Rem(p) GAu02c: replaced by 161Re(p)                   m        AHW002*W
*165Tm(B+)165Er                E+=272(2) to 1/2^- level at 297.371 keV                              h        Ens066**
*165Yb(B+)165Tm                E+=1580(20) to 7/2^- level at 160.47 keV                             h        Ens066**


 166Sm-u                       -43425#      429#                                    2                   g    1.0 S-u211
 166Gd-136Xe1.221               54904.1       3.9      54921.536    1.700     4.5B  B                   GJY1 1.0 18Vi02
 166Gd-84Kr1.976               116510.9       1.7                                   2                   GCP2 1.0 18Or.A
 166Tb-136Xe1.221               51232.1       4.1      51230.851    1.570     -.3   1     15  15 166Tb GJY1 1.0 20Vi04
 166Tb-84Kr1.976               112820.0       1.7     112820.215    1.570      .1   1     85  85 166Tb GCP2 1.0 20Or03
 C12 H8 N-166Er                135376        29       135373.192    0.358     -.0   U                   hR04 4.0 64De15
 C12 H8 N-166Er                135420        60       135373.192    0.358     -.2   U                   hR04 4.0 64De15
 C13 H10-166Er                 147740        60       147949.251    0.358      .9   U                   hR04 4.0 64De15
 166Lu-u                       -60157       108       -60141.000   32.000      .1   U                   MGS1 1.0 00Ra23,*
 166Lu-u                       -60141        32                                     2                   MGS2 1.0 05Li24,*
 166Hf-u                       -57860       110       -57820.000   30.000      .4   U                   MGS1 1.0 00Ra23
 166Hf-u                       -57820        30                                     2                   MGS2 1.0 05Li24
 166Ta-u                       -49488        30                                     2                   MGS2 1.0 05Li24
 166W-u                        -44957        30       -44968.029   10.159     -.4   1     11  11 166W  hGS2 1.0 05Li24
 166Er 35Cl-164Er 37Cl           4040.9       1.4       4043.451    0.802      .7   U                   KH25 2.5 72Ba08
 166Er-164Er                     1214        46         1093.327    0.799     -.7   U                   hR04 4.0 64De15
 166Er-164Er                     1110        80         1093.327    0.799     -.1   U                   hR04 4.0 64De15
 166W(a)162Hf                    4856.0       5.        4856.038    3.938     -.0  -1-                   ORa      75To05,Z
 166W(a)162Hf                    4855.0      10.        4856.038    3.938      .1  -1-                   GSa      79Ho10,Z
 166W(a)162Hf                    4858.3       8.2       4856.038    3.938     -.3  -1-                            89Hi04
 166W(a)162Hf               ave  4856.423     4.000     4856.038    3.938     -.1   1     97  78 166W            average
 166Re(a)162Ta                   5461.8      10.        5519.154   61.456     1.1  -5-                  H        78Sc26,*
 166Re(a)162Ta                   5574.5       3.        5519.154   61.456    -1.1  -5-                  GOra     82De11,*
 166Re(a)162Ta                   5637.0      13.        5519.154   61.456    -2.3B  B                   HBea     92Me10,*
 166Re(a)162Ta                   5669.9      10.        5519.154   61.456    -3.0B  B                   HDaa     96Pa01,*
 166Re(a)162Ta              ave  5519.154    35.733                                 5                            average
 166Os(a)162W                    6148.5      20.        6142.775    3.315     -.3   U                   m        77Ca23
 166Os(a)162W                    6129.0       6.        6142.775    3.315     2.2  -1-                   GSa      81Ho10
 166Os(a)162W                    6123.9      10.        6142.775    3.315     1.9   Z                   n        95Da.A,G
 166Os(a)162W                    6148.5       6.        6142.775    3.315     -.9  -1-                  MDaa     96Pa01
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 166Os(a)162W                6148.4      5.1       6142.775      3.315     -1.1  -1-                  KJya     15Li24
 166Os(a)162W          ave   6142.775    3.315     6142.775      3.315     -.0   1    100 100 166Os          average
 166Ir(a)162Re               6702.8     20.        6722.351      5.583     1.0   U                    MGSa     81Ho10
 166Ir(a)162Re               6724.3      6.        6722.351      5.583     -.3  -7-                   MAra     97Da07
 166Ir(a)162Re               6713.1     13.        6722.351      5.583      .7  -7-                   HJya     04Ke06,*
 166Ir(a)162Re         ave   6722.351    5.583                                   7                             average
 166Irm(a)162Rem             6718.2     11.        6718.633      4.054      .0  -8-                   MDaa     96Pa01,*
 166Irm(a)162Rem             6723.3      5.        6718.633      4.054     -.9  -8-                   MAra     97Da07
 166Irm(a)162Rem             6706.9      8.2       6718.633      4.054     1.4  -8-                   HJya     04Ke06
 166Irm(a)162Rem       ave   6718.633    4.054                                   8                             average
 166Pt(a)162Os               7285.9     15.        7292.266      7.233      .4  -5-                   MORa     96Bi07
 166Pt(a)162Os               7294.1      8.2       7292.266      7.233     -.2  -5-                   GJya     19Hi06
 166Pt(a)162Os         ave   7292.266    7.233                                   5                             average
 164Dy(t,p)166Dy             4276.4      4.4       4277.662      0.404      .3   U                    hMcM     88Bu08,*
 166Er(p,t)164Er            -6641        5        -6642.413      0.744     -.3   U                    HMin     73Oo01
 165Dy(n,g)166Dy             7043.5      0.4                                     3                             83Ke.A
 165Ho(n,g)166Ho             6243.69     0.06      6243.640      0.020     -.8   U                    hMMn     82Is05,Z
 165Ho(n,g)166Ho             6243.64     0.02      6243.640      0.020     -.0   1    100  51 165Ho  MMn      84Ke15,Z
 165Ho(n,g)166Ho             6243.68     0.13      6243.640      0.020     -.3   U                    MBdn     06Fi.A
 165Ho(d,p)166Ho             4025        7         4019.073      0.020     -.8   U                    hTal     65St06
 166Er(d,t)165Er            -2218       10        -2216.881      0.951      .1   U                    hKop     69Tj01
 166Ir(p)165Os               1152.0      8.0                                     6                    MAra     97Da07
 166Irm(p)165Os              1324.1      8.        1323.500     10.060     -.1o  o                    hAra     97Da07,*
 166Eu(B-)166Gd              7322      300         7622#       100#        1.0D  D                    GKur     14Ha38,G
 166Eu(B-)166Gd              7622#     100#                                      3                    g        S-u212
 166Tb(B-)166Dy              4830      100         4775.692      1.669     -.5o  o                    HKur     02Sh.A
 166Tb(B-)166Dy              4695       70         4775.692      1.669     1.2o  o                    HKur     07Ha57
 166Tb(B-)166Dy              4700       70         4775.692      1.669     1.1   U                    GKur     10Ha38
 166Dy(B-)166Ho               483        5          485.869      0.850      .6   U                    h        60He09,*
 166Ho(B-)166Er              1859        3         1853.807      0.779     -1.7  -1-                  n        63Fu17
 166Ho(B-)166Er              1857        3         1853.807      0.779     -1.1  -1-                           66Da04
 166Ho(B-)166Er              1854.7      1.5       1853.807      0.779     -.6  -1-                            74Gr41
 166Ho(B-)166Er              1851.6      2.0       1853.807      0.779     1.1  -1-                            83Ra.A
 166Ho(B-)166Er        ave   1854.655    1.044     1853.807      0.779     -.8   1     56  51 166Ho          average
 166Tm(B+)166Er              3043       20         3037.667     11.547     -.3  -2-                            61Gr33,*
 166Tm(B+)166Er              3031       20         3037.667     11.547      .3  -2-                            61Zy02,*
 166Tm(B+)166Er              3039       20         3037.667     11.547     -.1  -2-                            63Pr13,*
 166Tm(B+)166Er        ave   3037.667   11.547                                   2                             average
 166Yb(e)166Tm                280       40          292.771     13.507      .3   U                    m        Averag,*
 166Lu(B+)166Yb               5480     160         5572.720     30.619      .6   U                    M        74De09,*
 166Irm(IT)166Ir               171.5     6.1                                     7                    MAra     97Da07
*166Lu-u                   M-A=-56010(100) keV for mixture gs+m+n at 34.37 and 43.0 keV              g        Nub211**
*166Lu-u                   M-A=-55995(28) keV  for mixture gs+m+n at 34.37 and 43.0 keV              g        Nub211**
*166Re(a)162Ta             Originally assigned to 167Re                                              h        AHW930**
*166Re(a)162Ta             Assignment uncertain, no other obvious attribution                        h        AHW931**
*166Re(a)162Ta             Originally assigned to 167Re                                              h        AHW930**
*166Re(a)162Ta             Assignment tentative, may be 165Re                                        h        92Me10**
*166Re(a)162Ta             Correlated to a 170Ir 6003 line; assignment uncertain                     H        GAu10b**
*166Os(a)162W              Not in 95Da.A, do not use. ("...requirement...energy around 5974")       n        GAu959*G
*166Ir(a)162Re             All Q(a) of ref. increased by 7 keV for calibration error                 H        04Ke06**
*166Irm(a)162Rem           Correlated with E(a)=6123 of 162Rem                                       M        96Pa01**
*164Dy(t,p)166Dy           Q-Q(162Dy(t,p))=-1170.8(4.4) keV                                          h        AHW   **
*166Irm(p)165Os            Replaced by author's value for 166Irm(IT)166Ir                            M        97Da07**
*166Eu(B-)166Gd            Trends from Mass Surface TMS suggest 166Eu   300 keV less bound           G        GAu212**
*166Dy(B-)166Ho            E-=402(5) to 1^- level at 82.47 keV, and other E-                         h        Ens084**
*166Tm(B+)166Er            E+=1940(20) 1928(20) 1936(20) resp, to 2^+ level at 80.5776 keV           k        Ens084**
*166Yb(e)166Tm             Average pK=0.712(0.038) to 1^+ lvl at 82.298 keV from 2 references:       h        Ens084**
*                           ~ pK=0.74(0.05) to 82.298 level                                                   63Ja06**
*                           ~ pK=0.675(0.059) to 82.298 level                                                 73De22**
*166Yb(e)166Tm             Check Q. GAu 63Ja06;73De22 i.s.o. 73De22;74De09                           h        AHW939*W
*166Lu(B+)166Yb            E+=2225(160) to (6^-,7^-) level at 2233.36 keV                            h        Ens084**

 167Sm-u                    -37928#    537#                                      2                    g   1.0 S-u211
 167Eu-u                    -46989#    429#                                      2                    g   1.0 S-u211
 167Gd-136Xe1.228            59422      13        59430.642      5.596      .7   1     19  19 167Gd GJY1 1.0 20Vi04
 167Gd-84Kr1.988            121434.5     6.2     121432.534      5.596     -.3   1     81  81 167Gd GCP2 1.0 18Or.A
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167Tb-136Xe1.228		53947.0	4.1	53947.676	2.071	.2	1	26	26	167Tb	GJY1	1.0	20Vi04
167Tb-84Kr1.988		115949.8	2.4	115949.568	2.071	-.1	1	74	74	167Tb	GCP2	1.0	18Or.A
167Dy-82Kr2.037		111921.3	4.3				2				GCP2	1.0	18Or.A
C13 H11-167Er		153840	130	154019.158	0.307	.3	U				hR04	4.0	64De15
C13 H11-167Er		154040.4	6.2	154019.158	0.307	-.9	U				mM23	4.0	79Ha32
C12 H9 N-167Er		141480	27	141443.098	0.307	-.3	U				hR04	4.0	64De15
C12 H9 N-167Er		141520	50	141443.098	0.307	-.4	U				hR04	4.0	64De15
167Lu-u		-61757	40				2				GGS2	1.0	05Li24,*
167Hf-u		-57490	110	-57400.000	30.000	.8	U				MGS1	1.0	00Ra23
167Hf-u		-57400	30				2				MGS2	1.0	05Li24
167Ta-u		-51870	120	-51907.000	30.000	-.3	U				MGS1	1.0	00Ra23
167Ta-u		-51907	30				2				MGS2	1.0	05Li24
167W-u		-45175	30	-45189.014	20.079	-.5R	R	q-q=	14.014		MGS2	1.0	05Li24
167Er 35Cl-165Ho 37Cl		4666	3	4677.200	0.841	1.5	U				hH23	2.5	70Wh01
167Er 35Cl-165Ho 37Cl		4679.5	1.2	4677.200	0.841	-.8	U				HH25	2.5	72Ba08
167Er-166Er		1722	31	1755.125	0.192	.3	U				hR04	4.0	64De15
167W(a)163Hf		4661.9	20.	4751.119	29.883	1.7	-1-				H		89Me02
167W(a)163Hf		4671.1	13.	4751.119	29.883	1.5	-1-				H		91Me05
167W(a)163Hf	ave	4666.691	37.281	4751.119	29.883	1.4	1	23	15	163Hf			average
167Re(a)163Tam		5138.3	12.				12				HBea		92Me10
167Rem(a)163Ta		5408.8	3.	5407.032	2.863	-.6	-4-				MOra		82De11,*
167Rem(a)163Ta		5397.5	10.	5407.032	2.863	.9	-4-				MChR		84Sc06,*
167Rem(a)163Ta		5392.4	12.	5407.032	2.863	1.2	-4-				MBea		92Me10
167Rem(a)163Ta	ave	5407.032	2.863				4						average
167Os(a)163W		5983.6	5.	5984.662	55.946	.0	-4-				GSa		81Ho10,Z
167Os(a)163W		5978.7	2.	5984.662	55.946	.1	-4-				Ora		82De11,Z
167Os(a)163W		5996.9	5.	5984.662	55.946	-.2	-4-				MDaa		96Pa01,W
167Os(a)163W		5979.5	5.	5984.662	55.946	.1	-4-				MBka		02Ro17
167Os(a)163W	ave	5984.662	25.098				4						average
167Ir(a)163Re		6507.1	5.	6504.889	2.636	-.4	-2-				HAra		97Da07,W
167Ir(a)163Re		6504.0	3.	6504.889	2.636	.3	-2-				HJya		05Sc22
167Ir(a)163Re	ave	6504.889	2.636				2						average
167Irm(a)163Rem		6543.0	10.	6560.543	3.140	1.7	-1-				NGSa		81Ho10
167Irm(a)163Rem		6567.6	11.	6560.543	3.140	-.6	-1-				MDaa		96Pa01
167Irm(a)163Rem		6567.6	5.	6560.543	3.140	-1.4	-1-				NAra		97Da07
167Irm(a)163Rem		6551.2	7.2	6560.543	3.140	1.3	-1-				HJya		04Ke06
167Irm(a)163Rem		6561.5	6.	6560.543	3.140	-.1	-1-				HJya		05Sc22
167Irm(a)163Rem	ave	6560.543	3.140	6560.543	3.140	-.0	1	100	100	163Rem			average
167Pt(a)163Os		7159.8	10.	7158.089	61.577	-.0	-5-				MORa		96Bi07
167Pt(a)163Os		7150.6	10.	7158.089	61.577	.1o	o				GJya		04Ke06
167Pt(a)163Os		7156.4	8.2	7158.089	61.577	.0	-5-				GJya		19Hi06
167Pt(a)163Os	ave	7158.089	35.941				5						average
167Er(p,t)165Er		-6427	6	-6428.744	0.943	-.3	U				KMin		73Oo01
167Er(p,t)165Er		-6430	5	-6428.744	0.943	.3	U				K		75St08
166Er(n,g)167Er		6436.35	0.50	6436.429	0.179	.2	-1-				m		70Bo29,Z
166Er(n,g)167Er		6436.51	0.40	6436.429	0.179	-.2	-1-				m		70Mi01,Z
166Er(n,g)167Er		6436.46	0.22	6436.429	0.179	-.1	-1-				MBdn		06Fi.A
167Er(g,n)166Er		-6560	80	-6436.429	0.179	1.5	U				hPhi		60Ge01
166Er(d,p)167Er		4209	10	4211.863	0.179	.3	U				hTal		68Ha10
166Er(d,p)167Er		4214	10	4211.863	0.179	-.2	U				hKop		69Tj01
167Er(d,t)166Er		-189	12	-179.199	0.179	.8	U				hKop		69Bu01
166Er(n,g)167Er	ave	6436.456	0.180	6436.429	0.179	-.1	1	99	95	166Er			average
166Er(a,t)167Tm-168Er()169Tm		-666.5	1.0	-666.451	0.997	.0	1	99	99	167Tm	McM		75Bu02
167Ir(p)166Os		1070.5	6.	1070.107	3.714	-.1	-1-				M		97Da07
167Ir(p)166Os		1068.5	6.	1070.107	3.714	.3	-1-				HJyp		05Sc22,*
167Ir(p)166Os	ave	1069.500	4.243	1070.107	3.714	.1	1	77	77	167Ir			average
167Irm(p)166Os		1245.5	7.	1245.570	4.008	.0o	o				h		97Da07,*
167Dy(B-)167Ho		2350	60	2368.007	6.555	.3	U				G		77Tu01,*
167Ho(B-)167Er		970	20	1009.797	5.189	2.0	U				m		68Fu07
167Yb(B+)167Tm		1954	4	1953.216	3.797	-.2	1	90	89	167Yb			77Kr.A,*
167Lu(B+)167Yb		3130	100	3063.620	37.470	-.7	U *				M		64Ag.A,*
167W(B+)167Ta		5620	270	6257.765	33.626	2.4	U				hGot		89Me02
167Irm(IT)167Ir		175.3	2.2	175.463	2.130	.1	1	94	70	167Irm	MAra		97Da07
*167Lu-u		M-A=-57501(28) keV for mixture gs+m at 50#40 keV									g		Nub211**
*167Rem(a)163Ta		Original assignment to 168Re changed in ref.									N		92Me10**
*167Rem(a)163Ta		Rytz does not give 82De11 Re; for W,Os +0.2									n		AHW952*W
*167Rem(a)163Ta		Original assignment to 168Rem changed in ref.									N		92Me10**

*	~ original E(a)=5250 recalibrated using their 168Os-170Os results	N	GAu931**
*167Os(a)163W	What about discrepancy??	m	AHW971*W
*167Ir(a)163Re	Replaced by author's value for 163Rem(IT)163Re	h	AHW01b*W
*167Ir(a)163Re	Back to using this one. Now able to combine with following item	h	GAu095*G
*167Ir(p)166Os	E(p)=1062(6); also E(p)=1248(7) from 167Irm	H	05Sc22**
*167Irm(p)166Os	Replaced by author's value for 167Irm(IT)167Ir	M	97Da07**
*167Dy(B-)167Ho	E-=1780(60) to 3/2^- level at 569.69 keV	h	Ens008**
*167Yb(B+)167Tm	E+=639(4) to 7/2^- level at 292.820 keV	h	Ens008**
*167Lu(B+)167Yb	E+=2060(100) to 5/2^+ level at 29.658, 7/2^- at 78.671 keV	h	Ens008**

168Sm-u		-33967#	322#				2				g	1.0	S-u212
168Eu-u		-42137#	429#				2				g	1.0	S-u211
168Gd-u		-51691#	322#				2				g	1.0	S-u211
168Tb-136Xe1.235		57927.2	4.5				2				GJY1	1.0	20Vi04
C13 H12-168Er		161543.3	5.1	161522.100	0.281	-1.0	U				HM23	4.0	79Ha32
C12 H10 N-168Er		148884	44	148946.041	0.281	.4	U				hR04	4.0	64De15
C11 13C H9 N-168Er		144524	29	144475.844	0.281	-.4	U				hR04	4.0	64De15
C12 H10 N-168Yb		147010	100	147433.026	0.100	1.1	U				hR04	4.0	64De15
168Lu-u		-61253	55	-61270.202	40.766	-.3	1	55	55	168Lu	GGS2	1.0	05Li24,*
168Lum-133Cs1.263		58320.7	6.2				2				GMA8	1.0	19Hu15
168Hf-u		-59560	104	-59432.000	30.000	1.2	U				MGS1	1.0	00Ra23
168Hf-u		-59432	30				2				MGS2	1.0	05Li24
168Ta-u		-52020	110	-51953.000	30.000	.6	U				MGS1	1.0	00Ra23
168Ta-u		-51953	30				2				MGS2	1.0	05Li24
168W-u		-48181	30	-48194.954	14.229	-.5	1	22	22	168W	hGS2	1.0	05Li24
168Au-u		2716#	429#				2				g	1.0	S-u211
168Yb 35Cl2-164Dy 37Cl2		10612.8	8.7	10610.725	0.763	-.1	U				hH27	2.5	74Ba90
168Er 35Cl-166Er 37Cl		5037	50	5027.339	0.239	-.1	U				hR08	1.5	69De19
168Er 35Cl-166Er 37Cl		5026	3	5027.339	0.239	.2	U				hH23	2.5	70Wh01
168Er 35Cl-166Er 37Cl		5028.9	1.5	5027.339	0.239	-.4	U				hH25	2.5	72Ba08
168Yb-170Yb.988		-1658.726	0.100	-1658.740	0.100	-.1	1	99	99	168Yb	GJY2	1.0	20Ne.1
168Yb-168Er		1512.91	0.27	1513.015	0.264	.4	1	96	95	168Er	HSH1	1.0	11El04
168Er-167Er		284	31	322.089	0.128	.3	U				hR04	4.0	64De15
168Er-167Er		320.9	4.3	322.089	0.128	.1	U				hM24	2.5	79Ha32
168W(a)164Hf		4506.5	12.	4500.447	11.456	-.5	1	87	68	164Hf			91Me05
168Re(a)164Ta		5063	13				3				Bea		92Me10,*
168Os(a)164W		5819.0	3.	5815.655	2.699	-1.1	-1-				Ora		82De11,Z
168Os(a)164W		5800.4	8.	5815.655	2.699	1.9	-1-				H		84Sc06,G
168Os(a)164W		5812.7	8.	5815.655	2.699	.4	-1-				N		95Hi02
168Os(a)164W		5819.7	5.	5815.655	2.699	-.8	Z				hAra		04GoZZ,G
168Os(a)164W	ave	5816.268	2.715	5815.655	2.699	-.2	1	99	80	168Os			average
168Ir(a)164Re		6410.9	5.	6381.295	8.524	-5.9B	B				HOra		82De11
168Ir(a)164Re		6379.2	15.	6381.295	8.524	.1	-5-				HDaa		96Pa01
168Ir(a)164Re		6382.2	10.	6381.295	8.524	-.1	-5-				HJya		09Ha42
168Ir(a)164Re	ave	6381.295	8.524				5						average
168Irm(a)164Rem		6477.5	8.	6476.315	6.400	-.1	-6-				HDaa		96Pa01,G
168Irm(a)164Rem		6474.4	10.	6476.315	6.400	.2	-6-				HJya		09Ha42,*
168Irm(a)164Rem	ave	6476.315	6.400				6						average
168Pt(a)164Os		6990.8	20.	6989.730	3.073	-.1	U				HGSa		81Ho10
168Pt(a)164Os		6998.9	10.	6989.730	3.073	-.9	U				HORa		96Bi07
168Pt(a)164Os		6986.7	8.	6989.730	3.073	.4o	o				HJya		04Ke06
168Pt(a)164Os		6989.7	3.1				2				HJya		09Go16
168Er(p,t)166Er		-5723	6	-5725.926	0.214	-.5	U				hMin		73Oo01
168Yb(p,t)166Yb		-7647	7				2				Min		73Oo01
167Er(n,g)168Er		7771.43	0.40	7771.294	0.119	-.3	-1-				m		70Mi01,Z
167Er(n,g)168Er		7771.05	0.20	7771.294	0.119	1.2	-1-				mILn		79Br25,Z
167Er(n,g)168Er		7771.6	1.0	7771.294	0.119	-.3	U				KORn		84Ka22
167Er(n,g)168Er		7771.0	0.5	7771.294	0.119	.6	U				M		85Va.A
167Er(n,g)168Er		7771.45	0.16	7771.294	0.119	-1.0	-1-				MBdn		06Fi.A
167Er(d,p)168Er		5541	6	5546.727	0.119	1.0	U				hTal		67Ha25
168Er(d,t)167Er		-1523	10	-1514.064	0.119	.9	U				hKop		69Tj01
167Er(n,g)168Er	ave	7771.306	0.119	7771.294	0.119	-.1	1	99	96	167Er			average
167Er(a,t)168Tm-168Er()169Tm		-262.3	1.5	-262.300	1.500	-.0	1	100	100	168Tm	McM		75Bu02
168Yb(d,t)167Yb		-2797	12	-2804.054	3.960	-.6	1	11	11	167Yb	HKop		66Bu16
168Ho(B-)168Er		2740	100	2930.000	30.000	1.9	U				m		73Ka07,*
168Ho(B-)168Er		2930	30				2						90Ch37

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 168Lu(B+)168Yb                4475        80         4507.035    37.973      .4o  o              G         70Ch28,*
 168Lu(B+)168Yb                4475        80         4507.035    37.973      .4  -1-             G         72Ch44,*
 168Lu(B+)168Yb                4500        80         4507.035    37.973      .1  -1-             GIRS      83Vi.A
 168Lu(B+)168Yb          ave   4487.500    56.569     4507.035    37.973      .3   1     45  45 168Lu       average
 168Lum(B+)168Yb               4696       100         4671.653     5.776     -.2   U              G         72Ch44,*
*168Lu-u                    M-A=-56922(28) keV  for mixture gs+m at 130(40) keV               g         Nub211**
*168Re(a)164Ta              E(a)=4833(13) to level at 111.5 keV                                h         Ens089**
*168Os(a)164W               Used to recalibrate other results in same ref.                     h         GAu931*G
*168Os(a)164W               This is a thesis work, looks not reliable; all 04GoZZ taken out    h         GAu10b*G
*168Irm(a)164Rem            Correlated with E(a)=6878 of 172Aum                                h         96Pa01*G
*168Irm(a)164Rem            E(a)=6320(10), 6260(10) to gs and level at 69 keV                            09Ha42**
*168Ho(B-)168Er             E-=1900(100) to 2^+ level at 821.17 and 3^+ at 895.79 keV          h         Ens108**
*168Lu(B+)168Yb             E+=1230(80) to 2222.37 level                                       g         Ens108**
*168Lum(B+)168Yb            E+=1470(100) to 4^+ level at 2203.84 keV                           g         Ens108**

 169Eu-u                      -38283#     537#                                     2              g    1.0 S-u211
 169Gd-u                      -47118#     429#                                     2              g    1.0 S-u211
 169Tb-u                      -54193#     322#                                     2              g    1.0 S-u211
 C12 H11 N-169Tm              154920       60       154930.399     0.793      .0   U              hR04 4.0 64De15
 169Lu-u                      -62362       31       -62354.154     3.226      .3   U              MGS2 1.0 05Li24,*
 169Hf-u                      -58741       30                                      2              MGS2 1.0 05Li24
 169Ta-u                      -53960      110       -53989.000    30.000     -.3   U              MGS1 1.0 00Ra23
 169Ta-u                      -53989       30                                      2              MGS2 1.0 05Li24
 169W-u                       -48195       30       -48221.499    16.570     -.9   1     31  31 169W  MGS2 1.0 05Li24
 169Re-u                      -41203       63       -41234.102    12.205     -.5   U              KGS2 1.0 05Li24,*
 169Au-u                       -1920#     320#                                     2              m    1.0 S-h03b
 169Tm 35Cl2-165Ho 37Cl2       9793.0       1.1       9790.087     1.103    -1.1   1     16   8 165Ho  H25 2.5 72Ba08
 169Tm 35Cl-167Er 37Cl         5107         3         5112.887     0.822      .8   U              hH23 2.5 70Wh01
 169Tm 35Cl-167Er 37Cl         5113.2       1.1       5112.887     0.822     -.1   1      9   8 169Tm  H25 2.5 72Ba08
 169Re(a)165Tam                4989.3      12.                                     5              HBea      92Me10,*
 169Rem(a)165Ta                5189.1       3.        5188.733     3.059     -.1   1     99  76 165Ta MOra      82De11
 169Rem(a)165Ta                5191.1      10.        5188.733     3.059     -.2   U              MChR      84Sc06,*
 169Rem(a)165Ta                5184.0      10.        5188.733     3.059      .5   U              MBea      92Me10
 169Os(a)165W                  5717.6       4.        5713.416     3.086    -1.0  -2-             NOra      82De11
 169Os(a)165W                  5699.2       8.        5713.416     3.086     1.7  -2-             H         84Sc06,*
 169Os(a)165W                  5713         8         5713.416     3.086      .1  -2-             N         95Hi02,*
 169Os(a)165W                  5711.5       8.        5713.416     3.086      .2  -2-             MDaa      96Pa01
 169Os(a)165W                  5716.4       5.        5713.416     3.086     -.6   Z              hAra      04GoZZ,W
 169Os(a)165W            ave   5713.416     3.086                                  2                        average
 169Ir(a)165Re                 6150.8       8.        6141.022     3.665    -1.2  -5-             MAra      99Po09
 169Ir(a)165Re                 6153.9       5.        6141.022     3.665    -2.6   Z              hAra      04GoZZ
 169Ir(a)165Re                 6138.5       4.        6141.022     3.665      .6  -5-             HJya      05Sc22
 169Ir(a)165Re                 6165        14         6141.022     3.665    -1.7   U              KJya      12Th13
 169Ir(a)165Re           ave   6141.022     3.665                                  5                        average
 169Irm(a)165Rem               6276.0       3.        6266.488     2.895    -3.2B  B              MOra      82De11,Z
 169Irm(a)165Rem               6258.4      10.        6266.488     2.895      .8   U              HGSa      84Sc.A
 169Irm(a)165Rem               6267.6       9.        6266.488     2.895     -.1  -1-             MDaa      96Pa01
 169Irm(a)165Rem               6254.3       5.        6266.488     2.895     2.4B  B              kAra      99Po09
 169Irm(a)165Rem               6266.6       5.        6266.488     2.895     -.0   Z              hAra      04GoZZ
 169Irm(a)165Rem               6265.6       3.        6266.488     2.895      .3  -1-             HJya      05Sc22
 169Irm(a)165Rem               6268        14         6266.488     2.895     -.1   U              KJya      12Th13
 169Irm(a)165Rem         ave   6265.781     2.915     6266.488     2.895      .2   1     99  54 169Irm            average
 169Pt(a)165Os                 6840.2      15.        6857.611     5.121     1.2   U              HGSa      81Ho10
 169Pt(a)165Os                 6860.7      23.        6857.611     5.121     -.1   U              HDaa      96Pa01
 169Pt(a)165Os                 6853.5       8.2       6857.611     5.121      .5o  o              HJya      04Ke06
 169Pt(a)165Os                 6857.6       5.1                                    6              HJya      09Go16
 168Er(n,g)169Er               6002.5       0.7       6003.250     0.154     1.1   U              m         70Bo29,Z
 168Er(n,g)169Er               6003.5       0.3       6003.250     0.154     -.8  -2-             m         70Mu15,Z
 168Er(n,g)169Er               6003.16      0.18      6003.250     0.154      .5  -2-             MBdn      06Fi.A
 168Er(d,p)169Er               3773        12         3778.684     0.154      .5   U              hTal      68Ha10
 168Er(d,p)169Er               3781        10         3778.684     0.154     -.2   U              hKop      69Tj01
 168Er(n,g)169Er         ave   6003.250     0.154                                  2                        average
 168Er(a,t)169Tm             -14244.8      10.      -14239.471     0.757      .5   U              hMcM      75Bu02
 169Tm(g,n)168Tm              -8110        50        -8033.594     1.505     1.5   U              hPhi      60Ge01
 169Tm(d,t)168Tm              -1775         6        -1776.364     1.505     -.2   U              hPit      73Ko06
 168Yb(n,g)169Yb               6866.8       0.4       6866.979     0.152      .4  -2-             m         68Mi08,Z
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168Yb(n,g)169Yb		6867.2	0.4	6866.979	0.152	-.6	-2-				m		68Sh12,Z
168Yb(n,g)169Yb		6866.97	0.18	6866.979	0.152	.0	-2-				MBdn		06Fi.A
168Yb(d,p)169Yb		4636	12	4642.412	0.152	.5	U				hKop		66Bu16
168Yb(n,g)169Yb	ave	6866.979	0.152				2						average
169Dy(B-)169Ho		3200	300				3				LBL		90Ch34
169Ho(B-)169Er		2070	100	2125.154	20.048	.6	U				h		63Mi17,*
169Ho(B-)169Er		2140	100	2125.154	20.048	-.1	Z				LBL		90Ch34,G
169Er(B-)169Tm		343.8	3.	353.492	0.773	3.2B	B				H		56Bi30,*
169Er(B-)169Tm		347.8	5.	353.492	0.773	1.1	U				m		65Du02,*
169Yb(e)169Tm		913	12	899.128	0.756	-1.2	U				m		86Ad07,*
169Yb(e)169Tm		900	100	899.128	0.756	-.0	U				h		87Sa53,*
169Lu(B+)169Yb		2293	3				3						77Bo31
169Hf(B+)169Lu		3365	200	3365.632	28.106	.0	U				M		69Ar23,*
169Hf(B+)169Lu		3250	90	3365.632	28.106	1.3	U				M		73Me09,*
*169Lu-u		M-A=-58075(28) keV for mixture gs+m at 29.0 keV									g		Nub211**
*169Re-u		M-A=-38293(29) keV for mixture gs+m at 175(13) keV									g		Nub211**
*169Re(a)165Tam		E(a)=4871(12), and a stronger E(a)=4700(12)									H		92Me10**
*169Rem(a)165Ta		Original E(a)=5050 recalibrated using their 168Os-170Os results									n		GAu931**
*169Os(a)165W		Used to recalibrate other results in same ref.											GAu931**
*169Os(a)165W		E(a)=5578(8), 5536(10) to gs, (3/2^-) level at 43 keV									h		Ens066**
*169Os(a)165W		E(a)=5581(5) 5537(5) 5510(5) to gs, (3/2-) level at 43, (7/2-) at 72 keV									h		Ens066*W
*169Ho(B-)169Er		E-=1200(100) to 5/2^- level at 853.0 and 7/2^- at 941.04 keV									h		Ens089**
*169Ho(B-)169Er		This is the calibration. Do not use											GAu931*G
*169Er(B-)169Tm		E-=340(2) 344(4) resp, 55% to gs, 45% to 3/2^+ level at 8.41 keV									h		Ens089**
*169Yb(e)169Tm		From decay rates to (5/2)^+ lvl at 781.796, (7/2^+) 878.35 of same band									h		Ens089**
*169Yb(e)169Tm		pK=0.812(0.029) to 9/2^- level at 472.88 keV									h		Ens089**
*169Hf(B+)169Lu		E+=1850(200) to 7/2^- level at 492.88 keV									h		Ens089**
*169Hf(B+)169Lu		K/B+=5.2(1.0) to 7/2^- level at 492.88 keV									h		Ens089**

170Eu-u		-33130#	537#				2				g	1.0	S-u211
170Gd-u		-43854#	537#				2				g	1.0	S-u211
170Tb-u		-50145#	322#				2				g	1.0	S-u211
170Dy-u		-57660#	215#				2				g	1.0	S-u20c
C12 H12 N-170Er		161210	70	161502.454	1.489	1.0	U				hR04	4.0	64De15
C12 H12 N-170Yb		161831	43	162207.144	0.011	2.2	U				hR04	4.0	64De15
C11 H8 O N-170Yb		125370	150	125821.636	0.011	.8	U				hR04	4.0	64De15
C11 13C H11 N-170Yb		157320	210	157736.948	0.011	.5	U				hR04	4.0	64De15
170Yb-129Xe1.318		60266.078	0.012	60266.069	0.009	-.8	1	55	54	170Yb	KFS1	1.0	12Ra34
170Yb-132Xe1.288		58215.483	0.013	58215.494	0.009	.8	1	47	46	170Yb	KFS1	1.0	12Ra34
170Lu-u		-61529	42	-61520.769	18.082	.2R	R	q-q=		-8.231	MGS2	1.0	05Li24,*
170Hf-u		-60400	104	-60391.000	30.000	.1	U				MGS1	1.0	00Ra23
170Hf-u		-60391	30				2				MGS2	1.0	05Li24
170Ta-u		-53810	104	-53825.000	30.000	-.1	U				MGS1	1.0	00Ra23
170Ta-u		-53825	30				2				MGS2	1.0	05Li24
170W-u		-50710	110	-50769.327	14.158	-.5	U				MGS1	1.0	00Ra23
170W-u		-50755	30	-50769.327	14.158	-.5	1	22	22	170W	hGS2	1.0	05Li24
170Re-u		-41782	30	-41765.156	12.268	.6	-1-				MGS2	1.0	05Li24
170Re-u		-41768	72	-41765.156	12.268	.0	-1-	q-q=		-2.844	m1.0	1.0	174Ir-C
170Re-u	ave	-41779.929	27.692	-41765.156	12.268	.5	1	20	20	170Re			average
170Os-u		-36454	31	-36420.708	10.476	1.1	1	11	11	170Os	hGS2	1.0	05Li24
170Er 35Cl-168Er 37Cl		6073	31	6043.775	1.485	-.6	U				hR08	1.5	69De19
170Er 35Cl-168Er 37Cl		6040	3	6043.775	1.485	.5	U				hH23	2.5	70Wh01
170Er 35Cl-168Er 37Cl		6046.9	1.8	6043.775	1.485	-.7	1	11	11	170Er	H25	2.5	72Ba08
170Yb 35Cl-168Yb 37Cl		3806.0	7.6	3826.070	0.121	1.1	U				mH27	2.5	74Ba90
170Er-168Er		3450	70	3093.651	1.483	-1.3	U				hR04	4.0	64De15
170Yb-168Yb		910	200	875.945	0.100	-.0	U				hR04	4.0	64De15
170Os(a)166W		5533.5	10.	5536.863	2.691	.3	-1-				ORa		72To06,Z
170Os(a)166W		5541.8	4.1	5536.863	2.691	-1.2	-1-				Ora		82De11,Z
170Os(a)166W		5523.2	8.	5536.863	2.691	1.7	-1-				H		84Sc06,*
170Os(a)166W		5533.4	8.	5536.863	2.691	.4	-1-				N		95Hi02
170Os(a)166W		5537.5	5.	5536.863	2.691	-.1	-1-				HBka		02Ro17
170Os(a)166W		5540.6	5.	5536.863	2.691	-.7	Z				hAra		04GoZZ
170Os(a)166W	ave	5537.135	2.701	5536.863	2.691	-.1	1	99	89	170Os			average
170Ir(a)166Re		6230#	50#				6				g		S-u211
170Ir(a)166Rep		5955.4	10.				7				MBka		02Ro17,W
170Irm(a)166Re		6175.4	10.	6272.400	10.000	9.7B	B				H		78Sc26,*

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 170Irm(a)166Re                6172.7      5.        6272.400    10.000    19.9B  B                  HOra     82De11,*
 170Irm(a)166Re                6147.9     10.        6272.400    10.000    12.4B  B                  HDaa     96Pa01,*
 170Irm(a)166Re                6229.9     11.        6272.400    10.000     3.9B  B                  HDaa     96Pa01,*
 170Irm(a)166Re                6235.0      5.        6272.400    10.000     7.5   Z                  hAra     04GoZZ
 170Irm(a)166Re                6272.4     10.                                   6                  HJya     07Ha45,*
 170Pt(a)166Os                 6703.0      8.        6707.408     3.186      .5  -1-                  GSa     81Ho10
 170Pt(a)166Os                 6705.0     10.        6707.408     3.186      .2  -1-                          82En03
 170Pt(a)166Os                 6708.1      6.        6707.408     3.186     -.1  -1-                 MORa     96Bi07
 170Pt(a)166Os                 6711.2     11.        6707.408     3.186     -.3  -1-                 MJya     97Uu01
 170Pt(a)166Os                 6723.5     14.        6707.408     3.186    -1.1  -1-                 MBka     01Ro.B
 170Pt(a)166Os                 6707.1      7.        6707.408     3.186      .0  -1-                 HJya     04Ke06
 170Pt(a)166Os                 6703.0      5.        6707.408     3.186      .9   Z                  hAra     04GoZZ
 170Pt(a)166Os          ave    6707.814    3.469     6707.408     3.186     -.1   1     84  84 170Pt          average
 170Au(a)166Ir                 7174.1     11.        7177.311    15.305      .3o  o                  hJya     02Ke.C
 170Au(a)166Ir                 7170.0     12.        7177.311    15.305      .6   U *                HJya     04Ke06,G
 170Aum(a)166Irm               7277.5      6.        7285.467    12.406      .2o  o                  hJya     02Ke.C
 170Aum(a)166Irm               7226.3     15.        7285.467    12.406     1.1   U                  MAra     02Ma61
 170Aum(a)166Irm               7278.5      9.        7285.467    12.406      .1   U                  HJya     04Ke06
 170Hg(a)166Pt                 7773.2     30.7                                  6                  GJya     19Hi06
 170Er(p,a)167Ho               7036        5                                    2                   NDm     83Ta.A,W
 170Er(18O,20Ne)168Dy          4710      140                                    2                  M        98Lu08
 170Er(p,t)168Er              -4785        5        -4779.122     1.382     1.2   U                  mMin     73Oo01
 170Yb(p,t)168Yb              -6861        6        -6844.902     0.093     2.7B  B                  kMin     73Oo01
 170Er(d,3He)169Ho            -3107       20                                    2                           76Su.A
 170Er(d,t)169Er              -1010       10        -1000.439     1.390     1.0   U                  hKop     69Tj01
 169Tm(n,g)170Tm               6595.       2.5       6591.978     0.169    -1.2   U                  M        66Sh03
 169Tm(n,g)170Tm               6592.1      1.5       6591.978     0.169     -.1   U                  M        70Or.A
 169Tm(n,g)170Tm               6591.7      0.9       6591.978     0.169      .3   U                  MBNn     96Ho12,Z
 169Tm(n,g)170Tm               6591.95     0.17      6591.978     0.169      .2   1     99  66 169Tm MBdn     06Fi.A
 169Tm(d,p)170Tm               4420       20         4367.412     0.169    -2.6   U                  hCIT     66Ry01
 169Tm(d,p)170Tm               4369       15         4367.412     0.169     -.1   U                  hTal     66Sh03
 170Yb(d,t)169Yb              -2211       12        -2202.490     0.178      .7   U                  hKop     66Bu16
 170Au(p)169Pt                 1473.8     15.        1471.700    12.000     -.1o  o                  hJyp     02Ke.C
 170Au(p)169Pt                 1471.7     12.                                   7                  HJyp     04Ke06
 170Aum(p)169Pt                1749.5      8.        1751.356     5.145      .2o  o                  hJyp     02Ke.C
 170Aum(p)169Pt                1745.4     10.        1751.356     5.145      .6  -7-                 MArp     02Ma61
 170Aum(p)169Pt                1753.5      6.        1751.356     5.145     -.4  -7-                 HJyp     04Ke06
 170Aum(p)169Pt         ave    1751.356    5.145                                7                           average
 170Ho(B-)170Er                3870       50                                    2                           78Tu04
 170Hom(B-)170Er               3970       60                                    2                  N        78Tu04
 170Tm(B-)170Yb                 970        2          968.614     0.732     -.7  -1-                          54Po26
 170Tm(B-)170Yb                 967.3      1.         968.614     0.732     1.3  -1-                          69Va17,*
 170Tm(B-)170Yb         ave     967.840    0.894      968.614     0.732      .9   1     67  67 170Tm          average
 170Lu(B+)170Yb                3467       20         3457.695    16.843     -.5  -2-                          60Dz02
 170Lu(B+)170Yb                3410       50         3457.695    16.843     1.0  -2-                          65Ha30
 170Lu(B+)170Yb                3451       40         3457.695    16.843      .2  -2- q-q=    -7.187  H         170Lu-C
 170Lu(B+)170Yb         ave    3457.695   16.843                                2                           average
*170Lu-u                    M-A=-57267(29) keV  for mixture gs+m at 92.91 keV                      g        Nub211**
*170Os(a)166W               Used to recalibrate other results in same ref.                                  GAu931**
*170Ir(a)166Rep             Correlated with 174Au E(a)=6544                                        m        02Ro17*W
*170Irm(a)166Re             E(a)=6029.8(10,Z) 6027.2(5,Z) 6003(10) most probably to low lvls in 166ReH        GAu128**
*170Irm(a)166Re             170Irm(IT)-166Rem(IT)=81(15); in Ame95 assigned to Ir gs to Re gs      m        96Pa01*G
*170Irm(a)166Re             Correlated with 166Re E(a)=5533 keV                                    M        96Pa01**
*170Irm(a)166Re             E(a)=5951(10) to level at 175, 6007(10) to 122, 6053(10) to 75 keV     H        07Ha45**
*170Au(a)166Ir              Cannot use this and next without making estimates become primaries     m        GAu035*G
*170Au(a)166Ir              See diagram at 170Au                                                   h        GAu072*G
*170Er(p,a)167Ho            Q- for 167Ho ->50(20) ms. Goes (p,a) to gs???                          m        AHW95c*W
*170Tm(B-)170Yb             E-=883(1) to 2^+ level at 84.25468 keV                                 h        Ens02b**


 171Gd-u                     -38873#     537#                                   2                  g    1.0 S-u211
 171Tb-u                     -46989#     429#                                   2                  g    1.0 S-u211
 171Dy-u                     -53688#     215#                                   2                  g    1.0 S-u211
 C11 13C H12 N-171Yb         164140       80       163997.707     0.014     -.4   U                  hR04 4.0 64De15
 C10 H7 O N2-171Yb           119640      270       119506.336     0.014     -.1   U                  hR04 4.0 64De15
 171Yb-129Xe1.326             62592.096    0.012    62592.096     0.012     -.0   1    100 100 171Yb KFS1 1.0 12Ra34
 171Lu-u                     -62132       41       -62081.434     1.999     1.2   U                  MGS2 1.0 05Li24,*
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171Hf-u		-59570	104	-59508.000	31.000	.6	U				MGS1	1.0	00Ra23,*
171Hf-u		-59508	31				2				MGS2	1.0	05Li24,*
171Ta-u		-55550	104	-55524.000	30.000	.2	U				MGS1	1.0	00Ra23
171Ta-u		-55524	30				2				MGS2	1.0	05Li24
171W-u		-50650	110	-50549.000	30.000	.9	U				MGS1	1.0	00Ra23
171W-u		-50549	30				2				MGS2	1.0	05Li24
171Re-u		-44284	30				2				MGS2	1.0	05Li24
171Os-u		-36796	30	-36819.692	19.589	-.8	-1-				MGS2	1.0	05Li24
171Os-u		-36806	30	-36819.692	19.589	-.5	-1-	q-q=	13.692		m1.0	1.0	167W-C
171Os-u	ave	-36801.000	21.213	-36819.692	19.589	-.9	1	85	85	171Os			average
171Yb 35Cl2-167Er 37Cl2		10178.0	1.7	10175.571	0.336	-.6	U				KH27	2.5	74Ba90
171Yb 35Cl-169Tm 37Cl		5055	3	5062.684	0.797	1.0	U				hH23	2.5	70Wh01
171Yb 35Cl-169Tm 37Cl		5061.9	1.7	5062.684	0.797	.2	U				HH27	2.5	74Ba90
171Yb-170Yb		1220	60	1564.273	0.015	1.4	U				hR04	4.0	64De15
171Os(a)167W		5365.8	10.	5371.058	4.432	.5	-1-				NORa		72To06
171Os(a)167W		5365.8	10.	5371.058	4.432	.5	-1-				N		78Sc26
171Os(a)167W		5393.4	15.	5371.058	4.432	-1.5	-1-				NISa		79Ha10
171Os(a)167W		5367.9	8.	5371.058	4.432	.4	-1-				N		95Hi02,*
171Os(a)167W		5374.0	9.	5371.058	4.432	-.3	-1-				MDaa		96Pa01
171Os(a)167W		5378.0	5.	5371.058	4.432	-1.4	Z				hAra		04GoZZ
171Os(a)167W	ave	5370.630	4.441	5371.058	4.432	.1	1	100	93	167W			average
171Ir(a)167Rem		5854.2	10.	5865.740	4.773	1.1	-5-				MBka		02Ro17,*
171Ir(a)167Rem		5865.4	8.	5865.740	4.773	.0	-5-				HAra		11Ko.B,*
171Ir(a)167Rem		5871.6	7.2	5865.740	4.773	-.8	-5-				KAnv		13An10
171Ir(a)167Rem	ave	5865.740	4.773				5						average
171Irm(a)167Re		6159.2	3.	6161.142	2.290	.6	-11-				nOra		82De11,*
171Irm(a)167Re		6159	5	6161.142	2.290	.4	-11-						92Sc16,*
171Irm(a)167Re		6180	11	6161.142	2.290	-1.7	-11-				MDaa		96Pa01,*
171Irm(a)167Re		6159.2	8.	6161.142	2.290	.2	-11-				HAnv		10An01,*
171Irm(a)167Re		6184.8	5.	6161.142	2.290	-4.7	Z				hAra		04GoZZ,W
171Irm(a)167Re		6172.4	8.	6161.142	2.290	-1.4	-11-				HAra		11Ko.B,*
171Irm(a)167Re	ave	6161.142	2.290				11						average
171Pt(a)167Os		6608.1	4.	6607.376	3.077	-.2	-5-				HOra		81De22,Z
171Pt(a)167Os		6606.8	5.	6607.376	3.077	.1	-5-				HGSa		81Ho10,Z
171Pt(a)167Os		6604.8	11.	6607.376	3.077	.2	-5-				HJya		97Uu01
171Pt(a)167Os		6609.9	5.	6607.376	3.077	-.5	Z				hAra		04GoZZ
171Pt(a)167Os		6600.6	15.	6607.376	3.077	.5	U				HAnv		10An01
171Pt(a)167Os	ave	6607.376	3.077				5						average
171Aum(a)167Irm		7163.9	6.	7164.331	4.072	.1	-1-				MAra		97Da07
171Aum(a)167Irm		7162.9	8.	7164.331	4.072	.2	-1-				HJya		04Ke06
171Aum(a)167Irm	ave	7163.517	4.915	7164.331	4.072	.2	1	69	39	171Aum			average
171Hg(a)167Pt		7667.7	15.				6				HJya		04Ke06
171Yb(p,t)169Yb		-6599	5	-6592.131	0.179	1.4	U				HMin		73Oo01
170Er(n,g)171Er		5681.5	0.5	5681.627	0.350	.3	-1-						71Al01
170Er(n,g)171Er		5681.6	0.5	5681.627	0.350	.1	-1-				MBdn		06Fi.A
170Er(d,p)171Er		3450	10	3457.060	0.350	.7	U				hTal		68Ha10
170Er(d,p)171Er		3458	10	3457.060	0.350	-.1	U				hKop		69Tj01
170Er(n,g)171Er	ave	5681.550	0.354	5681.627	0.350	.2	1	98	72	171Er			average
170Er(a,t)171Tm-168Er()169Tm		817.9	1.0	817.334	0.893	-.6	1	80	63	170Er	McM		75Bu02
170Yb(n,g)171Yb		6614.3	0.6	6614.207	0.014	-.2	U				K		72Wa10,Z
170Yb(n,g)171Yb		6616.6	0.4	6614.207	0.014	-6.0C	C				hBdn		06Fi.A
170Yb(d,p)171Yb		4390	12	4389.641	0.014	-.0	U				hKop		66Bu16
171Yb(d,t)170Yb		-359	12	-356.977	0.014	.2	U				hKop		66Bu16
170Yb(a,t)171Lu-174Yb()175Lu		-1156.2	2.0	-1156.632	1.705	-.2	1	73	61	171Lu	McM		75Bu02
171Au(p)170Pt		1452.6	17.	1447.928	9.804	-.3	-2-				HArp		99Po09
171Au(p)170Pt		1445.6	12.	1447.928	9.804	.2	-2-				HJyp		04Ke06
171Au(p)170Pt	ave	1447.928	9.804				2						average
171Aum(p)170Pt		1702.1	6.	1702.493	3.714	.1	-1-				h		97Da07
171Aum(p)170Pt		1704.1	6.	1702.493	3.714	-.3	-1-				HJyp		04Ke06
171Aum(p)170Pt	ave	1703.100	4.243	1702.493	3.714	-.1	1	77	61	171Aum			average
171Ho(B-)171Er		3200	600				2				LBL		90Ch34
171Er(B-)171Tm		1490	2	1492.449	1.079	1.2	1	29	28	171Er			61Ar15,*
171Tm(B-)171Yb		96.5	1.0	96.547	0.971	.0	1	94	94	171Tm			57Sm73
171Lu(B+)171Yb		1479.3	3.	1478.328	1.862	-.3	1	39	39	171Lu			77Bo32,*
171Re(B+)171W		5670	200	5835.811	39.520	.8	U				MGot		87Ru05
171Aum(IT)171Au		250	16	254.565	10.484	.3o	o				H		99Po09,*
*171Lu-u		M-A=-57840(33) keV for mixture gs+m at 71.13 keV									g		Nub211**

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*171Hf-u                      M-A=-55480(100) keV for mixture gs+m at 21.93 keV                 g        Nub211**
*171Hf-u                      M-A=-55420(28) keV  for mixture gs+m at 21.93 keV                 g        Nub211**
*171Os(a)167W                 E(a)=5241(8), 5166(8) to gs and level at 79 keV                   h        95Hi02**
*171Ir(a)167Rem               Correlated with E(a)=6412 of 175Au                                M        02Ro17**
*171Ir(a)167Rem               Correlated with E(a)=6430(8) of 175Au and 6556(8) of 179Tl        H        11Ko.B**
*171Irm(a)167Re               E(a)=5925.2(3,Z) 5925(5) 5945(11) 5925(8) resp, to (11/2^-) lvl at 92 keVk  92Sc16**
*                              ~ E(a)=5920 correlated with 175Au E(a)=6438 keV                  H        02Ro17**
*171Irm(a)167Re               Assignments are different from Nubase : (11/2-) level is 92 keV above (9/h  Ens008*G
*171Irm(a)167Re               E(a)=5950(5) to 92 level; but half-life is 8.1(0.9) ms            h        04GoZZ*W
*171Irm(a)167Re               E(a)=5938(8) to 92 level; correlated with E(a)=6431(8) of 175Aum  H        11Ko.B**
*                              ~ and 7194(8) of 179Tlm                                          H        11Ko.B**
*171Er(B-)171Tm               E-=1065(2) to 7/2^- level at 424.95 keV                           h        Ens029**
*171Lu(B+)171Yb               E+=362(3) to 7/2^+ level at 95.28 keV                             h        Ens029**
*171Aum(IT)171Au              Redundant; use only their Q(p)                                    H        GAu095**


 172Gd-u                       -35395#     322#                                    2                  g    1.0 S-u211
 172Tb-u                       -42609#     537#                                    2                  g    1.0 S-u211
 172Dy-u                       -51272#     322#                                    2                  g    1.0 S-u211
 172Ho-u                       -55270#     210#                                    2                  h    1.0 S-u111
 C10 H6 O2 N-172Yb             103560       60      103466.780     0.015     -.4   U                  hR04 4.0 64De15
 172Yb-132Xe1.303               61272.578    0.013   61272.578     0.013      .0   1    100 100 172Yb KFS1 1.0 12Ra34
 172Hf-u                       -60555       30      -60550.283    26.225      .2  -2-                 MGS2 1.0 05Li24
 172Hf-u                       -60535       54      -60550.283    26.225     -.3  -2- q-q=    14.236  H1.0 1.0  172Lu+0
 172Hf-u                  ave  -60550.283   26.225                                 2                           average
 172Ta-u                       -55105       30                                     2                  MGS2 1.0 05Li24
 172W-u                        -52770      110      -52708.000    30.000      .6   U                  MGS1 1.0 00Ra23
 172W-u                        -52708       30                                     2                  MGS2 1.0 05Li24
 172Re-u                       -44760      220      -44623.834    38.183      .6   U                  gGS1 1.0 00Ra23,*
 172Re-u                       -44647       53      -44623.834    38.183      .4   1     52  52 172Re GGS2 1.0 05Li24,*
 172Os-u                       -39986       32      -39983.156    13.699      .1   Z                  mGS2 1.0 02Sc.C,G
 172Yb 35Cl2-168Er 37Cl2          9906.7     1.7      9908.621     0.312      .5   U                  KH27 2.5 74Ba90
 172Yb 35Cl-170Yb 37Cl            4568.5     2.0      4569.536     0.070      .2   U                  mH27 2.5 74Ba90
 172Yb-170Yb1.012                 2402.251   0.085    2402.202     0.016     -.6   U                  GJY2 1.0 20Ne.1
 172Yb-171Yb                       -50     230          55.139     0.018      .1   U                  hR04 4.0 64De15
 172Os(a)168W                     5226.8    10.       5224.326     6.973     -.2  -1-                          71Bo06
 172Os(a)168W                     5227.8    10.       5224.326     6.973     -.3  -1-                 MDaa      96Pa01
 172Os(a)168W                     5230.8     5.       5224.326     6.973    -1.3   Z                  hAra      04GoZZ
 172Os(a)168W             ave     5227.302   7.240    5224.326     6.973     -.4   1     93  59 168W           average
 172Ir(a)168Re                    5990.6    10.                                    4                  H         92Sc16,*
 172Ir(a)168Re                    5774.8    10.       5990.600    10.000     21.6   Z                  hAra      04GoZZ,W
 172Irm(a)168Re                   6129.3     3.       6129.247     2.572     -.0  -4-                  Ora      82De11,*
 172Irm(a)168Re                   6161      20        6129.247     2.572    -1.6F  F                  hGSa      84Sc.A,*
 172Irm(a)168Re                   6129.1     5.       6129.247     2.572      .0  -4-                           92Sc16,*
 172Irm(a)168Re                   6123.0    12.       6129.247     2.572      .5   U                  MDaa      96Pa01,*
 172Irm(a)168Re                   6131.0    10.       6129.247     2.572     -.2   Z                  hAra      04GoZZ,W
 172Irm(a)168Re           ave     6129.247   2.572                                 4                           average
 172Pt(a)168Os                    6464.8     4.       6463.434     4.039     -.3   1     97  77 172Pt  Ora      81De22,Z
 172Pt(a)168Os                    6467.6     5.       6463.434     4.039     -.8   Z                  hAra      04GoZZ
 172Pt(a)168Os                    6474.8    15.       6463.434     4.039     -.8   U                  HAnv      09An20
 172Au(a)168Ir                    6923.3    10.2                                   6                  HJya      09Ha42
 172Aum(a)168Irm                  7023.6    10.       7033.817     5.651     1.0  -7-                 H         93Se09
 172Aum(a)168Irm                  7042.1     9.       7033.817     5.651     -.9  -7-                 HDaa      96Pa01
 172Aum(a)168Irm                  7033.8    10.       7033.817     5.651      .0  -7-                 HJya      09Ha42,*
 172Aum(a)168Irm          ave     7033.817   5.651                                 7                           average
 172Hg(a)168Pt                    7525.3    12.       7523.801     6.191     -.1  -3-                 h         99Se14
 172Hg(a)168Pt                    7536.5    16.       7523.801     6.191     -.8o  o                  HJya      04Ke06
 172Hg(a)168Pt                    7523.3     7.2      7523.801     6.191      .1  -3-                 HJya      09Sa27
 172Hg(a)168Pt            ave     7523.801   6.191                                 3                           average
 170Er(t,p)172Er                  4034       4        4035.904     3.770      .5   1     89  87 172Er          80Sh14
 172Yb(p,t)170Yb                 -6161       5       -6152.367     0.015     1.7   U                  hMin      73Oo01
 171Yb(n,g)172Yb                  8020.3     0.7      8019.956     0.017     -.5   U                  K         71Al14,Z
 171Yb(n,g)172Yb                  8020.1     0.5      8019.956     0.017     -.3   U                  K         75Gr32
 171Yb(n,g)172Yb                  8019.67    0.35     8019.956     0.017      .8   U                  KILn      85Ge02,Z
 171Yb(n,g)172Yb                  8019.27    0.17     8019.956     0.017     4.0C  C                  KBdn      06Fi.A
 171Yb(d,p)172Yb                  5797      12        5795.390     0.017     -.1   U                  hKop      66Bu16
 171Yb(d,p)172Yb                  5789       5        5795.390     0.017     1.3   U                  hTal      66Sh14
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172Yb(d,t)171Yb		-1772	12	-1762.726	0.017	.8	U				hKop		66Bu16
171Yb(3He,d)172Lu		-792	34	-775.211	2.336	.5	U				hRoc		76El11
171Yb(a,t)172Lu-174Yb()175Lu		-791.9	2.0	-791.900	2.000	.0	1	100	100	172Lu	McM		75Bu02
172Er(B-)172Tm		888	5	890.976	4.542	.6	1	83	70	172Tm			62Gu03,*
172Tm(B-)172Yb		1870	10	1881.903	5.481	1.2	1	30	30	172Tm			66Ha15
172Hf(e)172Lu		350	50	333.880	24.540	-.3R	R	q-q=	16.120		m		79To18
172Ta(B+)172Hf		4920	180	5072.249	37.117	.8	U				M		73Ca10,*
172W(B+)172Ta		3210	100	2232.791	39.520	-9.8C	C				M		74Ca.A,*
*172Re-u		M-A=-41640(200) keV for mixture gs+m at 110#50 keV									g		Nub211**
*172Re-u		M-A=-41533(28) keV for mixture gs+m at 110#50 keV									g		Nub211**
*172Os-u		used as reference									m		02Sc.C*G
*172Ir(a)168Re		E(a)=5510(10) to 89.7+123.2+136.3 level									m		92Sc16**
*		~ level at 349.2 considered uncertain									k		Ens942**
*		~ E(a)=5510(10) correlated with E(a)=6260 of 186Au									k		02Ro17**
*172Ir(a)168Re		E(a)=5520(10) to 123.2 level {BPf}									h		04GoZZ*W
*172Irm(a)168Re		E(a)=5736 followed by XK(Re), 128 M*2 and 161 M*3 gamma's									h		84Sc.A**
*172Irm(a)168Re		F : first assigned to 173Ir(a); seen in neither nuclide in ref.									h		92Sc16**
*172Irm(a)168Re		E(a)=5828.2(3,Z) 5828(5) 5822(12) resp, to (8^+) level at 162.1 keV									h		Ens108**
*172Irm(a)168Re		E(a)=5830(10) to 162.1 level {BPf}									h		04GoZZ*W
*172Aum(a)168Irm		E(a)=6870(10) 6800(10) to gs and ~70 keV level									H		09Ha42**
*172Er(B-)172Tm		E-=278(5) to 1^+ level at 610.062 keV									k		Ens15c**
*172Ta(B+)172Hf		E+=2480(180) to 4^- level at 1418.55 keV									h		Ens959**
*172W(B+)172Ta		E+=1600(100) in coinc. with 459.2 keV gamma from 586.3 level									k		Ens15c**

173Tb-u		-39195#	537#				2				g	1.0	S-u20c
173Dy-u		-46957#	429#				2				g	1.0	S-u211
173Ho-u		-52980#	320#				2				h	1.0	S-u123
173Er-u		-57600#	210#				2				n	1.0	S
C14 H5-173Yb		101030	70	100908.948	0.012	-.4	U				hR04	4.0	64De15
C10 H7 O2 N-173Yb		109810	60	109462.254	0.012	-1.4	U				hR04	4.0	64De15
173Yb-129Xe1.341		65905.075	0.013	65905.078	0.010	.3	1	58	57	173Yb	KFS1	1.0	12Ra34
173Yb-132Xe1.311		63868.901	0.015	63868.897	0.010	-.3	1	44	43	173Yb	KFS1	1.0	12Ra34
173Hf-u		-59487	30				2				MGS2	1.0	05Li24
173Ta-u		-56270	104	-56250.000	30.000	.2	U				MGS1	1.0	00Ra23
173Ta-u		-56250	30				2				MGS2	1.0	05Li24
173W-u		-52340	104	-52311.000	30.000	.3	U				MGS1	1.0	00Ra23
173W-u		-52311	30				2				MGS2	1.0	05Li24
173Re-u		-46910	110	-46757.000	30.000	1.4	U				MGS1	1.0	00Ra23
173Re-u		-46757	30				2				MGS2	1.0	05Li24
173Os-u		-40169	30	-40191.809	16.058	-.8	1	29	29	173Os	MGS2	1.0	05Li24
173Ir-u		-32449	100	-32494.601	11.317	-.5	U				KGS2	1.0	05Li24,*
173Yb 35Cl2-169Tm 37Cl2		9898.3	1.2	9897.505	0.807	-.3	U				KH27	2.5	74Ba90
173Yb 35Cl-171Yb 37Cl		4827	4	4834.821	0.070	.8	U				hH23	2.5	70Wh01
173Yb 35Cl-171Yb 37Cl		4835.3	1.6	4834.821	0.070	-.1	U				hH27	2.5	74Ba90
173Yb-172Yb		1970	120	1829.558	0.016	-.3	U				hR04	4.0	64De15
173Os(a)169W		5057.2	10.	5054.693	5.780	-.2	-1-						71Bo06
173Os(a)169W		5055.2	7.	5054.693	5.780	-.1	-1-				MGSa		84Sc.A
173Os(a)169W	ave	5055.782	5.871	5054.693	5.780	-.2	1	97	69	169W			average
173Ir(a)169Rem		5544.4	10.	5540.842	9.698	-.4	1	90	77	169Rem			92Sc16
173Ir(a)169Rem		5546.4	5.	5540.842	9.698	-1.1	Z				hAra		04GoZZ
173Irm(a)169Re		5930.4	5.	5941.844	2.512	2.3	-4-						67Si02,*
173Irm(a)169Re		5947.1	4.	5941.844	2.512	-1.3	-4-				Ora		82De11,*
173Irm(a)169Re		5937	10	5941.844	2.512	.5	-4-				MGSa		84Sc.A,*
173Irm(a)169Re		5944.8	5.	5941.844	2.512	-.6	-4-						92Sc16,*
173Irm(a)169Re		5951.9	13.	5941.844	2.512	-.8	-4-				MDaa		96Pa01,*
173Irm(a)169Re		5927.3	20.	5941.844	2.512	.7	U				MAra		01Ko.B
173Irm(a)169Re		5942.7	13.	5941.844	2.512	-.1	Z				hAra		04GoZZ,W
173Irm(a)169Re	ave	5941.844	2.512				4						average
173Pt(a)169Os		6359.3	8.2	6361.310	57.885	.0	-3-				ISa		79Ha10,Z
173Pt(a)169Os		6352.3	3.	6361.310	57.885	.2	-3-				Ora		81De22,Z
173Pt(a)169Os		6382.9	10.	6361.310	57.885	-.4o	o				hGSa		84Sc.A
173Pt(a)169Os		6372.6	9.	6361.310	57.885	-.2	-3-				MDaa		96Pa01
173Pt(a)169Os		6379.8	5.1	6361.310	57.885	-.4	Z				hAra		04GoZZ,W
173Pt(a)169Os		6387.9	15.	6361.310	57.885	-.5	U *				HAnv		09An20
173Pt(a)169Os	ave	6361.310	29.166				3						average
173Au(a)169Ir		6830.2	6.	6836.483	4.914	1.0	-4-				MAra		99Po09

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 173Au(a)169Ir                  6847.6       8.         6836.483     4.914    -1.4  -4-                MAra     01Ko44
 173Au(a)169Ir                  6848.6       5.         6836.483     4.914    -2.4   Z                 hAra     04GoZZ
 173Au(a)169Ir                  6846.6      14.         6836.483     4.914     -.7   U *               KAra     12Th13
 173Au(a)169Ir              ave 6836.483     4.914                                   4                          average
 173Aum(a)169Irm                6896.8      10.         6897.050     3.027      .0  -1-                MGSa     84Sc.A,W
 173Aum(a)169Irm                6909.1       9.         6897.050     3.027    -1.3  -1-                MDaa     96Pa01
 173Aum(a)169Irm                6891.6       4.         6897.050     3.027     1.3  -1-                MAra     99Po09
 173Aum(a)169Irm                6900.8       6.         6897.050     3.027     -.6  -1-                MAra     01Ko44
 173Aum(a)169Irm                6901.8       5.         6897.050     3.027    -1.0   Z                 hAra     04GoZZ
 173Aum(a)169Irm                6899        15          6897.050     3.027     -.1   U                 KJya     12Th13
 173Aum(a)169Irm            ave 6896.276     3.050      6897.050     3.027      .3   1    98  52 173Aum         average
 173Hg(a)169Pt                  7382.0      11.3        7378.024     4.459     -.4  -7-                H        99Se14
 173Hg(a)169Pt                  7362.5      15.4        7378.024     4.459     1.0  -7-                HJya     04Ke06
 173Hg(a)169Pt                  7378.9       5.         7378.024     4.459     -.2  -7-                H        12Od01
 173Hg(a)169Pt              ave 7378.025     4.459                                   7                          average
 173Yb(p,t)171Yb               -5913         5         -5905.256     0.014     1.5   U                 hMin     73Oo01
 172Yb(n,g)173Yb                6367.3       0.4        6367.096     0.015     -.5   U                 K        71Al01,Z
 172Yb(n,g)173Yb                6367.2       0.6        6367.096     0.015     -.2   U                 KBdn     06Fi.A
 173Yb(g,n)172Yb               -6500        80         -6367.096     0.015     1.7   U                 hPhi     60Ge01
 172Yb(d,p)173Yb                4145        12          4142.530     0.015     -.2   U                 hKop     66Bu16
 173Yb(d,t)172Yb                -114        12          -109.866     0.015      .3   U                 hKop     66Bu16
 172Yb(a,t)173Lu-174Yb()175Lu   -595.6       1.0        -595.600     1.000     -.0   1   100 100 173Lu  McM     75Bu02
 173Tm(B-)173Yb                 1260        50          1295.167     4.400      .7   U                 h        63Ku22
 173Tm(B-)173Yb                 1320        40          1295.167     4.400     -.6   U                 h        63Or01
 173Lu(e)173Yb                   675        20           670.185     1.567     -.2   U                 h        73Ko13
 173Ta(B+)173Hf                 3670       200          3015.246    39.520    -3.3B  B                 h        73Re03
 173W(B+)173Ta                  4000       300          3669.155    39.520    -1.1   U                 M        80Vi.A
*173Ir-u                       M-A=-30113(70) keV  for mixture gs+m at 226(9) keV                      g        Nub211**
*173Irm(a)169Re                E(a)=5660.0(5,Z) 5676.2(4,Z) 5666(10) 5674(5) 5681(13) resp,           AHW   **
*                               ~ to (11/2^-) level at 136.40 keV                                      k        Ens155**
*173Irm(a)169Re                E(a)=5672(5) to (11/2-) level at 136.40 keV                             k        Ens155*W
*173Pt(a)169Os                 further E(a): 6133(5), 6100(5), 6067(5)  {BPf}                          h        04GoZZ*W
*173Aum(a)169Irm               Same author; gives E(a)=6720(20)                                        m        83Sc24*W
*173Aum(a)169Irm               T=59(+45,-18) ms but ref 14(1) ms (??)                                  m        01Ko44*W


 174Tb-u                      -34321#      537#                                      2                 g    1.0 S-u20c
 174Dy-u                      -44155#      537#                                      2                 g    1.0 S-u211
 174Ho-u                      -49243#      322#                                      2                 g    1.0 S-u211
 174Er-u                      -55770#      320#                                      2                 m    1.0 S-h03b
 C14 H6-174Yb                 108308        38        108082.646     0.012    -1.5   U                 hR04 4.0 64De15
 174Yb-129Xe1.349              67318.179     0.011     67318.167     0.009    -1.1   1    71  70 174Yb KFS1 1.0 12Ra34
 174Yb-132Xe1.318              65191.113     0.017     65191.142     0.009     1.7   1    31  30 174Yb KFS1 1.0 12Ra34
 174Ta-u                      -55546        30                                       2                 MGS2 1.0 05Li24
 174W-u                       -53940       104        -53921.000    30.000      .2   U                 MGS1 1.0 00Ra23
 174W-u                       -53921        30                                       2                 MGS2 1.0 05Li24
 174Re-u                      -46930       104        -46885.000    30.000      .4   U                 MGS1 1.0 00Ra23
 174Re-u                      -46885        30                                       2                 MGS2 1.0 05Li24
 174Os-u                      -42880       110        -42937.446    10.995     -.5   U                 MGS1 1.0 00Ra23
 174Os-u                      -42919        30        -42937.446    10.995     -.6   1    13  13 174Os hGS2 1.0 05Li24
 174Ir-u                      -33090        55        -33050.061    12.047      .7R  R  q-q=  -39.939  GGS2 1.0 05Li24,*
 174Yb 35Cl-172Yb 37Cl          5420         4          5431.016     0.070     1.1   U                 hH23 2.5 70Wh01
 174Yb 35Cl-172Yb 37Cl          5430.3       1.1        5431.016     0.070      .3   U                 mH27 2.5 74Ba90
 174Yb-173Yb                     700        50           651.334     0.013     -.2   U                 hR04 4.0 64De15
 174Hf(a)170Yb                  2558.9      30.         2494.390     2.259    -2.2   U                 h        61Ma05
 174Os(a)170W                   4872.2      10.         4870.435     9.687     -.2   1    90  78 170W           71Bo06
 174Ir(a)170Rem                 5624.1      10.         5620.370     4.543     -.4  -4-                         92Sc16,*
 174Ir(a)170Rem                 5619.4       5.1        5620.370     4.543      .2  -4-                GJya     19Mo.B,*
 174Ir(a)170Rem             ave 5620.370     4.543                                   4                          average
 174Irm(a)170Re                 5817.6       6.         5817.351     3.660     -.0  -1-                         67Si02,*
 174Irm(a)170Re                 5816.4       5.         5817.351     3.660      .2  -1-                         92Sc16,*
 174Irm(a)170Re                 5819.2      13.3        5817.351     3.660     -.1  -1-                GJya     19Mo.B,*
 174Irm(a)170Re             ave 5817.070     3.690      5817.351     3.660      .1   1    98  80 170Re          average
 174Pt(a)170Os                  6176.3      10.         6183.168     3.412      .7  -2-                 ISa     79Ha10,Z
 174Pt(a)170Os                  6185.7       5.         6183.168     3.412     -.5  -2-                 Ora     81De22,Z
 174Pt(a)170Os                  6182.4       5.1        6183.168     3.412      .2  -2-                HAra     04Go38
 174Pt(a)170Os              ave 6183.168     3.412                                   2                          average
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 174Au(a)170Ir                      6700.3      10.        6699.294     7.238     -.1  -7-              MGSa    84Sc.A
 174Au(a)170Ir                      6698.3      10.        6699.294     7.238      .1  -7-              MDaa    96Pa01,*
 174Au(a)170Ir                      6701.3       5.        6699.294     7.238     -.4   Z               hAra    04GoZZ
 174Au(a)170Ir                ave   6699.294     7.238                               7                          average
 174Aum(a)170Irm                    6683.9      20.        6783.581     7.994     5.0B  B               hGSa    83Sc24,*
 174Aum(a)170Irm                    6778        10         6783.581     7.994      .6  -7-              MGSa    84Sc.A,*
 174Aum(a)170Irm                    6793.5      13.        6783.581     7.994     -.7  -7-              MDaa    96Pa01
 174Aum(a)170Irm                    6774.0       5.        6783.581     7.994     1.9   Z               hAra    04GoZZ
 174Aum(a)170Irm              ave   6783.581     7.994                               7                          average
 174Hg(a)170Pt                      7235.6      11.        7233.269     6.012     -.2  -2-              MJya    97Uu01
 174Hg(a)170Pt                      7232.5       8.2       7233.269     6.012      .1  -2-              h       99Se14
 174Hg(a)170Pt                      7231.5      14.3       7233.269     6.012      .1  -2-              hBka    01Ro.B
 174Hg(a)170Pt                      7237.7       5.        7233.269     6.012     -.9   Z               hAra    04GoZZ
 174Hg(a)170Pt                ave   7233.269     6.012                               2                          average
 174Yb(p,t)172Yb                   -5359         5        -5349.904     0.015     1.8   U               hMin    73Oo01
 173Yb(n,g)174Yb                    7464.63      0.06      7464.605     0.013     -.4   U               KMMn    82Is05,Z
 173Yb(n,g)174Yb                    7464.58      0.35      7464.605     0.013      .1   U               MILn    87Ge01,Z
 173Yb(n,g)174Yb                    7465.5       0.4       7464.605     0.013    -2.2   U               hBdn    06Fi.A
 173Yb(d,p)174Yb                    5239        12         5240.038     0.013      .1   U               hKop    66Bu16
 173Yb(d,p)174Yb                    5229         5         5240.038     0.013     2.2   U               hTal    66Sh14
 174Yb(d,t)173Yb                   -1218        12        -1207.374     0.013      .9   U               hKop    66Bu16
 173Yb(a,t)174Lu-174Yb()175Lu       -202.1       1.0       -202.100     1.000      .0   1   100 100 174Lu  McM     75Bu02
 174Tm(B-)174Yb                     3080       100         3080.000    44.721      .0  -2-                      64Ka16,*
 174Tm(B-)174Yb                     3080        50         3080.000    44.721      .0  -2-                      67Gu12,*
 174Tm(B-)174Yb               ave   3080.000    44.721                               2                          average
 174Lu(B+)174Yb                     1402         5         1374.193     1.567    -5.6B  B               h       68Kl08
 174Lu(e)174Yb                      1370         7         1374.193     1.567      .6   U               h       68Li01,*
 174Ta(B+)174Hf                     3845        80         4103.851    28.036     3.2B  B               M       71Ch26,*
*174Ir-u                          M-A=-30761(36) keV  for mixture gs+m at 124(16) keV                   g       Nub211**
*174Ir(a)170Rem                   E(a)=5275(10) to (3^+) level at 224.7 keV above 170Rem                h       Ens02b**
*174Ir(a)170Rem                   E(a)=5271(5) to 224.2(0.3) keV level above 170Rem                     g       19Mo.B**
*174Irm(a)170Re                   E(a)=5478(6) to (7^+) level at 210.32 keV                             h       Ens02b**
*174Irm(a)170Re                   E(a)=5478(5) 5316(10) to (7^+) at 210.32 and 370.1 level              h       Ens02b**
*174Irm(a)170Re                   E(a)=5480(13) to 210.1(0.1) keV level above 170Re                     g       19Mo.B**
*174Au(a)170Ir                    E(a)=6538 correlated with 170Ir E(a)=5817 keV                         M       02Ro17**
*                                  ~ and only this with 178Tl alpha's                                   h       02Ro17**
*174Aum(a)170Irm                  E(a)=6530(20) to level above 76 keV                                   h       84Sc.A**
*174Aum(a)170Irm                  E(a)=6626, 6470, 6435 to 170Irm and levels above 170Irm (9^+) at 152.5,  h    Ens082**
*                                  ~ (7^-,8^-,9^-) at 190.56; last two E(a) originally assigned to 175Au  h     01Ko.B**
*174Tm(B-)174Yb                   E-=1200(100) 1200(50) resp, to 5^- level at 1884.674 keV, and other E-  h     Ens998**
*174Lu(e)174Yb                    No K capture to 2^- level at 1318.361 keV  -> Q<1380; and L capture   h       Ens998**
*                                  ~ of 174Lum at 170.83 to 174Ybm at 1518.148 keV -> Q(gs)>1357 keV    g       Nub211**
*174Ta(B+)174Hf                   E+=2525(80) to 4^+ level at 297.38 keV                                h       Ens04a**


 175Dy-u                          -39431#     537#                                   2                  g   1.0 S-u211
 175Ho-u                          -46484#     429#                                   2                  g   1.0 S-u211
 175Er-u                          -52230#     430#                                   2                  m   1.0 S-h03b
 175Lu 37Cl-142Nd 35Cl2            61249.5      2.5       61245.517     1.738     -.6   U               HH31 2.5 77So02
 C14 H7-175Lu                     114121       37        113998.050     1.295     -.8   U               hR04 4.0 64De15
 C13 13C H6-175Lu                 109763       36        109527.854     1.295    -1.6   U               hR04 4.0 64De15
 175Ta-u                          -56350      120        -56263.000    30.000      .7   U               MGS1 1.0 00Ra23
 175Ta-u                          -56263       30                                    2                  MGS2 1.0 05Li24
 175W-u                           -53290      104        -53283.000    30.000      .1   U               MGS1 1.0 00Ra23
 175W-u                           -53283       30                                    2                  MGS2 1.0 05Li24
 175Re-u                          -48630      104        -48619.000    30.000      .1   U               MGS1 1.0 00Ra23
 175Re-u                          -48619       30                                    2                  MGS2 1.0 05Li24
 175Os-u                          -43120      110        -43055.226    12.637      .6   U               MGS1 1.0 00Ra23
 175Os-u                          -43024       30        -43055.226    12.637    -1.0   1    18  18 175Os hGS2 1.0 05Li24
 175Ir-u                          -34353     1288        -35850.480    13.295     -.5   U               h    2.5 91Br17,W
 175Ir-u                          -35828       30        -35850.480    13.295     -.7   1    20  20 175Ir MGS2 1.0 05Li24
 175Lu 35Cl-173Yb 37Cl              5503        4          5511.086     1.298      .8   U               hH23 2.5 70Wh01
 175Lu 35Cl-173Yb 37Cl              5507.3      1.4        5511.086     1.298     1.1   1    14  14 175Lu  H27 2.5 74Ba90
 175Lu O-C16                      -64316.3      4.5      -64308.208     1.295     1.2   U               HTG1 1.5 11Ke03
 175Ir(a)171Re                      5709.0      5.         5430.858    30.566   -55.6B  B               M        67Si02,*
 175Ir(a)171Re                      5709.2      5.         5430.858    30.566   -55.7B  B               M        92Sc16,*
 175Ir(a)171Re                      5521.5      5.         5430.858    30.566   -18.1   Z               hAra     04GoZZ,G
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 175Pt(a)171Os                   6179        5          6163.634     3.993    -3.1C  C                  KISa      79Ha10,*
 175Pt(a)171Os                   6178.1      3.         6163.634     3.993    -4.8B  B                  KOra      82De11,*
 175Pt(a)171Os                   6178.5      5.         6163.634     3.993    -3.0   Z                  hAra      04GoZZ,W
 175Pt(a)171Os                   6164        4          6163.634     3.993     -.1   1    100  92 175Pt KJya      14Pe02,*
 175Au(a)171Ir                   6562.3     15.         6583.428     2.729     1.4   U                  KBka      02Ro17,*
 175Au(a)171Ir                   6580.7      8.2        6583.428     2.729      .3  -6-                 HAra      11Ko.B,*
 175Au(a)171Ir                   6583.7      4.         6583.428     2.729     -.1  -6-                 KAnv      13An10
 175Au(a)171Ir                   6583.7      4.         6583.428     2.729     -.1  -6-                 GJya      17Ba46
 175Au(a)171Ir             ave   6583.428    2.729                                6                               average
 175Aum(a)171Irm                 6590.9     10.         6583.461     2.495     -.7 -10-                 MOra      75Ca06
 175Aum(a)171Irm                 6775.8     10.         6583.461     2.495   -19.2F  F                  MGSa      84Sc.A,*
 175Aum(a)171Irm                 6588.8      9.         6583.461     2.495     -.6 -10-                 MDaa      96Pa01
 175Aum(a)171Irm                 6579.6      6.         6583.461     2.495      .6 -10-                 MAra      01Ko44
 175Aum(a)171Irm                 6581.6      5.         6583.461     2.495      .4   Z                  hAra      04GoZZ
 175Aum(a)171Irm                 6582.7      5.         6583.461     2.495      .1 -10-                 HAnv      10An01
 175Aum(a)171Irm                 6581.7      8.2        6583.461     2.495      .2 -10-                 HAra      11Ko.B,*
 175Aum(a)171Irm                 6583.7      4.         6583.461     2.495     -.1 -10-                 GJya      17Ba46
 175Aum(a)171Irm           ave   6583.461    2.495                               10                               average
 175Hg(a)171Pt                   7020.7     20.         7072.210     4.659     2.5o  o                  HGSa      83Sc24
 175Hg(a)171Pt                   7039.2     20.         7072.210     4.659     1.7   U                  HGSa      84Sc.A
 175Hg(a)171Pt                   7071.0     24.         7072.210     4.659      .1o  o                  HDaa      96Pa01
 175Hg(a)171Pt                   7058.7     11.         7072.210     4.659     1.2  -6-                 HJya      97Uu01
 175Hg(a)171Pt                   7040.2      5.         7072.210     4.659     6.4   Z                  hAra      04GoZZ
 175Hg(a)171Pt                   7075        5          7072.210     4.659     -.5  -6-                 HDaa      09Od01
 175Hg(a)171Pt                   7082.1     20.         7072.210     4.659     -.5   U                  HAnv      10An01
 175Hg(a)171Pt             ave   7072.210    4.659                                6                               average
 174Yb(n,g)175Yb                 5822.35     0.07       5822.354     0.070      .1   1    100 100 175Yb mMMn      82Is05,Z
 174Yb(n,g)175Yb                 5822.5      0.4        5822.354     0.070     -.4   U                  MBdn      06Fi.A
 174Yb(d,p)175Yb                 3595       12          3597.788     0.070      .2   U                  hKop      66Bu16
 174Yb(a,t)175Lu               -14303       10        -14303.702     1.207     -.1   U                  hMcM      75Bu02
 175Lu(g,n)174Lu                -7880       80         -7666.705     1.000     2.7   U                  hPhi      60Ge01
 175Lu(d,t)174Lu                -1400       10         -1409.474     1.000     -.9   U                  hTal      70Jo08
 174Hf(n,g)175Hf                 6708.4      0.5        6708.498     0.383      .2  -1-                 m         71Al01,Z
 174Hf(n,g)175Hf                 6708.8      0.6        6708.498     0.383     -.5  -1-                 MBdn      06Fi.A
 174Hf(n,g)175Hf           ave   6708.564    0.384      6708.498     0.383     -.2   1    100  86 175Hf           average
 175Tm(B-)175Yb                  2385       50                                       2                            66Wi04,*
 175Yb(B-)175Lu                   466        3           470.157     1.206     1.4  -1-                           55De18
 175Yb(B-)175Lu                   468        5           470.157     1.206      .4  -1-                           55Mi90
 175Yb(B-)175Lu                   471        3           470.157     1.206     -.3  -1-                           56Co13
 175Yb(B-)175Lu                   467        3           470.157     1.206     1.1  -1-                           62Ba32
 175Yb(B-)175Lu            ave    468.000    1.637       470.157     1.206     1.3   1     54  54 175Lu           average
 175Hf(e)175Lu                    628        9           683.911     1.952     6.2B  B                  h         68Ja11,*
 175Hf(e)175Lu                    650       20           683.911     1.952     1.7   U                  h         69Jo16,*
 175Hf(e)175Lu                    630        3           683.911     1.952    18.0B  B                  h         88Si22,*
*175Ir-u                       From 90Zr(89Y,a)175Ir                                                              AHW   *W
*175Ir(a)171Re                 E(a)=5392.8(5,Z) to 189.8 level                                      N             95Hi02**
*175Ir(a)171Re                 E(a)=5393(5) to 189.8 level                                          N             95Hi02**
*175Ir(a)171Re                 and 5879.6 5. 175Irm(a)171Rep 5745 5 A p                             h             04GoZZ*G
*175Pt(a)171Os                 E(a)=6037(10), 5963.0(5,Z) to gs, 76.4(0.5) level                                  84Sc.A**
*175Pt(a)171Os                 E(a)=5959.2(3,Z) to 76.4(0.5) level                                  N             84Sc.A**
*175Pt(a)171Os                  E(a)=6038, 5960 correlated with 179Hg E(a)=6275                                   02Ro17*W
*175Pt(a)171Os                 E(a)=6037(5) and 5693(5) to gs, 76.4(0.5) level {BPf} [fgk: do not use]  k         04GoZZ*W
*175Pt(a)171Os                 E(a)=6021(4), 5948(4) to gs, 76.7(0.3) level                                       14Pe02**
*175Au(a)171Ir                 Analysis by AHW of data in Fig. 3 of ref.                            h             02Ro17**
*175Au(a)171Ir                 Correlated with E(a)=6556(8) of 179Tl and 5728(8) of 171Ir           H             11Ko.B**
*175Aum(a)171Irm               E(a)=6435(10) and 6470(20) to 190.0 and 152.7 levels                 h             84Sc.A**
*175Aum(a)171Irm               ~ F : reassigned to 174Au !                                          M             01Ko.B**
*175Aum(a)171Irm               Correlated with E(a)=7194(8) of 179Tlm and 5958(8) of 171Irm         H             11Ko.B**
*                               ~ different method and different detectors as compared to 01*Ko*44  H             11Ko.B**
*175Tm(B-)175Yb                E-=1870(50) to 1/2^- level at 514.866 keV                            h             Ens04a**
*175Hf(e)175Lu                 pK=0.712(0.008) 0.740(0.015) 0.714(0.002) resp,                      h             AHW   **
*                               ~ to 7/2^+ level at 432.74 keV, and other capture ratios, recalculated  h         Ens04a**


 176Dy-u                        -36082#     537#                                     2                  g     1.0 S-u211
 176Ho-u                        -42287#     537#                                     2                  g     1.0 S-u211
 176Er-u                        -50060#     430#                                     2                  h     1.0 S-u123
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C14 H8-176Yb		119980	46	120025.549	0.016	.2	U				hR04	4.0	64De15
C13 H6 N-176Yb		107190	110	107449.489	0.016	.6	U				hR04	4.0	64De15
176Yb-129Xe1.364		72453.619	0.016	72453.613	0.014	-.4	1	74	74	176Yb	KFS1	1.0	12Ra34
176Yb-132Xe1.333		70335.958	0.027	70335.975	0.014	.6	1	27	26	176Yb	KFS1	1.0	12Ra34
176Lu 37Cl-143Nd 35Cl2		61067.2	1.4	61069.026	1.740	.5	1	25	13	143Nd	H31	2.5	77So02
C14 H8-176Lu		119962	49	119908.582	1.301	-.3	U				hR04	4.0	64De15
176Lu O-C16		-62394.1	7.6	-62393.708	1.301	.0	U				HTG1	1.5	11Ke03
176Hf O-C16		-63668.5	9.8	-63675.627	1.591	-.5	U				HTG1	1.5	11Ke03
176Ta-u		-55143	33				2				MGS2	1.0	05Li24
176W-u		-54420	104	-54366.000	30.000	.5	U				MGS1	1.0	00Ra23
176W-u		-54366	30				2				MGS2	1.0	05Li24
176Re-u		-48380	110	-48377.000	30.000	.0	U				MGS1	1.0	00Ra23
176Re-u		-48377	30				2				MGS2	1.0	05Li24
176Os-u		-45150	110	-45230.334	11.742	-.7	U				MGS1	1.0	00Ra23
176Os-u		-45194	30	-45230.334	11.742	-1.2	1	15	15	176Os	MGS2	1.0	05Li24
176Ir-u		-36328	30	-36373.738	8.680	-1.5	1	8	8	176Ir	MGS2	1.0	05Li24
176Pt-u		-31050	32	-31062.307	13.641	-.4	Z				mGS2	1.0	02Sc.C,G
176Yb 35Cl2-172Yb 37Cl2		12088.9	2.4	12088.301	0.138	-.1	U				mH27	2.5	74Ba90
176Yb 35Cl-174Yb 37Cl		6652	3	6657.285	0.070	.7	U				hH23	2.5	70Wh01
176Yb 35Cl-174Yb 37Cl		6656.3	1.4	6657.285	0.070	.3	U				HH27	2.5	74Ba90
176Hf 35Cl-174Hf 37Cl		4106	16	4311.544	1.876	5.1B	B				hH24	2.5	73Ba40
176Hf 35Cl-174Hf 37Cl		4314.21	0.86	4311.544	1.876	-1.2	1	76	74	174Hf	H37	2.5	77Sh12
176Lu-175Lu		1980	60	1914.499	0.161	-.3	U				hR04	4.0	64De15
176Yb-174Yb		4000	50	3707.161	0.017	-1.5	U				hR04	4.0	64De15
176Ir(a)172Re		5237.3	8.	5260.000	35.591	.4	1	49	48	172Re			67Si02
176Pt(a)172Os		5890.1	5.	5884.803	2.042	-1.0	-1-				ISa		79Ha10,Z
176Pt(a)172Os		5881.4	4.	5884.803	2.042	.8	-1-				Bka		82Bo04,Z
176Pt(a)172Os		5887.3	3.	5884.803	2.042	-.8	-1-				Ora		82De11,Z
176Pt(a)172Os		5874.8	8.	5884.803	2.042	1.2	-1-				MDaa		96Pa01
176Pt(a)172Os		5880.8	5.	5884.803	2.042	.8	Z				hAra		04GoZZ
176Pt(a)172Os		5881.9	7.	5884.803	2.042	.4	-1-				GISa		17An16
176Pt(a)172Os	ave	5885.041	2.048	5884.803	2.042	-.1	1	99	66	172Os			average
176Au(a)172Ir		6574.2	10.	6433.491	7.163	-14.1B	B				KOra		75Ca06,*
176Au(a)172Ir		6541.5	10.	6433.491	7.163	-10.8C	C				KGSa		84Sc.A,*
176Au(a)172Ir		6428.4	5.	6433.491	7.163	1.0	Z				hAra		04GoZZ
176Au(a)172Ir		6433.4	7.				5				KAnv		14An10,*
176Aum(a)172Irm		6436.6	10.	6433.438	3.855	-.3	-5-				MOra		75Ca06,*
176Aum(a)172Irm		6428.4	10.	6433.438	3.855	.5	-5-				MGSa		84Sc.A,*
176Aum(a)172Irm		6433.4	6.	6433.438	3.855	.0	-5-				MAra		01Ko44,*
176Aum(a)172Irm		6433.5	5.	6433.438	3.855	-.0	Z				hAra		04GoZZ,W
176Aum(a)172Irm		6434.4	7.	6433.438	3.855	-.1	-5-				KAnv		14An10,*
176Aum(a)172Irm	ave	6433.439	3.855				5						average
176Hg(a)172Pt		6907.2	20.	6897.164	5.547	-.5o	o				hGSa		83Sc24
176Hg(a)172Pt		6924.7	10.	6897.164	5.547	-2.8C	C				kGSa		84Sc.A
176Hg(a)172Pt		6907.3	20.	6897.164	5.547	-.5	U				MDaa		96Pa01
176Hg(a)172Pt		6897.0	6.	6897.164	5.547	.0	-1-				MAra		99Po09
176Hg(a)172Pt		6912.4	5.	6897.164	5.547	-3.0	Z				hAra		04GoZZ
176Hg(a)172Pt		6917.5	15.	6897.164	5.547	-1.3	-1-				HAnv		09An20
176Hg(a)172Pt	ave	6899.866	5.701	6897.164	5.547	-.5	1	95	72	176Hg			average
176Yb(p,a)173Tm		7628.8	4.4				2				NDm		78Ta10
176Yb(p,t)174Yb		-4216	5	-4207.642	0.015	1.7	U				hMin		73Oo01
176Hf(p,t)174Hf		-6397	5	-6392.686	1.748	.9	1	12	12	174Hf	Min		73Oo01
176Yb(d,t)175Yb		-621	12	-609.854	0.072	.9	U				hKop		66Bu16
175Lu(n,g)176Lu		6293.2	1.2	6287.973	0.150	-4.4B	B				h		70Wa20
175Lu(n,g)176Lu		6287.96	0.15	6287.973	0.150	.1	1	100	79	176Lu	mILn		91Kl02,Z
175Lu(n,g)176Lu		6289.78	0.24	6287.973	0.150	-7.5C	C				hBdn		06Fi.A
175Lu(d,p)176Lu		4070	8	4063.407	0.150	-.8	U				hTal		67St14
176Lu(d,t)175Lu		-25	15	-30.743	0.150	-.4	U				hTal		71Mi01
176Hf(d,t)175Hf		-1925	8	-1908.754	1.780	2.0	U				hTal		73Za08
176Tl(p)175Hg		1265.2	18.				7				HJyp		04Ke06,G
176Tm(B-)176Yb		4120	100				2				N		67Gu11,*
176Lu(B-)176Hf		1162	25	1194.100	0.874	1.3	U				h		69Pr11,*
176Lu(B-)176Hf		1194.1	1.0	1194.100	0.874	-.0	1	76	75	176Hf	H		73Va11,*
176Ta(B+)176Hf		3100	90	3211.089	30.775	1.2	U				h		71Be10,*
*176Pt-u	used as reference										m		02Sc.C*G
*176Au(a)172Ir	E(a)=6260(10) coinc. with E(g)=168.4(0.5) keV										M		75Ca06**
*176Au(a)172Ir	E(a)=6228(10) to 168.4(0.5) gamma										m		84Sc.A**

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*176Au(a)172Ir                E(a)=6260 correlated with 172Ir E(a)=5510 keV                        M        02Ro17**
*176Au(a)172Ir                and E(a)=6157(20),6138(15),6054(20),5798(20) to 126.3, 151.5, 236.6,500.0K        14An10**
*176Aum(a)172Irm              E(a)=6286 correlated with 172Irm E(a)=5828 keV                       M        02Ro17**
*176Aum(a)172Irm              E(a)=6119+E(g)=175.1 was misassigned to 177Au                        h        01Ko44**
*176Aum(a)172Irm              E(a)=6115(6) coinc. with 175.1 gamma of ref.                         M        84Sc.A**
*176Aum(a)172Irm              E(a)=6287(5), 6117(5), 6080(5) to g.s., 175 and 212 levels      {BPf}  h        04GoZZ*W
*176Aum(a)172Irm              E(a)=6287(7), 6117(7), 6082(7) to 0, 175.2, 211.6 above 172Irm       K        14An10**
*176Tl(p)175Hg                Trends from Mass Surface TMS suggest 176Tl   200 keV more bound      g        GAu212*G
*176Tm(B-)176Yb               E-=2000(100), 1150(100) to (3^+,4^+) lvl at 2053.34, (3^+,4^+,5^+) 3052.2h        Ens062**
*176Tm(B-)176Yb               Trends from Mass Surface TMS suggest 176Tm   100 keV more bound      g        GAu212*G
*176Lu(B-)176Hf               E-=565(25) to 6^+ level at 596.82 keV                                h        Ens062**
*176Lu(B-)176Hf               Q-=1317(1) from 176Lum at 122.845 keV                                g        Nub211**
*176Ta(B+)176Hf               KLM/B+=119(50) to 2^- level at 1247.70 keV, 1^+ level at 2994 keV    h        Ens062**
*176Ta(B+)176Hf                 -> Q=3050(+125-45)                                                 h        AHW   *W


 177Ho-u                   -38948#     537#                                      2                g    1.0 S-u211
 177Er-u                   -46010#     540#                                      2                h    1.0 S-u095
 177Tm-u                   -51068#     215#                                      2                g    1.0 S-u185
 177Ta-u                   -55559       30      -55518.115     3.558     1.4    U                MGS2 1.0 05Li24
 177W-u                    -53420      110      -53357.000    30.000      .6    U                MGS1 1.0 00Ra23
 177W-u                    -53357       30                                      2                MGS2 1.0 05Li24
 177Re-u                   -49620      104      -49672.000    30.000     -.5    U                MGS1 1.0 00Ra23
 177Re-u                   -49672       30                                      2                MGS2 1.0 05Li24
 177Os-u                   -45020      104      -45042.407    15.685     -.2    U                MGS1 1.0 00Ra23
 177Os-u                   -45012       30      -45042.407    15.685    -1.0R   R  q-q=    30.407  MGS2 1.0 05Li24
 177Ir-u                   -38810      110      -38698.500    21.213     1.0    U                MGS1 1.0 00Ra23
 177Ir-u                   -38699       30      -38698.500    21.213      .0   -2-               MGS2 1.0 05Li24
 177Ir-u                   -38698       30      -38698.500    21.213     -.0   -2- q-q=     0.500  m1.0 1.0  181Au-C
 177Ir-u              ave  -38698.500   21.213                                  2                         average
 177Pt-u                   -31545       30      -31530.659    16.089      .5    1     29   29 177Pt MGS2 1.0 05Li24
 177Hf O-C16               -61845.2      7.2    -61855.248     1.513     -.9    U                HTG1 1.5 11Ke03
 177Ir(a)173Re               5127.1     10.       5081.529    34.225     -.9F   F                M        67Si02,*
 177Pt(a)173Os               5654.6      6.       5642.894     2.734    -1.9   -1-               MISa     79Ha10,Z
 177Pt(a)173Os               5640.5      3.1      5642.894     2.734      .8   -1-               hBka     82Bo04,Z
 177Pt(a)173Os               5648.9      5.       5642.894     2.734    -1.2    Z                hAra     04GoZZ
 177Pt(a)173Os        ave    5643.338    2.745    5642.894     2.734     -.2    1     99   55 177Pt        average
 177Au(a)173Ir               6292.5     10.       6297.802     3.889      .5   -1-               MDaa     75Ca06
 177Au(a)173Ir               6292.5     20.       6297.802     3.889      .3    U                MGSa     84Sc.A,W
 177Au(a)173Ir               6296.5     10.       6297.802     3.889      .1   -1-               MDaa     96Pa01,W
 177Au(a)173Ir               6298.6      6.       6297.802     3.889     -.1   -1-               MAra     01Ko44
 177Au(a)173Ir               6300.6      5.       6297.802     3.889     -.6    Z                hAra     04GoZZ
 177Au(a)173Ir               6303.7      7.       6297.802     3.889     -.8o   o                GAnv     09An14
 177Au(a)173Ir               6301.6      7.2      6297.802     3.889     -.5   -1-               GAnv     18Cu04
 177Au(a)173Ir        ave    6298.329    3.918    6297.802     3.889     -.1    1     98   88 173Ir        average
 177Aum(a)173Irm             6251.5     10.       6261.808     3.605     1.0   -3-               MOra     75Ca06
 177Aum(a)173Irm             6260.8     10.       6261.808     3.605      .1   -3-               MGSa     84Sc.A,*
 177Aum(a)173Irm             6259.7      9.       6261.808     3.605      .2   -3-               MDaa     96Pa01,*
 177Aum(a)173Irm             6263.8      6.       6261.808     3.605     -.3   -3-               MAra     01Ko44
 177Aum(a)173Irm             6262.8      5.       6261.808     3.605     -.2    Z                hAra     04GoZZ
 177Aum(a)173Irm             6265.8      7.       6261.808     3.605     -.6   -3-               HAnv     09An14
 177Aum(a)173Irm      ave    6261.809    3.605                                  3                         average
 177Hg(a)173Pt               6732.4      8.       6736.020    56.163      .1   -4-                ISa     79Ha10
 177Hg(a)173Pt               6747.8     10.       6736.020    56.163     -.2   -4-                        91Ko.A,G
 177Hg(a)173Pt               6729.4      9.2      6736.020    56.163      .1   -4-               MDaa     96Pa01
 177Hg(a)173Pt               6732.4      5.1      6736.020    56.163      .1    Z                hAra     04GoZZ
 177Hg(a)173Pt               6734.5     15.       6736.020    56.163      .0   -4-               HAnv     09An20
 177Hg(a)173Pt        ave    6736.020   25.578                                  4                         average
 177Tl(a)173Au               7067.0      7.                                     3                MAra     99Po09
 177Tlm(a)173Aum             7660.4     13.       7660.122     8.697     -.0   -1-               MAra     99Po09
 177Tlm(a)173Aum             7645.1     13.       7660.122     8.697     1.1   -1-               HJya     04Ke06
 177Tlm(a)173Aum      ave    7652.766    9.405    7660.122     8.697      .8    1     86   48 173Aum       average
 177Hf(p,t)175Hf            -6071        5       -6059.834     1.986     2.2    1     16   14 175Hf  Min     73Oo01
 176Yb(n,g)177Yb             5565.1      1.0      5566.400     0.220     1.3    U                M        72Al19,Z
 176Yb(n,g)177Yb             5566.40     0.22                                   2                MBdn     06Fi.A
 176Yb(d,p)177Yb             3340       16        3341.834     0.220      .1    U                hTal     63Ve09
 176Yb(d,p)177Yb             3337       12        3341.834     0.220      .4    U                hKop     66Bu16
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176Yb(a,t)177Lu-174Yb()175Lu		674.1	1.0	671.423	0.217	-2.7	U				KMcM		75Bu02
176Lu(n,g)177Lu		7071.2	0.4	7072.888	0.156	4.2B	B				m		71Ma45,Z
176Lu(n,g)177Lu		7073.1	0.4	7072.888	0.156	-.5	-1-				m		72Mi16,Z
176Lu(n,g)177Lu		7072.85	0.17	7072.888	0.156	.2	-1-				MBdn		06Fi.A
176Lu(d,p)177Lu		4843	10	4848.322	0.156	.5	U				hTal		71Mi01
176Lu(n,g)177Lu	ave	7072.888	0.156	7072.888	0.156	-.0	1	99	92	177Lu			average
176Hf(n,g)177Hf		6385.8	0.8	6375.646	1.018	-12.7C	C				HBdn		06Fi.A
177Hf(g,n)176Hf		-6400	30	-6375.646	1.018	.8	U				hPhi		60Ge01
176Hf(d,p)177Hf		4150	7	4151.080	1.018	.2	U				hTal		68Ri07
177Hf(d,t)176Hf		-127	11	-118.416	1.018	.8	U				hTal		72Za04
177Tl(p)176Hg		1162.6	20.	1155.653	19.425	-.3o	o				hArp		99Po09,*
177Tlm(p)176Hg		1969.2	10.	1962.653	7.301	-.7	-1-				MArp		99Po09
177Tlm(p)176Hg		1965.2	12.	1962.653	7.301	-.2	-1-				HJyp		04Ke06
177Tlm(p)176Hg	ave	1967.561	7.682	1962.653	7.301	-.6	1	90	62	177Tlm			average
177Yb(B-)177Lu		1400	20	1397.535	1.240	-.1	U				h		64Jo03
177Lu(B-)177Hf		497	2	496.858	0.792	-.1	-1-						55Ma12
177Lu(B-)177Hf		496.4	1.0	496.858	0.792	.5	-1-				H		62El02,*
177Lu(B-)177Hf	ave	496.520	0.894	496.858	0.792	.4	1	78	70	177Hf			average
177Ta(B+)177Hf		1166	3				2						61We11
177Aum(IT)177Au		210	30	189.972	6.874	-.7o	o				H		01Ko44,*
177Tlm(IT)177Tl		807	18				2				M		99Po09
*177Ir(a)173Re	F : final state uncertain: possibly to 5/2^- level at 214.7 keV										h		95Hi02**
*177Au(a)173Ir	Read from graph										M		AHW027*W
*177Au(a)173Ir	Says in coinc. with 240.1 gamma										m		01Ko44*W
*177Au(a)173Ir	Misprint?										m		AHW018*W
*177Au(a)173Ir	Correlated with 173Ir E(a)=5416										m		02Ro17*W
*177Aum(a)173Irm	Followed by a 175.1(0.5) gamma										m		84Sc.A**
*	~ gamma associated with E(a)=6116 keV from 176Au										m		01Ko44**
*	~ yet E(a)=6118 correlated with E(a)=5672 of 173Irm										M		02Ro17**
*177Aum(a)173Irm	E(a) correlated with 173Ir E(a)=5681(13); also with 181Tl E(a)=6180 keV										M		96Pa01**
*	~ evaluator doubts about correctness of latter remark										M		AHW017**
*177Hg(a)173Pt	baglin.mail1 04feb05 says 91Ko.A p.177 is for 191Ir(n,g)										h		GAu052*G
*177Hg(a)173Pt	asked ahw - no answer yet. Ame03 says 191Ir(n,g)=6198.115(0.109)										h		GAu054*G
*177Tl(p)176Hg	Replaced by 177Tlm(IT)										M		AHW01b**
*177Lu(B-)177Hf	E-=384(2), 175(1) to 112.95, 321.32 levels										H		Ens035**
*177Aum(IT)177Au	Authors say 157.9+x, x estimated by evaluator										h		AHW017**
*	~ x is better known from 181Tlm(IT)181Tl combined with Q(a)										H		09An14**

178Ho-u		-34493#	537#				2				g	1.0	S-u211
178Er-u		-43221#	640#				2				k	1.0	S-u146
178Tm-u		-47494#	322#				2				g	1.0	S-u211
178Yb-85Rb2.094		131396.8	9.4	131381.702	7.072	-1.6	1	57	57	178Yb	GMA8	1.0	19Hu15
178W-u		-54152	30	-54114.264	16.316	1.3	U				MGS2	1.0	05Li24
178Re-u		-48800	110	-49011.000	30.000	-1.9	U				MGS1	1.0	00Ra23
178Re-u		-49011	30				2				MGS2	1.0	05Li24
178Os-u		-46790	104	-46747.212	14.627	.4	U				MGS1	1.0	00Ra23
178Os-u		-46710	30	-46747.212	14.627	-1.2	1	24	24	178Os	hGS2	1.0	05Li24
178Ir-u		-38950	110	-38920.605	20.205	.3	U				MGS1	1.0	00Ra23
178Ir-u		-38888	30	-38920.605	20.205	-1.1	1	45	45	178Ir	MGS2	1.0	05Li24
178Pt-u		-34783	1181	-34351.357	10.865	.1	U				h	2.5	91Br17,W
178Pt-u		-34300	110	-34351.357	10.865	-.5	U				MGS1	1.0	00Ra23
178Pt-u		-34333	30	-34351.357	10.865	-.6	1	13	13	178Pt	hGS2	1.0	05Li24
178Au-133Cs1.338		102562	11				2				GMA8	1.0	20Cu04
178Aun-133Cs1.338		102764	11	102761.669	10.279	-.2	1	87	87	178Aun	GMA8	1.0	20Cu04
178Hf 35Cl-176Hf 37Cl		5236	5	5248.637	1.098	1.0	U				hH23	2.5	70Wh01
178Hf 35Cl-176Hf 37Cl		5239.5	1.3	5248.637	1.098	2.8	U				HH27	2.5	74Ba90
178Hf O-C16		-61364.8	7.9	-61377.114	1.518	-1.0	U				HTG1	1.5	11Ke03
178Pt-175Ir		-472	1052	1499.123	17.170	.7	U				h	2.5	91Br17,W
178Pt(a)174Os		5583.3	5.	5572.975	2.204	-2.0	-1-				ISa		79Ha10,Z
178Pt(a)174Os		5569.9	3.	5572.975	2.204	1.0	-1-				Bka		82Bo04,Z
178Pt(a)174Os		5568.4	13.	5572.975	2.204	.4	U				NLvn		94Wa23
178Pt(a)174Os		5572.4	4.	5572.975	2.204	.1	-1-				HAra		00Ko16,*
178Pt(a)174Os	ave	5573.166	2.213	5572.975	2.204	-.1	1	99	75	174Os			average
178Au(a)174Ir		6056.4	10.	6057.992	4.575	.2	-3-				G		68Si01,*
178Au(a)174Ir		6058.4	5.1	6057.992	4.575	-.1	-3-				GISa		20Cu04
178Au(a)174Ir	ave	6057.992	4.575				3						average

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 178Aun(a)174Irm              6117.7     20.       6119.775     6.445     .1  -1-               GGSa     86Ke03,W
 178Aun(a)174Irm              6119.0      7.0      6119.775     6.445     .1  -1-               GISa     20Cu04,*
 178Aun(a)174Irm        ave   6118.868    6.623    6119.775     6.445     .1   1    95  82 174Irm        average
 178Hg(a)174Pt                6578.1      6.       6577.346     2.975    -.1  -3-                ISa     79Ha10
 178Hg(a)174Pt                6576.1      9.       6577.346     2.975     .1  -3-               MDaa     96Pa01
 178Hg(a)174Pt                6577.1      4.       6577.346     2.975     .1  -3-               HAra     00Ko48
 178Hg(a)174Pt                6577.1      5.       6577.346     2.975     .0   Z                hAra     04GoZZ
 178Hg(a)174Pt                6578.1      8.       6577.346     2.975    -.1  -3-               HAnv     09An14
 178Hg(a)174Pt          ave   6577.346    2.975                                3                         average
 178Tl(a)174Au                7017.0      5.       7020.043    10.230     .6o  o                KBka     02Ro17,*
 178Tl(a)174Au                7020.0     10.                                   8                KBka     13Li49,*
 178Pb(a)174Hg                7790.4     14.       7789.472    12.979    -.1  -3-               MBka     01Ro.B
 178Pb(a)174Hg                7785.2     30.7      7789.472    12.979     .1  -3-               GJya     16Ba60
 178Pb(a)174Hg          ave   7789.472   12.979                                3                         average
 178Pt(p,a)175Ir              4420      980        6260.479    15.994     1.9  U                h        91Br17
 176Yb(t,p)178Yb              3865       10        3846.656     6.588    -1.8  1    43  43 178Yb  Phi    82Zu02
 176Lu(t,p)178Lum             4482        5        4492.579     2.927     2.1  1    34  34 178Lum LAl    81Gi01
 178Hf(p,t)176Hf             -5531        5       -5519.789     1.021     2.2  U                hMin     73Oo01
 177Hf(n,g)178Hf              7625        1        7625.939     0.177      .9  U                h        69Fa01
 177Hf(n,g)178Hf              7624.4      1.5      7625.939     0.177     1.0  U                h        77St10
 177Hf(n,g)178Hf              7626.2      0.3      7625.939     0.177     -.9 -1-                ILn     86Ha22,Z
 177Hf(n,g)178Hf              7625.80     0.22     7625.939     0.177      .6 -1-               MBdn     06Fi.A
 178Hf(d,t)177Hf             -1364        9       -1368.709     0.177     -.5  U                hTal     68Ri07
 177Hf(n,g)178Hf        ave   7625.940    0.177    7625.939     0.177     -.0  1    99  71 178Hf         average
 178Yb(B-)178Lu                641       30         660.778     6.962      .7  U                h        73Or03,*
 178Lum(IT)178Lu                120        3         123.809     2.621     1.3  1    76  66 178Lum McM    93Bu02
 178Lu(B-)178Hf               2046       50        2097.501     2.057     1.0  U                h        73Or03,*
 178Lu(B-)178Hf               2117       30        2097.501     2.057     -.6  U                h        75Ka15,*
 178Tam(B+)178Hf              1937       15                                    2                M        61Ga05,*
 178Tam(IT)178Ta                100#      50#                                  3                h        S-u128
 178W(e)178Tam                  91.3      2.                                   3                         67Ni02,W
 178Re(B+)178W                4660      180        4753.660    31.811      .5  U                M        70Go20,*
 178Aup(IT)178Au                300      200             *                     Z                h        S-u123
*178Pt-u                   From 90Zr(89Y,p)178Pt                                                         AHW   *W
*178Pt-175Ir               From 90Zr(89Y,p)175Ir-90Zr(89Y,a)178Pt                                        AHW935*W
*178Pt-175Ir               Smaller error than 178Pt-C due to incident particle energy error cancell.     AHW935*W
*178Pt(a)174Os             Also E(a)=5289(8) keV to 2^+ 158.601 level (not used)              H          GAu067**
*178Au(a)174Ir             Previously F : higher E(a) branch seen in ref.; supoorted by 20Cu04  g          86Ke03*W
*                           ~ Schmidt confirms reality new line though not in table 1                    AHW92b*W
*178Aun(a)174Irm           And 5850(20; ref 5886(9))                                          m          96Pa01*W
*178Aun(a)174Irm           E(a)=5977(10), 5925(7), 5571(7), 5521(7) to n, 56.8, 421.4, 472.1  G          FGK209**
*178Tl(a)174Au             And a stronger E(a)=6704; both correlated with 174Au E(a)=6538 keV M          02Ro17**
*178Tl(a)174Au             Also 6693(10) and 6595(10) to 173.0, 273.0 levels                  K          13Li49**
*178Yb(B-)178Lu            E-=250(30) to 1^+ level at 390.8 keV                               h          Ens097**
*178Lu(B-)178Hf            E-=2000(50) to gs and 50% to 2^+ level at 93.18 keV                h          Ens097**
*178Lu(B-)178Hf            E-=2050(50) to gs and 50% to 2^+ level at 93.18 keV and            h          Ens097**
*                           ~ E-=770(30) from 178Lum at 123.8(2.6) to 8^- level 1479.025 keV  g          Nub211**
*178Tam(B+)178Hf           E+=890(10) to gs and 2^+ level at 93.18 keV, ratio 2.7 to 1        h          Ens097**
*178Tam(B+)178Hf           This is evidently the LOW spin isomer! (may be gs)                 m          AHW978*W
*178W(e)178Tam             Q recalculated                                                                AHW   *W
*178Re(B+)178W             E+=3300(180) to 4^+ level at 342.74 keV                            h          Ens097**


 179Er-u                    -38733#     537#                                   2                g    1.0 S-u211
 179Tm-u                    -44982#     429#                                   2                g    1.0 S-u211
 179Yb-u                    -50070#     215#                                   2                g    1.0 S-u211
 179Lu-85Rb2.106            132997       21      133103.758     5.528     5.1C  C               KMA8 1.0 13Ro.A
 C14 H11-179Hf              140260.3      1.8    140249.702     1.519    -1.5  U                KM23 4.0 79Ha32
 179W-u                     -52964       76      -52920.673    15.645      .6  U                MGS2 1.0 05Li24,*
 179Re-u                    -50010       30      -50010.326    26.451     -.0  1    78  78 179Re MGS2 1.0 05Li24
 179Os-u                    -46220      104      -46184.306    16.644      .3  U                MGS1 1.0 00Ra23
 179Os-u                    -46176       30      -46184.306    16.644     -.3  1    31  31 179Os hGS2 1.0 05Li24
 179Ir-u                    -40910      104      -40882.405    10.489      .3  U                MGS1 1.0 00Ra23
 179Ir-u                    -40852       30      -40882.405    10.489    -1.0  1    12  12 179Ir hGS2 1.0 05Li24
 179Pt-u                    -34710      110      -34641.656     8.557      .6  U                MGS1 1.0 00Ra23
 179Pt-u                    -34625       30      -34641.656     8.557     -.6  U                HGS2 1.0 05Li24
 179Au-u                    -26811       31      -26826.334    12.556     -.5  1    16  16 179Au MGS2 1.0 05Li24
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179Hg-208Pb.861		1900	34	1924.646	30.177	.7	1	79	79	179Hg	MMA6	1.0	01Sc41
179Hf 35Cl-177Hf 37Cl		5539	3	5545.641	0.218	.9	U				hH23	2.5	70Wh01
179Hf 35Cl-177Hf 37Cl		5544.4	0.7	5545.641	0.218	.7	U				mH27	2.5	74Ba90
179Hf O-C16		-59261.8	6.5	-59259.732	1.519	.2	U				HTG1	1.5	11Ke03
179Pt(a)175Os		5370	10	5412.275	9.459	4.2F	F				M		66Si08,*
179Pt(a)175Os		5416	10	5412.275	9.459	-.4	1	89	82	175Os	mISa		79Ha10,*
179Pt(a)175Os		5382	3	5412.275	9.459	10.1F	F				MBka		82Bo04,*
179Au(a)175Ir		5981.8	5.	5981.023	5.045	-.1	1	97	80	175Ir	H		68Si01,G
179Au(a)175Ir		5986.9	15.	5981.023	5.045	-.4	U				HJya		04Ra28,*
179Hg(a)175Pt		6431.0	5.	6350.027	31.255	-1.6	-1-				MISa		79Ha10,Z
179Hg(a)175Pt		6418.7	9.	6350.027	31.255	-1.4	-1-				MDaa		96Pa01
179Hg(a)175Pt		6430.0	4.	6350.027	31.255	-1.6	-1-				HAra		02Ko09
179Hg(a)175Pt	ave	6426.628	29.100	6350.027	31.255	-1.3	1	29	21	179Hg			average
179Tl(a)175Au		6710.2	20.	6709.139	2.636	-.1	U				KGSa		83Sc24
179Tl(a)175Au		6718.4	18.	6709.139	2.636	-.5	U				KDaa		96Pa01
179Tl(a)175Au		6719.4	10.	6709.139	2.636	-1.0	-7-				MAra		98To14
179Tl(a)175Au		6706.1	8.	6709.139	2.636	.4	-7-				KAra		11Ko.B
179Tl(a)175Au		6710.2	4.	6709.139	2.636	-.3	-7-				KAnv		13An10
179Tl(a)175Au		6707.2	4.1	6709.139	2.636	.5	-7-				GJya		17Ba46
179Tl(a)175Au	ave	6709.139	2.636				7						average
179Tlm(a)175Aum		7364.5	20.	7369.748	2.976	.3	U				HGSa		83Sc24
179Tlm(a)175Aum		7366.0	20.	7369.748	2.976	.2	U				HDaa		96Pa01
179Tlm(a)175Aum		7378.1	10.	7369.748	2.976	-.8o	o				MAra		98To14
179Tlm(a)175Aum		7372.0	5.1	7369.748	2.976	-.4	-9-				HAnv		10An01
179Tlm(a)175Aum		7358.7	8.2	7369.748	2.976	1.3	-9-				HAra		11Ko.B
179Tlm(a)175Aum		7371.0	4.1	7369.748	2.976	-.3	-9-				GJya		17Ba46
179Tlm(a)175Aum	ave	7369.748	2.976				9						average
179Pb(a)175Hg		7598.3	20.	7596.135	4.851	-.1	-7-				HAnv		10An01,*
179Pb(a)175Hg		7596	5	7596.135	4.851	.0	-7-				GJya		17Ba46,*
179Pb(a)175Hg	ave	7596.135	4.851				7						average
179Hf(p,t)177Hf		-5249	5	-5243.131	0.192	1.2	U				hMin		73Oo01
179Hf(t,a)178Lu-178Hf()177Lu		-72	2	-73.693	1.892	-.8	1	89	89	178Lu	McM		93Bu02
178Hf(n,g)179Hf		6099.5	1.5	6098.989	0.077	-.3	Z						72Al19
178Hf(n,g)179Hf		6099.02	0.10	6098.989	0.077	-.3	-1-				mILn		89Ri03,Z
178Hf(n,g)179Hf		6098.95	0.12	6098.989	0.077	.3	-1-				MBdn		06Fi.A
179Hf(g,n)178Hf		-6000	70	-6098.989	0.077	-1.4	U				hPhi		60Ge01
178Hf(d,p)179Hf		3877	14	3874.422	0.077	-.2	U				hTal		63Ve09
178Hf(n,g)179Hf	ave	6098.991	0.077	6098.989	0.077	-.0	1	100	71	179Hf			average
179Lu(B-)179Hf		1350	50	1404.039	5.067	1.1	U				h		61Ku10
179Lu(B-)179Hf		1380	70	1404.039	5.067	.3	U				h		63St06
179Ta(e)179Hf		129	16	105.578	0.409	-1.5	U				m		61Jo15,*
179Ta(e)179Hf		105.61	0.41	105.578	0.409	-.1	1	99	93	179Ta	M		01Hi06
179Re(B+)179W		2710	50	2710.972	26.802	.0	1	29	22	179Re	h		75Me20,*
179Tlm(IT)179Tl		825#	10#				8				h		S-u129,G

*179W-u	M-A=-49225(29) keV for mixture gs+m at 221.91 keV	g	Nub211**
*179Pt(a)175Os	F : part of double line (with 180Pt)	m	AHW944**
*179Pt(a)175Os	E(a)=5150(10) 5195(10) 5161(3) resp, to 1/2^- level at 102.3 keV, rclbtd	h	Ens092**
*179Au(a)175Ir	E(a)=5847.8(5,Z) to gs according to 04Ra28 {by BPf10b}	k	GAu10b*G
*179Au(a)175Ir	not to a state at 100(20) as in 84Sc.A {GAu128}	h	84Sc.A*G
*179Au(a)175Ir	E(a)=5853(15), 5810(15) to gs, 49 keV level	H	04Ra28**
*179Pb(a)175Hg	E(a)=7350(20) to 80 keV level	H	10An01**
*179Pb(a)175Hg	E(a)=7348(5) to 80 keV level	G	17Ba46**
*179Ta(e)179Hf	As corr in ref.		76He03**
*179Re(B+)179W	E+=950(50) to 3/2^+ level at 720.18 and 5/2^+ at 773.65 keV	h	Ens092**
*179Tlm(IT)179Tl	Estimated from trends in 177,181,183Tl (see Nubase)	h	FGK129*G

180Er-u		-35620#	537#				2			g	1.0	S-J202
180Tm-u		-40977#	429#				2			g	1.0	S-u212
180Yb-u		-48009#	322#				2			g	1.0	S-u185
C14 H12-180Hf		147356.6	4.8	147340.902	1.525	-.8	U			mM23	4.0	79Ha32
180W-u		-53299	30	-53286.751	1.544	.4	U			MGS2	1.0	05Li24
180Re-u		-49209	30	-49208.431	22.965	.0	-2-			MGS2	1.0	05Li24
180Re-u		-49178	64	-49208.431	22.965	-.5	-2-	q-q=	28.347	h1.0	1.0	180W+0
180Re-u		-49221	43	-49208.431	22.965	.3	-2-	q-q=	-11.708	h1.0	1.0	180W+0
180Re-u	ave	-49208.431	22.965				2					average
180Os-u		-47650	104	-47618.447	16.878	.3	U			MGS1	1.0	00Ra23

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 180Os-u                         -47626       30       -47618.447    16.878      .3   1    32  32 180Os hGS2 1.0 05Li24
 180Ir-u                         -40800      104       -40770.553    23.303      .3   U                  MGS1 1.0 00Ra23
 180Ir-u                         -40765       30       -40770.553    23.303     -.2  -2-                 MGS2 1.0 05Li24
 180Ir-u                         -40779       37       -40770.553    23.303      .2  -2- q-q=   -8.447  m1.0 1.0  184Au-C
 180Ir-u                     ave -40770.553   23.303                                2                             average
 180Pt-u                         -36900      104       -36962.661    10.775     -.6   U                  MGS1 1.0 00Ra23
 180Pt-u                         -36918       30       -36962.661    10.775    -1.5   1    13  13 180Pt MGS2 1.0 05Li24
 180Au-u                         -27496       30       -27510.261     5.109     -.5   U                  KGS2 1.0 05Li24
 180Au-133Cs1.353                100411.5      5.3     100413.243     5.109      .3   1    93  93 180Au KMA8 1.0 17Ma29
 180Hg-208Pb.865                  -1569       22        -1543.032    13.569     1.2   1    38  38 180Hg MMA6 1.0 01Sc41
 180Tl-u                          -9668       35       -10081.050    75.059   -11.8   Z                  mGS2 1.0 02Sc.C,W
 180Hf 35Cl2-176Hf 37Cl2          11036.1      3.0      11049.976     1.108     1.9   U                  mH27 2.5 74Ba90
 180Hf 35Cl-178Hf 37Cl             5797        3         5801.339     0.194      .6   U                  hH23 2.5 70Wh01
 180Hf 35Cl-178Hf 37Cl             5798.4      0.7       5801.339     0.194     1.7   U                  mH27 2.5 74Ba90
 180W-180Hf                         153.73     0.30       153.767     0.297      .1   1    98  82 180W  HSH1 1.0 12Dr01
 180Hf-179Hf                        730.8      4.7        733.832     0.162      .3   U                  hM24 2.5 79Ha32
 180Hf O-C16                     -58524.5      6.5     -58525.900     1.525     -.1   U                  HTG1 1.5 11Ke03
 180W(a)176Hf                      2516.4      1.6       2515.258     1.031     -.7   1    41  23 176Hf H        04Co26
 180Pt(a)176Os                     5257.1     10.        5276.373     5.041     1.9F  F                  M        66Si08,*
 180Pt(a)176Os                     5279        3         5276.373     5.041     -.9F  F                  MBka     82Bo04,*
 180Pt(a)176Os                     5277.5      5.1       5276.373     5.041     -.2   1    97  85 176Os G        20Cu02,*
 180Au(a)176Ir                     5814.4     10.2       5831.360     6.767     1.7F  F                  GGSa     86Ke03,*
 180Au(a)176Ir                     5857       30         5831.360     6.767     -.9F  F                  GLvn     93Wa03,*
 180Au(a)176Ir                     5833.6      7.        5831.360     6.767     -.3   1    93  90 176Ir GISa     20Ha24,*
 180Hg(a)176Pt                     6258.3      5.        6258.485     2.252      .0  -1-                 hISa     79Ha10,Z
 180Hg(a)176Pt                     6259.5      5.        6258.485     2.252     -.2  -1-                 hLvn     93Wa03,*
 180Hg(a)176Pt                     6258.3      4.        6258.485     2.252      .0  -1-                 HAra     00Ko48
 180Hg(a)176Pt                     6259.3      5.        6258.485     2.252     -.2  -1-                 HAnv     03An27
 180Hg(a)176Pt                     6258.3      7.        6258.485     2.252      .0  -1-                 GISa     17An16
 180Hg(a)176Pt               ave   6258.775    2.260     6258.485     2.252     -.1   1    99  66 176Pt          average
 180Tl(a)176Au                     6709.4     10.        6705.613    61.540     -.1  -6-                 MAra     98To14,*
 180Tl(a)176Au                     6701.9      7.        6705.613    61.540      .1  -6-                 GIsa     17An16
 180Tl(a)176Au               ave   6705.613   35.877                                6                             average
 180Pb(a)176Hg                     7375.2     10.        7418.654     5.478     4.3   Z                  hGSa     86Ke03,W
 180Pb(a)176Hg                     7394.6     40.        7418.654     5.478      .6   U                  HORa     96To08
 180Pb(a)176Hg                     7415.1     15.        7418.654     5.478      .2  -2-                 MAra     99To11
 180Pb(a)176Hg                     7419.2     10.        7418.654     5.478     -.1  -2-                 HAnv     09An20
 180Pb(a)176Hg                     7419.2      7.        7418.654     5.478     -.1  -2-                 HJya     10Ra12
 180Pb(a)176Hg               ave   7418.654    5.478                                2                             average
 180Hf(p,t)178Hf                  -5011        5        -5004.950     0.169     1.2   U                  hMin     73Oo01
 180Hf(t,a)179Lu-178Hf()177Lu       -669       5         -669.000     5.000      .0   1   100 100 179Lu  McM     92Bu12
 179Hf(n,g)180Hf                   7387.3      0.4       7387.758     0.151     1.1  -1-                 m        74Bu22,Z
 179Hf(n,g)180Hf                   7387.8      0.6       7387.758     0.151     -.1  -1-                 m        90Bo52,Z
 179Hf(n,g)180Hf                   7387.85     0.17      7387.758     0.151     -.5  -1-                 MBdn     06Fi.A
 180Hf(g,n)179Hf                  -7470      110        -7387.758     0.151      .7   U                  hPhi     60Ge01
 179Hf(d,p)180Hf                   5167        7         5163.192     0.151     -.5   U                  hTal     72Za04
 180Hf(d,t)179Hf                  -1112        4        -1130.528     0.151    -4.6B  B                  hTal     68Ri07
 179Hf(n,g)180Hf             ave   7387.768    0.151     7387.758     0.151     -.1   1    99  83 180Hf          average
 180W(d,t)179W                    -2155       15        -2155.087    14.511     -.0   1    94  94 179W   Kop     72Ca01
 180Lu(B-)180Hf                    3148      100         3103.000    70.711     -.5  -2-                          71Gu02,*
 180Lu(B-)180Hf                    3058      100         3103.000    70.711      .4  -2-                          71Sw01,*
 180Lu(B-)180Hf              ave   3103.000   70.711                                2                             average
 180Tam(IT)180Ta                     73        2           75.333     1.351     1.2   Z                           81Co17,G
 180Ta(B-)180W                      705       15          702.318     2.346     -.2   U                  H        51Br87
 180Ta(B-)180W                      712       15          702.318     2.346     -.6   U                  H        62Ga07
 180Re(B+)180W                     3830       60         3798.931    21.440     -.5R  R  q-q=   31.069  m        67Go22,*
 180Re(B+)180W                     3790       40         3798.931    21.440      .2R  R  q-q=   -8.931  m        67Ho12,*
*180Tl-u                        seen only once in spectra. To be remeasured                              m        02Sc.C*W
*180Tl-u                        Requires analysis; old value -9200#150 from 172Ir(a)                     m        AHW028*W
*180Pt(a)176Os                  F : part of double line (with 179Pt); E(a)=5140(10) keV                  m        AHW944**
*180Pt(a)176Os                  F : part of double line (with 179Pt)                                     m        AHW944**
*180Pt(a)176Os                  E(a)=5161(3) recalibrated as in ref.                                     h        91Ry01*W
*180Pt(a)176Os                  Also E(a)=5028(7) keV to 2+ level at 135.1 keV                           j        20Ha24**
*180Au(a)176Ir                  E(a)=5685(10) to 40(30) level, former treatment not supported by 20*Ha*24g        93Wa03**
*180Au(a)176Ir                  E(a)=5647(10,Z) to 80(30) level, not supported by 20*Ha*24               G        93Wa03**
*180Au(a)176Ir                  E(a)=5639(7) to 46.0(0.9) keV level                                      G        20Ha24**
*180Hg(a)176Pt                  E(a)=6120 5862 5689(5) to gs, 2^+ level at 264.0, 0^+ at 443 keV         H        Ens062**
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*180Hg(a)176Pt	supersedes ref.	GLvn	93Wa.A**
*180Tl(a)176Au	Highest E(a); not necessarily gs to gs	M	98To14**
*180Pb(a)176Hg	F : tentative reassignment of their 181Pb WgM12a: not relevant, remove	h	AHW965*W
*180Lu(B-)180Hf	E-=1540(100) 1450(100) resp, to 4^+ level at 1607.67 keV	k	Ens156**
*180Tam(IT)180Ta	Deduced from 2 measurements: not to be used again		GAu92c*G
*180Re(B+)180W	E+=1800(60) 1760(40) resp, to 2^- level 1006.381 keV	k	Ens156**

181Tm-u		-38046#	537#				2			g	1.0	S-u212
181Yb-u		-44110#	320#				2			h	1.0	S-u123
181Lu-u		-48092	135				2			KGS3	1.0	13Sh30
181Ta O-133Cs1.481		82943.7	3.6	82938.421	1.663	-1.5	W			gMA8	1.0	16We.A,W
181Ta O-202Tl.975		-29891.4	2.5	-29892.418	1.878	-.4	1	56	30 202Tl	GMA8	1.0	17We09
181Re-u		-49915	30	-49938.551	13.472	-.8R	R	q-q=	23.551	MGS2	1.0	05Li24
181Os-u		-46670	110	-46752.811	27.202	-.8	U			MGS1	1.0	00Ra23,*
181Os-u		-46756	34	-46752.811	27.202	.1	1	64	64 181Os	MGS2	1.0	05Li24,*
181Ir-u		-42330	104	-42365.309	5.631	-.3	U			MGS1	1.0	00Ra23,W
181Ir-u		-42372	30	-42365.309	5.631	.2	U			KGS2	1.0	05Li24
181Ir-u		-42388	69	-42365.309	5.631	.3	Z	q-q=	-22.691	k1.0	1.0	185Au-C
181Pt-u		-36880	104	-36910.364	14.694	-.3	U			MGS1	1.0	00Ra23
181Pt-u		-36900	30	-36910.364	14.694	-.3	-1-			MGS2	1.0	05Li24
181Pt-u		-36880	30	-36910.364	14.694	-1.0	-1-	q-q=	30.364	m1.0	1.0	177Os-C
181Pt-u		-36890	44	-36910.364	14.694	-.5	Z	q-q=	20.364	k1.0	1.0	185Hg-C
181Pt-u		-36931	29	-36910.364	14.694	.7	Z	q-q=	-20.636	k1.0	1.0	185Hg-x
181Pt-u	ave	-36890.000	21.213	-36910.364	14.694	-1.0	1	48	48 181Pt			average
181Au-u		-30030	110	-29920.898	21.445	1.0	U			MGS1	1.0	00Ra23
181Au-u		-29920	30	-29920.898	21.445	-.0R	R	q-q=	0.898	MGS2	1.0	05Li24
181Hg-208Pb.870		-1929	40	-1866.836	16.513	1.6	1	17	17 181Hg	MMA6	1.0	01Sc41
181Tl-133Cs1.361		114936	11	114939.776	9.771	.3	1	79	79 181Tl	MMA8	1.0	08We02
181Ta 35Cl-179Hf 37Cl		5128.6	2.1	5122.633	2.050	-1.1	1	15	8 181Ta	H35	2.5	80Sh06
181Ta 17O 35Cl-180Tam O 37Cl		7572	21	7617.327	0.211	.9	U			hH35	2.5	80Sh06
181Pt(a)177Os		5133.7	20.	5150.035	5.113	.8	U			M		66Si08
181Pt(a)177Os		5150.1	5.				2			MORa		95Bi01
181Au(a)177Ir		5750.1	5.	5751.369	2.930	.2	-3-					68Si01,Z
181Au(a)177Ir		5751.9	5.	5751.369	2.930	-.1	-3-			ISa		79Ha10,Z
181Au(a)177Ir		5735	4	5751.369	2.930	4.1F	F			hIRa		92Sa03,*
181Au(a)177Ir		5752	5	5751.369	2.930	-.1	-3-			mORa		95Bi01,*
181Au(a)177Ir	ave	5751.369	2.930				3					average
181Hg(a)177Pt		6288	5	6284.381	4.206	-.7	-1-			ISa		79Ha10,*
181Hg(a)177Pt		6283	10	6284.381	4.206	.1	-1-			GSa		86Ke03,*
181Hg(a)177Pt		6269.3	13.	6284.381	4.206	1.2	-1-			MDaa		96Pa01,*
181Hg(a)177Pt	ave	6285.127	4.229	6284.381	4.206	-.2	1	99	83 181Hg			average
181Tl(a)177Au		6319.9	20.	6322.070	4.491	.1	U			H		92Bo.D
181Tl(a)177Au		6326.1	10.	6322.070	4.491	-.4	-1-			MAra		98To14,G
181Tl(a)177Au		6320.9	7.	6322.070	4.491	.2	-1-			HAnv		09An14
181Tl(a)177Au		6323.0	7.2	6322.070	4.491	-.1	-1-			GAnv		18Cu04
181Tl(a)177Au	ave	6322.776	4.537	6322.070	4.491	-.2	1	98	89 177Au			average
181Tl(a)177Aum		6120.3	20.	6132.098	5.205	.6	-2-			HGSa		84Sc.A,*
181Tl(a)177Aum		6132.6	10.	6132.098	5.205	-.1	-2-			HAra		98To14,*
181Tl(a)177Aum		6133.1	6.4	6132.098	5.205	-.2	-2-			HAnv		09An14,*
181Tl(a)177Aum	ave	6132.098	5.205				2					average
181Pb(a)177Hg		7374.3	10.	7240.276	7.314	-13.4F	F			NGSa		86Ke03,*
181Pb(a)177Hg		7203.5	15.	7240.276	7.314	2.4	-5-			HORa		89To01
181Pb(a)177Hg		7224.9	20.	7240.276	7.314	.7o	o			HAra		96To01,*
181Pb(a)177Hg		7250.7	10.	7240.276	7.314	-1.0	-5-			HAra		05Ca.A,*
181Pb(a)177Hg		7252.0	15.	7240.276	7.314	-.8	-5-			HAnv		09An20,*
181Pb(a)177Hg	ave	7240.276	7.314				5					average
181Ta(p,t)179Ta		-5738	5	-5742.739	1.939	-.9	1	15	8 181Ta	Min		73Oo01
180Hf(n,g)181Hf		5695.2	0.6	5694.800	0.070	-.7	U			M		71Al22
180Hf(n,g)181Hf		5694.80	0.07				2			MPrn		02Bo41
180Hf(n,g)181Hf		5695.58	0.20	5694.800	0.070	-3.9C	C			hBdn		06Fi.A
180Hf(d,p)181Hf		3440	25	3470.234	0.070	1.2	U			hSac		66Ga06
180Hf(d,p)181Hf		3475	10	3470.234	0.070	-.5	U			hTal		68Ri07
181Ta(g,n)180Ta		-7713	25	-7576.751	1.338	5.4B	B			hPhi		60Ge01,*
181Ta(g,n)180Ta		-7852	26	-7576.751	1.338	10.6B	B			hPhi		60Ge01
181Ta(g,n)180Ta		-7580	5	-7576.751	1.338	.6	U			mMcM		79Ba06
181Ta(g,n)180Ta		-7579	2	-7576.751	1.338	1.1	-2-			McM		81Co17

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 181Ta(d,t)180Ta              -1317.7       1.8      -1319.521     1.338    -1.0  -2-              NDm      79Ta.B
 181Ta(g,n)180Ta         ave  -7576.751     1.338                                  2                       average
 180Tam(n,g)181Ta              7651.8       0.5       7652.084     0.186      .6  -2-             mMMn      81Co17,Z
 180Tam(n,g)181Ta              7652.13      0.20      7652.084     0.186     -.2  -2-              ILn      84Fo.A,Z
 180Tam(n,g)181Ta        ave   7652.084     0.186                                  2                       average
 180W(n,g)181W                 6669.02      0.16                                   2              KBdn      15Hu07
 180W(d,p)181W                 4468        15         4444.454     0.160    -1.6   U              KKop      72Ca01
 181Hg(ep)180Pt                6150       200         6480.203    18.366     1.7F  F              h         72Ho19,*
 181Hf(B-)181Ta                1023         8         1036.400     1.914     1.7   U              H         52Fa14,*
 181Hf(B-)181Ta                1020         5         1036.400     1.914     3.3B  B              H         53Ba81,*
 181W(e)181Ta                   184        12          205.413     1.933     1.8   U              K         66Ra03
 181W(e)181Ta                   190         6          205.413     1.933     2.6   U              K         83Se17
 181Os(B+)181Re                2990       200         2967.498    28.276     -.1   U              M         67Go25,*
 181Hgm(IT)181Hg                212        50                                      2              H         09An17,*
*181Ta O-133Cs1.481              Not independent, do not use                                      g         17Ma.B*W
*181Os-u                         M-A=-43450(100) keV for mixture gs+m at 49.20 keV                g         Nub211**
*181Os-u                         M-A=-43529(28) keV  for mixture gs+m at 49.20 keV                g         Nub211**
*181Ir-u                         Corrected for 185Au Q(a)                                         m         00Ra23*W
*181Au(a)177Ir                   E(a)=5609(8), 5462(4) to gs and (3/2^-) level at 148.00 keV      h         Ens035**
*                                 ~ F : all lines in 181Au and 183Au shifted by 16-20keV          h         GAu953**
*181Au(a)177Ir                   Notes diff. with 79Ha not others                                 n         AHW952*W
*181Au(a)177Ir                   E(a)=5626(5) to gs; favored 5479(5) to (3/2^-) level at 148.00 keV  k      Ens035**
*181Hg(a)177Pt                   E(a)=6147.0(10,Z), 6005.0(5,Z) to gs and 1/2^- isomer at 147.5 keV  g      Nub211**
*181Hg(a)177Pt                   E(a)=6136.6(10,Z), 6005.6(10,Z) to gs and 1/2^- isomer at 147.5 keV g      Nub211**
*181Hg(a)177Pt                   Not clear if measured in this work                                         GAu929*G
*181Hg(a)177Pt                   sent letter to ask! Answer #51 6may93: they did indeed                     AHW92b*W
*181Hg(a)177Pt                   E(a)=5986(13) to 1/2^- isomer at 147.5 keV                       g         Nub211**
*181Tl(a)177Au                   The 6180 line is correlated with the 6110 line from 177Aum       h         96To01*G
*                                 ~ in contradiction with mass-spectrometric data for 181Tl and 165Ta  h    GAu033*G
*181Tl(a)177Au                   speculates that the 9/2- state (in 177Au) is fed by the 6186 line  m       01Ko.B*G
*181Tl(a)177Aum                  E(a)=6566(20) Q(a)=6956.2 from 181Tlm at 835.9 to 241.5 abv 177Aum  g      Nub211**
*181Tl(a)177Aum                  E(a)=6578(10) Q(a)=6968.5 from 181Tlm at 835.9 to 241.5 abv 177Aum  g      Nub211**
*181Tl(a)177Aum                  E(a)=6818(15), 6578(7) from 181Tlm to 177Aum and level 241.5 above 177AumH 09An14**
*181Tl(a)177Aum                  Q(a)=6969.0                                                      h         GAu12a*G
*181Pb(a)177Hg                   F : This alpha-line not found in same reaction                   N         96To01**
*181Pb(a)177Hg                   Seen in correlation with 177Hg E(a)=6580 keV                     h         96To01**
*181Pb(a)177Hg                   E(a)=7015(10) to level at 77.2 keV                               H         09An20**
*181Pb(a)177Hg                   E(a)=7016(15) to level at 77.2 keV                               H         09An20**
*181Ta(g,n)180Ta                 Q=-7640(25) to 180Tam at 75.3(1.4) keV                           g         Nub211**
*181Hg(ep)180Pt                  F : retracted by authors in PrvCom                               h         AHW   **
*181Hg(ep)180Pt                  Authors told AHW: "Not very dependable"                                    GAu92a*G
*181Hf(B-)181Ta                  E-=408(8) 405(5) resp, to 181Tan at 615.19 keV                   g         Nub211**
*181Os(B+)181Re                  E+=1750(200) from 181Osm at 49.20 to 181Rem at 262.91 keV        g         Nub211**
*181Hgm(IT)181Hg                 From cascade x+90.3+71.4, with x estimated 50#                   H         09An17**


 182Tm-u                     -33806#      537#                                     2              g    1.0 S-u212
 182Yb-u                     -41761#      429#                                     2              g    1.0 S-u185
 182Lu-u                     -44842#      215#                                     2              g    1.0 S-u211
 182Re-u                     -48311        65       -48788.516   109.483    -7.3C  C              hGS2 1.0 03Li.A,*
 182Os-u                     -47883        30       -47889.846    23.345     -.2   1    61   61 182Os MGS2 1.0 05Li24
 182Ir-u                     -41942        30       -41923.703    22.509      .6   1    56   56 182Ir MGS2 1.0 05Li24
 182Pt-u                     -38870       104       -38828.959    14.049      .4   U              MGS1 1.0 00Ra23
 182Pt-u                     -38860        30       -38828.959    14.049     1.0   1    22   22 182Pt hGS2 1.0 05Li24
 182Au-u                     -30420       110       -30385.566    20.144      .3   U              MGS1 1.0 00Ra23
 182Au-u                     -30412        30       -30385.566    20.144      .9   1    45   45 182Au MGS2 1.0 05Li24
 182Hg-u                     -25297        30       -25311.525    10.493     -.5   1    12   12 182Hg hGS2 1.0 05Li24
 182Hg-208Pb.875              -4893        19        -4880.770    10.493      .6  -1-             MMA6 1.0 01Sc41
 182Hg-208Pb.875              -4898        21        -4880.770    10.493      .8  -1-             MMA6 1.0 01Sc41
 182Hg-208Pb.875         ave  -4895.251    14.089    -4880.770    10.493     1.0   1    55   55 182Hg         average
 182Pt(a)178Os                 4928.5      30.        4950.890     5.047      .7   U              n         63Gr08
 182Pt(a)178Os                 4948.9      20.        4950.890     5.047      .1   U              n         66Si08
 182Pt(a)178Os                 4952.0       5.        4950.890     5.047     -.2   1    97   76 178Os NORa      95Bi01
 182Au(a)178Ir                 5529        10         5525.422     4.441     -.4  -1-              ISa      79Ha10,*
 182Au(a)178Ir                 5525.5       5.        5525.422     4.441     -.0  -1-             mORa      95Bi01,*
 182Au(a)178Ir           ave   5526.200     4.472     5525.422     4.441     -.2   1    99   55 178Ir          average
 182Hg(a)178Pt                 5998.1       5.        5995.634     4.646     -.5  -1-              ISa      79Ha10,Z
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182Hg(a)178Pt		5999.1	10.2	5995.634	4.646	-.3o	o				KLvn		93Wa.A
182Hg(a)178Pt		5989.9	13.3	5995.634	4.646	.4	-1-				hLvn		94Wa23
182Hg(a)178Pt	ave	5997.023	4.772	5995.634	4.646	-.3	1	95	62	178Pt			average
182Tl(a)178Au		6550.2	10.	6550.900	6.200	.1F	F				HGSa		86Ke03,*
182Tl(a)178Au		6593.1	15.	6550.900	6.200	-2.8B	B				K		04Ra28,*
182Tl(a)178Au		6550.9	6.2				3				KISa		16Va01,*
182Tl(a)178Auq		6186.2	20.				4				H		92Bo.D,W
182Pb(a)178Hg		7076.8	10.	7065.873	5.509	-1.1	-4-				GSa		86Ke03
182Pb(a)178Hg		7074.8	15.	7065.873	5.509	-.6	-4-				ORa		87To09
182Pb(a)178Hg		7050.2	10.	7065.873	5.509	1.5	-4-				hAra		99To11
182Pb(a)178Hg		7066.6	10.	7065.873	5.509	-.1	-4-				MJya		00Je09
182Pb(a)178Hg	ave	7065.873	5.509				4						average
180Hf(t,p)182Hf		3931	6				2				McM		83Bu03
180W(t,p)182W		6265	5	6270.760	1.585	1.2	U				KLAl		76Ca10,*
182W(p,t)180W		-6261	10	-6270.760	1.585	-1.0	U				HMin		73Oo01
181Ta(n,g)182Ta		6063.0	0.4	6062.938	0.105	-.2	-1-				m		71He13,Z
181Ta(n,g)182Ta		6063.1	0.5	6062.938	0.105	-.3	-1-				m		77St15,Z
181Ta(n,g)182Ta		6063.1	0.5	6062.938	0.105	-.3	-1-				mMMn		81Co17,Z
181Ta(n,g)182Ta		6062.95	0.2	6062.938	0.105	-.1	-1-				ILn		83Fo.B
181Ta(n,g)182Ta		6062.89	0.14	6062.938	0.105	.3	-1-				MBdn		06Fi.A
181Ta(d,p)182Ta		3832	8	3838.372	0.105	.8	U				hMIT		64Er02
181Ta(n,g)182Ta	ave	6062.933	0.105	6062.938	0.105	.1	1	100	69	182Ta			average
182W(d,t)181W		-1809	10	-1826.307	1.593	-1.7	U				KKop		72Ca01
182Hf(B-)182Ta		431	50	381.342	6.298	-1.0	U				h		74Wa14,*
182Ta(B-)182W		1809	5	1815.185	1.510	1.2	-1-						64Da15,*
182Ta(B-)182W		1813	3	1815.185	1.510	.7	-1-						67Ba01,*
182Ta(B-)182W	ave	1811.941	2.572	1815.185	1.510	1.3	1	34	31	182Ta			average
182Rem(B+)182W		2860	20				2						63Ba37,*
182Rem(IT)182Re		60	100				3						63Ba37,W
182Os(e)182Rem		848	15	777.106	29.554	-4.7B	B				M		70Ak02,*
182Ir(B+)182Os		5700	200	5557.427	30.207	-.7	U				M		72We.A
182Pt(B+)182Ir		2900	200	2882.736	24.716	-.1	U				M		72We.A
182Au(B+)182Pt		6850	200	7864.970	22.877	5.1C	C				M		72We.A
182Hg(B+)182Au		4950	200	4726.439	21.157	-1.1	U				M		72We.A,G
182Tlp(IT)182Tl		500#	100#				4				h		S-u118
*182Re-u	M-A=-44972(29) keV for mixture gs+m at 60(100) keV										g		Nub211**
*182Au(a)178Ir	E(a)=5353(10) to 2^+ level at 54.4(0.5) keV										h		Ens097**
*182Au(a)178Ir	E(a)=5403(5), 5352(5) to gs, 54.4 level										m		95Bi01**
*182Tl(a)178Au	F : identification from excitation function assuming 100% alpha decay										H		WgM118**
*182Tl(a)178Au	E(a)=6403(15) in coincidence with 46 keV gamma										H		04Ra28**
*182Tl(a)178Au	E(a)=6165(6) in coincidence with 247.2(0.5) keV gamma										K		16Va01**
*182Tl(a)178Auq	No 182Tl alpha seen following 186Bi(a)										h		97Ba21*W
*182Tl(a)178Auq	high upper limit on 6050 branch										h		97Ba21*W
*180W(t,p)182W	Q-Q(170Y(t,p))=112(5,Ca), Q(170)=-6153(4) keV												AHW **
*182Hf(B-)182Ta	E-=970(70) 480(50) from 182Hfm to 651.215 (4)^-, 1115.96 (7^-) lvls										k		Ens15c**
*182Ta(B-)182W	E-=520(5) to 2^- level at 1289.1498 keV										k		Ens15c**
*182Ta(B-)182W	E-=1713(3) to 2^+ level at 100.10598 keV										k		Ens15c**
*182Rem(B+)182W	E+=1740(20), 550(20) to 2^+ level at 100.10598, 2^- at 1289.1498 keV										k		Ens15c**
*182Rem(IT)182Re	combining data on gs and isomer <-- GAu959 thinks it is wrong										n		AHW957*W
*182Rem(IT)182Re	"unknown, expected about 50"										n		Ens886*W
*182Os(e)182Rem	pK=0.47(0.07) to 1^+ level at 726.97 keV above 182Rem, recalculated Q										k		Ens15c**
*182Hg(B+)182Au	No details. Error estimated by AHW										m		AHW983*W

183Yb-u		-37574#	429#				2				g	1.0	S-u185
183Lu-u		-42637	86				2				KGS3	1.0	13Sh30
183W O-C2 35Cl5		100858.0	2.7	100875.492	0.807	2.6	U				hH29	2.5	77Sh04
183W O-C2 35Cl5		100873.6	0.8	100875.492	0.807	.9	1	16	16	183W	MH48	2.5	03Ba49
183Re-u		-49151	30	-49178.770	8.625	-.9	U				MGS2	1.0	05Li24
183Os-u		-46879	61	-46874.972	53.429	.1	1	77	77	183Os	MGS2	1.0	05Li24,*
183Ir-u		-43160	104	-43158.769	26.486	.0	U				MGS1	1.0	00Ra23
183Ir-u		-43145	30	-43158.769	26.486	-.5	1	78	78	183Ir	MGS2	1.0	05Li24
183Pt-u		-38440	107	-38404.426	15.259	.3	U				MGS1	1.0	00Ra23,W
183Pt-u		-38400	32	-38404.426	15.259	-.1	1	23	23	183Pt	MGS2	1.0	05Li24,*
183Au-u		-32440	104	-32411.893	10.116	.3	U				MGS1	1.0	00Ra23,W
183Au-u		-32371	30	-32411.893	10.116	-1.4	1	11	11	183Au	hGS2	1.0	05Li24
183Hg-u		-25537	35	-25555.753	7.597	-.5	U				MGS2	1.0	05Li24,*

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183Hg-208Pb.880                -5009         19         -5008.250      7.597      .0  -1-                 MMA6 1.0 01Sc41
183Hg-208Pb.880                -5002         19         -5008.250      7.597     -.3  -1-                 MMA6 1.0 01Sc41
183Hg-208Pb.880           ave  -5005.500     13.435     -5008.250      7.597     -.2   1     32  32 183Hg           average
183Tl-133Cs1.376              112286         11        112290.953     10.018      .5   1     83  83 183Tl MMA8 1.0 08We02
183W O2-178Hf 37Cl             30455.7        5.0       30442.743      1.678    -1.0   U                  mH35 2.5 80Sh06
183W O2-180W 35Cl              24421          9         24487.636      1.701     3.0B  B                  kH24 2.5 73Ba40
183W O2-180W 35Cl              24509          6         24487.636      1.701    -1.4   U                  hH28 2.5 77Sh04
183W 35Cl-181Ta 37Cl            5177.2        1.2        5176.307      1.620     -.3   1     29  26 181Ta  H35 2.5 80Sh06
183W O2 37Cl-182W 35Cl2        20045.6        1.8       20045.200      0.105     -.1   U                  mH28 2.5 77Sh04
183Pt(a)179Os                   4846.1       30.         4821.996      8.799     -.8   U                  n        63Gr08
183Pt(a)179Os                   4835.9       20.0        4821.996      8.799     -.7  -1-                 M        66Si08
183Pt(a)179Os                   4819.6       10.2        4821.996      8.799      .2  -1-                 MORa     95Bi01
183Pt(a)179Os             ave   4822.824      9.145      4821.996      8.799     -.1   1     93  69 179Os           average
183Au(a)179Ir                   5462.6        5.         5465.316      2.937      .5  -1-                 N        68Si01,Z
183Au(a)179Ir                   5465.5        5.         5465.316      2.937     -.0  -1-                 NBka     82Bo04,Z
183Au(a)179Ir                   5449.3       10.         5465.316      2.937     1.6F  F                  h        84Br.A,*
183Au(a)179Ir                   5468.8        5.         5465.316      2.937     -.7  -1-                 nORa     95Bi01
183Au(a)179Ir             ave   5465.632      2.951      5465.316      2.937     -.1   1     99  88 179Ir           average
183Hg(a)179Pt                   6043.4        6.         6038.550      3.895     -.8  -1-                  ORa     76To06
183Hg(a)179Pt                   6036.2        5.         6038.550      3.895      .5  -1-                  ISa     79Ha10,Z
183Hg(a)179Pt             ave   6039.124      3.927      6038.550      3.895     -.1   1     98  93 179Pt           average
183Tlm(a)179Au                  6593.4       30.         6605.106      9.151      .4   U                  HGSa     80Sc09,*
183Tlm(a)179Au                  6600.6       30.         6605.106      9.151      .2   U                  HJya     04Ra28,*
183Tlm(a)179Au                  6609.5       10.         6605.106      9.151     -.4   1     84  67 179Au HAnv     11Ve01,*
183Pb(a)179Hg                   6928          7                                        2                  MAnv     02Je09,*
183Pbm(a)179Hg                  6950.1       25.         7022.112      4.097     2.9B  B                  hGSa     80Sc09
183Pbm(a)179Hg                  7029         20          7022.112      4.097     -.3   U                  MGSa     84Sc.A,*
183Pbm(a)179Hg                  7026.9       10.         7022.112      4.097     -.5  -2-                 MGSa     86Ke03
183Pbm(a)179Hg                  6868.4       10.         7022.112      4.097    15.4B  B                  hORa     87To09
183Pbm(a)179Hg                  7034         10          7022.112      4.097    -1.2  -2-                 MORa     89To01,*
183Pbm(a)179Hg                  7018          5          7022.112      4.097      .8  -2-                 MAnv     02Je09,*
183Pbm(a)179Hg            ave   7022.112      4.097                                    2                           average
183W(p,t)181W                  -5810         10         -5792.577      1.593     1.7   U                  kMin     73Oo01
182Ta(n,g)183Ta                 6934.18       0.20                                     2                   ILn     83Fo.B
182W(n,g)183W                   6191.6        2.0        6190.837      0.040     -.4   U                  M        67Sp03,Z
182W(n,g)183W                   6190.1        1.5        6190.837      0.040      .5   U                  M        70Or.A
182W(n,g)183W                   6190.76       0.12       6190.837      0.040      .6  -1-                 gLtn     97Pr02
182W(n,g)183W                   6190.89       0.13       6190.837      0.040     -.4o  o                  KBdn     06Fi.A
182W(n,g)183W                   6190.81       0.06       6190.837      0.040      .4  -1-                 HILn     11Bo09
182W(n,g)183W                   6190.88       0.06       6190.837      0.040     -.7  -1-                 KBdn     14Hu02
183W(g,n)182W                  -6290         50         -6190.837      0.040     2.0   U                  hPhi     60Ge01
182W(d,p)183W                   3967          5          3966.271      0.040     -.1   U                  hANL     65Er03
182W(d,p)183W                   3979         10          3966.271      0.040    -1.3   U                  hKop     72Ca01
183W(d,t)182W                     57         15            66.393      0.040      .6   U                  hKop     72Ca01
182W(n,g)183W             ave   6190.836      0.040      6190.837      0.040      .0   1    100 103 182W            average
182W(3He,d)183Re                -610         40          -640.985      8.000     -.8   U                  hRoc     71Lu01
183Hg(ep)182Pt                  5000        200          5074.942     14.878      .4F  F                  h        72Ho19,G
183Hf(B-)183Ta                  2010         30                                        3                           67Mo13,*
183Ta(B-)183W                   1068         10          1071.842      1.523      .4   U                  h        55Mu19,*
183Re(e)183W                     556          8                                        2                           69Ku03,*
183Ir(B+)183Os                  3450        100          3461.622     52.806      .1   1     28  23 183Os h        70Be.A,*
183Tlm(IT)183Tl                  628.7        0.5         628.711      0.500      .0   1    100  83 183TlmH        11Ve.A
*183Os-u                      M-A=-43582(28) keV  for mixture gs+m at 170.73 keV                 g        Nub211**
*183Pt-u                      Corrected for Q(a)                                                 m        00Ra23*W
*183Pt-u                      M-A=-35752(28) keV  for mixture gs+m at 34.74 keV                  g        Nub211**
*183Au-u                      Corrected by author with 187Tl(a)                                  m        00Ra23*W
*183Hg-u                      Existence of isomeric state under discussion (see Nubase); not corr g       Nub211**
*183Au(a)179Ir                F : all lines in 181Au and 183Au shifted by 16-20keV               h        GAu953**
*183Tlm(a)179Au               E(a)=6449(15), error increased since partially summed with electrons H      GAu115**
*183Tlm(a)179Au               E(a)=6456(15), error increased since partially summed with electrons H      GAu115**
*183Tlm(a)179Au               E(a)=6400(10), 6378(10) summed with e^-, in coinc. with 62.4, 89.5 gamma H  GAu115**
*183Pb(a)179Hg                E(a)=6775(7), 6570(10) to gs, 217 level                            M        02Je09**
*183Pbm(a)179Hg               E(a)=6868(20), 6715(20) to gs, 171.4 isomer                        M        02Je09**
*                              ~ original assignment to 182Pb changed                            m        AHW965**
*183Pbm(a)179Hg               E(a)=6874(15), 6712(10) to gs, 171.4 isomer; and an 6784(15) line  g        Nub211**
*183Pbm(a)179Hg               E(a)=6860(11), 6698(5) to gs, 171.4 isomer                         g        Nub211**
*183Hg(ep)182Pt               F : retracted by authors in PrvCom                                 h        AHW   **
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*183Hg(ep)182Pt	Authors told AHW: "Not very dependable"		GAu92a*G
*183Hf(B-)183Ta	E-=1540(30) to (5/2^+) level at 459.062 keV, and other E-	k	Ens164**
*183Ta(B-)183W	E-=615(10) to 7/2^- level at 453.0695 keV	k	Ens164**
*183Re(e)183W	pK=0.40(0.07) to 7/2^- level at 453.0695 keV	k	Ens164**
*183Ir(B+)183Os	Q+=3190(100) mainly to 3/2^- level at 258.34 keV	k	Ens164**

184Yb-u		-34998#	540#				2				g	1.0	S-u212
184Lu-u		-38970#	215#				2				g	1.0	S-u212
184W-u		-49066.76	0.99	-49066.894	0.790	-.1	1	28	28	184W	KTG1	1.5	12Sm07
184Os-u		-47504.3	1.2	-47507.138	0.889	-1.6	1	24	24	184Os	KTG1	1.5	12Sm07
184Ir-u		-42460	110	-42524.000	30.000	-.6	U				MGS1	1.0	00Ra23
184Ir-u		-42524	30				2				MGS2	1.0	05Li24
184Pt-u		-40120	104	-40078.194	15.828	.4	U				MGS1	1.0	00Ra23
184Pt-u		-40068	30	-40078.194	15.828	-.3	1	28	28	184Pt	MGS2	1.0	05Li24
184Au-u		-32540	104	-32548.477	23.913	-.1	U				MGS1	1.0	00Ra23,*
184Au-u		-32557	37	-32548.477	23.913	.2R	R	q-q=	-8.523		MGS2	1.0	05Li24,*
184Hg-u		-28230	110	-28282.995	10.218	-.5	U				MGS1	1.0	00Ra23
184Hg-u		-28296	30	-28282.995	10.218	.4	-1-				MGS2	1.0	05Li24
184Hg-u		-28305	30	-28282.995	10.218	.7	-1-	q-q=	-22.005		H1.0	1.0	188Pb-C
184Hg-u	ave	-28300.500	21.213	-28282.995	10.218	.8	1	23	23	184Hg			average
184Hg-204Pb.902		-3986	20	-3966.953	10.219	1.0	1	26	26	184Hg	MMA6	1.0	01Sc41
184Hg-208Pb.885		-7620	19	-7618.745	10.218	.1	1	29	29	184Hg	MMA6	1.0	01Sc41
184Tl-u		-18115	112	-18125.026	10.748	-.1	U				HGS2	1.0	05Li24,*
184Tl-133Cs1.383		112645.4	23.2	112634.917	10.748	-.5	1	21	21	184Tl	HMA8	1.0	14Bo26,*
184W O2-181Ta 35Cl		23917.5	2.8	23911.493	1.622	-.9	U				mH35	2.5	80Sh06
184W 35Cl-182W 37Cl		5675	3	5677.670	0.160	.4	U				hH22	2.5	70Mc03
184W 35Cl-182W 37Cl		5676.3	2.2	5677.670	0.160	.2	U				MH28	2.5	77Sh04
184W O2 37Cl-183W 35Cl2		18734.7	3.0	18735.187	0.169	.1	U				hH28	2.5	77Sh04
184Os-184W		1560.59	0.70	1559.756	0.716	-.8	1	46	31	184Os	KTG1	1.5	12Sm07
184Pt(a)180Os		4579.8	20.	4598.786	8.088	.9	-1-				H		63Gr08,W
184Pt(a)180Os		4600.2	20.	4598.786	8.088	-.1	-1-						66Si08
184Pt(a)180Os		4602.2	10.	4598.786	8.088	-.3	-1-				NORa		95Bi01
184Pt(a)180Os	ave	4598.158	8.347	4598.786	8.088	.1	1	94	68	180Os			average
184Au(a)180Ir		5218.6	15.	5233.900	5.000	1.0	U				MISa		70Ha18,*
184Au(a)180Ir		5233.9	5.				3				NORa		95Bi01,*
184Hg(a)180Pt		5658.2	15.	5660.142	4.301	.1	-1-				ISa		70Ha18
184Hg(a)180Pt		5662.3	5.1	5660.142	4.301	-.4	-1-				ORa		76To06
184Hg(a)180Pt		5658.2	10.2	5660.142	4.301	.2o	o				GLvn		93Wa.A
184Hg(a)180Pt		5662.3	10.2	5660.142	4.301	-.2	-1-				MLvn		93Wa03,Z
184Hg(a)180Pt	ave	5661.996	4.381	5660.142	4.301	-.4	1	96	75	180Pt			average
184Tl(a)180Au		6299.4	5.	6317.375	9.265	.4	U				KORa		76To06,Z
184Tl(a)180Au		6292.9	10.	6317.375	9.265	.5	U				KGSa		80Sc09,Z
184Tl(a)180Au		6315.2	10.2	6317.375	9.265	.2	1	83	79	184Tl	KISa		16Va01,*
184Pb(a)180Hg		6765.4	10.	6774.019	3.126	.8	-1-						80Du02
184Pb(a)180Hg		6779.6	10.	6774.019	3.126	-.6	-1-				GSa		80Sc09
184Pb(a)180Hg		6773.6	10.	6774.019	3.126	.0	-1-				nGSa		84Sc.A
184Pb(a)180Hg		6781.7	10.2	6774.019	3.126	-.8	-1-				ORa		87To09
184Pb(a)180Hg		6773.6	6.	6774.019	3.126	.1	-1-				MJya		98Co27
184Pb(a)180Hg		6772.5	10.	6774.019	3.126	.1	-1-				MAra		99To11
184Pb(a)180Hg		6773.6	6.	6774.019	3.126	.1	-1-				HAnv		04An07
184Pb(a)180Hg	ave	6774.011	3.146	6774.019	3.126	.0	1	99	70	184Pb			average
184Bi(a)180Tl		8024.8	50.	8220#	100#	2.8D	D				GAnv		03An27,*
184Bi(a)180Tl		8220#	100#				7				g		S-u211
182W(t,p)184W		5127	7	5120.147	0.135	-1.0	U				hLAl		76Ca10
184W(p,t)182W		-5124	5	-5120.147	0.135	.8	U				hMin		73Oo01
183W(n,g)184W		7411.2	0.5	7411.107	0.129	-.2	U				K		74Gr11,Z
183W(n,g)184W		7411.8	0.3	7411.107	0.129	-2.3B	B				K		75Bu01,Z
183W(n,g)184W		7411.15	0.16	7411.107	0.129	-.3o	o				kBdn		06Fi.A
183W(n,g)184W		7411.11	0.13	7411.107	0.129	-.0	1	99	73	183W	KBdn		14Hu02
183W(d,p)184W		5187	15	5186.540	0.129	-.0	U				hKop		72Ca01
184W(d,t)183W		-1154	10	-1153.877	0.129	.0	U				hKop		72Ca01
184Hf(B-)184Ta		1340	30				3						73Wa18,*
184Ta(B-)184W		2866	26				2						73Ya02,*
184Ir(B+)184Os		5100	250	4641.764	27.957	-1.8	U				m		70Be.A,*
184Ir(B+)184Os		4300	100	4641.764	27.957	3.4B	B						73Ho09,*
184Ir(B+)184Os		4285	70	4641.764	27.957	5.1B	B						89Po09,*

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 184Ir(B+)184Os                  4562       270         4641.764    27.957      .3   Z                   m         Averag,G
 184Au(B+)184Pt                  6380        50         7013.887    26.712    12.7C  C                   M         84Da.A,*
 184Hg(B+)184Au                  3760        30         3973.271    24.223     7.1C  C                   M         84Da.A,G
*184Au-u                      M-A=-30280(100) keV for mixture gs+m at 68.46 keV                          g         Nub211**
*184Au-u                      M-A=-30292(28) keV  for mixture gs+m at 68.46 keV                          g         Nub211**
*184Tl-u                      M-A=-16899(102) keV for mixture gs+m at --50(30) keV                       g         Nub211**
*184Tl-133Cs1.383             D_M=112618.6(6.2) uu for mx gs+m at --50(30) keV; M-A=-16898.5(5.8) keV    g         Nub211**
*184Pt(a)180Os                E(a)'s of 63Gr08 deviate systematically  GAu06c: seems now not to be the   h         AHW952*W
*184Au(a)180Ir                E(a)=5172(15) from 184Aum at 68.6(0.1) keV                                 N         94Ib01**
*                              ~ transition to gs in 180Ir                                               N         95Bi01**
*184Au(a)180Ir                E(a)=5187(5) from 184Aum at 68.6(0.1) keV                                  N         94Ib01**
*184Tl(a)180Au                E(a)=6161(10) to level at 17.1(3) keV                                      K         16Va01**
*184Bi(a)180Tl                Trends from Mass Surface TMS suggest 184Bi   200 keV less bound            G         GAu212**
*184Hf(B-)184Ta               E-=1100(30) to 1^- level at 228.4 keV , and other E-                       h         Ens102**
*184Ta(B-)184W                E-=1165(26) to 6^+ level at 1746.03 keV, and other E-                      h         Ens102**
*184Ir(B+)184Os               Q+=4720(250) to 4^+ level at 383.68 keV                                              Ens102**
*184Ir(B+)184Os               E+=2900(100) to 4^+ level at 383.68 keV                                    h         Ens102**
*184Ir(B+)184Os               E+=2320(70) to 2^+ level at 942.86 keV                                     h         Ens102**
*184Ir(B+)184Os               Adopted: simple average and dispersion of 3 data                           m         GAu936*G
*184Ir(B+)184Os               Weighted aver. of 3 =4330( 56) Re=125                                      m         GAu936*G
*184Au(B+)184Pt               Q+=6450(50) from 184Aum at 68.6(0.1) keV                                   M         94Ib01**
*184Hg(B+)184Au               Q+=2640(30)+1022 if to 392 level                                           m         84Da.A*W
*                              ~ Instead, to 491.0 level                                                 m         94Ib01*W


 185Yb-u                        -30575#     537#                                 2                       g    1.0 S-u211
 185Lu-u                        -36458#     322#                                 2                       g    1.0 S-u212
 185Hf-u                        -41138       69                                  2                       gGS3 1.0 13Sh30
 185Os-u                        -46037       31       -45954.088     0.892     2.7F  F                   HGS2 1.0 03Li.A,*
 185Ir-u                        -43340      110       -43302.000    30.000      .3   U                   MGS1 1.0 00Ra23
 185Ir-u                        -43302       30                                  2                       MGS2 1.0 05Li24
 185Pt-u                        -39334      112       -39386.340    27.732     -.5   U                   MGS1 1.0 00Ra23,*
 185Pt-u                        -39381       44       -39386.340    27.732     -.1   1     40   40 185Pt MGS2 1.0 05Li24,*
 185Au-u                        -34190      100       -34201.129     2.800     -.1o  o                   gGS1 1.0 00Ra23,*
 185Au-u                        -34197       43       -34201.129     2.800     -.1   U                   gGS2 1.0 05Li24,*
 185Au-133Cs1.391                97315.2      2.8                                2                       KMA8 1.0 17Ma29
 185Hg-u                        -28070      107       -28109.630    14.639     -.4   U                   MGS1 1.0 00Ra23,W
 185Hg-u                        -28088       44       -28109.630    14.639     -.5   1     11   11 185Hg kGS2 1.0 05Li24,*
 185Hg-208Pb.889                 -7373       29        -7351.983    14.639      .7   1     25   25 185Hg kMA6 1.0 01Sc41,*
 185Tl-u                        -21354      145       -21210.810    22.194     1.0   U                   HGS2 1.0 05Li24,*
 185Re 16O2-182W 35Cl            25731        6        25729.247     0.725     -.1   U                   hH22 2.5 70Mc03
 185Re 35Cl-183W 37Cl             5695        3         5684.046     0.725    -1.5   U                   hH22 2.5 70Mc03
 185Re 35Cl-183W 37Cl             5678.7      1.0       5684.046     0.725     2.1   U                   kH28 2.5 77Sh04
 185Re(a,8He)181Re              -26480       14       -26486.403    12.522     -.5  -2-                   INS      90Ka19
 185Re(a,8He)181Re              -26512       28       -26486.403    12.522      .9  -2- q-q=  -27.480  H          181Re-C
 185Re(a,8He)181Re         ave  -26486.400   12.522                              2                                 average
 185Pt(a)181Os                    4436.6     10.2       4436.908    10.008      .0   1     96   60 185Pt HORa      91Bi04,*
 185Au(a)181Ir                    5180.2      5.        5179.970     4.551     -.0  -3-                  N         68Si01,Z
 185Au(a)181Ir                    5182.9     15.        5179.970     4.551     -.2   U                   mISa      70Ha18,Z
 185Au(a)181Ir                    5179       10         5179.970     4.551      .1  -3-                  mORa      91Bi04,*
 185Au(a)181Ir             ave    5179.970    4.551                              3                                 average
 185Hg(a)181Pt                    5777       15         5772.915     4.461     -.3  -1-                  MISa      70Ha18,*
 185Hg(a)181Pt                    5775       5          5772.915     4.461     -.4  -1-                  MORa      76To06,*
 185Hg(a)181Pt                    5761       15         5772.915     4.461      .8  -1-                  M         76Gr.A,*
 185Hg(a)181Pt             ave    5773.909    4.523     5772.915     4.461     -.2   1     97   52 181Pt           average
 185Tlm(a)181Au                   6112.6      7.        6143.279     5.111     4.4C  C                   h         75Co.A,Z
 185Tlm(a)181Au                   6143.3      5.                                 4                       HORa      76To06,*
 185Tlm(a)181Au                   6145.6     15.        6143.279     5.111     -.2   U                   mGSa      80Sc09,Z
 185Pb(a)181Hg                    6693       15         6695.000     5.000      .1   U                   MGSa      80Sc09,*
 185Pb(a)181Hg                    6555.0     15.        6695.000     5.000     2.7B  B                   hORa      87To09
 185Pb(a)181Hg                    6695        5                                  2                       MAnv      02An15,*
 185Pbm(a)181Hgm                  6622.9     20.        6549.884     5.111    -3.7B  B                   hOra      75Ca06
 185Pbm(a)181Hgm                  6679.7     20.        6549.884     5.111    -6.5B  B                   hGSa      80Sc09,G
 185Pbm(a)181Hgm                  6549.8      5.                                 3                       hAnv      02An15
 185Bim(a)181Tl                   8258.9     30.        8217.873    11.931    -1.3  -1-                  MAra      01Po05,*
 185Bim(a)181Tl                   8207.8     15.3       8217.873    11.931      .7  -1-                  HAnv      04An07
 185Bim(a)181Tl            ave    8218.029   13.713     8217.873    11.931     -.0   1     76   64 185Bim          average
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 184W(n,g)185W                    5753.7        0.3       5753.736      0.050      .1  U                 KBNn      87Br05,Z
 184W(n,g)185W                    5754.62       0.24      5753.736      0.050    -3.7C  C                 hBdn      06Fi.A
 184W(n,g)185W                    5753.74       0.05      5753.736      0.050     -.1  1    100  84 185W  KBdn      14Hu02
 184W(d,p)185W                    3524          5         3529.170      0.050     1.0  U                 hANL      65Er03
 184W(d,p)185W                    3533         10         3529.170      0.050     -.4  U                 hKop      72Ca01
 184W(3He,d)185Re                  -98         40          -90.925      0.661      .2  U                 hRoc      71Lu01
 185Re(d,t)184Re-187Re()186Re     -310          4         -310.000      4.000      .0  1    100 100 184Re  Roc      76El12
 184Os(n,g)185Os                  6625.4        0.9       6624.661      0.273     -.8  U                 M         74Pr15
 184Os(n,g)185Os                  6624.52       0.28      6624.661      0.273      .5  1     95  51 185Os MBdn      06Fi.A
 185Bim(p)184Pb                   1669         50         1607.013     13.088    -1.2o  o                 h         95Da.A,*
 185Bim(p)184Pb                   1606.8       16.        1607.013     13.088      .0  1     67  36 185BimMAra      01Po05,*
 185Bim(p)184Pb                   1568.6       50.        1607.013     13.088      .8o  o                 h         03An27,*
 185Bim(p)184Pb                   1591.7        5.        1607.013     13.088     3.1F  F                 H         04An07,*
 185Ta(B-)185W                    2013         20         1993.500     14.142    -1.0  -2-                          69Ku07,*
 185Ta(B-)185W                    1974         20         1993.500     14.142     1.0  -2- q-q=  -19.500  m          186W-1
 185Ta(B-)185W              ave   1993.500     14.142                                   2                           average
 185W(B-)185Re                     432.6        1.0        431.161      0.661    -1.4  1     44  28 185Re           67Wi19
 185Os(e)185Re                    1012.7        1.0       1013.140      0.419      .4  -1-                          67Sc15,*
 185Os(e)185Re                    1012.8        0.5       1013.140      0.419      .7  -1-                          70Sc06,*
 185Os(e)185Re              ave   1012.780      0.447     1013.140      0.419      .8  1     88  49 185Os           average
 185Au(B+)185Pt                   4707         40         4829.994     25.963     3.1F  F                 h         86Da.A,*
 185Tlm(IT)185Tl                    454.8       1.5                                     5                 k         Ens061
 185Bim(IT)185Bi                     80#       80#                                      2                 h         S-u117,G
*185Os-u                        F : contaminated by isomeric state AND by other nuclides                 H         03Li.B**
*185Pt-u                        M-A=-36590(100) keV for mixture gs+m at 103.41 keV                       g         Nub211**
*185Pt-u                        M-A=-36631(28) keV  for mixture gs+m at 103.41 keV                       g         Nub211**
*185Au-u                        M-A=-31820(90) keV  for mixture gs+m at 50#50 keV                        g         Nub211**
*185Au-u                        M-A=-31829(28) keV  for mixture gs+m at 50#50 keV                        g         Nub211**
*185Hg-u                        Corrected for Q(a)                                                       m         00Ra23*W
*185Hg-u                        M-A=-26112(28) keV  for mixture gs+m at 103.7 keV                        g         Nub211**
*185Hg-208Pb.889                Original error (17keV) increased by 20 due to isomer+gs lines in trap    h         01Sc41**
*185Tl-u                        M-A=-19664(31) keV  for mixture gs+m at 454.8(1.5) keV                   g         Nub211**
*185Pt(a)181Os                  E(a)=4444(10) assumed from (1/2^-) isomer at 103.41 keV                  g         Nub211**
*185Au(a)181Ir                  E(a)=5069(10), 4826(10) to gs, 243.3 level                               m         91Bi04**
*                                ~ unhindered E(a)=5069(10) to gs or very low level; from coinc.         m         95Bi01**
*185Hg(a)181Pt                  E(a)=5653.4(15,Z), 5576.4(15,Z) to gs, 3/2^- level at 79.41 keV          h         Ens061**
*                                ~ and E(a)=5376.4(15,Z) from 185Hgm at 103.8 to 13/2^+ lvl at 380.92 keVh         Ens061**
*185Hg(a)181Pt                  E(a)=5653(5), 5569(5) to gs, 3/2^- level at 79.41 keV                    h         Ens061**
*                                ~ and 5371(10) from 185Hgm at 103.8 to 13/2^+ level at 380.92 keV       h         Ens061**
*185Hg(a)181Pt                   AHW966:item includes earlier ref 80To.A; IT see below                   m         80To.A*W
*185Hg(a)181Pt                  E(a)=5365(15) from 185Hgm at 103.8 to 13/2^+ level at 380.92 keV         h         Ens061**
*185Tlm(a)181Au                 E(a)=6010.2(5,Z); also an E(a)=5975.2(5,Z), 4 times stronger branch      h         76To06**
*185Tlm(a)181Au                 E(a)=6012.5(15,Z); also an E(a)=5970.5(15,Z), 4 times stronger branch    h         80Sc09**
*185Pb(a)181Hg                  E(a)=6485(15) to 64 level                                                M         02An15**
*185Pb(a)181Hg                  Assigned to low spin isomer (measured T1/2=6.1 s)                        m         GAu033*G
*185Pb(a)181Hg                  E(a)=6486(5),6288(5) to 64, 269 levels                                   M         02An15**
*185Pbm(a)181Hgm                Short-lived (high-spin) isomer                                           m         GAu033*G
*185Bim(a)181Tl                 E(a)=8030, by same authors, from only one event                          M         96Da06**
*185Bim(p)184Pb                 Read from graph                                                          h         AHW956**
*185Bim(p)184Pb                 Average by authors of E(p)=1618(11), and 1585(9) in ref.                 M         96Da06**
*185Bim(p)184Pb                 As read from graph                                                       h         GAu039**
*185Bim(p)184Pb                 F : rjctd by authors: no dedicated calibration with known proton activityH         04An07**
*185Ta(B-)185W                  E-=1770(20) to 7/2^- level at 243.62 keV                                 h         Ens061**
*185Os(e)185Re                  L/K=0.600(0.006) to 3/2^+ level at 874.81 and 1/2^+ at 880.33 keV        h         Ens061**
*185Os(e)185Re                  pK=0.109(0.005) to 3/2^+ level at 931.06 keV, and other pK, recalculated h         Ens061**
*185Au(B+)185Pt                 F : insufficient information                                             h         GAu128**
*185Au(B+)185Pt                 Not documented, only Fig.1 on which I read E+=3410 !!!                   m         GAu99b*G
*185Bim(IT)185Bi                See syst of 13/2+ in Mfile                                               h         GAu117*G
*185Bim(IT)185Bi                 "Alternatively, 1/2+ may be the gs"                                     m         01Po05*W


 186Lu-u                         -32550#      429#                                      2                 g    1.0 S-u212
 186Hf-u                         -39103        55                                       2                 gGS3 1.0 13Sh30
 186W O-C 13C 35Cl4 37Cl         104592.7       3.2     104611.528      1.308     2.4  U                 hH29 2.5 77Sh04,W
 186Ir-u                         -42063        30       -42053.246     17.741      .3  -2-                MGS2 1.0 05Li24,*
 186Ir-u                         -42048        22       -42053.246     17.741     -.2  -2- q-q=    4.886  K1.0 1.0  186Os+0
 186Ir-u                    ave  -42053.246    17.741                                   2                           average
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186Pt-u		-40656	30	-40649.154	23.345	.2	1	61	61 186Pt	MGS2	1.0	05Li24
186Au-u		-34029	30	-34047.297	22.509	-.6	1	56	56 186Au	MGS2	1.0	05Li24
186Hg-u		-30660	104	-30638.670	12.492	.2	U			MGS1	1.0	00Ra23
186Hg-u		-30630	30	-30638.670	12.492	-.3	1	17	17 186Hg	hGS2	1.0	05Li24
186Hg-204Pb.912		-6065	20	-6053.049	12.491	.6	-1-			MMA6	1.0	01Sc41
186Hg-204Pb.912		-6041	30	-6053.049	12.491	-.4	-1-	q-q=	12.049	H1.0	1.0	190Pb-C
186Hg-204Pb.912	ave	-6057.615	16.641	-6053.049	12.491	.3	1	56	56 186Hg			average
186Tl-u		-21650	220	-21345.213	22.277	1.4o	o			gGS1	1.0	00Ra23,*
186Tl-u		-21513	105	-21345.213	22.277	1.6	U			HGS2	1.0	05Li24,*
186Tl-133Cs1.398		110831	24	110832.949	22.277	.1o	o			HMA8	1.0	08We02,*
186Tl-133Cs1.398		110829	24	110832.949	22.277	.2	1	86	86 186Tl	HMA8	1.0	14Bo26,*
186Tln-133Cs1.398		111254	34				2			kMA8	1.0	14Bo26
186W O2-183W 35Cl		25122	5	25117.292	1.255	-.4	U			hH28	2.5	77Sh04
186W 35Cl-184W 37Cl		6374	3	6382.105	1.243	1.1	U			hH22	2.5	70Mc03
186W 35Cl-184W 37Cl		6382.0	1.4	6382.105	1.243	.0	1	13	11 186W	H28	2.5	77Sh04
186Os(a)182W		2820.6	50.	2821.229	0.874	.0	U			h		75Vi01
186Pt(a)182Os		4323.2	20.	4319.746	18.156	-.2	1	79	39 182Os			63Gr08
186Au(a)182Ir		4907	15	4911.911	14.024	.3	1	87	44 182Ir	NORa		90Ak04,*
186Hg(a)182Pt		5206.2	15.	5204.290	9.886	-.1	-1-			ISa		70Ha18
186Hg(a)182Pt		5204.2	15.	5204.290	9.886	.0	-1-			M		96Ri12
186Hg(a)182Pt	ave	5205.155	10.840	5204.290	9.886	-.1	1	83	57 182Pt			average
186Tl(a)182Au		6016.1	52.1	5996.120	25.946	-.4	1	25	14 186Tl	GISa		20St11,*
186Tlm(a)182Aum		5891.9	7.	5891.948	5.059	-.0	-4-			G		75Co.A
186Tlm(a)182Aum		5891.9	7.	5891.948	5.059	-.0	-4-			GORa		77Ij01
186Tlm(a)182Aum	ave	5891.948	5.059				4					average
186Pb(a)182Hg		6458.2	20.	6471.072	5.024	.6	-2-			Ora		74Le02,Z
186Pb(a)182Hg		6470.1	10.	6471.072	5.024	.1	-2-			GSa		80Sc09,Z
186Pb(a)182Hg		6474.7	10.	6471.072	5.024	-.4	-2-			ORa		84To09,Z
186Pb(a)182Hg		6474.5	10.2	6471.072	5.024	-.3	-2-			GLvn		93Wa.A
186Pb(a)182Hg		6476.5	15.	6471.072	5.024	-.4	-2-			MORa		97Ba25
186Pb(a)182Hg		6459.2	15.	6471.072	5.024	.8	-2-			MAnv		97An09
186Pb(a)182Hg	ave	6471.072	5.024				2					average
186Bi(a)182Tl		7760	20	7756.800	12.000	-.2	-4-			MAra		97Ba21,*
186Bi(a)182Tl		7755	15	7756.800	12.000	.1	-4-			MAnv		03An27,*
186Bi(a)182Tl	ave	7756.800	12.000				4					average
186Bim(a)182Tlp		7349.3	25.	7422.932	5.110	2.9	U			hGSa		84Sc.A,W
186Bim(a)182Tlp		7420.9	20.	7422.932	5.110	.1	U			MAra		97Ba21,W
186Bim(a)182Tlp		7422.9	5.				5			MAnv		03An27,W
186Po(a)182Pb		8493	30	8501.171	13.712	.3	-5-			K		05Hu.A,G
186Po(a)182Pb		8503.2	15.3	8501.171	13.712	-.1	-5-			K		13An13
186Po(a)182Pb	ave	8501.171	13.712				5					average
186W(p,t)184W		-4474	5	-4463.970	1.157	2.0	U			HMin		73Oo01
186W(p,t)184W-184W()182W		660.1	1.6	656.177	1.160	-2.5o	o			H		09Le03
186W(p,t)184W-184W()182W		657.0	1.8	656.177	1.160	-.5	1	42	35 186W	H		09Le.A
186W(t,a)185Ta		11430	20	11410.683	14.189	-1.0R	R	q-q=	19.317	LAl		80Lo10
186W(g,n)185W		-7120	60	-7192.030	1.157	-1.2	U			hPhi		60Ge01
186W(d,t)185W		-939	10	-934.800	1.157	.4	U			hKop		72Ca01
185Re(n,g)186Re		6179.8	0.8	6179.591	0.050	-.3	U			GTal		69La11,Z
185Re(n,g)186Re		6178.6	1.5	6179.591	0.050	.7	U			m		70Or.A
185Re(n,g)186Re		6179.9	0.8	6179.591	0.050	-.4	Z			m		73Gl06,G
185Re(n,g)186Re		6179.34	0.18	6179.591	0.050	1.4o	o			GBdn		06Fi.A
185Re(n,g)186Re		6179.59	0.05	6179.591	0.050	.0	1	100	72 186Re	LBdn		16Ma35
185Re(d,p)186Re		3939	25	3955.025	0.050	.6	U			hTal		69La11
186Ta(B-)186W		3901	60				2					69Mo16,*
186Re(B-)186Os		1064	2	1072.696	0.834	4.3B	B			H		56Jo05
186Re(B-)186Os		1071.5	1.3	1072.696	0.834	.9	-1-					56Po28
186Re(B-)186Os		1076	3	1072.696	0.834	-1.1	-1-					64Ma36
186Re(B-)186Os		1064	3	1072.696	0.834	2.9B	B			H		68An11
186Re(B-)186Os	ave	1072.211	1.193	1072.696	0.834	.4	1	49	28 186Re			average
186Ir(B+)186Os		3760	200	3827.720	16.543	.3	U			h		62Bo22,*
186Ir(B+)186Os		3831	20	3827.720	16.543	-.2R	R	q-q=	3.280	m		63Em02,W
186Au(B+)186Pt		5950	200	6149.591	30.207	1.0	U			M		72We.A
186Hg(B+)186Au		3250	200	3175.116	23.980	-.4	U			M		72We.A
186Tln(IT)186Tlm		373.9	0.5	374.160	0.089	.5o	o			hLvn		91Va04
186Tln(IT)186Tlm		374.0	0.2	374.160	0.089	.8	-3-			H		Ens036
186Tln(IT)186Tlm		374.2	0.1	374.160	0.089	-.4	-3-			G		20St11
186Tln(IT)186Tlm	ave	374.160	0.089				3					average

*186W O-C 13C 35Cl4 37C	See 183W O-C2 35Cl5 in same reference	h	AHW017*W
*186Ir-u	M-A=-39181(28) keV for mixture gs+m at 0.8 keV	g	Nub211**
*186Tl-u	M-A=-20030(180) keV for mixture gs+m+n at 20(40) and 390(40) keV	g	Nub211**
*186Tl-u	Corrected for Q(a)	m	00Ra23*W
*186Tl-u	M-A=-19900(29) keV for mixture gs+m at 20(40) keV,	G	Nub211**
*	~ n state can be resolved	G	Nub211**
*186Tl-133Cs1.398	D_M=110842.1(9.2) uu for mx gs+m at 20(40) keV; M-A=-19874.4(8.6) keV	g	Nub211**
*186Tl-133Cs1.398	D_M=110840.4(8.6) uu for mx gs+m at 20(40) keV; M-A=-19876.0(8.0) keV	g	Nub211**
*186Au(a)182Ir	E(a)=4653(15) to 3^- level at 152.3 keV	m	95Sa42**
*186Tl(a)182Au	E(a)=5760(51) to 129.4(0.1) keV	G	20St11**
*186Bi(a)182Tl	E(a)=7158(20) followed by E(g)=444 keV	M	03An27**
*186Bi(a)182Tl	E(a)=7152(15), 7085(15) followed by E(g)=444, 520 keV	M	03An27**
*186Bim(a)182Tlp	Differs from all E(a) of ref	m	03An27*W
*186Bim(a)182Tlp	Probably 10- state decaying to 10- Tl		97Ba21*W
*186Bim(a)182Tlp	followed by E1 E(g)=108.5; and E(a)=7369(10)	M	03An27*W
*186Po(a)182Pb	Error is evaluator's educated guess	k	GAu057*G
*185Re(n,g)186Re	I do not find this value in that paper....	m	GAu *G
*186Ta(B-)186W	E-=2240(60) to (2^-,3^-) level at 1661.3817 keV	h	Ens036**
*186Ir(B+)186Os	E+=2600(200) assumed to 2^+ level at 137.159 keV, also other E+	h	Ens036**
*186Ir(B+)186Os	E+=1940(20) to 6^+ level at 868.94 keV	h	Ens036**

187Lu-u		-29812#	429#				2				g	1.0	S-u212
187Hf-u		-35427#	215#				2				g	1.0	S-u20c
187Ta-u		-39609	60				2				KGS3	1.0	13Sh30,G
187Ir-u		-42458	30				2				HGS2	1.0	05Li24
187Pt-u		-39500	110	-39383.353	25.837	1.1	U				MGS1	1.0	00Ra23
187Pt-u		-39413	30	-39383.353	25.837	1.0	1	74	74	187Pt	MGS2	1.0	05Li24
187Au-u		-35470	114	-35457.852	24.154	.1	U				MGS1	1.0	00Ra23,*
187Au-u		-35441	30	-35457.852	24.154	-.6	1	65	65	187Au	MGS2	1.0	05Li24,G
187Hg-u		-30190	110	-30187.076	13.800	.0	U				gGS1	1.0	00Ra23,*
187Hg-u		-30155	36	-30187.076	13.800	-.9	1	15	15	187Hg	gGS2	1.0	05Li24,*
187Hg-208Pb.899		-9210	20	-9195.934	13.800	.7	1	48	48	187Hg	MMA6	1.0	01Sc41
187Hgm-208Pb.899		-9152	19	-9133.147	15.613	1.0o	o				hMA6	1.0	01Sc41,*
187Tl-u		-24120	107	-24095.259	8.640	.2	U				MGS1	1.0	00Ra23,W
187Tl-u		-23928	109	-24095.259	8.640	-1.5	U				MGS2	1.0	05Li24,*
187Tlm-133Cs1.406		109151	24	109197.514	8.355	1.9F	F				MMA8	1.0	08We02,*
187Pb-u		-16076	45	-16089.310	5.467	-.3	U				HGS2	1.0	05Li24,*
187Pb-133Cs1.406		116844	14	116845.238	5.467	.1	Z				hMA8	1.0	03We.A
187Pb-133Cs1.406		116843.5	5.9	116845.238	5.467	.3	1	86	86	187Pb	HMA8	1.0	05We11,*
187Pbm-133Cs1.406		116871	14	116865.874	12.169	-.4	Z				hMA8	1.0	03We.A
187Pbm-133Cs1.406		116871.6	5.6	116865.874	12.169	-1.0o	o				HMA8	1.0	05We11,*
187Re O2-184W 35Cl		25797.4	3.5	25795.619	0.927	-.2	U				mH28	2.5	77Sh04
187Re 35Cl-185Re 37Cl		5737	3	5744.042	0.927	.9	U				hH22	2.5	70Mc03
187Re 35Cl-185Re 37Cl		5744.2	1.2	5744.042	0.927	-.1	1	10	6	185Re	H28	2.5	77Sh04
187Re-187Os		2.676	0.036	2.65076	0.00106	-.7	U				KSH1	1.0	14Ne15
187Re-187Os		2.6526	0.0014	2.65076	0.00106	-1.3	1	58	52	187Re	JHep	1.0	21Fi.A,*
187Au(a)183Ir		4792.7	20.	4748.442	30.161	-.8	1	31	17	183Ir			68Si01,*
187Hg(a)183Pt		5229.9	20.	5229.497	13.953	-.0	1	49	29	183Pt	MISa		70Ha18,*
187Hgm(a)183Pt		5293.4	20.	5287.984	14.464	-.3	1	52	27	187Hgm	MISa		70Ha18,*
187Tlm(a)183Au		5643	20	5655.665	6.368	.6	-1-				MORa		76To06,*
187Tlm(a)183Au		5661.5	10.	5655.665	6.368	-.6	-1-				MGSa		80Sc09,*
187Tlm(a)183Au		5645.1	12.	5655.665	6.368	.9o	o				hLvn		85Co06,*
187Tlm(a)183Au		5661.5	10.	5655.665	6.368	-.6	-1-				hLvn		91Wa21,*
187Tlm(a)183Au	ave	5659.444	6.667	5655.665	6.368	-.6	1	91	77	183Au			average
187Pb(a)183Hg		6393.0	10.	6393.020	6.188	.0	-1-				Ora		75Ca06,*
187Pb(a)183Hg		6395.0	19.	6393.020	6.188	-.1o	o				HGSa		80Sc09
187Pb(a)183Hg		6398.4	10.	6393.020	6.188	-.5	-1-				mGSa		81Mi12,*
187Pb(a)183Hg	ave	6395.700	7.071	6393.020	6.188	-.4	1	77	62	183Hg			average
187Pbm(a)183Hgm		6213.1	20.	6208.367	6.536	-.2o	o				MOra		74Le02
187Pbm(a)183Hgm		6213.1	10.	6208.367	6.536	-.5	-2-				MOra		75Ca06
187Pbm(a)183Hgm		6223.3	10.	6208.367	6.536	-1.5o	o				mGSa		80Sc09,W
187Pbm(a)183Hgm		6206.0	10.2	6208.367	6.536	.2	-2-				mGSa		81Mi12
187Pbm(a)183Hgm		6202.9	15.	6208.367	6.536	.4	-2-				MAnv		99An36
187Pbm(a)183Hgm	ave	6208.367	6.536				2						average
187Bi(a)183Tlm		7139.0	10.	7150.359	3.585	1.1	-2-				GSa		84Sc.A
187Bi(a)183Tlm		7153.3	8.	7150.359	3.585	-.4	-2-				MORa		99Ba45,*

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 187Bi(a)183Tlm                 7158.4      10.       7150.359     3.585     -.8o  o                 HAnv     03An27
 187Bi(a)183Tlm                 7147.2       8.       7150.359     3.585      .4  -2-                HJya     03Ke08,*
 187Bi(a)183Tlm                 7153.3      10.       7150.359     3.585     -.3o  o                 HAnv     04An07
 187Bi(a)183Tlm                 7153.3       5.       7150.359     3.585     -.6  -2-                HAnv     06An11,*
 187Bi(a)183Tlm            ave  7150.359     3.585                                2                           average
 187Bim(a)183Tl                 7749.1      10.       7887.494     6.781     13.8F  F                MGSa     84Sc.A,*
 187Bim(a)183Tl                 7890.1      15.       7887.494     6.781     -.2  -2-                MORa     99Ba45
 187Bim(a)183Tl                 7882.9      11.       7887.494     6.781      .4  -2-                HJya     03Ke08
 187Bim(a)183Tl                 7890.1      10.       7887.494     6.781     -.3  -2-                HAnv     06An11
 187Bim(a)183Tl            ave  7887.494     6.781                                2                           average
 187Po(a)183Pb                  7978.9      15.                                   3                  HAnv     06An11,*
 187Pom(a)183Pbm                7889.1      20.                                   3                  HAnv     06An11
 186W(n,g)187W                  5466.3       0.3      5466.759     0.041      1.5   U                HBNn     87Br05,Z
 186W(n,g)187W                  5467.22      0.3      5466.759     0.041     -1.5   U                kLtn     92Be17,*
 186W(n,g)187W                  5466.59      0.12     5466.759     0.041      1.4o  o                KBdn     06Fi.A
 186W(n,g)187W                  5466.83      0.05     5466.759     0.041     -1.4  -1-               HPrn     08Bo26
 186W(n,g)187W                  5466.62      0.07     5466.759     0.041      2.0  -1-               KBdn     14Hu02
 186W(d,p)187W                  3236         5        3242.193     0.041      1.2   U                hANL     65Er03
 186W(d,p)187W                  3240        10        3242.193     0.041      .2    U                hKop     72Ca01
 186W(n,g)187W             ave  5466.759     0.041    5466.759     0.041      .0    1   100  55 186W          average
 186W(3He,d)187Re                530        40         503.427     1.122     -.7    U                hRoc     71Lu01
 187Re(g,n)186Re               -7180        80       -7360.528     0.862     -2.3   U                hPhi     60Ge01
 187Re(d,t)186Re               -1055        25       -1103.298     0.862     -1.9   U                hTal     69La11
 186Os(n,g)187Os                6291.1       1.0      6290.301     0.522     -.8  -1-                m        74Pr15,Z
 186Os(n,g)187Os                6289.4       0.8      6290.301     0.522      1.1 -1-                MBdn     06Fi.A
 186Os(n,g)187Os           ave  6290.063     0.625    6290.301     0.522      .4    1    70  39 186Os         average
 187W(B-)187Re                  1314         2        1312.490     1.122     -.8  -1-                         69Na03
 187W(B-)187Re                  1310         2        1312.490     1.122      1.2 -1-                         70He14
 187W(B-)187Re             ave  1312.000     1.414    1312.490     1.122      .3    1    63  55 187W          average
 187Re(B-)187Os                    2.62      0.09        2.46917   0.00099  -1.7    U                h        65Br12
 187Re(B-)187Os                    2.64      0.05        2.46917   0.00099  -3.4B   B                h        67Hu05
 187Re(B-)187Os                    2.667     0.020       2.46917   0.00099  -9.9B   B                h        92Co23
 187Re(B-)187Os                    2.70      0.09        2.46917   0.00099  -2.6    U                h        93As02
 187Re(B-)187Os                    2.460     0.011       2.46917   0.00099    .8    U                H        99Al20
 187Re(B-)187Os                    2.470     0.004       2.46917   0.00099   -.2  -1-                N        01Ga01,*
 187Re(B-)187Os                    2.4661    0.0017      2.46917   0.00099   1.8  -1-                H        03Ar36
 187Re(B-)187Os            ave     2.46670   0.00156     2.46917   0.00099   1.6    1    40  36 187Re         average
 187Ir(B+)187Os                 1550       200        1669.677    27.955      .6    U                H        71Ma24,*
 187Os(3He,t)187Ir             -1521         6       -1688.269    27.955    -27.9B  B                hINS     90Ka27
 187Os(3He,t)187Ir-189Os()189Ir  -963         4       -1132.527    30.647    -42.4   Z                hINS     90Ka.B,G
 187Au(B+)187Pt                 3600        40        3656.581    27.448     1.4    1    47  26 187Pt H       83Gn01,*
 187Hgm(IT)187Hg                  54        21          58.486    14.303      .2    1    46  28 187HgmMMA6    01Sc41,*
 187Tlm(IT)187Tl                 330         5         333.685     3.342      .7    1    45  31 187Tl         77Sc03
 187Pbm(IT)187Pb                  33        13          19.222    10.127    -1.1    1    61  61 187PbmHMA8    05We11
*187Ta-u                         Trends from Mass Surface TMS suggest 187Ta    30 keV less bound          g        GAu212*G
*187Au-u                         M-A=-32980(100) keV for mixture gs+m at 120.33 keV                       g        Nub211**
*187Au-u                         Observed for 10 minutes: no isomeric contamination                       m        03Li.A*G
*187Hg-u                         M-A=-28090(100) keV for mixture gs+m at 58(14) keV                       g        Nub211**
*187Hg-u                         M-A=-28060(28) keV  for mixture gs+m at 58(14) keV                       g        Nub211**
*187Hgm-208Pb.899                Use instead their difference between gs and 187Hgm lines                 M        GAu037**
*187Tl-u                         Corrected for Q(a)                                                       m        00Ra23*W
*187Tl-u                         Not acceptable since isomer 16 s at 335.7 present                        m        AHW99c*W
*187Tl-u                         M-A=-22121(28) keV  for mixture gs+m at 334(3) keV                       g        Nub211**
*187Tl-u                          Measured values happens to coincide with value for 187Tlm               m        AHW036*W
*187Tlm-133Cs1.406               F : contamination from gs not resolved                                   M        08We02**
*187Pb-u                         M-A=-14965(41) keV  for mixture gs+m at 19(10) keV                       g        Nub211**
*187Pb-133Cs1.406                D_M=116851.3(4.3) uu for mixture gs+m at 19(10) keV with R=0.62(0.02);   g        Nub211**
*                                 ~ M-A=-14981.5(4.0) keV                                                 H        GAu12a**
*187Pbm-133Cs1.406               D_M=116869.5(5.5) for mx gs+m at 19(10) R=8.7(0.7); M-A=-14964.5(5.1) keVg        Nub211**
*                                 ~ used are only the equations for the 187Pb doublet and 187Pbm(IT)187Pb H        GAu098**
*187Re-187Os                     Reconstructed from mass difference 2470.9(1.3) in eV                     j        HWJ213**
*187Au(a)183Ir                   Assignment uncertain                                                     k        Ens095**
*187Hg(a)183Pt                   E(a)=5035(20) to 3/2^- level at 84.73 keV                                k        Ens164**
*187Hgm(a)183Pt                  E(a)=4870(20) to (13/2^+) level at 316.9 level                           k        Ens164**
*187Tlm(a)183Au                  E(a)=5510(20) 5528(10) 5512(12) 5528(10) resp, to (9/2)^- at 12.4(0.4)keVk        Ens164**
*187Pb(a)183Hg                   E(a)=6190(10) to 3/2^- level at 67.16 keV                                k        Ens164**
*187Pb(a)183Hg                   E(a)=6194(10) 5993(10) to 3/2^- levels at 67.16 and 275.33 keV           k        Ens164**
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*187Pbm(a)183Hgm	Same work as following	m	AHW95a*W
*187Bi(a)183Tlm	Also E(a)=7612(15) keV to gs	H	99Ba45**
*187Bi(a)183Tlm	Also E(a)=7605(16) keV to gs	H	03Ke08**
*187Bi(a)183Tlm	Also E(a)=7612(5), 7342(15) keV to gs, 273(1) keV	H	06An11**
*187Bim(a)183Tl	F : for T=700 us instead of Nubase=370(20) us	g	Nub211**
*187Po(a)183Pb	E(a)=7528(15) to 286(1) keV lvl; also 1 event E(a)=7796(15) to gs	H	06An11**
*186W(n,g)187W	Only statistical error 0.04 keV given; ~ Z recalibrated		GAu922**
*187Re(B-)187Os	supersedes 2.481(0.006) of same group	G	98Ga50**
*187Ir(B+)187Os	p^+<0.15(0.05), resulting Q<1550 keV	H	Ens095**
*187Ir(B+)187Os	level at 111.99 fed, thus Q=1350(200)	h	AHW *W
*187Ir(B+)187Os	but, there is no level at 111.99 keV	h	GAu128*G
*187Os(3He,t)187Ir-189O	Given as diff in preliminary PrvCom.		GAu921*G
*187Au(B+)187Pt	K/B+=31.6(2.8) to 1/2^+ level at 1341.07 keV, recalculated	m	Ens095**
*187Au(B+)187Pt	Error in Q+(187Au) may be underestimated Not trusted(AHW#56)	n	AHW955*W
*187Hgm(IT)187Hg	Original error (7 keV) increased by 20 due to isomer+gs lines in trap	M	01Sc41**

188Lu-u		-25572#	429#				2			g	1.0	S-u212
188Hf-u		-33097#	322#				2			g	1.0	S-u212
188Ta-u		-36084	59	-36404#	215#	-5.4D	D			GGS3	1.0	13Sh30,*
188Ta-u		-36404#	215#				2			g	1.0	S-u212
188Au-u		-34750	104	-34752.034	2.900	-.0	U			MGS1	1.0	00Ra23
188Au-u		-34674	30	-34752.034	2.900	-2.6B	B			KGS2	1.0	05Li24
188Au-u		-34685	32	-34752.034	2.900	-2.1	Z	q-q=	62.442	k1.0	1.0	188Pt+0
188Au-133Cs1.414		98938.9	2.9				2			KMA8	1.0	17Ma29
188Hg-u		-32500	104	-32419.511	7.283	.8	U			MGS1	1.0	00Ra23
188Hg-u		-32428	30	-32419.511	7.283	.3	1	6	6 188Hg	MGS2	1.0	05Li24
188Hg-208Pb.904		-11330	20	-11311.622	7.283	.9	-1-			MMA6	1.0	01Sc41
188Hg-208Pb.904		-11325	30	-11311.622	7.283	.4	Z	q-q=	-13.378	h1.0	1.0	180Os-C
188Hg-208Pb.904		-11287	30	-11311.622	7.283	-.8	-1-	q-q=	24.622	h1.0	1.0	192Pb-C
188Hg-208Pb.904	ave	-11316.769	16.641	-11311.622	7.283	.3	1	19	19 188Hg			average
188Tl-u		-23827	110	-23979.113	32.103	-1.4	U			MGS1	1.0	00Ra23,*
188Tl-u		-23994	38	-23979.113	32.103	.4	-2-			MGS2	1.0	05Li24,*
188Tl-u		-23942	60	-23979.113	32.103	-.6	-2-	q-q=	37.113	H1.0	1.0	192Bi-C
188Tl-u	ave	-23979.113	32.103				2					average
188Pb-u		-19070	110	-19121.624	10.852	-.5	U			MGS1	1.0	00Ra23
188Pb-u		-19144	30	-19121.624	10.852	.7R	R	q-q=	-22.376	MGS2	1.0	05Li24
188Os 35Cl-186W 37Cl		4426	3	4422.290	1.213	-.5	U			mH22	2.5	70Mc03
188Pt(a)184Os		4015.7	10.	4006.687	5.275	-.9	-1-					63Gr08
188Pt(a)184Os		4000.3	10.	4006.687	5.275	.6	-1-			ORa		78El11
188Pt(a)184Os		3990.1	15.	4006.687	5.275	1.1	-1-			ISa		79Ha10
188Pt(a)184Os	ave	4004.698	6.535	4006.687	5.275	.3	1	65	65 188Pt			average
188Hg(a)184Pt		4710.4	20.	4709.102	14.763	-.1	1	52	47 184Pt	ISa		79Ha10
188Pb(a)184Hg		6110.3	10.	6108.847	3.405	-.1	-2-			Ora		74Le02,Z
188Pb(a)184Hg		6109.2	10.	6108.847	3.405	-.0	-2-			Ora		77De32,Z
188Pb(a)184Hg		6120.5	15.	6108.847	3.405	-.8	-2-			MGSa		80Sc09,Z
188Pb(a)184Hg		6110.5	5.	6108.847	3.405	-.3	-2-			ORa		81To02,Z
188Pb(a)184Hg		6110.3	10.3	6108.847	3.405	-.1o	o			GLvn		93Wa.A
188Pb(a)184Hg		6109.3	10.	6108.847	3.405	-.0	-2-			NLvn		93Wa03,Z
188Pb(a)184Hg		6100.0	8.	6108.847	3.405	1.1	-2-			MJya		03Ke04
188Pb(a)184Hg	ave	6108.847	3.405				2					average
188Bi(a)184Tl		7274.5	25.	7263.639	4.975	-.4o	o			hGSa		80Sc09,*
188Bi(a)184Tl		7279.7	10.	7263.639	4.975	-1.6	-2-			HGSa		84Sc.A,*
188Bi(a)184Tl		7255.2	7.	7263.639	4.975	1.2	-2-			MLvn		97Wa05,*
188Bi(a)184Tl		7259.3	5.	7263.639	4.975	.9o	o			HAnv		03An26,*
188Bi(a)184Tl		7264.8	10.	7263.639	4.975	-.1	-2-			HAnv		06An04,*
188Bi(a)184Tl	ave	7263.639	4.975				2					average
188Bin(a)184Tlm		7462.9	5.				5			HAnv		03An26,*
188Bin(a)184Tln		6968.5	20.	6964.505	4.675	-.2o	o			HGSa		80Sc09
188Bin(a)184Tln		6968.5	10.	6964.505	4.675	-.4	-5-			HGSa		84Sc.A,W
188Bin(a)184Tln		6963.5	6.	6964.505	4.675	.2	-5-			HLvn		97Wa05
188Bin(a)184Tln		6961.3	5.	6964.505	4.675	.6o	o			HAnv		03An26
188Bin(a)184Tln		6963.5	5.	6964.505	4.675	.1	-5-			HAnv		06An04
188Bin(a)184Tln	ave	6964.505	4.675				5					average
188Po(a)184Pb		8087.4	25.	8082.293	15.327	-.2o	o			HAnv		99An52
188Po(a)184Pb		8080.2	15.	8082.293	15.327	.1o	o			hAnv		01Va.B
188Po(a)184Pb		8082.3	15.				2			HAnv		03Va16

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 188Os(p,t)186Os             -5802       5        -5798.108     0.532      .8   U                  mMin     73Oo01
 188Os(p,t)186Os             -5803       4        -5798.108     0.532     1.2   U                  mMcM     75Th04
 187Re(n,g)188Re              5871.77    0.3       5871.650     0.040     -.4   U                  H        72Sh13,Z
 187Re(n,g)188Re              5871.75    0.13      5871.650     0.040     -.8   U                  HBdn     06Fi.A
 187Re(n,g)188Re              5871.65    0.04                                   2                  HPrn     10Ba48
 188Os(t,a)187Re             12604      10        12604.140     0.147      .0   U                  hMcM     76Hi08
 187Os(n,g)188Os              7989.6     0.3       7989.604     0.147      .0  -1-                 m        83Fe06,Z
 187Os(n,g)188Os              7989.58    0.17      7989.604     0.147      .1  -1-                 MBdn     06Fi.A
 187Os(n,g)188Os        ave   7989.585   0.148     7989.604     0.147      .1   1    98  57 187Os           average
 188W(B-)188Re                 349       3                                      3                           64Bu10
 188Re(B-)188Os               2116       2         2120.423     0.152     2.2   U                  h        56Jo05
 188Re(B-)188Os               2111       3         2120.423     0.152     3.1B  B                  h        68An11
 188Ir(B+)188Os               2833      10         2792.339     9.416    -4.1B  B                  H        62Wa20,*
 188Ir(B+)188Os               2781      20         2792.339     9.416      .6  -1-                          69Ya02,*
 188Ir(B+)188Os               2827      30         2792.339     9.416    -1.2  -1-                          70Ag03,*
 188Ir(B+)188Os         ave   2795.154  16.641     2792.339     9.416     -.2   1    32  32 188Ir           average
 188Pt(e)188Ir                 525      10          523.984     8.686     -.1   1    75  68 188Ir  ORa      78El11,*
 188Au(B+)188Pt               5520      30         5449.702     5.953    -2.3   U                  K        84Da.A
 188Hg(B+)188Au               2040      20         2172.731     7.302     6.6B  B                  K        84Da.A
*188Ta-u                    Trends from Mass Surface TMS suggest 188Ta   300 keV more bound        G        GAu212**
*188Tl-u                    M-A=-22180(100) keV for mixture gs+m at 30(40) keV                     M        GAu037**
*188Tl-u                    M-A=-22335(28) keV  for mixture gs+m at 30(40) keV                     M        GAu037**
*188Bi(a)184Tl              E(a)=7005(25) 7010(10) 6987(6) resp, to (3^+) level at 117.5(0.5) keV  h        Ens102**
*                            ~ E(a)=7029(7) 3 times weaker exists too, possible mx in older results  M        97Wa05**
*188Bi(a)184Tl              E(a)=7106(5), 6992(5), 6889(10) to gs, 117.5, 216 levels               H        03An26**
*188Bi(a)184Tl              E(a)=6995(10) to 117.5 level                                           H        06An04**
*188Bin(a)184Tlm            E(a)=7302(5), 7232(10), 6995(15)  to gs, 70.5, 320 levels              H        03An26**
*188Bin(a)184Tln            Not coincident with X(K) and gamma  AHW028:thus 184Tln T> 20 ns?       h        84Sc.A*W
*188Ir(B+)188Os             E+=1656(10) 1605(20) 1650(30) resp, to 2^+ level at 155.021 keV        h        Ens024**
*188Pt(e)188Ir              pL=0.67(0.05) to 1^+ level at 478.17 keV                               h        Ens024**


 189Hf-u                    -29147#    322#                                     2                  g    1.0 S-u20c
 189Ta-u                    -34310#    215#                                     2                  g    1.0 S-u212
 189W-u                     -38237      43      -38443#       215#       -4.8B  B                  GGS3 1.0 13Sh30
 C14 H21-189Os              206188.3     6.2    206179.758      0.715     -.3   U                  mM23 4.0 79Ha32
 189Ir-u                    -41310      32      -41277.434     13.501     1.0   Z                  mGS2 1.0 02Sc.C,G
 189Au-u                    -36080     140      -36051.713     21.558      .2   U                  MGS1 1.0 00Ra23,*
 189Au-u                    -36045      31      -36051.713     21.558     -.2  -2-                 MGS2 1.0 05Li24
 189Au-u                    -36058      30      -36051.713     21.558      .2  -2-                 MGS2 1.0 05Li24,*
 189Au-u                ave -36051.713  21.558                                  2                           average
 189Hg-u                    -31788     111      -31805.681     33.871     -.2   U                  HGS1 1.0 00Ra23,*
 189Hg-u                    -31791      42      -31805.681     33.871     -.3   1    65  65 189Hg HGS2 1.0 05Li24,*
 189Hgm-208Pb.909           -10501      20      -10497.671     19.191      .2   1    92  92 189HgmMMA6 1.0 01Sc41
 189Tl-u                    -26497     139      -26426.475      8.983      .5   U                  MGS1 1.0 00Ra23,*
 189Tl-u                    -26313      93      -26426.475      8.983    -1.2   U                  MGS2 1.0 05Li24,*
 189Pb-u                    -19206      97      -19156.662     15.094      .5   U                  KGS1 1.0 00Ra23,*
 189Pb-u                    -19193      34      -19156.662     15.094     1.1   1    20  20 189Pb KGS2 1.0 05Li24,*
 189Os 35Cl-187Re 37Cl        5341       3        5343.857      0.501      .4   U                  hH22 2.5 70Mc03
 189Pb(a)185Hg                5954.2    10.        5914.721      4.314    -3.9B  B                  hOra     72Ga27,*
 189Pb(a)185Hg                5943.9    10.        5914.721      4.314    -2.9B  B                  hOra     74Le02,*
 189Pb(a)185Hg                5915      10         5914.721      4.314     -.0  -1-                 K        05Fr.A,*
 189Pb(a)185Hg                5914.8     5.4       5914.721      4.314     -.0  -1-                 KISa     13Sa43,*
 189Pb(a)185Hg          ave   5914.845   4.751     5914.721      4.314     -.0   1    82  67 189Pb           average
 189Pbm(a)185Hg               5958      10         5955.174      5.256     -.3   1    28  25 189PbmK        05Fr.A,*
 189Pbm(a)185Hg               5955       5         5955.174      5.256      .0o  o                  KISa     13Sa43,*
 189Bi(a)185Tl                7269.4    10.        7268.165      2.712     -.1  -6-                 HOra     74Le02,*
 189Bi(a)185Tl                7274.5    10.        7268.165      2.712     -.6  -6-                 HGSa     84Sc.A,*
 189Bi(a)185Tl                7271.2     5.        7268.165      2.712     -.6  -6-                 HLvn     85Co06,*
 189Bi(a)185Tl                7271.8    15.        7268.165      2.712     -.2   U                  HAnv     97An09,*
 189Bi(a)185Tl                7268.1     6.        7268.165      2.712      .0  -6-                 MLvn     97Wa05
 189Bi(a)185Tl                7271.5     5.        7268.165      2.712     -.7o  o                  HJya     02Hu14,*
 189Bi(a)185Tl                7264.2     4.5       7268.165      2.712      .9  -6-                 HJya     03Ke08,*
 189Bi(a)185Tl          ave   7268.165   2.712                                  6                           average
 189Bim(a)185Tl               7362.1    20.        7452.175      3.802     1.7   U                  hGSa     84Sc.A,*
 189Bim(a)185Tl               7499.0    30.        7452.175      3.802    -1.6   U                  mDbb     93An19
 189Bim(a)185Tl               7458.2    40.        7452.175      3.802     -.2   U                  mORa     95Ba75
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 189Bim(a)185Tl              7458.2     15.        7452.175     3.802     -.4  -6-                 MAnv     97An09
 189Bim(a)185Tl              7450.0      6.        7452.175     3.802      .4  -6-                 mLvn     97Wa05
 189Bim(a)185Tl              7453.1      6.        7452.175     3.802     -.2  -6-                 HJya     03Ke08
 189Bim(a)185Tl         ave  7452.175   3.802                                   6                           average
 189Po(a)185Pb               7699.4     15.        7694.300    15.000     -.3o  o                  HAnv     99An52,*
 189Po(a)185Pb               7694.3     15.                                     3                  HAnv     05Va04,*
 189Os(p,t)187Os            -5431        5        -5428.623     0.462      .5   U                  hMin     73Oo01
 189Os(p,t)187Os            -5432        4        -5428.623     0.462      .8   U                  hMcM     75Th04
 188Os(n,g)189Os             5920.8      2.        5920.815     0.448      .0   U                  h        76Be50
 188Os(n,g)189Os             5920.6      0.5       5920.815     0.448      .4   1    80   59 188Os  ILn     92Br17
 188Os(n,g)189Os             5922.0      0.4       5920.815     0.448    -3.0C  C                  hBdn     06Fi.A
 188Os(d,p)189Os             3689       10         3696.249     0.448      .7   U                  hKop     75Mo29
 189Os(d,t)188Os              335       15          336.415     0.448      .1   U                  hTal     75Th06
 189W(B-)189Re               2500      200         2170#      200#       -1.6D  D                  G        65Ka07,*
 189W(B-)189Re               2170#     200#                                     3                  g        S-u212
 189Re(B-)189Os              1000       20         1007.705     8.167      .4R  R  q-q=   -7.705            63Cr06
 189Re(B-)189Os              1015       20         1007.705     8.167     -.4R  R  q-q=    7.295            65Bl06
 189Pt(B+)189Ir              1950       20         1980.247    13.636     1.5   1    46   30 189Ir          71Pl08,*
 189Au(B+)189Pt              3160      300         2887.481    22.474     -.9   U                  M        75Un.A
 189Hg(B+)189Au              4200      200         3955.154    37.399    -1.2   U                  h        75Un.A
 189Hgm(IT)189Hg              100       50           77.663    32.746     -.4   1    43   35 189Hg MMA6     01Sc41
 189Tlm(B+)189Hg             5460      200         5296.176    32.625     -.8   U                  M        75Un.A,*
 189Pbm(IT)189Pb               40       30           40.452     3.761      .0   Z                  k        S-w037
 189Pbm(IT)189Pb               40        4           40.452     3.761      .1   1    88   75 189PbmKISa     13Sa43
*189Ir-u                         used as reference                                                 m        02Sc.C*G
*189Au-u                         M-A=-33490(100) keV for mixture gs+m at 247.25 keV                g        Nub211**
*189Au-u                         M-A=-33341(28) keV  for 189Aum at 247.25 keV                      g        Nub211**
*189Hg-u                         M-A=-29570(100) keV for mixture gs+m at 80(30) keV                g        Nub211**
*189Hg-u                         M-A=-29573(28) keV  for mixture gs+m at 80(30) keV                g        Nub211**
*189Tl-u                         M-A=-24540(100) keV for mixture gs+m at 285(6) keV                g        Nub211**
*189Tl-u                         M-A=-24369(28) keV  for mixture gs+m at 285(6) keV                g        Nub211**
*189Pb-u                         M-A=-17870(90) keV  for mixture gs+m at 40(4) keV                 g        Nub211**
*189Pb-u                         Corrected for Q(a)                                                m        00Ra23*W
*189Pb-u                         M-A=-17858(29) keV  for mixture gs+m at 40(4) keV                 g        Nub211**
*189Pb(a)185Hg                   E(a)=5730.1(10,Z) possibly from gs, to 3/2^- level at 26.1 keV    h        Ens061**
*189Pb(a)185Hg                   Same work as 74Le02. Both not trusted.                            m        AHW95c*W
*189Pb(a)185Hg                   E(a)=5720(10) possibly from gs, to 3/2^- level at 26.1 keV        h        Ens061**
*189Pb(a)185Hg                   E(a)=5761 to 3/2^- level at 26.1 and E(a)=5623 to 173.8 level     H        05Fr.A**
*189Pb(a)185Hg                   E(a)=5764(3)(5) to 3/2^- level at 26.02 and E(a)=5619(2)(5) to 173.9 lvl K 13Sa43**
*189Pbm(a)185Hg                  E(a)=5730 to 103.8 level                                          H        05Fr.A**
*189Pbm(a)185Hg                  E(a)=5727(2)(5) to 103.7(0.4) level                               K        13Sa43**
*189Pbm(a)185Hg                  use instead 189Pbm(IT)189Pb where systematic errors cancel        K        GAu146**
*189Bi(a)185Tl                   E(a)=6670.1(10,Z) to 185Tlm at 454.8(1.5) keV                     g        Nub211**
*189Bi(a)185Tl                   E(a)=6675(10) to 185Tlm at 454.8(1.5) keV                         g        Nub211**
*189Bi(a)185Tl                   E(a)=7115.6(15,Z) and 6671.6(5,Z) to 185Tlm at 454.8(1.5) keV     g        Nub211**
*189Bi(a)185Tl                   E(a)=7120(15), 6670(15) to gs and 185Tlm at 454.8(1.5) keV        g        Nub211**
*189Bi(a)185Tl                   E(a)=6674(5) to 185Tlm at 452.8(2.0) keV                          M        77Sc03**
*189Bi(a)185Tl                   E(a)=6667(4) to 185Tlm at 452.8(2.0) keV                          H        77Sc03**
*                                 ~ and also E(a)=7114(6) to gs                                    H        03Ke08**
*189Bim(a)185Tl                  Only one event; not seen in reference                             h        93An19**
*189Po(a)185Pb                   E(a)=7264(15) to 278(1) level                                     h        99An52**
*189Po(a)185Pb                   E(a)=7259(15) to 278(1) level                                     H        05Va04**
*189W(B-)189Re                   Trends from Mass Surface TMS suggest 189W    330 keV more bound   G        GAu212**
*189Pt(B+)189Ir                  E+=885(10) to gs, 1/2^+ level at 94.34 and 3/2^+ at 176.53 keV    h        Ens039**
*189Tlm(B+)189Hg                 E+=4140(200) to several levels around 300 keV                     h        75Un.A**


 190Hf-u                    -26624#    429#                                     2                  g    1.0 S-u20c
 190Ta-u                    -30832#    215#                                     2                  g    1.0 S-u212
 190W-u                     -36917      44       -36896.468    37.994      .5   1    75   75 190W  kGS3 1.0 13Sh30
 190Ir-u                    -39479     188       -39456.663     1.470      .1   U                  GGS1 1.0 97Sc.B,*
 190Au-u                    -35213     106       -35248.253     3.700     -.3   U                  MGS2 1.0 05Li24,*
 190Au-133Cs1.429            99860.9     3.7                                    2                  KMA8 1.0 17Ma29
 190Hg-u                    -33670     107       -33679.080    17.039     -.1   U                  MGS1 1.0 00Ra23
 190Hg-208Pb.913            -12361      20       -12361.046    17.039     -.0   1    73   73 190Hg MMA6 1.0 01Sc41
 190Tl-133Cs1.429           109008      16       108950.925     7.785    -3.6   Z                  hMA8 1.0 10Bo.A,G
 190Tlm-u                   -26055     107       -26083.084     5.512     -.3o  o                  HGS1 1.0 00Ra23,*
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 190Tlm-u                  -26048      30      -26083.084    5.512   -1.2  U                 HGS2 1.0 05Li24,*
 190Tlm-133Cs1.429         109033.5     6.9    109026.069    5.512   -1.1  1    64  64 190TlmHMA8 1.0 14Bo26
 190Pb-u                   -21940     104      -21918.859   13.420    .2   U                 MGS1 1.0 00Ra23
 190Pb-u                   -21905      30      -21918.859   13.420   -.5R  R  q-q=   13.859  MGS2 1.0 05Li24
 190Bim-133Cs1.429         123800      27      123865.322   34.130   2.4F  F                 MMA8 1.0 08We02,*
 186Os-190Pt.979            -6953.13    0.86    -6953.314    0.627   -.2   1    53  39 186Os KMS1 1.0 16Ei01
 190Os 35Cl-188Os 37Cl       5557       3        5558.278    0.510    .2   U                 mH22 2.5 70Mc03
 190Os-190Pt                -1504.31    0.59    -1504.381    0.465   -.1   1    62  33 190Pt KMS1 1.0 16Ei01
 190Os-C14 H21            -205897.8     5.8   -205880.264    0.697    .8   U                 mM23 4.0 79Ha32
 190Os-189Os                  285.2     5.2      299.494     0.201   1.1   U                 hM24 2.5 79Ha32
 190Pt(a)186Os               3238.3    20.       3268.617    0.587   1.5   U                 K        61Pe23
 190Pt(a)186Os               3248.5    20.       3268.617    0.587   1.0   U                 K        63Gr08
 190Pb(a)186Hg               5699.8    10.       5697.536    4.568   -.2  -2-                 Ora     74Le02,Z
 190Pb(a)186Hg               5697.0     5.       5697.536    4.568    .1  -2-                 ORa     81El03,Z
 190Pb(a)186Hg          ave  5697.536   4.569                              2                          average
 190Bi(a)186Tl               6862.2     5.       6862.118    3.046   -.0  -2-                 Lvn     91Va04,*
 190Bi(a)186Tl               6863.3     5.       6862.118    3.046   -.2  -2-                HAnv     03An26,*
 190Bi(a)186Tl               6860.3     6.       6862.118    3.046    .3  -2-                KJya     13Ny01,*
 190Bi(a)186Tl          ave  6862.119   3.046                              2                          average
 190Bim(a)186Tlm             6967.9     5.       6966.415    2.774   -.3  -4-                 Lvn     91Va04,*
 190Bim(a)186Tlm             6969.1     5.       6966.415    2.774   -.5  -4-                HAnv     03An26,*
 190Bim(a)186Tlm             6963      10        6966.415    2.774    .3  -4-                 Ora     74Le02,*
 190Bim(a)186Tlm             6963.1     5.       6966.415    2.774    .7  -4-                KJya     13Ny01,*
 190Bim(a)186Tlm        ave  6966.415   2.773                              4                          average
 190Bim(a)186Tln             6589.0    10.       6592.255    2.775    .3   U                 GOra     74Le02
 190Po(a)186Pb               7643.2    20.       7693.273    7.223   2.5C  C                 kGSa     88Qu.A,W
 190Po(a)186Pb               7651.4    40.       7693.273    7.223   1.0   U                 MORa     96Ba35
 190Po(a)186Pb               7691.2    10.       7693.273    7.223    .2  -3-                MORa     97Ba25
 190Po(a)186Pb               7695.3    10.       7693.273    7.223   -.2  -3-                MAnv     00An14,*
 190Po(a)186Pb          ave  7693.273   7.223                              3                          average
 190Os(p,t)188Os            -5234       5       -5231.360    0.471    .5   U                 mMin     73Oo01,G
 190Os(p,t)188Os            -5237       4       -5231.360    0.471   1.4   U                 mMcM     75Th04,G
 190Pt(p,t)188Pt            -7150      10       -7146.361    5.300    .4   1    28  28 188Pt  Ors     78Ve10
 190Os(t,a)189Re            11796      10       11796.167    8.165    .0  -2-                 McM     76Hi08
 190Os(t,a)189Re            11804      20       11796.167    8.165   -.4  -2- q-q=    7.833  h         189Os-O
 190Os(t,a)189Re            11789      20       11796.167    8.165    .4  -2- q-q=   -7.167  h         189Os-O
 190Os(t,a)189Re        ave 11796.167   8.165                              2                          average
 189Os(n,g)190Os             7791.8     1.0      7792.341    0.187    .5   U                 mBNn     79Ca02,Z
 189Os(n,g)190Os             7792.31    0.19     7792.341    0.187    .2   1    97  79 189Os MBdn     06Fi.A
 190Os(d,t)189Os            -1541      10       -1535.111    0.187    .6   U                 hKop     75Mo29
 190Os(d,t)189Os            -1530       4       -1535.111    0.187   -1.3  U                 hTal     76Be50
 190Pt(p,d)189Pt            -6693      11       -6683.850   10.070    .8   1    84  84 189Pt  Ors     80Ka19
 190W(B-)190Re               1270      70        1214.211   35.554   -.8   1    26  25 190W  h        76Ha39,*
 190Re(B-)190Os              3090     300        3124.807    4.786    .1   U                 G        55At21,*
 190Re(B-)190Os              3190     300        3124.807    4.786   -.2   U                 G        69Ha44,*
 190Re(B-)190Os              3146     200        3124.807    4.786   -.1   U                 G        64Fl02,*
 190Ir(B+)190Os              2000     200        1954.211    1.213   -.2   U                 M        60Ka14,*
 190Au(B+)190Pt              4442      15        4472.998    3.508   2.1   U                 K        73Jo11
 190Au(B+)190Pt              4380      55        4472.998    3.508   1.7   U                 h        74Di.A
 190Au(B+)190Pt              4380     200        4472.998    3.508    .5   U                 h        75Un.A
 190Hg(B+)190Au              2105      80        1461.675   16.242   -8.0C C                 M        74Di.A
 190Tl(B+)190Hg              7000     400        7005.629   17.450    .0   U                 M        75Un.A,*
 190Tlm(B+)190Hg             6975     300        7075.625   16.682    .3   U                 H        76Bi09,*
 190Tlm(IT)190Tl               90      50          69.997    7.351   -.4   Z                 k        S-u115
 190Bi(B+)190Pb              8700     500        9821.383   24.416   2.2F  F                 n        76Bi09,*
*190Ir-u                  M-A=-36761(175) keV  for mixture gs+m at 26.1 keV              G        Nub211**
*190Au-u                  M-A=-32701(28) keV  for mixture gs+m at 200#150 keV            g        Nub211**
*190Tl-133Cs1.429         Do not use                                                     h        12Bo.A*G
*190Tlm-u                 Assumed by evaluator to be the 7^+ excited isomer              h        GAu126**
*190Bim-133Cs1.429        F : contamination due to gs not resolved                       M        08We02**
*190Bi(a)186Tl            E(a)=6716(5), 6507(5), 6431(5) to gs, 215.2, 293.7 levels               91Va04**
*190Bi(a)186Tl            E(a)=6431(5) to 293.7 level                                    H        03An26**
*190Bi(a)186Tl            E(a)=6428(6) to 293.7 level                                    K        13Ny01**
*190Bim(a)186Tlm          E(a)=6819(5), 6734(5), 6456(5) to levels 0, 89.5, 373.9 above 186Tlm    91Va04**
*190Bim(a)186Tlm          E(a)=6456(5) to 374.0 level above 186Tlm                       H        03An26**
*190Bim(a)186Tlm          Q(a)=6589(10) to 374.0 level above 186Tlm                      G        Nub211**
*190Bim(a)186Tlm          E(a)=6450(5) to 374.0 level above 186Tlm                       g        Nub211**
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*190Po(a)186Pb	not mentioned in new ref.; other T in 97Ba25	m	93Qu03*W
*190Po(a)186Pb	E(a)=7545(15) same dataset as in ref. 2000*An*14	M	97An09**
*190Os(p,t)188Os	keep them in with an eye on the discussion of the 191Ir-196Pt matter	m	AHW039*G
*190W(B-)190Re	E-=950(70) to 1^+ level at 319.7 keV	H	Ens036**
*190Re(B-)190Os	E-=1700(300) 1800(300) resp, to 3^- level at 1387.00 keV	h	Ens036**
*190Re(B-)190Os	E-=1600(200) from isomer at 204(10) to several levels around 1750 keV	g	Nub211**
*190Ir(B+)190Os	p+=6(1)e-5 to 4^+ lvls at 1163.19 and 955.37 keV, lvl at 1872.15 keV fed	h	Ens036**
*190Tl(B+)190Hg	E+=5700(400) to gs and 2^+ level at 416.32 keV	h	Ens036**
*190Tlm(B+)190Hg	E+=4180(300) to 6^+ level at 1772.94 keV	h	Ens036**
*190Bi(B+)190Pb	F : E+=5700(300) to a level around 2000 at least	h	AHW **

191Ta-u		-28470#	322#				2				g	1.0	S-u212
191W-u		-33469	45				2				GGS3	1.0	13Sh30,G
191Au-u		-36180	88	-36283.552	5.288	-1.2	U				KGS2	1.0	05Li24,*
191Au-133Cs1.436		99487.3	5.3	99487.435	5.288	.0	1	100	100	191Au	KMA8	1.0	13Kr15
191Hg-u		-32811	51	-32842.598	23.906	-.6	1	22	22	191Hg	MGS2	1.0	05Li24,*
191Hg-208Pb.918		-11414	29	-11407.817	23.906	.2	1	68	68	191Hg	MMA6	1.0	01Sc41,*
191Tl-u		-28340	130	-28215.907	7.890	1.0	U				MGS1	1.0	00Ra23,*
191Tl-u		-28234	30	-28215.907	7.890	.6	U				MGS2	1.0	05Li24
191Tl-u		-28192	31	-28215.907	7.890	-.8	U				MGS2	1.0	05Li24,*
191Pb-u		-21770	110	-21783.545	7.100	-.1	U				MGS1	1.0	00Ra23,*
191Pb-u		-21744	35	-21783.545	7.100	-1.1	1	4	4	191Pb	GGS2	1.0	05Li24,*
191Bi-133Cs1.436		121552.1	8.6	121557.959	8.038	.7	1	87	87	191Bi	MMA8	1.0	08We02
191Pbm(a)187Hgm		5403.4	20.	5401.969	14.636	-.1	1	51	44	187Hgm	MOra		74Le02
191Bi(a)187Tl		6780.8	5.	6780.325	3.041	-.1	-1-				Lvn		85Co06,Z
191Bi(a)187Tl		6785.3	10.2	6780.325	3.041	-.5	-1-				hORa		98Bi.A
191Bi(a)187Tl		6782.3	10.2	6780.325	3.041	-.2	-1-				hAnv		99An36
191Bi(a)187Tl		6783.3	7.2	6780.325	3.041	-.4	-1-				KJya		13Ny01
191Bi(a)187Tl	ave	6782.238	3.602	6780.325	3.041	-.5	1	71	69	187Tl			average
191Bi(a)187Tlm		6440.0	5.	6446.640	2.462	1.3	-1-				m		67Tr06,Z
191Bi(a)187Tlm		6455.0	10.	6446.640	2.462	-.8	U				MOra		74Le02,Z
191Bi(a)187Tlm		6445.9	5.	6446.640	2.462	.2	-1-				mLvn		85Co06,Z
191Bi(a)187Tlm		6447	10	6446.640	2.462	-.0	U				MORa		98Bi.A
191Bi(a)187Tlm		6458.5	20.	6446.640	2.462	-.6	U				MRIa		99Ta20
191Bi(a)187Tlm		6445	10	6446.640	2.462	.2	U				MAnv		99An36
191Bi(a)187Tlm		6443.2	3.	6446.640	2.462	1.1o	o				KJya		03Ke04
191Bi(a)187Tlm		6445.2	10.	6446.640	2.462	.1	U				KJya		13Uu01
191Bi(a)187Tlm		6450.3	4.	6446.640	2.462	-.9	-1-				KJya		13Ny01
191Bi(a)187Tlm	ave	6446.183	2.706	6446.640	2.462	.2	1	83	72	187Tlm			average
191Bim(a)187Tl		7022.8	5.	7022.506	3.190	-.0	-2-				mLvn		85Co06,Z
191Bim(a)187Tl		7023.4	10.	7022.506	3.190	-.1	U				MORa		98Bi.A
191Bim(a)187Tl		7016.2	20.	7022.506	3.190	.3	U				MRIa		99Ta20
191Bim(a)187Tl		7017.2	3.	7022.506	3.190	1.7o	o				KJya		03Ke04
191Bim(a)187Tl		7031.0	15.	7022.506	3.190	-.6	U				KJya		13Uu01,*
191Bim(a)187Tl		7022.4	4.	7022.506	3.190	.0	-2-				KJya		13Ny01
191Bim(a)187Tl	ave	7022.506	3.190				2						average
191Po(a)187Pb		7470.8	20.	7493.308	4.950	1.1F	F				MGSa		93Qu03,*
191Po(a)187Pb		7487.1	15.	7493.308	4.950	.4	U				HORa		97Ba25
191Po(a)187Pb		7491.2	5.	7493.308	4.950	.4	1	94	94	191Po	HAnv		02An19,*
191Po(a)187Pbm		7493.2	15.	7474.087	10.322	-1.2	1	45	39	187Pbm	HAnv		02An19
191Pom(a)187Pbm		7535	5				2				HAnv		02An19,*
191At(a)187Bim		7713.9	11.				3				HJya		03Ke08
191Atm(a)187Bi		7880.4	15.				3				HJya		03Ke08
191Ir(p,t)189Ir		-5903	15	-5920.014	12.541	-1.1	1	70	70	189Ir	McM		78Lo07
190Os(n,g)191Os		5758.2	2.	5758.732	0.109	.3	U				h		77Be15
190Os(n,g)191Os		5759.1	1.5	5758.732	0.109	-.2	U				h		77Ca19
190Os(n,g)191Os		5758.67	0.16	5758.732	0.109	.4	-1-				mILn		91Bo35,Z
190Os(n,g)191Os		5758.81	0.15	5758.732	0.109	-.5	-1-				MBdn		06Fi.A
190Os(n,g)191Os	ave	5758.745	0.109	5758.732	0.109	-.1	1	100	99	191Os			average
190Os(a,t)191Ir		-14569	15	-14523.894	1.145	3.0B	B				kMcM		71Pr13
191Ir(d,t)190Ir		-1769.3	0.4				2				M		95Ga04,*
191Os(B-)191Ir		313.3	3.	313.587	1.141	.1	-1-						48Sa18,*
191Os(B-)191Ir		314.3	2.	313.587	1.141	-.4	-1-						51Ko17,*
191Os(B-)191Ir		316.3	3.	313.587	1.141	-.9	-1-						58Na15,*
191Os(B-)191Ir		314.3	3.	313.587	1.141	-.2	-1-						60Fe03,*
191Os(B-)191Ir		318.3	3.	313.587	1.141	-1.6	-1-						63Pl01,*

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 191Os(B-)191Ir            ave     315.100     1.200      313.587     1.141    -1.3   1    90  90 191Ir         average
 191Pt(e)191Ir                       1000        15        1010.487     3.636      .7   U                  h       70Sc20,*
 191Au(B+)191Pt                      1830        50        1900.459     6.426     1.4   U                  K       76Vi.A,*
 191Hg(B+)191Au                      3430       200        3205.229    22.699    -1.1   U                  h       75Un.A,*
 191Hg(B+)191Au                      3180        70        3205.229    22.699      .4   1    11  10 191Hg          76Vi.A,*
 191Tlm(B+)191Hg                     5178       200        4606.964    23.339    -2.9C  C                  H       75Un.A,*
*191W-u                        Trends from Mass Surface TMS suggest 191W     70 keV more bound         g       GAu212*G
*191Au-u                       M-A=-33568(28) keV  for mixture gs+m at 266.2 keV                       g       Nub211**
*191Hg-u                       M-A=-30499(28) keV  for mixture gs+m at 128(22) keV                     g       Nub211**
*191Hg-208Pb.918               Original error (19keV) increased by 20 due to isomer+gs lines in trap   h       01Sc41**
*191Tl-u                       M-A=-26250(90) keV  for mixture gs+m at 297(7) keV                      g       Nub211**
*191Tl-u                       M-A=-25964(28) keV  for 191Tlm at 297(7) keV                            g       Nub211**
*191Pb-u                       Possible isomeric contamination                                         M       00Ra23**
*191Pb-u                       M-A=-20226(28) keV  for mixture gs+m at 57(10) keV                      g       Nub211**
*191Bim(a)187Tl                average 6882(20) 6885(15)                                               K       13Uu01**
*191Po(a)187Pb                 F : probably mainly 189Bim                                              M       97Ba25**
*191Po(a)187Pb                 E(a)=7334(10), 6960(15) to gs, 375(1) superseded by 02*An*19            H       99An10**
*191Pom(a)187Pbm               E(a)=7376(5), 6888(5) to 187Pbm and 494(1) above                        H       02An19**
*191Pom(a)187Pbm               E(a)=7378(10), 6888(15) superseded by 02*An*19                          H       99An10**
*191Ir(d,t)190Ir               Feeds gs                                                                m       96Ga30**
*191Os(B-)191Ir                E-=142(3) 143(2) 145(3) 143(3) 147(3) resp, to 11/2^- level at 171.29 keVh       Ens07a**
*191Pt(e)191Ir                 pL=0.73(0.12) to (1/2^+,3/2,5/2^+) at 935.46 keV , no K capture         h       Ens07a**
*191Au(B+)191Pt                E+=850(30) to gs and (5/2^-,7/2^-) level at 9.547 keV; also E+=470(60) toh       Ens07a**
*                               ~ (3/2^-,5/2^-) level at 277.88 and 5/2^- level at 293.458 keV         h       Ens07a**
*191Hg(B+)191Au                Reassigned by evaluator to mainly gs, partly 3/2^+ 207.9 level          h       Ens07a**
*191Tlm(B+)191Hg               E+=3820(200) to level(5/2^-) at 336.32 keV                              h       Ens07a**


 192Ta-u                            -24799#     429#                                  2                  g    1.0 S-u212
 192W-u                             -31798#     215#                                  2                  g    1.0 S-u211
 192Re-u                            -33912       76                                   2                  KGS3 1.0 13Sh30,G
 192Hg-u                            -34440      104      -34367.066    16.641      .7   U                  MGS1 1.0 00Ra23
 192Hg-u                            -34342       30      -34367.066    16.641     -.8R  R  q-q=    25.066  MGS2 1.0 05Li24
 192Hg-208Pb.923                    -12826       20      -12815.538    16.641      .5  -2-                 MMA6 1.0 01Sc41
 192Hg-208Pb.923                    -12792       30      -12815.538    16.641     -.8  -2- q-q=    23.538  m1.0 1.0  192Hg-C
 192Hg-208Pb.923           ave  -12815.538   16.641                                  2                           average
 192Tl-u                            -27830      123      -27775.000    34.000      .4   U                  GGS1 1.0 00Ra23,*
 192Tl-u                            -27775       34                                   2                  MGS2 1.0 05Li24,G
 192Pb-u                            -24280      104      -24210.552     6.146      .7   U                  MGS1 1.0 00Ra23
 192Pb-u                            -24185       30      -24210.552     6.146     -.9R  R  q-q=    25.552  MGS2 1.0 05Li24
 192Bi-u                            -14783      128      -14529.922    32.327     2.0   U                  KGS1 1.0 00Ra23,*
 192Bi-u                            -14489       60      -14529.922    32.327     -.7R  R  q-q=    40.922  KGS2 1.0 05Li24,*
 192Bim-133Cs1.444                  122143.5      9.6                                  2                  MMA8 1.0 08We02
 192Os O2-189Os 35Cl                 24301        6       24309.362     2.394      .6   U                  hH22 2.5 70Mc03
 192Os 35Cl-190Os 37Cl                 5984        3        5983.447     2.386     -.1   U                  HH22 2.5 70Mc03
 192Pb(a)188Hg                       5221.0       5.        5221.681     4.789      .1   1    88  69 188Hg  ORa     79To06,Z
 192Bi(a)188Tl                       6376.0       5.        6376.950     3.536      .2  -3-                 Lvn     91Va04,*
 192Bi(a)188Tl                       6377.9       5.        6376.950     3.536     -.2  -3-                KJya     13Ny01,*
 192Bi(a)188Tl             ave     6376.950     3.536                                  3                           average
 192Bim(a)188Tlm                     6481.4       5.        6484.949     3.077      .7  -3-                h        67Tr06,*
 192Bim(a)188Tlm                     6491.6      10.        6484.949     3.077     -.7  -3-                hOra     74Le02,*
 192Bim(a)188Tlm                     6483.3       5.        6484.949     3.077      .3  -3-                HLvn     91Va04,*
 192Bim(a)188Tlm                     6494         8         6484.949     3.077    -1.1  -3-                HJya     03Ke04,*
 192Bim(a)188Tlm           ave     6484.949     3.077                                  3                           average
 192Po(a)188Pb                       7322.8      20.        7319.625     3.254     -.2   U                  h        81Le23
 192Po(a)188Pb                       7319.8       7.        7319.625     3.254     -.0  -3-                 Lvn     93Wa04
 192Po(a)188Pb                       7364.6      35.        7319.625     3.254    -1.3   U                  mRIa     95Mo14
 192Po(a)188Pb                       7349.4      30.        7319.625     3.254    -1.0   U                  MRIa     97Pu01
 192Po(a)188Pb                       7319.8      11.        7319.625     3.254     -.0o  o                  MJya     01Ke06
 192Po(a)188Pb                       7318.8       8.        7319.625     3.254      .1  -3-                MJya     03Ke04
 192Po(a)188Pb                       7319.8       4.        7319.625     3.254     -.0  -3-                HAnv     03Va16
 192Po(a)188Pb             ave     7319.625     3.254                                  3                           average
 192At(a)188Bi                       7695.6      25.                                    3                  HAnv     06An04
 192At(a)188Bim                      7629.3      15.                                    4                  HAnv     06An04,*
 192Atm(a)188Bi                      7695.6      25.                                    3                  HAnv     06An04
 192Atm(a)188Bin                     7542.4      15.                                    4                  HAnv     06An04,*
 192Os(p,t)190Os                    -4835         5       -4835.318     2.222     -.1  -1-                 Min     73Oo01
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 192Os(p,t)190Os                 -4837        4         -4835.318     2.222      .4  -1-                    McM     75Th04
 192Os(p,t)190Os          ave   -4836.220     3.123     -4835.318     2.222      .3   1     51  51 192Os            average
 192Pt(p,t)190Pt                 -6629        7         -6642.862     2.520    -2.0   1     13  13 192Pt  Ors     80Ka19
 192Os(t,a)191Re                 10993       10                                     2                     McM     76Hi08
 192Os(d,t)191Os                 -1265       15         -1301.152     2.224    -2.4   U                    hTal     77Be15
 191Ir(n,g)192Ir                  6197.7      0.3        6198.122     0.109     1.4o  o                    hILn     87Ke.A
 191Ir(n,g)192Ir                  6198.1      0.2        6198.122     0.109      .1  -1-                    ILn     91Ke10
 191Ir(n,g)192Ir                  6198.14     0.13       6198.122     0.109     -.1  -1-                   MBdn     06Fi.A
 191Ir(n,g)192Ir          ave     6198.128    0.109      6198.122     0.109     -.1   1    100  91 192Ir            average
 192Pt(p,d)191Pt                 -6448        6         -6436.938     2.873     1.8   1     23  26 191Pt  Ors     80Ka19
 192Pt(p,d)191Pt-194Pt()193Pt     -307        3          -309.765     2.696     -.9   1     81  74 191Pt  Ors     78Be09
 192Ir(B+)192Os                   1468       10          1046.672     2.396   -42.1B  B                    h       60An04,*
 192Ir(B-)192Pt                   1456.7      4.         1452.895     2.274    -1.0  -1-                            65Jo04,*
 192Ir(B-)192Pt                   1453.3      3.         1452.895     2.274     -.1  -1-                            77Ra17,*
 192Ir(B-)192Pt           ave     1454.524    2.400      1452.895     2.274     -.7   1     90  87 192Pt            average
 192Au(B+)192Pt                   3514       20          3516.341    15.617      .1  -2-                            66Ny01
 192Au(B+)192Pt                   3520       25          3516.341    15.617     -.1  -2-                            74Di.A
 192Au(B+)192Pt           ave     3516.341   15.617                                 2                             average
 192Hg(B+)192Au                   1745       30           759.498    22.154   -32.9F  F                    n       74Di.A,*
 192Tl(B+)192Hg                   6380      200          6140.471    35.261    -1.2   U                    h       75Un.A,*
 192Tlp(IT)192Tl                   200       50           177.738    40.322     -.4   Z                    hLvn    91Va04,W
*192Re-u                        Trends from Mass Surface TMS suggest 192Re   100 keV more bound         g       GAu212*G
*192Tl-u                        M-A=-25830(100) keV for mixture gs+m at 196(7) keV                      g       Nub211**
*192Tl-u                        see fig. 3.17 in the thesis. resolved                                   m       03Li.A*G
*192Bi-u                        M-A=-13700(110) keV for mixture gs+m at 140(30) keV                     g       Nub211**
*192Bi-u                        M-A=-13426(31) keV  for mixture gs+m at 140(30) keV                     g       Nub211**
*192Bi(a)188Tl                  E(a)=6245(5), 6060(5) to gs, 184.6 level                                        91Va04**
*192Bi(a)188Tl                  E(a)=6064(5) to 184.6 level                                             K       Ens024**
*192Bim(a)188Tlm                E(a)=6050(5) to (10^-) level, 302.4 above 188Tlm                        h       91Va04**
*192Bim(a)188Tlm                E(a)=6060(10) to (10^-) level, 302.4 above 188Tlm                       h       91Va04**
*192Bim(a)188Tlm                E(a)=6348(5), 6253(5), 6081(10), 6052(5) to 188Tlm and                 h       91Va04**
*                                 ~ to levels 103.2, 268.8, 302.4 above 188Tlm                          h       91Va04**
*192Bim(a)188Tlm                E(a)=6062(5) to level 302.4 above 188Tlm                                        03Ke04**
*192At(a)188Bim                 Also E(a)=7435(15) keV followed by 36 keV gamma                         H       06An04**
*192Atm(a)188Bin                Also E(a)=7224(15), 7195(15) keV followed by 165 and 188 keV gamma      H       06An04**
*192Ir(B+)192Os                 E+=240(10) to 2^+ level at 205.7944 keV                                 k       Ens129**
*192Ir(B-)192Pt                 E-=672(4) 666(2) resp, to 4^+ level at 784.5759, and other E-           k       Ens129**
*192Hg(B+)192Au                 May be branch in Au daughter                                                    AHW   *W
*192Hg(B+)192Au                 F : most probably due to backscattering of 2.5 MeV Au positons          n       AHW942**
*192Tl(B+)192Hg                 E+=4940(200) to 2^+ level at 422.79 keV                                 k       Ens129**
*192Tlp(IT)192Tl                From SYST <- GAu029 is not sure => 91Va04 to be checked !! --> yes, it ish      Ens988*W


 193Ta-u                        -22340#      429#                                   2                     g    1.0 S-u211
 193W-u                         -28116#      215#                                   2                     g    1.0 S-u212
 193Re-u                        -32455        42                                    2                     kGS3 1.0 13Sh30
 193Au-u                        -35736        96        -35861.713     9.311    -1.3   U                    MGS2 1.0 05Li24,*
 193Hg-u                        -33288        53        -33347.085    16.641    -1.1   U                    HGS2 1.0 05Li24,*
 193Hg-208Pb.928                -11673        29        -11678.810    16.641     -.2   1     33  33 193Hg MMA6 1.0 01Sc41,*
 193Tl-u                        -29690       158        -29498.006     7.200     1.2   U                    hGS1 1.0 00Ra23,*
 193Tl-u                        -29329       120        -29498.006     7.200    -1.4   U                    hGS2 1.0 05Li24,*
 193Tl-133Cs1.451               107902       120        107691.200     7.200    -1.8   Z                    hMA8 1.0 10Bo.A,G
 193Tl-133Cs1.451               107691.2       7.2                                   2                     HMA8 1.0 14Bo26,*
 193Pb-u                        -23840       110        -23864.085    11.044     -.2o  o                    GGS1 1.0 00Ra23,*
 193Pb-u                        -23826        43        -23864.085    11.044     -.9  -1-                   GGS2 1.0 05Li24,*
 193Pb-u                        -23791        90        -23864.085    11.044     -.8  -1- q-q=    73.085  m1.0 1.0  197Po-C
 193Pb-u                  ave   -23819.495    38.799    -23864.085    11.044    -1.1   1      8   8 193Pb          average
 193Bi-u                        -16980       110        -17052.779     8.133     -.7   U                    MGS1 1.0 00Ra23
 193Bi-u                        -17025        30        -17052.779     8.133     -.9R  R  q-q=    27.779  MGS2 1.0 05Li24
 193Bi-133Cs1.451               120147        11        120136.426     8.133    -1.0  -1-                   MMA8 1.0 08We02
 193Bi-133Cs1.451               120164        30        120136.426     8.133     -.9  -1- q-q=    27.574  m1.0 1.0  193Bi-C
 193Bi-133Cs1.451         ave   120149.015    10.328    120136.426     8.133    -1.2   1     62  62 193Bi          average
 193Bi(a)189Tl                    6304.5       5.          6306.626     4.904      .4   1     92  70 189Tl  Lvn     85Co06,Z
 193Bi(a)189Tlm                   6017.8       5.          6021.149     3.404      .7  -2-                          67Tr06,Z
 193Bi(a)189Tlm                   6024.6      10.          6021.149     3.404     -.3  -2-                    Ora     74Le02,Z
 193Bi(a)189Tlm                   6023.7       5.          6021.149     3.404     -.5  -2-                    Lvn     85Co06,Z
 193Bi(a)189Tlm           ave     6021.149     3.404                                2                             average
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 193Bim(a)189Tl                6617.4      10.       6611.308     4.423     -.6  -1-                 Ora      74Le02
 193Bim(a)189Tl                6611.9       5.       6611.308     4.423     -.1  -1-                 Lvn      85Co06,Z
 193Bim(a)189Tl                6618.4      14.       6611.308     4.423     -.5   U                 HJya      05Uu02
 193Bim(a)189Tl           ave  6612.999     4.567    6611.308     4.423     -.4   1     94  64 193Bim         average
 193Po(a)189Pb                 7128.1      20.       7093.801     3.662    -1.7   U                 h         67Si09
 193Po(a)189Pb                 7087.1      20.       7093.801     3.662      .3   U                 hOra      77De32
 193Po(a)189Pb                 7096.4       5.       7093.801     3.662     -.5  -2-                MLvn      93Wa04
 193Po(a)189Pb                 7093.3      30.       7093.801     3.662      .0   U                 hRIa      95Mo14
 193Po(a)189Pb                 7089.2       6.       7093.801     3.662      .7  -2-                MJya      96En02
 193Po(a)189Pb                 7096.4      10.       7093.801     3.662     -.3  -2-                HAnv      02Va13
 193Po(a)189Pb            ave  7093.801     3.662                                 2                          average
 193Pom(a)189Pbm               7143.3      10.       7153.736     3.447     1.0  -2-                 Ora      77De32
 193Pom(a)189Pbm               7148.4      20.       7153.736     3.447      .3   U                 h         81Le23
 193Pom(a)189Pbm               7152.5       5.       7153.736     3.447      .2  -2-                 Lvn      93Wa04
 193Pom(a)189Pbm               7139.2      30.       7153.736     3.447      .5   U                 hRIa      95Mo14
 193Pom(a)189Pbm               7159.7       6.       7153.736     3.447    -1.0  -2-                MJya      96En02
 193Pom(a)189Pbm               7152.5      10.       7153.736     3.447      .1  -2-                HAnv      02Va13
 193Pom(a)189Pbm          ave  7153.736     3.447                                 2                          average
 193At(a)189Bim                7388.5       5.                                    7                 HJya      03Ke08
 193Atm(a)189Bi                7556.9      20.       7580.400     5.000     1.1o  o                 mJya      95Le15
 193Atm(a)189Bi                7490         6        7580.400     5.000    15.1C  C                 HJya      98En.A
 193Atm(a)189Bi                7580.4       5.                                    7                 HJya      03Ke08,*
 193Atn(a)189Bi                7614.3       5.                                    7                 HJya      03Ke08,*
 193Rn(a)189Po                 8040.0      12.                                    4                 HAnv      06An36,*
 193Ir(p,t)191Ir              -5490        15       -5488.318     0.227      .1   U                 hMcM      78Lo07
 192Os(n,g)193Os               5583.5       2.       5583.416     0.200     -.0   U                 M         78Be22
 192Os(n,g)193Os               5583.40      0.20     5583.416     0.200      .1   1    100  81 193Os M        79Wa04
 192Os(n,g)193Os               5584.01      0.16     5583.416     0.200    -3.7C  C                 hBdn      06Fi.A
 192Os(a,t)193Ir             -13923        15      -13870.894     2.395     3.5B  B                 hMcM      71Pr13
 193Ir(t,a)192Os-191Ir()190Os  -661         4        -653.000     2.222     2.0   1     31  31 192Os  LAl     82La22
 192Ir(n,g)193Ir               7772.0       0.2      7771.992     0.200     -.0   1    100  94 193Ir m        85Co.B,Z
 193Ir(g,n)192Ir              -7790        50       -7771.992     0.200      .4   U                 hPhi      60Ge01
 192Pt(n,g)193Pt               6247         3        6262.470     2.302     5.2B  B                 H         68Sa13
 193Os(B-)193Ir                1132         5        1141.904     2.400     2.0   1     23  19 193Os          58Na15
 193Pt(e)193Ir                   56.6       0.3        56.628     0.300      .1   1    100  96 193Pt          83Jo04
 193Au(B+)193Pt                1355        20        1074.737     8.767   -14.0B  B                           76Di15,*
 193Hg(B+)193Au                2341        30        2342.361    14.368      .0  -1-                          58Br88,*
 193Hg(B+)193Au                2340        20        2342.361    14.368      .1  -1-                h         76Di15,*
 193Hg(B+)193Au           ave  2340.308    16.641    2342.361    14.368      .1   1     75  67 193Hg          average
 193Pbm(IT)193Pb                130        80          92.515    12.357     -.5   Z                           S
*193Au-u                      M-A=-33143(29) keV  for mixture gs+m at 290.19 keV                g         Nub211**
*193Hg-u                      M-A=-30937(28) keV  for mixture gs+m at 140.76 keV                g         Nub211**
*193Hg-208Pb.928              Original error (18keV) increased by 20 due to isomer+gs lines in trap  h    01Sc41**
*193Tl-u                      M-A=-27470(100) keV for mixture gs+m at 372(4) keV                g         Nub211**
*193Tl-u                      M-A=-27134(28) keV  for mixture gs+m at 372(4) keV                g         Nub211**
*193Tl-133Cs1.451             M-A=-27096.8(6.9) keV for mixture gs+m at 372(4) keV              g         Nub211*G
*193Tl-133Cs1.451             D_M=108091.5(5.6) uu for 193Tlm at 372(4) keV; M-A=-27104.3(5.2) keV   g    Nub211**
*193Pb-u                      M-A=-22160(100) keV for mixture gs+m at 94(13) keV                g         Nub211**
*193Pb-u                      M-A=-22147(28) keV  for mixture gs+m at 94(13) keV                g         Nub211**
*193Atm(a)189Bi               E(a)=7423(5), 7325(5) to gs and 99.6(5) level                     H         03Ke08**
*193Atn(a)189Bi               E(a)=7106(5) to 357.6(0.5) 189Bin level                           H         03Ke08**
*193Rn(a)189Po                E(a)=7875(20), 7685(15) to gs and 194 level                       H         06An36**
*193Au(B+)193Pt               E+=153(15) to 3/2^- lvl at 187.81 keV, and other E+               h         Ens062**
*193Au(B+)193Pt               could be lower Hg branches                                        h         AHW   *W
*193Hg(B+)193Au               E-=1170(30) from 193Hgm at 140.76 to 11/2^- level at 290.19 keV   h         Ens062**
*193Hg(B+)193Au               E+=1287(15) reinterpreted by AHW as going to gs and 1/2^+ lvl at 38.22keVH  Ens062**


 194Ta-u                      -18390#     537#                                    2                 g    1.0 S-u212
 194W-u                       -26205#     322#                                    2                 g    1.0 S-u212
 194Re-u                      -29265#     215#                                    2                 g    1.0 S-u212
 194Pt-u                      -37315.72     0.67   -37316.535     0.532    -1.2   1     63  63 194Pt KMS1 1.0 16Ei01
 194Au-u                      -34768      114      -34581.008     2.273     1.6   U                 MGS2 1.0 05Li24,*
 194Hg-u                      -34527       30      -34550.892     3.100     -.8   U                 HGS2 1.0 05Li24
 194Hg-133Cs1.459             103394.7      3.1                                   2                 HMA8 1.0 10El11
 194Hg-208Pb.933              -12766       19      -12765.868     3.101      .0   U                 HMA6 1.0 01Sc41
 194Tl-u                      -28803      135      -28918.592    15.000     -.9o  o                 HGS1 1.0 00Ra23,*
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194Tl-u		-28778	87	-28918.592	15.000	-1.6	U				HGS2	1.0	05Li24,*
194Tl-133Cs1.459		109027	15				2				HMA8	1.0	14Bo26
194Tlm-133Cs1.459		109306.4	4.1	109306.400	4.100	.0o	o				HMA8	1.0	14Bo26
194Tlm-133Cs1.459		109306.4	4.1				2				KMA8	1.0	13St25
194Pb-u		-25980	104	-25989.561	18.682	-.1	U				MGS1	1.0	00Ra23
194Bi-u		-17160	120	-17201.419	5.639	-.3o	o				gGS1	1.0	00Ra23,*
194Bi-u		-17165	59	-17201.419	5.639	-.6	U				gGS2	1.0	05Li24,*
194Bim-133Cs1.459		120900	54				2				MMA8	1.0	08We02,*
190Os-194Pt.979		-5022.45	0.68	-5021.708	0.513	1.1	1	57	52	190Os	KMS1	1.0	16Ei01
190Pt-194Pt.979		-3516.95	0.68	-3517.327	0.518	-.6	1	58	53	190Pt	KMS1	1.0	16Ei01
194Pt-197Au.985		-4396.4	3.2	-4388.026	0.571	2.6	U				kCP1	1.0	05Sh52
194Au-197Au.985		-1652.5	2.2				2				HMA8	1.0	10El11
194Pb(a)190Hg		4737.9	20.	4737.826	16.722	-.0	1	67	40	194Pb	ORa		87El09
194Bi(a)190Tl		5918.3	5.				3				Lvn		91Va04,*
194Bin(a)190Tlm		6015.7	5.	6011.511	4.419	-.8	1	78	42	194Bin	Lvn		91Va04,*
194Po(a)190Pb		6991.5	10.	6987.074	3.177	-.4	-3-						67Si09,Z
194Po(a)190Pb		6990.9	7.	6987.074	3.177	-.5	-3-						67Tr06,Z
194Po(a)190Pb		6984.4	5.	6987.074	3.177	.5	-3-				Ora		77De32,Z
194Po(a)190Pb		6990.0	5.	6987.074	3.177	-.6o	o				hLvn		85Va03,Z
194Po(a)190Pb		6986.3	6.	6987.074	3.177	.1	-3-				Lvn		93Wa04
194Po(a)190Pb		6993.4	4.	6987.074	3.177	-1.6o	o				hJya		96En02
194Po(a)190Pb		6987.3	14.	6987.074	3.177	-.0	-3-				HJya		05Uu02
194Po(a)190Pb	ave	6987.074	3.177				3						average
194At(a)190Bi		7412.5	20.	7454.500	10.607	2.1o	o				kJya		95Le15,*
194At(a)190Bi		7462.5	15.	7454.500	10.607	-.5	-3-				HAnv		09An11,*
194At(a)190Bi		7446.5	15.	7454.500	10.607	.5	-3-				KJya		13Ny01,*
194At(a)190Bi	ave	7454.500	10.607				3						average
194Atm(a)190Bim		7362.1	20.	7309.187	4.843	-2.6o	o				h		80Ya.A
194Atm(a)190Bim		7351.9	20.	7309.187	4.843	-2.1	U				K		84Ya.A
194Atm(a)190Bim		7341.7	20.	7309.187	4.843	-1.6o	o				KJya		95Le15
194Atm(a)190Bim		7329.4	15.3	7309.187	4.843	-1.3	-5-				HAnv		09An11
194Atm(a)190Bim		7306.9	5.1	7309.187	4.843	.4	-5-				KJya		13Ny01
194Atm(a)190Bim	ave	7309.187	4.843				5						average
194Rn(a)190Po		7862.5	10.				4				HAnv		06An36
193Ir(n,g)194Ir		6067.0	0.4	6066.790	0.110	-.5	-2-						82Ra.A
193Ir(n,g)194Ir		6066.9	0.2	6066.790	0.110	-.6	-2-				M		98Ba85
193Ir(n,g)194Ir		6066.71	0.14	6066.790	0.110	.6	-2-				MBdn		06Fi.A
193Ir(n,g)194Ir	ave	6066.790	0.110				2						average
194Pt(t,a)193Ir		12286	20	12301.102	1.252	.8	U				hTal		78Ya07
194Pt(p,d)193Pt		-6142	3	-6127.173	1.285	4.9	Z				hOrs		78Be09,W
194Pt(d,t)193Pt		-2126	20	-2094.509	1.285	1.6	U				hPit		64Co11
194Pt(p,d)193Pt-196Pt()195Pt		-445	3	-429.760	1.292	5.1B	B				hOrs		78Be09
194Os(B-)194Ir		96.6	2.				3						64Wi07,*
194Ir(B-)194Pt		2254	4	2228.322	1.257	-6.4B	B				M		76Ra33
194Irn(B-)194Pt		2600	70				2				N		68Su02,*
194Pt(d,a)192Ir-192Os()190Re		375	4	374.818	3.995	-.0	1	100	100	190Re	G		20Gr08
194Au(B+)194Pt		2465	20	2548.127	2.117	4.2B	B				H		56Th11,W
194Au(B+)194Pt		2509	15	2548.127	2.117	2.6	U				H		60Ba17
194Au(B+)194Pt		2485	30	2548.127	2.117	2.1	U				H		70Ag03,*
194Hg(e)194Au		40	20	28.053	3.581	-.6	U				H		81Ho18,W

*194Au-u	M-A=-32192(29) keV for mixture gs+m+n at 107.4 and 475.8 keV	g	Nub211**
*194Tl-u	M-A=-26700(100) keV for mixture gs+m at 260(14) keV	g	Nub211**
*194Tl-u	M-A=-26677(28) keV for mixture gs+m at 260(14) keV	g	Nub211**
*194Tl-u	Assumed by evaluator to be the 7+ excited isomer	h	GAu126*G
*194Bi-u	M-A=-15870(100) keV for mixture gs+m+n at 150(50) and 163(4) keV	g	Nub211**
*194Bi-u	Original corrected for Q(a)	m	00Ra23*W
*194Bi-u	M-A=-15885(28) keV for mixture gs+m+n at 150(50) and 163(4) keV	g	Nub211**
*194Bim-133Cs1.459	Original error 16 uu increased to include possible 3^+ and 10^- contam.	h	08We02**
*194Bi(a)190Tl	E(a)=5799(5), 5645(5) to gs, 151.3 level		91Va04**
*194Bin(a)190Tlm	E(a)=5892(5), 5781(5) to levels 0, 112.2 above 190Tlm	n	91Va04**
*194Bin(a)190Tlm	#21: 194Bin(IT)=270#500 not acceptable: extremely probable >0 ****	n	AHW942*W
*194At(a)190Bi	E(a)=7140(20) to 121(15)	K	09An11**
*194At(a)190Bi	E(a)=7190(15) to 121(15); further E(a): 7310(15), 7266(15), 7145(15) keV		09An11**
*194At(a)190Bi	E(a)=7174(8) to 121(15)		13Ny01**
*194Pt(p,d)193Pt	Q-Q(196Pt(p,d))=-445(3)	h	AHW *W
*194Os(B-)194Ir	E-=54.5(2.0) to 0^- level at 43.119 keV, and other E-	h	Ens066**
*194Irn(B-)194Pt	E-<250 to 10^+ level at 2438.41 keV	h	Ens066**

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*194Au(B+)194Pt                  E+=1230(30) to 2^+ level at 328.464 keV, and other E^+              h        Ens066**
*194Hg(e)194Au                   No K capture                                                                  AHW   *W


 195W-u                           -22265#      322#                                  2                  g    1.0 S-u211
 195Re-u                          -27440#      322#                                  2                  g    1.0 S-u211
 195Os-u                          -31682        60                                   2                  gGS3 1.0 13Sh30
 195Hg-u                          -33283        62      -33295.260     24.827    -.2   U                 MGS2 1.0 05Li24,*
 195Hg-208Pb.938                  -11381        28      -11393.489     24.827    -.4   1     79   79 195Hg KMA6 1.0 01Sc41,*
 195Tl-u                          -30320       200      -30226.195     11.942     .5   U                 MGS1 1.0 00Ra23,*
 195Tl-u                          -30209        40      -30226.195     11.942    -.4  -1-                hGS2 1.0 05Li24
 195Tl-u                          -30264        33      -30226.195     11.942    1.1  -1-                hGS2 1.0 05Li24,*
 195Tl-u                      ave -30241.726    25.455  -30226.195     11.942     .6   1     22   22 195Tl          average
 195Tl-133Cs1.466                 108375        27      108381.230     11.942     .2  -1-                HMA8 1.0 14Bo26
 195Tl-133Cs1.466                 108472        79      108381.230     11.942   -1.1  -1-                HMA8 1.0 14Bo26,*
 195Tl-133Cs1.466             ave 108385.145    25.549  108381.230     11.942    -.2   1     22   22 195Tl          average
 195Pb-u                          -25423       150      -25483.873      5.462    -.4o  o                 MGS1 1.0 00Ra23,*
 195Pb-u                          -25461        70      -25483.873      5.462    -.3  -1-                MGS2 1.0 05Li24,*
 195Pb-u                          -25451        38      -25483.873      5.462    -.9  -1- q-q=    32.873  m1.0 1.0  199Po-C
 195Pb-u                          -25462        38      -25483.873      5.462    -.6  -1- q-q=    21.873  k1.0 1.0  199Po-C
 195Pb-u                      ave -25457.078    25.085  -25483.873      5.462   -1.1   1      5    5 195Pb          average
 195Bi-u                          -19320       100      -19351.241      5.675    -.3   U                 MGS1 1.0 00Ra23,W
 195Bi-u                          -19537       128      -19351.241      5.675    1.5   U                 MGS2 1.0 05Li24,*
 195Bi-133Cs1.466                 119258.2       6.0    119256.184      5.675    -.3   1     89   89 195Bi MMA8 1.0 08We02
 195Po-133Cs1.466                 126671.8       6.6    126673.206      6.487     .2   1     97   97 195Po GMA8 1.0 17Al34
 195Pom-133Cs1.466                126832.4       7.8    126832.591      7.556     .0   1     94   94 195PomGMA8 1.0 17Al34
 195Pt-197Au.990                   -2119.9       3.2     -2110.050      0.569    3.1B  B                 kCP1 1.0 05Sh52
 195Bi(a)191Tl                      5832.5       5.                                  2                   Lvn     85Co06,Z
 195Bi(a)191Tlm                     5542.9      10.       5535.239      4.566    -.8  -2-                 Ora     74Le02,Z
 195Bi(a)191Tlm                     5533.3       5.       5535.239      4.566     .4  -2-                 Lvn     85Co06,Z
 195Bi(a)191Tlm               ave   5535.239     4.566                               2                           average
 195Bim(a)191Tl                     6228.1       5.       6231.731      3.403     .7  -3-                         67Tr06,Z
 195Bim(a)191Tl                     6238.4      10.       6231.731      3.403    -.6  -3-                 Ora     74Le02,Z
 195Bim(a)191Tl                     6233.7       5.       6231.731      3.403    -.4  -3-                 Lvn     85Co06,Z
 195Bim(a)191Tl               ave   6231.731     3.403                               3                           average
 195Po(a)191Pb                      6763.1       8.       6749.673      2.785   -1.6  -1-                H        67Si09,Z
 195Po(a)191Pb                      6747.4       5.       6749.673      2.785     .5  -1-                M        67Tr06,Z
 195Po(a)191Pb                      6744.6       5.       6749.673      2.785    1.0  -1-                MLvn     93Wa04
 195Po(a)191Pb                      6752.8      14.       6749.673      2.785    -.2o  o                 hJya     96Le09
 195Po(a)191Pb                      6744.6      10.       6749.673      2.785     .5  -1-                HAnv     02Va13
 195Po(a)191Pb                      6755.9       6.       6749.673      2.785   -1.0  -1-                HJya     05Uu02
 195Po(a)191Pb                ave   6749.944     2.795    6749.673      2.785    -.1   1     99   96 191Pb          average
 195Pom(a)191Pbm                    6850.8      10.       6840.608      2.843   -1.0  -1-                n        67Si09,W
 195Pom(a)191Pbm                    6839.4       5.       6840.608      2.843     .2  -1-                         67Tr06,Z
 195Pom(a)191Pbm                    6839.6       5.       6840.608      2.843     .2  -1-                 Lvn     93Wa04
 195Pom(a)191Pbm                    6852.8      10.       6840.608      2.843   -1.2o  o                 hJya     96Le09
 195Pom(a)191Pbm                    6839.6      10.       6840.608      2.843     .1  -1-                HAnv     02Va13
 195Pom(a)191Pbm                    6840.6       6.       6840.608      2.843     .0  -1-                HJya     05Uu02
 195Pom(a)191Pbm              ave   6840.635     2.856    6840.608      2.843    -.0   1     99   93 191Pbm          average
 195At(a)191Bim                     7095.8      20.       7101.955      4.084     .3   U                 MJya     95Le15
 195At(a)191Bim                     7105        20        7101.955      4.084    -.2   U                 MRIa     99Ta20
 195At(a)191Bim                     7098.9       3.       7101.955      4.084    1.0o  o                 KJya     03Ke04,*
 195At(a)191Bim                     7113.2      10.       7101.955      4.084   -1.1o  o                 KJya     13Uu01
 195At(a)191Bim                     7101.9       4.                                  3                   KJya     13Ny01
 195Atm(a)191Bi                     7340.9      30.       7373.500      4.000    1.1o  o                 kJya     83Le.A,*
 195Atm(a)191Bi                     7371.5      30.       7373.500      4.000     .1o  o                 kJya     95Le.A
 195Atm(a)191Bi                     7283        37        7373.500      4.000    2.4   Z                 mRIa     95No.A,W
 195Atm(a)191Bi                     7403        30        7373.500      4.000   -1.0   U                 hRIa     99Ta20,*
 195Atm(a)191Bi                     7372.5       4.0      7373.500      4.000     .2o  o                 KJya     03Ke04,*
 195Atm(a)191Bi                     7373.5       4.0                                 2                   KJya     13Ny01,*
 195Rn(a)191Po                      7694.1      11.                                  2                   MJya     01Ke06
 195Rnm(a)191Pom                    7713.5      11.                                  3                   MJya     01Ke06
 194Ir(n,g)195Ir                    7231.92      0.11     7231.860      0.060    -.5o  o                 hILn     87Ci.A
 194Ir(n,g)195Ir                    7231.86      0.06                                3                   mILn     87Co08,Z
 194Pt(n,g)195Pt                    6105.06      0.12     6105.096      0.119     .3   1     99   72 195Pt mILn     81Ho.B,Z
 194Pt(n,g)195Pt                    6109.17      0.13     6105.096      0.119  -31.3F  F                 MBdn     06Fi.A
 195Pt(g,n)194Pt                   -6205        44       -6105.096      0.119    2.3   U                 hPhi     60Ge01
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 194Pt(d,p)195Pt                  3908        20         3880.530     0.119    -1.4  U                 hPit     64Co11
 195Pt(d,t)194Pt                   140        20          152.134     0.119      .6  U                 hPit     64Co11
 195Os(B-)195Ir                   2000       500         2180.756    55.906      .4  U                 H        57Ba08
 195Ir(B-)195Pt                   1116        20         1101.557     1.264     -.7  U                 h        73Ja10,*
 195Au(e)195Pt                     226.8       1.0        226.817     1.000      .0  1   100 100 195Au          Averag,*
 195Hg(B+)195Au                   1510        50         1552.754    23.142      .9  1    21  21 195Hg          71Fr03,*
 195Tl(B+)195Hg                   3000       300         2858.816    25.662     -.5  U                 h        78Go15,*
 195Pbm(IT)195Pb                    202.9      0.7        202.878     0.700     -.0  1   100  95 195Pb  Oak     91Gr12
 195Bi(B+)195Pb                   4850       550         5712.511     7.337     1.6  U                 hOak     91Gr12
 195Atp(IT)195Atm                   70#       40#                                    3                 k        GAu151
*195Hg-u                         M-A=-30914(28) keV  for mixture gs+m at 176.07 keV                   g        Nub211**
*195Hg-208Pb.938                 Corrected 40(20) keV for isomeric mixture R=0.3(0.2) E=176.07 keV     g        Nub211**
*195Tl-u                         M-A=-28000(100) keV for mixture gs+m at 482.63 keV                   g        Nub211**
*195Tl-u                         Isomer T=3.6 s at Eexc=482.63 conv. coeff. ~100!                     m        AHW99b*W
*195Tl-u                         M-A=-27708(31) keV  for 195Tlm at 482.63 keV                         g        Nub211**
*195Tl-133Cs1.466                D_M=108990(79) uu    for 195Tlm at 482.63 keV; M-A=-27589(73) keV    g        Nub211**
*195Pb-u                         M-A=-23580(100) keV for mixture gs+m at 202.9 keV                    g        Nub211**
*195Pb-u                         M-A=-23615(28) keV  for mixture gs+m at 202.9 keV                    g        Nub211**
*195Bi-u                         Corrected by author for Q(a)                                         m        00Ra23*W
*195Bi-u                         M-A=-17999(28) keV  for mixture gs+m at 399(6) keV                   g        Nub211**
*195Pom(a)191Pbm                 E(a)=6710.1(10,Z). This and his 195Po syst. high.                    n        AHW952*W
*195At(a)191Bim                  Correlated with E(a)=6313 of 191Bim                                  M        03Ke04**
*195Atm(a)191Bi                  E(a)=7190(30) to 148.7(0.5) level                                             03Ke04**
*                                 ~ correlated with alpha of 12 s 191Bi gs                            m        95Le15**
*195Atm(a)191Bi                  Preliminary                                                          m        95No.A*W
*195Atm(a)191Bi                  E(a)=7105(30) to 148.7(0.5) level                                             03Ke04**
*195Atm(a)191Bi                  E(a)=7221(4) and 7075(4) to 148.7(0.5) level                                  03Ke04**
*195Atm(a)191Bi                  E(a)=7222(4) and 7076(5) to 148.7(0.5) level                                  13Ny01**
*195Ir(B-)195Pt                  E-=980(30) to 3/2^- level at 98.880 keV and 5/2^- level at 129.772 keV,  k    Ens148**
*                                 ~ and E-=410(20) from 195Irm at 100(5) to 9/2^- at 814.50, and other E- k    Ens148**
*195Au(e)195Pt                   Average pK=0.179(0.006) to 5/2^- lvl at 129.772 from the following ref.s:k    Ens148**
*                                 ~ pK=0.195(0.015) to 129.78 level                                            65De20**
*                                 ~ pK=0.166(0.020) to 129.78 level                                            68Ja11**
*                                 ~ pK=0.160(0.017) to 129.78 level                                            73Go05**
*                                 ~ pK=0.183(0.009) to 129.78 level                                            80Sa11**
*                                 ~ pK=0.176(0.012) to 129.78 level                                            82Be.A**
*195Hg(B+)195Au                  Assuming 511 gamma is annihilation of B+ to gs and 1/2^+ lvl at 61.434   k    Ens148**
*195Tl(B+)195Hg                  K/B+=6(1) to gs and 3/2^- level at 37.083 keV                        k        Ens148**


 196W-u                         -20118#      429#                                    2                 g    1.0 S-u211
 196Re-u                        -24004#      322#                                    2                 g    1.0 S-u20c
 196Hg-u                        -34161.8      16.3     -34166.616     3.163     -.3  U                 GMA8 1.0 20Ku19,*
 196Hg-208Pb.942                -12178        20       -12171.448     3.164      .3  U                 MMA6 1.0 01Sc41
 196Tl-u                        -29188       126       -29518.811    13.000    -2.6  U                 hGS2 1.0 05Li24,*
 196Tl-133Cs1.474                109845       13                                     2                 MMA8 1.0 08We02,*
 196Pb-208Pb.942                 -5228        22        -5218.682     8.190      .4 -1-                MMA6 1.0 01Sc41
 196Pb-208Pb.942                 -5238        30        -5218.682     8.190      .6 -1- q-q=  -19.318  m1.0 1.0  196Pb-C
 196Pb-208Pb.942                 -5235        30        -5218.682     8.190      .5  Z  q-q=  -16.318  k1.0 1.0  200Po-C
 196Pb-208Pb.942           ave   -5231.497    17.741    -5218.682     8.190      .7  1    21  21 196Pb           average
 196Pb-u                        -27200       104       -27213.849     8.190     -.1  U                 MGS1 1.0 00Ra23
 196Pb-u                        -27232        30       -27213.849     8.190      .6R  R  q-q=  -18.151 MGS2 1.0 05Li24
 196Bi-u                        -19309       137       -19333.491    26.225     -.2o o                 MGS1 1.0 00Ra23,*
 196Bi-u                        -19325        30       -19333.491    26.225     -.3 -2-                MGS2 1.0 05Li24,G
 196Bi-u                        -19361        54       -19333.491    26.225      .5 -2-                MMA8 1.0 08We02,*
 196Bi-u                   ave  -19333.491    26.225                                 2                          average
 196Po-133Cs1.474                124905.4      6.3     124904.404     5.778     -.2  1    84  84 196Po GMA8 1.0 17Al34
 196Pt-197Au.995                 -1781.1       3.0      -1782.578     0.566     -.5  U                 kCP1 1.0 05Sh52
 196Bi(a)192Tlp                   5260.6       5.                                    3                  Lvn     91Va04
 196Po(a)192Pb                    6662.3       8.2       6658.219     2.380     -.5 -1-                         67Si09,Z
 196Po(a)192Pb                    6653.7       5.        6658.219     2.380      .9 -1-                         67Tr06,Z
 196Po(a)192Pb                    6658.4       8.        6658.219     2.380     -.0 -1-                         71Ho01,Z
 196Po(a)192Pb                    6656.7       5.        6658.219     2.380      .3o o                 mLvn     85Va03,Z
 196Po(a)192Pb                    6656.7       5.        6658.219     2.380      .3 -1-                 Lvn     93Wa04
 196Po(a)192Pb                    6653.1      18.        6658.219     2.380      .3o o                 hAra     95Le04
 196Po(a)192Pb                    6657.1      10.        6658.219     2.380      .1o o                 hJya     96Le09
 196Po(a)192Pb                    6654.0       5.0       6658.219     2.380      .8 -1-                HAra     96Ta18,*
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 196Po(a)192Pb                   6669.4      6.        6658.219     2.380    -1.8  -1-               HJya     05Uu02
 196Po(a)192Pb                   6658.2     25.        6658.219     2.380      .0   U                HAnv     10He25
 196Po(a)192Pb             ave   6658.062    2.413     6658.219     2.380      .1   1    97  81 192Pb         average
 196At(a)192Bi                   7202.3      7.        7196.446     2.724     -.8  -4-               H        67Tr06
 196At(a)192Bi                   7187.0     25.        7196.446     2.724      .4   U                hJya     95Le15
 196At(a)192Bi                   7200.2     30.        7196.446     2.724     -.1   U                hRIa     95Mo14
 196At(a)192Bi                   7191.0      7.        7196.446     2.724      .8o  o                hJya     96En01
 196At(a)192Bi                   7195.1      5.        7196.446     2.724      .3o  o                KJya     00Sm06
 196At(a)192Bi                   7202.3     12.        7196.446     2.724     -.5o  o                KAnv     05De01,G
 196At(a)192Bi                   7195.1     12.        7196.446     2.724      .1o  o                KJya     13Uu01,*
 196At(a)192Bi                   7194.1      5.        7196.446     2.724      .5  -4-               KJya     13Ny01
 196At(a)192Bi                   7192.1      5.        7196.446     2.724      .9  -4-               KAnv     14Ka23
 196At(a)192Bi                   7200.2      5.        7196.446     2.724     -.7  -4-               GAnv     16Tr07
 196At(a)192Bi             ave   7196.446    2.724                                 4                          average
 196Atm(a)192Bim                 7023.6     15.                                    3                 HJya     96En01,*
 196Rn(a)192Po                   7623       30         7616.737     9.188     -.2   Z                mRIa     95No.A,W
 196Rn(a)192Po                   7583.1     35.        7616.737     9.188      .9o  o                MRIa     95Mo14,W
 196Rn(a)192Po                   7648.4     30.        7616.737     9.188    -1.1   U                MRIa     97Pu01
 196Rn(a)192Po                   7616.7      9.                                    4                 MJya     01Ke06
 196Pt(t,a)195Ir                11565       20        11572.677     1.270      .4   U                hTal     78Ya07
 196Pt(t,a)195Ir                11545       20        11572.677     1.270     1.4   U                hLAl     81Fl.A
 195Pt(n,g)196Pt                 7921.96     0.20      7921.979     0.129      .1  -1-               mILn     81Ho.B,Z
 195Pt(n,g)196Pt                 7921.92     0.17      7921.979     0.129      .3  -1-               MBdn     06Fi.A
 196Pt(g,n)195Pt                -8290      140        -7921.979     0.129     2.6   U                hPhi     60Ge01
 195Pt(d,p)196Pt                 5712       25         5697.412     0.129     -.6   U                hPit     64Co11
 196Pt(d,t)195Pt                -1686       20        -1664.749     0.129     1.1   U                hPit     64Co11
 195Pt(n,g)196Pt           ave   7921.937    0.130     7921.979     0.129      .3   1    99  71 196Pt         average
 196Os(B-)196Ir                   900       40         1158.384    55.495     6.5B  B                H        77Ha32,*
 196Ir(B-)196Pt                  3150       60         3209.016    38.411     1.0  -2-                        66Vo05,*
 196Ir(B-)196Pt                  3250       50         3209.016    38.411     -.8  -2-                        67Mo10
 196Ir(B-)196Pt            ave   3209.016   38.411                                 2                          average
 196Irm(B-)196Pt                 3418       20                                     2                 M        65Bi04,*
 196Irm(B-)196Pt                 3630      100         3418.000    20.000    -2.1   U                h        68Ja06,*
 196Au(B+)196Pt                  1498        7         1505.799     2.960     1.1   1    18  18 196Au         63Ik01,*
 196Au(e)196Pt                   1490       10         1505.799     2.960     1.6   U                m        62Wa16,*
 196Au(B-)196Hg                   685        4          687.230     3.118      .6   1    61  31 196Au         62Li03,*
 196Bim(IT)196Bi                  158.3      0.3        166.418     2.947    27.1   Z                hLvn     87Va09,W
*196Hg-u                       from frequency ratio 196Hg+/(39K)+=2.514744076(209)                   G        20Ku19**
*196Tl-u                       M-A=-26991(28) keV  for mixture gs+m at 394.2 keV                     g        Nub211**
*196Tl-133Cs1.474              Q=110268(13) uu M-A=-27103(12) keV for 196Tlm at 394.2 keV            g        Nub211**
*196Bi-u                       M-A=-17850(100) keV for mixture gs+n at 272(3) keV                    g        Nub211**
*196Bi-u                       see fig. 3.9 in the thesis, resolved                                  m        03Li.A*G
*196Bi-u                       Q=120182(15) uu for 196Bim-133Cs1.474, M-A(196Bim)=-17868(14) keV at  M        08We02**
*                               ~ 167(3) keV; error increased to include possible 3^+ and 10^- contam. M      08We02**
*196Po(a)192Pb                 Including systematic uncertainty 5 keV                                H        96Ta18**
*196At(a)192Bi                 used for calibration                                                  h        GAu097*G
*196At(a)192Bi                 Same group, but much less events than in 00*Sm*06                     K        WgM151**
*196Atm(a)192Bim               Correlated with E(a)=7550 of 200Fr(a)                                 M        96En01**
*196Rn(a)192Po                 Preliminary                                                           m        95No.A*W
*196Rn(a)192Po                 Single event                                                          m        Ame95 *W
*196Os(B-)196Ir                E-=435(20) to (0,1)^+ levels at 407.88, 522.37 keV                    H        Ens076**
*196Ir(B-)196Pt                Original value 3170(60) recalibrated using 62Cu                       h        AHW   **
*196Irm(B-)196Pt               E-=950(20) to (10^-,11^-) level at 2468.0 keV                         h        Ens076**
*196Irm(B-)196Pt               E-=1160(100) to (10^-,11^-) level at 2468.0 keV                       h        Ens076**
*196Au(B+)196Pt                KL/B+=2.0(0.4)e+6 to 2^+ level at 355.68 keV, recalculated            h        Ens076**
*196Au(e)196Pt                 pL=0.64(0.06) to 3^- level at 1447.043 keV                            h        Ens076**
*196Au(B-)196Hg                E-=259(4) to 2^+ level at 425.98 keV                                  h        Ens076**
*196Bim(IT)196Bi               Transition from 6^+ (not the 7^+ 196Bim) to ground-state              h        92Hu04*W


 197W-u                        -15964#     429#                                    2                 g    1.0 S-u211
 197Re-u                       -21847#     322#                                    2                 g    1.0 S-u212
 197Os-u                       -26924#     215#                                    2                 g    1.0 S-u211
 197Hg-u                       -32868       98       -32786.349     3.442      .8   Z                hGS2 1.0 03Li.A,G
 197Hg-u                       -32766       30       -32786.349     3.442     -.7   U                HGS2 1.0 05Li24
 197Hg-u                       -32765       30       -32786.349     3.442     -.7   U                HGS2 1.0 05Li24,*
 197Hg-208Pb.947               -10664       30       -10674.434     3.443     -.3   U                MMA6 1.0 01Sc41,G
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197Tl-u		-30450	30	-30438.216	14.563	.4R	R	q-q=	-11.784	MGS2	1.0	05Li24
197Pb-u		-26520	110	-26565.637	5.148	-.4	U			MGS1	1.0	00Ra23,W
197Pb-u		-26609	30	-26565.637	5.148	1.4	U			MGS2	1.0	05Li24
197Pb-u		-26543	30	-26565.637	5.148	-.8	U			MGS2	1.0	05Li24,*
197Pbm-133Cs1.481		113799.6	6.0	113802.799	5.147	.5	1	74	74 197Pbm	MMA8	1.0	08We02
197Bi-208Pb.947		982	22	976.843	8.947	-.2R	R	q-q=	5.157	MMA6	1.0	01Sc41
197Bi-u		-21381	192	-21135.073	8.946	1.3	U			KGS1	1.0	00Ra23,*
197Bi-u		-21187	31	-21135.073	8.946	1.7	U			hGS2	1.0	05Li24
197Bi-133Cs1.481		118870	26	118890.572	8.946	.8R	R	q-q=	-20.572	MMA8	1.0	08We02,*
197Po-u		-14420	130	-14378.060	10.586	.3o	o			GGS1	1.0	00Ra23,*
197Po-u		-14288	71	-14378.060	10.586	-1.3R	R	q-q=	90.060	GGS2	1.0	05Li24,*
197Po-133Cs1.481		125644	11	125647.584	10.586	.3	1	93	93 197Po	GMA8	1.0	17Al34
197Pom-133Cs1.481		125858.0	7.0				2			GMA8	1.0	17Al34
197At-133Cs1.481		133186	20	133202.998	8.570	.8	1	18	18 197At	KMA8	1.0	17Ma29
197Atm-133Cs1.481		133234	15	133250.994	9.700	1.1	1	42	42 197Atm	KMA8	1.0	17Ma29
197Au-C16		-33432.5	7.3	-33429.957	0.579	.2o	o			HTG1	1.5	09Ke.A
197Au-C16		-33432.9	5.4	-33429.957	0.579	.4	U			HTG1	1.5	10Ke09
197Au(a,8He)193Au		-26919	9	-26919.601	8.658	-.1	1	93	93 193Au			89Ka04
197Bim(a)193Tl		5890.8	10.	5897.639	4.565	.7o	o			mOra		72Ga27,W
197Bim(a)193Tl		5889.7	10.	5897.639	4.565	.8	-3-			Ora		74Le02,Z
197Bim(a)193Tl		5899.6	5.	5897.639	4.565	-.4	-3-			Lvn		85Co06,Z
197Bim(a)193Tl	ave	5897.639	4.565				3					average
197Po(a)193Pb		6420.7	10.	6411.261	3.179	-.9	-1-			M		67Si09,Z
197Po(a)193Pb		6410.1	5.	6411.261	3.179	.2	-1-			M		67Tr06,Z
197Po(a)193Pb		6409.4	9.	6411.261	3.179	.2	-1-			M		71Ho01,Z
197Po(a)193Pb		6411.4	5.0	6411.261	3.179	-.0	-1-			HAra		96Ta18,*
197Po(a)193Pb	ave	6411.584	3.191	6411.261	3.179	-.1	1	99	92 193Pb			average
197Pom(a)193Pbm		6510.1	5.	6514.746	2.081	.9	-3-					67Tr06,Z
197Pom(a)193Pbm		6511.4	9.	6514.746	2.081	.4	U			m		71Ho01,Z
197Pom(a)193Pbm		6518.0	3.	6514.746	2.081	-1.1	-3-			Bka		82Bo04,Z
197Pom(a)193Pbm		6512.4	5.0	6514.746	2.081	.4	-3-			HAra		96Ta18,*
197Pom(a)193Pbm		6517.6	10.	6514.746	2.081	-.3o	o			HAnv		02Va13
197Pom(a)193Pbm		6516.6	30.	6514.746	2.081	-.1	U			HAnv		10He25
197Pom(a)193Pbm		6513.0	4.6	6514.746	2.081	.4	-3-			HTex		12Fo09
197Pom(a)193Pbm	ave	6514.746	2.081				3					average
197At(a)193Bi		7103.0	5.	7104.393	3.074	.3	-1-			K		67Tr06,Z
197At(a)193Bi		7100.5	5.	7104.393	3.074	.8o	o			kJya		96En01
197At(a)193Bi		7104.5	5.	7104.393	3.074	-.0o	o			KJya		99Sm07
197At(a)193Bi		7103.5	6.	7104.393	3.074	.1	-1-			KJya		05Uu02
197At(a)193Bi		7107.5	5.	7104.393	3.074	-.6	-1-			KAnv		14Ka23
197At(a)193Bi	ave	7104.834	3.109	7104.393	3.074	-.1	1	98	82 197At			average
197Atm(a)193Bim		6846.2	10.	6844.418	4.327	-.2o	o			HLvn		86Co12
197Atm(a)193Bim		6846.2	5.	6844.418	4.327	-.4	-1-			MJya		99Sm07
197Atm(a)193Bim		6846.2	5.	6844.418	4.327	-.4	Z			hAnv		05De01,G
197Atm(a)193Bim		6845.2	9.	6844.418	4.327	-.1	-1-			HJya		05Uu02
197Atm(a)193Bim		6837.0	16.	6844.418	4.327	.5	U			KAnv		14Ka23
197Atm(a)193Bim	ave	6846.032	4.462	6844.418	4.327	-.4	1	94	58 197Atm			average
197Rn(a)193Po		7410.8	20.	7410.755	7.145	-.0o	o			HRIa		95No.A
197Rn(a)193Po		7411.8	30.	7410.755	7.145	-.0	U			HRIa		95Mo14
197Rn(a)193Po		7410.8	7.				3			HJya		96En02
197Rnm(a)193Pom		7523.1	30.	7509.157	6.391	-.5	U			MRIa		95Mo14
197Rnm(a)193Pom		7508.7	7.	7509.157	6.391	.1	-3-			MJya		96En02
197Rnm(a)193Pom		7510.7	14.	7509.157	6.391	-.1	-3-			HJya		05Uu02
197Rnm(a)193Pom	ave	7509.157	6.391				3					average
197Fr(a)193Atm		7888.4	15.				8			KAnv		13Ka16
196Pt(n,g)197Pt		5846.4	0.4	5846.559	0.264	.4	-1-			m		78Ya07,Z
196Pt(n,g)197Pt		5846.0	0.9	5846.559	0.264	.6	-1-			MILn		81Ho.B,Z
196Pt(n,g)197Pt		5846.6	0.5	5846.559	0.264	-.1	-1-			mBNn		83Ca04,Z
196Pt(n,g)197Pt		5846.0	0.7	5846.559	0.264	.8	-1-			MBdn		06Fi.A
196Pt(d,p)197Pt		3627	20	3621.993	0.264	-.3	U			hPit		64Co11
196Pt(d,p)197Pt		3606	20	3621.993	0.264	.8	U			hTal		78Ya07
196Pt(n,g)197Pt	ave	5846.362	0.272	5846.559	0.264	.7	1	94	65 197Pt			average
197Au(g,n)196Au		-8057	22	-8072.355	2.939	-.7	U			hPhi		60Ge01
197Au(g,n)196Au		-8080	5	-8072.355	2.939	1.5	-1-			McM		79Ba06
197Au(g,n)196Au		-8072	7	-8072.355	2.939	-.1	-1-					79Be.A,W
197Au(d,t)196Au		-1820	30	-1815.125	2.939	.2	U			hPit		64Co11
197Au(g,n)196Au	ave	-8077.297	4.069	-8072.355	2.939	1.2	1	52	52 196Au			average

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 196Hg(n,g)197Hg                 6785.3       1.5       6785.608      1.478      .2   1     97   84 197Hg mBNn      78Zg.A,Z
 197Ir(B-)197Pt                  2000       200         2155.641     20.106      .8   U                   h         61Ho10
 197Pt(B-)197Au                   719.0       0.6        719.997      0.502     1.7   1     70   36 197Au            71Pr03
 197Hg(e)197Au                    415        20          599.517      3.202     9.2B  B                   h         65De20,*
 197Hg(e)197Au                    610       100          599.517      3.202     -.1   U                   h         92Da14,*
 197Tl(B+)197Hg                  2220       100         2187.273     13.939     -.3   U                   h         61Ju05
 197Pbm(IT)197Pb                  319.31      0.11       319.309      0.110     -.0   1    100   74 197Pb k         Ens053
*197Hg-u                      M-A=-30467(28) keV  for mixture gs+m at 298.93 keV                          g         Nub211*G
*197Hg-u                      Mixture resolved before publishing                                          h         GAu095*G
*197Hg-u                      M-A=-30221(28) keV for 197Hgm at 298.93 keV                                 g         Nub211**
*197Hg-208Pb.947              Original error (19keV) increased by 20 due to isomer+gs lines in trap      m         01Sc41*G
*197Pb-u                      Value may fit isomer at 319.31 keV and 201Po+Q(a)                           m         AHW99b*W
*197Pb-u                       but then the error is certainly underestimated!                            m         AHW011*W
*197Pb-u                      M-A=-24405(28) keV  for 197Pbm at 319.31 keV                                g         Nub211**
*197Bi-u                      M-A=-19650(90) keV  for mixture gs+m at 533(12) keV                         g         Nub211**
*197Bi-u                      Corrected by author for Q(a)                                                m         00Ra23*W
*197Bi-133Cs1.481             Q=118887(12) uu M-A=-19690(11) keV corr by --16(22) keV due to possible    M         08We02**
*                              ~ contamination from 197Bim                                                M         08We02**
*197Po-u                      M-A=-13330(110) keV for mixture gs+m at 198(12) keV                         g         Nub211**
*197Po-u                      M-A=-13210(32) keV  for mixture gs+m at 198(12) keV                         g         Nub211**
*197Bim(a)193Tl               (,Z) same work as 74Le02 though Rytz says E(a)=5771(10)                     m         AHW95c*W
*197Po(a)193Pb                Also E(a)=6283(5) keV from uncorrelated decays                              H         96Ta18**
*197Pom(a)193Pbm              Also E(a)=6381(5) keV from uncorrelated decays                              H         96Ta18**
*197Atm(a)193Bim              used for calibration                                                        h         GAu097*G
*197Au(g,n)196Au              Based on 206Pb S(n)=8086(5)                                                           AHW   *W
*197Hg(e)197Au                pK=0.54(0.06) to 3/2^+ level at 268.788 keV                                 h         Ens053**
*197Hg(e)197Au                pK=0.746(0.033) to 268.75 level -> Q=574(+139--62) keV                      h         Ens053**


 198Re-u                        -18240#     429#                                         2                   g    1.0 S-u212
 198Os-u                        -25336#     215#                                         2                   g    1.0 S-u211
 198Ir-u                        -27601#     215#                                         2                   g    1.0 S-u211
 198Hg-161Dy 37Cl                74130       60        73927.137      0.898     -.8   U                   hR04 4.0 64De15
 198Hg-163Dy 35Cl                68979       37        69179.216      0.891     1.4   U                   hR04 4.0 64De15
 198Hg-u                        -33231.6      0.6     -33230.867      0.490     1.2   1     67   67 198Hg hST2 1.0 02Bf02
 198Tl-133Cs1.489               111228.7      8.1                                     2                   KMA8 1.0 14Bo26,*
 198Pb-208Pb.952                 -5748       23        -5756.773      9.363     -.4  -1-                  MMA6 1.0 01Sc41
 198Pb-208Pb.952                 -5724       30        -5756.773      9.363    -1.1  -1- q-q=    32.773   H1.0 1.0  198Pb-C
 198Pb-208Pb.952           ave   -5739.115   18.253    -5756.773      9.363    -1.0   1     26   26 198Pb            average
 198Pb-u                        -27990      104       -27985.436      9.363      .0   U                   MGS1 1.0 00Ra23
 198Pb-u                        -27951       30       -27985.436      9.363    -1.1R  R  q-q=    34.436   MGS2 1.0 05Li24
 198Bi-u                        -21070      160       -20798.683     29.598     1.7o  o                   gGS1 1.0 00Ra23,*
 198Bi-u                        -20794       30       -20798.683     29.598     -.2   1     97   97 198Bi MGS2 1.0 05Li24
 198Bin-u                       -20222       30                                       2                   MGS2 1.0 05Li24
 198Po-208Pb.952                  5616       24         5616.067     18.670      .0   1     61   61 198Po MMA6 1.0 01Sc41
 198Po-u                        -16600      104       -16612.596     18.670     -.1   U                   MGS1 1.0 00Ra23
 198At-133Cs1.489               133570.0      7.3     133579.895      5.265     1.4o  o                   kMA8 1.0 13Ma.A
 198At-133Cs1.489               133573.7      6.3     133579.895      5.265     1.0   1     70   70 198At KMA8 1.0 13St25
 198Atm-133Cs1.489              133898       39       133866.142      5.547     -.8   U                   KMA8 1.0 13St25
 198Hg 35Cl-196Hg 37Cl            3885.91     1.66      3885.873      3.141     -.0   1     57   57 196Hg  H33 2.5 80Ko25
 198Pt-197Au1.005                 1494.7      3.0       1493.774      2.209     -.3   1     54   53 198Pt kCP1 1.0 05Sh52
 198Po(a)194Pb                   6312.8       5.        6309.672      1.368     -.6   U                   H         67Si09,Z
 198Po(a)194Pb                   6305.7       5.        6309.672      1.368      .8   U                   H         67Tr06,Z
 198Po(a)194Pb                   6301.2       8.        6309.672      1.368     1.1   U                   H         71Ho01,Z
 198Po(a)194Pb                   6311.1       3.        6309.672      1.368     -.5  -1-                   Bka      82Bo04,Z
 198Po(a)194Pb                   6307.7       5.        6309.672      1.368      .4   U                   HLvn      93Wa04
 198Po(a)194Pb                   6309.7       5.0       6309.672      1.368     -.0   U                   HAra      96Ta18,*
 198Po(a)194Pb                   6309.3       1.7       6309.672      1.368      .2  -1-                  HTex      12Fo09
 198Po(a)194Pb             ave   6309.672     1.369     6309.672      1.368     -.0   1    100   60 194Pb            average
 198At(a)194Bi                   6887.5       5.        6889.357      1.880      .4  -2-                            67Tr06,Z
 198At(a)194Bi                   6904.9       7.        6889.357      1.880    -2.2   U                   HOra      75Ba.B,Z
 198At(a)194Bi                   6889.4      15.        6889.357      1.880     -.0   U                   h         80Ew03,Z
 198At(a)194Bi                   6893.3       3.5       6889.357      1.880    -1.1  -2-                   Lvn      92Hu04,*
 198At(a)194Bi                   6892.5       4.        6889.357      1.880     -.8o  o                   HJya      96En01
 198At(a)194Bi                   6887.4       6.        6889.357      1.880      .3  -2-                  HJya      05Uu02
 198At(a)194Bi                   6888.4       3.6       6889.357      1.880      .3  -2-                  HTex      12Fo09
 198At(a)194Bi                   6886.4       5.        6889.357      1.880      .6  -2-                  KAnv      14Ka23
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 198At(a)194Bi                    6888.9       8.2       6889.357     1.880       .1  -2-             GISa     19Gh11,*
 198At(a)194Bi           ave      6889.357     1.880                                  2                        average
 198Atm(a)194Bin                  6990.0       5.        6992.787     2.252       .6  -1-                      67Tr06,Z
 198Atm(a)194Bin                  6997.5      10.        6992.787     2.252      -.5  -1-                      80Ew03,Z
 198Atm(a)194Bin                  6997.6       4.        6992.787     2.252     -1.2  -1-              Lvn     92Hu04
 198Atm(a)194Bin                  6996.6       4.        6992.787     2.252     -.9o   o              KJya     96En01
 198Atm(a)194Bin                  6991.5       6.        6992.787     2.252       .2  -1-             HJya     05Uu02
 198Atm(a)194Bin                  6990.5       5.        6992.787     2.252       .5  -1-             KAnv     14Ka23
 198Atm(a)194Bin                  6996.9       8.2       6992.787     2.252      -.5  -1-             GISa     19Gh11,*
 198Atm(a)194Bin         ave      6993.679     2.307     6992.787     2.252      -.4   1    95  58 194Bin        average
 198Rn(a)194Po                    7344.7      10.        7349.382     3.660       .5  -4-                      84Ca32
 198Rn(a)194Po                    7353.8       5.        7349.382     3.660      -.9  -4-             NLvn     95Bi17
 198Rn(a)194Po                    7344.7       6.        7349.382     3.660       .8  -4-             MJya     96En02
 198Rn(a)194Po           ave      7349.382     3.660                                  4                        average
 198Fr(a)194At                    7869.2      20.4                                    4               KAnv     13Ka16,*
 198Frm(a)194Atm                  7889.6      20.4                                    6               KAnv     13Ka16
 198Pt(14C,16O)196Os              6130        40                                      2               gBNL     83Bo29
 198Pt(t,a)197Ir                 10885        20                                      2                LAl     83Ci01
 198Pt(p,d)197Pt                 -5332         3        -5331.006     2.062       .3   1    47  47 198Pt  Ors  78Be09,*
 198Pt(d,t)197Pt                 -1305        20        -1298.342     2.062       .3   U              hPit     64Co11
 198Pt(d,t)197Pt                 -1311        20        -1298.342     2.062       .6   U              hTal     78Ya07
 197Au(n,g)198Au                  6512.35      0.11      6512.360     0.090       .1  -1-             mILn     79Br26,Z
 197Au(n,g)198Au                  6512.32      0.16      6512.360     0.090       .2  -1-             MBdn     06Fi.A
 197Au(d,p)198Au                  4282        30         4287.794     0.090       .2   U              hPit     64Co11
 197Au(d,p)198Au                  4298         5         4287.794     0.090     -2.0   U              hMIT     67Sp09
 197Au(n,g)198Au         ave      6512.340     0.091     6512.360     0.090       .2   1    99  63 197Au        average
 198Au(B-)198Hg                   1372.3       0.7       1373.507     0.490      1.7  -1-                      65Ke04,*
 198Au(B-)198Hg                   1372.8       1.2       1373.507     0.490       .6  -1-                      65Pa08,*
 198Au(B-)198Hg          ave      1372.427     0.605     1373.507     0.490      1.8   1    66  44 198Au        average
 198Tl(B+)198Hg                   3460        80         3425.604     7.559      -.4   U              K        61Gu02
 198Bin(IT)198Bim                  248.5       0.5                                    3                Lvn     92Hu04
 198Atm(IT)198At                   265         3          266.637     2.747       .5   1    84  57 198AtmGISa  19Gh11,*
*198Tl-133Cs1.489            D_M=111812.3(8.1) uu for 198Tlm at 543.6(0.4) keV; M-A=-26985.1(7.5) keV g  Nub211**
*198Bi-u                     M-A=-19350(100) keV for mixture gs+m+n at 290(40) and 540(40) keV   g        Nub211**
*198Po(a)194Pb               Also E(a)=6182(5) keV from uncorrelated decays                      H        96Ta18**
*198At(a)194Bi               E(a)=6755(4), 6539(10), 6360(10) to gs, 218, 396 levels                      92Hu04**
*198At(a)194Bi               E(a)=6358(8) keV to 399.7(0.2) keV; Also E(a)=6275(8), 6361(9),     G        19Gh11**
*198At(a)194Bi               ~ 6535(8) to 485.6(0.7), 382.4(0.1), 218.2(0.1) keV                 G        19Gh11**
*198Atm(a)194Bin             E(a)=6753(8) keV to level at 104.5(0.2) keV; Also E(a)=6322(12),    G        19Gh11**
*198Atm(a)194Bin             6338(8) keV to levels at 538.3(0.4), 525.4(0.2) keV                 G        19Gh11**
*198Fr(a)194At               Ea=7710(30,estimated by evaluator) to 210 level                     k        GAu146*G
*198Fr(a)194At               Ea spread 7470-7920 due to summing effect, Qa from highest Ea, error estik   WgM147*W
*198Fr(a)194At               Evaluator's interpretation of Fig. 3d, no 210 keV gamma             K        GAu168**
*198Pt(p,d)197Pt             Q-Q(196Pt(p,d))=365(3) keV                                          h        AHW   **
*198Au(B-)198Hg              E-=960.5(0.7) 961.0(1.2) resp, to 2^+ level at 411.80251 keV        k        Ens163**
*198Atm(IT)198At             E(g)=511(3)+130.0(0.1)+150.8(0.1) - E(g)=527.3(0.2)                 G        19Gh11**


 199Re-u                        -15813#      429#                                     2               g    1.0 S-u212
 199Os-u                        -21761#      215#                                     2               g    1.0 S-u211
 199Hg-C2 35Cl5                 124023.43      0.53    124017.361     0.549     -4.6B  B               H34 2.5 80Ko25
 199Hg-C2 35Cl5                 124017.21      0.37    124017.361     0.549       .2   1    35  33 199Hg MH48 2.5 03Ba49
 199Hg-183W O                    23144.4       0.9      23141.868     0.911     -1.1   1    16  11 183W  MH48 2.5 03Ba49
 199Hg-162Dy 37Cl                75661        41        75573.749     0.930      -.5   U              hR04 4.0 64De15
 199Hg-164Dy 35Cl                70087        31        70247.313     0.923      1.3   U              hR04 4.0 64De15
 199Hg-164Er 35Cl                70310        80        70220.393     0.930      -.3   U              hR04 4.0 64De15
 199Tl-u                        -30123        30                                      2               MGS2 1.0 05Li24
 199Pb-u                        -27028       137       -27087.380     7.323      -.4   U              MGS2 1.0 05Li24,*
 199Bi-u                        -22328        31       -22327.450    11.393       .0  -1-             hGS2 1.0 05Li24
 199Bi-u                        -22263        30       -22327.450    11.393     -2.1  -1-             HGS2 1.0 05Li24,*
 199Bi-u                 ave    -22294.435    21.558   -22327.450    11.393     -1.5   1    28  28 199Bi        average
 199Po-u                        -16249       144       -16359.595     5.828      -.8   U              HGS1 1.0 00Ra23,*
 199Po-u                        -16327        38       -16359.595     5.828     -.9R   R  q-q=   32.595 MGS2 1.0 05Li24
 199Po-u                        -16339        38       -16359.595     5.828     -.5R   R  q-q=   20.595 MGS2 1.0 05Li24,*
 199Pom-133Cs1.496              125416.5       5.3     125418.936     5.111       .5   1    93  93 199PomGMA8 1.0 17Al34
 199Bim(a)195Tl                   5598.7       6.        5599.478     5.890       .1   1    93  56 195Tl        66Ma51
 199Po(a)195Pb                    6074.1       2.        6074.295     1.895       .1  -2-              Dba     68Go.B,Z
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 199Po(a)195Pb               6075.3      5.0      6074.295     1.895    -.2  -2-                HAra    96Ta18
 199Po(a)195Pb          ave  6074.295    1.895                               2                        average
 199Pom(a)195Pbm             6190.7      5.       6183.148     1.740   -1.5  -1-                        67Si09,Z
 199Pom(a)195Pbm             6177.6      5.1      6183.148     1.740    1.1  -1-                        67Tr06,Z
 199Pom(a)195Pbm             6182.3      3.1      6183.148     1.740     .3  -1-                 Dba    68Go.B,Z
 199Pom(a)195Pbm             6183.5      3.       6183.148     1.740    -.1  -1-                 Bka    82Bo04,Z
 199Pom(a)195Pbm             6183.5      5.0      6183.148     1.740    -.1  -1-                HAra    96Ta18,*
 199Pom(a)195Pbm             6173.3      3.6      6183.148     1.740    2.7B  B                 KTex    12Fo09
 199Pom(a)195Pbm        ave  6183.287    1.745    6183.148     1.740    -.1   1    99  95 195Pbm        average
 199At(a)195Bi               6775.1      5.       6777.273     1.151     .4  -1-                H       67Tr06,Z
 199At(a)195Bi               6781.3      3.       6777.273     1.151   -1.3  -1-                HOra    75Ba.B,Z
 199At(a)195Bi               6775.4      5.0      6777.273     1.151     .4  -1-                HAra    96Ta18
 199At(a)195Bi               6779.4      6.       6777.273     1.151    -.4   U                 HJya    05Uu02
 199At(a)195Bi               6776.8      1.5      6777.273     1.151     .3  -1-                HTex    12Fo09
 199At(a)195Bi          ave  6777.353    1.153    6777.273     1.151    -.1   1   100  89 199At         average
 199Rn(a)195Po               7133.7     15.       7131.892     4.091    -.1  -2-                K       80Di07
 199Rn(a)195Po               7132.7     10.       7131.892     4.091    -.1  -2-                K       82Hi14
 199Rn(a)195Po               7138.8     10.       7131.892     4.091    -.7  -2-                K       84Ca32
 199Rn(a)195Po               7112.2     15.       7131.892     4.091    1.3o  o                 kJya    96Le09
 199Rn(a)195Po               7132.6      6.       7131.892     4.091    -.1  -2-                KJya    05Uu02
 199Rn(a)195Po               7121.4     10.2      7131.892     4.091    1.0  -2-                KAnv    14Ka23
 199Rn(a)195Po          ave  7131.892    4.091                               2                        average
 199Rnm(a)195Pom             7205.1     15.       7203.295     4.091    -.1  -2-                M       80Di07
 199Rnm(a)195Pom             7205.1     10.       7203.295     4.091    -.2  -2-                M       82Hi14
 199Rnm(a)195Pom             7204.1     10.       7203.295     4.091    -.1  -2-                M       84Ca32
 199Rnm(a)195Pom             7205.1     15.       7203.295     4.091    -.1o  o                 hJya    96Le09
 199Rnm(a)195Pom             7205.1      6.       7203.295     4.091    -.3  -2-                HJya    05Uu02
 199Rnm(a)195Pom             7194.9     10.2      7203.295     4.091     .8  -2-                KAnv    14Ka23
 199Rnm(a)195Pom        ave  7203.295    4.091                               2                        average
 199Fr(a)195At               7812.3     40.       7816.772     9.836     .1   U                 K       99Ta20,W
 199Fr(a)195At               7821.5     11.       7816.772     9.836    -.4  -4-                KAnv    13Ka16
 199Fr(a)195At               7801.1     20.       7816.772     9.836     .8  -4-                KJya    13Uu01
 199Fr(a)195At          ave  7816.772    9.836                               4                        average
 199Frm(a)195Atm             7833.7      6.       7832.633     5.685    -.2  -3-                KAnv    13Ka16
 199Frm(a)195Atm             7825.6     15.3      7832.633     5.685     .5  -3-                KJya    13Uu01
 199Frm(a)195Atm        ave  7832.633    5.685                               3                        average
 199Frn(a)195Atp             7968.4     20.                                  4                KJya    13Uu01
 199Hg(p,t)197Hg            -6734       29       -6666.771     3.214    2.3   U                 hPri    81Ko13
 199Hg(p,t)197Hg            -6658        8       -6666.771     3.214   -1.1   1    16  16 197Hg  Ors    82Be21
 198Pt(18O,17F)199Ir        -8240       41                                   2                N       95Zh10
 198Pt(n,g)199Pt             5602        3        5556.000     0.500  -15.3B  B                 h       68Sa13
 198Pt(n,g)199Pt             5556.0      0.5                                 2                mBNn    83Ca04,Z
 198Pt(d,p)199Pt             3347       20        3331.434     0.500    -.8   U                 hPit    64Co11
 198Au(n,g)199Au             7584.27     0.15     7584.278     0.060     .1o  o                 mILn    79Br26,Z
 198Au(n,g)199Au             7584.28     0.06     7584.278     0.060    -.0   1   100  80 199Au HILn    91Ma65,G
 198Hg(n,g)199Hg             6665.2      0.5      6663.183     0.577   -4.0B  B                 HCRn    75Lo03
 199Hg(g,n)198Hg            -6590       90       -6663.183     0.577    -.8   U                 hPhi    60Ge01
 199Pt(B-)199Au              1690       50        1705.062     2.120     .3   U                 h       64Jo09
 199Au(B-)199Hg               453.0      1.0       452.413     0.607    -.6   1    37  20 199Au         68Be06
 199Tl(B+)199Hg              1420      150        1486.825    27.949     .4   U                 M       75Ma05,*
 199Pb(B+)199Tl              2870      110        2827.662    28.765    -.4   U                 M       70Do.A,*
 199Bim(IT)199Bi              667        5         666.759     3.491    -.0  -1-                M       80Br23,W
 199Bim(IT)199Bi              667        5         666.759     3.491    -.0  -1-                M       85St02,W
 199Bim(IT)199Bi        ave   667.000    3.536     666.759     3.491    -.1   1    98  64 199Bim        average
 199Atm(IT)199At              255       20         244.000     1.000    -.6o  o                 KJya    13Ja06,*
 199Atm(IT)199At              244        1                               2                KJya    14Au03
*199Pb-u                 M-A=-24961(28) keV  for mixture gs+m at 429.5(2.7) keV             g       Nub211**
*199Bi-u                 M-A=-20071(28) keV  for 199Bim at 667(3) keV                       g       Nub211**
*199Po-u                 M-A=-14980(100) keV for mixture gs+m at 311.7(2.7) keV             g       Nub211**
*199Po-u                 M-A=-14909(35) keV  for 199Pom at 311.7(2.7) keV                   g       Nub211**
*199Pom(a)195Pbm         Also E(a)=6059(5) keV from uncorrelated decays                     H       96Ta18**
*199Fr(a)195At           Reassigned to E(a) to isomer, GAu keeps to gs                      h       AHW035*W
*198Au(n,g)199Au         More information needed                                            h       GAu935*G
*199Tl(B+)199Hg          KL+<500(100) giving Q<1620, (1/2^-,3/2^-) lvl at 1221.17 fed. ~Reanalyzedh  Ens073**
*199Pb(B+)199Tl          p+=0.04(0.01) to 3/2^+ level at 366.89 keV, recalculated           h       Ens073**
*199Bim(IT)199Bi         Assignment uncertain; but checks other data                        m       Ens946*W
*199Bim(IT)199Bi         Error my guess.                                                    m       AHW973*W
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*199Atm(IT)199At Combining lines 110(20) 160(20) 240(30) as read from Fig. 8a K GAu151**

200Os-u		-19914#	322#				2				g	1.0	S-u211
200Ir-u		-23156#	210#				2				g	1.0	S-u211
200Au-u		-29237	34	-29243.490	28.681	-.2	1	71	71	200Au	HGS3	1.0	08Ch.A
200Aum-u		-28135	33	-28162.632	28.113	-.8	1	73	73	200Aum	HGS3	1.0	08Ch.A
200Hg-C 13C 35Cl5		120707.97	1.22	120708.471	0.554	.2	U				mH34	2.5	80Ko25
200Hg-165Ho 35Cl		69116	33	69144.963	1.005	.2	U				hR04	4.0	64De15
200Hg-163Dy 37Cl		73527	42	73686.981	0.930	1.0	U				hR04	4.0	64De15
200Pb-u		-28179	30	-28182.650	10.696	-.1R	R	q-q=	3.650		MGS2	1.0	05Li24
200Bi-u		-21888	57	-21868.709	24.371	.3R	R	q-q=	-19.291		MGS2	1.0	05Li24,*
200Po-u		-18170	104	-18189.046	8.048	-.2	U				MGS1	1.0	00Ra23
200Po-u		-18204	30	-18189.046	8.048	.5	U				kGS2	1.0	05Li24
200Hg-208Pb.962		-9205	28	-9211.070	0.556	-.2	U				MMA6	1.0	01Sc41
200Hg 35Cl-198Hg 37Cl		4525	2	4507.765	0.630	-2.2	U				hH17	4.0	64Mc07
200Hg 35Cl-198Hg 37Cl		4508.80	0.48	4507.765	0.630	-.9	1	28	16	200Hg	H33	2.5	80Ko25
200Po(a)196Pb		5979.8	5.	5981.635	1.847	.4	-1-						67Si09,Z
200Po(a)196Pb		5980.0	3.	5981.635	1.847	.5	-1-						67Tr06,Z
200Po(a)196Pb		5983.4	3.	5981.635	1.847	-.6	-1-						70Ra14,Z
200Po(a)196Pb		5981.8	5.0	5981.635	1.847	-.0	-1-				HAra		96Ta18,*
200Po(a)196Pb	ave	5981.484	1.856	5981.635	1.847	.1	1	99	79	196Pb			average
200At(a)196Bi		6594.9	5.	6596.223	1.340	.3	-3-						67Tr06,Z
200At(a)196Bi		6596.9	2.	6596.223	1.340	-.4	-3-				nOra		75Ba.B,Z
200At(a)196Bi		6593.1	5.	6596.223	1.340	.6o	o				hLvn		87Va09
200At(a)196Bi		6596.1	2.	6596.223	1.340	.0	-3-				Lvn		92Hu04
200At(a)196Bi		6593.1	5.0	6596.223	1.340	.6	-3-				HAra		96Ta18
200At(a)196Bi		6599.1	6.	6596.223	1.340	-.5	U				HJya		05Uu02
200At(a)196Bi	ave	6596.223	1.340				3						average
200Atm(a)196Bi		6708.3	5.	6709.120	2.625	.2	-3-				MOra		75Ba.B,Z
200Atm(a)196Bi		6705.4	5.	6709.120	2.625	.7o	o				hLvn		87Va09
200Atm(a)196Bi		6709.5	3.	6709.120	2.625	-.1	-3-				Lvn		92Hu04
200Atm(a)196Bi	ave	6709.120	2.625				3						average
200Atm(a)196Bim		6542.8	5.	6542.702	1.340	-.0	-4-				N		67Tr06,Z
200Atm(a)196Bim		6542.9	2.	6542.702	1.340	-.1	-4-				NOra		75Ba.B,Z
200Atm(a)196Bim		6540.0	5.	6542.702	1.340	.5o	o				hLvn		87Va09
200Atm(a)196Bim		6542.1	2.	6542.702	1.340	.3	-4-				Lvn		92Hu04
200Atm(a)196Bim		6545.1	5.0	6542.702	1.340	-.5	-4-				HAra		96Ta18
200Atm(a)196Bim		6544.1	6.	6542.702	1.340	-.2	U				HJya		05Uu02
200Atm(a)196Bim	ave	6542.702	1.340				4						average
200Atm(a)196Bin		6439.5	5.	6437.526	1.965	-.4	-4-				m		67Tr06,*
200Atm(a)196Bin		6438.5	5.	6437.526	1.965	-.2	-4-				mOra		75Ba.B,*
200Atm(a)196Bin		6433.8	5.	6437.526	1.965	.7o	o				mLvn		87Va09,*
200Atm(a)196Bin		6439.2	3.	6437.526	1.965	-.6	-4-				Lvn		92Hu04,*
200Atm(a)196Bin		6430.5	5.0	6437.526	1.965	1.4	-4-				HAra		96Ta18,*
200Atm(a)196Bin		6436.7	6.	6437.526	1.965	.1	-4-				HJya		05Uu02,*
200Atm(a)196Bin	ave	6437.526	1.965				4						average
200Rn(a)196Po		7020.6	10.	7043.361	2.138	2.3	U				h		67Va.A
200Rn(a)196Po		7050.3	8.	7043.361	2.138	-.9	U				h		71Ho01
200Rn(a)196Po		7040.1	10.	7043.361	2.138	.3	U				hLvn		84Co.A
200Rn(a)196Po		7043.5	2.5	7043.361	2.138	-.1	-2-				Lvn		93Wa04
200Rn(a)196Po		7042.1	12.	7043.361	2.138	.1o	o				hAra		95Le04
200Rn(a)196Po		7039.0	10.	7043.361	2.138	.4o	o				hJya		96Le09
200Rn(a)196Po		7042.1	5.1	7043.361	2.138	.2	-2-				HAra		96Ta18
200Rn(a)196Po		7044.1	6.	7043.361	2.138	-.1	-2-				HJya		05Uu02
200Rn(a)196Po		7055.4	30.	7043.361	2.138	-.4	U				HAnv		10He25
200Rn(a)196Po	ave	7043.361	2.138				2						average
200Fr(a)196At		7653.4	30.	7621.837	4.191	-1.1	U				MRIa		95Mo14,W
200Fr(a)196At		7620.7	9.	7621.837	4.191	.1	-5-				KJya		96En01,W
200Fr(a)196At		7625.8	12.	7621.837	4.191	-.3o	o				KAnv		05De01
200Fr(a)196At		7620.7	15.	7621.837	4.191	.1o	o				KJya		13Uu01,*
200Fr(a)196At		7622.7	5.	7621.837	4.191	-.2	-5-				KAnv		14Ka23
200Fr(a)196At		7618.6	12.2	7621.837	4.191	.3	-5-				GISa		19Gh11
200Fr(a)196At	ave	7621.837	4.191				5						average
200Frm(a)196Atm		7704.4	15.				4				MJya		96En01,*
198Pt(t,p)200Pt		4356	20				2						81Ci01
199Hg(n,g)200Hg		8029.1	0.3	8028.520	0.113	-1.9	-1-				HBNn		67Sc30,Z

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 199Hg(n,g)200Hg               8029.6       0.5       8028.520     0.113    -2.2   U                  mCRn      75Lo03,Z
 199Hg(n,g)200Hg               8028.51      0.18      8028.520     0.113      .1  -1-                 mILn      79Br25,Z
 199Hg(n,g)200Hg               8028.37      0.17      8028.520     0.113      .9  -1-                 MBdn      06Fi.A
 199Hg(n,g)200Hg          ave  8028.532     0.114     8028.520     0.113     -.1   1     98  64 200Hg           average
 200Au(B-)200Hg                2273       100         2263.285    26.719     -.1  -1-                 H         59Ro53,*
 200Au(B-)200Hg                2200       100         2263.285    26.719      .6  -1-                           60Gi01
 200Au(B-)200Hg                2260        70         2263.285    26.719      .0  -1-                 m         72He36,*
 200Au(B-)200Hg           ave  2248.369    49.747     2263.285    26.719      .3   1     29  29 200Au           average
 200Aum(B-)200Hg               3202        50         3270.099    26.189     1.4   1     27  27 200Aum          72Cu07,*
 200Tl(B+)200Hg                2450        10         2456.040     5.735      .6  -2-                           57He43,*
 200Tl(B+)200Hg                2459         7         2456.040     5.735     -.4  -2-                           62Va10,*
 200Tl(B+)200Hg           ave  2456.040     5.735                                  2                           average
 200Atn(IT)200Atm               230.9       0.2                                    4                  HLvn      92Hu04
*200Bi-u                      M-A=-20338(28) keV  for mixture gs+m at 100#70 keV                      g         Nub211**
*200Po(a)196Pb                Also E(a)=5863(5) keV from uncorrelated decays                          H         96Ta18**
*200Atm(a)196Bin              E(a)=6536.7(5,Z) from 200Atn 230.9 above 200Atm                         m         92Hu04**
*200Atm(a)196Bin              E(a)=6535.8(5,Z) from 200Atn 230.9 above 200Atm                         m         92Hu04**
*200Atm(a)196Bin              E(a)=6301(5); 6535(5) from 200Atn 230.9 above 200Atm                    m         92Hu04**
*200Atm(a)196Bin              E(a)=6306(5); 6538(3) from 200Atn 230.9 above 200Atm                    m         92Hu04**
*200Atm(a)196Bin              E(a)=6528(5) from 200Atn 230.9 above 200Atm                             H         92Hu04**
*200Atm(a)196Bin              E(a)=6534(6) from 200Atn 230.9 above 200Atm                             H         92Hu04**
*200Fr(a)196At                Correlated with 196At E(a)=7053(30)                                     m         95Mo14*W
*200Fr(a)196At                Correlated with 196At E(a)=7044(7) see there                            m         AHW973*W
*200Fr(a)196At                Same group, but much less events than preceding item                    K         WgM151**
*200Frm(a)196Atm              Correlated with 196Atm E(a)=6880(15); two events only                   M         96En01**
*200Frm(a)196Atm              Assignment not quite certain.                                           m         96En01*W
*200Au(B-)200Hg               E-=2250(200) to gs, and 700(100) to levels 1^+ at 1570.275,             h         Ens077**
*                              ~ 2^+ at 1573.663, 2^+ at 1593.423 keV                                 h         Ens077**
*200Au(B-)200Hg               E-=2260(100), 670(70) to gs, 2^+ level at 1593.423 keV                  h         Ens077**
*200Aum(B-)200Hg              E-=560(50) to 11^- level at 2641.54 keV                                 h         Ens077**
*200Tl(B+)200Hg               E+=1052(10) 1069(7) resp, to 2^+ level at 367.943 keV, and other E+     h         Ens077**


 201Os-u                      -15931#     322#                                     2                  g    1.0 S-u211
 201Ir-u                      -21299#     215#                                     2                  g    1.0 S-u211
 201Hg-185Re O                 22440        5        22429.795     1.091     -.8   U                  MH48 2.5 03Ba49
 201Hg-C2 35Cl4 37Cl          128995.43     0.61    128989.334     0.701    -4.0B  B                   H34 2.5 80Ko25
 201Hg-164Dy 37Cl              75086       42        75219.286     1.021      .8   U                  hR04 4.0 64De15
 201Hg-166Er 35Cl              71186       35        71148.916     0.779     -.3   U                  hR04 4.0 64De15
 201Pb-u                      -27418      198       -27129.712    14.758     1.5   U                  MGS2 1.0 05Li24,*
 201Bi-u                      -22935       30       -23003.691    13.061    -2.3R  R  q-q=    68.691  MGS2 1.0 05Li24
 201Bi-u                      -22995       30       -23003.691    13.061     -.3R  R  q-q=     8.691  MGS2 1.0 05Li24,*
 201Po-u                      -17760      190       -17736.611     5.294      .1   U                  MGS1 1.0 00Ra23,*
 201Po-u                      -17649       30       -17736.611     5.294    -2.9   U                  hGS2 1.0 05Li24
 201Pom-u                     -17305       30       -17281.608     5.468      .8   U                  MGS2 1.0 05Li24
 201At-u                      -11573       31       -11582.941     8.786     -.3   U                  MGS2 1.0 05Li24
 201Bi-205Fr.980              -21660      410       -21625.672    15.439      .1   Z                  kRI1 1.0 16Sc.A,G
 201Po-205Fr.980              -16471       80       -16358.592     9.787     1.4   Z                  kRI1 1.0 16Sc.A
 201At-205Fr.980              -10616       47       -10204.922    12.040     8.7   Z                  kRI1 1.0 16Sc.A
 201Hg 35Cl-199Hg 37Cl          4981        2         4971.973     0.609    -1.1   U                  hH17 4.0 64Mc07
 201Hg 35Cl-199Hg 37Cl          4972.65     0.37      4971.973     0.609     -.7   1     43  33 201Hg  H33 2.5 80Ko25
 201Hg 35Cl-199Hg 37Cl          4971.8      1.0       4971.973     0.609      .1   U                  KH48 2.5 03Ba49
 201Bi(a)197Tl                 4500.3       6.                                     4                            66Ma51,*
 201Po(a)197Pb                 5793.9       5.        5799.270     1.697     1.0  -1-                           67Tr06,Z
 201Po(a)197Pb                 5799.4       2.        5799.270     1.697     -.1  -1-                  Dba      68Go.B,Z
 201Po(a)197Pb                 5800.4       4.        5799.270     1.697     -.3  -1-                           70Ra14,Z
 201Po(a)197Pb            ave  5798.988     1.719     5799.270     1.697      .2   1     98  71 201Po           average
 201Pom(a)197Pbm               5899.0       5.1       5903.794     1.719      .9  -2-                 m         67Tr06,Z
 201Pom(a)197Pbm               5904.5       2.0       5903.794     1.719     -.4  -2-                 mDba      68Go.B,Z
 201Pom(a)197Pbm               5903.9       4.1       5903.794     1.719     -.0  -2-                 m         70Ra14,Z
 201Pom(a)197Pbm          ave  5903.794     1.719                                  2                            average
 201At(a)197Bi                 6470.7       3.        6472.838     1.568      .7  -4-                           67Tr06,Z
 201At(a)197Bi                 6476.2       5.        6472.838     1.568     -.7   U                            74Ho27,Z
 201At(a)197Bi                 6474.0       2.        6472.838     1.568     -.6  -4-                 nOra      75Ba.B,Z
 201At(a)197Bi                 6471.0       5.0       6472.838     1.568      .4   U                  HAra      96Ta18
 201At(a)197Bi                 6472.0       4.        6472.838     1.568      .2  -4-                 HAnv      05De01
 201At(a)197Bi            ave  6472.838     1.568                                  4                            average
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201Rn(a)197Po		6862.8	8.	6860.750	2.282	-.3	U				h		67Va.A
201Rn(a)197Po		6858.8	8.	6860.750	2.282	.2	U				h		71Ho01
201Rn(a)197Po		6866.9	20.	6860.750	2.282	-.3	U				hGSa		87He10
201Rn(a)197Po		6860.5	2.5	6860.750	2.282	.1	-2-				Lvn		93Wa04
201Rn(a)197Po		6863.8	7.	6860.750	2.282	-.4o	o				hAra		95Le04
201Rn(a)197Po		6861.8	5.0	6860.750	2.282	-.2	-2-				HAra		96Ta18
201Rn(a)197Po	ave	6860.750	2.282				2						average
201Rnm(a)197Pom		6906.8	5.	6909.512	2.083	.5	-3-				n		67Va17,Z
201Rnm(a)197Pom		6909.0	8.	6909.512	2.083	.1	U				h		71Ho01,Z
201Rnm(a)197Pom		6907.7	20.	6909.512	2.083	.1	U				hGSa		87He10
201Rnm(a)197Pom		6909.9	2.5	6909.512	2.083	-.1	-3-				Lvn		93Wa04
201Rnm(a)197Pom		6915.9	7.	6909.512	2.083	-.9o	o				hAra		95Le04
201Rnm(a)197Pom		6910.7	5.0	6909.512	2.083	-.3	-3-				HAra		96Ta18
201Rnm(a)197Pom		6925.1	30.	6909.512	2.083	-.5	U				HAnv		10He25
201Rnm(a)197Pom	ave	6909.512	2.083				3						average
201Fr(a)197At		7538.0	15.	7518.912	4.326	-1.3	U				K		80Ew03
201Fr(a)197At		7510.8	7.	7518.912	4.326	1.1o	o				KJya		96En01
201Fr(a)197At		7529.1	7.	7518.912	4.326	-1.4o	o				KAnv		05De01
201Fr(a)197At		7519.0	8.	7518.912	4.326	-.0	-2-				KJya		05Uu02
201Fr(a)197At		7519.0	5.	7518.912	4.326	-.0	-2-				KAnv		14Ka23
201Fr(a)197At	ave	7518.912	4.326				2						average
201Frm(a)197Atm		7605.7	8.	7603.217	4.887	-.3	-2-				KJya		05Uu02
201Frm(a)197Atm		7596.4	8.	7603.217	4.887	.8	-2-				KAnv		14Ka23
201Frm(a)197Atm		7608.7	9.2	7603.217	4.887	-.6	-2-				GJya		20Au01
201Frm(a)197Atm	ave	7603.217	4.887				2						average
201Ra(a)197Rn		8001.5	12.				4				KAnv		14Ka23
201Ram(a)197Rnm		8065.8	20.				4				KJya		05Uu02
201Hg(g,n)200Hg		-6210	70	-6230.776	0.570	-.3	U				hPhi		60Ge01
201Pt(B-)201Au		2660	50				2						63Go06
201Au(B-)201Hg		1270	100	1261.838	3.147	-.1	U				h		72Pa24
201Tl(e)201Hg		470	70	480.950	14.165	.2	U				h		60Gu05,*
201Pb(B+)201Tl		1900	40	1910.765	18.509	.3	1	21	11	201Tl	h		79Do09,*
*201Pb-u		M-A=-25225(28) keV for mixture gs+m at 629.1 keV									g		Nub211**
*201Bi-u		M-A=-20573(28) keV for 201Bim at 846.35 keV									g		Nub211**
*201Po-u		M-A=-16330(100) keV for mixture gs+m at 423.8(2.4) keV									g		Nub211**
*201Po-u		V: see 197Pb-C and 201Po(a)									m		AHW99b*W
*201Bi-205Fr.980		This and next two items were in Feb2016 version from Sarah, but taken outk											GAu16b*G
*201Bi(a)197Tl		E(a)=5240(6) from 201Bim at 846.35 keV									g		Nub211**
*201Tl(e)201Hg		pK=0.70(0.04)to 1/2^- level at 167.47 keV, recalculated									h		Ens073**
*201Pb(B+)201Tl		p+=10(2)e-3 to 3/2^+ level at 331.16 keV									h		Ens073**
202Os-u		-13452#	429#				2				g	1.0	S-u211
202Ir-u		-17864#	322#				2				g	1.0	S-u211
202Pt-u		-24425	34	-24361.000	27.000	1.9o	o				HGS3	1.0	08Ch.A
202Pt-u		-24361	27				2				HGS3	1.0	12Ch19
202Au-u		-26202	34	-26144.000	25.000	1.7o	o				HGS3	1.0	08Ch.A
202Au-u		-26144	25				2				HGS3	1.0	12Ch19
202Hg-C 13C 35Cl4 37Cl		125976.01	1.32	125975.040	0.691	-.3	U				HH34	2.5	80Ko25
C16 H10-202Hg		107663	40	107607.101	0.682	-.9	U				hR08	1.5	69De19
C15 13C H9-202Hg		103102	60	103136.905	0.682	.4	U				hR08	1.5	69De19
202Hg-167Er 35Cl		69740	60	69734.331	0.746	-.0	U				hR04	4.0	64De15
202Hg-165Ho 37Cl		74470	50	74411.531	1.087	-.3	U				hR04	4.0	64De15
202Tl-133Cs1.519		115727.2	3.7	115726.373	1.786	-.2	W				gMA8	1.0	16We.A,W
202Pb-u		-27823	30	-27848.592	4.071	-.9	U				HGS2	1.0	05Li24,*
202Pb-133Cs1.519		115773.4	3.6	115769.889	4.071	-1.0o	o				HMA8	1.0	10Bo.A
202Pb-133Cs1.519		115769.2	4.4	115769.889	4.071	.2	1	86	86	202Pb	HMA8	1.0	14Bo26
202Bi-u		-22282	30	-22276.273	15.029	.2	1	25	25	202Bi	MGS2	1.0	05Li24
202Po-u		-19270	104	-19261.947	9.277	.1	U				MGS1	1.0	00Ra23
202Po-u		-19243	30	-19261.947	9.277	-.6	U				KGS2	1.0	05Li24
202Hg 35Cl2-198Hg 37Cl2		9774.87	1.06	9774.334	0.788	-.2	U				HH33	2.5	80Ko25
202Hg 35Cl-200Hg 37Cl		5271	3	5266.569	0.606	-.4	U				hH17	4.0	64Mc07
202Hg 35Cl-200Hg 37Cl		5266.76	0.43	5266.569	0.606	-.2	1	32	23	202Hg	H33	2.5	80Ko25
202Tl-203Tl.995		-372.4	2.1	-373.100	1.767	-.3	1	71	70	202Tl	GMA8	1.0	17We09
202Po(a)198Pb		5700.9	2.	5700.962	1.692	.0	-1-				Dba		68Go.B,Z
202Po(a)198Pb		5701.6	3.	5700.962	1.692	-.2	-1-						70Ra14,Z
202Po(a)198Pb	ave	5701.126	1.698	5700.962	1.692	-.1	1	99	74	198Pb			average

202At(a)198Bi		6355.8	3.	6353.829	1.338	-.6	-1-				N	63Ho18,Z
202At(a)198Bi		6351.7	3.	6353.829	1.338	.7	-1-				n	67Tr06,Z
202At(a)198Bi		6353.2	5.	6353.829	1.338	.1	-1-				n	74Ho27,Z
202At(a)198Bi		6353.9	2.	6353.829	1.338	-.0	-1-				nOra	75Ba.B,Z
202At(a)198Bi		6354	5	6353.829	1.338	-.0	-1-				Lvn	92Hu04,*
202At(a)198Bi		6355.0	6.0	6353.829	1.338	-.2	-1-				HAra	96Ta18
202At(a)198Bi	ave	6353.839	1.338	6353.829	1.338	-.0	1	100	97	202At		average
202Atm(a)198Bim		6259.9	2.	6258.961	1.305	-.5	-4-				N	63Ho18,Z
202Atm(a)198Bim		6256.8	3.	6258.961	1.305	.7	-4-				N	67Tr06,Z
202Atm(a)198Bim		6257.2	5.	6258.961	1.305	.4	U				H	74Ho27,Z
202Atm(a)198Bim		6259.0	2.	6258.961	1.305	-.0	-4-				NOra	75Ba.B,*
202Atm(a)198Bim		6260.0	5.	6258.961	1.305	-.2	U				HLvn	92Hu04,*
202Atm(a)198Bim		6257.1	6.0	6258.961	1.305	.3	U				HAra	96Ta18
202Atm(a)198Bim	ave	6258.961	1.305				4					average
202Rn(a)198Po		6771.0	3.	6773.802	1.829	.9	-2-					67Va17,Z
202Rn(a)198Po		6772.3	10.	6773.802	1.829	.2	U				hGSa	87He10
202Rn(a)198Po		6775.3	2.5	6773.802	1.829	-.6	-2-				Lvn	93Wa04
202Rn(a)198Po		6773.4	7.	6773.802	1.829	.1o	o				hAra	95Le04
202Rn(a)198Po		6775.4	5.0	6773.802	1.829	-.3	-2-				HAra	96Ta18
202Rn(a)198Po	ave	6773.802	1.829				2					average
202Fr(a)198At		7397.7	15.	7385.369	3.513	-.8	-2-					80Ew03,*
202Fr(a)198At		7382.5	11.	7385.369	3.513	.3	-2-				mLvn	92Hu04,*
202Fr(a)198At		7389.6	6.	7385.369	3.513	-.7o	o				KJya	96En01,*
202Fr(a)198At		7387.6	8.	7385.369	3.513	-.3	-2-				HJya	05Uu02
202Fr(a)198At		7384.5	5.1	7385.369	3.513	.2	-2-				KAnv	14Ka23
202Fr(a)198At		7383.3	8.2	7385.369	3.513	.3	-2-				GISa	19Gh11,*
202Fr(a)198At	ave	7385.369	3.513				2					average
202Frm(a)198At		7643.7	8.2	7642.735	4.238	-.1	1	27	24	202Frm	GISa	19Gh11,*
202Frm(a)198Atm		7382.5	11.	7376.098	3.653	-.6	-1-				mLvn	92Hu04,*
202Frm(a)198Atm		7388.6	6.	7376.098	3.653	-2.0o	o				KJya	96En01
202Frm(a)198Atm		7381.5	8.	7376.098	3.653	-.7	-1-				HJya	05Uu02
202Frm(a)198Atm		7372.2	5.	7376.098	3.653	.8	-1-				KAnv	14Ka23
202Frm(a)198Atm		7387.3	8.2	7376.098	3.653	-1.4	U *				GISa	19Gh11,*
202Frm(a)198Atm	ave	7375.865	4.026	7376.098	3.653	.1	1	82	76	202Frm		average
202Ra(a)198Rn		8019.1	60.	7880.304	6.741	-2.3o	o				hJya	96Le09
202Ra(a)198Rn		7896.7	20.	7880.304	6.741	-.8	-5-				HJya	05Uu02
202Ra(a)198Rn		7878.3	7.1	7880.304	6.741	.3	-5-				KAnv	14Ka23
202Ra(a)198Rn	ave	7880.304	6.741				5					average
202Hg(t,a)201Au		11567	15	11580.269	3.141	.9	U				hLAl	81Fl05
202Hg(d,3He)201Au-206Pb()205Tl		-979.9	3.1	-979.900	3.100	-.0	1	100	100	201Au	N	94Gr07
201Hg(n,g)202Hg		7754.9	0.5	7754.106	0.198	-1.6	-1-				HBNn	75Br02,Z
201Hg(n,g)202Hg		7756.4	0.5	7754.106	0.198	-4.6B	B				mCRn	75Lo03,Z
201Hg(n,g)202Hg		7753.93	0.22	7754.106	0.198	.8	-1-				MBdn	06Fi.A
202Hg(g,n)201Hg		-7600	130	-7754.106	0.198	-1.2	U				hPhi	60Ge01
201Hg(n,g)202Hg	ave	7754.087	0.201	7754.106	0.198	.1	1	97	64	201Hg		average
202Au(B-)202Hg		3500	300	2992.688	23.296	-1.7	U				H	67Wa23,W
202Au(B-)202Hg		2700	300	2992.688	23.296	1.0	U				H	72Bu05,W
202Tl(e)202Hg		1245	25	1364.336	1.772	4.8B	B				h	66Le06,*
202Pb(e)202Tl		55	20	40.535	4.140	-.7	U				K	54Hu61
202Atn(IT)202Atm		391.7	0.2				5				Lvn	92Hu04

*202Tl-133Cs1.519	Not independent, do not use	g	17Ma.B*W
*202Pb-u	M-A=-23747(28) keV for 202Pbm at 2169.85 keV	g	Nub211**
*202At(a)198Bi	E(a)=6228(5), 6070(10), 5929(10) to gs, 164, 303 levels		92Hu04**
*202Atm(a)198Bim	Assignment to 202Atm in ref.; ~ Z recalibrated	N	92Hu04**
*202Atm(a)198Bim	E(a)=6135(5); and 6277(5) from 202Atn(a)198Bin, with	m	92Hu04**
*	~ 202Atn(IT)202Atm=391.7(0.5) and 198Bin(IT)198Bim=248.5(0.5) keV	k	Nub211**
*202Fr(a)198At	E(a)=7251(10) has a doublet structure		92Hu04**
*202Fr(a)198At	E(a)=7237(8), is a doublet	m	92Hu04**
*202Fr(a)198At	202Fr E(a)'s in correlation with At daughters	m	96En01**
*202Fr(a)198At	E(a)=7105(8) keV to level at 130.0(0.1) keV; Also E(a)=7086(8) keV	G	19Gh11**
*202Fr(a)198At	~ to level at 154.2(0.3) keV	G	19Gh11**
*202Frm(a)198At	E(a)=7217(8) to level at 280.8(0.1) keV	G	19Gh11**
*202Frm(a)198Atm	E(a)=7237(8), is a doublet	m	92Hu04**
*202Frm(a)198Atm	E(a)=6724(8) keV to level at 527.3(0.2) keV above 198Atm and at	G	19Gh11**
*202Frm(a)198Atm	~ 792(3) keV above 198At; not independent	G	19Gh11**
*202Au(B-)202Hg	Original error 200 increased		AHW *W
*202Au(B-)202Hg	Original error was 200, increased in last file of AHW	h	AHW116*W

*202Tl(e)202Hg   pK=0.305(0.020) to 2^+ level at 959.94 keV   h   Ens083**

203Os-u		-7805#	429#				2				g	1.0	S-u211
203Ir-u		-15427#	429#				2				g	1.0	S-u211
203Pt-u		-20945#	215#				2				g	1.0	S-u185
C16 H11-203Tl		113735	43	113732.645	0.409	-.0	U				hR08	1.5	69De19
C15 13C H10-203Tl		109216	95	109262.448	0.409	.3	U				hR08	1.5	69De19
C14 N2 H7-203Tl		88540	48	88580.526	0.409	.6	U				hR08	1.5	69De19
203Tl-166Er 37Cl		76190	48	76139.070	0.547	-.7	U				hR08	1.5	69De19
203Tl-168Er 35Cl		71069	36	71111.731	0.497	.8	U				hR08	1.5	69De19
203Tl-133Cs1.526		116622.5	3.8	116623.020	0.409	.1	W				gMA8	1.0	16We.A,W
203Pb-u		-26594	30	-26610.785	6.932	-.6	U				MGS2	1.0	05Li24
203Bi-u		-23060	32	-23107.365	13.716	-1.5	Z				mGS2	1.0	02Sc.C,G
203Po-u		-18581	30	-18583.927	4.981	-.1	U				HGS2	1.0	05Li24
203Po-133Cs1.526		125697.0	6.0	125696.386	4.981	-.1	1	69	69	203Po	GMA8	1.0	17Al34
203At-u		-13042	30	-13057.388	11.402	-.5	1	14	14	203At	HGS2	1.0	05Li24
203Fr-133Cs1.526		145205	17	145221.181	6.690	1.0	1	15	15	203Fr	MMA8	1.0	08We02
203At-208Pb.976		9690	25	9731.661	11.402	1.7	1	21	21	203At	MMA6	1.0	01Sc41
203Rnm-208Pb.976		16579	30	16539.267	5.366	-1.3	1	3	3	203Rnm	KSH1	1.0	13Dr04
203Tl 35Cl-201Hg 37Cl		4997	3	4990.154	0.789	-.6	U				hH17	4.0	64Mc07
203Tl 35Cl-201Hg 37Cl		4995.23	1.49	4990.154	0.789	-1.4	1	4	3	201Hg	H36	2.5	85De40
202Hg H-203Tl		6154	34	6125.543	0.780	-.6	U				hR08	1.5	69De19
203Tl-167Er 35Cl		71436	36	71433.820	0.512	-.0	U				hR08	1.5	69De19
167Er 37Cl-203Tl		-74404	33	-74383.944	0.514	.4	U				hR08	1.5	69De19
169Tm 35Cl-203Tl		-69257	29	-69271.057	0.892	-.3	U				hR08	1.5	69De19
203Tl-202Hg		1722	20	1699.489	0.780	-.8	U				hR08	1.5	69De19
203Tl-201Hg		1999	29	2040.030	0.789	.9	U				hR08	1.5	69De19
203Po(a)199Pb		5496	5				2				Dba		68Go.B,*
203At(a)199Bi		6210.3	1.	6210.092	0.840	-.2	-1-						63Ho18,Z
203At(a)199Bi		6208.7	3.	6210.092	0.840	.5	-1-						67Tr06,Z
203At(a)199Bi		6209.4	2.	6210.092	0.840	.3	-1-				Dba		68Go.B,Z
203At(a)199Bi		6211.7	3.	6210.092	0.840	-.5	-1-				NOra		75Ba.B
203At(a)199Bi		6210.6	5.0	6210.092	0.840	-.1	U				HAra		96Ta18
203At(a)199Bi	ave	6210.133	0.841	6210.092	0.840	-.0	1	100	62	203At			average
203Rn(a)199Po		6628.6	5.	6629.868	2.082	.3	-3-						67Va17,Z
203Rn(a)199Po		6630.2	2.5	6629.868	2.082	-.1	-3-				Lvn		93Wa04
203Rn(a)199Po		6630	10	6629.868	2.082	-.0	U				NJya		95Uu01
203Rn(a)199Po		6629.8	5.0	6629.868	2.082	-.0	-3-				HAra		96Ta18
203Rn(a)199Po	ave	6629.868	2.082				3						average
203Rnm(a)199Pom		6679.5	3.	6680.585	1.568	.3	-1-						67Va17,Z
203Rnm(a)199Pom		6681.9	10.	6680.585	1.568	-.1	U				hGSa		87He10
203Rnm(a)199Pom		6680.9	2.5	6680.585	1.568	-.1	-1-				Lvn		93Wa04
203Rnm(a)199Pom		6683.9	7.	6680.585	1.568	-.5o	o				hAra		95Le04
203Rnm(a)199Pom		6679.8	3.	6680.585	1.568	.2	-1-				MJya		96Le09
203Rnm(a)199Pom		6682.9	5.0	6680.585	1.568	-.5	-1-				HAra		96Ta18
203Rnm(a)199Pom	ave	6680.468	1.570	6680.585	1.568	.1	1	100	97	203Rnm			average
203Fr(a)199At		7275.6	5.	7274.874	3.574	-.1	-1-				H		67Va20,Z
203Fr(a)199At		7281.7	10.	7274.874	3.574	-.7	-1-				H		80Ew03,Z
203Fr(a)199At		7263.4	25.	7274.874	3.574	.5o	o				hJya		94Le05
203Fr(a)199At		7273.6	6.	7274.874	3.574	.2	-1-				HJya		05Uu02
203Fr(a)199At	ave	7275.678	3.658	7274.874	3.574	-.2	1	95	85	203Fr			average
203Frm(a)199Atm		7391.9	5.				3				KJya		13Ja06
203Ra(a)199Rn		7729.6	20.	7736.261	6.373	.3o	o				kJya		96Le09
203Ra(a)199Rn		7741.8	8.	7736.261	6.373	-.7	-3-				KJya		05Uu02
203Ra(a)199Rn		7727.6	10.	7736.261	6.373	.9	-3-				KAnv		14Ka23
203Ra(a)199Rn	ave	7736.261	6.373				3						average
203Ram(a)199Rnm		7768.4	20.	7762.748	5.771	-.3o	o				hJya		96Le09
203Ram(a)199Rnm		7765.3	8.	7762.748	5.771	-.3	-3-				HJya		05Uu02
203Ram(a)199Rnm		7760.2	8.2	7762.748	5.771	.3	-3-				KAnv		14Ka23
203Ram(a)199Rnm	ave	7762.748	5.771				3						average
203Tl(p,t)201Tl		-6240	15	-6241.514	14.147	-.1	1	89	89	201Tl	mYal		71Ki01
202Hg(d,p)203Hg-204Hg()205Hg		325	5	326.741	3.604	.3	1	52	48	205Hg	Pit		72Mo12
203Tl(p,d)202Tl		-5630	20	-5628.024	1.646	.1	U				KYal		71Ki01
203Au(B-)203Hg		2040	60	2126.892	3.315	1.4	U				N		94We02
203Hg(B-)203Tl		489.2	2.	492.206	1.222	1.5	-1-						54Th17,*
203Hg(B-)203Tl		493.2	2.	492.206	1.222	-.5	-1-						55Ma40,*

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 203Hg(B-)203Tl                 493.2       3.         492.206      1.222     -.3  -1-                          58Ni28,*
 203Hg(B-)203Tl           ave   491.564     1.279      492.206      1.222      .5   1      91  90 203Hg         average
 203Pb(e)203Tl                  940        50          974.816      6.461      .7   U                     h     55Ha.A,*
 203Pb(e)203Tl                  980        20          974.816      6.461     -.3   1      10  10 203Pb         65Le07,*
 203Bi(B+)203Pb                3260        50         3263.415     14.315      .1   U                     H     58No30,*
 203At(B+)203Po                5060       200         5147.939     11.590      .4   U                     M     87Se04
*203Tl-133Cs1.526               Not independent, do not use                                           g     17Ma.B*W
*203Bi-u                        used as reference                                                     m     02Sc.C*G
*203Po(a)199Pb                  E(a)=5383.8(3,Z) to 4(4) level (this is level x<9.3 in Ensdf)              Ens073**
*203Hg(B-)203Tl                 E-=210(2) 214(2) 214(3) resp, to 3/2^+ level at 279.1958 keV          h     Ens057**
*203Pb(e)203Tl                  pK=0.36(0.07) 0.71(0.01) resp, to 5/2^+ level at 680.5164 keV         h     Ens057**
*203Bi(B+)203Pb                 E+=1350(50), 740(50) to levels around 840, 1550 keV                   h     Ens057**
*203Bi(B+)203Pb                 from 9/2- : 820.3 3 7/2- ; 825.2 3 13/2+  ; 866.4 5 5/2- ; 896.9 3 9/2-  h  GAu128*G
*203Bi(B+)203Pb                 from 9/2- : 1536.5 4 (7/2)- ; 1547.7 4 9/2+ ; 1592.9 6(7/2,9/2)-      h     GAu128*G


 204Ir-u                        -10274#     429#                                2                     g   1.0 S-u211
 204Pt-u                        -18916#     215#                                2                     g   1.0 S-u185
 204Hg-C 13C 35Cl3 37Cl2        131776.05     1.25   131775.892      0.547     -.1   U                    hH34 2.5 80Ko25
 204Hg-169Tm 35Cl                70420      100        70422.296      0.953      .0   U                    hR04 4.0 64De15
 204Hg-167Er 37Cl                75430       60        75535.184      0.612      .4   U                    hR04 4.0 64De15
 204Hg-u                        -26505.8      0.6    -26506.054      0.528     -.4   1      78  78 204Hg hST2 1.0 02Bf02
 204Po-u                        -19689       30      -19691.114     10.764     -.1R  R  q-q=    2.114  MGS2 1.0 05Li24
 204Po-u                        -19426      213      -19691.114     10.764    -1.2   U                    GRI1 1.0 17Sc02,*
 204At-u                        -12748       30      -12748.606     24.335     -.0  -1-                   MGS2 1.0 05Li24
 204At-u                        -12768       57      -12748.606     24.335      .3  -1- q-q=  -19.394  m1.0 1.0  200Bi-C
 204At-u                        -13099      208      -12748.606     24.335     1.7   U                    GRI1 1.0 17Sc02,*
 204At-u                  ave   -12752.338   26.548  -12748.606     24.335      .1   1      84  84 204At        average
 204Rn-133Cs1.534               136394       60      136479.026      7.902     1.4   U                    KSH1 1.0 13Dr04
 204Rn-u                         -8660       86       -8557.673      7.902     1.2   U                    GRI1 1.0 17Sc02
 204Fr-u                           595      115         651.972     26.389      .5   U                    GRI1 1.0 17Sc02,*
 204Hg 35Cl2-200Hg 37Cl2         11066.85     0.55    11067.421      0.664      .4   1      23  12 200Hg  H33 2.5 80Ko25
 204Pb-208Pb.981                 -4047       21       -4052.121      0.176     -.2   U                    MMA6 1.0 01Sc41
 204Rn-208Pb.981                 14358.1      9.4     14348.123      7.901    -1.1  -1-                   KSH1 1.0 13Dr04
 204Rn-208Pb.981                 14303       25       14348.123      7.901     1.8  -1-                   KSH1 1.0 13Dr04
 204Rn-208Pb.981          ave    14351.275    8.799   14348.123      7.901     -.4   1      81  81 204Rn        average
 204Hg 35Cl-202Hg 37Cl            5807        2        5800.852      0.744     -.8   U                    hH17 4.0 64Mc07
 204Hg 35Cl-202Hg 37Cl            5800.67     0.53     5800.852      0.744      .1   1      32  21 202Hg  H33 2.5 80Ko25
 204Hg-203Tl                      1161       25        1151.239      0.662     -.3   U                    hR08 1.5 69De19
 204Pb(a)200Hg                    2650      100        1967.367      0.541    -6.8B  B                    h        58Ri23
 204Pb(a,8He)200Pb              -28043       13      -28043.936      9.962     -.1  -1-                    INS     90Ka10
 204Pb(a,8He)200Pb              -28046       28      -28043.936      9.962      .1  -1- q-q=   -2.216  H        200Pb-C
 204Pb(a,8He)200Pb              -28044       28      -28043.936      9.962      .0  -1- q-q=   -0.069  H        204Po-C
 204Pb(a,8He)200Pb        ave   -28043.602   10.867  -28043.936      9.962     -.0   1      84  84 200Pb        average
 204Po(a)200Pb                    5484.6      1.5      5484.900      1.367      .2  -1-                    Dba     69Go23,*
 204Po(a)200Pb                    5486.3      3.       5484.900      1.367     -.5  -1-                            70Ra14,Z
 204Po(a)200Pb            ave     5484.894    1.369    5484.900      1.367      .0   1     100  84 204Po        average
 204At(a)200Bi                    6069.9      3.       6070.406      1.224      .2  -2-                   N        63Ho18,Z
 204At(a)200Bi                    6066.2      3.       6070.406      1.224     1.4  -2-                   N        67Tr06,Z
 204At(a)200Bi                    6071.3      3.       6070.406      1.224     -.3  -2-                   NOra     75Ba.B
 204At(a)200Bi                    6071.3      2.0      6070.406      1.224     -.4  -2-                   h        79Sc01
 204At(a)200Bi                    6072.0      3.       6070.406      1.224     -.5  -2-                   NDba     81Va27,Z
 204At(a)200Bi            ave     6070.406    1.224                                2                            average
 204Rn(a)200Po                    6544.3      3.       6546.652      1.820      .8  -1-                            67Va17,Z
 204Rn(a)200Po                    6547.5      2.5      6546.652      1.820     -.3  -1-                    Lvn     93Wa04
 204Rn(a)200Po                    6537.4      7.       6546.652      1.820     1.3o  o                    hAra     95Le04
 204Rn(a)200Po                    6548.6      5.0      6546.652      1.820     -.4  -1-                   HAra     96Ta18
 204Rn(a)200Po            ave     6546.505    1.829    6546.652      1.820      .1   1      99  80 200Po        average
 204Fr(a)200At                    7170.4      5.       7170.286      2.391     -.0  -4-                            67Va20,Z
 204Fr(a)200At                    7169.4      5.       7170.286      2.391      .2  -4-                            74Ho27,Z
 204Fr(a)200At                    7170.6      5.       7170.286      2.391     -.1  -4-                    Lvn     92Hu04,*
 204Fr(a)200At                    7179.0      6.       7170.286      2.391    -1.4o  o                    hJya     94Le05
 204Fr(a)200At                    7167.8      7.       7170.286      2.391      .3  -4-                   NAra     95Le04
 204Fr(a)200At                    7173.9      6.       7170.286      2.391     -.6o  o                    KJya     05Uu02
 204Fr(a)200At                    7171.9      5.       7170.286      2.391     -.3  -4-                   KJya     13Ja06
 204Fr(a)200At            ave     7170.286    2.391                                4                            average
 204Frm(a)200At                   7218.8      8.       7220.545      3.577      .2o  o                    hLvn     92Hu04
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 204Frm(a)200Atm                  7108.2      5.        7107.648     2.027     -.1  -4-               M       74Ho27,Z
 204Frm(a)200Atm                  7105.5      3.        7107.648     2.027      .7  -4-               MBka    82Bo04,Z
 204Frm(a)200Atm                  7108.4      5.        7107.648     2.027     -.2  -4-               MLvn    92Hu04,*
 204Frm(a)200Atm                  7115.6      7.        7107.648     2.027    -1.1o  o                hJya    94Le05,*
 204Frm(a)200Atm                  7114.7      7.        7107.648     2.027    -1.0  -4-               NAra    95Le04
 204Frm(a)200Atm                  7117.7      6.        7107.648     2.027    -1.7o  o                KJya    05Uu02,*
 204Frm(a)200Atm                  7108.7      5.        7107.648     2.027     -.2  -4-               KJya    13Ja06
 204Frm(a)200Atm            ave   7107.648    2.027                                4                          average
 204Frn(a)200Atn                  7157.6      6.1       7152.848     2.098     -.8o  o                hJya    05Uu02
 204Frn(a)200Atn                  7153.5      5.        7152.848     2.098     -.1o  o                kJya    13Ja06
 204Ra(a)200Rn                    7638.1     12.        7636.636     6.790     -.1  -3-               NAra    95Le04
 204Ra(a)200Rn                    7638.1     25.        7636.636     6.790     -.1o  o                mJya    95Le15
 204Ra(a)200Rn                    7634.0     10.        7636.636     6.790      .3o  o                hJya    96Le09
 204Ra(a)200Rn                    7636.1      8.        7636.636     6.790      .1  -3-               HJya    05Uu02
 204Ra(a)200Rn                    7638.1     25.        7636.636     6.790     -.1   U                HAnv    10He25
 204Ra(a)200Rn              ave   7636.636    6.790                                3                          average
 204Pb(p,t)202Pb                 -6835       10        -6831.182     3.796      .4   1     14  14 202Pb  Yal     71Ki01
 204Hg(t,a)203Au                 10962       15        10978.169     3.042     1.1   U                hLAl    81Fl05
 204Hg(d,3He)203Au-206Pb()205Tl  -1582.0      3.0      -1582.000     3.000      .0   1    100 100 203Au N       94Gr07
 204Hg(d,t)203Hg                 -1242        5        -1233.922     1.347     1.6   1 *    7   6 203Hg  Ald     70An14
 203Tl(n,g)204Tl                  6656.0      0.3       6656.100     0.290      .3   1     94  92 203Tl mMMn    74Co21,Z
 203Tl(n,g)204Tl                  6654.88     0.14      6656.100     0.290     8.7C  C                hBdn    06Fi.A
 204Pb(p,d)203Pb                 -6165       10        -6170.103     6.455     -.5  -1-                Yal    71Ki01
 204Pb(d,t)203Pb                 -2160       20        -2137.439     6.455     1.1  -1-                Ald    67Bj01
 204Pb(p,d)203Pb            ave  -6170.533    8.944    -6170.103     6.455      .0   1     52  52 203Pb         average
 204Au(B-)204Hg                   4500      300         4300#      200#        -.7F  F                N       67Wa23,*
 204Au(B-)204Hg                   4300#     200#                                   2                g       S-u20c
 204Tl(e)204Hg                     314       20          342.846     0.550     1.4   U                h       64Ch17
 204Tl(e)204Hg                     332       20          342.846     0.550      .5   U                h       66Kl02
 204Tl(e)204Hg                     385       20          342.846     0.550    -2.1   U                h       73La17
 204Tl(B-)204Pb                    764.24     0.31       763.754     0.177    -1.6  -1-                       67Pa08
 204Tl(B-)204Pb                    763.47     0.22       763.754     0.177     1.3  -1-                       68Wo02
 204Tl(B-)204Pb             ave    763.728    0.179      763.754     0.177      .1   1     97  95 204Tl         average
 204At(B+)204Po                   6220      160         6466.905    24.787     1.5   U                m       86Ve.B,*
 204Frn(IT)204Frm                  276.1      0.5                                  5                k       95Bi.A
*204Po-u                        A systematic error 75 keV is added to all data in the same paper.     G       HWJ182**
*                                ~ freq ratio rounded, not used                                        G       HWJ182**
*204At-u                        M-A=-11908(94) keV  for mixture gs+m at 587.3(0.2) keV                G       Nub211**
*204Fr-u                        M-A=679(79) keV for mixture at gs+m+n 50(4) 326(4) keV                G       Nub211**
*204Po(a)200Pb                  Printing error in ref.: 204Po not 206Po; ~ Z recalibrated                     AHW   **
*204Fr(a)200At                  E(a)=7031(5), 6916(8) to gs, 113 level                                        92Hu04**
*204Frm(a)200Atm                E(a)=6969(5); and 7013(5) from 204Frn 276.1 above 204Frm to 200Atn    m       95Bi.A**
*                                ~ 230.9 above 200Atm                                                  m       92Hu04**
*204Frm(a)200Atm                E(a)=7020(7) from 204Frn 276.1 above Fr^m to 200Atn 230.9 above 200Atm m       95Bi.A**
*204Frm(a)200Atm                E(a)=6976(6); and 7017(6) from 204Frn 276.1 above 204Frm to 200Atn    H       GAu071**
*204Au(B-)204Hg                 F : reported 4 s activity does not exist                              N       Ens87a**
*204At(B+)204Po                 E+=2950(160) to 8^+ level at 2248.17 keV                              h       Ens102**


 205Ir-u                         -6012#     537#                                   2                g    1.0 S-u211
 205Pt-u                        -13763#     322#                                   2                g    1.0 S-u185
 205Au-u                        -19936#     215#                                   2                g    1.0 S-u211
 C16 H13-205Tl                  127345       29       127299.501     0.561    -1.0   U                hR08 1.5 69De19
 C14 N2 H9-205Tl                102091       36       102147.382     0.561     1.0   U                hR08 1.5 69De19
 205Tl-168Er 37Cl                76198       44        76145.062     0.629     -.8   U                hR08 1.5 69De19
 205Tl-170Er 35Cl                70034       23        70101.287     1.592     2.0   U                hR08 1.5 69De19
 205Tl-133Cs1.541               120129       11       120124.446     0.561     -.4   U                MMA8 1.0 08We02
 205Bi-u                        -22559       30       -22615.470     5.131    -1.9   U                hGS2 1.0 05Li24
 205Bi-u                        -22358      616       -22615.470     5.131     -.4   U                GRI1 1.0 17Sc02
 205Po-u                        -18773       30       -18810.067    10.798    -1.2  -1-               MGS2 1.0 05Li24
 205Po-u                        -18825       43       -18810.067    10.798      .3  -1- q-q=  -13.910 H1.0 1.0  209Rn-0
 205Po-u                        -18822       43       -18810.067    10.798      .3   Z  q-q=  -11.116 h1.0 1.0  201Pb-0
 205Po-u                        -18811      538       -18810.067    10.798      .0   U                GRI1 1.0 17Sc02,*
 205Po-u                    ave -18790.024   24.604   -18810.067    10.798     -.8   1     19  19 205Po         average
 205At-u                        -13841      111       -13938.162    12.930     -.9   U                GRI1 1.0 17Sc02
 205Rn-133Cs1.541               137456       50       137421.308     5.440     -.7   U                KSH1 1.0 13Dr04
 205Rn-133Cs1.541               137458       29       137421.308     5.440    -1.3   U                KSH1 1.0 13Dr04
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205Rn-u		-8494	222	-8277.224	5.440	1.0	U				GRI1	1.0	17Sc02,*
205Fr-133Cs1.541		144293.8	9.7	144292.387	8.400	-.1	-2-				MMA8	1.0	08We02
205Fr-133Cs1.541		144299	22	144292.387	8.400	-.3	-2-	q-q=		6.613	H1.0	1.0	197Bi-C
205Fr-133Cs1.541		144273	26	144292.387	8.400	.7	-2-	q-q=		-19.387	m1.0	1.0	197Bi-x
205Fr-133Cs1.541	ave	144292.387	8.400				2						average
205Ac-u		15116	110	15144.152	63.682	.1	Z				k	2.5	S-u146
205Rn-208Pb.986		14748	11	14745.318	5.440	-.2	-1-				KSH1	1.0	13Dr04
205Rn-208Pb.986		14772	20	14745.318	5.440	-1.3	-1-				KSH1	1.0	13Dr04
205Rn-208Pb.986	ave	14753.574	9.638	14745.318	5.440	-.9	1	32	32	205Rn			average
205Tl 35Cl-203Tl 37Cl		5040	4	5033.331	0.579	-.4	U				hH17	4.0	64Mc07
205Tl 35Cl-203Tl 37Cl		5031.43	1.07	5033.331	0.579	.7	-1-				H36	2.5	85De40
205Tl 35Cl-203Tl 37Cl		5032.88	1.01	5033.331	0.579	.3	-1-				NH42	1.5	93Si05
205Tl 35Cl-203Tl 37Cl	ave	5032.528	1.318	5033.331	0.579	.6	1	19	14	205Tl			average
205Pb-205Tl		54.78	0.49	54.342	0.540	-.6	Z				H42	1.5	92Hy.A,W
205Tl-167Er 37Cl		76426	47	76467.151	0.641	.6	U				hR08	1.5	69De19
205Tl-169Tm 35Cl		71355	25	71354.264	0.972	-.0	U				hR08	1.5	69De19
169Tm 37Cl-205Tl		-74316	32	-74304.389	0.973	.2	U				hR08	1.5	69De19
205Tl-204Hg		938	27	931.968	0.768	-.1	U				hR08	1.5	69De19
205Tl-203Tl		2092	20	2083.207	0.577	-.3	U				hR08	1.5	69De19
205Po(a)201Pb		5324.1	10.	5324.785	9.935	.1	1	95	90	201Pb			67Ti04
205At(a)201Bi		6016.3	4.	6019.571	1.718	.8	-3-						63Ho18,Z
205At(a)201Bi		6020.5	2.	6019.571	1.718	-.5	-3-				Dba		68Go.B,Z
205At(a)201Bi		6018.9	5.	6019.571	1.718	.1	-3-						74Ho27,Z
205At(a)201Bi	ave	6019.571	1.718				3						average
205Rn(a)201Po		6386.6	3.	6386.447	1.838	-.0	-1-				K		67Va17,Z
205Rn(a)201Po		6386.6	6.	6386.447	1.838	-.0	-1-				K		71Ho01,Z
205Rn(a)201Po		6385.7	2.5	6386.447	1.838	.3	-1-				KLvn		93Wa04,G
205Rn(a)201Po	ave	6386.115	1.866	6386.447	1.838	.2	1	97	68	205Rn			average
205Fr(a)201At		7056.5	5.	7054.709	2.401	-.3	-3-				M		67Va20,Z
205Fr(a)201At		7052.2	5.	7054.709	2.401	.5	-3-				M		74Ho27,Z
205Fr(a)201At		7057.3	5.	7054.709	2.401	-.5	-3-				MORa		81Ri04,Z
205Fr(a)201At		7052.9	7.	7054.709	2.401	.3	-3-				MAra		95Le04
205Fr(a)201At		7053.9	5.	7054.709	2.401	.2	-3-				HAnv		05De01
205Fr(a)201At	ave	7054.709	2.401				3						average
205Ra(a)201Rn		7506.7	20.	7486.350	20.399	-.4F	F				nGSa		87He10,*
205Ra(a)201Rn		7496.6	25.	7486.350	20.399	-.4o	o				mJya		95Le15
205Ra(a)201Rn		7486.4	20.				3				MJya		96Le09
205Ram(a)201Rnm		7501.7	10.	7504.709	9.123	.3	-4-				HAra		95Le04
205Ram(a)201Rnm		7522.1	25.	7504.709	9.123	-.7o	o				mJya		95Le15
205Ram(a)201Rnm		7517.0	20.	7504.709	9.123	-.6	-4-				MJya		96Le09
205Ram(a)201Rnm		7526.1	30.	7504.709	9.123	-.7	U				HAnv		10He25
205Ram(a)201Rnm	ave	7504.709	9.123				4						average
205Ac(a)201Fr		8093.2	30.6				3				KLza		14Zh03
204Hg(d,p)205Hg		3443	5	3444.741	3.604	.3	1	52	52	205Hg	Ald		70An14
205Tl(g,n)204Tl		-7515	29	-7546.042	0.480	-1.1	U				hPhi		60Ge01
205Tl(g,n)204Tl		-7548	3	-7546.042	0.480	.7	U				hMcM		79Ba06
205Tl(d,t)204Tl		-1288.7	0.6	-1288.811	0.480	-.2	1	64	61	205Tl	Mun		90Li40
204Pb(n,g)205Pb		6731.53	0.15	6731.669	0.109	.9	-1-				ILn		83Hu13,Z
204Pb(n,g)205Pb		6731.80	0.16	6731.669	0.109	-.8	-1-				MBdn		06Fi.A
204Pb(d,p)205Pb		4516	20	4507.103	0.109	-.4	U				hAld		67Bj01
204Pb(n,g)205Pb	ave	6731.656	0.109	6731.669	0.109	.1	1	99	98	204Pb			average
205Hg(B-)205Tl		1620	200	1533.888	3.659	-.4	U				h		40Kr08
205Hg(B-)205Tl		1750	200	1533.888	3.659	-1.1	U				h		51Ly10
205Pb(e)205Tl		41.4	1.1	50.619	0.503	8.4B	B						78Pe08
205Bi(B+)205Pb		2701.4	10.	2705.315	4.780	.4	-1-						62Bo25,*
205Bi(B+)205Pb		2715.4	10.	2705.315	4.780	-1.0	-1-						62Pe08,*
205Bi(B+)205Pb	ave	2708.400	7.071	2705.315	4.780	-.4	1	46	46	205Bi			average
205Po(B+)205Bi		3390	150	3544.710	11.136	1.0	U				h		69Ho37,*
*205Po-u		M-A=-16791(268) keV for mixture at gs+p 1461.2(0.2) keV									G		Nub211**
*205Rn-u		M-A=-7584(82) keV for mixture at gs+m 657.1(0.5) keV									G		Nub211**
*205Pb-205Tl		Calculated from H42 doubets. Do not use									h		AHW931*W
*205Rn(a)201Po		Changed flag "O" to "A", because of consistency with SH1 data									k		GAu154*G
*205Ra(a)201Rn		F : possibly mixed with 205Ram(a)201Rnm									n		87He10**
*205Bi(B+)205Pb		E+=976(10) 990(10) resp, to 7/2^- level at 703.427 keV									h		Ens044**
*205Po(B+)205Bi		p+=3(1)e-3 to 7/2^- level at 849.84 and 7/2^- at 1001.22 keV									h		Ens044**

206Pt-u		-9920#	322#				2				g	1.0	S-u211
206Au-u		-15234#	322#				2				g	1.0	S-u211
206Bi-u		-21429	30	-21502.585	8.102	-2.5	U				hGS2	1.0	05Li24
206Po-u		-19471	30	-19526.542	4.303	-1.9	U				hGS2	1.0	05Li24
206At-u		-13305	30	-13353.526	14.520	-1.6	1	23	23	206At	hGS2	1.0	05Li24
206At-u		-13416	2309	-13353.526	14.520	.0	U				GRI1	1.0	17Sc02
206Rn-u		-9195	649	-9805.467	9.193	-.9	U				GRI1	1.0	17Sc02
206Rn-133Cs1.549		136641	15	136649.451	9.193	.6	1	38	38	206Rn	KSH1	1.0	13Dr04
206Fr-u		-1520	220	-1338.558	29.856	.8	U				GRI1	1.0	17Sc02,*
206Pb 35Cl2-202Hg 37Cl2		9722.09	0.57	9720.812	0.696	-.9	1	24	22	202Hg	H36	2.5	85De40
206Pb 35Cl-204Hg 37Cl		3929	4	3919.960	0.552	-.6	U				hH17	4.0	64Mc07
206Pb 35Cl-204Pb 37Cl		4378	3	4371.823	0.149	-.5	U				hH17	4.0	64Mc07
206Pb 35Cl-204Pb 37Cl		4370.72	1.17	4371.823	0.149	.4	U				mH36	2.5	85De40
206Pb 35Cl-204Pb 37Cl		4371.29	0.81	4371.823	0.149	.4	U				hH42	1.5	93Si05
206Rn-208Pb.990		13307	15	13310.473	9.193	.2	1	38	38	206Rn	KSH1	1.0	13Dr04
206Po(a)202Pb		5327.4	4.	5327.024	1.297	-.1	-2-						67Ti04,Z
206Po(a)202Pb		5327.4	1.5	5327.024	1.297	-.3	-2-				Dba		69Go23,*
206Po(a)202Pb		5325.1	3.	5327.024	1.297	.6	-2-						70Ra14,Z
206Po(a)202Pb	ave	5327.024	1.297				2						average
206At(a)202Bi		5884.4	3.6	5886.571	4.940	.6o	o				HDba		68Go.B,*
206At(a)202Bi		5886.4	5.	5886.571	4.940	.0	1	98	75	202Bi	HDba		81Va27,*
206Rn(a)202Po		6381.8	3.	6383.739	1.644	.6	-1-						67Va17,Z
206Rn(a)202Po		6384.6	3.	6383.739	1.644	-.3	-1-				Dba		71Go35,Z
206Rn(a)202Po		6384.8	2.5	6383.739	1.644	-.4	-1-				Lvn		93Wa04
206Rn(a)202Po	ave	6383.894	1.650	6383.739	1.644	-.1	1	99	74	202Po			average
206Fr(a)202At		6925.9	7.	6923.332	3.499	-.4	-1-				m		67Va20,*
206Fr(a)202At		6918.9	7.	6923.332	3.499	.6	-1-				m		74Ho27,*
206Fr(a)202At		6924.0	7.	6923.332	3.499	-.1	-1-				mORa		81Ri04,*
206Fr(a)202At		6924.8	7.	6923.332	3.499	-.2	-1-				mLvn		92Hu04,*
206Fr(a)202At	ave	6923.400	3.500	6923.332	3.499	-.0	1	100	97	206Fr			average
206Frn(a)202Atn		7068.8	5.	7067.942	3.570	-.2	-6-				ORa		81Ri04,Z
206Frn(a)202Atn		7067.1	5.	7067.942	3.570	.2	-6-				Lvn		92Hu04,*
206Frn(a)202Atn	ave	7067.942	3.570				6						average
206Ra(a)202Rn		7416.3	5.	7415.258	4.163	-.2	-3-						67Va22,Z
206Ra(a)202Rn		7414.3	10.	7415.258	4.163	.1	-3-				GSa		87He10
206Ra(a)202Rn		7412.2	10.	7415.258	4.163	.3o	o				mJya		95Le15
206Ra(a)202Rn		7406	15	7415.258	4.163	.6o	o				mJya		95Uu01
206Ra(a)202Rn		7412.2	10.	7415.258	4.163	.3	-3-				MJya		96Le09
206Ra(a)202Rn	ave	7415.258	4.163				3						average
206Ac(a)202Fr		7944.6	30.	7958.300	64.807	.2	-3-				MJya		98Es02
206Ac(a)202Fr		7972.0	30.	7958.300	64.807	-.2	-3-				KLza		14Zh03
206Ac(a)202Fr	ave	7958.300	41.231				3						average
206Acm(a)202Frm		7903.8	30.				2				MJya		98Es02
204Pb(t,p)206Pb		6322	20	6336.536	0.124	.7	U				hAld		67Ha.A
204Pb(a,d)206Bi		-15798.	11.5	-15792.417	7.547	.5R	R	q-q=	-5.583		Pit		76Da20
205Tl(n,g)206Tl		6503.7	0.4	6503.806	0.386	.3	1	93	84	206Tl	mMMn		74Co21,Z
205Tl(n,g)206Tl		6502.87	0.27	6503.806	0.386	3.5C	C				hBdn		06Fi.A
205Tl(d,p)206Tl		4276	5	4279.240	0.386	.6	U				hANL		65Er02
205Tl(3He,d)206Pb		1761.7	1.4	1760.222	0.505	-1.1	1	13	13	205Tl	Mun		90Li40
205Pb(n,g)206Pb		8086.66	0.06	8086.664	0.060	.1	1	100	99	205Pb	M		96Ra16,Z
206Pb(g,n)205Pb		-8090	70	-8086.664	0.060	.0	U				hPhi		60Ge01
206Pb(g,n)205Pb		-8087	3	-8086.664	0.060	.1	U				hMcM		79Ba06
206Pb(d,t)205Pb		-1830	100	-1829.433	0.060	.0	U				hMIT		53Ha66
206Pb(d,t)205Pb		-1831.2	0.5	-1829.433	0.060	3.5B	B				hMun		90Li40,W
206Hg(B-)206Tl		1240	62	1307.600	20.410	1.1	U				h		68Wo09,*
206Tl(B-)206Pb		1534	5	1532.238	0.612	-.4	U				h		71Pe23
206Tl(B-)206Pb		1527	4	1532.238	0.612	1.3	U				h		72Wi18
206Bi(B+)206Pb		3683	33	3757.306	7.546	2.3	U				h		62Pe08,*
206Bi(e)206Pb		3753	10	3757.306	7.546	.4	-2-						74Go20,*
206Bi(e)206Pb		3763.	11.5	3757.306	7.546	-.5	-2-	q-q=	5.694		H		204Pb+2
206Bi(e)206Pb	ave	3757.306	7.546				2						average
206At(B+)206Po		5687	150	5750.128	14.107	.4	U				M		77Li16,*
206Frn(IT)206Frm		531	2				7				ORa		81Ri04
206Frx(IT)206Fr		100	100				2				h		AHW930,*
*206Fr-u	M-A=-1104(131) keV for mixture gs+m+n at 200(40) 730(40) keV										G		Nub211**
*206Po(a)202Pb	Printing error in ref.: 206Po not 211Po; ~ Z recalibrated												AHW **
*206At(a)202Bi	E(a)=5702.8(2,Z) to (5)^+ level at 68(3) keV										H		Ens044**

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*206At(a)202Bi                    E(a)=5773.8(5,Z), 5702.8(5,Z) to gs and (5)^+ level at 68(3) keV        H        Ens044**
*206Fr(a)202At                    E(a)=6793.1(5,Z); correction --2 for being a doublet                    m        AHW02b**
*206Fr(a)202At                    E(a)=6786.3(5,Z); correction --2 for being a doublet                    m        AHW02b**
*206Fr(a)202At                    E(a)=6791.3(5,Z); correction --2 for being a doublet                    m        AHW02b**
*206Fr(a)202At                    E(a)=6792(5); correction --2 for being a doublet                        m        AHW02b**
*206Frn(a)202Atn                  E(a)=6930(5) and 6792(7) combined with  E(g)'s 531, 391.7 keV                    92Hu04**
*206Pb(d,t)205Pb                  Without this input -1830.38(0.74)                                       m        Ame95 *W
*206Pb(d,t)205Pb                   From S(n) of ref. -1829.41(0.06)                                       m        96Ra16*W
*206Hg(B-)206Tl                   E-=935(62) to 1^- level at 304.896 keV                                  h        Ens085**
*206Bi(B+)206Pb                   E+=977(33) to 4^+ level at 1683.99 keV                                  h        Ens085**
*206Bi(e)206Pb                    LK=0.509(0.015) to 5^- lvl at 3562.92 keV, original error 22, rclcld    h        Ens085**
*206At(B+)206Po                   E+=3092(150) to 6^+ level at 1573.38 keV                                h        Ens085**
*206Frx(IT)206Fr                  Assuming a 0.15(0.20)% isomeric mixture                                 h        AHW930**
*206Frx(IT)206Fr                   No longer necessary for deriving M(206Fr)                              m        AHW978*W


 207Pt-u                            -4444#      429#                                   2                g   1.0 S-u211
 207Au-u                           -11423#      322#                                   2                g   1.0 S-u211
 207Hg-u                           -17721        33       -17700.000    32.000      .6o  o                HGS3 1.0 08Ch.A
 207Hg-u                           -17700        32                                    2                HGS3 1.0 12Ch19
 207Rn-133Cs1.556                  137794        28       137846.976     5.090     1.9   U                KSH1 1.0 13Dr04
 207Fr-133Cs1.556                  144062        20       144058.176    18.848     -.2   1    89  89 207Fr HMA8 1.0 14Bo26
 207Pb 35Cl-205Tl 37Cl               4413         4         4419.595     0.557      .4   U                hH17 4.0 64Mc07
 207Pb 35Cl-205Tl 37Cl               4415.60      2.40      4419.595     0.557      .7   U                hH36 2.5 85De40
 207Pb 35Cl-205Tl 37Cl               4417.32      1.40      4419.595     0.557     1.1   U                HH42 1.5 93Si05
 206Pb H-207Pb                       6394.2       1.1       6393.429     0.102     -.3   U                hC4  2.5 71Ke02
 206Frx-207Fr.498 205Fr.502           930        90          929.495   104.237     -.0   U                mP24 2.5 82Au01
 207Po(a)203Pb                       5216.0       2.5       5215.868     2.502     -.0   1    96  59 207Po MDba     70Af.A,W
 207At(a)203Bi                       5872.5       3.                                     3                 Dba      69Go23,Z
 207Rn(a)203Po                       6256.3       3.        6251.161     1.627    -1.7  -1-                         67Va20,Z
 207Rn(a)203Po                       6247.3       3.        6251.161     1.627     1.2  -1-                Dba      71Go35,Z
 207Rn(a)203Po                       6250.4       2.5       6251.161     1.627      .3  -1-                Lvn      93Wa04
 207Rn(a)203Po              ave      6251.211     1.649     6251.161     1.627     -.0   1    97  66 207Rn          average
 207Fr(a)203At                       6907.8       5.        6888.918    20.007     -.4  -1-                         67Va20,Z
 207Fr(a)203At                       6895.8       5.        6888.918    20.007     -.1  -1-                         74Ho27,Z
 207Fr(a)203At                       6900.9       5.        6888.918    20.007     -.2  -1-                ORa      81Ri04,Z
 207Fr(a)203At              ave      6901.500    29.011     6888.918    20.007     -.2   1    12   9 207Fr          average
 207Ra(a)203Rn                       7273.8       5.        7273.117    57.995     -.0  -4-                         67Va22,Z
 207Ra(a)203Rn                       7268.7      10.        7273.117    57.995      .1  -4-                GSa      87He10
 207Ra(a)203Rn                       7276.9      12.2       7273.117    57.995     -.1  -4-                NJya     95Uu01
 207Ra(a)203Rn              ave      7273.117    29.384                                  4                          average
 207Ram(a)203Rnm                     7464.5      10.2       7467.966     8.485      .3  -2-                NGSa     87He10
 207Ram(a)203Rnm                     7474.7      15.        7467.966     8.485    -.4o   o                mJya     95Le15
 207Ram(a)203Rnm                     7475.7      15.        7467.966     8.485     -.5  -2-                MJya     96Le09
 207Ram(a)203Rnm            ave      7467.967     8.485                                  2                          average
 207Ac(a)203Fr                       7864.3      25.        7844.900    55.902    -.3o   o                mJya     94Le05
 207Ac(a)203Fr                       7844.9      25.                                     2                MJya     98Es02
 205Tl(t,p)207Tl                     4880        15         4873.018     5.393     -.5   1    13  13 207Tl  Ald     69Ha11
 207Pb(t,a)206Tl                    12321        25        12326.186     0.619      .2   U                hAld     67Ha.A
 206Pb(n,g)207Pb                     6737.85      0.15      6737.789     0.095     -.4  -1-                MMn      81Ke11,Z
 206Pb(n,g)207Pb                     6737.72      0.18      6737.789     0.095      .4  -1-                ILn      83Hu13,Z
 206Pb(n,g)207Pb                     6737.74      0.17      6737.789     0.095      .3  -1-                MBdn     06Fi.A
 207Pb(g,n)206Pb                    -6742         3        -6737.789     0.095     1.4   U                hMcM     79Ba06
 206Pb(d,p)207Pb                     4480        30         4513.222     0.095     1.1   U                hMIT     53Ha66
 206Pb(d,p)207Pb                     4510        20         4513.222     0.095      .2   U                h        58Mc64
 206Pb(d,p)207Pb                     4526        30         4513.222     0.095     -.4   U                hPit     64Co11
 206Pb(n,g)207Pb            ave      6737.779     0.095     6737.789     0.095      .1   1    99  99 206Pb          average
 207Hg(B-)207Tl                      4815       150         4546.844    30.289    -1.8   U                H        81Jo.B,*
 207Tl(B-)207Pb                      1431         8         1419.018     5.375    -1.5   1    45  45 207Tl          67Da10
 207Bi(e)207Pb                       2392        10         2397.469     2.117      .5   U                h        Averag,*
 207Po(B+)207Bi                      2907        10         2908.833     6.614      .2   1    44  41 207Po          58Ar56,*
 207Rn(B+)207At                      4617        70         4592.222    13.280     -.4   U                H        75Ze.A,*
*207Po(a)203Pb                    error made 2.5 following Rytz review ADNDT*47(1991)205                  m        AHW038*W
*207Hg(B-)207Tl                   E-=1800(150), 14%, 32%, 16%, 7% to (7/2^-,9/2) level at 2911.83 keV     h        81Jo.B**
*                                  ~ (9/2)^+ at 2985.23 and 3104.43, (7/2^-,9/2,11/2) at 3143.1 keV       h        Ens112**
*207Bi(e)207Pb                    Average pL=0.61(0.05) to 7/2^- lvl at 2339.921 keV from two references: h        Ens112**
*                                  ~ pL=0.663(0.014)                                                      h        64De16**
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*		~ pL=0.56(0.04); original error 0.08 is 2 sigma										h		82Ta18**
*207Po(B+)207Bi		E+=893(10) to 7/2^- level at 992.43 keV, and other E+										h		Ens112**
*207Rn(B+)207At		E+=3250(70) to 7/2^- level at 344.55 keV										h		Ens112**
208Pt-u		-537#	429#				2					g	1.0	S-u211
208Au-u		-6345#	322#				2					g	1.0	S-u211
208Hg-u		-14241	33	-14241.000	33.000	.0o	o					HGS3	1.0	08Ch.A
208Hg-u		-14241	33				2					HGS3	1.0	09Ch08
208Pb-133Cs1.564		124532.0	5.6	124523.703	0.093	-1.5	U					MMA8	1.0	08We02
208Pb-133Cs1.564		124524.3	5.5	124523.703	0.093	-.1	U					HMA8	1.0	14Bo26
208Pb-u		-23349.415	0.093	-23349.435	0.092	-.2	1	99	99	208Pb		JHep	1.0	21Ko.A
208Po-u		-18710	31	-18755.314	1.377	-1.5	U					MGS2	1.0	05Li24
208Po-133Cs1.564		129125.3	6.0	129117.824	1.377	-1.2	1	5	5	208Po		GMA8	1.0	17Al34
208Fr-133Cs1.564		144984	20	145012.220	12.515	1.4o	o					KMA8	1.0	12Bo.A
208Fr-133Cs1.564		145030	16	145012.220	12.515	-1.1o	o					KMA8	1.0	12Bo.A
208Fr-133Cs1.564		145012	13	145012.220	12.515	.0	1	93	93	208Fr		KMA8	1.0	14Bo26
208Pb 35Cl-206Pb 37Cl		5136	2	5136.908	0.135	.1	U					hH17	4.0	64Mc07
208Pb 35Cl-206Pb 37Cl		5136.23	1.08	5136.908	0.135	.3	U					hH36	2.5	85De40
208Pb 35Cl-206Pb 37Cl		5136.93	0.41	5136.908	0.135	-.0	U					HH42	1.5	93Si05
207Fr-208Fr.498 206Frx.502		-890	60	-946.188	55.289	-.4	U					MP24	2.5	82Au01
208Po(a)204Pb		5216.3	2.	5215.760	1.270	-.3	-1-					Dba		69Go23,Z
208Po(a)204Pb		5214.0	3.	5215.760	1.270	.6	-1-							70Ra14,Z
208Po(a)204Pb		5215.1	2.	5215.760	1.270	.3	-1-							89Ma05
208Po(a)204Pb	ave	5215.381	1.304	5215.760	1.270	.3	1	95	95	208Po				average
208At(a)204Bi		5750.6	3.	5751.110	2.163	.2	-3-					Dba		69Go23,Z
208At(a)204Bi		5751.6	3.	5751.110	2.163	-.2	-3-					Dba		81Va27,Z
208At(a)204Bi	ave	5751.110	2.163				3							average
208Rn(a)204Po		6269.3	4.	6260.745	1.665	-2.1	-1-							55Mo69,Z
208Rn(a)204Po		6260.0	3.	6260.745	1.665	.2	-1-					Dba		71Go35,Z
208Rn(a)204Po		6257.5	5.	6260.745	1.665	.6	-1-							74Ho27
208Rn(a)204Po		6258.7	2.5	6260.745	1.665	.8	-1-					Lvn		93Wa04
208Rn(a)204Po	ave	6260.737	1.668	6260.745	1.665	.0	1	100	83	208Rn				average
208Fr(a)204At		6778.3	5.	6785.408	24.590	.1	-1-					m		67Va20,Z
208Fr(a)204At		6767.7	5.	6785.408	24.590	.4	-1-					m		74Ho27,Z
208Fr(a)204At		6767.7	5.	6785.408	24.590	.4	-1-					mORa		81Ri04,Z
208Fr(a)204At		6739.8	51.0	6785.408	24.590	.6	-1-					KGSa		15De22
208Fr(a)204At		6772.4	18.4	6785.408	24.590	.2	-1-					GLza		19Zh23,W
208Fr(a)204At	ave	6767.921	23.998	6785.408	24.590	.3	1	20	16	204At				average
208Ra(a)204Rn		7273.1	5.				2							67Va22,Z
208Ac(a)204Fr		7720.8	15.	7728.630	59.614	.1	-5-					MJya		94Le05
208Ac(a)204Fr		7769.7	40.	7728.630	59.614	-.6	-5-					MJAa		96Ik01
208Ac(a)204Fr		7707.5	21.4	7728.630	59.614	.4	-5-					KLza		14Ya19
208Ac(a)204Fr	ave	7728.630	32.462				5							average
208Acm(a)204Frn		7892.1	20.	7899.043	13.876	.3	-6-					NDbb		94An01
208Acm(a)204Frn		7910.4	20.	7899.043	13.876	-.6	-6-					NJya		94Le05
208Acm(a)204Frn		7871.7	50.	7899.043	13.876	.5	-6-					MJAa		96Ik01
208Acm(a)204Frn	ave	7899.043	13.876				6							average
208Th(a)204Ra		8202.0	30.				4					HAnv		10He25,G
206Pb(t,p)208Pb		5622	30	5623.864	0.108	.1	U					hAld		67Ha.A
207Pb(n,g)208Pb		7367.95	0.15	7367.871	0.052	-.5	-1-					mMMn		81Ke11,Z
207Pb(n,g)208Pb		7367.96	0.10	7367.871	0.052	-.9	-1-					M		81Su.A,Z
207Pb(n,g)208Pb		7367.81	0.11	7367.871	0.052	.6	-1-					mILn		83Hu13,Z
207Pb(n,g)208Pb		7367.774	0.098	7367.871	0.052	1.0	-1-					M		98Be19,Z
207Pb(n,g)208Pb		7367.92	0.16	7367.871	0.052	-.3	-1-					MBdn		06Fi.A
208Pb(g,n)207Pb		-7370	3	-7367.871	0.052	.7	U					hMcM		79Ba06
208Pb(d,t)207Pb		-1114	25	-1110.641	0.052	.1	U					hPit		64Co11
207Pb(n,g)208Pb	ave	7367.869	0.052	7367.871	0.052	.0	1	100	99	207Pb				average
208Tl(B-)208Pb		4989.7	7.	4999.560	1.617	1.4	U					M		48Ma29,*
208Tl(B-)208Pb		4997.7	10.	4999.560	1.617	.2	U					M		54El24,*
208Bi(e)208Pb		2810	4	2878.427	2.013	17.1B	B					h		59Mi19,*
*208Fr(a)204At		Ea = 6637, 6633, 6651, 6648										g		19Zh23*W
*208Th(a)204Ra		Trends from Mass Surface TMS suggest 208Th 100 keV less bound										g		GAu212*G
*208Tl(B-)208Pb		E-=1792(7) 1800(10) resp, to 5^- level at 3197.711 keV										h		Ens077**
*208Bi(e)208Pb		pK=0.24(0.01) to 3^- level at 2614.522 keV, recalculated										h		Ens077**

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 209Au-u                          -2394#     429#                                    2              g    1.0 S-u211
 209Hg-u                          -9243#     161#                                    2              g    1.0 S-u20c
 209Bi-133Cs1.571                128937.6      4.7    128932.193     0.838    -1.2   U              MMA8 1.0 08We02
 209Fr-226Ra.925                 -27584       36      -27563.662    12.309      .6  -1-              MA3 1.0 92Bo28
 209Fr-226Ra.925                 -27575       30      -27563.662    12.309      .4  -1- q-q=  -11.338 m1.0 1.0  197Tl-C
 209Fr-226Ra.925                 -27495       30      -27563.662    12.309    -2.3  -1- q-q=   68.662 m1.0 1.0  201Bi-C
 209Fr-226Ra.925                 -27555       30      -27563.662    12.309     -.3  -1- q-q=    8.662 k1.0 1.0  201Bi-C
 209Fr-226Ra.925            ave  -27549.624   15.608  -27563.662    12.309     -.9   1    62  62 209Fr          average
 209Bi 35Cl-207Pb 37Cl             7444        3        7451.963     0.834      .7   U              hH17 4.0 64Mc07
 209Bi 35Cl-207Pb 37Cl             7454.13     1.51     7451.963     0.834     -.6   U              mH36 2.5 85De40
 208Fr-209Fr.498 207Fr.502          720       60         648.202    15.695     -.5   U              HP24 2.5 82Au01
 209Bi(a)205Tl                     3137.0      2.2      3137.323     0.772      .1   1    12  10 209Bi M        03De11
 209Po(a)205Pb                     4974        5        4979.231     1.361     1.0  -2-                         66Ha29,*
 209Po(a)205Pb                     4980.0      2.       4979.231     1.361     -.4  -2-              Dba        69Go23,*
 209Po(a)205Pb                     4979.3      2.       4979.231     1.361     -.0  -2-                         89Ma05,*
 209Po(a)205Pb              ave    4979.231    1.361                                 2                         average
 209At(a)205Bi                     5757.2      2.       5756.940     1.993     -.1   1    95  54 205Bi  Dba     69Go23,Z
 209Rn(a)205Po                     6157.5      3.       6155.435     1.951     -.7  -1-              Dba        71Go35,Z
 209Rn(a)205Po                     6154.2      2.5      6155.435     1.951      .5  -1-              Lvn        93Wa04
 209Rn(a)205Po              ave    6155.546    1.958    6155.435     1.951     -.1   1    99  75 205Po          average
 209Fr(a)205At                     6777.7      5.       6777.459     3.605     -.0  -2-                         67Va20,Z
 209Fr(a)205At                     6777.3      5.       6777.459     3.605      .0  -2-                         74Ho27,Z
 209Fr(a)205At              ave    6777.459    3.605                                 2                         average
 209Ra(a)205Rn                     7147.0      5.       7143.089     2.686     -.8  -2-             M          67Va22,Z
 209Ra(a)205Rn                     7141        5        7143.089     2.686      .4  -2-             MGSa       03He06,*
 209Ra(a)205Rn                     7142.0      4.       7143.089     2.686      .3  -2-             H          08Ha12
 209Ra(a)205Rn              ave    7143.089    2.686                                 2                         average
 209Ac(a)205Fr                     7733.3     15.       7729.787    55.295     -.1  -3-                         68Va04
 209Ac(a)205Fr                     7738.4     20.       7729.787    55.295     -.2  -3-             NDbb       94An01
 209Ac(a)205Fr                     7729.2     15.       7729.787    55.295      .0  -3-             NJya       94Le05
 209Ac(a)205Fr                     7728.2     40.       7729.787    55.295      .0   U *            MJAa       96Ik01
 209Ac(a)205Fr                     7725.1     10.       7729.787    55.295      .1  -3-             MGSa       00He17
 209Ac(a)205Fr                     7723.0     23.       7729.787    55.295      .1  -3-             KLza       14Ya19
 209Ac(a)205Fr              ave    7729.787   23.613                                 3                         average
 209Thm(a)205Ram                   8238.0     50.       8273.035    22.798      .7  -5-             KJAa       96Ik01,*
 209Thm(a)205Ram                   8281.8     25.       8273.035    22.798     -.3  -5-             KAnv       10He25,*
 209Thm(a)205Ram            ave    8273.035   22.798                                 5                         average
 207Pb(t,p)209Pb                   2814       12        2823.363     1.343      .8   U              hAld       68Bj03
 209Bi(p,t)207Bi                  -5864.8      2.0     -5864.873     1.977     -.0   1    98  97 207Bi  MSU     76Be.B,*
 209Bi(p,t)207Bi-208Pb()206Pb      -241        2        -241.010     1.980     -.0   Z              mMSU       76Be.B
 208Pb(d,p)209Pb                   1705       15        1712.722     1.344      .5   U              hMIT       64Sp12
 208Pb(d,p)209Pb                   1700       10        1712.722     1.344     1.3   U              m          67Mu16
 208Pb(d,p)209Pb                   1718        4        1712.722     1.344    -1.3   1    11  11 209Pb  Pit     72Ko03,*
 208Pb(d,p)209Pb                   1715       10        1712.722     1.344     -.2   U              hYal       74Ko20
 208Pb(d,p)209Pb-209Bi()210Bi      -662        4        -667.346     1.350    -1.3   Z              mPit       72Ko03
 209Bi(t,a)208Pb                  16003       25       16014.884     0.776      .5   U              hAld       68Bj01
 209Bi(g,n)208Bi                  -7432       10       -7459.756     1.857    -2.8   U              hPhi       60Ge01
 209Bi(g,n)208Bi                  -7460        2       -7459.756     1.857      .1  -2-              McM        79Ba06
 209Bi(d,t)208Bi                  -1216       30       -1202.526     1.857      .4   U              hPit       64Co11
 209Bi(d,t)208Bi                  -1201        5       -1202.526     1.857     -.3  -2-              ANL        64Er06
 209Bi(g,n)208Bi            ave   -7459.756    1.857                                 2                         average
 209Pb(B-)209Bi                     644.6      1.2       644.041     1.146     -.5   1    91  87 209Pb          72Be44
 209Rn(B+)209At                    3928       40        3943.205    11.022      .4R  R  q-q=  -15.205  m        74Vy01,*
 209Thm(IT)209Th                    370#     100#                                    6              g          S-u211
*209Po(a)205Pb              E(a)=4876.8(5,Z) 4882.8(2,Z) resp, to (20% gs + 80% 205Pbm at 2.329 keV)         Ens044**
*209Po(a)205Pb              E(a)=4882.6(2.0) 4622(5) to (gs + 80% 205Pbm at 2.329), 3/2^- at 262.8keV        Ens044**
*209Ra(a)205Rn              E(a)=7003(10) to gs, 6625(5) to 387.0 level                          M          03He06**
*209Thm(a)205Ram            the decay is from 209Th isomer, following Ea1-Ea2-Ea3-Ea4 correlations  K          FGK141**
*209Bi(p,t)207Bi            Q-Q(208Pb(p,t))=-241(2,Be), Q(Pb)=-5623.82(0.20) keV                            AHW   **
*208Pb(d,p)209Pb            Q-Q(209Bi(d,p))=-662(4),Q(Bi)=2380.01(0.14) keV                                 AHW   **
*209Rn(B+)209At             E+=2160(40) to 7/2^- level at 745.81 keV                             k          Ens156**


 210Au-u                           2877#     429#                                    2              g    1.0 S-u211
 210Hg-u                          -5690#     215#                                    2              g    1.0 S-u20c
 210Fr-226Ra.929                 -27198       24      -27194.948    14.432      .1   1    36  36 210Fr  MA3 1.0 92Bo28
 210Ra-u                             441.3     35.5      474.530     9.840      .9   U              GRI1 1.0 18Ro14
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 210Ac-u                               9260       169         9408.625     66.783       .9   1    16   16 210Ac GRI1 1.0 18Ro14
 209Fr-210Fr.498 208Fr.502             -770        50         -778.429     14.505      -.1   U                  MP24 2.5 82Au01
 210Pb(a)206Hg                         3792.4      20.                                       2                           62Ka27
 210Bi(a)206Tl                         5042.8       2.        5036.495      0.776     -3.2B  B                  nOrm     60Wa14,*
 210Bi(a)206Tl                         5037.3       1.1       5036.495      0.776      -.7   1    50   34 210Bi          76Tu.A,*
 210Po(a)206Pb                         5407.53      0.07      5407.531      0.071       .0   1   100  100 210Po          73Go39,Z
 210Po(a)206Pb                         5407.7       2.        5407.531      0.071      -.1   U                  h        89Ma05
 210At(a)206Bi                         5630.9       1.5       5631.185      0.982       .2  -3-                 nDba     69Go23,*
 210At(a)206Bi                         5631.4       1.3       5631.185      0.982      -.2  -3-                 nDba     81Va27,*
 210At(a)206Bi                  ave    5631.186     0.982                                    3                           average
 210Rn(a)206Po                         6162.1       3.        6158.988      2.163     -1.0  -3-                          55Mo69,Z
 210Rn(a)206Po                         6155.9       3.        6158.988      2.163      1.0  -3-                  Dba     71Go35,Z
 210Rn(a)206Po                  ave    6158.988     2.163                                    3                           average
 210Fr(a)206At                         6699.9       5.        6671.007      5.007     -5.8B  B                  H        67Va20,*
 210Fr(a)206At                         6672.3       5.        6671.007      5.007      -.3   1    96   54 206At HGSa     05Ku06
 210Ra(a)206Rn                         7156.6       5.        7150.841      3.270     -1.1  -2-                          67Va22,Z
 210Ra(a)206Rn                         7147         5         7150.841      3.270       .8  -2-                 MGSa     03He06,*
 210Ra(a)206Rn                         7146.4       5.        7150.841      3.270       .5  -2-                 HJya     07Le14
 210Ra(a)206Rn                  ave    7150.841     3.270                                    2                           average
 210Ac(a)206Fr                         7607.2       8.        7586.022     57.459      -.4  -1-                          68Va04
 210Ac(a)206Fr                         7607.2      10.        7586.022     57.459      -.4  -1-                 MGSa     00He17
 210Ac(a)206Fr                  ave    7607.200    35.930     7586.022     57.459      -.3   1    87   84 210Ac          average
 210Th(a)206Ra                         8052.7      17.        8068.992      5.768       .9  -4-                 NJya     95Uu01
 210Th(a)206Ra                         7962.0      50.        8068.992      5.768      2.1F  F                  hJAa     96Ik01,*
 210Th(a)206Ra                         8071.0       6.        8068.992      5.768      -.3  -4-                 HAnv     10He25
 210Th(a)206Ra                  ave    8068.992     5.768                                    4                           average
 208Pb(t,p)210Pb                        628        12          640.679      0.918      1.1   U                  hAld     68Bj03
 209Bi(n,g)210Bi                       4604.5       0.3       4604.634      0.078       .4  -1-                          71Mo03
 209Bi(n,g)210Bi                       4604.68      0.14      4604.634      0.078      -.3  -1-                 mMMn     83Ts01,Z
 209Bi(n,g)210Bi                       4604.63      0.10      4604.634      0.078       .0  -1-                 MBdn     06Fi.A
 209Bi(d,p)210Bi                       2369        10         2380.068      0.078      1.1   U                  hMIT     64Sp12
 209Bi(n,g)210Bi                ave    4604.637     0.079     4604.634      0.078      -.0   1   100   86 209Bi          average
 210Tl(B-)210Pb                        5500       100         5482.479     11.555      -.2   U                  h        64We06,*
 210Pb(B-)210Bi                          63.5       0.5         63.488      0.499      -.0   1   100   99 210Pb          67Ha03,*
 210Bi(B-)210Po                        1160.5       1.5       1161.202      0.766       .5  -1-                          62Da03
 210Bi(B-)210Po                        1161.5       1.5       1161.202      0.766      -.2  -1-                          67Hs01
 210Bi(B-)210Po                 ave    1161.000     1.061     1161.202      0.766       .2   1    52   52 210Bi          average
 210At(e)210Po                         3870        30         3980.960      7.610      3.7B  B                           63Sc15,*
*210Bi(a)206Tl                     E(a)=4685.3(2,Z), 4648.3(2,Z) to 2^- level at 265.832, 1^- at 304.896 keVk       Ens085**
*210Bi(a)206Tl                     Their 214Bi(a) may be high too                                        n        AHW958**
*210Bi(a)206Tl                     E(a)=4946(1), 4909(1) from 210Bim at 271.31 keV                       g        Nub211**
*                                   ~ to 2^- level at 265.832, 1^- level at 304.896 keV                  k        Ens085**
*                                   ~ Unfortunately no calibration data                                  n        Ens909*W
*                                   ~ Without 210Bi(a) input, output ->5034.4(1.2); therefore 60Wa14 ->C  n        AHW956*W
*210At(a)206Bi                     E(a)=5523.8, 5464.8, 5441.8(1.5,Z) to gs, 4^+ at 59.897, 5^+ at 82.818  k        Ens085**
*210At(a)206Bi                     E(a)=5524.1, 5465.3, 5442.8(1.3,Z) to gs, 4^+ at 59.897, 5^+ at 82.818  k        Ens085**
*210Fr(a)206At                     E(a)=6572.0(5,Z) 6542(5,Z) to gs and level at 31.05 keV               k        Ens085**
*210Ra(a)206Rn                     E(a)=7003(10) to gs, 6447(5) to 574.9 level                           M        03He06**
*210Th(a)206Ra                     F : Low energy; may be escape                                         h        96Ik01**
*210Tl(B-)210Pb                    E-=1870(100) to 3625(19) level, and other E-                          k        Ens148**
*210Pb(B-)210Bi                    E-=17.0(0.5) to 0^- level at 46.5390 keV                              k        Ens148**
*210At(e)210Po                     pK=0.46(0.10) to (6)^- level at 3727.34 keV                           k        Ens148**


 211Hg-u                               -419#      215#                                       2                  g    1.0 S-u20c
 211Tl-u                              -6525        45                                        2                  HGS3 1.0 08Ch.A
 211Po-u                             -13519       147       -13348.267      0.558      1.2   U                  GGR1 1.0 19An10
 211Fr-133Cs1.586                    145517        15       145508.937     12.870      -.5   1    74   74 211Fr HMA8 1.0 09Ko35
 211Fr-u                              -4410        43        -4444.254     12.870      -.8   U                  GGR1 1.0 19An10
 211Fr-226Ra.934                     -28200        25       -28177.603     12.924       .9   1    27   26 211Fr  MA3 1.0 92Bo28
 211Ra-133Cs1.586                    150846.4       8.5     150846.240      5.332      -.0   1    39   39 211Ra HMA8 1.0 09Ko35
 211Ra-u                                879        27          893.049      5.332       .5   1     4    4 211Ra GRI1 1.0 18Ro14
 211Ac-u                               7522       106         7668.827     57.706      1.4   1    30   30 211Ac GRI1 1.0 18Ro14
 211Pom-211Po                          1580       129         1570.056      5.499      -.0   U                  K    2.5 15Di03
 207Fr-211Fr.327 205Fr.673             -930       100         -613.830     18.744      1.3   U                  MP24 2.5 82Au01
 208Fr-211Fr.394 206Frx.606            -260        50         -338.852     64.145      -.6   U                  MP24 2.5 82Au01
 210Fr-211Fr.498 209Fr.502              580        50          616.843     15.759       .3   U                  mP24 2.5 82Au01
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 211Bi(a)207Tl              6749.5     0.7       6750.411    0.461    1.2  -1-                    61Ry02,Z
 211Bi(a)207Tl              6751.1     0.6       6750.411    0.461   -1.2  -1-                    71Gr17,Z
 211Bi(a)207Tl         ave  6750.444   0.462     6750.411    0.461    -.1   1   100  58 211Bi      average
 211Po(a)207Pb              7594.5     0.5                                  2                hOrm   62Wa18,Z
 211Po(a)207Pb              7594.3     3.        7594.560    0.510     .1   U                hDba   69Go23,Z
 211Po(a)207Pb              7587.2     2.        7594.560    0.510    3.7   Z                 Bka   82Bo04,G
 211Po(a)207Pb              7600.6     2.        7594.560    0.510   -3.0B  B                h      85La17,Z
 211Po(a)207Pb              7586.0    15.3       7594.560    0.510     .6   U                K      15Di03
 211Po(a)207Pb              7604.5    30.6       7594.560    0.510    -.3   U                GGSa   18Mi11
 211Pom(a)207Pb             9057.1     5.1                                  2                 Bka   82Bo04
 211Pom(a)207Pb             9049.0    15.        9057.058    5.097     .5   U                K      89Ku08,*
 211Pom(a)207Pb             9043.0    15.        9057.058    5.097     .9   U                K      15Di03,*
 211At(a)207Bi              5979.4     2.        5982.447    1.304    1.5  -2-                Dba   69Go23,Z
 211At(a)207Bi              5981.6     3.        5982.447    1.304     .3  -2-                Bka   82Bo04,*
 211At(a)207Bi              5985.9     2.        5982.447    1.304   -1.7  -2-                      85La17,Z
 211At(a)207Bi         ave  5982.447   1.304                                2                       average
 211Rn(a)207Po              5967.9     2.        5965.455    1.442   -1.2  -2-                      55Mo69,Z
 211Rn(a)207Po              5963.1     2.        5965.455    1.442    1.2  -2-                Dba   71Go35,Z
 211Rn(a)207Po         ave  5965.455   1.442                                2                       average
 211Fr(a)207At              6660.2     5.1       6662.251    3.184     .4  -2-                      67Va20,Z
 211Fr(a)207At              6663.5     4.        6662.251    3.184    -.3  -2-               HGSa   05Ku06
 211Fr(a)207At         ave  6662.251   3.184                                2                       average
 211Ra(a)207Rn              7045.3     5.        7041.696    2.933    -.7  -1-                      67Va22,Z
 211Ra(a)207Rn              7040       5         7041.696    2.933     .3  -1-               MGSa   03He06,*
 211Ra(a)207Rn              7039.7     6.        7041.696    2.933     .3  -1-               HJya   07Le14
 211Ra(a)207Rn              7033.5    15.3       7041.696    2.933     .5   U                GLza   19Zh54
 211Ra(a)207Rn         ave  7041.870   3.083     7041.696    2.933    -.1   1    91  57 211Ra      average
 211Ac(a)207Fr              7624.8     8.        7567.597   52.476   -1.1  -1-                      68Va04
 211Ac(a)207Fr              7616.7    10.        7567.597   52.476   -1.0  -1-               MGSa   00He17
 211Ac(a)207Fr         ave  7620.778  35.930     7567.597   52.476    -.9   1    73  70 211Ac      average
 211Th(a)207Ra              7942.9    14.        7937.492   63.330    -.1  -5-               NJya   95Uu01
 211Th(a)207Ra              7930.6    30.6       7937.492   63.330     .1  -5-               KLza   15Ya13
 211Th(a)207Ra         ave  7937.492  38.868                                5                       average
 211Pa(a)207Ac              8481.0    40.8                                  3                GJya   20Au04
 211Pb(B-)211Bi             1378       8         1368.004    5.428   -1.2   1    46  42 211Bi      65Co06
*211Po(a)207Pb            PrvCom Rytz 931 to AHW: value of 69Go23 used as calibration              GAu935*G
*211Pom(a)207Pb           E(a)=7275(15) to 13/2^+ level at 1633.356 keV                    K       Ens112**
*211Pom(a)207Pb           E(a)=7269(15) to 13/2^+ level at 1633.356 keV                    K       Ens112**
*211At(a)207Bi            Recalibrated as in ref.                                                  91Ry01**
*211Ra(a)207Rn            Average of E(a)=6907(5) and several branches to known levels     M       03He06**


 212Hg-u                    3242#    322#                                   2                g    1.0 S-u20c
 212Bin-u                  -7127      32                                    2                HGS3 1.0 08Ch.A
 212At-u                   -9234      92        -9264.076    2.260    -.3   U                GGR1 1.0 19An10
 212Rn-u                   -9242      32        -9297.404    3.133   -1.7   U                GGR1 1.0 19An10
 212Fr-133Cs1.594         146938      10        146935.236    9.419    -.3   1    89  89 212Fr HMA8 1.0 09Ko35
 212Fr-u                   -3790      30        -3774.340    9.419     .5   U                GGR1 1.0 19An10
 212Fr-226Ra.938          -27631      28       -27609.331    9.541     .8   1    12  11 212Fr  MA3 1.0 92Bo28
 212Ra-u                    -212.7    26.6      -214.562   10.962    -.1   1    17  17 212Ra GRI1 1.0 18Ro14
 212Ac-u                    7840.7    25.4      7836.442   23.493    -.2   1    86  86 212Ac GRI1 1.0 18Ro14
 209Fr-212Fr.563 205Fr.437 -1270      70       -1229.168   12.960     .2   U                MP24 2.5 82Au01
 206Frx-212Fr.139 205Fr.861  340     130         469.590  104.021     .4   U                mP24 2.5 82Au01
 207Fr-212Fr.163 206Frx.837 -1150     70       -1316.053   88.644    -.9   U                mP24 2.5 82Au01
 212Bi(a)208Tl              6207.12    0.04      6207.262    0.028    3.5B  B                hBIP   61Ry02,Z
 212Bi(a)208Tl              6207.09    0.08      6207.262    0.028    2.1o  o                mBIP   69Gr28,*
 212Bi(a)208Tl              6207.262   0.028                                2                MBIP   72Go.A,*
 212Bim(a)208Tl             6458.1    30.                                   3                       78Ba44
 212Po(a)208Pb              8953.6     0.8       8954.199    0.114     .7   U                h      61Ry02,Z
 212Po(a)208Pb              8953.85    0.31      8954.199    0.114    1.1  -1-                      71De52,Z
 212Po(a)208Pb              8953.3     0.6       8954.199    0.114    1.5   U                h      71Gr17,Z
 212Po(a)208Pb              8954.25    0.12      8954.199    0.114    -.4  -1-                      74Hu15,Z
 212Po(a)208Pb         ave  8954.199   0.114     8954.199    0.114    -.0   1   100 100 212Po      average
 212Pom(a)208Pb            11874.6    20.       11877.294    4.448     .1  -2-                      62Pe15
 212Pom(a)208Pb            11859.3    15.       11877.294    4.448    1.2o  o                h      75Fr.B
 212Pom(a)208Pb            11884.8    10.2      11877.294    4.448    -.7  -2-               h      76Fr.A
 212Pom(a)208Pb            11875.6     5.1      11877.294    4.448     .3  -2-               HGSa   12Ho12
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212Pom(a)208Pb	ave	11877.294	4.448				2						average
212At(a)208Bi		7829.0	9.	7817.086	0.612	-1.3	U				H		70Re02,*
212At(a)208Bi		7817.0	0.6				3				H		76Fr.A,*
212At(a)208Bi		7828.0	10.	7817.086	0.612	-1.1	U				H		96Li37,*
212Atm(a)208Bi		8049.3	10.	8040.003	0.612	-.9	U				H		68Va18
212Atm(a)208Bi		8054.3	9.	8040.003	0.612	-1.6	U				H		70Re02,*
212Atm(a)208Bi		8040.00	0.61				3				H		76Fr.A,*
212Atm(a)208Bi		8051.2	10.	8040.003	0.612	-1.1	U				H		96Li37,*
212Rn(a)208Po		6392.3	5.	6385.072	2.622	-1.4	-2-						55Mo69,Z
212Rn(a)208Po		6382.5	3.	6385.072	2.622	.9	-2-				Dba		71Go35,Z
212Rn(a)208Po	ave	6385.072	2.622				2						average
212Fr(a)208At		6531.3	3.	6528.987	1.611	-.7	-2-						66Va.A,Z
212Fr(a)208At		6528.0	3.	6528.987	1.611	.3	-2-				Dba		81Va27
212Fr(a)208At		6527.5	3.	6528.987	1.611	.5	-2-				Bka		82Bo04,*
212Fr(a)208At		6529.5	4.	6528.987	1.611	-.1	-2-				HGSa		05Ku06
212Fr(a)208At	ave	6528.987	1.611				2						average
212Ra(a)208Rn		7030.0	5.	7031.716	1.669	.3	-1-						67Va22,Z
212Ra(a)208Rn		7034.0	5.	7031.716	1.669	-.4	-1-						74Ho27,Z
212Ra(a)208Rn		7032.2	2.	7031.716	1.669	-.3	-1-				Bka		82Bo04,Z
212Ra(a)208Rn		7028	5	7031.716	1.669	.7	-1-				MGSa		03He06,*
212Ra(a)208Rn		7040	24	7031.716	1.669	-.3	U				KLza		14Ya19
212Ra(a)208Rn	ave	7031.708	1.672	7031.716	1.669	.0	1	100	83	212Ra			average
212Ac(a)208Fr		7521.2	8.	7539.612	23.959	.4	-1-						68Va04
212Ac(a)208Fr		7515.1	10.	7539.612	23.959	.5	-1-				MGSa		00He17
212Ac(a)208Fr		7514.0	18.	7539.612	23.959	.5	-1-				KLza		14Ya19
212Ac(a)208Fr		7518.0	17.	7539.612	23.959	.4	-1-				GLza		19Zh23,W
212Ac(a)208Fr	ave	7517.137	25.930	7539.612	23.959	.4	1	18	14	212Ac			average
212Th(a)208Ra		7952.3	10.	7958.037	4.558	.6	-3-						80Ve01
212Th(a)208Ra		7959.5	5.	7958.037	4.558	-.3	-3-				HAnv		10He25
212Th(a)208Ra		7980.8	20.4	7958.037	4.558	-1.1	U				KGSa		15De22
212Th(a)208Ra	ave	7958.037	4.558				3						average
212Pa(a)208Ac		8429.4	30.	8410.753	59.300	-.3	-6-				MJAa		97Mi03
212Pa(a)208Ac		8406.9	20.	8410.753	59.300	.1	-6-				GLza		14Ya19,*
212Pa(a)208Ac		8398.7	20.	8410.753	59.300	.2	-6-				GJva		20Au04
212Pa(a)208Ac	ave	8410.753	31.883				6						average
210Pb(t,p)212Pb		515	25	478.681	1.871	-1.5	U				h		71El05
212Pb(B-)212Bi		569.3	2.5	570.582	1.736	.5	-1-						48Ma30,*
212Pb(B-)212Bi		576.6	5.	570.582	1.736	-1.2	-1-						58Se71,*
212Pb(B-)212Bi	ave	570.760	2.236	570.582	1.736	-.1	1	60	31	212Pb			average
212Bi(B-)212Po		2256	3	2252.623	1.615	-1.1	-1-						48Fe09
212Bi(B-)212Po		2250.5	2.5	2252.623	1.615	.8	-1-						48Ma30
212Bi(B-)212Po	ave	2252.754	1.921	2252.623	1.615	-.1	1	71	71	212Bi			average

*212Bi(a)208Tl	E(a)=6089.86(0.08,Z), 6050.57(0.07,Z) to gs, 4^+ level at 39.858 keV	k	Ens077**
*212Bi(a)208Tl	E(a)=6089.883(0.037,Z), 6050.837(0.028,Z) to gs, 4^+ level at 39.858 keV	m	72Go.A**
*212At(a)208Bi	Original E(a)=7679(8); calibration 211Po 7448(1), now 7450.3(0.5) keV	h	AHW929**
*212At(a)208Bi	Original E(a)=7669.0(0.2); calibration 211Po 7450(2), now 7450.3(0.5)	H	05Ma.A**
*212At(a)208Bi	E(a)=7679(10) to gs, 7618(10) to 63.3 level	H	96Li37**
*	~ error estimated by the evaluators	H	GAu058**
*212Atm(a)208Bi	Original E(a)=7900(8); calibration 211Po 7448(1), now 7450.3(0.5) keV	H	GAu058**
*212Atm(a)208Bi	Original E(a)=7887.7(0.2); calibration 211Po 7450(2), now 7450.3(0.5)	H	GAu068**
*212Atm(a)208Bi	E(a)=7897(10) to gs, 7837(10) to 63.3 level	H	96Li37**
*	~ error estimated by the evaluators	H	GAu058**
*212Fr(a)208At	E(a)=6341(3) (recalibrated as in ref.) to 63.70 level		91Ry01**
*212Ra(a)208Rn	E(a)=6898(5) to gs, 6269(5) to 635.1 level	M	03He06**
*212Ac(a)208Fr	Ea = 7386, 7372, 7364, 7369, 7384, 7368, 7386	g	19Zh23*W
*212Pa(a)208Ac	E(a)=8250(20) keV in ref. by combining with 97Mi03	G	14Ya19**
*212Pb(B-)212Bi	E-=330.7(2.5) 338(5) resp to 0^- level at 238.632 keV	k	Ens053**

213Hg-u	8803#	322#				2				g 1.0	S-u20c
213Tl-u	1893	65	1915.000	29.000	.3o	o				HGS3 1.0	10Ch19
213Tl-u	1915	29				2				HGS3 1.0	12Ch19
213Rn-u	-6159	63	-6116.280	3.407	.7	U				GGR1 1.0	19An10
213Fr-133Cs1.602	147649.1	7.4	147649.812	5.031	.1	1	46	46	213Fr	HMA8 1.0	09Ko35
213Fr-u	-3823.9	13.2	-3816.151	5.031	.6	1	15	15	213Fr	GGR1 1.0	19An10
213Ra-133Cs1.602	151833	12	151836.865	10.540	.3	1	77	77	213Ra	KSH1 1.0	13Dr04
213Ac-u	6572.2	19.4	6593.888	12.512	1.1	1	42	42	213Ac	GRI1 1.0	18Ro14

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 207Fr-213Fr.324 204Fr.676        -2540      330      -2107.856    24.221     .5   U               MP24 2.5 82Au01,*
 208Fr-213Fr.279 206Frx.721        -700       60       -846.275    75.750   -1.0   U               MP24 2.5 82Au01
 209Fr-213Fr.327 207Fr.673         -670       60       -701.140    16.554    -.2   U               mP24 2.5 82Au01
 209Fr-213Fr.196 208Fr.804         -980       60       -941.614    14.858     .3   U               HP24 2.5 82Au01
 211Fr-213Fr.330 210Fr.670         -830       60       -727.057    15.053     .7   U               nP24 2.5 82Au01
 212Fr-213Fr.498 211Fr.502          270       50        332.653    10.889     .5   U               nP24 2.5 82Au01
 213Bi(a)209Tl                     5982.6      6.       5988.206     3.392     .9  -2-                       64Gr11
 213Bi(a)209Tl                     5990.7      4.       5988.206     3.392    -.6  -2-              KGea     13Ma13
 213Bi(a)209Tl              ave    5988.206    3.392                                2                        average
 213Po(a)209Pb                     8537.1      5.       8536.299     2.557    -.2  -1-                       64Va20,Z
 213Po(a)209Pb                     8536.5      3.       8536.299     2.557    -.1  -1-               Bka     82Bo04,Z
 213Po(a)209Pb                     8530.5     10.2      8536.299     2.557     .6   U               GGSt     18Sa45
 213Po(a)209Pb              ave    8536.699    2.622    8536.299     2.557    -.2   1    95  94 213Po        average
 213At(a)209Bi                     9254.2     12.       9254.151     4.704    -.0  -2-                       70Bo13
 213At(a)209Bi                     9254.2      5.       9254.151     4.704    -.0  -2-               Lvn     87De.A
 213At(a)209Bi              ave    9254.151    4.704                                2                        average
 213Rn(a)209Po                     8245.1      8.       8245.150     2.863    -.0  -3-                       67Va20
 213Rn(a)209Po                     8240.0     10.       8245.150     2.863     .5   U               K        70Va13
 213Rn(a)209Po                     8242       10        8245.150     2.863     .3   U               KGSa     00He17,*
 213Rn(a)209Po                     8245.2      3.1      8245.150     2.863    -.0  -3-              KJya     01Ku07
 213Rn(a)209Po                     8218.6     44.       8245.150     2.863     .6   U               H        05Li17
 213Rn(a)209Po                     8204.4     30.6      8245.150     2.863    1.3   U               GGSa     18Mi11
 213Rn(a)209Po                     8245.0     10.       8245.150     2.863     .0   U               GGSa     19Mi08,*
 213Rn(a)209Po              ave    8245.150    2.863                                3                        average
 213Fr(a)209At                     6904.0      5.       6904.683     1.308     .1   U               G        67Va20,Z
 213Fr(a)209At                     6908.0      5.       6904.683     1.308    -.7   U               G        74Ho27,Z
 213Fr(a)209At                     6904.6      2.       6904.683     1.308     .0  -1-               Bka     82Bo04,Z
 213Fr(a)209At                     6904.9      1.7      6904.683     1.308    -.1  -1-              HGSa     05Ku06
 213Fr(a)209At                     6880       20        6904.683     1.308    1.2   U               KGSa     15De22
 213Fr(a)209At                     6869.2     20.4      6904.683     1.308    1.7   U               GGSa     19Mi08
 213Fr(a)209At              ave    6904.790    1.320    6904.683     1.308    -.1   1    98  59 209At        average
 213Ra(a)209Rn                     6860.3      5.       6861.693     2.277     .3  -1-              n        67Va22,*
 213Ra(a)209Rn                     6862.4      5.       6861.693     2.277    -.1  -1-              N        76Ra37,*
 213Ra(a)209Rn                     6862.2      3.       6861.693     2.277    -.2  -1-              HGSa     06Ku26,*
 213Ra(a)209Rn              ave    6861.844    2.287    6861.693     2.277    -.1   1    99  76 209Rn        average
 213Ram(a)209Rn                    8630.3      5.1      8629.788     3.569    -.1  -2-              N        76Ra37
 213Ram(a)209Rn                    8629.3      5.       8629.788     3.569     .1  -2-              HGSa     06Ku26,*
 213Ram(a)209Rn             ave    8629.788    3.569                                2                        average
 213Ac(a)209Fr                     7505.2      8.       7498.193     4.249    -.9  -1-              K        68Va04,*
 213Ac(a)209Fr                     7497.0     10.       7498.193     4.249     .1o  o               kGSa     00He17
 213Ac(a)209Fr                     7497.0      5.       7498.193     4.249     .2  -1-              KGSa     02He.A
 213Ac(a)209Fr              ave    7499.348    4.321    7498.193     4.249    -.3   1    97  58 213Ac        average
 213Th(a)209Ra                     7837.4     10.       7836.951     7.207    -.1  -3-              K        68Va18,*
 213Th(a)209Ra                     7836.5     10.       7836.951     7.207     .0  -3-              K        80Ve01
 213Th(a)209Ra              ave    7836.951    7.207                                3                        average
 213Pa(a)209Ac                     8393.9     15.       8384.392    12.230    -.6  -4-              MGSa     00He17
 213Pa(a)209Ac                     8367.4     20.4      8384.392    12.230     .8  -4-              GJva     20Au04
 213Pa(a)209Ac              ave    8384.392   12.230                                4                        average
 213Bi(B-)213Po                    1430       10        1424.179     5.402    -.6   1    29  23 213Bi        68Va17,*
 213Thp(IT)213Th                    260#      50#                                   4                 h        S-u12b
*207Fr-213Fr.324 204Fr.         D_M=-2470(330) keV  for 204Fr mixture gs+m+n at 50(4), 326(4) keV       k        Nub211**
*213Rn(a)209Po                  E(a)=8088(10), 7550(15) to gs, 540.3 level                              M        00He17**
*213Rn(a)209Po                  E(a)=7980(10) 8090(10)                                                  g        19Mi08**
*213Ra(a)209Rn                  E(a)=6730.7, 6623.7, 6520.7(3,Z) to gs, 1/2^- at 110.25, 3/2^- at 214.93 k        Ens156**
*213Ra(a)209Rn                  E(a)=6731.9, 6624.9, 6523.9(5,Z) to gs, 1/2^- at 110.25, 3/2^- at 214.93 k        Ens156**
*213Ra(a)209Rn                  E(a)=6733(3), 6625(3) to gs and 1/2^- level at 110.25 keV               k        Ens156**
*213Ram(a)209Rn                 E(a)=8467 (5) 8358(10) to gs and 1/2^- level at 110.25 keV              k        Ens156**
*213Ac(a)209Fr                  Original Q increased by 2 keV, as in ref.                               h        91Ry01**
*213Th(a)209Ra                  Original Q increased by 2 keV, as in ref.            {->was 7841.5 10.  k        91Ry01*W
*213Th(a)209Ra                  Original Q decreased by 0.5 keV, as in ref.                             K        91Ry01**
*213Bi(B-)213Po                 E-=1420(10) 1018(15) to gs and 7/2^+ level at 440.45 keV                h        Ens074**


 214Hg-u                          12636#     429#                                   2                 g    1.0 S-u20c
 214Tl-u                           6940#     210#                                   2                 h    1.0 S-u127
 214Ra-133Cs1.609                152235       22      152227.152     5.633    -.4   U               HMA8 1.0 08We02
 214Ra-u                             63       38          99.356     5.633    1.0   U               GRI1 1.0 18Ro14
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214Ac-u		6866.8	30.9	6907.147	14.544	1.3	1	22	22	214Ac	GRI1	1.0	18Ro14
214Bi(a)210Tl		5621.3	3.0				2				M		91Ry01,*
214Po(a)210Pb		7833.54	0.06	7833.541	0.061	-.0	1	100	99	214Po			71Gr17,Z
214At(a)210Bi		8987.2	4.	8987.837	3.741	.1	1	84	84	214At	Bka		82Bo04,Z
214Atm(a)210Bi		9046.4	8.				2						82Ew01
214Atn(a)210Bi		9220.8	5.	9219.889	4.367	-.2	1	76	76	214Atn			82Ew01,*
214Rn(a)210Po		9212.6	20.	9208.480	9.115	-.2	-2-						70To07
214Rn(a)210Po		9207.5	10.	9208.480	9.115	.1	-2-						70Va13
214Rn(a)210Po		9334.8	51.	9208.480	9.115	-2.5	U				GGSa		18Mi11
214Rn(a)210Po	ave	9208.480	9.115				2						average
214Fr(a)210At		8585.5	8.	8588.856	3.654	.4	-4-				n		68Va18,*
214Fr(a)210At		8590.9	5.	8588.856	3.654	-.4	-4-				n		70To18,*
214Fr(a)210At		8583.8	10.	8588.856	3.654	.5	-4-				Dbb		89An.A
214Fr(a)210At		8590.8	20.	8588.856	3.654	-.1	U				hGSa		90Ni05
214Fr(a)210At		8578.7	48.	8588.856	3.654	.2	U				H		05Li17
214Fr(a)210At		8590.9	10.2	8588.856	3.654	-.2	-4-				GGSa		19Mi08
214Fr(a)210At	ave	8588.856	3.654				4						average
214Frm(a)210At		8711.7	8.	8710.211	3.269	-.2	-4-						68Va04,Z
214Frm(a)210At		8711.7	5.	8710.211	3.269	-.3	-4-				n		70To18,*
214Frm(a)210At		8708.1	5.	8710.211	3.269	.4	-4-				HGSa		05Ku06
214Frm(a)210At	ave	8710.211	3.269				4						average
214Ra(a)210Rn		7271.7	5.	7272.589	2.606	.2	-4-						67Va22,Z
214Ra(a)210Rn		7275.6	5.	7272.589	2.606	-.6	-4-						74Ho27,Z
214Ra(a)210Rn		7273.2	10.	7272.589	2.606	-.1	-4-				MGSa		00He17,*
214Ra(a)210Rn		7271.2	4.	7272.589	2.606	.3	-4-				HGSa		06Ku26,*
214Ra(a)210Rn	ave	7272.589	2.606				4						average
214Ra(a)210Rnm		5563.9	30.				5				HGSa		06Ku26,*
214Ac(a)210Fr		7351.7	5.	7351.859	2.498	.0	-1-				M		68Va04,Z
214Ac(a)210Fr		7347.6	10.	7351.859	2.498	.4	-1-				MDbb		89An13
214Ac(a)210Fr		7347.6	10.	7351.859	2.498	.4o	o				MGSa		00He17,*
214Ac(a)210Fr		7349.6	5.	7351.859	2.498	.4o	o				hGSa		02He.A
214Ac(a)210Fr		7352.7	3.	7351.859	2.498	-.3	-1-				HGSa		04Ku24,*
214Ac(a)210Fr		7360.6	17.3	7351.859	2.498	-.5	U				GLza		20Ma27
214Ac(a)210Fr	ave	7352.144	2.506	7351.859	2.498	-.1	1	99	78	214Ac			average
214Th(a)210Ra		7828.6	10.	7827.177	5.399	-.1	-3-						68Va18
214Th(a)210Ra		7823.5	10.	7827.177	5.399	.4	-3-						80Ve01
214Th(a)210Ra		7828.6	8.	7827.177	5.399	-.2	-3-				HJya		07Le14
214Th(a)210Ra	ave	7827.177	5.399				3						average
214Pa(a)210Ac		8270.9	15.				2				MGSa		00He17
214Pb(B-)214Bi		1024	20	1020.083	11.225	-.2	1	32	31	214Bi			52Be78,*
214Bi(B-)214Po		3260	30	3270.237	11.159	.3	-1-						56Da06
214Bi(B-)214Po		3275	15	3270.237	11.159	-.3	-1-						60Lu07
214Bi(B-)214Po	ave	3272.000	13.416	3270.237	11.159	-.1	1	69	69	214Bi			average
*214Bi(a)210Tl		E(a)=5516(3) recommended in place of the following E(a):									m		91Ry01**
*		~ E(a)=5510.5(1.0) keV									m		34Le01**
*		~ E(a)=5515.8(3.0) keV									m		60Wa14**
*214Bi(a)210Tl		The final energies used earlier were derived from E(a)'s									m		AHW961*W
*214Atn(a)210Bi		E(a)=8782(5) to 9^- level at 271.31 keV									k		Ens148**
*214Fr(a)210At		E(a)=8425.5, 8352.5(8,Z) to gs, (4)^+ level at 72.65 keV									k		Ens148**
*214Fr(a)210At		E(a)=8428.3, 8360.3(5,Z) to gs, (4)^+ level at 72.65 keV									k		Ens148**
*214Frm(a)210At		E(a)=8546.8, 8477.8(5,Z) to gs, (4)^+ level at 72.65 keV									k		Ens148**
*214Ra(a)210Rn		E(a)=7137(10), 6505(15) to gs, 641.9 level									M		00He17**
*214Ra(a)210Rn		Also E(a)=8950(30) keV Q(a)=9120.9 keV from 214Ran at 1865.2 keV									g		Nub211**
*214Ra(a)210Rnm		E(a)=7290(30) Q(a)=7429.1 from 214Ran at 1865.2 keV									g		Nub211**
*214Ac(a)210Fr		E(a)=7210(10), 7080(15) to gs, 138.6 level									M		00He17**
*214Ac(a)210Fr		Also E(a)=7081(4) keV to 139.0(1) level									H		04Ku24**
*214Pb(B-)214Bi		E-=670(20) to (0^-,1^-) level at 351.9324 keV, and another branch									h		Ens092**

215Hg-u		18368#	429#				2				g	1.0	S-u212
215Tl-u		10768#	322#				2				g	1.0	S-u185
215Bi-133Cs1.617		154654	16	154634.971	5.997	-1.2	1	14	14	215Bi	MMA8	1.0	08We02
215Po(a)211Pb		7526.45	0.8	7526.345	0.813	-.1	1	99	96	211Pb			71Gr17,Z
215At(a)211Bi		8178.5	4.	8177.617	3.784	-.2	-2-				Bka		82Bo04,Z
215At(a)211Bi		8172.3	10.2	8177.617	3.784	.5	-2-				GGSt		18Sa45
215At(a)211Bi	ave	8177.617	3.784				2						average
215Rn(a)211Po		8834.7	20.	8838.587	5.960	.2	-3-				ORa		69Ha32

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  215Rn(a)211Po                 8839.8      8.       8838.587     5.960     -.1  -3-                     70Va13
  215Rn(a)211Po                 8865.3     30.6      8838.587     5.960     -.9  -3-             GGSa    18Mi11
  215Rn(a)211Po                 8834.7     10.2      8838.587     5.960      .4  -3-             GGSt    18Sa45
  215Rn(a)211Po            ave  8838.587    5.960                                3                      average
  215Fr(a)211At                 9543.0     15.       9540.413     6.518     -.2  -3-                     70Bo13
  215Fr(a)211At                 9532.7     10.       9540.413     6.518      .8  -3-                     74No02
  215Fr(a)211At                 9546.9     10.       9540.413     6.518     -.6  -3-             h       84De16
  215Fr(a)211At                 9364.4     50.9      9540.413     6.518     3.5B  B              GGSa    19Mi08,*
  215Fr(a)211At            ave  9540.413    6.518                                3                      average
  215Ra(a)211Rn                 8862.7      5.       8862.409     2.331     -.1  -3-                     68Va18,Z
  215Ra(a)211Rn                 8865.5      5.       8862.409     2.331     -.6  -3-                     70To18,Z
  215Ra(a)211Rn                 8865.3     10.       8862.409     2.331     -.3   U              GGSa    00He17
  215Ra(a)211Rn                 8865.3     46.       8862.409     2.331     -.1   U              H       05Li17
  215Ra(a)211Rn                 8861.1      3.1      8862.409     2.331      .4  -3-             GLza    20Su02
  215Ra(a)211Rn            ave  8862.409    2.331                                3                      average
  215Ac(a)211Fr                 7748.4      5.       7745.949     3.183     -.5  -2-             M       68Va04,Z
  215Ac(a)211Fr                 7746       10        7745.949     3.183     -.0o  o              MGSa    00He17,*
  215Ac(a)211Fr                 7740.3      5.       7745.949     3.183     1.1o  o              hGSa    02He.A
  215Ac(a)211Fr                 7744.4      4.       7745.949     3.183      .4  -2-             HGSa    04Ku24
  215Ac(a)211Fr            ave  7745.949    3.183                                2                      average
  215Th(a)211Ra                 7664.9      8.       7664.648     3.932     -.0  -2-                     68Va18
  215Th(a)211Ra                 7667.0     10.       7664.648     3.932     -.2o  o              HGSa    89He03
  215Th(a)211Ra                 7664       15        7664.648     3.932      .0o  o              HGSa    00He17,*
  215Th(a)211Ra                 7665        5        7664.648     3.932     -.1  -2-             HGSa    05Ku31,*
  215Th(a)211Ra                 7662.8     10.       7664.648     3.932      .2  -2-             HJya    07Le14,*
  215Th(a)211Ra                 7652.2     15.2      7664.648     3.932      .8   U              GLza    19Zh54
  215Th(a)211Ra            ave  7664.648    3.932                                2                      average
  215Pa(a)211Ac                 8238.6     15.       8236.136    62.519     -.0  -2-             N       79Sc09,G
  215Pa(a)211Ac                 8244.7     15.       8236.136    62.519     -.2o  o              KGSa    00He17
  215Pa(a)211Ac                 8233.5     20.4      8236.136    62.519      .0  -2-             KGSa    15De22
  215Pa(a)211Ac            ave  8236.136   37.532                                2                      average
  215U(a)211Th                  8588.0     30.6                                  6                 KLza    15Ya13
 *215Fr(a)211At            E(a)=8060(50) 9190(50)                                                g       19Mi08**
 *215Ac(a)211Fr            E(a)=7602(10) 7026(15) 6960(15) to gs, 11/2^- at 583.28, 13/2^- at 652.62k     Ens136**
 *215Th(a)211Ra            E(a)=7520(15), 7387(15), 7336(15) to gs, 133.6, 192.4 lvls            M       00He17**
 *215Th(a)211Ra            E(a)=7523(5), 7392(4), 7335(5), 7236(7) to gs, 133.9, 194.5, 295.1 lvls  H    05Ku31**
 *215Th(a)211Ra            Also E(a)=7399(20) keV to 133.9 level                                 H       07Le14**
 *215Pa(a)211Ac            Q(a)=8167.2(15) in 1993 table was a typo                              m       GAu954*G


  216Hg-u                      22459#     429#                                   2                 g    1.0 S-u212
  216Tl-u                      15964#     322#                                   2                 g    1.0 S-u20c
  216Pb-u                       8062#     215#                                   2                 g    1.0 S-u20c
  216Bi-133Cs1.624            159852       12                                    2                 MMA8 1.0 08We02
  216Bi(a)212Tl                 5000#     200#                                   3                 h        S-u123
  216Po(a)212Pb                 6906.44     0.5      6906.431     0.504     -.0   1     98  69 212Pb         71Gr17,Z
  216At(a)212Bi                 7949.7      3.                                   2                  Bka     82Bo04,Z
  216Atm(a)212Bi                8110.5     10.                                   2                 H        71Br13
  216Rn(a)212Po                 8199.2     10.       8197.805     5.652     -.1  -2-                        61Ru06
  216Rn(a)212Po                 8201.2     10.       8197.805     5.652     -.3  -2-                        70Va13
  216Rn(a)212Po                 8192.0     10.2      8197.805     5.652      .6  -2-             H          71Br13
  216Rn(a)212Po                 8202.2     20.4      8197.805     5.652     -.2  -2-             GGSt       18Sa45
  216Rn(a)212Po            ave  8197.805    5.652                                2                         average
  216Fr(a)212At                 9175.3     12.       9174.255     3.426     -.1  -4-                        70Bo13
  216Fr(a)212At                 9174.1      5.       9174.255     3.426      .0  -4-             H          96Li37,*
  216Fr(a)212At                 9174.3      5.       9174.255     3.426      .0  -4-             HGSa       07Ku30
  216Fr(a)212At            ave  9174.255    3.426                                4                         average
  216Frm(a)212Atm               9170.2      5.                                   4                 HGSa       07Ku30
  216Ra(a)212Rn                 9525.8      8.       9525.770     7.375     -.0  -3-                        73No09
  216Ra(a)212Rn                 9525.8     17.3      9525.770     7.375     -.0  -3-             GLza       17Su18
  216Ra(a)212Rn            ave  9525.770    7.375                                3                         average
  216Ac(a)212Fr                 9243.3      8.       9240.819     2.862     -.3  -1-                        70To18,Z
  216Ac(a)212Fr                 9223.1     10.       9240.819     2.862     1.8   U              GGSa       00He17
  216Ac(a)212Fr                 9241.4     50.9      9240.819     2.862     -.0   U              H          05Li17
  216Ac(a)212Fr                 9240.5      3.0      9240.819     2.862      .1  -1-             GLza       17Hu08
  216Ac(a)212Fr                 9240.5      6.1      9240.819     2.862      .1o  o              GLza       18Hu13
  216Ac(a)212Fr            ave  9240.819    2.862    9240.819     2.862      .0   1    100 100 216Ac        average
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216Acm(a)212Fr		9280.0	5.	9279.037	4.146	-.2	-2-					70To18,Z
216Acm(a)212Fr		9284	10	9279.037	4.146	-.5o	o			MGSa		00He17,*
216Acm(a)212Fr		9278.2	5.	9279.037	4.146	.2o	o			hGSa		02He.A
216Acm(a)212Fr		9277.2	7.	9279.037	4.146	.3	-2-			HGSa		04Ku24,*
216Acm(a)212Fr	ave	9279.037	4.146				2					average
216Th(a)212Ra		8070.7	8.	8072.384	4.262	.2	-2-					68Va18
216Th(a)212Ra		8071	10	8072.384	4.262	.1o	o			HGSa		00He17,*
216Th(a)212Ra		8073	5	8072.384	4.262	-.1	-2-			HGSa		05Ku31,*
216Th(a)212Ra		8069.7	44.	8072.384	4.262	.1	U			H		05Li17
216Th(a)212Ra		8072.6	5.	8072.384	4.262	-.0	Z			hJya		07Le14,W
216Th(a)212Ra		8070.7	23.	8072.384	4.262	.1	U			KLza		14Ya19
216Th(a)212Ra		8068.6	15.3	8072.384	4.262	.2	U			GLza		19Zh54
216Th(a)212Ra	ave	8072.384	4.262				2					average
216Thm(a)212Ra		10099.4	20.	10113.656	6.906	.7	-2-					83Hi08
216Thm(a)212Ra		10107.4	40.	10113.656	6.906	.2	U			HDbb		93An07
216Thm(a)212Ra		10120.8	15.	10113.656	6.906	-.5	-2-			NGSa		00He17
216Thm(a)212Ra		10117.5	10.	10113.656	6.906	-.4	-2-			H		05Ku31,*
216Thm(a)212Ra		10117.5	10.	10113.656	6.906	-.4	Z			hJya		07Le14,W
216Thm(a)212Ra		10105.5	15.3	10113.656	6.906	.5	-2-			GLza		19Zh54
216Thm(a)212Ra	ave	10113.656	6.906				2					average
216Pa(a)212Ac		8013.7	20.	8099.283	11.339	4.3B	B			h		79Sc09
216Pa(a)212Ac		8110.5	50.	8099.283	11.339	-.2	U			MJAa		98Ik01
216Pa(a)212Ac		8097	15	8099.283	11.339	.2	-2-			MGSa		00He17,*
216Pa(a)212Ac		8102.3	17.3	8099.283	11.339	-.2	-2-			GLza		19Zh23,W
216Pa(a)212Ac	ave	8099.283	11.339				2					average
216U(a)212Th		8542.5	30.6	8530.627	26.211	-.4	-4-			KLza		15Ma37
216U(a)212Th		8497.6	50.9	8530.627	26.211	.6	-4-			KGSa		15De22
216U(a)212Th	ave	8530.627	26.211				4					average
216Uxm(a)212Th		10782.0	30.6				4			KLza		15Ma37
*216Fr(a)212At		E(a)=9004(5); and E(a)=8933(8) from 133.3 level to 205.6 keV								H		96Li37**
*216Acm(a)212Fr		E(a)=9110(10), 9026(15), 8586(15) to gs, 82.4, 542.2 levels								M		00He17**
*216Acm(a)212Fr		Also E(a)=9029(7) keV to 82.6(1) level								H		04Ku24**
*216Th(a)212Ra		E(a)=7923(10), 7302(15) to gs, 618.3 level								M		00He17**
*216Th(a)212Ra		E(a)=7923(5), 7304(4) to gs, 629.3(1) level								H		05Ku31**
*216Th(a)212Ra		not from this work : taken from 05Ku31								h		WgM115*W
*216Thm(a)212Ra		E(a)=9930(10), 9312(12) to gs, 629.3(1) level								H		05Ku31**
*216Thm(a)212Ra		not from this work : taken from 05Ku31								h		WgM115*W
*216Pa(a)212Ac		E(a)=7948(15), 7815(15) to gs, 133.6 level								M		00He17**
*216Pa(a)212Ac		Ea = 7952, 7944, 7975, 7946, 7942								g		19Zh23*W

217Tl-u		20032#	429#				2			g	1.0	S-u20c
217Pb-u		13162#	322#				2			g	1.0	S-u211
217Bi-u		9420	32	9372.000	19.000	-1.5o	o			HGS3	1.0	08Ch.A
217Bi-u		9372	19				2			HGS3	1.0	12Ch19
217At-u		4759	145	4719.157	5.282	-.3	U			GGR1	1.0	19An10
217Po(a)213Pb		6660.3	4.	6662.134	2.353	.4	-4-			Dba		77Vy02,Z
217Po(a)213Pb		6660.0	4.	6662.134	2.353	.5	-4-			HOrm		97Li23
217Po(a)213Pb		6666.1	4.1	6662.134	2.353	-1.0	-4-			HAnv		03Ku25
217Po(a)213Pb	ave	6662.134	2.353				4					average
217At(a)213Bi		7200.3	3.	7201.388	1.219	.4	-1-			M		60Vo05,Z
217At(a)213Bi		7200.3	2.	7201.388	1.219	.5	-1-			Orm		62Wa28,Z
217At(a)213Bi		7204.6	5.	7201.388	1.219	-.6	-1-			M		64Va20,Z
217At(a)213Bi		7193.1	5.	7201.388	1.219	1.6	-1-			MDba		77Vy02,Z
217At(a)213Bi		7204.0	2.	7201.388	1.219	-1.3	-1-			Bka		82Bo04
217At(a)213Bi	ave	7201.475	1.226	7201.388	1.219	-.1	1	99	77 213Bi			average
217Rn(a)213Po		7887.5	4.	7887.169	2.882	-.1	-2-					61Ru06,Z
217Rn(a)213Po		7886.9	4.	7887.169	2.882	.1	-2-			Bka		82Bo04,Z
217Rn(a)213Po		7885.6	10.2	7887.169	2.882	.2	U			GGSt		18Sa45
217Rn(a)213Po	ave	7887.169	2.882				2					average
217Fr(a)213At		8471.5	8.	8469.269	4.320	-.3	-3-					70Bo13
217Fr(a)213At		8468.4	5.	8469.269	4.320	.2	-3-			Lvn		87De.A
217Fr(a)213At	ave	8469.269	4.320				3					average
217Ra(a)213Rn		9159.1	8.	9160.569	6.188	.2	-4-					70To07
217Ra(a)213Rn		9163.2	10.	9160.569	6.188	-.3	-4-					70Va13
217Ra(a)213Rn		9159.2	40.8	9160.569	6.188	.0	U			GGSa		19Mi08,*
217Ra(a)213Rn		9157.1	26.5	9160.569	6.188	.1	-4-			GLza		19Ya04

217Ra(a)213Rn	ave	9160.569	6.188				4						average
217Ac(a)213Fr		9831.6	10.				2						73No09
217Ac(a)213Fr		9474.9	203.8	9831.605	10.188	1.8	U				GGSa		19Mi08
217Acm(a)213Fr		11843.8	17.				2						85De14
217Th(a)213Ra		9424.1	10.	9435.307	4.031	1.1	-2-						68Va18
217Th(a)213Ra		9424.1	20.	9435.307	4.031	.6	U				M		73Ha32
217Th(a)213Ra		9421.1	15.	9435.307	4.031	.9	U				M		00Ni02
217Th(a)213Ra		9442	15	9435.307	4.031	-.4o	o				hGSa		00He17,*
217Th(a)213Ra		9435.6	5.	9435.307	4.031	-.1	-2-				MGSa		02He29,*
217Th(a)213Ra		9443.5	9.	9435.307	4.031	-.9	-2-				HGSa		05Ku31
217Th(a)213Ra		9424.1	47.	9435.307	4.031	.2	U				H		05Li17
217Th(a)213Ra		9431.0	15.3	9435.307	4.031	.3	U				GLza		19Zh54
217Th(a)213Ra	ave	9435.307	4.031				2						average
217Pa(a)213Ac		8486.7	10.	8488.803	4.489	.2	-2-				M		68Va18
217Pa(a)213Ac		8489.8	15.	8488.803	4.489	-.1	U				M		79Sc09
217Pa(a)213Ac		8486.7	50.	8488.803	4.489	.0	U				MJAa		98Ik01
217Pa(a)213Ac		8490.8	15.	8488.803	4.489	-.1	U				MGSa		00He17
217Pa(a)213Ac		8489.3	5.	8488.803	4.489	-.1	-2-				MGSa		02He29,*
217Pa(a)213Ac		8493.7	5.	8488.803	4.489	-1.0	Z				hJya		07Le14,W
217Pa(a)213Ac	ave	8488.803	4.489				2						average
217Pam(a)213Ac		10351	20	10349.100	5.000	-.1	U				M		79Sc09
217Pam(a)213Ac		10330.8	50.	10349.100	5.000	.4	U				MJAa		98Ik01
217Pam(a)213Ac		10346.1	15.	10349.100	5.000	.2o	o				MGSa		00He17
217Pam(a)213Ac		10349.1	5.				2				MGSa		02He29,*
217Pam(a)213Ac		10347.9	5.	10349.100	5.000	.2	Z				hJya		07Le14,W
217U(a)213Thp		8155.6	20.	8165.638	62.445	.2	-5-				M		00Ma65
217U(a)213Thp		8175.0	14.3	8165.638	62.445	-.2	-5-				HJya		05Le42,*
217U(a)213Thp	ave	8165.638	37.409				5						average
*217Ra(a)213Rn		E(a)=8910(40) 8990(40)									g		19Mi08**
*217Th(a)213Ra		E(a)=9268(15), 8731(15), 8459(15) to gs, 546.35, 822.7 lvls									M		00He17**
*217Th(a)213Ra		E(a)=9261(5), 8725(5), 8455(5) to gs, 546.35, 822.7 levels									M		02He29**
*217Pa(a)213Ac		E(a)=8337(5), 7873(5), 7728(5), 7710(5) to gs,466.1,612.5,634.3 lvls									M		02He29**
*217Pa(a)213Ac		not from this work : taken from 02He29									h		WgM115*W
*217Pam(a)213Ac		Average of 5 E(a)'s to known levels									M		02He29**
*217Pam(a)213Ac		not from this work : taken from 02He29									h		WgM115*W
*217U(a)213Thp		Only one event. ~ Not reported in later publication 07*Le*14									H		WgM115**
218Tl-u		25454#	429#				2				g	1.0	S-u212
218Pb-u		16779#	322#				2				g	1.0	S-u211
218Bi-u		14178	34	14188.000	29.000	.3o	o				HGS3	1.0	08Ch.A
218Bi-u		14188	29				2				HGS3	1.0	12Ch19
218Rn-u		5463	58	5599.922	2.200	2.4	U				GGR1	1.0	19An10
218Po(a)214Pb		6114.76	0.09	6114.754	0.092	-.0	1	100	99	214Pb			71Gr17,Z
218At(a)214Bi		6874	3	6876.082	2.586	.7	-2-				Orm		58Wa.A,*
218At(a)214Bi		6882.1	5.1	6876.082	2.586	-1.2	-2-				G		19Cu02,*
218At(a)214Bi	ave	6876.082	2.586				2						average
218Rn(a)214Po		7265.0	5.	7262.622	1.850	-.5	-1-				N		56As38,Z
218Rn(a)214Po		7262.4	2.	7262.622	1.850	.1	-1-				Bka		82Bo04,Z
218Rn(a)214Po	ave	7262.761	1.892	7262.622	1.850	-.1	1	96	95	218Rn			average
218Fr(a)214At		8014.0	2.	8013.676	1.441	-.2	-2-				Bka		82Bo04,Z
218Fr(a)214At		8013.3	2.	8013.676	1.441	.2	-2-				G		99Sh03
218Fr(a)214At	ave	8013.676	1.441				2						average
218Frm(a)214At		8099.9	5.	8100.894	3.373	.2	-1-						82Ew01,Z
218Frm(a)214At		8100.9	5.	8100.894	3.373	-.0	-1-				M		99Sh03
218Frm(a)214At	ave	8100.421	3.602	8100.894	3.373	.1	1	88	72	218Frm			average
218Frm(a)214Atn		7870.7	7.1	7868.843	5.131	-.3	1	52	28	218Frm	G		99Sh03
218Ra(a)214Rn		8549.1	8.	8540.305	3.432	-1.1	-3-						70To07
218Ra(a)214Rn		8541.0	10.	8540.305	3.432	-.1	-3-						70Va13
218Ra(a)214Rn		8577.7	51.	8540.305	3.432	-.7	U				GGSa		18Mi11
218Ra(a)214Rn		8537.9	4.1	8540.305	3.432	.6	-3-				GJya		19Pa45
218Ra(a)214Rn	ave	8540.305	3.432				3						average
218Ac(a)214Fr		9377.4	15.3	9384.256	56.983	.1	-5-						70Bo13
218Ac(a)214Fr		9391.3	15.	9384.256	56.983	-.1	-5-				GLza		17Su18
218Ac(a)214Fr		9392.6	30.6	9384.256	56.983	-.1	-5-				GGSa		19Mi08
218Ac(a)214Fr		9376.3	26.	9384.256	56.983	.1	-5-				GLza		19Ya04
218Ac(a)214Fr	ave	9384.256	27.332				5						average

218Th(a)214Ra		9861.3	20.4	9849.091	9.112	-.6	-5-			h		73Ha32
218Th(a)214Ra		9846.1	10.	9849.091	9.112	.3	-5-					73No09
218Th(a)214Ra		9851.0	81.5	9849.091	9.112	-.0	U			KGSa		15Kh09
218Th(a)214Ra	ave	9849.091	9.112				5					average
218Pa(a)214Ac		9794.1	20.	9791.380	11.612	-.1	-2-			G		79Sc09,*
218Pa(a)214Ac		9815	10	9791.380	11.612	-2.4F	F			GGSa		00He17,*
218Pa(a)214Ac		9790.0	14.2	9791.380	11.612	.1	-2-			GLza		20Zh01,*
218Pa(a)214Ac		9781.8	17.3	9791.380	11.612	.6o	o			GLza		20Ma27
218Pa(a)214Ac	ave	9791.381	11.612				2					average
218Pam(a)214Ac		9872.4	15.0				2			GLza		20Zh01
218U(a)214Th		8786.6	25.	8774.807	8.627	-.5	-4-			Dbb		92An04
218U(a)214Th		8773.2	9.	8774.807	8.627	.2	-4-			HJya		07Le14
218U(a)214Th		8780.4	35.7	8774.807	8.627	-.2	U			GLza		18Ya01
218U(a)214Th	ave	8774.808	8.627				4					average
218Uxm(a)214Th		10878.1	17.	10883.712	15.067	.3	-4-			HJya		07Le14
218Uxm(a)214Th		10901.4	30.6	10883.712	15.067	-.6	-4-			KLza		15Ma37
218Uxm(a)214Th	ave	10883.712	15.067				4					average
218Acm(IT)218Ac		150	50	52.519	66.048	-1.9	Z			g		S-MA ,G
*218At(a)214Bi		E(a)=6696.3(3.0,Z) to (2)^- level at 53.2282 keV								k		Ens092**
*218At(a)214Bi		58Wa16 in NSR not accepted since not refereed								n		AHW941*W
*218At(a)214Bi		E(a)=6694(5) to 3- level at 63 keV								G		19Cu02**
*218At(a)214Bi		also E(a)=6655(7) to 4- level at 100 keV								W		19Cu02**
*218Pa(a)214Ac		E(a)=9614(20)								M		00He17**
*218Pa(a)214Ac		E(a)=9544(10) to 91.8 level; F : from single alpha-spectra								M		00He17**
*218Pa(a)214Ac		Also E(a)=9524(16) to 91.8(0.8)								G		20Zh01**
*218Acm(IT)218Ac		Exc. at least 122.5								n		94De04*G

219Pb-u		22136#	429#				2			g	1.0	S-u211
219Bi-u		17520#	215#				2			g	1.0	S-u20c
219Po-u		13601	32	13614.000	17.000	.4o	o			HGS3	1.0	08Ch.A
219Po-u		13614	17				2			HGS3	1.0	12Ch19
219At-133Cs1.647		166879.4	8.4	166883.099	3.386	.4	1	16	16 219At	KMA8	1.0	17Ma29
219Po(a)215Pb		5840	100	5914.200	50.249	.7	Z			k		S-u127
219Po(a)215Pb		5914.2	5.				3			KISa		15Fi07
219At(a)215Bi		6390.9	50.	6342.018	4.831	-1.0	U			M		53Hy83
219At(a)215Bi		6344.0	5.	6342.018	4.831	-.4	1	90	86 215Bi	KISa		15Fi07
219Rn(a)215Po		6946.21	0.3	6946.195	0.305	-.0	1	100	97 215Po			71Gr17,Z
219Fr(a)215At		7448.7	2.0	7448.607	1.822	-.1	-3-			Orm		68Ba73,Z
219Fr(a)215At		7448.2	4.	7448.607	1.822	.1	-3-			Bka		82Bo04,Z
219Fr(a)215At	ave	7448.607	1.822				3					average
219Ra(a)215Rn		8139.0	20.	8137.927	3.056	-.1	U			hORa		69Ha32
219Ra(a)215Rn		8128.7	10.	8137.927	3.056	.9	U			h		70Va13
219Ra(a)215Rn		8128.7	20.	8137.927	3.056	.5	U			hDbb		89An13
219Ra(a)215Rn		8138.0	3.				4			N		94Sh02
219Ra(a)215Rn		8160	31	8137.927	3.056	-.7	U			GGSa		18Mi11
219Ra(a)215Rn		8128.8	10.2	8137.927	3.056	.9	U			GGSt		18Sa45,*
219Ac(a)215Fr		8826.5	10.				4					70Bo13
219Ac(a)215Fr		9330.6	40.7	8826.500	50.990	-7.8B	B			GGSa		19Mi08,*
219Th(a)215Ra		9514.1	20.	9505.869	55.998	-.2	-4-					73Ha32
219Th(a)215Ra		9503.9	50.9	9505.869	55.998	.0	-4-			KGSa		15Kh09
219Th(a)215Ra		9503.6	15.3	9505.869	55.998	.1o	o			GLza		17Su18
219Th(a)215Ra		9503.9	20.	9505.869	55.998	.0	-4-			GLza		19Zh54
219Th(a)215Ra		9493.6	24.	9505.869	55.998	.2	-4-			GLza		19Ya04
219Th(a)215Ra		9512.0	16.3	9505.869	55.998	-.1	-4-			GLza		20Su02
219Th(a)215Ra	ave	9505.869	25.216				4					average
219Pa(a)215Ac		10084.6	50.	10127.757	68.592	.6	-3-					87Fa.A
219Pa(a)215Ac		10161.8	38.	10127.757	68.592	-.5	-3-			GLza		17Su18
219Pa(a)215Ac	ave	10127.757	46.956				3					average
219U(a)215Th		9860.4	40.	9949.604	11.738	2.2	U			GDbb		93An07
219U(a)215Th		9956.2	18.	9949.604	11.738	-.4	-3-			HJya		07Le14
219U(a)215Th		9945.0	15.3	9949.604	11.738	.3	-3-			GLza		19Zh54
219U(a)215Th	ave	9949.604	11.738				3					average
219Np(a)215Pa		9167.8	203.7	9207.498	40.746	.2	U			GGSa		15De22,*
219Np(a)215Pa		9207.5	40.7				3			GLza		18Ya01,G
*219Ra(a)215Rn		also E(a)=7.66(2) to 316-keV level								G		18Sa45**
*219Ac(a)215Fr		E(a)=8520(40) 9160(40)								G		19Mi08**

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*219Np(a)215Pa                E(a)>9000 keV                                                      K          15De22**
*219Np(a)215Pa                Trends from Mass Surface TMS suggest 219Np   150 keV more bound          g          GAu212*G


 220Pb-u                       25905#      429#                                         2                   g     1.0 S-u211
 220Bi-u                       22501#      322#                                         2                   g     1.0 S-u211
 220Po-u                       16420        32       16386.000     19.000     -1.1o     o                   HGS3 1.0 08Ch.A
 220Po-u                       16386        19                                          2                   HGS3 1.0 12Ch19
 220At-u                       15427        32       15433.000     15.000       .2o     o                   HGS3 1.0 08Ch.A
 220At-u                       15433        15                                          2                   HGS3 1.0 12Ch19
 220Rn-133Cs1.654             167777        11      167776.488      1.726      -.0      U                   HMA8 1.0 09Ne03
 220Ra-u                       11389       344       11026.107      8.061     -1.1      U                   GGR1 1.0 19An10
 210Fr-220Fr.159 208Fr.841     -2930        60       -2927.265     16.628       .0      U                   HP24 2.5 82Au01
 211Fr-220Fr.240 208Fr.761     -4850        70       -4867.502     14.942      -.1      U                   HP24 2.5 82Au01
 212Fr-220Fr.321 208Fr.679     -5450        60       -5392.060     11.883       .4      U                   HP24 2.5 82Au01
 212Fr-220Fr.263 209Fr.738     -3730        60       -3745.247     12.239      -.1      U                   nP24 2.5 82Au01
 213Fr-220Fr.352 209Fr.649     -5170        50       -5142.608      8.922       .2      U                   nP24 2.5 82Au01
 212Fr-220Fr.193 210Fr.808     -3160        60       -3030.842     13.962       .9      U                   nP24 2.5 82Au01
 220At(a)216Bim                 6053.3       6.                                         3                   H          89Bu09
 220Rn(a)216Po                  6404.75      0.10     6404.745      0.102      -.0      1    100  71 216Po             71Gr17,Z
 220Fr(a)216At                  6799.0       2.       6800.738      1.857       .9     -3-                  nOrm       68Ba73,*
 220Fr(a)216At                  6811.6       5.       6800.738      1.857     -2.2     -3-                  n          74Ho27,*
 220Fr(a)216At           ave    6800.738     1.857                                      3                              average
 220Ra(a)216Rn                  7593.3      10.       7593.863      4.941       .1     -3-                             61Ru06
 220Ra(a)216Rn                  7595.3      10.       7593.863      4.941      -.1     -3-                             70Va13
 220Ra(a)216Rn                  7598.4      20.4      7593.863      4.941      -.2     -3-                   Dbb       90An19
 220Ra(a)216Rn                  7587.2      10.       7593.863      4.941       .7     -3-                  MGSa       00He17
 220Ra(a)216Rn                  7598.4      10.2      7593.863      4.941      -.4     -3-                  GGSt       18Sa45
 220Ra(a)216Rn           ave    7593.863     4.941                                      3                              average
 220Ac(a)216Fr                  8347.1      10.       8347.817      4.488       .1     -5-                  M          70Bo13
 220Ac(a)216Fr                  8348         5        8347.817      4.488      -.0     -5-                  M          97Sh09,*
 220Ac(a)216Fr           ave    8347.817     4.488                                      5                              average
 220Th(a)216Ra                  8953.1      20.       8973.156     11.102      1.0     -4-                             73Ha32
 220Th(a)216Ra                  8981.6      13.2      8973.156     11.102      -.6     -4-                  GJya       19Pa45
 220Th(a)216Ra           ave    8973.156    11.102                                      4                              average
 220Pa(a)216Ac                  9829.1      50.       9703.745     11.383     -1.8B     B                   g          87Fa.A
 220Pa(a)216Ac                  9696.7      16.3      9703.745     11.383       .4     -2-                  GLza       17Hu08
 220Pa(a)216Ac                  9718        20        9703.745     11.383      -.7     -2-                  GLza       19Zh54
 220Pa(a)216Ac                  9698.7      25.5      9703.745     11.383       .2     -2-                  GLza       19Ya04
 220Pa(a)216Ac           ave    9703.745    11.383                                      2                              average
 220Pam(a)216Ac                 9730.3      20.4      9729.748     19.885      -.0      1     95  95 220PamGLza       18Hu13
 220Pan(a)216Ac                 9993.1      63.       9998.098     46.705       .1      1     55  55 220PanGLza       18Hu13
 220U(a)216Th                  10290#      100#                                         3                   g          S-u20c
 220Np(a)216Pa                 10226.3      18.3                                        3                   GLza       19Zh23
*220Fr(a)216At                E(a)=6675.2, 6631.0, 6570.2(2,Z) to gs, (2)^- at 44.59, (0)^- at 105.89  k          Ens075**
*220Fr(a)216At                E(a)=6687.5, 6642.5, 6583.5(2,Z) to gs, (2)^- at 44.59, (0)^- at 105.89  k          Ens075**
*220Ac(a)216Fr                E(a)=7792, 7855 to levels at 409.3, 349.3 keV                            k          Ens075**


 221Bi-u                       25980#      322#                                         2                   g     1.0 S-u211
 221Po-u                       21238        62       21228.000     21.000      -.2o     o                   HGS3 1.0 10Ch19
 221Po-u                       21228        21                                          2                   HGS3 1.0 12Ch19
 221At-u                       18028        32       18017.000     15.000      -.3o     o                   HGS3 1.0 08Ch.A
 221At-u                       18017        15                                          2                   HGS3 1.0 12Ch19
 221Np-u                       32110#      215#                                         2                   g     1.0 S-u20c
 221Pu-u                       38572#      322#                                         2                   g     1.0 S-u211
 221Fr-226Ra.978              -10590        34      -10596.281      5.401      -.2      U                   hMA3 1.0 92Bo28
 211Fr-221Fr.159 209Fr.841     -3080        60       -3071.316     15.396       .1      U                   mP24 2.5 82Au01
 221Rn(a)217Po                  6161.8       5.8      6162.986      3.189       .2     -3-                  HDba       77Vy02,*
 221Rn(a)217Po                  6163.5       5.4      6162.986      3.189      -.1     -3-                  KOrm       97Li23,*
 221Rn(a)217Po                  6163.5       5.4      6162.986      3.189      -.1     -3-                  KOrm       04Li28,*
 221Rn(a)217Po           ave    6162.986     3.189                                      3                              average
 221Fr(a)217At                  6457.3       2.0      6457.784      1.404       .2     -1-                  nOrm       62Wa28,*
 221Fr(a)217At                  6458.5       2.0      6457.784      1.404      -.4     -1-                  nOrm       68Le07,*
 221Fr(a)217At           ave    6457.900     1.414    6457.784      1.404      -.1      1     99  78 217At             average
 221Ra(a)217Rn                  6883.7       5.       6880.395      1.953      -.7     -3-                  n          61Ru06,*
 221Ra(a)217Rn                  6881.3       3.       6880.395      1.953      -.3     -3-                  M          95Ch74,*
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 221Ra(a)217Rn                    6878.3      3.       6880.395     1.953      .7  -3-              M       97Li12,*
 221Ra(a)217Rn                    6884.8     10.2      6880.395     1.953     -.4   U               GGSt    18Sa45
 221Ra(a)217Rn            ave     6880.395    1.953                                 3                       average
 221Ac(a)217Fr                    7786.2     10.       7791.470    56.525      .1  -4-                      70Bo13
 221Ac(a)217Fr                    7782.1      5.       7791.470    56.525      .2  -4-               Lvn    87De.A
 221Ac(a)217Fr                    7791.3     15.       7791.470    56.525      .0  -4-              NDbb    92An.A
 221Ac(a)217Fr                    7811.4     30.6      7791.470    56.525     -.3  -4-              GGSa    18Mi11
 221Ac(a)217Fr            ave     7791.470   26.365                                 4                       average
 221Th(a)217Ra                    8628.5      5.       8625.860     2.414     -.5  -5-                      70To07,Z
 221Th(a)217Ra                    8626.0     10.       8625.860     2.414     -.0  -5-                      70Va13,Z
 221Th(a)217Ra                    8626.4     10.       8625.860     2.414     -.1  -5-               Dbb    90An19
 221Th(a)217Ra                    8614.2     10.       8625.860     2.414     1.1  -5-              MGSa    00He17
 221Th(a)217Ra                    8596.9     66.       8625.860     2.414      .4   U               H       05Li17
 221Th(a)217Ra                    8667.2     30.6      8625.860     2.414    -1.4   U               GGSa    18Mi11
 221Th(a)217Ra                    8381.9     41.       8625.860     2.414     6.0B  B               GGSa    19Mi08
 221Th(a)217Ra                    8617.2     19.       8625.860     2.414      .5   U               JLza    19Ya04,*
 221Th(a)217Ra                    8625.9      3.1      8625.860     2.414     -.0  -5-              JJya    20Pa44,*
 221Th(a)217Ra            ave     8625.860    2.414                                 5                       average
 221Pa(a)217Ac                    9247.7     30.                                    3                       89Mi17
 221Pa(a)217Ac                    8250      200        9247.700    58.310     4.8B  B               GGSa    19Mi08
 221U(a)217Th                     9889.3     50.9                                   3               KGSa    15Kh09
*221Rn(a)217Po                 E(a)=6035.3(3,Z) to a tentative (11/2^+) lvl at 15(5)keV above (9/2^+) gsK       04Li28**
*                               ~ also E(a)=5786.3(3,Z), 5776.3(3,Z)                                k       77Vy02*G
*221Rn(a)217Po                 E(a)=6037(2) to a tentative (11/2^+) level at 15(5) keV above (9/2^+) gs K       04Li28**
*                               ~ also E(a)=5788(2), 5778(2)                                        k       97Li23*G
*221Rn(a)217Po                 E(a)=6037(2) to a tentative (11/2^+) level at 15(5) keV above (9/2^+) gs K       04Li28**
*                               ~ also E(a)=5788(2), 5778(2)                                        k       04Li28*G
*221Rn(a)217Po                 the 273.5 gamma assumed by 04Li28 not trusted by evaluator           k       FGK155*W
*221Fr(a)217At                 E(a)=6341.1(2,Z), 6125.1(3,Z) to gs, 5/2^- level at 218.12 keV       h       Ens039**
*221Fr(a)217At                 E(a)=6341.3(2,Z), 6127.2(3,Z) to gs, 5/2^- level at 218.12 keV       h       Ens039**
*221Ra(a)217Rn                 E(a)=6761.2 6668.2 6613.2 6591.2(5,Z) to gs, lvls at 88.9 149.18 174.3keVh       Ens039**
*221Ra(a)217Rn                 E(a)=6610(3,Z) to 149.2 level                                        M       97Li12**
*221Ra(a)217Rn                 E(a)=6754, 6662, 6607(..)  to gs, 93.02, 149.2 level                 M       97Li12**
*221Th(a)217Ra                 Ea= 8461(19), 8152(17) keV                                           g       19Ya04**
*221Th(a)217Ra                 E(a)=8247(3) keV to level at 226.7(0.2) keV; also E(a)=8471(no unc.),    J       20Pa44**
*221Th(a)217Ra                 ~ 7951(8) to gs and level at 539.8(0.3) keV                          J       20Pa44**


 222Bi-u                         31079#      322#                                   2               g    1.0 S-u211
 222Po-u                         24133        72      24140.000    43.000      .1o  o               HGS3 1.0 10Ch19
 222Po-u                         24140        43                                    2               HGS3 1.0 12Ch19
 222At-u                         22459        32      22494.000    17.000     1.1o  o               HGS3 1.0 08Ch.A
 222At-u                         22494        17                                    2               HGS3 1.0 12Ch19
 222Fr-133Cs1.669               175383.3       8.0                                  2               KMA8 1.0 14Kr09
 222Pu-u                         37638#      322#                                   2               g    1.0 S-u20b
 222Fr-226Ra.982                 -7410        25      -7370.433     8.202     1.6   U               KMA3 1.0 92Bo28
 213Fr-222Fr.240 210Fr.761       -4810        60      -4941.590    11.376     -.9   U               hP24 2.5 82Au01
 213Fr-222Fr.096 212Fr.904       -1940        60      -1948.758     9.240     -.1   U               nP24 2.5 82Au01
 221Fr-222Fr.498 220Fr.502        -610        90       -641.766     6.368     -.1   U               hP34 2.5 86Au02
 222Rn(a)218Po                    5590.39     0.3      5590.390     0.305     -.0   1   100  99 218Po       71Gr17,Z
 222Ra(a)218Rn                    6680.0      5.       6678.976     4.208     -.2   1    68  63 222Ra       56As38,Z
 222Ac(a)218Fr                    7137.5      2.                                    3               NBka    82Bo04,Z
 222Acm(a)218Frm                  7128.6     22.4                                   2               G       72Es03,*
 222Acm(a)218Frp                  7140.3     20.            *                       Z               g       72Es03,*
 222Th(a)218Ra                    8127.7     10.       8132.567     2.861      .5   U               G       70To07
 222Th(a)218Ra                    8130.7      8.       8132.567     2.861      .2  -4-                      70Va13
 222Th(a)218Ra                    8126.7     15.       8132.567     2.861      .4   U               GDbb    92An.A
 222Th(a)218Ra                    8120.6     10.       8132.567     2.861     1.2   U               GGSa    00He17
 222Th(a)218Ra                    8116.4     48.       8132.567     2.861      .3   U               H       05Li17
 222Th(a)218Ra                    8132.8      3.       8132.567     2.861     -.1  -4-              GJya    16Pa28
 222Th(a)218Ra                    8157.3     30.6      8132.567     2.861     -.8   U               GGSa    18Mi11
 222Th(a)218Ra            ave     8132.567    2.861                                 4                       average
 222Pa(a)218Ac                    8788.6     41.                                    6               GGSa    19Mi08,*
 222Pa(a)218Acm                   8697.0     30.       8736.081    13.465     1.3  -7-              M       70Bo13
 222Pa(a)218Acm                   8745.5     15.       8736.081    13.465     -.6  -7-              HGSa    95Ho.C,*
 222Pa(a)218Acm           ave     8736.081   13.465                                 7                       average
 222U(a)218Th                     9481.1     50.9                                   6               KGSa    15Kh09
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 222Np(a)218Pa                   10200.2     33.7                                     3                 GLza     20Ma27
*222Acm(a)218Frm               E(a)=7000(20) keV from 1972Es03 to 218Frm  at 86(8) keV                  G        FGK20c**
*222Acm(a)218Frp               E(a)=7011.4(20,Z) not to gs                                              H        AHW032**
*222Acm(a)218Frp               Rytz overlooked that this is 1.05 m not 5 s isomer.                      h        Ens961*W
*222Acm(a)218Frp                 5 s not 1.05 m 222Ac is daughter 226Pa, parent 218Fr                   h        Ens961*W
*222Pa(a)218Ac                 E(a)=8470(40) 8630(40)                                                   g        19Mi08**
*222Pa(a)218Acm                E(a)=8210(15) to 218Acn at 384.49 keV above 218Acm                       g        Nub211**


 223Bi-u                         34611#     429#                                      2                 g    1.0 S-u211
 223Po-u                         29070#     210#                                      2                 h    1.0 S-u127
 223At-u                         25172       32       25151.000    15.000     -.7o   o                 HGS3 1.0 08Ch.A
 223At-u                         25151       15                                       2                 HGS3 1.0 12Ch19
 223Rn-133Cs1.677               180453       11      180446.353     8.397     -.6    1     58   58 223Rn HMA8 1.0 09Ne03
 223Rn-u                         21899       32       21889.283     8.397     -.3o   o                 HGS3 1.0 08Ch.A
 223Rn-u                         21880       13       21889.283     8.397      .7    1     42   42 223Rn HGS3 1.0 12Ch19
 223Pu-u                         38777#     322#                                      2                 g    1.0 S-J20b
 223Am-u                         45840#     322#                                      2                 g    1.0 S-u211
 213Fr-223Fr.087 212Fr.913       -1900       60       -1944.264     9.282     -.3    U                 nP24 2.5 82Au01
 222Fr-223Fr.498 221Fr.502         790      100         556.819     7.924     -.9    U                 hP34 2.5 86Au02
 223Fr(a)219At                    5431.6     80.       5561.727     2.814     1.6    U                 M        55Ad10
 223Fr(a)219At                    5562        3        5561.727     2.814     -.1    1     85   80 219At M        01Li44
 223Ra(a)219Rn                    5978.9      0.3      5978.993     0.212      .3   -1-                mOrm     62Wa18,*
 223Ra(a)219Rn                    5979.1      0.3      5978.993     0.212     -.4   -1-                mBIP     71Gr17,*
 223Ra(a)219Rn             ave    5979.000    0.212    5978.993     0.212     -.0    1    100   97 219Rn          average
 223Ac(a)219Fr                    6783.2      1.0                                     4                 nOrm     69Le.A,*
 223Ac(a)219Fr                    6782        3        6783.200     1.000      .4    Z                 m        90Sh15,W
 223Th(a)219Ra                    7602       23        7566.633     4.082    -1.5    U                 hORa     69Ha32,*
 223Th(a)219Ra                    7589       14        7566.633     4.082    -1.6    U                 h        70Va13,*
 223Th(a)219Ra                    7570       25        7566.633     4.082     -.1    U                 h        84Mi.A
 223Th(a)219Ra                    7568       10        7566.633     4.082     -.1   -5-                         87El02,*
 223Th(a)219Ra                    7567.4     10.       7566.633     4.082     -.1   -5-                 Dbb     90An19,*
 223Th(a)219Ra                    7566.1      5.       7566.633     4.082      .1   -5-                         92Li09,*
 223Th(a)219Ra             ave    7566.633    4.082                                   5                          average
 223Pa(a)219Ac                    8345.0     10.       8343.145    55.409     -.0   -5-                          70Bo13
 223Pa(a)219Ac                    8339.9     10.2      8343.145    55.409      .1o   o                 hDbb     89An.A
 223Pa(a)219Ac                    8350.0     15.       8343.145    55.409     -.1   -5-                MDbb     90An19
 223Pa(a)219Ac                    8339.9     15.       8343.145    55.409      .1   -5-                MGSa     95Ho.C
 223Pa(a)219Ac                    8321.6      5.       8343.145    55.409      .4   -5-                MJya     99Ho28
 223Pa(a)219Ac                    8370.3     41.       8343.145    55.409     -.4   -5-                GGSa     19Mi08,*
 223Pa(a)219Ac             ave    8343.145   23.879                                   5                          average
 223U(a)219Th                     8940.7     40.7      9157.582    17.311     3.4F   F                 GDbb     91An10,*
 223U(a)219Th                     9157.5     17.3                                     5                 GLza     20Su02,*
 223Np(a)219Pa                    9650.4     44.8                                     4                 GLza     17Su18,*
 223Fr(B-)223Ra                   1170       10        1149.105     0.848    -2.1    U                 h        75We23,*
*223Ra(a)219Rn                 E(a)=5747.0(0.4,Z), 5715.7(0.3,Z), 5606.7(0.3,Z) keV                     m        62Wa18**
*                               ~ to 11/2^+ level at 126.77, 7/2^+ at 158.64, 3/2^+ at 269.48 keV        h        Ens01a**
*223Ra(a)219Rn                 E(a)=5747.0(0.40,Z), 5716.23(0.29,Z), 5606.73(0.30,Z) keV                m        71Gr17**
*                               ~ to 11/2^+ level at 126.77, 7/2^+ at 158.64, 3/2^+ at 269.48 keV        h        Ens01a**
*223Ac(a)219Fr                 E(a)=6661.6, 6646.7, 6563.7(1.0,Z) to gs, 5/2^+ at 15.0, 7/2^- at 98.58  h        Ens01a**
*223Ac(a)219Fr                 E(a)=6660.3(3,Z) to 5/2+ level at 15.0 keV                               h        Ens01a*W
*223Ac(a)219Fr                 It seems that there is no E(a) measurement here !                        m        GAu931*G
*223Th(a)219Ra                 E(a)=7330(20) to mixture of excited states at 138(10) keV                h        GAu929**
*223Th(a)219Ra                 E(a)=7317(10) to mixture of excited states at 138(10) keV                h        GAu929**
*223Th(a)219Ra                 E(a)=7324(10) to 113.8, 7285(10) 55% to 140.0, 26% to 152.0 level                 92Li09**
*223Th(a)219Ra                 E(a)=7290(10) 55% to 140.0, 26% to 152.0 level                                    92Li09**
*223Th(a)219Ra                 E(a)=7318(5), 7293(5), 7281(5) to 113.8, 140.0, 152.0 levels                      92Li09**
*223Pa(a)219Ac                 E(a)=8030(40) 8220(40)                                                   g        19Mi08**
*223U(a)219Th                  Might be 8753 to 224 keV level                                           G        20Su02**
*223U(a)219Th                  Also E(a)=8753 to 224 keV level                                          G        20Su02**
*223Np(a)219Pa                 Extracted as difference of sum energy 19453(23) and Ea(219Pa)=9976(37)   G        17Su18**
*223Fr(B-)223Ra                E-=1120(10) to 3/2^- level at 50.128 keV                                 h        Ens01a**


 224Bi-u                         39796#     429#                                      2                 g    1.0 S-u211
 224Po-u                         32110#     210#                                      2                 h    1.0 S-u118
 224At-u                         29744       63       29749.000    24.000      .1o   o                 HGS3 1.0 10Ch19
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 224At-u                       29749      24                                        2                   HGS3 1.0 12Ch19
 224Rn-133Cs1.684             183304      16       183314.706     10.536      .7    1    43   43 224Rn HMA8 1.0 09Ne03
 224Rn-u                       24073      32        24095.803     10.536      .7o   o                   HGS3 1.0 08Ch.A
 224Rn-u                       24104      14        24095.803     10.536     -.6    1    57   57 224Rn HGS3 1.0 12Ch19
 224Fr-u                       23399      32        23348.097     12.000    -1.6o   o                   HGS3 1.0 08Ch.A
 224Fr-u                       23398      14        23348.097     12.000    -3.6B   B                   KGS3 1.0 12Ch19
 224Fr-133Cs1.684             182567      12                                        2                   KMA8 1.0 14Kr09
 224Ra-133Cs1.684             179430      30       179430.853      1.723      .0    U                   HMA8 1.0 14Bo26
 224Pu-u                       37875#    322#                                       2                   g    1.0 S-u20b
 224Am-u                       46442#    429#                                       2                   g    1.0 S-u211
 223Fr-224Fr.747 220Fr.253      -620      70         -766.777      8.577     -.8    U                   mP34 2.5 86Au02
 222Fr-224Frx.496 220Fr.505       10      70         -257#        51#       -1.5    U                   mP24 2.5 82Au01
 223Fr-224Frx.747 220Fr.253     -410      70         -841#        75#       -2.5B   B                   hP24 2.5 82Au01
 223Fr-224Fr.664 221Fr.336       780     110         -518.250      7.728    -4.7F   F                   hP34 2.5 86Au02,*
 223Fr-224Frx.664 221Fr.336     -110      70         -585#        67#       -2.7B   B                   hP24 2.5 82Au01
 224Ra(a)220Rn                 5788.93     0.15      5788.930      0.153     -.0    1   100   71 220Rn            71Gr17,Z
 224Ac(a)220Fr                 6326.9      0.7                                      4                   nOrm      69Le.A,*
 224Th(a)220Ra                 7304.7     10.        7298.573      5.879     -.6   -4-                            61Ru06
 224Th(a)220Ra                 7304.7     10.        7298.573      5.879     -.6   -4-                            70Va13
 224Th(a)220Ra                 7300.7     20.        7298.573      5.879     -.1    U                   mDbb      89An13
 224Th(a)220Ra                 7286.4     10.        7298.573      5.879     1.2   -4-                  MGSa      00He17
 224Th(a)220Ra           ave   7298.573    5.879                                    4                             average
 224Pa(a)220Ac                 7695.2     10.        7693.680      4.472     -.2   -6-                  M         70Bo13,*
 224Pa(a)220Ac                 7692.6     10.        7693.680      4.472      .1F   F                   nDbb      90An19,*
 224Pa(a)220Ac                 7680       15         7693.680      4.472      .9    U                   MGSa      95Ho.C,G
 224Pa(a)220Ac                 7693.3      5.        7693.680      4.472      .1   -6-                  M         96Li05,*
 224Pa(a)220Ac           ave   7693.680    4.472                                    6                             average
 224U(a)220Th                  8624.3     15.        8628.237      6.751      .3   -5-                   Dbb      91An10
 224U(a)220Th                  8612.1     20.        8628.237      6.751      .8   -5-                   ORa      92To02
 224U(a)220Th                  8631.9      8.1       8628.237      6.751     -.5   -5-                  KOrm      14Lo10,*
 224U(a)220Th            ave   8628.237    6.751                                    5                             average
 224Np(a)220Pam                9303.5     20.4       9302.932     19.879     -.0    1    95   91 224Np GLza      18Hu13
 224Np(a)220Pan                9029.6     63.1       9034.582     46.702      .1    1    55   45 220PanGLza      18Hu13
 224Frx(IT)224Fr                100#     100#                                       3                   h         S-u113
 224Fr(B-)224Ra                2830       50         2921.302     11.293     1.8    U                   H         75We23,*
*223Fr-224Fr.664 221Fr.          F : rejection based on line-shape analysis                            h         86Au02**
*224Ac(a)220Fr                   E(a)=6213.8, 6207.0, 6141.7, 6059.8(0.7,Z) keV                        n         69Le.A**
*                                 ~ to gs, 3^+ at 6.92, 3^+ at 72.99, 2^- at 156.82 keV                h         Ens114**
*224Pa(a)220Ac                   E(a)=7490(10) to 5^- level at 68.71 keV                               h         Ens114**
*224Pa(a)220Ac                   F : intensities in contradiction with ref.                            m         96Li05**
*224Pa(a)220Ac                   E(a)=7555(10), 7460(10) to gs, 68.71 level                            m         96Li05*G
*224Pa(a)220Ac                   E(a)=7488(5), 7375(5) to (5^-) level at 68.71 keV and 184.21 level    h         Ens114**
*224U(a)220Th                    E(a)=8479(8), 8095(11) to gs, 386.7(1.8) 2^+ level                    K         14Lo10**
*224U(a)220Th                     8633.4(8.1), 8242.4(11.2)+386.7(1.8)=8629.1(11.3)                    k         GAu162*G
*224Fr(B-)224Ra                  E-=1780(50) to 1^- level at 1053.041 keV, and other E-                k         Ens15c**

 225Po-u                       37123#    322#                                       2                   g    1.0 S-u20b
 225At-u                       32528#    322#                                       2                   g    1.0 S-u20b
 225Rn-133Cs1.692             188484      23       188460.862     11.959    -1.0    1    27   27 225Rn HMA8 1.0 09Ne03
 225Rn-u                       28498      32        28485.573     11.959     -.4o   o                   HGS3 1.0 08Ch.A
 225Rn-u                       28477      14        28485.573     11.959      .6    1    73   73 225Rn HGS3 1.0 12Ch19
 225Fr-u                       25574      14        25572.706     12.843     -.1    1    84   84 225Fr HGS3 1.0 12Ch19
 225Pu-u                       38970#    322#                                       2                   g    1.0 S-u20b
 225Am-u                       45508#    429#                                       2                   g    1.0 S-u211
 221Fr-225Fr.655 213Fr.346     -1110      60        -1094.140      9.324      .1    U                   hP24 2.5 82Au01
 224Frx-225Fr.747 221Fr.253       50      80          695#       101#        3.2B   B                   hP24 2.5 82Au01
 224Frx-225Fr.498 223Fr.502      190      80          757#       101#        2.8B   B                   hP24 2.5 82Au01
 225Ra(a)221Rn                 5096.7      5.1                                      2                   h         00Li37
 225Ac(a)221Fr                 5936.1      2.        5935.186      1.429     -.5   -1-                   Orm      67Ba51,Z
 225Ac(a)221Fr                 5934.5      2.        5935.186      1.429      .3   -1-                            67Dz02,Z
 225Ac(a)221Fr            ave  5935.307    1.440     5935.186      1.429     -.1    1    99   79 221Fr            average
 225Th(a)221Ra                 6920.7      3.        6921.400      2.121      .2   -4-                  n         61Ru06,*
 225Th(a)221Ra                 6922.1      3.        6921.400      2.121     -.2   -4-                  n         87Li.A,*
 225Th(a)221Ra            ave  6921.400    2.121                                    4                             average
 225Pa(a)221Ac                 7381.5     20.        7400.676     58.859      .4    U *                 kORa      68Ha14
 225Pa(a)221Ac                 7376.4     10.        7400.676     58.859      .5F   F                   h         70Bo13,*
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 225Pa(a)221Ac                 7392.7      5.1       7400.676    58.859      .2  -5-              Lvn      87De.A
 225Pa(a)221Ac                 7383.5     19.        7400.676    58.859      .3  -5-             M        00Sa52
 225Pa(a)221Ac                 7432.1     30.5       7400.676    58.859     -.5  -5-             GGSa     18Mi11
 225Pa(a)221Ac           ave   7400.676   31.055                                  5                     average
 225U(a)221Th                  8012.7     20.        8007.159     5.897     -.3o  o              HDbb     89An13
 225U(a)221Th                  8022.9     20.        8007.159     5.897     -.8  -6-             MGSa     89He13
 225U(a)221Th                  8021.9     15.        8007.159     5.897    -1.0  -6-             MORa     92To02
 225U(a)221Th                  8012.7     20.4       8007.159     5.897     -.3  -6-             hDbb     94Ye08
 225U(a)221Th                  8010       10         8007.159     5.897     -.3  -6-             MGSa     00He17,*
 225U(a)221Th                  7992.4     30.5       8007.159     5.897      .5   U              GGSa     18Mi11
 225U(a)221Th                  7992.3     10.2       8007.159     5.897     1.5  -6-             GGSa     19Mi08
 225U(a)221Th            ave   8007.159    5.897                                  6                     average
 225Np(a)221Pa                 8786.5     20.        8818.245    69.770      .6  -4-              Dbb     94Ye08
 225Np(a)221Pa                 8959.5    102.        8818.245    69.770    -1.2  -4-             GGSa     19Mi08
 225Np(a)221Pa           ave   8818.245   48.661                                  4                     average
 225Fr(B-)225Ra                1820       30         1826.380    12.048      .2   1    16  16 225Fr M        75We23,*
 225Ra(B-)225Ac                 360       10          355.776     4.838     -.4   1    23  21 225Ac          55Ma.A,*
 225Ra(B-)225Ac                 360       30          355.776     4.838     -.1   U              m        55Pe24,*
*225Th(a)221Ra                     E(a)=6800.2, 6746.2, 6503.2, 6480.2, 6443.2(3,Z) keV          n        61Ru06**
*                                   ~ to gs, 7/2^+ 53.14, 7/2^+ 299.16, 3/2^+ 321.39, 5/2^+ 359.02 levels  h        Ens075**
*225Th(a)221Ra                     E(a)=6799.3, 6745.3, 6504.3, 6483.3, 6447.3(3,Z) keV          n        87Li.A**
*                                   ~ to gs, 7/2^+ 53.14, 7/2^+ 299.16, 3/2^+ 321.39, 5/2^+ 359.02 levels  h        Ens075**
*225Pa(a)221Ac                     F : average of two branches                                   h        87De.A**
*225U(a)221Th                      E(a)=7868(15), 7621(15) to gs, 250.9 level                    M        00He17**
*225Fr(B-)225Ra                    E-=1640(10). ~ 28% to 3/2^- level at 225.2                    k        Ens095**
*                                   ~ but lower levels also fed directly                         k        Ens906*W
*225Ra(B-)225Ac                    E-=320(10) 320(30) resp, to 3/2^+ level at 40.09 keV          h        Ens095**


 226Po-u                      40310#     430#                                     2              h    1.0 S-u118
 226At-u                      37209#     322#                                     2              g    1.0 S-u20b
 226Rn-133Cs1.699            191490       17       191498.503    11.248      .5   1    44  44 226Rn HMA8 1.0 09Ne03
 226Rn-u                      30864       32        30861.380    11.248     -.1o  o              HGS3 1.0 08Ch.A
 226Rn-u                      30868       15        30861.380    11.248     -.4   1    56  56 226Rn HGS3 1.0 12Ch19
 226Fr-u                      29565       32        29544.513     6.688     -.6o  o              HGS3 1.0 08Ch.A
 226Fr-u                      29566       13        29544.513     6.688    -1.7   1    26  26 226Fr HGS3 1.0 12Ch19
 226Fr-133Cs1.699            190173.9      7.8     190181.635     6.688     1.0   1    74  74 226Fr KMA8 1.0 14Kr09
 133Cs-226Ra.588            -109487        9      -109489.379     1.082     -.3   U              mMA3 1.0 92Bo28
 133Cs-226Ra.588            -109499       13      -109489.379     1.082      .7   U              hMA4 1.0 99Am05
 226Pu-u                      38250#     215#                                     2              g    1.0 S-u20b
 226Am-u                      46130#     322#                                     2              g    1.0 S-u211
 223Fr-226Fr.493 220Fr.507     -800       80        -1004.651     4.016    -1.0   U              mP24 2.5 82Au01
 225Fr-226Fr.796 221Fr.204     -570      100         -794.352    12.985     -.9   U              MP24 2.5 82Au01
 225Fr-226Fr.498 224Frx.502    -260       90         -852#       52#       -2.6B  B              hP24 2.5 82Au01
 226Ra(a)222Rn                 4870.70     0.25      4870.703     0.254     -.0   1   100  99 222Rn               71Gr17,Z
 226Ac(a)222Fr                 5496.1      5.        5507.913     8.028      .2   U              KDba     75Va.A,Z
 226Th(a)222Ra                 6448.5      3.0       6452.572     1.012     1.4   U              K        56As38,*
 226Th(a)222Ra                 6454.8      3.6       6452.572     1.012     -.6   U              KDba     75Va.A,*
 226Th(a)222Ra                 6452.6      1.0       6452.572     1.012     -.0   1    99  62 226Th KGea     12Ma30
 226Pa(a)222Ac                 6986.9     10.                                     4                       64Mc21
 226U(a)222Th                  7747.4     30.        7700.843     4.266    -1.6   U              M        73Vi10,*
 226U(a)222Th                  7706.6     15.        7700.843     4.266     -.4  -5-              Dbb     90An22
 226U(a)222Th                  7701.6      5.        7700.843     4.266     -.1  -5-             MJya     99Gr28
 226U(a)222Th                  7691.4     10.        7700.843     4.266      .9o  o              MGSa     00He17
 226U(a)222Th                  7696.5     10.        7700.843     4.266      .4  -5-             MGSa     01Ca.B
 226U(a)222Th                  7696.4     20.4       7700.843     4.266      .2  -5-             KRIa     16Ka13
 226U(a)222Th                  7706.6     30.5       7700.843     4.266     -.2   U              GGSa     18Mi11
 226U(a)222Th            ave   7700.843    4.266                                  5                     average
 226Np(a)222Pa                 8189.2     20.4       8327.600    54.001     2.6B  B              GGSa     90Ni05
 226Np(a)222Pa                 8205.5     20.        8327.600    54.001     2.3B  B              GDbb     94Ye08
 226Np(a)222Pa                 8327.6     20.4                                    7              GGSa     19Mi08,W
 226Ra(p,t)224Ra              -2816       15        -2818.479     1.894     -.2   U              hANL     74Fr01
 226Ra(d,t)225Ra               -146       10         -138.860     2.388      .7   U              h        83Ny01
 226Fr(B-)226Ra                3804      330         3850.867     6.462      .1   U              h        75We23,*
 226Fr(B-)226Ra                3704      100         3850.867     6.462     1.5   U              H        87Ve.A,*
 226Ac(B-)226Th                1115        7         1113.259     4.522     -.2  -1-                      68Va17,*
 226Ac(B-)226Th                1114       15         1113.259     4.522     -.0  -1- q-q=     0.741        230Pa+0
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 226Ac(B-)226Th            ave    1114.821     6.343     1113.259     4.522     -.2  1    51  38 226Th         average
*226Th(a)222Ra                E(a)=6334.6(3,Z), 6224.6(3,Z) to gs, 2^+ level at 111.12 keV            h       Ens11b**
*226Th(a)222Ra                E(a)=6337.1(1.0,Z), 6233.6(1.0,Z) to gs, 2^+ level at 111.12 keV       h       Ens11b**
*226Th(a)222Ra                Neglected discrepancy by using E(exc) in calibrating                    m       91Ry01*W
*226U(a)222Th                 E(a)=7430(30) to 2^+ level at 183.3(0.3) keV                            N       94Ye08**
*226Np(a)222Pa                E(a)=8180(20), 8090(20) 7990(20)                                        g       19Mi08*W
*226Fr(B-)226Ra               E-=3550(330) 3450(100) resp, to 1^- level at 253.73 keV                 h       Ens964**
*226Ac(B-)226Th               E-=885(7) to 1^- level at 230.37 keV                                    h       Ens964**

 227Po-u                           45390#     430#                                  2                 h    1.0 S-u118
 227At-u                           40183#     322#                                  2                 g    1.0 S-u20b
 227Rn-133Cs1.707                 196686       19      196697.902    15.127     .6  1    63  63 227Rn HMA8 1.0 09Ne03
 227Rn-u                           35288       33       35304.394    15.127     .5o o                 HGS3 1.0 08Ch.A
 227Rn-u                           35325       25       35304.394    15.127    -.8  1    37  37 227Rn HGS3 1.0 12Ch19
 227Fr-u                           31868       32       31865.414     6.332    -.1o o                 HGS3 1.0 08Ch.A
 227Fr-u                           31869       14       31865.414     6.332    -.3  1    20  20 227Fr HGS3 1.0 12Ch19
 227Fr-133Cs1.707                 193258.0      7.1    193258.922     6.332     .1  1    80  80 227Fr KMA8 1.0 14Kr09
 227Pu-u                           39474#     107#                                  2                 k    1.0 S-u169
 227Am-u                           45282#     215#                                  2                 g    1.0 S-u211
 225Fr-227Fr.708 220Fr.292          -410      130        -547.135    12.722    -.4  U                 mP24 2.5 82Au01
 224Frx-227Fr.493 221Fr.507         -220       80         483#      101#       3.5B B                 hP24 2.5 82Au01
 227Ac(a)223Fr                     5043.0       2.0      5042.270     0.142    -.4  U                 h       66Ba19,Z
 227Ac(a)223Fr                     5042.27      0.14     5042.270     0.142    -.0  1   100  95 223Fr         86Ry04,Z
 227Th(a)223Ra                     6146.60      0.10     6146.598     0.100    -.0  1   100  97 223Ra MBIP    71Gr17,*
 227Pa(a)223Ac                     6581.5       3.       6580.400     2.121    -.4 -5-                        63Su.A,*
 227Pa(a)223Ac                     6579.3       3.       6580.400     2.121     .4 -5-                  m       90Sh15,*
 227Pa(a)223Ac             ave     6580.400     2.121                               5                         average
 227U(a)223Th                      7230        30        7234.716     3.054     .2  U                 KORa    69Ha32,*
 227U(a)223Th                      7206        16        7234.716     3.054    1.8  U                 K       91Ho05
 227U(a)223Th                      7234.7       3.1                                 6                 KGSa    15Ka24
 227Np(a)223Pa                     7818.0      10.       7816.488    14.396    -.0o o                 hDbb    90An19
 227Np(a)223Pa                     7815.0      20.       7816.488    14.396     .1 -6-                 GSa    90Ni05
 227Np(a)223Pa                     7818.0      20.       7816.488    14.396    -.1 -6-                 Dbb    94Ye08
 227Np(a)223Pa             ave     7816.488    14.396                               6                         average
 226Ra(n,g)227Ra                   4561.43      0.27                                2                 mILn    81Vo03,Z
 227Fr(B-)227Ra                    2476       100        2502.884     6.148     .3  U                 H       75We23,*
 227Ra(B-)227Ac                    1345        20        1327.948     2.262    -.9  U                 h       53Bu63,*
 227Ra(B-)227Ac                    1335        15        1327.948     2.262    -.5  U                 h       71Lo15,*
 227Ac(B-)227Th                      45.5       1.0        44.776     0.830    -.7 -1-                        55Be20
 227Ac(B-)227Th                      43.5       1.5        44.776     0.830     .9 -1-                        59No41
 227Ac(B-)227Th            ave       44.885     0.832      44.776     0.830    -.1  1    99  97 227Th         average
*227Th(a)223Ra                E(a)=6038.01(0.15,Z), 5977.72(0.10,Z), 5756.89(0.15,Z) keV              m       71Gr17**
*                               ~ to gs, 7/2^+ at 61.424, 1/2^+ at 286.182 keV                        h       Ens01a**
*227Pa(a)223Ac                E(a)=6465.8(3,Z), 6423.8(3,Z), 6415.8(3,Z), 6401.7(3,Z), 6356.7(3,Z)    h       63Su.A**
*                               ~ to gs, 7/2^- at 42.4, 5/2^- at 50.7, 5/2^+ at 64.62, 7/2^+ at 110.06 h       Ens01a**
*227Pa(a)223Ac                E(a)=6463, 6421, 6355 keV (all errors 3 keV, estimated by evaluator)    m       90Sh15**
*                               ~ to gs, 7/2^- at 42.4, 5/2^- at 50.7, 7/2^+ at 110.06 keV            h       Ens01a**
*227U(a)223Th                 E(a)=6860(30) to 3/2^+ level at 247(1) keV                              h       Ens01a**
*227Fr(B-)227Ra               E-=1800(100) to 1/2^- level at 675.863 keV                              k       Ens162**
*227Ra(B-)227Ac               E-=1310(20) 1300(15) resp, to 3/2^+ level at 27.369 and 5/2^+ at 46.354 k       Ens162**
*                               ~ and other E-                                                        k       Ens162*W

 228At-u                           44960#     429#                                  2                 g    1.0 S-u20c
 228Rn-133Cs1.714                 199897       24      199890.757    18.977    -.3  1    63  63 228Rn HMA8 1.0 09Ne03
 228Rn-u                           37856       33       37835.415    18.977    -.6o o                 HGS3 1.0 08Ch.A
 228Rn-u                           37825       31       37835.415    18.977     .3  1    37  37 228Rn HGS3 1.0 12Ch19
 228Fr-u                           35833       34       35839.434     7.227     .2o o                 kMA8 1.0 11Kr.A
 228Fr-u                           35852       32       35839.434     7.227    -.4o o                 HGS3 1.0 08Ch.A
 228Fr-u                           35821       16       35839.434     7.227    1.2  1    20  20 228Fr HGS3 1.0 12Ch19
 228Fr-133Cs1.714                 197899.5      8.1    197894.776     7.227    -.6  1    80  80 228Fr KMA8 1.0 14Kr09
 228Am-u                           46001#     215#                                  2                 g    1.0 S-u211
 224Frx-228Fr.491 220Fr.509         -540      320        -387#      101#        .2  U                 HP24 2.5 82Au01
 228Th(a)224Ra                     5520.17      0.22     5520.167     0.223    -.0  1   100  71 224Ra         71Gr17,Z
 228Pa(a)224Ac                     6266.7       3.       6264.535     1.455    -.7 -5-                N       58Hi.A,*
 228Pa(a)224Ac                     6264.7       3.       6264.535     1.455    -.1 -5-                N       93Sh07,*
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 228Pa(a)224Ac                  6263.5       2.        6264.535     1.455      .5  -5-              N        94Ah03,*
 228Pa(a)224Ac           ave    6264.535     1.455                                5                          average
 228U(a)224Th                   6803.6      10.        6799.504     9.451     -.4  -5-                       61Ru06
 228U(a)224Th                   6774.1      25.4       6799.504     9.451     1.0  -5-              GGSa     18Mi11
 228U(a)224Th            ave    6799.504     9.451                                5                          average
 228Np(a)224Pa                  7308.5      36.        7538#      100#        3.7D  D               GJAa     03Ni10,*
 228Np(a)224Pa                  7538#      100#                                   7                 g        S-u212
 228Pu(a)224U                   7949.7      20.        7940.203    17.676     -.5  -6-              NDbb     94An02
 228Pu(a)224U                   7911.0      35.        7940.203    17.676      .8  -6-              HJAa     03Ni10
 228Pu(a)224U            ave    7940.203    17.676                                6                          average
 228Ra(B-)228Ac                   46.7       2.          45.540     0.634     -.6  -3-                       61To10,*
 228Ra(B-)228Ac                   45.5       0.9         45.540     0.634      .0  -3-              K        72He.A,*
 228Ra(B-)228Ac                   45.3       1.0         45.540     0.634      .2  -3-              K        95So11,*
 228Ra(B-)228Ac          ave      45.540     0.634                                3                          average
 228Ac(B-)228Th                 2240        20         2124.954     2.606    -5.8B  B               h        53Ky19,*
 228Ac(B-)228Th                 2158        20         2124.954     2.606    -1.7   U               h        57Bj56,*
 228Pa(e)228Th                  2109        15         2151.023     4.298     2.8B  B               h        73Ku09,*
*228Pa(a)224Ac              E(a)=6119.2(3,Z), 6106.2(3,Z), 6079.2(3,Z) to 37.2, 51.9, 78.4 levels  N        93Sh07**
*                            ~ E(a)=6143(3,Hi,Z) is contamination                                    64Mc21*W
*228Pa(a)224Ac              E(a)=6118(3) to 37.2 level                                          N        93Sh07**
*228Pa(a)224Ac              E(a)=6117(2) to 37.1 level                                          N        94Ah03**
*                            ~ other reported E(a)'s mixed, to nearly coinciding levels          n        AHW949*W
*228Np(a)224Pa              Trends from Mass Surface TMS suggest 228Np   230 keV less bound      G        GAu212**
*228Ra(B-)228Ac             E-=40(2) 39(1) resp, to 1^- level at 6.28 keV, and other E-         K        Ens143**
*228Ra(B-)228Ac             E-=39.0(1.0) to 1^+ level at 6.28 keV                               K        Ens143**
*228Ac(B-)228Th             E-=2180(20) to 2^+ level at 57.773 keV, and other E-                k        Ens143**
*228Ac(B-)228Th             E-=2100(20), 1760, 1180 to 2^+ at 57.773, 3^- at 396.094, 2^+ at 968.984 k  Ens143**
*228Pa(e)228Th              pK=0.33(0.08) to 3^+ level at 1944.904 keV, recalculated            k        Ens143**


 229At-u                       48191#      429#                                   2                 g    1.0 S-u211
 229Rn-133Cs1.722             205069        14                                    2                 HMA8 1.0 09Ne03
 229Fr-133Cs1.722             201262        40       201104.038     5.364    -3.9B  B               HMA8 1.0 08We02,*
 229Fr-133Cs1.722             201104.5       6.4     201104.038     5.364     -.1   1     70  70 229Fr KMA8 1.0 14Kr09
 229Fr-u                       38343        32        38292.311     5.364    -1.6o  o               HGS3 1.0 08Ch.A
 229Fr-u                       38298        15        38292.311     5.364     -.4   1     13  13 229Fr HGS3 1.0 12Ch19
 229Fr-238U.962               -10576        13       -10569.822     5.392      .5   1     17  17 229Fr KMA8 1.0 14Kr09
 229Ra-133Cs1.722             197782        21       197768.431    16.576     -.6  -2-              MMA8 1.0 08We02
 229Ra-133Cs1.722             197746        27       197768.431    16.576      .8  -2-              HMA8 1.0 05He26
 229Ra-133Cs1.722        ave  197768.431    16.576                                2                          average
 229Ac-u                       32947        13                                    2                 HGS3 1.0 12Ch19
 229Th(a)225Ra                  5167.4       1.2       5167.560     1.024      .1  -1-              nKum     71Bb10,*
 229Th(a)225Ra                  5168.2       2.        5167.560     1.024     -.3  -1-              n        87He28,Z
 229Th(a)225Ra           ave    5167.612     1.029     5167.560     1.024     -.1   1     99  97 225Ra         average
 229Pa(a)225Ac                  5835.6       5.        5835.201     4.254     -.1   1     72  60 225Ac N        63Su.A,*
 229U(a)225Th                   6475.5       3.                                   5                          61Ru06,Z
 229Np(a)225Pa                  7012.7      20.        7019.822    59.453      .1  -6-               ORa     68Ha14
 229Np(a)225Pa                  7015.8      23.        7019.822    59.453      .1  -6-              M        00Sa52
 229Np(a)225Pa                  7032.8      30.5       7019.822    59.453     -.2  -6-              GGSa     18Mi11
 229Np(a)225Pa           ave    7019.822    32.166                                6                          average
 229Pu(a)225U                   7592.9      30.        7598.007    59.814      .1  -7-              NDbb     94An02
 229Pu(a)225U                   7598.0      10.        7598.007    59.814      .0o  o               HGSa     01Ca.B
 229Pu(a)225U                   7589.8      20.        7598.007    59.814      .2  -7-              HGSa     10Kh06
 229Pu(a)225U                   7613        31         7598.007    59.814     -.3  -7-              GGSa     18Mi11
 229Pu(a)225U            ave    7598.007    32.829                                7                          average
 229Am(a)225Np                  8137.4      20.4                                  5                 KGSa     15De22,*
 229Ra(B-)229Ac                 1760        40         1872.027    19.623     2.8B  B               K        75We23,G
 229Ac(B-)229Th                 1140       150         1103.016    12.191     -.2   U               M        73Ch24
 229Ac(B-)229Th                 1090        50         1103.016    12.191      .3   U               H        75We23
 229Npp(IT)229Np                 160#       50#                                   7                 h        S-u125
 229Amp(IT)229Am                  260#     200#                                   6                 g        S-u211,G
*229Fr-133Cs1.722           Could be influenced by 229Rn contaminant                            HMA8     08We02**
*229Fr-133Cs1.722           Isoltrap has new result                                             h        WgM123*W
*229Th(a)225Ra              E(a)=4978.3(1.2,Z), 4967.3(1.2,Z), 4845.1(1.2,Z) keV                n        71Gr17**
*                            ~ to 100.60, 111.60, 236.25 levels                                  n        71Gr17**
*229Th(a)225Ra              Other reference for same                                                     70Ba20*W
*229Th(a)225Ra              E(a)=4979.3(2,Z), 4968.3(2,Z), 4845.1(2,Z) keV                      n        87He28**
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*                                ~ to 9/2^+ level at 100.50, 7/2^+ at 111.60, 5/2^+ at 236.25 keV       h        Ens095**
*                                ~ calibrated with 71*BaB*2 value for 4845 level                         n        AHW92c**
*229Pa(a)225Ac                  E(a)=5670.2, 5630.2, 5615.2, 5580.2, 5536.2 (all 3,Z) keV to            N        63Su.A**
*                                ~ 5/2^+ 64.70, 7/2^+ 105.06, 5/2^- 120.80, 5/2^+ 155.65, 7/2^+ 199.85   h        Ens095**
*229Pa(a)225Ac                  Combination E(a,Z) of 63Su.A with level feeding of ref. gave 5835.7               73Ag01*W
*229Am(a)225Np                  E(a)=7990(20) and E(a)=8000(20)                                          K        15De22**
*229Ra(B-)229Ac                 E-=1760(40) is to ground-state                                           h        Ens08a*G
*229Amp(IT)229Am                for 233Bk                                                                k        GAu168*G

 230Rn-u                          45271#     215#                                    2                  g    1.0 S-u211
 230Fr-133Cs1.729                205878      32       205864.349      7.022     -.4o  o                  KMA8 1.0 05He26
 230Fr-133Cs1.729                205860.1     7.5     205864.349      7.022      .6   1     88   88 230Fr KMA8 1.0 14Kr09
 230Fr-u                          42401      34        42390.788      7.022     -.3o  o                  HGS3 1.0 08Ch.A
 230Fr-u                          42421      20        42390.788      7.022    -1.5   1     12   12 230Fr HGS3 1.0 12Ch19
 230Ra-133Cs1.729                200530      13       200528.338     11.053     -.1  -2-                 MMA8 1.0 08We02
 230Ra-133Cs1.729                200524      21       200528.338     11.053      .2  -2-                 HMA8 1.0 05He26
 230Ra-133Cs1.729            ave 200528.338  11.053                                  2                            average
 230Ac-u                          36328      32        36327.000     17.000     -.0o  o                  HGS3 1.0 08Ch.A
 230Ac-u                          36327      17                                      2                  HGS3 1.0 12Ch19
 230Ra-226Ra1.018                 11225      35        11186.951     11.211    -1.1   U                  MMA3 1.0 92Bo28
 230Th(a)226Ra                     4770.1     1.5       4770.058      1.515     -.0   1     98   98 226Ra  Orm      66Ba14,Z
 230Pa(a)226Ac                     5439.5     0.7       5439.448      0.710     -.0   1     99   88 226Ac  Orm      66Ba14,Z
 230U(a)226Th                      5992.8     0.7       5992.452      0.504     -.5  -2-                  Orm      66Ba14,Z
 230U(a)226Th                      5992.1     0.7       5992.452      0.504      .5  -2-                 KGea      12Ma30
 230U(a)226Th                ave   5992.452   0.504                                  2                            average
 230Np(a)226Pa                     6778.1    20.                                     5                  ORa      68Ha14
 230Pu(a)226U                      7175.0    15.        7178.456      9.289      .2  -6-                  Dbb      90An22
 230Pu(a)226U                      7180.1    17.        7178.456      9.289     -.1  -6-                 MJya      99Gr28
 230Pu(a)226U                      7182.2    10.        7178.456      9.289     -.4o  o                  GGSa      01Ca.B
 230Pu(a)226U                      7185.1    20.4       7178.456      9.289     -.3  -6-                 KRIa      16Ka13
 230Pu(a)226U                      7174.0    25.4       7178.456      9.289      .2  -6-                 GGSa      18Mi11
 230Pu(a)226U                ave   7178.457   9.289                                  6                            average
 230Am(a)226Np                     7630#    100#                                     8                  g         S-u211
 230Th(p,t)228Th                  -3550      15        -3568.588      1.119    -1.2   U                  hANL      74Fr01
 230Th(p,t)228Th-232Th()230Th      -493.5     1.0       -492.507      0.495     1.0o  o                  h         91Gr13
 230Th(p,t)228Th-232Th()230Th      -492.5     0.5       -492.507      0.495     -.0   1     98   71 228Th N         94Le22
 230Th(p,t)228Th-184W()182W        1564.0     1.6       1551.559      1.127    -7.8B  B                  H         09Le03
 230Th(p,t)228Th-184W()182W        1564.0     1.8       1551.559      1.127    -6.9C  C                  H         09Le.A
 230Th(d,t)229Th                   -541       6         -536.362      1.554      .8  -1-                            90Bu17
 230Th(d,t)229Th                   -525       6         -536.362      1.554    -1.9  -1-                  ANL      67Er02,*
 230Th(d,t)229Th             ave   -533.000   4.243     -536.362      1.554     -.8   1     13   10 229Th           average
 230Ra(B-)230Ac                     710     300          677.920     18.888     -.1   U                  H         80Gi04,*
 230Ac(B-)230Th                    2700     100         2973.740     15.856     2.7   U                  h         80Gi04,*
 230Pa(e)230Th                     1310.3     3.        1310.650      2.830      .1   1     89   88 230Pa           70Lo02,*
 230Pa(B-)230U                      561      15          560.255      4.550     -.0R  R  q-q=     0.745           70Lo02
*230Th(d,t)229Th                Q=-525(6) to 229Thm at 0.0035(0.0010) keV                                          94He08**
*230Ra(B-)230Ac                 E-=500(200) to level at 211.78 keV                                       k        Ens129**
*230Ac(B-)230Th                 E-=1400(100) to 0^+ level at 1297.14 keV                                 k        Ens129**
*230Pa(e)230Th                  pK=0.42(0.01) to 3^- level at 1127.789, recalculated                     k        Ens129**

 231Rn-u                          49973#     322#                                    2                  g    1.0 S-u211
 231Fr-u                          45191      39        45175.353      8.300     -.4o  o                  HGS3 1.0 08Ch.A
 231Fr-u                          45158      27        45175.353      8.300      .6   U                  KGS3 1.0 12Ch19
 231Fr-133Cs1.737                209405.3     8.3                                    2                  KMA8 1.0 14Kr09
 231Ra-133Cs1.737                205267      21       205257.032     12.206     -.5   1     34   34 231Ra HMA8 1.0 05He26
 231Ra-u                          41052      32        41027.085     12.206     -.8o  o                  HGS3 1.0 08Ch.A
 231Ra-u                          41022      15        41027.085     12.206      .3   1     66   66 231Ra HGS3 1.0 12Ch19
 231Ac-u                          38404      32        38393.000     14.000     -.3o  o                  HGS3 1.0 08Ch.A
 231Ac-u                          38393      14                                      2                  HGS3 1.0 12Ch19
 231Am-u                          45529#     322#                                    2                  k    1.0 S-u169
 231Cm-u                          50746#     322#                                    2                  k    1.0 S-u169
 231Pa(a)227Ac                     5150.2     1.5       5149.953      0.825     -.2o  o                  hOrm      66Ba14,W
 231Pa(a)227Ac                     5146.9     1.0       5149.953      0.825     3.1B  B                  kKum      68Ba25,*
 231Pa(a)227Ac                     5150.7     1.5       5149.953      0.825     -.5  -1-                 hOrm      69Le.A,*
 231Pa(a)227Ac                     5149.8     1.0       5149.953      0.825      .2  -1-                  Kum      76Ba68,*
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 231Pa(a)227Ac           ave   5150.077    0.832     5149.953     0.825     -.1   1     98  92 227Ac          average
 231U(a)227Th                  5551.3     50.        5576.277     1.664      .4   U                     h       53Cr.A,W
 231U(a)227Th                  5576.9      3.        5576.277     1.664     -.2  -2-                    N       94Li12,*
 231U(a)227Th                  5576        2         5576.277     1.664      .1  -2-                    M       97Mu08
 231U(a)227Th            ave   5576.277    1.664                                 2                              average
 231Np(a)227Pa                 6368.4      8.                                    6                              73Ja06
 231Pu(a)227U                  6838.6     20.                                    7                      M       99La14
 231Pa(p,t)229Pa              -4133        3        -4133.144     2.847     -.0   1     90  87 229Pa HMun    91Gr13,*
 230Th(n,g)231Th               5118.00     0.20      5118.009     0.198      .0   1     98  70 231Th mILn    87Wh01,Z
 230Th(d,p)231Th               2907        7         2893.443     0.198    -1.9   U                     hANL    67Er02
 231Ac(B-)231Th                2100      100         1944.898    13.067    -1.6   U                     H       60Ta19
 231Th(B-)231Pa                 389.2      2.         391.474     1.460     1.1   1     53  48 231Pa          75Ho14,*
*231Pa(a)227Ac               E(a)=5060.9(1.5). Do not use: same authors as 69Le.A                      n       AHW951*W
*231Pa(a)227Ac               E(a)=5057.6(1.0,Z), 4985.9(1.0,Z), 4950.4(1.0,Z) to gs, 7/2^- at         k       Ens129**
*                             ~ 74.149 keV, and 9/2^+ at 109.992 keV                                    k       Ens129**
*                             ~ Do not use: same authors as 76Ba68, who, though, uses another branch   n       AHW951*W
*                             ~ Rytz quotes wrong ref.; gives wrong correction                          n       AHW951*W
*231Pa(a)227Ac               E(a)=5015.9(1.5,Z),4735.9(1.5,Z) to 5/2^+ at 46.354, 3/2^- at 330.040 keVk       Ens129**
*231Pa(a)227Ac               E(a)=4736.2(1.0,Z) to 330.040 level                                       k       Ens129**
*231U(a)227Th                PrvCom to ref.                                                            h       58St50*W
*231U(a)227Th                E(a)=5471(3), 5456(3), 5404(3) to 9.3, 24.4, 77.7 levels                  N       94Li12**
*231Pa(p,t)229Pa             Q=-4145(3) to 11.6 level                                                  m       98Le15**
*231Th(B-)231Pa              E-=305(2) to 5/2^+ level at 84.2148 keV                                   k       Ens136**


 232Fr-133Cs1.744              214353      15                                    2                      KMA8 1.0 14Kr09
 232Ra-133Cs1.744              208368      13       208367.048     9.824     -.1   1     57  57 232Ra HMA8 1.0 05He26
 232Ra-u                        43518      32        43475.268     9.824    -1.3o  o                     HGS3 1.0 08Ch.A
 232Ra-u                        43474      15        43475.268     9.824      .1   1     43  43 232Ra HGS3 1.0 12Ch19
 232Ac-u                        42052      32        42034.000    14.000     -.6o  o                     HGS3 1.0 08Ch.A
 232Ac-u                        42034      14                                      2                     HGS3 1.0 12Ch19
 C18 H16-232Th                  87142.4     2.       87144.011     1.103      .3   U                     KM20 2.5 73Br06
 C24 H16-232Th 37Cl 35Cl       152393.4     1.8     152388.749     1.105    -1.0   1      6   6 232Th  M20 2.5 73Br06
 232Am-u                        46613#    322#                                     2                     g    1.0 S-u20c
 232Th(a)228Ra                  4082.5      5.        4081.600     1.400     -.2   U                     h       57Ha08,Z
 232Th(a)228Ra                  4084.6      5.        4081.600     1.400     -.6   U                     h       61Ko11,Z
 232Th(a)228Ra                  4083.5      5.        4081.600     1.400     -.4   U                     h       62Ko12,Z
 232Th(a)228Ra                  4081.6      1.4                                    2                     m       89Sa01,*
 232U(a)228Th                   5413.63     0.09      5413.630     0.090     -.0   1    100  99 232U  MBIP    72Go33,*
 232Pu(a)228U                   6716.0     10.                                     6                             73Ja06
 232Cm(a)228Pu                  7800#     200#                                     7                     k       S-u169
 232Th(p,t)230Th               -3070       15        -3076.081     1.042     -.4   U                     hANL    74Fr01
 232Th(p,t)230Th-184W()182W     2056.4      1.6       2044.066     1.050    -7.7B  B                     H       09Le03
 232Th(p,t)230Th-184W()182W     2056.5      1.8       2044.066     1.050    -6.9B  B                     H       09Le.A
 232Th(d,t)231Th                -174        6         -182.638     1.051    -1.4   U                     hANL    67Er02
 232Th(d,t)231Th                -187       10         -182.638     1.051      .4   U                     hMIT    72Gr19
 232Ac(B-)232Th                 3700      100         3705.018    13.081      .1   U                     H       90Be.B
 232Pa(B-)232U                  1344       20         1337.103     7.428     -.3  -2-                            63Bj01,*
 232Pa(B-)232U                  1336        8         1337.103     7.428      .1  -2-                            71Ka42,*
 232Pa(B-)232U           ave    1337.103    7.428                                  2                             average
 232Np(e)232U                   2750#     100#                                     2                     n       S-MA
*232Th(a)228Ra               E(a)=4012.3(1.4), 3947.2(2.0) to gs, 2^+ level at 63.823 keV              k       Ens143**
*232U(a)228Th                E(a)=5320.12(0.14,Z), 5263.36(0.09,Z) to gs, 2^+ level at 57.773 level   k       Ens143**
*232Pa(B-)232U               E-=1295(20) to 2^+ level at 47.573 keV, and other E-                      h       Ens06a**
*232Pa(B-)232U               E-=314(8) to 2^- level at 1016.85 keV, and other E-                       h       Ens06a**


 233Fr-u                        52640     320        52517.834    21.000     -.2   Z                     k    2.5 S-u123
 233Fr-133Cs1.752              218166      21                                      2                     KMA8 1.0 14Kr09
 233Ra-u                        47602      32        47594.571     9.235     -.2o  o                     HGS3 1.0 08Ch.A
 233Ra-u                        47582      17        47594.571     9.235      .7   1     30  30 233Ra HGS3 1.0 12Ch19
 233Ra-133Cs1.752              213248      11       213242.737     9.235     -.5   1     70  70 233Ra KMA8 1.0 14Kr09
 233Ac-u                        44363      32        44346.000    14.000     -.5o  o                     HGS3 1.0 08Ch.A
 233Ac-u                        44346      14                                      2                     HGS3 1.0 12Ch19
 233U O2-208Pb1.274             59211.9     1.0      59212.158     0.911      .3   1     83  83 233U  JTG3 1.0 21Na.A
 233U(a)229Th                   4908.4      1.2       4908.620     1.170      .2   1     92  88 229Th  Kum    68Ba25,Z
 233Np(a)229Pa                  5626.7     50.9                                    2                     h       50Ma14,W
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233Pu(a)229U		6416.3	20.				6					57Th10
233Am(a)229Npp		6898.6	17.3				8			h		00Sa52
233Cm(a)229Pu		7468.5	10.	7473.500	53.852	.1o	o			HGSa		01Ca.B
233Cm(a)229Pu		7473.5	20.				8			HGSa		10Kh06
233Bk(a)229Amp		7905.9	20.3				7			KGSa		15De22
232Th(n,g)233Th		4786.69	0.25	4786.386	0.093	-1.2	-1-			m		74Ke13,Z
232Th(n,g)233Th		4786.34	0.10	4786.386	0.093	.5	-1-			MBdn		06Fi.A
232Th(d,p)233Th		2555	10	2561.820	0.093	.7	U			hMIT		72Gr19
232Th(d,p)233Th		2567	7	2561.820	0.093	-.7	U			hANL		72Vo08
232Th(n,g)233Th	ave	4786.388	0.093	4786.386	0.093	-.0	1	100	92 233Th			average
233Th(B-)233Pa		1245	3	1242.461	1.114	-.8	1	14	8 233Th			57Fr.A,*
233Pa(B-)233U		568	4	571.420	1.147	.9	-1-			h		54Br37,*
233Pa(B-)233U		568	5	571.420	1.147	.7	-1-			h		55On05,*
233Pa(B-)233U		566	5	571.420	1.147	1.1	-1-			h		63Bi03,*
233Pa(B-)233U	ave	567.439	2.649	571.420	1.147	1.5	1	19	10 233Pa			average
233Npp(IT)233Np		50#	30#				3			m		S-w038
*233Np(a)229Pa		Says 229Pa ground-state same Nilsson level as 233Np								n		91Gr13*W
*		~ Alpha decay not found in ref. Repl. by SYST??								n		58Le73*W
*233Th(B-)233Pa		PrvCom to ref.										58St50**
*233Pa(B-)233U		E-=568(5), 256(4) to gs, 3/2^+ level at 311.904 keV								h		Ens057**
*233Pa(B-)233U		E-=568(5), 257(5) to gs, 3/2^+ level at 311.904 keV								h		Ens057**
*233Pa(B-)233U		E-=254(5) to 3/2^+ level at 311.904 keV								h		Ens057**
234Ra-u		50358	33	50382.100	9.000	.7o	o			HGS3	1.0	08Ch.A
234Ra-u		50342	33	50382.100	9.000	1.2	U			KGS3	1.0	12Ch19
234Ra-133Cs1.759		216692.1	9.0				2			KMA8	1.0	14Kr09
234Ac-u		48137	32	48139.000	15.000	.1o	o			HGS3	1.0	08Ch.A
234Ac-u		48139	15				2			HGS3	1.0	12Ch19
234U(a)230Th		4857.4	1.0	4857.936	0.663	.5	-1-					55Go.A,Z
234U(a)230Th		4860.4	2.	4857.936	0.663	-1.2	-1-			Kum		67Ba43,Z
234U(a)230Th	ave	4857.991	0.910	4857.936	0.663	-.1	1	53	46 230Th			average
234Pu(a)230U		6310.1	5.				3					60Ho.A,*
234Am(a)230Np		6572.6	20.	6800#	150#	11.4F	F			H		90Ha02,*
234Am(a)230Np		6800#	150#				6			h		S-w118
234Cm(a)230Pu		7365.2	10.	7365.325	9.100	.0	-7-			MGSa		01Ca.B
234Cm(a)230Pu		7366.1	20.3	7365.325	9.100	-.0	-7-			KRIa		16Ka13
234Cm(a)230Pu	ave	7365.325	9.100				7					average
234Bk(a)230Am		8087	50	8098.600	53.964	.2o	o			KRIa		02Mo.B,*
234Bk(a)230Am		8098.6	20.3				9			KRIa		16Ka13
232Th(t,p)234Th		2487	20	2492.350	2.412	.3	U			hLAl		69Br11
234U(p,t)232U		-4099	15	-4124.282	1.531	-1.7	U			hANL		74Fr01
234U(p,t)232U-184W()182W		1007.6	1.6	995.866	1.537	-7.3B	B			H		09Le03
234U(p,t)232U-184W()182W		1007.6	1.8	995.866	1.537	-6.5C	C			H		09Le.A
233U(d,p)234U		4656	15	4619.709	0.980	-2.4	U			hKop		68Bj05
234U(d,t)233U		-579	6	-587.045	0.980	-1.3	1 *	3	2 233U	ANL		67Er02
234Th(B-)234Pam		192	2	195.088	1.029	1.5	-3-					55De40,*
234Th(B-)234Pam		193	2	195.088	1.029	1.0	-3-					63Bj02,*
234Th(B-)234Pam		198.	1.5	195.088	1.029	-1.9	-3-					73Go40,*
234Th(B-)234Pam	ave	195.088	1.029				3					average
234Pam(IT)234Pa		79	3				4			g		Nub211
234Pa(B-)234U		2230	40	2196.308	3.896	-.8	U			h		62Bj01
234Pam(B-)234U		2290	20	2275.308	2.485	-.7	U			h		63Bj02
234Np(B+)234U		1812	10	1809.846	8.321	-.2	-2-					67Ha04,*
234Np(B+)234U		1805	15	1809.846	8.321	.3	-2-					67Wa09,*
234Np(B+)234U	ave	1809.846	8.320				2					average
*234Pu(a)230U		With correction similar to ref.								m		91Ry01**
*234Am(a)230Np		Not clear if measured in this work. Check older NDS.										GAu931*G
*234Am(a)230Np		F : not believed to be measured in this work, replaced by estimate								H		GAu118**
*234Bk(a)230Am		E(a)=7850(50) to 100 keV excited state								K		16Ka13**
*234Th(B-)234Pam		E-=100(2) 100(2) 104.0(1.5) resp, to (1^-) 92.38 abv 234Pam, and other E-								h		Ens074**
*234Np(B+)234U		E+=790(10) pK=0.48(0.03) resp, to 1^+ at 1570.69 and 1^+ at 1601.8 keV								h		Ens074**
*		~ recalculated								h		AHW *W
235Ra-u		54890#	322#				2			k	1.0	S-u168
235Ac-u		50872	32	50840.000	15.000	-1.0o	o			HGS3	1.0	08Ch.A

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 235Ac-u                     50840       15                                     2               HGS3 1.0 12Ch19
 235Th-u                     47252       32        47255.000    14.000      .1o  o               HGS3 1.0 08Ch.A
 235Th-u                     47255       14                                     2               HGS3 1.0 12Ch19
 235Pa-u                     45421       32        45399.000    15.000     -.7o  o               HGS3 1.0 08Ch.A
 235Pa-u                     45399       15                                     2               HGS3 1.0 12Ch19
 235U-206Pb C2 H5            30341.0     10.       30341.932     0.598      .0   U               hC4  2.5 71Ke02
 235U O2-208Pb1.284          63742.5      1.5      63740.786     0.587    -1.1   1    15  15 235U JTG3 1.0 21Na.A
 235Bk-u                     56651#     430#                                    2               g    1.0 S-u211
 235U-C18 H18               -96932.8      3.8     -96919.702     0.595     1.4   U               mM20 2.5 73Br06
 C18 H20-235U               112584.2      4.8     112569.766     0.595    -1.2   U               mM20 2.5 73Br06
 235U(a)231Th                 4678        2         4678.478     0.677      .2  -1-               Kum      60Ba44,*
 235U(a)231Th                 4681        3         4678.478     0.677     -.8  -1-                        60Vo07,*
 235U(a)231Th                 4675.5      3.0       4678.478     0.677     1.0  -1-                        64Sc27,*
 235U(a)231Th                 4677        3         4678.478     0.677      .5  -1-                        66Ga03,*
 235U(a)231Th           ave   4677.905    1.309     4678.478     0.677      .4   1    27  24 231Th          average
 235Np(a)231Pa                5197.2      2.0       5194.143     1.468    -1.5   1    54  44 231Pa MBka     73Br12,*
 235Pu(a)231U                 5951.5     20.                                     3               N        57Th10
 235Am(a)231Np                6559      100         6576.000    13.000      .2o  o               hJAa     99Sa.D,*
 235Am(a)231Np                6576       15         6576.000    13.000     -.0o  o               HJAa     04Sa05,*
 235Am(a)231Np                6576       13                                     7               HJAa     04As12,*
 235Cm(a)231Pu                7131.6     20.0       7280#       100#       7.4D  D               GGSa     20Kh10,*
 235Cm(a)231Pu                7280#     100#                                    8               g        S-u212
 233U(t,p)235U                3668       10         3659.947     0.962     -.8   U               h        67Ri.A,*
 234U(n,g)235U                5297.1      0.5       5297.468     0.232      .7  -1-              m        72Ri08,Z
 234U(n,g)235U                5297.4      0.3       5297.468     0.232      .2  -1-              m        77Ko15,Z
 234U(d,p)235U                3075        7         3072.902     0.232     -.3   U               hANL     70Br01
 235U(d,t)234U                 935       15          959.762     0.232     1.7   U               hKop     68Bj05
 234U(n,g)235U          ave   5297.321    0.257     5297.468     0.232      .6   1    81  70 234U           average
 235Th(B-)235Pa               1470       80         1728.853    19.113     3.2B  B                        89Yu01
 235Pa(B-)235U                1410       50         1367.552    13.983     -.8   U               H        68Tr07
 235Np(e)235U                  123.5      2.         124.191     0.852      .3  -1-                       58Gi05
 235Np(e)235U                  123.6      1.         124.191     0.852      .6  -1-                       72Mc25
 235Np(e)235U           ave    123.580    0.894      124.191     0.852      .7   1    91  90 235Np          average
*235U(a)231Th               E(a)=4596 4398 4372(all 2,Z) to gs, (7/2^-) at 205.310, 9/2^- at 236.906 k      Ens136**
*235U(a)231Th               E(a)=4598.6(3,Z) , 4402.6(3,Z) to gs, (7/2^-) at 205.310 keV             k      Ens136**
*235U(a)231Th               E(a)=4595 4394 4364(all 3,Z) to gs, (7/2^-) at 205.310, 9/2^- at 236.906 k      Ens136**
*235U(a)231Th               E(a)=4595.3, 4397.3, 4365.3(all 3,Z) to gs, (7/2^-) level at 205.310 keV k      Ens136**
*                            ~ and 9/2^- at 236.906 keV                                              k      Ens136**
*235Np(a)231Pa              E(a)=5105.2(3), 5097.2(3), 5050.8(2,Z), 5024.8(2,Z), 4924.8(2,Z) to gs,  m      AHW951**
*                            ~ 1/2^- at 9.206, 7/2^- at 58.5699, 5/2^+ at 84.2148, 5/2^+ at 183.4962 k      Ens136**
*235Am(a)231Np              E(a)=6440(100) to level below 15 keV                                     H      04As12**
*235Am(a)231Np              E(a)=6457(14) to level below 15 keV                                      H      04As12**
*235Am(a)231Np              E(a)=6457(12) to level below 15 keV                                      H      04As12**
*235Cm(a)231Pu              Trends from Mass Surface TMS suggest 235Cm   150 keV less bound          G      GAu212**
*233U(t,p)235U              Q=3335(10,Ri) to 5/2^+ level at 332.845 keV                              k      Ens14b**


 236Ac-u                     55037       73        54988.000    41.000     -.7o  o               HGS3 1.0 10Ch19
 236Ac-u                     54988       41                                     2               HGS3 1.0 12Ch19
 236Th-u                     49665       32        49657.000    15.000     -.2o  o               HGS3 1.0 08Ch.A
 236Th-u                     49657       15                                     2               HGS3 1.0 12Ch19
 236Pa-u                     48666       32        48668.000    15.000      .1o  o               HGS3 1.0 08Ch.A
 236Pa-u                     48668       15                                     2               HGS3 1.0 12Ch19
 236U(a)232Th                 4572.2      3.        4572.827     0.870      .2o  o               H        60Ko04,Z
 236U(a)232Th                 4570.0      3.1       4572.827     0.870      .9  -1-              H        61Ko11,Z
 236U(a)232Th                 4573.1      1.0       4572.827     0.870     -.3  -1-               Kum     78Ba.C
 236U(a)232Th           ave   4572.835    0.965     4572.827     0.870     -.0   1    81  81 232Th          average
 236Pu(a)232U                 5867.15     0.08      5867.147     0.081     -.0   1   100  99 236Pu          84Ry02,Z
 236Am(a)232Np                6256.2     40.                                     3               HJAa     04Sa05
 236Cm(a)232Pu                7074.1     20.        7066.990     5.086     -.4   U               HGSa     10Kh06
 236Cm(a)232Pu                7066.9      5.                                     7               HJAa     10As.A
 236Bk(a)232Am                7447       14         7697#       200#       4.8D  D               GBka     20Po07,*
 236Bk(a)232Am                7697#     200#                                    3               g        S-u212
 236U(p,t)234U               -3330       15        -3361.191     0.331    -2.1   U               hANL     74Fr01
 235U(n,g)236U                6545        2         6545.519     0.256      .3   U               m        70Ka22
 235U(n,g)236U                6545.1      0.5       6545.519     0.256      .8  -1-              M        74Ju.B,Z
 235U(n,g)236U                6545.4      0.5       6545.519     0.256      .2  -1-              m        75We.A,Z
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236U(d,t)235U		-281	6	-288.289	0.256	-1.2	U				hANL		70Br01
235U(n,g)236U	ave	6545.250	0.354	6545.519	0.256	.8	1	53	28	235U			average
236Pa(B-)236U		3350	100	2886.807	13.983	-4.6B	B						63Wo04
236Pa(B-)236U		2900	200	2886.807	13.983	-.1	U				H		68Tr07,*
236Npm(IT)236Np		60	50				3				h		Ens06a
236Npm(B-)236Pu		525	10	536.585	6.247	1.2	-2-						56Gr11,*
236Npm(B-)236Pu		544	8	536.585	6.247	-.9	-2-						69Le05,*
236Npm(B-)236Pu	ave	536.585	6.247				2						average
*236Bk(a)232Am		Trends from Mass Surface TMS suggest 236Bk 250 keV less bound									G		GAu212**
*236Pa(B-)236U		E-=2000(200) to 1^- level at 687.59 keV, and other E-, reinterpreted									h		Ens06a**
*236Npm(B-)236Pu		E-=518(10) 537(8) resp, to gs and 2^+ level at 44.63 keV									h		Ens06a**
237Ac-u		57993#	429#				2				k	1.0	S-u168
237Th-u		53690	32	53629.000	17.000	-1.9o	o				HGS3	1.0	08Ch.A
237Th-u		53629	17				2				HGS3	1.0	12Ch19
237Pa-u		51038	32	51023.000	14.000	-.5o	o				HGS3	1.0	08Ch.A
237Pa-u		51023	14				2				HGS3	1.0	12Ch19
237Np(a)233Pa		4959.9	3.	4957.353	0.725	-.8	U				K		61Ba44,*
237Np(a)233Pa		4956.7	1.5	4957.353	0.725	.4	-1-				mKum		68Ba25,*
237Np(a)233Pa		4959.9	3.	4957.353	0.725	-.8	U				K		69Va06,*
237Np(a)233Pa		4956.9	0.9	4957.353	0.725	.5	-1-				KGea		00Si02,*
237Np(a)233Pa	ave	4956.847	0.772	4957.353	0.725	.7	1	88	85	233Pa			average
237Pu(a)233U		5753.3	20.	5748.756	1.564	-.2	U				h		57Th10
237Pu(a)233U		5747	5	5748.756	1.564	.4	1	10	7	237Pu	NDba		93Dm02,W
237Am(a)233Npp		6146.2	5.				4				M		75Ah05,Z
237Cm(a)233Pu		6774.5	10.	6770.400	50.990	-.1o	o				HJAa		02As08
237Cm(a)233Pu		6770.4	10.				7				HJAa		06As03
237Bk(a)233Am		7500#	200#				9						S-MA
237Cf(a)233Cm		8220	20				9				HGSa		10Kh06
235U(t,p)237U		3206	20	3189.490	0.525	-.8	U				hAld		64Mi.A,*
235U(t,p)237U		3178	20	3189.490	0.525	.6	U				hLAl		69Br11
237Np(p,t)235Np		-3816	15	-3832.235	0.911	-1.1	U				hANL		74Fr01
236U(n,g)237U		5125.9	0.5	5125.767	0.462	-.3	1	85	84	237U	mBNn		79Vo05,Z
236U(d,p)237U		2898	8	2901.201	0.462	.4	U				hANL		67Er02
237Pa(B-)237U		2250	100	2134.925	13.060	-1.2	U				H		74Ka05
237U(B-)237Np		520	5	518.554	0.520	-.3	U				h		53Wa05,*
237U(B-)237Np		524	5	518.554	0.520	-1.1	U				h		56Ba39,*
237U(B-)237Np		523	5	518.554	0.520	-.9	U				h		57Ra04,*
237Pu(e)237Np		222	8	219.983	1.290	-.3	U				h		58Ho02,*
237Pu(e)237Np		207	18	219.983	1.290	.7	U				h		59Gi54,*
237Cmp(IT)237Cm		200#	150#				8						S-MA
*237Np(a)233Pa		E(a)=4876.7 4774.2 4769.1(3,Z) to gs, 7/2^+ at 103.635, 9/2^+ 109.07 keV									h		Ens057**
*237Np(a)233Pa		E(a)=4787.9(1.5,Z) to 5/2^+ level at 86.48 keV									h		Ens057**
*237Np(a)233Pa		E(a)=4791.0(3,Z), 4774.0(3,Z), 4770.0(3,Z) keV									h		69Va06**
*		~ to 5/2^+ at 86.468, 7/2^+ at 103.635, 9/2^+ at 109.07 keV									h		Ens057**
*237Np(a)233Pa		E(a)=4788.0(0.9) keV to 5/2^+ at 86.468 keV									K		00Si02**
*237Pu(a)233U		Nine values E(a) combined with level energies									n		Ens901*W
*235U(t,p)237U		Q=2980(20) to 7/2^+ level at 426.15 keV									h		Ens068**
*237U(B-)237Np		E-=245(5), 249(5), 248(5) resp, to 53% 3/2^- level at 267.556, and									h		Ens068**
*		~ 43% 1/2^- level at 281.356 keV									h		Ens068**
*237Pu(e)237Np		LK=2.8(0.8) capture to 5/2^- level at 59.541 keV, recalculated									h		Ens068**
*237Pu(e)237Np		pK=0.38(0.06) to gs, 7/2^+ level at 33.196, 5/2^- at 59.541 keV									h		Ens068**
238Pa-u		54648	32	54637.000	17.000	-.3o	o				HGS3	1.0	08Ch.A
238Pa-u		54637	17				2				HGS3	1.0	12Ch19
238U-206Pb 32S		104253.9	10.	104257.282	0.707	.1	U				hC4	2.5	71Ke02
C18 H22-238U		121366.0	2.4	121358.465	0.706	-1.3	U				KM20	2.5	73Br06
C24 H20-238U 35Cl2		168010.8	1.4	168003.015	0.710	-2.2	1	4	4	238U	M20	2.5	73Br06
238U O2-208Pb1.298		70930.31	0.83	70929.041	0.698	-1.5	1	71	70	238U	JTG3	1.0	21Na.A
238Cf-u		61490#	320#				2				h	1.0	S-u125
238U-235U		6858.6	10.	6861.364	0.833	.1	U				hC4	2.5	71Ke02
238U(a)234Th		4271.5	5.	4269.858	2.116	-.3	-2-						57Ha08,Z
238U(a)234Th		4265.1	5.	4269.858	2.116	.9	-2-						60Vo07,Z
238U(a)234Th		4272.9	5.	4269.858	2.116	-.6	-2-						61Ko11,Z
238U(a)234Th		4269.9	3.	4269.858	2.116	-.0	-2-				KGea		14Po02

238U(a)234Th	ave	4269.858	2.116				2					average
238Pu(a)234U		5593.20	0.2	5593.278	0.193	.4	1	90	67 238Pu			71Gr17,Z
238Am(a)234Np		6041.7	30.				3					72Ah04
238Cm(a)234Pu		6611.5	50.	6670.301	10.171	1.2	U			H		48St.A,*
238Cm(a)234Pu		6632.0	50.	6670.301	10.171	.8	U			H		52Hi.A
238Cm(a)234Pu		6672.3	10.	6670.301	10.171	-.2o	o			HJAa		02As08
238Cm(a)234Pu		6670.3	10.				4			HJAa		06As03
238Bk(a)234Am		7330#	200#				7			n		S-MA
238U(n,a)235Th		8700	50	8941.317	13.058	4.8B	B			H		81Wa11
236U(t,p)238U		2900	20	2795.319	0.767	-5.2F	F			hAld		64Mi.A,*
236U(t,p)238U		2782	10	2795.319	0.767	1.3	U			hANL		67Er02
236U(t,p)238U		2780	20	2795.319	0.767	.8	U			hLAl		69Br11
238U(p,t)236U		-2765	15	-2795.319	0.767	-2.0	U			hANL		74Fr01
238U(p,d)237U		-3951	20	-3926.781	0.893	1.2	U			hAld		64Mi.A
238U(d,t)237U		116	6	105.883	0.893	-1.7	U			hANL		67Er02
237Np(n,g)238Np		5488.32	0.20				2			mBNn		79Io01,Z
238Pu(d,t)237Pu		-746	10	-742.523	1.340	.3	U			hKop		73Gr26
238Pa(B-)238U		3600	300	3581.374	15.849	-.1	U			H		68Tr07,*
238Pa(B-)238U		3460	60	3581.374	15.849	2.0	U			H		85Ba57,*
238Np(B-)238Pu		1295	10	1291.450	0.455	-.4	U			h		55Ra27,*
238Np(B-)238Pu		1300	15	1291.450	0.455	-.6	U			h		56Ba95,*
*238Cm(a)234Pu		PrvCom to ref.										58St50**
*236U(t,p)238U		F : authors not satisfied with target material								h		AHW **
*238Pa(B-)238U		E-=1700(300) to (3^-) level at 1992.2 keV, and other E-, reinterpreted								k		Ens157**
*238Pa(B-)238U		Reports result from thesis										82Gi.A**
*238Np(B-)238Pu		E-=270(10) 280(10) resp, to 2^+ level at 1028.537 keV, and other E-								k		Ens157**

239Th-u		60655#	429#				2			g	1.0	S-u20c
239Pa-u		57260#	210#				2			m	1.0	S-h03b
239Pu O-208Pb1.226		75704.1	1.4	75705.372	0.577	.9	1	17	17 239Pu	JTG3	1.0	21Na.A
239Es-u		68310#	322#				2			g	1.0	S-u20b
239Pu(a)235U		5244.60	0.25	5244.517	0.205	-.3	1	67	42 235U			79Ry.A,*
239Am(a)235Np		5924.6	2.0	5922.400	1.414	-1.1	-2-			MBka		71Go01,*
239Am(a)235Np		5920.2	2.0	5922.400	1.414	1.1	-2-			M		75Ah05,*
239Am(a)235Np	ave	5922.400	1.414				2					average
239Cm(a)235Pu		6539.7	140.				4			HJAa		02Sh.C,*
239Bk(a)235Am		7200#	200#				8					S
239Cf(a)235Cm		7760.1	25.	7763.451	62.517	.1	-9-			GSa		81Mu12
239Cf(a)235Cm		7766.2	8.	7763.451	62.517	-.1	-9-			GGSa		20Kh10
239Cf(a)235Cm	ave	7763.451	37.529				9					average
238U(n,g)239U		4806.55	0.30	4806.382	0.172	-.6	-2-			mANL		72Bo46,Z
238U(n,g)239U		4806.30	0.21	4806.382	0.172	.4	-2-			mILn		79Br25,Z
238U(d,p)239U		2588	20	2581.816	0.172	-.3	U			hAld		64Mi.A
238U(d,p)239U		2579	7	2581.816	0.172	.4	U			hTal		66Sh16
238U(d,p)239U		2585	6	2581.816	0.172	-.5	U			hANL		67Er02
238U(n,g)239U	ave	4806.382	0.172				2					average
238Pu(n,g)239Pu		5646.7	0.5	5646.229	0.307	-.9	1	38	32 238Pu	m		75Ma.A,Z
238Pu(d,p)239Pu		3432	10	3421.663	0.307	-1.0	U			hKop		73Gr26
239Pu(d,t)238Pu		604	10	611.001	0.307	.7	U			hANL		73Fr01
239U(B-)239Np		1290	20	1263.354	1.045	-1.3	U			h		64Bl11,*
239Np(B-)239Pu		722.5	1.0	723.469	0.807	1.0	1	65	54 239Np			59Co63,*
239Cmp(IT)239Cm		240	100	238.639	150.558	-.0	Z			j		S-u125,G
*239Pu(a)235U		E(a)=5156.59(0.25,Z) to 1/2^+ level at 0.0760 keV								k		Ens14b**
*239Am(a)235Np		E(a)=5824.6(4,Z) 5775.6(2,Z) 5733.6(2,Z); gs, (5/2)^- 49.10, (7/2)^- 91.6k										Ens14b**
*239Am(a)235Np		E(a)=5772.7(2,Z) to (5/2)^- level at 49.10 keV								k		Ens14b**
*239Cm(a)235Pu		Private communication to ref.								H		08Qi03**
*239U(B-)239Np		E-=1211(20) to 5/2^- level at 74.6640 keV, and other E-								k		Ens14b**
*239Np(B-)239Pu		E-=437(1) to 5/2^+ level at 285.460 keV, and other E-								k		Ens14b**
*239Cmp(IT)239Cm		was 150(100)								h		S-NmMA*G

240Pa-u		61203#	215#				2			g	1.0	S-u20c
240Pu(a)236U		5255.88	0.15	5255.818	0.145	-.4	1	90	74 236U			72Go33,Z
240Am(a)236Npp		5468.9	1.0				3					70Go42,Z
240Cm(a)236Pu		6397.8	0.6	6397.797	0.600	-.0	1	100	99 240Cm	mKum		71Bb10,*
240Cf(a)236Cm		7718.9	10.	7710.983	3.777	-.8	-8-					70Si19

240Cf(a)236Cm		7713.8	20.	7710.983	3.777	-.1	U				HGSa		10Kh06
240Cf(a)236Cm		7709.7	4.1	7710.983	3.777	.3	-8-				HJAa		10As.A
240Cf(a)236Cm	ave	7710.983	3.777				8						average
240Es(a)236Bk		8330	30	8258.779	62.651	-1.2	-4-				G		17Ko02,*
240Es(a)236Bk		8258	77	8258.779	62.651	.0	-4-				GBka		20Po07
240Es(a)236Bk		8186.6	31.0	8258.779	62.651	1.2	-4-				GGSt		20Kh10
240Es(a)236Bk	ave	8258.779	37.751				4						average
238U(t,p)240U		2242	20	2267.511	1.369	1.3	U				hAld		64Mi.A
238U(t,p)240U		2253	20	2267.511	1.369	.7	U				hLAl		69Br11
240Pu(p,t)238Pu		-3692	15	-3698.651	0.354	-.4	U				hANL		74Fr01
239Pu(n,g)240Pu		6534.1	1.0	6534.218	0.228	.1	-1-						70Ch.A
239Pu(n,g)240Pu		6534.3	0.4	6534.218	0.228	-.2	-1-				M		74Ju.B,Z
239Pu(n,g)240Pu		6534.2	0.4	6534.218	0.228	.0	-1-				m		75We.A,Z
239Pu(d,p)240Pu		4300	10	4309.652	0.228	1.0	U				hANL		73Fr01
239Pu(n,g)240Pu	ave	6534.239	0.272	6534.218	0.228	-.1	1	70	41	239Pu			average
240U(B-)240Npm		386	20	374.350	13.053	-.6	1	43	42	240Npmh			53Kn23,*
240Npm(IT)240Np		20	15	16.953	13.668	-.2	1	83	68	240Np			81Hs02,*
240Np(B-)240Pu		2199	30	2186.813	16.996	-.4	1	32	32	240Np			51Or.A,*
240Npm(B-)240Pu		2210	20	2203.766	13.043	-.3	1	43	43	240Npmh			59Bu20,*
240Am(e)240Pu		1395	35	1384.775	13.788	-.3R	R	q-q=	10.225				72Ah07,*
240Bk(e)240Cm		3940#	150#				2						S-MAPN
240Bkp(IT)240Bk		240#	100#				3				m		S-h03b
*240Cm(a)236Pu		E(a)=6290.5, 6247.7(0.6,Z) to gs, 2^+ level at 44.63 keV									h		Ens06a**
*240Es(a)236Bk		Highest decay energy is assigned to gs to gs transition									G		HWJ202**
*240U(B-)240Npm		E-=360(20) to 240Npm, and 1^+ level at 44.17 keV above									h		Ens08a**
*240Npm(IT)240Np		From fraction IT =0.0012(0.0001)									h		AHW900**
*240Np(B-)240Pu		E-=890(30) to 5^- level at 1308.74 keV									h		Ens08a**
*240Npm(B-)240Pu		E-=2180(20) to gs and 2^+ level at 42.824 keV, and other E-									h		Ens08a**
*240Am(e)240Pu		pK=0.635(0.020) to 3^+ level at 1030.55 keV, recalculated									h		Ens08a**

241Pa-u		64134#	322#				2				g	1.0	S-u20c
241U-u		60330#	210#				2				k	1.0	S-u169
241Am O-208Pb1.236		80599.7	2.3	80604.598	0.591	2.1	U				JTG3	1.0	21Na.A
241Fm-u		74311#	322#				2				g	1.0	S-u211
241Am O-C22		51744.8	1.9	51744.697	0.599	-.0	1	4	4	241Am	KTG1	1.5	14Ei01
241Pu(a)237U		5139.6	3.	5140.063	0.478	.2	U				H		68Ah01,*
241Pu(a)237U		5139.3	1.2	5140.063	0.478	.6	1	16	16	237U	mKum		68Ba25,*
241Am(a)237Np		5637.81	0.12	5637.822	0.120	.1	1	100	96	237Np			71Gr17,*
241Cm(a)237Pu		6182.8	2.0	6185.207	0.571	1.2	U				mKum		67Ba42,*
241Cm(a)237Pu		6185.2	0.6	6185.207	0.571	.0	-1-				mKum		71Bb10,*
241Cm(a)237Pu		6185.0	2.0	6185.207	0.571	.1	-1-				M		75Ah05,*
241Cm(a)237Pu	ave	6185.183	0.575	6185.207	0.571	.0	1	99	93	237Pu			average
241Cf(a)237Cmp		7459.0	5.	7454.676	3.176	-.9	-9-						70Si19,G
241Cf(a)237Cmp		7451.9	4.1	7454.676	3.176	.7	-9-				HJAa		10As.A
241Cf(a)237Cmp		7451.9	15.3	7454.676	3.176	.2	U				GGSa		20Kh10
241Cf(a)237Cmp	ave	7454.676	3.176				9						average
241Es(a)237Bk		8064.1	30.	8258.622	16.922	6.5C	C				HGSa		85Hi.A,*
241Es(a)237Bk		8250.2	20.	8258.622	16.922	.4	-10-				HGSa		96Ni09
241Es(a)237Bk		8277.6	31.	8258.622	16.922	-.6	-10-				GGSt		20Kh08
241Es(a)237Bk	ave	8258.622	16.922				10						average
239Pu(t,p)241Pu		3242	20	3293.944	0.229	2.6	U				hLAl		69Br11
240Pu(n,g)241Pu		5241.3	0.7	5241.522	0.030	.3	U				m		75Ma.A
240Pu(n,g)241Pu		5241.52	0.03	5241.522	0.030	.1	1	100	55	240Pu	MILn		98Wh01,Z
240Pu(d,p)241Pu		3018	6	3016.956	0.030	-.2	U				hANL		67Er02
241Am(d,t)240Am		-388	15	-389.862	13.787	-.1	-2-				Kop		76Gr19
241Am(d,t)240Am		-400	35	-389.862	13.787	.3	-2-	q-q=	-10.138		m		240Pu+0
241Am(d,t)240Am	ave	-389.862	13.787				2						average
241Np(B-)241Pu		1360	100				2						59Va32
241Np(B-)241Pu		1250	100	1360.000	100.000	1.1B	B				G		66Qa02,*
241Pu(B-)241Am		20.8	0.2	20.795	0.166	-.0	-1-						56Sh31
241Pu(B-)241Am		20.7	0.3	20.795	0.166	.3	-1-				M		99Dr13
241Pu(B-)241Am		20.78	0.20	20.795	0.166	.1o	o				K		99Ya.A
241Pu(B-)241Am		21.6	0.5	20.795	0.166	-1.6	U				H		10Lo14,*
241Pu(B-)241Am	ave	20.769	0.166	20.795	0.166	.2	1	99	91	241Am			average
241Cm(e)241Am		767.5	1.2	767.368	1.165	-.1	1	94	93	241Cm			89Su.A,*
241Cfp(IT)241Cf		150#	100#				10						S-NmMA

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 241Esp(IT)241Es                230#      100#                                    11                  g        S-u20c,G
*241Pu(a)237U                 E(a)=4896.6(3,Z), 4853.6(3,Z) to 5/2^+ at 159.962, 11/2^+ at 204.06 keV  h        Ens068**
*241Pu(a)237U                 E(a)=4896.3(1.2,Z), 4853.3(1.2,Z) to 5/2^+ at 159.962, 11/2^+ 204.06 keV h        Ens068**
*241Pu(a)237U                 Error in Rytz corrected.                                                 m        AHW951*W
*241Am(a)237Np                E(a)=5485.56(0.12,Z) 5442.80(0.13,Z) to 5/2^- at 59.54, 7/2^- at 102.96  h        Ens068**
*241Cm(a)237Pu                E(a)=6080.6(2,Z), 5926.6(2,Z) to gs, 3/2^+ level at 155.456 keV          h        Ens068**
*241Cm(a)237Pu                Retained because of defective cycle closure                              n        AHW952*W
*241Cm(a)237Pu                E(a)=5939.0(0.6,Z), 5884.7(0.6,Z) to 1/2^+ at 145.543, 5/2^+ 201.179 keV h        Ens068**
*241Cm(a)237Pu                E(a)=5938.7(2,Z), 5884.7(2,Z) to 1/2^+ at 145.543, 5/2^+ at 201.179 keV  h        Ens068**
*241Cf(a)237Cmp               Z or not Z ?? not in 90Rytz                                                       GAu   *G
*241Es(a)237Bk                C : new data from same group (next item) is more reliable                N        96Ni09**
*241Es(a)237Bk                E(a)+Nm low in alpha syst. See next item                                 n        AHW949*W
*241Np(B-)241Pu               Trends from Mass Surface TMS favors the higher Q-beta                    G        GAu212**
*241Pu(B-)241Am               No quoted uncertainty, estimated by evaluator                            k        GAu126**
*241Cm(e)241Am                Q(e)=5.5(1.2) to 3/2^- level at 636.861 keV                              k        Ens152**
*241Esp(IT)241Es              for 245Md                                                                g        GAu20c*G


 242Pu O2-208Pb1.317             79327.8       2.3      79325.034     0.718    -1.2   1     10   10 242Pu JTG3 1.0 21Na.A
 242Fm-u                         73430#      430#                                       2                          1.0 S
 242U(a)238Th                     3670#      200#                                       3                    k        S-u168
 242Pu(a)238U                     4987.3       2.0       4982.654     0.747    -2.3  -1-                     N        53As.A,*
 242Pu(a)238U                     4989.5       3.0       4982.654     0.747    -2.3   U                      M        56Ko67,*
 242Pu(a)238U                     4982.9       1.2       4982.654     0.747     -.2  -1-                     mKum     68Ba25,*
 242Pu(a)238U             ave     4984.065     1.029     4982.654     0.747    -1.4   1     53   28 242Pu             average
 242Am(a)238Np                    5587.5       0.8       5588.502     0.254     1.3   U                      HKum     79Ba67,*
 242Am(a)238Np                    5589.9       0.8       5588.502     0.254    -1.7   U                      H        90Ho02,*
 242Cm(a)238Pu                    6215.63      0.08      6215.635     0.081      .0   1    100  100 242Cm             71Gr17,Z
 242Cf(a)238Cm                    7516.9       4.                                       5                             70Si19,Z
 242Es(a)238Bk                    8160.2      20.                                       8                    HGSa     10An08
 240Pu(t,p)242Pu                  3043        20         3068.483     0.597     1.3   U                      hLAl     69Br11
 242Pu(p,t)240Pu                 -3045        15        -3068.483     0.597    -1.6   U                      hANL     74Fr01
 241Pu(n,g)242Pu                  6309.5       0.7       6308.757     0.597    -1.1   1     73   54 242Pu             72Ma.A
 242Pu(d,t)241Pu                   -49         7          -51.527     0.597     -.4   U                      hANL     67Er02
 241Am(n,g)242Am                  5541.5       1.5       5537.640     0.100    -2.6   U                      h        75Ij.A
 241Am(n,g)242Am                  5537.64      0.1                                      2                    mILn     88Sa18,Z
 241Am(d,p)242Am                  3308        15         3313.074     0.100      .3   U                      hKop     76Gr19
 242Np(B-)242Pu                   2700       200                                        2                    G        79Ha26,G
 242Am(B-)242Cm                    651         5          664.317     0.412     2.7   U                      h        50Ok52,*
 242Am(B-)242Cm                    667         5          664.317     0.412     -.5   U                      h        55Ba.A
 242Bkp(IT)242Bk                   150#      100#                                       3                    g        S-u211
*242Pu(a)238U                 E(a)=4904.6, 4860.6(2,Z) to gs, 2^+ level at 44.916 keV                  k        Ens157**
*242Pu(a)238U                 E(a)=4905.2(3,Z), 4863.2(3,Z) to gs, 2^+ level at 44.916 keV             k        Ens157**
*242Pu(a)238U                 E(a)=4900.4(1.2,Z), 4856.1(1.2,Z) to gs, 2^+ level at 44.916 keV         k        Ens157**
*242Am(a)238Np                E(a)=5206.6(0.5,Z), 5141.4(0.5,Z) from 242Amm at 48.60 to 5^- at 342.439,k        Ens157**
*                              ~ and 6^- at 407.59 keV; error increased due to conflict with next item h        GAu128**
*242Am(a)238Np                E(a)=5208.3(0.8,Z), 5144.3(0.9,Z) from 242Amm to 5^- 6^- levels (see abv)k        Ens157**
*242Np(B-)242Pu               Trends from Mass Surface TMS suggest 242Np    60 keV less bound          g        GAu212*G
*242Am(B-)242Cm               E-=628(5) to gs and 2^+ level at 42.13 keV                               h        Ens026**


 243U-u                          67075#      322#                                       2                    g    1.0 S-u20c
 243Am O-208Pb1.245              85369.89      0.85     85368.775     0.713    -1.3   1     70   70 243Am JTG3 1.0 21Na.A
 243Am O-C22                     56295.8       1.5      56298.728     0.720     1.3   1     10   10 243Am KTG1 1.5 14Ei01
 243Am(a)239Np                    5438.8       1.0       5439.769     0.807     1.0   1     65   46 239Np  Kum     68Ba25,*
 243Cm(a)239Pu                    6165.4       3.0       6168.800     1.000     1.1   U                      h        57As.A,*
 243Cm(a)239Pu                    6165.7       3.0       6168.800     1.000     1.0   U                      h        63Dz07,*
 243Cm(a)239Pu                    6165.4       3.0       6168.800     1.000     1.1o  o                      hKum     66Ba07,*
 243Cm(a)239Pu                    6168.8       1.0                                      2                             69Ba57,*
 243Bk(a)239Am                    6874.4       4.                                       3                     Bka     66Ah.A,Z
 243Cf(a)239Cmp                   7178        10                                        4                    N        67Fi04,*
 243Es(a)239Bk                    8072.1      10.                                       9                     RIa     89Ha27
 243Es(a)239Bkp                   8022.3      20.        8030.933     2.922      .4   U                      h        73Es02
 243Es(a)239Bkp                   8031.4       3.        8030.933     2.922     -.2 -10-                      RIa     89Ha27
 243Es(a)239Bkp                   8027.3      20.        8030.933     2.922      .2o  o                      HGSa     93Ho.A
 243Es(a)239Bkp                   8025.4      10.        8030.933     2.922      .6 -10-                     HGSa     10An08
 243Es(a)239Bkp           ave     8030.933     2.922                                   10                             average
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 243Fm(a)239Cf                   8689.3      25.4       8689.200    50.652     -.0o  o                HGSa      81Mu12
 243Fm(a)239Cf                   8693.4      20.3       8689.200    50.652     -.1o  o                GGSa      08Kh10
 243Fm(a)239Cf                   8689.2       8.1                                   10                GGSa      20Kh10
 243Am(p,t)241Am                -3407        15        -3418.787     0.795     -.8  U                 hANL      74Fr01
 242Pu(n,g)243Pu                 5034.2       3.        5036.961     2.303      .9  1     59  57 243Pu          76Ca25
 242Pu(d,p)243Pu                 2807         8         2812.395     2.303      .7  U                 hANL      67Er02
 243Am(d,t)242Am                 -111        15         -105.713     0.801      .4  U                 hKop      76Gr19
 243Npp(IT)243Np                   50        30          120#        30#       2.3  Z                 g         S-Nm
 243Npp(IT)243Np                  120#       30#                                    3                 g         S-u20c
 243Pu(B-)243Am                   578        10          575.660     2.393     -.2  -1-                         69Ho10
 243Pu(B-)243Am                   580        10          575.660     2.393     -.4  -1-                         77Dr07
 243Pu(B-)243Am            ave    579.000     7.071      575.660     2.393     -.5  1     11  11 243Pu          average
*243Am(a)239Np                 E(a)=5275.2(1.0,Z) 5233.3(1.0,Z) to 5/2^- at 74.6640, 7/2^- at 117.715  k       Ens14b**
*243Cm(a)239Pu                 E(a)=6063.7, 5989.7, 5782.7, 5738.7(3,Z) to gs, 7/2^+ lvl at 75.705,    h       57As.A**
*                               ~ 5/2^+ at 285.460, and 7/2^+ at 330.124 keV                           k       Ens14b**
*243Cm(a)239Pu                 E(a)=5990.5, 5783.5, 5738.5(3,Z) to 7/2^+ lvl at 75.705, 5/2^+ at 285.46,k       Ens14b**
*                               ~ and 7/2^+ at 330.124 keV                                             k       Ens14b**
*243Cm(a)239Pu                 E(a)=6067.4, 5992.4(2,Z) to gs, 7/2^+ at 75.705 keV                     k       Ens14b**
*243Cm(a)239Pu                 Same authors as next item                                               h       AHW952*W
*243Cm(a)239Pu                 E(a)=5785.7(1.0,Z), 5742.8(1.0,Z) to 5/2^+ at 285.46, 7/2^+ at 330.124keVk       Ens14b**
*243Cm(a)239Pu                 E(a)=6066.2(1.7), 5991.8(1.5), 5785.2(0.9), 5742.1(0.9) [GAu15b:???] [addk       91Ry01*W
*243Cf(a)239Cmp                Unhindered E(a)=7060(10); there is a weaker E(a)=7170(10) keV           N       AHW951**


 244U-u                         70012       322              *                      Z                 g    2.5 S-J20b
 244Np-u                        67891#      107#                                    2                 g    1.0 S-u20c
 244Pu O2-208Pb1.327            85011.0       1.8      85008.122     0.699    -1.6  -1-               JTG3 1.0 21Na.A
 244Pu O-208Pb1.250             88293.9       1.6      88295.596     0.699     1.1  -1-               JTG3 1.0 21Na.A
 244Pu O2-208Pb1.327       ave  85008.382     1.196    85008.122     0.699     -.2  1     34  34 244Pu          average
 244Pu O-C22                    59119.3       1.9      59108.802     0.709    -3.7B  B                JTG1 1.5 14Ei01
 244Pu(a)240U                    4665.6       1.0       4665.590     1.016     -.0  1    100 100 240U           69Be06,Z
 244Cm(a)240Pu                   5901.60      0.03                                  2                 KBIP      71Gr17,*
 244Bk(a)240Am                   6778.8       4.                                    3                 N         66Ah.B,*
 244Cf(a)240Cm                   7327.1       2.        7328.946     1.811      .9  -1-                         67Fi04,Z
 244Cf(a)240Cm                   7336.4       4.        7328.946     1.811    -1.8  -1-                         67Si08,Z
 244Cf(a)240Cm                   7330.4      20.        7328.946     1.811     -.1  U                 HGSa      08Kh10
 244Cf(a)240Cm             ave   7328.976     1.819     7328.946     1.811     -.0  1     99  98 244Cf          average
 244Es(a)240Bkp                  7696.4      20.                                    4                           73Es02
 244Fm(a)240Cf                   8550#      200#                                    9                 n         S
 244Md(a)240Es                   8446.9      19.3       8947.000    78.873     9.3B  B                GBka      20Po07,*
 244Md(a)240Es                   8807.4      23.4       8947.000    78.873     2.5B  B                GBka      20Po07
 244Md(a)240Es                   8947        61                                     5                 GGSt      20Kh08,*
 242Pu(t,p)244Pu                 2576        20         2584.575     0.927      .4  U                 hLAl      69Br11
 244Pu(p,t)242Pu                -2560        15        -2584.575     0.927    -1.6  U                 hANL      72Ma15
 244Pu(t,a)243Npp               12405        10                                     2                 N         79Fl02,W
 244Pu(d,t)243Pu                  234         5          227.820     2.372    -1.2  1     22  21 243Pu  ANL     76Ca25
 243Am(n,g)244Amm                5277.90      0.07                                  2                 mILn      84Vo07,Z
 244Cm(d,t)243Cm                 -530         7         -544.188     1.026    -2.0  U                 hANL      67Er02
 244Amm(IT)244Am                   85.0       1.0         90.656     1.270     5.7F  F                M         84Ho02,*
 244Am(B-)244Cm                  1427.3       1.0                                   3                           62Va08,*
 244Bkp(IT)244Bk                  140#       50#                                    4                 n         S-MA
 244Esp(IT)244Es                    0       100              *                      Z                 g         S-u211
*244Cm(a)240Pu                 E(a)=5804.77(0.05,Z), 5762.65(0.03,Z) to gs, 2^+ level at 42.824 keV    K       Ens08a**
*244Cm(a)240Pu                 Q(a)=5901.61(0.05)    5858.77(0.03)+42.82=  5901.59  Birge=0.34         K       GAu16a*G
*244Cm(a)240Pu                 Carefull : there is a typo in 1991Rytz01 : 5762.35(0.03) instead of 5762.K       GAu16a*G
*244Bk(a)240Am                 E(a)=6667.5(4,Z), 6625.5(3,Z) to gs, 2^+ level at 42.824 keV            h       Ens08a**
*244Md(a)240Es                 One event, not trusted.                                                 g       FGK20c**
*244Md(a)240Es                 Unweighted average of E(a)=8860(30) at E=231.5 MeV and E(a)=8740(30)    G       20Kh08**
*244Md(a)240Es                 ~ at E=239.8 MeV                                                        G       20Kh08**
*244Md(a)240Es                 Trends from Mass Surface TMS favors the higher Q-alpha                  G       GAu212**
*244Pu(t,a)243Npp              Not necessarily to gs                                                   n       Ens928*W
*244Amm(IT)244Am               F : value in Fig. 1 only, no source no error                            M       AHW98c**
*244Amm(IT)244Am                Without this input, output 88.4(1.7)                                   m       AHW038*W
*244Am(B-)244Cm                E-=387(1) to 6^+ level at 1040.188 keV; also E-=1498(10) from           h       Ens036**
*                               ~ 244Amm at 89.3(1.6) to gs and 2^+ at 42.965 keV, not used            g       Nub211**
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 245U-u                          74661      322          *                      Z                 g    2.5 S-J20b
 245Np-u                         70693#     215#                                2                 g    1.0 S-u20c
 245Cm(a)241Pu                    5621.9      0.5     5624.191     0.453    4.6B  B                 KKum       75Ba65,*
 245Cm(a)241Pu                    5624.8      0.5     5624.191     0.453   -1.2   1     82  54 245Cm KAra       16Ko.B,*
 245Bk(a)241Am                    6454.7      4.      6454.525     1.404    -.0  -2-                M          74Po08,*
 245Bk(a)241Am                    6454.5      1.5     6454.525     1.404     .0  -2-                 Kum       75Ba25,*
 245Bk(a)241Am              ave   6454.525    1.404                              2                            average
 245Cf(a)241Cm                    7257.5      2.0     7258.460     1.842     .5  -1-                m          67Fi04,*
 245Cf(a)241Cm                    7265        5       7258.460     1.842   -1.3  -1-                M          96Ma72,*
 245Cf(a)241Cm                    7260.8     11.      7258.460     1.842    -.2   U                 HGSa       04He28
 245Cf(a)241Cm              ave   7258.534    1.857   7258.460     1.842    -.0   1     98  98 245Cf            average
 245Es(a)241Bk                    7858.5     20.      7909.358     3.050     .9   U                 h          73Es01
 245Es(a)241Bk                    7884.0     20.      7909.358     3.050     .5   U                 hGSa       85He22
 245Es(a)241Bk                    7909.4      3.                                  4                  RIa       89Ha27
 245Es(a)241Bkp                   7827.9     30.      7858.526     1.017    1.0   U                 h          67Mi06
 245Es(a)241Bkp                   7858.5      1.                                  4                  RIa       89Ha27
 245Fm(a)241Cfp                   8285.5     20.      8290.039     6.717     .2 -11-                           67Nu01
 245Fm(a)241Cfp                   8290.6      7.      8290.039     6.717    -.1 -11-                GGSa       20Kh10
 245Fm(a)241Cfp             ave   8290.039    6.717                             11                            average
 245Md(a)241Esp                   8779.0     20.      8776.422    63.758    -.0 -12-                FGSa       96Ni09,*
 245Md(a)241Esp                   8773.4     30.      8776.422    63.758     .1 -12-                GGSt       20Kh10
 245Md(a)241Esp             ave   8776.422   39.561                             12                            average
 244Pu(d,p)245Pu                  2469       15       2474.600    13.416     .4  -2-                HANL       75Er.A,*
 244Pu(d,p)245Pu                  2497       30       2474.600    13.416    -.7  -2- q-q=    22.400 K           245Am-0
 244Pu(d,p)245Pu            ave   2474.600   13.416                              2                            average
 244Cm(d,p)245Cm                  3297        7       3294.365     0.454    -.4   U                 hANL       67Er02
 245Pu(B-)245Am                   1257       30       1266.279    13.524     .3R  R  q-q=    -9.279            68Da02,*
 245Am(B-)245Cm                    905        5        895.591     1.538   -1.9   U                 K          55Br02
 245Bkp(IT)245Bk                    50#      30#                                  3                 n          S-Nm
 245Esp(IT)245Es                   283#      15#                                  3                 g          Nub211
*245Cm(a)241Pu                  E(a)=5529.0, 5488.5, 5436.1(0.5,Z), 5303.6, 5234.4 (1.2,Z) keV          K          75Ba65**
*245Cm(a)241Pu                  ~ to gs, 7/2^+ 41.9722, 9/2^+ 95.7795, 9/2^+ 231.935, 11/2^+ 301.172 lvlsK          Ens15c**
*                                ~ E(a)=5361.8(1.2,Z) to 7/2^+ 175.05 lvl in error in 75*Ba*65; excluded K          FGK169**
*245Cm(a)241Pu                  E(a)=5532.7, 5491.3(0.5), 5436.6(2.0), 5360.6, 5305.2, 5624.5(0.5) keV   K          16Ko.B**
*                                ~ to gs, 41.97, 95.78, 175.05, 231.94, 301.17 levels                      K          Ens15c**
*245Cm(a)241Pu                   calibrated using 244Cm(Ea=5804.77 (0.05)) 248Cm(Ea=5078.38(0.25)) from 9k          16Ko.B*W
*245Bk(a)241Am                  E(a)=6349.0, 6309.0, 6146.0, 5886.0 (all 4,Z)                            m          91Ry01**
*                                ~ to gs, 7/2^- at 41.176, 5/2^+ at 205.883, 3/2^- at 471.810 keV         k          Ens15c**
*245Bk(a)241Am                  E(a)=6347.8, 6307.8, 6146.8, 5885.8 recalibrated as in ref.                         91Ry01**
*                                ~ to gs, 7/2^- at 41.176, 5/2^+ at 205.883, 3/2^- at 471.810 keV         k          Ens15c**
*245Cf(a)241Cm                  E(a)=7136.8(2.0,Z),7083.8(2.0,Z) to gs+5.6 and 56.1 level                h          96Ma72**
*245Cf(a)241Cm                  E(a)=7145(5),7090(5) to gs+5.6 and 56.1 level                            h          96Ma72**
*245Md(a)241Esp                 Second E(a) 8635(20) keV                                                 m          96Ni09**
*245Md(a)241Esp                 Interpreted as e- summing with E(a)=8635(20) keV                         G          21He.A**
*244Pu(d,p)245Pu                Q=2252(15) to 217 level (estimated energy for 15/2^- level)              H          06Ma.A**
*245Pu(B-)245Am                 E-=1210(40), 930(30) to (9/2^+) level at 47.07, 7/2^+ at 327.428 keV     h          Ens112**


 246U-u                          77839      322          *                      Z                 g    2.5 S-J20b
 246Np-u                         75154      322          *                      Z                 g    2.5 S-J20b
 246Cm O-208Pb1.260              91560.7      2.5    91560.493     1.088    -.1   1     19  19 246Cm JTG3 1.0 21Na.A
 246Es-u                         72799      122      72890.459    30.465     .7   1      6   6 246Es GRI1 1.0 18It04
 246Pu(a)242U                     4350#     200#                                  2                 n          S
 246Cm(a)242Pu                    5475.2      4.      5475.083     0.836    -.0   U                 h          63Dz07,Z
 246Cm(a)242Pu                    5474.9      2.      5475.083     0.836     .1  -1-                MKum       66Ba07,*
 246Cm(a)242Pu                    5475.2      1.      5475.083     0.836    -.1  -1-                m          84Sh31,*
 246Cm(a)242Pu              ave   5475.140    0.894   5475.083     0.836    -.1   1     87  80 246Cm            average
 246Cf(a)242Cm                    6871.0      1.0     6861.659     0.997   -9.3B  B                 h          63Fr04,*
 246Cf(a)242Cm                    6861.6      1.      6861.659     0.997     .1   1     99  99 246Cf  Kum       77Ba69,*
 246Es(a)242Bkp                   7451.2     30.      7492.032     4.066    1.4   U                 h          67Mi06
 246Es(a)242Bkp                   7481.9     30.      7492.032     4.066     .3   U                 h          73Es01
 246Es(a)242Bkp                   7492.0      4.                                  2                  RIa       89Ha27
 246Fm(a)242Cf                    8371.4     20.      8379.289     4.546     .4   U                 G          66Ak01
 246Fm(a)242Cf                    8376.5     20.      8379.289     4.546     .1   U                 GBka       67Nu01
 246Fm(a)242Cf                    8386.7     20.      8379.289     4.546    -.4o  o                 HGSa       96Ni09
 246Fm(a)242Cf                    8378.4     10.      8379.289     4.546     .1  -6-                HGSa       10An08
 246Fm(a)242Cf                    8379.5      5.      8379.289     4.546    -.0  -6-                GGSa       11Ve03
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246Fm(a)242Cf	ave	8379.289	4.546				6						average
246Md(a)242Es		8884.7	20.	8888.790	40.662	.1o	o				HGSa		96Ni09,*
246Md(a)242Es		8888.8	40.				9				HGSa		10An08
246Mdm(a)242Es		8944.5	50.				9				HGSa		10An08,*
244Pu(t,p)246Pu		2085	20	2066.381	14.917	-.9	1	56	56	246Pu	LAl		79Br19
246Cm(d,t)245Cm		-196	6	-200.636	1.063	-.8	U				MANL		67Er02
246Pu(B-)246Amm		374	10	369.345	9.429	-.5	1	89	44	246Amm			56Ho23,*
246Amm(IT)246Am		30#	10#				2				h		S-u11b,G
246Amm(B-)246Cm		2300	100	2401.381	14.917	1.0	U				h		55En16,*
246Amm(B-)246Cm		2420	20	2401.381	14.917	-.9	1	56	56	246Amm			56Sm85,*
246Bk(e)246Cm		1350	60				2						89Sc26
*246Cm(a)242Pu		E(a)=5385.3(2,Z), 5342.3(2,Z) to gs, 2^+ level at 44.54 keV									h		Ens026**
*246Cm(a)242Pu		E(a)=5385.6(1,Z), 5342.6(1,Z) to gs, 2^+ level at 44.54 keV									h		Ens026**
*246Cf(a)242Cm		E(a)=6757.4(1.0,Z), 6718.4(0.7,Z) to gs, 2^+ level at 42.13 keV									h		Ens026**
*246Cf(a)242Cm		nasty disagreement. Trust Baranov better.									n		AHW952*W
*246Cf(a)242Cm		E(a)=6750.0(1.0,Z), 6708.2(1.0,Z) to gs, 2^+ level at 42.13 keV									h		Ens026**
*246Md(a)242Es		Also a lower E(a)=8530(30) keV									H		96Ni09**
*246Mdm(a)242Es		E(a)=8178(10) to level at 531+x; x estimated to be 100#50 keV									H		10An08**
*246Pu(B-)246Amm		E-=150(10) to 1^+ level at 223.74 keV above 246Amm									h		Ens118**
*246Amm(IT)246Am		From ref., theoretical work									h		84So03*G
*246Amm(B-)246Cm		E-=1222(100) 1350(20) resp, to 1^- lvl at 1078.845, 2^- lvl at 1104.854									h		Ens118**
*246Amm(B-)246Cm		and other E-									h		AHW *W
247U-u		82814	322	*			Z				g	2.5	S-J20b
247Np-u		78350	322	*			Z				g	2.5	S-J20b
247Pu-u		74300#	215#				2				g	1.0	S-u20c
247Cm(a)243Pu		5354.6	4.	5352.578	3.357	-.5	1	70	60	247Cm	m		71Fi01,*
247Bk(a)243Am		5889.6	5.				2				m		69Fr01,*
247Cf(a)243Cm		6528	7	6499.979	14.372	-4.0	Z				m		84Ah02,G
247Cf(a)243Cmp		6399.6	5.				3				m		84Ah02,Z
247Es(a)243Bkp		7450.7	30.	7443.754	1.016	-.2	U				h		67Mi06
247Es(a)243Bkp		7430.5	30.	7443.754	1.016	.4	U				h		73Es01
247Es(a)243Bkp		7443.8	1.				3				RIa		89Ha27
247Fm(a)243Cf		8060.8	50.	8259.204	8.070	4.0B	B				hDba		67Fl15
247Fm(a)243Cf		8213	18	8259.204	8.070	2.6o	o				HGSa		89He03,*
247Fm(a)243Cf		8287.3	20.	8259.204	8.070	-1.4o	o				HGSa		04He28,*
247Fm(a)243Cf		8268.1	10.	8259.204	8.070	-.9o	o				HGSa		06He27,*
247Fmm(a)243Cf		8314.9	30.	8306.759	5.082	-.3	U				hDba		67Fl15,*
247Fmm(a)243Cf		8260.0	30.	8306.759	5.082	1.5o	o				hGSa		97He29,*
247Fmm(a)243Cf		8304.8	11.	8306.759	5.082	.2o	o				HGSa		04He28
247Fmm(a)243Cf		8306.8	5.				3				HGSa		06He27
247Md(a)243Es		8776.6	25.	8764.400	10.000	-.5o	o				HGSa		81Mu12,*
247Md(a)243Es		8772.5	20.	8764.400	10.000	-.4o	o				hGSa		93Ho.A,*
247Md(a)243Es		8770.5	10.	8764.400	10.000	-.6o	o				HGSa		05He27,*
247Md(a)243Es		8764.4	10.				10				HGSa		10An08,*
247Mdm(a)243Es		9027.9	40.				10				HGSa		10An08,*
246Cm(d,p)247Cm		2931	8	2934.899	3.675	.5	1	21	20	247Cm	ANL		67Er02
247Am(B-)247Cm		1620#	100#				2				n		S-Alph
247Cf(e)247Bk		646	6	615.941	15.189	-5.0C	C				H		56Ch.A,*
*247Cm(a)243Pu		E(a)=5267.3(4,Z) 5212.3(4,Z) 4870.3(4,Z) to gs, 9/2^+ 58.13, 9/2^- 402.6									k		Ens148**
*247Bk(a)243Am		E(a)=5794, 5710, 5688(5,Z) to gs, 5/2^+ lvl at 84.00, 7/2^+ at 109.22 keV									k		Ens148**
*247Cf(a)243Cm		as used by AHW instead of following. GAu prefers direct determination									m		GAu039*G
*247Cf(a)243Cm		of 243Cmp (Ensdf=128(4) is from no K X-RAYS observed in coinc with a)									m		GAu039*G
*247Fm(a)243Cf		E(a)=8060(15) summed with e-									M		AHW024**
*247Fm(a)243Cf		E(a)=7840(20) to ~318 level									H		04He28**
*247Fm(a)243Cf		E(a)=7824(10) to ~315 level									H		06He27**
*247Fm(a)243Cf		Use preferably chain 243Cf-247Fmm-251Nom-251No-247Fm									h		GAu072*G
*247Fm(a)243Cf		If we use this data, 14 secondaries will become primaries									h		GAu128*G
*247Fmm(a)243Cf		Only one event									M		97He29**
*247Fmm(a)243Cf		Not observed in later work on 251No decay									M		01He35**
*247Md(a)243Es		E(a)=8428(25) to 209.6 level									H		10An08**
*247Md(a)243Es		E(a)=8424(20) to 209.6 level									H		10An08**
*247Md(a)243Es		E(a)=8422(10) to 209.6 level									H		10An08**
*247Md(a)243Es		E(a)=8616(20), 8416(10) to gs, 209.6 level									H		10An08**
*247Mdm(a)243Es		E(a)=8783(40) to 1/2^- level at ~100 keV									H		10An08**
*247Cf(e)247Bk		LMK=10(3) assuming first-frbdn to (5/2^-) lvl at 447.80 keV, yields 646.8									k		Ens153**

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*                                 ~ contradicts LMK=75 allowed to (5/2)^+ level at 334.92 keV, yields 550;k        WgM10a**
*                                 ~ both conflict with 613 from Shiptrap data to 255No plus alpha chain   H        WgM10a**
*247Cf(e)247Bk                   In Ame2003 it was assumed allowed capture to 489.4 level, yielding 646(6)h        AHW   *W

 248U-u                            86315       322             *                      Z               g    2.5 S-J20b
 248Np-u                           82878       322             *                      Z               g    2.5 S-J20b
 248Cm O-208Pb1.269                96883.43      0.83     96883.883     0.682     .5  1     68  68 248Cm JTG3 1.0 21Na.A
 248Cm(a)244Pu                      5161.81      0.25      5161.774     0.250    -.1  1     97  64 244Pu  Kum      77Ba69,Z
 248Cf(a)244Cm                      6364.8       5.1       6361.200     5.000    -.7o o                   h        78Gr10
 248Cf(a)244Cm                      6361.2       5.                                   3                   m        84Ah02,*
 248Es(a)244Bk                      7165.8      20.        7160#       50#       -.3F F                   n        84Li.A,*
 248Es(a)244Bkp                     6982.8      15.        7020.425     5.082    2.5  U                   h        56Ch67
 248Es(a)244Bkp                     6982.8      10.        7020.425     5.082    3.8B B                   h        70Ah01
 248Es(a)244Bkp                     7020.4       5.                                   5                    RIa     89Ha27
 248Fm(a)244Cf                      8009.4      30.        7994.458     8.265    -.5 -1-                           66Ak01
 248Fm(a)244Cf                      7999.3      20.        7994.458     8.265    -.2 -1-                           67Nu01
 248Fm(a)244Cf                      8002.3      15.        7994.458     8.265    -.5o o                   hGSa     85He.A
 248Fm(a)244Cf                      7992.2      11.        7994.458     8.265     .2 -1-                  HGSa     04He28
 248Fm(a)244Cf               ave    7995.244     9.327     7994.458     8.265    -.1  1     79  77 248Fm          average
 248Md(a)244Es                      8497.3      30.                                   5                            73Es01
 248No(a)244Fm                      9300#      100#                                  10                   g        S-u20c
 248Cm(p,t)246Cm                   -2894        15        -2897.884     1.190    -.3  U                   HANL     74Fr01
 248Cm(d,t)247Cm                      49         8           37.015     3.651   -1.5  1     21  20 247Cm  ANL      67Er02
 248Am(B-)248Cm                     3170#      200#                                   2                            S-MA
 248Bkp(IT)248Bk                      50#       50#                                   5                   n        S
 248Bkm(B-)248Cf                     870        20                                    4                   N        78Gr10,W
*248Cf(a)244Cm                   E(a)=6257.8(5,Z), 6216.8(5,Z) to gs, 2^+ level at 42.965 keV             h        Ens036**
*248Es(a)244Bk                   F : this line is not observed in more recent works                       h        AHW95a**
*248Bkm(B-)248Cf                 In Ame93, 1(-) 248Bkm was ground-state; but (6^+) 248Bk is gs            m        Ens898*W

 249U-u                            91443       322             *                      Z               g    2.5 S-J20b
 249Np-u                           86364       322             *                      Z               g    2.5 S-J20b
 249Am-u                           78480#      320#                                   2                    1.0 S
 249Cf-208Pb1.197                 102801.38      0.81    102801.805     0.606     .5  1     56  56 249Cf JTG3 1.0 21Na.A
 249Md-u                           82940       239        82857.156   176.517    -.3  1     55  55 249Md GRI1 1.0 18It04
 249Cf O-C22                       69760.0       1.4      69767.150     0.614    3.4  1      9   9 249Cf KTG1 1.5 14Ei01
 249Bk(a)245Am                      5520.4       2.0       5521.000     1.414     .3 -3-                  NBka     66Ah.A,*
 249Bk(a)245Am                      5526.1       1.0       5521.000     1.414   -5.1B B                   KKum     71Bb10,*
 249Bk(a)245Am                      5521.6       2.0       5521.000     1.414    -.3 -3-                  KAra     13Ah03,*
 249Bk(a)245Am               ave    5521.000     1.414                                3                            average
 249Cf(a)245Cm                      6296.0       0.7       6292.991     0.453   -4.3B B                   KKum     71Bb10,*
 249Cf(a)245Cm                      6293.6       0.5       6292.991     0.453   -1.2  1     82  46 245Cm KAra     15Ah03,*
 249Es(a)245Bkp                     6881.3       5.        6886.048     1.887     .9 -4-                           70Ah01,Z
 249Es(a)245Bkp                     6886.8       2.        6886.048     1.887    -.4 -4-                   RIa     89Ha27
 249Es(a)245Bkp              ave    6886.048     1.887                                4                            average
 249Fm(a)245Cf                      7718.3      20.        7709.000     5.914    -.5 -1-                  H        73Es01,*
 249Fm(a)245Cf                      7705.1      23.        7709.000     5.914     .2o o                   hGSa     85He06,*
 249Fm(a)245Cf                      7705.0      14.        7709.000     5.914     .3 -1-                  HGSa     04He28,*
 249Fm(a)245Cf                      7710.2       8.1       7709.000     5.914    -.1 -1-                  HOrm     11Lo06,*
 249Fm(a)245Cf               ave    7709.958     6.640     7709.000     5.914    -.1  1     79  77 249Fm          average
 249Md(a)245Esp                     8161.3      20.        8158.080     9.091    -.2 -2-                           73Es01
 249Md(a)245Esp                     8157.3      20.        8158.080     9.091     .0o o                   hGSa     85He22
 249Md(a)245Esp                     8165        20         8158.080     9.091    -.3o o                   hGSa     01He35,*
 249Md(a)245Esp                     8157.3      10.        8158.080     9.091     .1o o                   HGSa     05He27
 249Md(a)245Esp                     8157.3      10.        8158.080     9.091     .1 -2-                  HGSa     09He20
 249Md(a)245Esp              ave    8158.080     9.091                                2                            average
 249Mdm(a)245Esq                    8212.2      20.                                   3                   MGSa     01He35
 249No(a)245Fm                      9170#      200#                                  12                            S
 248Cm(n,g)249Cm                    4713.37      0.25                                 2                   mILn     82Ho07,Z
 248Cm(d,p)249Cm                    2488         6         2488.804     0.250     .1  U                   hANL     67Er02
 249Cm(B-)249Bk                      870       100          892.850     0.971     .2  U                   h        58Ea06,*
 249Cm(B-)249Bk                      885        15          892.850     0.971     .5  U                   HANB     05Ah03,*
 249Bk(B-)249Cf                      125         2          123.600     0.400    -.7  U                   K        59Va02
 249Bk(B-)249Cf                      123         2          123.600     0.400     .3  U                   K        74Gl10
 249Bk(B-)249Cf                      123.6       0.4                                  2                   K        14Ch47
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 249Mdm(IT)249Md                 100#      100#                             2                  m        S
*249Bk(a)245Am                E(a)=5431.8, 5412.8, 5384.8(all 2,Z) to gs, 7/2^+ 19.20, 9/2^+ 47.07 keV h        Ens112**
*249Bk(a)245Am                E(a)=5437.1(1.0,Z) to gs. ~ Energies of higher branches                  N        71Bb10**
*                              ~ rather different from ref., calibrated with same gs alpha              N        75Ba27**
*249Bk(a)245Am                E(a)=5437.1, 5416.6, 5389.7(1.0,Z)                                        n        71Bb10*W
*249Bk(a)245Am                E(a)=5436.8, 5420.8, 5392.8(1.0,Z)                                        n        75Ba27*W
*249Bk(a)245Am                 to ground-state, 7/2+ level at 19.20, 9/2+ level at 47.07 keV            h        Ens112*W
*249Bk(a)245Am                E(a)=5433(2), 5414(2), 5386(2) to gs, 7/2^+ 19.20, 9/2^+ 47.07 keV       K        Ens112**
*249Cf(a)245Cm                E(a)=6193.8(0.7,Z), 5813.3(1.0,Z) to gs, 9/2^- level at 388.181 keV      h        Ens112**
*249Cf(a)245Cm                E(a)=6192.4(0.5), 5810.5(0.5) to gs, 9/2^- level at 388.181 keV          K        Ens112**
*249Cf(a)245Cm                  Qa=6293.6(0.5), 5905.4(0.5)                                             k        GAu157*G
*249Fm(a)245Cf                E(a)=7540(20) to corresponding 7/2^+ [624] level at 55(10) keV           H        04He28**
*249Fm(a)245Cf                E(a)=7527(23) to corresponding 7/2^+ [624] level at 55(10) keV           H        04He28**
*249Fm(a)245Cf                Also E(a)=7530(10) keV to 7/2^+ [624] level at 57(4) keV                 H        11Lo06**
*249Fm(a)245Cf                E(a)=7530(7) to 7/2^+ [624] level at 57(4) keV                           H        11Lo06**
*249Md(a)245Esp               E(a)=8022(20) partly summed with conversion electrons                     M        01He35**
*249Cm(B-)249Bk               E-=860(100) 876(15) resp, to 3/2^- level at 8.777 keV                    h        Ens118**

 250Md-u                       84177     155      84254.018     9.265     .5   1     0    0 250Md GRI1 1.0 18It04,*
 250Cf(a)246Cm                  6129.1     0.6      6128.508     0.193   -1.0  -2-                  NKum     71Bb10,*
 250Cf(a)246Cm                  6128.44    0.2      6128.508     0.193     .3  -2-                           86Ry04,Z
 250Cf(a)246Cm           ave    6128.508   0.193                                2                            average
 250Fm(a)246Cf                  7550.9    50.       7560.593     6.325     .2   U                   h        57Am47
 250Fm(a)246Cf                  7540.9    30.5      7560.593     6.325     .6  -1-                           66Ak01
 250Fm(a)246Cf                  7561.1    30.       7560.593     6.325    -.0  -1-                           73Es01
 250Fm(a)246Cf                  7560.1    15.       7560.593     6.325     .0  -1-                   ORb     77Be36
 250Fm(a)246Cf                  7556.1    35.6      7560.593     6.325     .1o  o                   hGSa     81Mu06
 250Fm(a)246Cf                  7555.0    12.       7560.593     6.325     .5  -1-                  HGSa     04He28
 250Fm(a)246Cf                  7544.8    35.       7560.593     6.325     .5   U                   HBka     06Fo02
 250Fm(a)246Cf           ave    7556.084   8.711    7560.593     6.325     .5   1    53   52 250Fm           average
 250Md(a)246Es                  8155      28        8160.172    27.191     .2   1    94   94 246Es GGSa     19Vo03,*
 250Md(a)246Esp                 7947.4    30.       7967.702    40.652     .7F  F                   G        73Es01,*
 250Md(a)246Esp                 7964.7    20.       7967.702    40.652     .1o  o                   HGSa     85He22
 250Md(a)246Esp                 7967.7    40.                                   2                   HGSa     08An16
 250Mdm(a)246Es                 8278      28                                    2                   GGSa     19Vo03,*
 250No(a)246Fm                  8950#    200#                                   7                            S
 248Cm(t,p)250Cm                2064      10                                    2                            73Ba72
 250Bk(B-)250Cf                 1760      15        1781.670     2.456    1.4   U                   h        59Va02,*
 250Es(e)250Cf                  2055#    100#                                   3                   m        S-h03b
*250Md-u                       M-A=78472(140) keV for mixture gs+m at 123(28) keV                      G        WgM209**
*250Cf(a)246Cm                 E(a)=6030.6(0.6,Z), 5988.9(0.6,Z) to gs, 2^+ level at 42.852 keV        h        Ens118**
*250Md(a)246Es                 E(a)=7875(20) to 2-# level at 151.9(2.0), unc. as given in ref.          G        19Vo03**
*250Md(a)246Esp                Lacking spectroscopy information                                         G        19Vo03**
*250Mdm(a)246Es                E(a)=7741(20) to 411.4, 7773(20) to 379.5 keV, unc. as given in ref.     G        19Vo03**
*250Bk(B-)250Cf                E-=725(15) to 2^+ level at 1031.852 keV and 3^+ level at 1071.37 keV    h        Ens01c**

 251Fm-u                       81585      45      81545.131    15.343    -.9   1    12   12 251Fm GRI1 1.0 18It04
 251Md-u                       84837      69      84753.407     3.901   -1.2   U                  GRI1 1.0 18It04,*
 251No-133Cs1.887             267356.8     1.4   267356.722     1.372    -.1   1    96   96 251No JSH2 1.0 20Gi.A
 251Nom-133Cs1.887            267468.6     2.6   267468.869     2.419     .1   1    87   87 251NomJSH2 1.0 20Gi.A
 251Lr-u                       94289#    215#                                   2                   g    1.0 S-u20c
 251Cf(a)247Cm                  6177.2     1.0      6176.960     0.894    -.2  -2-                  HKum     71Bb10,*
 251Cf(a)247Cm                  6176       2        6176.960     0.894     .5  -2-                  H        03Ah07,*
 251Cf(a)247Cm           ave    6176.960   0.894                                2                            average
 251Es(a)247Bk                  6593.5     5.       6597.110     1.016     .7o  o                   H        70Ah01,*
 251Es(a)247Bk                  6597.8     3.       6597.110     1.016    -.2o  o                   G        79Ah03,*
 251Es(a)247Bk                  6597.1     1.0                                  3                   GAra     19Ah04,*
 251Fm(a)247Cf                  7425.1     2.0      7424.500     1.000    -.3o  o                   G        73Ah02,*
 251Fm(a)247Cf                  7424.5     1.0                                  2                   GAra     19Ah04,*
 251Md(a)247Es                  7965.5    20.       7963.440     4.472    -.1   U                   H        73Es01,*
 251Md(a)247Es                  7955.2    10.       7963.440     4.472     .8  -2-                  HGSa     05He27,*
 251Md(a)247Es                  7965.5     5.       7963.440     4.472    -.4  -2-                  HJya     06Ch52,*
 251Md(a)247Es           ave    7963.440   4.472                                2                            average
 251No(a)247Fm                  8820.8    20.       8751.714     4.065   -3.5   Z                   hBka     67Gh01
 251No(a)247Fm                  8739.5    20.       8751.714     4.065     .6   U                   HBka     67Gh01
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 251No(a)247Fm                   8801.5      15.        8751.714     4.065    -3.3  Z                hGSa     89He03
 251No(a)247Fm                   8732.4      15.        8751.714     4.065     1.3o o                hGSa     89He03,G
 251No(a)247Fm                   8762.9      20.        8751.714     4.065     -.6o o                HGSa     97He29
 251No(a)247Fm                   8760.9      20.        8751.714     4.065     -.9o o                HGSa     01He35,W
 251No(a)247Fm                   8747.7      11.        8751.714     4.065      .4o o                HGSa     04He28
 251No(a)247Fm                   8751.8       4.                                    2                HGSa     06He27
 251Nom(a)247Fmm                 8619.6      30.        8808.623     4.065     6.3F F                HGSa     97He29,*
 251Nom(a)247Fmm                 8805.5      13.        8808.623     4.065      .2o o                HGSa     04He28
 251Nom(a)247Fmm                 8808.6       4.                                    2                HGSa     06He27
 251Cm(B-)251Bk                  1420        20                                     4                         78Lo13
 251Bk(B-)251Cf                  1093        10                                     3                         84Li05,*
 251Nom(IT)251No                  106         6          104.464     2.500     -.3  1    17  13 251NomHGSa     06He27
*251Md-u                      possible mixture of gs+p, not corrected                                G        WgM209**
*251Cf(a)247Cm                E(a)=5680.1(1.0,Z) to 1/2^+ level at 404.90 keV                        k        Ens153**
*251Cf(a)247Cm                E(a)=6078(2), 5679(2) to gs, 1/2^+ level at 404.90 keV, and others     k        Ens153**
*251Es(a)247Bk                E(a)=6488.5(5,Z), 6458.5(5,Z) to gs, (5/2^-) level at 29.88 keV        k        Ens153**
*251Es(a)247Bk                Same authors as next item                                              n        AHW952*W
*251Es(a)247Bk                E(a)=6492.8(3,Z), 6462.8(3,Z) to gs, (5/2^-) level at 29.88 keV        k        Ens153**
*251Es(a)247Bk                re-evaluated data of 1979Ah03; E(a)=6492.8(3,Z)                        G        19Ah04**
*251Fm(a)247Cf                E(a)=7305.7(3,Z), 6833.7(2,Z) to gs and (9/2^-) level at 480.40 keV    k        Ens153**
*251Fm(a)247Cf                re-evaluated data from 73*Ah*02; E(a)=7306.0(1.0), 6833.4(1.0) keV     G        19Ah04**
*251Fm(a)247Cf                ~ to gs and (9/2^-) level at 480.40 keV                                G        19Ah04**
*251Md(a)247Es                E(a)=7550(20) 7540(10) 7550(1) resp, to 7/2^- level at 293.7 keV       H        06Ch52**
*251Md(a)247Es                Original error 1 keV in third ref. increased for calibration           H        GAu098**
*251No(a)247Fm                I do not understand why they are changed...    ****                             GAu936*G
*251No(a)247Fm                E(a)=8661(15) of ref. not seen                                         M        89He03*W
*251Nom(a)247Fmm              F : not observed in later work on 251No decay                          h        01He35**
*251Bk(B-)251Cf               E-=915(10) to 3/2^+ level at 177.602 keV                               k        Ens139**


 252Cm-u                        84870#      320#                                    2                n    1.0 S
 252Md-u                        86385        98                                     2                GRI1 1.0 18It04
 252No-133Cs1.895              268111        34        268135.729    9.955      .7o o                HSH1 1.0 10Dw01
 252No-133Cs1.895              268133        18        268135.729    9.955      .2  1    31  31 252No HSH1 1.0 12Mi27
 252Cf(a)248Cm                   6216.9       0.5       6216.947     0.041      .1  U                hKum     71Bb10,Z
 252Cf(a)248Cm                   6216.95      0.04                                  2                         86Ry04,Z
 252Es(a)248Bk                   6739.5       3.        6738.642     0.508     -.3o o                G        73Fi06,*
 252Es(a)248Bk                   6738.6       0.5                                   4                GAra     19Ah04,*
 252Fm(a)248Cf                   7152.7       2.        7153.744     1.016      .5o o                G        84Ah02,*
 252Fm(a)248Cf                   7153.7       1.0                                   4                GAra     19Ah04,*
 252No(a)248Fm                   8545.9      20.        8548.548     5.322      .1  U                mBka     67Gh01
 252No(a)248Fm                   8545.9      30.        8548.548     5.322      .1  U                hDba     67Mi03
 252No(a)248Fm                   8551.0       6.        8548.548     5.322     -.4 -1-                        77Be09
 252No(a)248Fm                   8542.8      15.        8548.548     5.322      .4o o                hGSa     85He.A
 252No(a)248Fm                   8538.7      13.        8548.548     5.322      .7 -1-               HGSa     04He28
 252No(a)248Fm              ave  8548.825     5.536     8548.548     5.322     -.1  1    92  69 252No         average
 252Lr(a)248Md                   9163.8      20.        9164.337    16.910      .0 -6-               MGSa     01He35
 252Lr(a)248Md                   9165.8      30.        9164.337    16.910     -.0 -6-               HBka     08Ne01,*
 252Lr(a)248Md              ave  9164.338    16.910                                 6                         average
 252Bk(B-)252Cf                  2500#      200#                                    3                         S-Alph
 252Es(e)252Cf                   1260        50                                     3                         73Fi06,*
*252Es(a)248Bk                E(a)=6632.1(3,Z), 6522.1(3,Z) to 0, 7^+ level at 70.65 keV above 248Bk  k        Ens14b**
*252Es(a)248Bk                re-evaluated data of 73*Fi*06; E(a)=6631.5(0.5), 6050.8(0.5) to gs and  G        19Ah04**
*252Es(a)248Bk                ~ (5-) level at 590 keV                                                G        19Ah04**
*252Fm(a)248Cf                E(a)=7038.9(2,Z), 6998.1(2,Z) to gs, 2^+ level at 41.53 keV            k        Ens14b**
*252Fm(a)248Cf                re-evaluated data from 84*Ah*02                                        G        19Ah04**
*252Lr(a)248Md                Other E(a)=9610(20) unexplained, and 8990, 8820 keV                    H        08Ne01**
*252Es(e)252Cf                pK=0.45(0.10) to 3^+ level at 969.8 keV, rclcld for non-unique first   h        Ens061**
*                              ~ frbdn or allowed transition; unique first frbdn would give 1440(100) h        AHW   **


 253No-133Cs1.902              270390        13        270395.689    7.358      .4  1    32  32 253No HSH1 1.0 10Dw01
 253Bk(a)249Am                   5400#      200#                                    3                n        S
 253Cf(a)249Cm                   6127.3       5.        6125.950     3.536     -.3 -3-               N        66Rg01,*
 253Cf(a)249Cm                   6124.6       5.        6125.950     3.536      .3 -3-               n        68Be21,*
 253Cf(a)249Cm              ave  6125.950     3.536                                 3                         average
 253Es(a)249Bk                   6739.24      0.05                                  3                         71Gr17,Z
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 253Es(a)249Bk                      6739.7       2.0       6739.238      0.051      -.2   U               GAra     19Ah04
 253Fm(a)249Cf                      7199         3         7197.900      1.000      -.4o  o               G        67Ah02,*
 253Fm(a)249Cf                      7194.2       6.        7197.900      1.000       .6   U               GOrm     11Lo06,*
 253Fm(a)249Cf                      7197.9       1.0                                      2               GAra     19Ah04,*
 253Md(a)249Es                      7567.5      15.        7573.077      8.321       .4o  o               HGSa     05He27,*
 253Md(a)249Es                      7574.0      10.        7573.077      8.321      -.1  -5-              HOrm     11Lo06,*
 253Md(a)249Es                      7571        15         7573.077      8.321       .1  -5-              HGSa     12He09,*
 253Md(a)249Es               ave    7573.077     8.320                                    5                        average
 253No(a)249Fm                      8419        20         8414.602      4.325      -.2   U               HBka     67Gh01,*
 253No(a)249Fm                      8419        30         8414.602      4.325      -.1   U               HDba     67Mi03,*
 253No(a)249Fm                      8430        20         8414.602      4.325      -.8o  o               hGSa     85He.A,*
 253No(a)249Fm                      8420        10         8414.602      4.325      -.5o  o               hGSa     01He.A,*
 253No(a)249Fm                      8412.5      11.        8414.602      4.325       .2o  o               HGSa     04He28,*
 253No(a)249Fm                      8411.5       5.        8414.602      4.325       .6o  o               HOrm     06Lo12,*
 253No(a)249Fm                      8415.6       5.0       8414.602      4.325      -.2  -1-              HOrm     11Lo06,*
 253No(a)249Fm                      8412.4      11.        8414.602      4.325       .2  -1-              HGSa     12He09,*
 253No(a)249Fm               ave    8415.052     4.552     8414.602      4.325      -.1   1     90   67 253No        average
 253Lr(a)249Md                      8941.6      20.        8917.603     20.283     -1.2o  o               HGSa     85He22
 253Lr(a)249Md                      8935.6      10.        8917.603     20.283     -1.8o  o               HGSa     01He35
 253Lr(a)249Md                      8927.4      15.        8917.603     20.283      -.6o  o               HGSa     09He20
 253Lr(a)249Md                      8918.3      20.        8917.603     20.283      -.0   1    100   54 253Lr HGSa     10He11
 253Lrm(a)249Mdm                    8862.4      20.        8850.167     20.322      -.6o  o               HGSa     85He22
 253Lrm(a)249Mdm                    8862.4      10.        8850.167     20.322     -1.2o  o               HGSa     01He35
 253Lrm(a)249Mdm                    8859.4      15.        8850.167     20.322      -.6o  o               HGSa     09He20
 253Lrm(a)249Mdm                    8850.2      20.                                       3               HGSa     10He11
 253Rf(a)249No                      9430#      300#                                      13               g        S-u212
 253Cf(B-)253Es                      270        50          279.562      3.667       .2   U               h        59Gh.A
 253Mdp(IT)253Md                       0        30           60.000     30.000      2.0   Z               k        S-h03b
 253Mdp(IT)253Md                      60        30                                        6               K        Ens139
*253Cf(a)249Cm                E(a)=5981(5,Z) to 7/2^+ level at 48.76 keV                                  h        Ens118**
*253Cf(a)249Cm                E(a)=5978.4(5,Z), 5920.4(5,Z) to 7/2^+ at 48.76, 7/2^+ at 110.173 keV       h        Ens118**
*253Fm(a)249Cf                E(a)=7083.2(4,Z), 6943.2(3,Z), 6846.2(3,Z), 6673.2(3,Z) keV                 m        67Ah02**
*                               ~ to gs and levels 5/2^+ at 144.98, 9/2^+ at 243.13, 1/2^+ at 416.8 keV h        Ens118**
*253Fm(a)249Cf                E(a)=6670(6) to 416.8 level                                                 H        11Lo06**
*253Fm(a)249Cf                re-evaluated data from 67*Ah*02; E(a)=7083.9(1.0), 6673.7(1.0) to gs,       G        19Ah04**
*253Fm(a)249Cf                ~ 1/2^+ at 416.8 keV                                                        G        19Ah04**
*253Md(a)249Es                E(a)=7100(15) to 353.2(0.4) level                                           H        05He27**
*253Md(a)249Es                E(a)=7105(10) to 354.6(0.6) level                                           H        11Lo06**
*253Md(a)249Es                E(a)=7103(15) to 353.2(0.4) level                                           H        12He09**
*253Md(a)249Es                also 7628(20) from E(a)=7123(15) coinc. E(g)=390.8   {E(a)=7103+20keV CE k        GAu126*W
*253No(a)249Fm                E(a)=8010(20) to 279.7 level                                                h        04He28**
*253No(a)249Fm                E(a)=8010(30) to 279.7 level                                                h        04He28**
*253No(a)249Fm                E(a)=8021(20) to 279.7 level                                                h        04He28**
*253No(a)249Fm                E(a)=8011(10) to 279.7 level                                                h        04He28**
*253No(a)249Fm                E(a)=8004(11) to 279.7(5) level                                             H        04He28**
*253No(a)249Fm                E(a)=8003(5) to 279.7(5) level; and 8280(10) to gs                          H        04He28**
*253No(a)249Fm                E(a)=8007(4) to 279.8(0.2) level; also E(a)=7615(30) to 669(3) and          H        11Lo06**
*                               ~ E(a)=8080(10) to 209.5(0.5) levels                                      H        11Lo06**
*253No(a)249Fm                E(a)=8004(10) to 279.5(5) level                                             H        12He09**

 254Bk-u                           90600#      320#                                       2               n    1.0 S
 254No-133Cs1.910                 271552        15       271551.694      0.877      -.0o  o               HSH1 1.0 10Dw01
 254No-133Cs1.910                 271544        16       271551.694      0.877       .5   1      0    0 254No HSH1 1.0 12Mi27
 254No-u                           90902        49        90964.938      0.877      1.3   U               GRI1 1.0 18It04,G
 254No-133Cs1.910                 271551.76      0.88    271551.694      0.877      -.1   1     99   99 254No JSH2 1.0 20Gi.A
 254Lr-133Cs1.910                 276915.4       2.1     276915.422      2.092       .0   1     99   99 254Lr JSH2 1.0 20Gi.A
 254Lrm-133Cs1.910                277039.3       4.0     277039.072      3.950      -.1   1     98   98 254LrmJSH2 1.0 20Gi.A
 254Cf(a)250Cm                      5926.9       5.                                       3                        68Be21,Z
 254Es(a)250Bk                      6615.7       1.5       6617.230      0.474      1.0  -6-              NKum     72Bb24,*
 254Es(a)250Bk                      6617.4       0.5       6617.230      0.474      -.3  -6-              GAra     19Ah04,*
 254Es(a)250Bk               ave    6617.230     0.474                                    6                        average
 254Es(a)250Bkn                     6531.6       1.5                                      7               hKum     72Bb24
 254Esm(a)250Bk                     6699.9       2.0       6697.600      1.000     -1.2o  o               G        73Ah04,*
 254Esm(a)250Bk                     6697.6       1.0                                      5               GAra     19Ah04,*
 254Fm(a)250Cf                      7306.8       5.        7307.270      1.016       .1   U               GBka     64As01,Z
 254Fm(a)250Cf                      7307.6       2.        7307.270      1.016      -.2o  o               G        84Ah02,*
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 254Fm(a)250Cf               7307.2     1.0                                     3                  GAra     19Ah04,*
 254No(a)250Fm               8229.8    20.        8230.060     6.332      .0o   o                  hBka     67Gh01
 254No(a)250Fm               8240.0    30.        8230.060     6.332     -.3    U                  HDba     67Mi03
 254No(a)250Fm               8215.6    20.        8230.060     6.332      .7o   o                  HGSa     85He22
 254No(a)250Fm               8177.0    30.        8230.060     6.332     1.8    U                  HBka     06Fo02
 254No(a)250Fm               8225.7    10.        8230.060     6.332      .4   -1-                 HGSa     10He10
 254No(a)250Fm               8222.7    20.3       8230.060     6.332      .4   -1-                 KRIa     15KaZX
 254No(a)250Fm          ave  8225.153   9.088     8230.060     6.332      .5    1     49  48 250Fm          average
 254Lr(a)250Md               8804.7    20.        8822.547     8.411      .9o   o                  HGSa     85He22,*
 254Lr(a)250Md               8804.7    20.        8822.547     8.411      .9   -1-                 HLza     01Ga20,*
 254Lr(a)250Md               8820.6    25.7       8822.547     8.411      .1   -1-                 HBka     06Fo02,*
 254Lr(a)250Md               8825.2    20.        8822.547     8.411     -.1o   o                  GGSa     08An16,*
 254Lr(a)250Md               8826.3    10.        8822.547     8.411     -.4   -1-                 GGSa     19Vo03,*
 254Lr(a)250Md          ave  8821.831   8.447     8822.547     8.411      .1    1     99  99 250Md          average
 254Rf(a)250No               9210#    200#                                      8                  h        S-u098
 254Esm(B-)254Fm             1172       2                                       4                  H        62Un01,*
 254Esm(B-)254Fm             1280      50         1172.000     2.000     -2.2   Z                  h        S-sugg
 254Md(e)254Fm               2550#    100#                                      4                  h        S-u126
*254No-u                  partially resolved frome 254Nom at  1295(2) keV                          g        18It04*G
*254Es(a)250Bk            E(a)=6415.4(1.5,Z) to 5^- level at 97.49 keV                             g        Ens01c**
*254Es(a)250Bk            Eexc. 250Bkn was derived from this data and next one!!                   m        AHW952*W
*254Es(a)250Bk            E(a) to Bkn 6425.8(1.5) same group, rather different!!                   m        71Bb10*W
*254Es(a)250Bk            re-evaluated 08*Ah*02; E(a)=6430.5(0.5) to 7^+ level at 83.88(18) keV    G        19Ah04**
*254Esm(a)250Bk           E(a)=6558.9(2,Z), 6383.9(2,Z) to 4^+ at 35.59, 2^+ at 211.82 keV         h        Ens01c**
*254Esm(a)250Bk           re-evaluated from 73*Ah*04; E(a)=6383.5(1.0) to 2^+ at 211.8(0.2) keV    G        19Ah04**
*254Fm(a)250Cf            E(a)=7192.3(2,Z), 7150.3(2,Z) to gs, 5^+ level at 42.721 keV             h        Ens01c**
*254Fm(a)250Cf            re-evaluated data from 84*Ah*02                                          G        19Ah04**
*254Lr(a)250Md            E(a)=8460(20) to 209.1 level                                             H        08An16**
*254Lr(a)250Md            E(a)=8460(20) to 209.1 level                                             H        08An16**
*254Lr(a)250Md            E(a)=8437(50) to 209.1 and E(a)=8394(30) to 306.2 keV                    H        08An16**
*254Lr(a)250Md            E(a)=8480(20) to 209.1 and E(a)=8385(20) to 306.2 keV                    H        08An16**
*254Lr(a)250Md            E(a)=8480(15) to 209.1 and E(a)=8386(10) to 306.8 keV                    G        19Vo03**
*254Esm(B-)254Fm          E-=1127(2) to 2^+ level at 45.000 keV                                    H        Ens05b**
*254Esm(B-)254Fm          Trends from Mass Surface .z. suggest 254Es   110 keV less bound          h        GAu127*G


 255No-133Cs1.917          274440      16       274445.040    15.080      .3    1     89  89 255No HSH1 1.0 12Mi27
 255Lr-133Cs1.917          277811      19       277795.790     0.993     -.8    U                 JSH1 1.0 12Mi27,*
 255Lr-133Cs1.917          277795.9     1.0     277795.790     0.993     -.1    1     99  99 255Lr JSH2 1.0 20Gi.A
 255Lrm-133Cs1.917         277831.8     2.0     277832.240     1.945      .2    1     95  95 255LrmJSH2 1.0 20Gi.A
 255Es(a)251Bk               6439.3     3.0       6436.340     1.342    -1.0   -4-                 N        66Rg01,*
 255Es(a)251Bk               6435.6     1.5       6436.340     1.342      .5   -4-                  Kum     71Bb10,*
 255Es(a)251Bk          ave  6436.340   1.342                                   4                           average
 255Fm(a)251Cf               7237.0     4.        7240.568     0.508      .9    U                  G        64As01,*
 255Fm(a)251Cf               7240.4     2.        7240.568     0.508      .1o   o                  G        75Ah01,*
 255Fm(a)251Cf               7240.6     0.5                                     3                  GAra     19Ah04,*
 255Md(a)251Es               7901.8     5.        7905.606     1.741      .8   -4-                          70Fi12,*
 255Md(a)251Es               7910.7     5.        7905.606     1.741    -1.0   -4-                          71Ho16,*
 255Md(a)251Es               7905.4     4.        7905.606     1.741      .1o   o                  GAra     00Ah02,*
 255Md(a)251Es               7891.2    15.        7905.606     1.741     1.0    U                  HGSa     05He27,*
 255Md(a)251Es               7905.4     2.0       7905.606     1.741      .1   -4-                 GAra     19Ah04,*
 255Md(a)251Es          ave  7905.606   1.741                                   4                           average
 255No(a)251Fm               8451.1     6.        8428.210     2.993    -3.8B   B                  hORb     71Di03,*
 255No(a)251Fm               8426.4    20.        8428.210     2.993      .1o   o                  HGSa     98Ho13,*
 255No(a)251Fm               8391.9    35.        8428.210     2.993     1.0    U                  HRIa     04Mo40,*
 255No(a)251Fm               8449.3    20.        8428.210     2.993    -1.1    U                  HBka     04Fo08,*
 255No(a)251Fm               8426.4    10.        8428.210     2.993      .2    U                  HGSa     06He20,*
 255No(a)251Fm               8403.8    60.        8428.210     2.993      .4    U                  HBka     06Gr24,*
 255No(a)251Fm               8428.4     3.        8428.210     2.993     -.1    1    100  88 251Fm HJAa     11As03,*
 255Lr(a)251Md               8563.6    18.        8560.923     3.682     -.1   -1-                 HORb     76Be.A,*
 255Lr(a)251Md               8534.1    30.        8560.923     3.682      .9    U                  HLza     01Ga20,*
 255Lr(a)251Md               8554.4    10.        8560.923     3.682      .6   -1-                 HJya     06Ch52
 255Lr(a)251Md               8554.4    10.        8560.923     3.682      .6   -1-                 HOrm     08Ha31,*
 255Lr(a)251Md          ave  8555.641   6.687     8560.923     3.682      .8    1     30  29 251Md          average
 255Lr(a)251Mdp              8503.6    18.        8502.834     3.803     -.0   -2-                 HORb     76Be.A,*
 255Lr(a)251Mdp              8442.7    50.        8502.834     3.803     1.2F   F                  HBka     95Gh04,*
 255Lr(a)251Mdp              8493.5    30.        8502.834     3.803      .3    U                  HLza     01Ga20,*
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 255Lr(a)251Mdp                8498.6      5.        8502.834     3.803      .8  -2-                HJya     06Ch52
 255Lr(a)251Mdp                8506.7     11.        8502.834     3.803     -.3  -2-                HGSa     08An16,*
 255Lr(a)251Mdp                8509.7     10.2       8502.834     3.803     -.7  -2-                KOrm     08Ha31
 255Lr(a)251Mdp                8509.7     10.2       8502.834     3.803     -.7  -2-                KRIa     11As.A,*
 255Lr(a)251Mdp            ave 8502.834    3.803                                  2                        average
 255Lrm(a)251Md                8592.0      5.        8594.876     3.400      .6  -1-                HJya     06Ch52,*
 255Lrm(a)251Md                8602.2     11.        8594.876     3.400     -.7  -1-                HGSa     08An16
 255Lrm(a)251Md                8603.1     10.2       8594.876     3.400     -.8  -1-                KOrm     08Ha31,*
 255Lrm(a)251Md                8604.2     10.2       8594.876     3.400     -.9  -1-                KRIa     11As.A,*
 255Lrm(a)251Md            ave 8596.662    3.888     8594.876     3.400     -.5   1    76  71 251Md            average
 255Rf(a)251No                 9042       20         9055.461     3.922      .7  -2-                MBka     69Gh01,*
 255Rf(a)251No                 9053       15         9055.461     3.922      .2o  o                 MGSa     85He06,*
 255Rf(a)251No                 9064       20         9055.461     3.922     -.4o  o                 MGSa     97He29,*
 255Rf(a)251No                 9062       10         9055.461     3.922     -.7o  o                 HGSa     01He35,*
 255Rf(a)251No                 9056        4         9055.461     3.922     -.1  -2-                HGSa     06He27,*
 255Rf(a)251No             ave 9055.462    3.922                                  2                        average
 255Rfm(a)251Nom               8864.3     15.        9100.958    22.158    15.8   Z                 kGSa     97He29,W
 255Db(a)251Lr                 9340#     200#                                     3                 g        S-u212
 255Cf(B-)255Es                 720#     200#                                     5                 n        S-MA
 255Fmp(IT)255Fm                250      100             *                        Z                 k        S-Nm
 255Mdp(IT)255Md                 10#      70#                                     5                 m        S-h03b
 255Nop(IT)255No                100#      70#                                     2                          S-Nm
 255Rfm(IT)255Rf                135       20          149.961    21.664      .7R  R  q-q=  -14.961  K        15An05,*
*255Lr-133Cs1.917            D_M=277822(17) uu for mx 71% gs + 29% 255Lrm at 41(8); M-A=89958(16) keV g        Nub211**
*255Es(a)251Bk               E(a)=6303(3,Z) 6299.3(1.5,Z) resp, to (7/2^+) level at 35.5 keV        k        Ens139**
*255Fm(a)251Cf               E(a)=7121.5, 7018.5(4,Z) to gs, 7/2^+ level at 106.309 keV             k        Ens139**
*255Fm(a)251Cf               E(a)=7126.8, 7021.8(2,Z) to gs, 7/2^+ level at 106.309 keV             k        Ens139**
*255Fm(a)251Cf               re-evaluated data from 75*Ah*01; Also E(a)=7022.0(0.5), 6591.3(0.5) to   G        19Ah04**
*                             ~ 7/2^+ level at 106.309 keV, 5/2^+ level at 543.99 keV               G        19Ah04**
*255Md(a)251Es               E(a)=7323.5(5,Z) 7332.3(5,Z) 7327(4) 7313(15) resp, to 7/2^- at 461.5 keVk        Ens139**
*255Md(a)251Es               re-evaluated data from 00*Ah*02; E(a)=7327.0(2.0) to 7/2^- at 461.5 keV  G        19Ah04**
*255No(a)251Fm               E(a)=8312(9), 8121(6) to gs and 199.9 level                            h        06He20**
*255No(a)251Fm               E(a)=8296(20), 8092(20) to gs and 199.9 level                          h        06He20**
*255No(a)251Fm               E(a)=8060 to 199.9 level; also E(a)=7800 keV                           H        04Mo40**
*255No(a)251Fm               E(a)=8341, 8092 to gs and 199.9 level; also E(a)=7873 keV              H        06He20**
*255No(a)251Fm               E(a)=8290(20), 8095(10) to gs and 199.9 level                          H        06He20**
*255No(a)251Fm               E(a)=8150, 8000 to 199.9 level                                         H        06He20**
*255No(a)251Fm               E(a)=8100(3) to 251Fmm at 200.09(0.11) keV                             H        11As03**
*255Lr(a)251Md               This is the faint alpha from long-lived isomer to the 7/2^- gs         H        06Ch52**
*255Lr(a)251Md               Line is mixed with 254Lr's alpha                                       H        01Ga20**
*255Lr(a)251Md               As interpreted from Fig.~1                                             H        08Ha31**
*255Lr(a)251Mdp              This is the most intense alpha from long-lived isomer to 1/2^-         H        06Ch52**
*255Lr(a)251Mdp              F : one event in a questionable 267Ds decay chain                      h        AHW99a**
*255Lr(a)251Mdp              No gamma observed in coincidence                                       H        08An16**
*255Lr(a)251Mdp              Original E(a)=8371(10) corrected for recoil to E(a)=8476(10)           K        16Hu.A**
*255Lr(a)251Mdp              Uncertainty estimated by evaluator                                     K        GAu161**
*255Lrm(a)251Md              Original error 2 keV increased for calibration                         H        GAu098**
*255Lrm(a)251Md              Original E(a)=8463(10) corrected for recoil to E(a)=8468(10)           K        16Hu.A**
*255Lrm(a)251Md              Uncertainty estimated by evaluator                                     K        GAu161**
*255Rf(a)251No               E(a)=8700(20) to 203 level                                             M        01He35**
*255Rf(a)251No               E(a)=8766(15), 8715(15) to 142, 203 levels,                            M        01He35**
*255Rf(a)251No               E(a)=8905(20), 8739(20) to gs, 203 level                               M        01He35**
*255Rf(a)251No               E(a)=8722(10) to 203(3) level                                          M        01He35**
*255Rf(a)251No               Authors confirm reptd Q(a) incorrectly derived                         m        AHW021*W
*255Rf(a)251No               E(a)=8716(4) to 203.6(0.2) level                                       H        06He27**
*255Rfm(a)251Nom             Tentative assignment; correlated with 251Nom                           k        97He29*W
*                             ~ discarded in 01He35 from same group                                 k        01He35*W
*255Rfm(IT)255Rf             From ~105 keV EC from K shell, error estim. by eval.                   K        WgM164**

 256Lr-133Cs1.925             280499      89       280488.700     2.000     -.1   U                 JSH1 1.0 12Mi27
 256Lr-133Cs1.925             280488.7     2.0                                    2                 JSH2 1.0 20Gi.A
 256Cf(a)252Cm                  5560#    100#                                     3                 h        S
 256Fm(a)252Cf                  7027.3     5.        7025.270     1.886     -.4  -3-                         68Ho13,Z
 256Fm(a)252Cf                  7024.9     2.0       7025.270     1.886      .2  -3-                GAra     19Ah04
 256Fm(a)252Cf             ave  7025.270   1.886                                  3                          average
 256Mdm(a)252Es                 7834.6    20.        7896.600    52.498     1.2B  B                 h        71Ho16,*
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 256Mdm(a)252Es              7896.6      16.                                    4                       93Mo18,*
 256Mdm(a)252Es              7798.0       8.      7896.600     52.498     1.9B  B                  H    00Ah02,W
 256No(a)252Fm               8553.9      30.      8581.519      5.452      .9   U                  h    67Fl05,*
 256No(a)252Fm               8553.9      20.      8581.519      5.452     1.4   U                  hBka 67Gh01,*
 256No(a)252Fm               8578.3      12.      8581.519      5.452      .3  -5-                      81Be03
 256No(a)252Fm               8582.3       6.      8581.519      5.452     -.1  -5-                      90Ho03
 256No(a)252Fm          ave  8581.519     5.452                                 5                       average
 256Lr(a)252Mdp              8787.6      20.      8771.196     11.140     -.8  -3-                      71Es01
 256Lr(a)252Mdp              8761.1      25.      8771.196     11.140      .4o  o                  HORb 76Be.A
 256Lr(a)252Mdp              8777.4      20.      8771.196     11.140     -.3  -3-                 NORb 76Di.A,W
 256Lr(a)252Mdp              8767.2      35.      8771.196     11.140      .1  -3-                 HRIa 04Mo26
 256Lr(a)252Mdp              8749.9      20.      8771.196     11.140     1.0  -3-                 HBka 04Fo08
 256Lr(a)252Mdp         ave  8771.196    11.140                                 3                       average
 256Rf(a)252No               8952.1      23.      8925.706     15.239    -1.1o  o                  mGSa 85He06
 256Rf(a)252No               8929.8      20.      8925.706     15.239     -.2o  o                  HGSa 97He29
 256Rf(a)252No               8925.7      15.2                                   2                  HGSa 10St14
 256Db(a)252Lr               9336.2      20.                                    7                  HBka 08Ne01
 256Db(a)252Lrp              9157.4      20.      9168.505     14.367      .6  -8-                 MGSa 01He35
 256Db(a)252Lrp              9179.7      20.      9168.505     14.367     -.6  -8-                 HBka 08Ne01,*
 256Db(a)252Lrp         ave  9168.506    14.367                                 8                       average
 256Es(B-)256Fm              1700#      100#                                    4                  n    S-MA
 256Mdm(IT)256Md              160#      100#                                    5                  h    S-u127
 256Mdp(IT)256Mdm              80#      100#                                    5                  h    S-h03b
 256Lrp(IT)256Lr              100        70        230#        40#        1.9   Z                  h    AHW   ,W
 256Lrp(IT)256Lr              230#       40#                                    3                  h    S-u126
*256Mdm(a)252Es            Also E(a)=7210(5,Z) keV to 520(20) level                                h    70Fi12**
*256Mdm(a)252Es            Very weak line; more precise E(a) to excited levels                     h    93Mo18**
*                           ~ alpha summed with electrons                                          H    WgM129**
*256Mdm(a)252Es            Error: estimated in ref. from AHW file E(a)=7762(12) not found in paper h    AHW024*W
*256No(a)252Fm             Probably mixture of two branches                                        h    AHW   **
*256Lr(a)252Mdp            This one added since Be value possibly typo                             n    AHW952*W
*256Db(a)252Lrp            5 events E(a)=9030 9060 9020 9040 9030 keV                             H    08Ne01**
*256Lrp(IT)256Lr           L X-rays following alpha rays seen in ref.                              h    77Be36*W


 257Rf-133Cs1.932          285682        84     285587.226     11.482    -1.1   1     2   2 257Rf JSH2 1.0 20Gi.A
 257Db-u                   107422       260     107520.042    176.742      .4   1    46  46 257Db GRI1 1.0 20Sc.1,*
 257Es(a)253Bk               6050#      200#                                    4                  n    S-MA
 257Fm(a)253Cf               6862.7       2.      6863.660      0.894      .5  -4-                 mBka 67As02,*
 257Fm(a)253Cf               6864.4       2.      6863.660      0.894     -.4o  o                  G    82Ah01,*
 257Fm(a)253Cf               6863.9       1.0     6863.660      0.894     -.2  -4-                 GAra 19Ah04,*
 257Fm(a)253Cf          ave  6863.660     0.894                                 4                       average
 257Md(a)253Es               7549.3       5.      7557.070      0.949     1.6   U                  H    70Fi12,*
 257Md(a)253Es               7557.6       1.      7557.070      0.949     -.5  -4-                      93Mo18,*
 257Md(a)253Es               7552.3       3.0     7557.070      0.949     1.6  -4-                 GAra 19Ah04,*
 257Md(a)253Es          ave  7557.070     0.949                                 4                       average
 257No(a)253Fm               8474.1      30.      8476.600      6.000      .1   U                  h    70Es02,*
 257No(a)253Fm               8480        30       8476.600      6.000     -.1   U                  hGSa 96Ho13,*
 257No(a)253Fm               8476.6       6.                                    3                  HJAa 05As05,*
 257Lr(a)253Mdp              9020.6      20.      9007.744      8.620     -.6  -7-                 h    71Es01
 257Lr(a)253Mdp              9001.3      12.      9007.744      8.620      .5o  o                  HORb 76Be.A,W
 257Lr(a)253Mdp              9001.3      12.      9007.744      8.620      .5  -7-                 HORb 77Be36
 257Lr(a)253Mdp              9015.5      15.2     9007.744      8.620     -.5o  o                  HGSa 97He29
 257Lr(a)253Mdp              9030.8      50.      9007.744      8.620     -.5   U                  HLza 04Ga29
 257Lr(a)253Mdp              9010.4      15.      9007.744      8.620     -.2  -7-                 HGSa 10St14
 257Lr(a)253Mdp         ave  9007.744     8.620                                 7                       average
 257Rf(a)253No               9079.8      15.      9083.775      8.274      .3  -1-                 HORb 73Be33,*
 257Rf(a)253No               9083.7      15.      9083.775      8.274      .0o  o                  HGSa 85He06
 257Rf(a)253No               9044.0      15.      9083.775      8.274     2.7B  B                  kGSa 97He29
 257Rf(a)253No               9084.1      20.      9083.775      8.274     -.0o  o                  HGSa 07St12,*
 257Rf(a)253No               9084.1      10.      9083.775      8.274     -.0  -1-                 HGSa 10St14,*
 257Rf(a)253No               9106.2     100.      9083.775      8.274     -.2   U                  HAra 09Qi04,*
 257Rf(a)253No          ave  9082.777     8.320   9083.775      8.274      .1   1    99  98 257Rf       average
 257Rfm(a)253No              9142.5      20.      9155.889      6.762      .7  -2-                 HBka 69Gh01
 257Rfm(a)253No              9158.8      15.      9155.889      6.762     -.2o  o                  MORb 73Be33
 257Rfm(a)253No              9155.8       8.      9155.889      6.762      .0  -2-                 MORb 90Be.A
 257Rfm(a)253No              9163.9      15.      9155.889      6.762     -.5  -2-                 MGSa 97He29
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 257Rfm(a)253No                9144.0     100.       9155.889     6.762       .1  U                 HAra     09Qi04,*
 257Rfm(a)253No          ave   9155.889     6.762                                 2                          average
 257Db(a)253Lr                 9112.1      20.       9205.899    20.278      4.7B  B                 hGSa     85He22
 257Db(a)253Lr                 9218        10        9205.899    20.278     -1.2o  o                 HGSa     01He35,*
 257Db(a)253Lr                 9209.2      20.       9205.899    20.278      -.2o  o                 HGSa     09He20,*
 257Db(a)253Lr                 9206.6      20.       9205.899    20.278      -.0   1   100  54 257Db HGSa     10He11
 257Dbm(a)253Lrm               9305.1      20.       9313.205    20.317       .4o  o                 MGSa     85He22
 257Dbm(a)253Lrm               9308.2      10.       9313.205    20.317       .5o  o                 HGSa     01He35
 257Dbm(a)253Lrm               9300.0      20.3      9313.205    20.317       .7o  o                 HGSa     09He20
 257Dbm(a)253Lrm               9313.2      20.3                                  4                   HGSa     10He11
 257Lrp(IT)257Lr                150#      100#                                   8                   n        S
 257Rfn(IT)257Rfm              1082         4                                    3                   h        10Be16
*257Db-u                    100063(231)(2) keV for mixture of gs and isomer, not corrected           G        20Sc.1**
*257Fm(a)253Cf              E(a)=6518.5(2,Z) to (9/2^+) level at 241.01 keV                          k        Ens139**
*257Fm(a)253Cf              E(a)=6756.5(3,Z), 6520.5(2,Z) to gs, (9/2^+) level at 241.01 keV         k        Ens139**
*257Fm(a)253Cf              re-evaluated data from 82*Ah*01; E(a)=6519.7(1.0) to (9/2^+) level at    G        19Ah04**
*257Fm(a)253Cf              ~ 241.01 keV                                                             G        19Ah04**
*257Md(a)253Es              E(a)=7066(5,Z) to 371.4 level                                            h        93Mo18**
*257Md(a)253Es              E(a)=7440(2), 7074(1) to gs, 371.4 level                                          93Mo18**
*257Md(a)253Es              E(a)=8340(30) and others in agreement with above                         m        00La34*W
*257Md(a)253Es              re-evaluated data from 70*Fi*12; E(a)=7069.0(3.0) to 371.4 level         G        19Ah04**
*257No(a)253Fm              E(a)=8320(30) to 22.3 keV                                                H        05As05**
*257No(a)253Fm              E(a)=8340(20); one event only; may be summing with e-                    m        AHW962**
*257No(a)253Fm              E(a)=8222(6) to 124.1(1) level; also E(a)=8323(7) to 22.3 keV            H        05As05**
*257Lr(a)253Mdp             See also ref. fig. 2                                                     n        77Be36*W
*257Rf(a)253No              E(a)=8778(15) to 166.7 level                                             H        07St12**
*257Rf(a)253No              E(a)=8778(20) and 8495(20) to 166.7 and 455 level                                 07St12**
*257Rf(a)253No              E(a)=8778(10) to 166.7; and 8950(15) to gs is sum with conversion e-     H        10St14**
*257Rf(a)253No              E(a)=8800(100) to 166.7 level                                            H        09Qi04**
*257Rfm(a)253No             E(a)=9000(100) and 8950(100) to gs and 54(14) level                      H        09Qi04**
*257Db(a)253Lr              E(a)=9074(10) partly summed with conversion e-                           M        01He35**
*257Db(a)253Lr              E(a)=8965(20) coinc. ~ E(g)=102.2; E(a)=9066(20)summed with conversion e-H        09He20**


 258Es-u                      99520#      430#                                   2                   k    1.0 S-u169
 258Fm(a)254Cf                 6660#      200#                                   4                   n        S-MAP
 258Md(a)254Es                 7266.8       5.       7271.283     1.857       .9  -7-                         70Fi12,*
 258Md(a)254Es                 7272         2        7271.283     1.857      -.4  -7-                n        93Mo18,*
 258Md(a)254Es           ave   7271.283     1.857                                 7                           average
 258No(a)254Fm                 8150#      100#                                   4                   h        S
 258Lr(a)254Md                 8870        50        8904.483    18.570       .7  -5-                HORb     76Be.A,*
 258Lr(a)254Md                 8910        20        8904.483    18.570      -.3  -5-                h        88Gr30,*
 258Lr(a)254Md           ave   8904.483    18.570                                 5                           average
 258Rf(a)254No                 9192.8      30.5      9196.110    12.887       .1  -2-                H        08Ga08
 258Rf(a)254No                 9196.8      14.2      9196.110    12.887      -.1  -2-                GGSa     16He15
 258Rf(a)254No                 9197.8      15.2      9196.110    12.887      -.1o  o                 GGSa     19Vo03
 258Rf(a)254No           ave   9196.110    12.887                                 2                           average
 258Db(a)254Lr                 9531.0      50.       9438.430     9.061     -1.3o  o                 HGSa     97Ho14
 258Db(a)254Lr                 9500.6      15.       9438.430     9.061     -1.2o  o                 GGSa     09He20,W
 258Db(a)254Lr                 9436.9      10.       9438.430     9.061       .2   1    82  81 258Db GGSa     19Vo03,*
 258Db(a)254Lrm                9341.1      10.       9323.251     9.639      -.4o  o                 GGSa     09He20
 258Db(a)254Lrm                9330        21        9323.251     9.639      -.3   1    21  19 258Db GGSa     19Vo03,*
 258Db(a)254Lrp                9445.7      15.           *                        F                  HGSa     85He22,*
 258Db(a)254Lrp                9446.8      20.           *                        F                  GLza     01Ga20,*
 258Db(a)254Lrp                9341.1      10.           *                        F                  GGSa     09He20,*
 258Dbm(a)254Lr                9489.5      10.                                    2                  GGSa     19Vo03,*
 258Sg(a)254Rf                 9670#      300#                                    9                  g        S-u212
 258Lrp(IT)258Lr                240#      100#                                    6                  h        S-u126
*258Md(a)254Es              E(a)=6713(5) to 447.9 level                                                       93Mo18**
*258Md(a)254Es              E(a)=6763(4), 6718(2) to 403.8, 447.9 levels                                      93Mo18**
*258Lr(a)254Md              E(a)=8648(10) in concidence with X(L) not X(K) -> E(g)=90(50) keV                 AHW935**
*258Lr(a)254Md              E(a)=8752 observed as sum of alpha's and conversion electrons                     AHW   **
*258Lr(a)254Md              Mass assignment confirmed                                                         92Gr02**
*258Lr(a)254Md              Could be to Mdm; but is already high in (a)-SYST                         n        AHW951*W
*258Db(a)254Lr              also E(a)=9089(10), 9109(5), 9166(10), 9280(20)                          h        09He20*W
*258Db(a)254Lr              E(a)=9074(10) to 220.7 keV, E(a)=9093(10) to 199.1 keV                   G        19Vo03**
*258Db(a)254Lrm             E(a)=9185(15), unc. as given in ref.                                     G        19Vo03**
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*258Db(a)254Lrp                Lacking spectroscopy information, might misidentified               G        19Vo03**
*258Dbm(a)254Lr                E(a)=9154(15) 9144(10) to 199.1 keV, 9165(15) to 178 keV           G        19Vo03**


 259Fm(a)255Cf                   6470#     200#                                6                    S
 259Md(a)255Es                   7050#     100#                                5               g    S-u20c
 259No(a)255Fm                   7849.2     15.      7854.000     5.000     .3  U              K    73Si40,*
 259No(a)255Fm                   7869.6     15.      7854.000     5.000   -1.0  U              K    93Mo18,*
 259No(a)255Fm                   7854        5                                 4               KJAa 13As02,*
 259Lr(a)255Mdp                  8582.8     20.      8573.842     9.085    -.4 -6-                  71Es01
 259Lr(a)255Mdp                  8571.6     10.      8573.842     9.085     .2 -6-                  92Ha22,W
 259Lr(a)255Mdp                  8577.7     29.      8573.842     9.085    -.1  U              mBka 92Kr01
 259Lr(a)255Mdp            ave   8573.842    9.085                             6                    average
 259Rf(a)255Nop                  8999.2     20.      9030.099    11.085    1.5o o              HBka 69Gh01
 259Rf(a)255Nop                  9030       20       9030.099    11.085     .0 -3-             N    81Be03,*
 259Rf(a)255Nop                  9034.7     20.      9030.099    11.085    -.2 -3-             mGSa 98Ho13,W
 259Rf(a)255Nop                  9026.6     35.      9030.099    11.085     .1 -3-             HRIa 04Mo40
 259Rf(a)255Nop                  9026.6     20.3     9030.099    11.085     .2 -3-             HBka 04Fo08
 259Rf(a)255Nop                  9017       60       9030.099    11.085     .2  U              HBka 06Gr24
 259Rf(a)255Nop                  8940.4     11.      9030.099    11.085    8.2F F              HGSa 10Ni14,*
 259Rf(a)255Nop                  8968.8     50.      9030.099    11.085    1.2  U              H    12Zh04
 259Rf(a)255Nop            ave   9030.099   11.085                             3                    average
 259Db(a)255Lr                   9618.8     20.                                2               MLza 01Ga20
 259Sg(a)255Rf                   9771.2     30.5     9765.077     8.126    -.1o o              HGSa 85Mu11,W
 259Sg(a)255Rf                   9807.7     23.      9765.077     8.126    -.8  U              KBka 09Fo02,*
 259Sg(a)255Rf                   9784       50       9765.077     8.126    -.4o o              KGSa 09He20,*
 259Sg(a)255Rf                   9765.0      8.1                               3               KGSa 15An05
 259Sgm(a)255Rf                  9852.4     20.3                               3               KGSa 15An05
 259Sgm(a)255Rfm                 9700.0      8.1     9702.469     7.528     .3 -4-             KGSa 15An05
 259Sgm(a)255Rfm                 9717       20       9702.469     7.528    -.7 -4- q-q=   14.531 K  255Rfm-0
 259Sgm(a)255Rfm           ave   9702.469    7.528                             4                    average
 259Nop(IT)259No                  230#     150#                                5               h    S-u125
 259Lrp(IT)259Lr                  350#     150#                                7               n    S-Nm
*259No(a)255Fm                 suffer summing effect; highest E(a) seen 7685(10); extra unc. added      K    WgM147**
*259No(a)255Fm                 suffer summing effect; highest E(a) seen 7689(4); extra unc. added       K    WgM147**
*259No(a)255Fm                 Or E(favored)=7551(4) if Coriolis mixed                              k    Ens902*W
*259No(a)255Fm                 Both calibr. on 254Fm; energies perhaps not so good!                 n    AHW93b*W
*259No(a)255Fm                 E(a)=7505(5) to 231.1 level                                          K    13As02**
*259Lr(a)255Mdp                Gives E(a) 8445(29) not important                                    h    92Gr02*W
*259Rf(a)255Nop                E(a)=8870(20); partly summed E(a)=8770(20) and e-                    N    AHW951**
*259Rf(a)255Nop                May partly be sum of unhindered E(a)=8756 and e-                     m    AHW021*W
*259Rf(a)255Nop                Note for GAu: 2 a-branches: (2) 8881, (2)8770 see also 81Be03        n    AHW951*W
*259Rf(a)255Nop                F : lifetime 107 ms is much shorter than T=2.63 s in Nubase          g    Nub211**
*259Sg(a)255Rf                 E(a)=9620(30) probably to 9/2 63(10) above 7/2 ground-state          h    AHW951*W
*259Sg(a)255Rf                 E(a)=9030(50) maybe unhindered to 255Rfp Nm level at 660(60) keV     h    AHW951*W
*259Sg(a)255Rf                 7 events; and single ones E(a)=9030, 9360                            m    85Mu11*W
*259Sg(a)255Rf                 All correlated with ONLY SF (50% branch in 255Rf)                    m    85Mu11*W
*259Sg(a)255Rf                 Seems improbable!                                                    m    AHW99b*W
*259Sg(a)255Rf                 One event only, resolution 23 keV; also a wide group at lower 9593(46)keVH    09Fo02**
*259Sg(a)255Rf                 One event with E(a)~9050 in coincidence with 593 gamma; also groups at  H    09He20**
*                               ~ E(a)=9607(10), 9550(10) keV                                        H    09He20**


 260Fm(a)256Cf                   6300#     300#                                4               k    S-u169
 260Md(a)256Es                   6940#     300#                                5                    S
 260No(a)256Fm                   7700#     200#                                4                    S-MAP
 260Lr(a)256Mdp                  8155.6     20.3                               6               h    71Es01
 260Rf(a)256No                   8900#     200#                                6               n    S-MAP
 260Db(a)256Lr                   9191.5     30.      9501#       42#      10.3F F              hRIa 04Mo26,*
 260Db(a)256Lr                   9516.5     30.      9501#       42#       -.5F F              HRIa 04Mo26,*
 260Db(a)256Lr                   9563.2     20.      9501#       42#      -3.1F F              HBka 04Fo08,*
 260Db(a)256Lrp                  9283.1     20.      9271.272    13.156    -.6 -4-              Bka 70Gh02
 260Db(a)256Lrp                  9262.8     17.      9271.272    13.156     .5 -4-              ORb 77Be36
 260Db(a)256Lrp                  9316.5     60.      9271.272    13.156    -.8  U              HGSa 95Ho04,*
 260Db(a)256Lrp                  9285.1     60.      9271.272    13.156    -.2  U              MGSa 02Ho11,*
 260Db(a)256Lrp                  9181.3     60.      9271.272    13.156    1.5  U              HLza 04Ga29,*
 260Db(a)256Lrp                  9310.4     60.      9271.272    13.156    -.7  U              HRIa 04Mo26,*
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Item		Input value	Unc.	Adjusted value	Unc.	v/s	Dg	Lab	Reference
260Db(a)256Lrp	ave	9271.272	13.156				4		average
260Sg(a)256Rf		9923.0	30.	9900.587	10.157	-.7o	o	HGSa	85Mu11
260Sg(a)256Rf		9900.6	10.				3	HGSa	09He20
260Bh(a)256Db		10400.3	30.5				8	H	08Ne01,*
260Dbp(IT)260Db		100#	150#				5	g	S-u20c,*
*260Db(a)256Lr	Highest energy event; other two E(a)=8810 and 8500 keV							h	04Mo26**
*260Db(a)256Lr	F : not observed in experiments with greater statistics							H	77Be36**
*260Db(a)256Lrp	Two events E(a)=9200 and 9146; error estimated by evaluator							M	FGK126**
*260Db(a)256Lrp	Two events E(a)=9156 and 9129; error estimated by evaluator							M	FGK126**
*260Db(a)256Lrp	Four events							h	FGK126*W
*260Db(a)256Lrp	Eight events out of 14, E(a)=9170 9050 9340 9400 9010 9100 9140 9130 keV							H	04Mo26**
*260Db(a)256Lrp	Two longer-lived alpha-escapes are assigned to the daughter							H	FGK126**
*260Bh(a)256Db	Other events E(a)=10170, 10170 and 10190; 10080 and 10030							H	08Ne01**
*260Dbp(IT)260Db	for 264Bh							g	GAu20c*G
261Md(a)257Es		6750#	300#				5	k	S-u169
261No(a)257Fm		7440#	200#				5	h	S-u126
261Lr(a)257Md		8140#	200#				5	m	S-h03b
261Rf(a)257No		8652.9	20.	8646.253	65.370	-.1o	o	MGSa	96Ho13
261Rf(a)257No		8652.9	20.	8646.253	65.370	-.1o	o	HGSa	02Ho11
261Rf(a)257No		8659	52	8646.253	65.370	-.2o	o	HGSa	03Tu05,*
261Rf(a)257No		8642.6	50.	8646.253	65.370	.1	-4-	HGSa	08Dv02
261Rf(a)257No		8652.9	50.	8646.253	65.370	-.1	-4-	HRIm	11Ha13,*
261Rf(a)257No		8642.6	60.	8646.253	65.370	.0	-4-	HRIm	12Ha05,*
261Rf(a)257No	ave	8646.253	42.110				4		average
261Rfm(a)257Nop		8409.1	20.	8414.837	14.916	.3	-6-	MBka	70Gh01
261Rfm(a)257Nop		8388.8	30.	8414.837	14.916	.9o	o	HGSa	98Tu01,*
261Rfm(a)257Nop		8429.4	30.5	8414.837	14.916	-.5	-6-	MDba	00La34
261Rfm(a)257Nop		8470.0	50.	8414.837	14.916	-1.1	U	H	08Ga08,*
261Rfm(a)257Nop		8419.3	50.	8414.837	14.916	-.1	-6-	HGSa	08Dv02
261Rfm(a)257Nop		8409.1	50.	8414.837	14.916	.1o	o	KRIm	11Ha13
261Rfm(a)257Nop		8409.1	40.6	8414.837	14.916	.1	-6-	KRIm	13Mu08
261Rfm(a)257Nop	ave	8414.837	14.916				6		average
261Db(a)257Lrp		9069.2	20.	9067.877	13.541	-.1	-9-	Bka	71Gh01
261Db(a)257Lrp		9069.2	40.	9067.877	13.541	-.0	-9-	HLza	04Ga29
261Db(a)257Lrp		9066.2	20.	9067.877	13.541	.1	-9-	HGSa	10St14
261Db(a)257Lrp	ave	9067.877	13.541				9		average
261Sg(a)257Rf		9709.0	30.	9713.700	15.000	.2o	o	HGSa	85Mu11
261Sg(a)257Rf		9713.1	20.	9713.700	15.000	.0F	F	HGSa	95Ho03,*
261Sg(a)257Rf		9770.0	20.3	9713.700	15.000	-2.8o	o	HGSa	07St12
261Sg(a)257Rf		9713.7	15.				2	HGSa	10St14,*
261Bh(a)257Db		10562.1	25.	10500.208	72.284	-1.1o	o	HGSa	89Mu09
261Bh(a)257Db		10507.3	75.	10500.208	72.284	-.1o	o	HBka	06Fo02,*
261Bh(a)257Db		10492.1	75.	10500.208	72.284	.1	-2-	HBka	08Ne08,*
261Bh(a)257Db		10504.3	40.	10500.208	72.284	-.1	-2-	HGSa	10He11,*
261Bh(a)257Db	ave	10500.208	52.201				2		average
261Rfm(IT)261Rf		70#	100#				5	m	S
261Rfp(IT)261Rf		230#	100#				5	g	S-u20c,G
261Dbp(IT)261Db		280#	200#				10	g	S-u20c,G
*261Rf(a)257No	Two events with E(a)=8500(+70--30) keV							H	GAu06c**
*261Rf(a)257No	From direct production (fusion-evaporation)							H	11Ha13**
*261Rf(a)257No	Decay chain of 265Sg, observation is independent of previous item							H	12Ha05**
*261Rfm(a)257Nop	In addition 60% E(a)=8380(30) keV							M	98Tu01**
*261Rfm(a)257Nop	Regrouping the 16 values, one finds 8221(13) and 8338(10)							m	GAu022*G
*261Rfm(a)257Nop	Single event, decay time 103.2 s							H	08Ga08**
*261Sg(a)257Rf	F : alpha's to 157 level summed with conversion electron							H	FGK10a**
*261Sg(a)257Rf	Average of 2 highest							h	AHW957*W
*261Sg(a)257Rf	E(a)=9410(15) to 157(1) level							H	10St14**
*261Bh(a)257Db	E(a)=10346(75) one event; error estimated by evaluator							H	06Fo02**
*261Bh(a)257Db	Highest E(a); error estimated; others 10054, 10285, 10113, 10165, 9989							H	08Ne08**
*261Bh(a)257Db	Average of 2 highest 10331, 10355 as read from graph; error estimated							H	10He11**
*261Rfp(IT)261Rf	for 269Hs							g	GAu20c*G
*261Dbp(IT)261Db	for 265Bh							g	GAu20c*G
262Md(a)258Es		6540#	200#				3	g	S-u20c

262No(a)258Fm		7250#	300#				5	h	S-u10a
262Lr(a)258Md		7990#	200#				8	h	S-u12b
262Rf(a)258No		8490#	200#				5	n	S-MAP ,W
262Db(a)258Lrp		8794.5	20.	8806.256	10.944	.6	-7-	Bka	71Gh01
262Db(a)258Lrp		8815.8	20.	8806.256	10.944	-.5	-7-		88Gr30
262Db(a)258Lrp		8804.7	20.	8806.256	10.944	.1	-7-	MGSa	99Dr09
262Db(a)258Lrp		8875.8	20.	8806.256	10.944	-1.4o	o	KRIa	09Mo12
262Db(a)258Lrp		8814.8	30.5	8806.256	10.944	-.3	-7-	KRIa	14Ha04
262Db(a)258Lrp	ave	8806.256	10.944				7		average
262Sg(a)258Rf		9599.8	15.2				3	HGSa	10Ac.A
262Bh(a)258Db		10216.2	25.	10319.500	15.000	4.1F	F	hGSa	89Mu09,*
262Bh(a)258Db		10300.5	25.4	10319.500	15.000	.7o	o	HGSa	97Ho14
262Bh(a)258Db		10231.4	25.4	10319.500	15.000	3.5B	B	HBka	06Fo02
262Bh(a)258Db		10239.2	30.	10319.500	15.000	2.7B	B	kBka	08Ne08,*
262Bh(a)258Db		10319.5	15.				2	HGSa	09He20,*
262Bhm(a)258Db		10531.1	25.4	10536.620	67.468	.1o	o	HGSa	89Mu09
262Bhm(a)258Db		10605.2	25.4	10536.620	67.468	-1.2o	o	HGSa	97Ho14
262Bhm(a)258Db		10508.7	76.2	10536.620	67.468	.3o	o	HBka	06Fo02,*
262Bhm(a)258Db		10544.3	76.2	10536.620	67.468	-.1	-2-	HBka	08Ne08
262Bhm(a)258Db		10534.1	15.	10536.620	67.468	.0	-2-	HGSa	09He20
262Bhm(a)258Db	ave	10536.620	45.298				2		average
262Dbp(IT)262Db		50#	70#				8	h	S-u126
*262Rf(a)258No		From partial (a)-half-life > 200s, Q(a)<8400						n	93Gr.B*W
*262Bh(a)258Db		F : not highest line, see ref.						h	97Ho14**
*262Bh(a)258Db		E(a)=10096, 10025, 10125 keV						H	08Ne08**
*262Bh(a)258Db		E(a)=10008(15) to 156.5 level						H	09He20**
*262Bhm(a)258Db		Single event, error estimated by evaluator						k	GAu098**
263No(a)259Fm		7000#	400#				7	h	S-u10a
263Lr(a)259Md		7680#	200#				6	h	S-u126
263Rf(a)259Nop		8022.2	40.6	8022.214	28.722	-.0	-6-	N	93Gr.C,W
263Rf(a)259Nop		8022.2	40.6	8022.214	28.722	-.0	-6-	M	99Ga.A,W
263Rf(a)259Nop	ave	8022.214	28.722				6		average
263Db(a)259Lrp		8484.3	27.				8	Bka	92Kr01
263Sg(a)259Rf		9393.1	40.	9403.263	60.928	.3o	o	HBka	74Gh04
263Sg(a)259Rf		9403.3	60.				4	HBka	06Gr24,*
263Sg(a)259Rfq		9200.2	40.	9198.136	60.928	-.1o	o	HBka	74Gh04
263Sg(a)259Rfq		9149.4	60.9	9198.136	60.928	.8o	o	HBka	94Gr08
263Sg(a)259Rfq		9198.1	60.9				5	HBka	06Gr24,*
263Sgm(a)259Rfp		9391.1	20.	9390.053	13.315	-.1	-7-	mGSa	98Ho13
263Sgm(a)259Rfp		9382.9	50.8	9390.053	13.315	.1o	o	HBka	03Gi05
263Sgm(a)259Rfp		9393.1	35.	9390.053	13.315	-.1	-7-	HRIa	04Mo40,*
263Sgm(a)259Rfp		9388.0	20.	9390.053	13.315	.1	-7-	HBka	04Fo08
263Sgm(a)259Rfp		9198.1	11.	9390.053	13.315	17.5F	F	HGSa	10Ni14,*
263Sgm(a)259Rfp	ave	9390.053	13.315				7		average
263Bh(a)259Db		10080#	300#				3	n	S
263Hs(a)259Sg		10733.5	60.				4	HBka	09Dr02,G
263Hsm(a)259Sg		11058.5	60.				4	HBka	09Dr02,*
263Rfp(IT)263Rf		300#	200#				7	h	S-u10a
263Dbp(IT)263Db		260#	200#				9	h	S-u126
*263Rf(a)259Nop		Tentative assignment						m	AHW95a*W
*263Rf(a)259Nop		Two events only						m	AHW99a*W
*263Sg(a)259Rf		Two events E(a)=9290 and 9230 keV						H	06Gr24**
*263Sg(a)259Rfq		Four events E(a)=9010, 9100, 9060 and 9060 keV						H	06Gr24**
*263Sgm(a)259Rfp		Also lower E(a)=9130, 9040, 9150 keV						H	04Mo40**
*263Sgm(a)259Rfp		F : the alpha chain originating from 267Hs is in conflict with other dataH							10Ni14**
*263Hs(a)259Sg		Trends from Mass Surface TMS suggest 263Hs 50 keV less bound						g	GAu212*G
*263Hsm(a)259Sg		Assignment assumed by evaluator						H	GAu123**
264No(a)260Fm		6820#	400#				5	h	S-u123
264Lr(a)260Md		7400#	300#				6	h	S-u10a
264Rf(a)260No		8040#	300#				5	h	S-u125
264Db(a)260Lr		8560#	200#				7	g	S-u20c
264Sg(a)260Rf		9210#	200#				7	n	S
264Bh(a)260Dbp		9767.3	20.	9759.998	17.632	-.4	-6-	NGSa	95Ho04,*

264Bh(a)260Dbp		9636.0	60.	9759.998	17.632	2.1	U	HLza	04Ga29,*
264Bh(a)260Dbp		9737.8	35.5	9759.998	17.632	.6	-6-	HRIa	04Mo26,*
264Bh(a)260Dbp	ave	9759.998	17.632				6		average
264Hs(a)260Sg		10870	210	10590.754	20.308	-1.3	o	hGSa	87Mu15,*
264Hs(a)260Sg		10590.8	20.				4	NGSa	95Ho.B
264Hs(a)260Sg		10966.4	80.	10590.754	20.308	-4.7	B	HRIa	11Sa41,*
264Bhp(IT)264Bh		330#	150#				7	g	S-u211,W
*264Bh(a)260Dbp		Three more events in ref. ~ E(a)=9365, 9514 and 9113 keV						M	02Ho11**
*264Bh(a)260Dbp		Three more events E(a)=9501, 9481,9440 keV						H	04Ga29**
*264Bh(a)260Dbp		Six events; also two E(a)=9830 keV						H	04Mo26**
*264Hs(a)260Sg		Q(a)=11000(+100--300) derived from T(1/2), one event only						h	87Mu15**
*264Hs(a)260Sg		Syst indicates 264Hs(a) 200 lower GAu: then next is better!!						n	AHW *W
*264Hs(a)260Sg		Also E(a)=10610(40) keV						H	11Sa41**
*264Bhp(IT)264Bh		A 93 gamma follows reported 268Mt(a)						n	95Ho04*W

265Lr(a)261Md		7230#	200#				6	h	S-u126
265Rf(a)261No		7810#	300#				6	h	S-u125
265Db(a)261Lr		8400#	100#				6	g	S-u20c
265Sg(a)261Rfm		8945.3	60.	8980.841	70.852	.5	F	HDba	94La22,*
265Sg(a)261Rfm		8904.7	30.	8980.841	70.852	1.3	F	HGSa	96Ho13,*
265Sg(a)261Rfm		8975.7	30.	8980.841	70.852	.1	o	HGSa	98Tu01,W
265Sg(a)261Rfm		9077.3	30.	8980.841	70.852	-1.7	F	HGSa	98Tu01,*
265Sg(a)261Rfm		9036.6	50.8	8980.841	70.852	-.8	o	HGSa	03Tu05
265Sg(a)261Rfm		8985.9	50.	8980.841	70.852	-.1	-6-	HGSa	08Du09
265Sg(a)261Rfm		8975.7	50.8	8980.841	70.852	.1	-6-	HRIm	12Ha05
265Sg(a)261Rfm	ave	8980.841	50.200				6		average
265Sgm(a)261Rfp		8823.5	50.	8814.852	43.051	-.2	o	HGSa	03Tu05
265Sgm(a)261Rfp		8813.3	40.	8814.852	43.051	.0	o	HGSa	06Dv01
265Sgm(a)261Rfp		8823.5	50.	8814.852	43.051	-.2	-6-	HGSa	08Dv02
265Sgm(a)261Rfp		8843.8	40.	8814.852	43.051	-.7	o	HRIa	08Mo09
265Sgm(a)261Rfp		8823.5	50.	8814.852	43.051	-.2	o	KRIa	12Ha05
265Sgm(a)261Rfp		8792.9	81.2	8814.852	43.051	.3	-6-	KRIa	13Su04
265Sgm(a)261Rfp	ave	8814.852	43.051				6		average
265Bh(a)261Dbp		9381.9	50.				11	HLza	04Ga29
265Hs(a)261Sg		10524.2	25.	10470.324	15.230	-2.1	o	hGSa	87Mu15
265Hs(a)261Sg		10468.3	20.	10470.324	15.230	.1	o	hGSa	95Ho03
265Hs(a)261Sg		10459.2	15.	10470.324	15.230	.7	o	hGSa	99He11,*
265Hs(a)261Sg		10470.3	15.2				3	HGSa	09He20,*
265Hsm(a)261Sg		10712.0	20.	10699.797	15.230	-.6	o	MGSa	95Ho03,G
265Hsm(a)261Sg		10734.3	15.2	10699.797	15.230	-2.3	o	HGSa	99He11,*
265Hsm(a)261Sg		10699.8	15.				3	HGSa	09He20
265Mt(a)261Bh		11120#	400#				3	h	S-u118
*265Sg(a)261Rfm		F : average but probably due to several groups, see ref.						M	98Tu01**
*265Sg(a)261Rfm		F : this event is not trusted, see ref. from same group						M	02Ho11**
*265Sg(a)261Rfm		Strongest group; may be unhindered one. There is a 100 higher E(a)						h	98Tu01*W
*265Sg(a)261Rfm		F : most probably not from 265Sg						H	GAu10a**
*265Hs(a)261Sg		Also E(a)=10426(15) keV						H	99He11**
*265Hs(a)261Sg		Most intense line, also E(a)=10282(15), 10428(15), 10573(15) keV						H	09He20**
*265Hsm(a)261Sg		Original E(a)=10550(20) modified in ref. (to 10570(20))						m	95Ho.B*G
*265Hsm(a)261Sg		Also E(a)=10726(15) keV						H	99He11**

266Lr(a)262Md		7570#	300#				4	h	S-u123
266Rf(a)262No		7610#	200#				6	g	S-u20c
266Db(a)262Lr		8210#	200#				9	h	S-u126
266Sg(a)262Rf		8762.0	50.	8800#	100#	.8	F	MDba	94La22,*
266Sg(a)262Rf		8904.1	40.	8800#	100#	-2.6	F	HGSa	98Tu01,*
266Sg(a)262Rf		8853.4	50.	8800#	100#	-1.1	F	HGSa	02Tu05,*
266Sg(a)262Rf		8800#	100#				6	h	S-u127
266Bh(a)262Dbp		9432	50	9376.071	32.833	-1.1	-9-	MBka	00Wi15
266Bh(a)262Dbp		9245.3	81.2	9376.071	32.833	1.6	-9-	HLza	06Qi03
266Bh(a)262Dbp		9371.2	50.	9376.071	32.833	.1	-9-	HRIa	09Mo12,*
266Bh(a)262Dbp	ave	9376.071	32.833				9		average
266Hs(a)262Sg		10335.7	20.3	10345.686	15.599	.5	-4-	hGSa	01Ho06
266Hs(a)262Sg		10360	24	10345.686	15.599	-.6	-4-	HGSa	11Ac.A
266Hs(a)262Sg	ave	10345.687	15.599				4		average

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 266Hsm(a)262Sgp             10592.6      20.                                      7                  KGSa     11Ac.A
 266Mt(a)262Bh               10995.7      25.                                      3                  MGSa     97Ho14
 266Mtm(a)262Bhm             11269.7      50.        11918.565     50.765    13.0B  B                  HGSa     84Mu07,*
 266Mtm(a)262Bhm             11168.1      30.        11918.565     50.765    25.0B  B                  HGSa     89Mu16
 266Mtm(a)262Bhm             11918.6      50.                                      3                  MGSa     97Ho14,*
*266Sg(a)262Rf             Average of two groups                                                      M        02Tu05**
*266Sg(a)262Rf             Data included in value of 02Tu05 (GAu uses original)                       m        AHW   *W
*266Sg(a)262Rf             F : no alpha decay from 266Sg, all re-assigned to 265Sg                    H        08Dv02**
*266Bh(a)262Dbp            Also E(a)=9770(40), 9080(40) keV from 278Nh decay chain                    H        08Mo09**
*266Mtm(a)262Bhm           One E(a) only; may be gs                                                   m        AHW997**
*266Mtm(a)262Bhm           One E(a)=11739(50), one 11306; several smaller                             h        AHW997**

 267Rf(a)263No                7890#      300#                                      8                  h        S-u125
 267Db(a)263Lr                7920#      300#                                      7                  h        S-u126
 267Sg(a)263Rfp               8325.0      50.                                      8                  HGSa     08Dv02
 267Bh(a)263Dbp               8964.5      30.5        8969.901     26.117      .2 -10-                MBka     00Wi15
 267Bh(a)263Dbp               8984.8      50.         8969.901     26.117     -.3 -10-                hGSa     02Tu05
 267Bh(a)263Dbp         ave   8969.901    26.117                                  10                           average
 267Hs(a)263Sg               10015.3      60.        10037.505     13.005      .4  -5-                HDba     95La20,*
 267Hs(a)263Sg               10032.6      20.        10037.505     13.005      .2  -5-                HGSa     98Ho13
 267Hs(a)263Sg               10035.7      50.        10037.505     13.005      .0o  o                 HBka     03Gi05
 267Hs(a)263Sg               10069.1      35.        10037.505     13.005     -.9  -5-                HRIa     04Mo40,*
 267Hs(a)263Sg               10034.6      20.        10037.505     13.005      .1  -5-                HBka     04Fo08,*
 267Hs(a)263Sg               10145.2      50.        10037.505     13.005    -2.2   U                 HGSa     10Ni14,*
 267Hs(a)263Sg          ave  10037.505    13.005                                   5                           average
 267Hs(a)263Sgm               9978.8      20.         9986.752     13.312      .4  -6-                HGSa     98Ho13,*
 267Hs(a)263Sgm               9979.8      35.         9986.752     13.312      .2  -6-                HRIa     04Mo40,*
 267Hs(a)263Sgm               9997.0      20.         9986.752     13.312     -.5  -6-                HBka     04Fo08,*
 267Hs(a)263Sgm         ave   9986.752    13.312                                   6                           average
 267Hsm(a)263Sgp              9979.8      20.                                      8                  HBka     04Fo08
 267Mt(a)263Bh               10870#      400#                                      4                  m        S-h03b
 267Ds(a)263Hs               11776.8      50.8                                     5                  HBka     95Gh04,*
 267Rfp(IT)267Rf                80#      100#                                      9                  g        S-u20c,G
 267Sgp(IT)267Sg                20#       50#                                      9                  g        S-u20c,G
*267Hs(a)263Sg             Selecting two events at E(a)=9860,9870; and one E(a)=9740(60) keV          H        95La20**
*267Hs(a)263Sg             Selecting four events at E(a)=9970, 9890, 9900, 9910 keV                   H        04Mo40**
*267Hs(a)263Sg             Selecting two events at E(a)=9880, 9888 keV                                H        04Fo08**
*267Hs(a)263Sg             Directly produced 267Hs; daughter and grand-daughter also conflicting      H        10Ni14**
*267Hs(a)263Sgm            And one E(a)=9749(20) at 13 ms                                             H        98Ho13**
*267Hs(a)263Sgm            Selecting 7 events at E(a)=9830, 9820, 9820, 9860, 9820, 9830, 9830 keV    H        04Mo40**
*267Hs(a)263Sgm            Selecting 2 events at E(a)=9864, 9830 keV                                  H        04Fo08**
*267Ds(a)263Hs             Error not given in paper, estimated by evaluator (AHW)                     h        GAu954*G
*267Ds(a)263Hs             Maybe the upper isomer at about 250 keV excitation energy                  H        AHW041**
*267Ds(a)263Hs             Previously to 263Hsm, high spin & syst. suggest 267Ds -330                 h        GAu125*G
*267Rfp(IT)267Rf           for 271Sg                                                                  g        GAu20c*G
*267Sgp(IT)267Sg           for 271Hs                                                                  g        GAu20c*G

 268Rf(a)264No                8040#      300#                                      6                  h        S-u127
 268Db(a)264Lr                8260#      300#                                      7                  h        S-u126
 268Sg(a)264Rf                8300#      300#                                      6                  h        S-u111
 268Bh(a)264Db                9020#      300#                                      8                  h        S-u127
 268Hs(a)264Sg                9622.9      16.         9760#       100#        8.6D  D                 GGSa     10Ni14,*
 268Hs(a)264Sg                9760#      100#                                      8                  g        S-u212
 268Mt(a)264Bhp              10395.5      20.        10438.136     18.851     2.1o  o                 MGSa     95Ho04,*
 268Mt(a)264Bhp              10431.9      20.        10438.136     18.851      .3  -8-                hGSa     02Ho11,*
 268Mt(a)264Bhp              10476.7      50.        10438.136     18.851     -.8  -8-                HRIa     04Mo26,*
 268Mt(a)264Bhp              10268        20         10438.136     18.851     8.5B  B                 HBka     04Fo08,*
 268Mt(a)264Bhp         ave  10438.136    18.851                                   8                           average
 268Ds(a)264Hs               11660#      300#                                      5                  h        S-u103
 268Dbp(IT)268Db                160       100           146.150    84.333      -.1  Z                 k        S-u126
*268Hs(a)264Sg             Trends from Mass Surface TMS suggest 268Hs   140 keV less bound           G        GAu212**
*268Mt(a)264Bhp            Two events E(a)=10221 coinc. E(g)=93 and 10259; event #3 E(a)=10097 keV    M        95Ho04**
*                           ~ could be decay of an isomer with lifetime=171 ms                        M        02Ho11**
*268Mt(a)264Bhp            Average of event 95*Ho*04 E(a)=10259 and present 10294 keV                 M        02Ho11**
*268Mt(a)264Bhp            Also E(a)=10340 keV                                                        H        04Mo26**
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*268Mt(a)264Bhp		One event only						H	04Fo08**
269Db(a)265Lr		8490#	300#				7	h	S-u126
269Sg(a)265Rf		7572.8	20.	8577.441	74.931	18.7	Z	mDba	99Og.A,W
269Sg(a)265Rf		8699.6	100.	8577.441	74.931	-1.1	-7-	H	10El06
269Sg(a)265Rf		8628.5	60.9	8577.441	74.931	-.6o	o	KDba	15Ut02
269Sg(a)265Rf		8536.9	40.6	8577.441	74.931	.6	-7-	GDba	18Ut02
269Sg(a)265Rf	ave	8577.441	55.809				7		average
269Bh(a)265Db		8670#	300#				7	g	S-u20c
269Hs(a)265Sgm		9369.6	30.	9280.427	31.707	-3.0B	B	HGSa	96Ho13,*
269Hs(a)265Sgm		9349.3	30.	9280.427	31.707	-2.3o	o	HGSa	02Ho11,*
269Hs(a)265Sgm		9278.2	50.8	9280.427	31.707	.0o	o	HGSa	03Tu05,*
269Hs(a)265Sgm		9207.1	30.5	9280.427	31.707	2.4o	o	HGSa	06Dv01
269Hs(a)265Sgm		9268.0	50.8	9280.427	31.707	.2	-7-	HGSa	08Dv02
269Hs(a)265Sgm		9349.2	71.1	9280.427	31.707	-1.0o	o	KRIa	08Mo09
269Hs(a)265Sgm		9288.3	40.6	9280.427	31.707	-.2	-7-	KRIa	13Su04
269Hs(a)265Sgm	ave	9280.427	31.707				7		average
269Mt(a)265Bh		10480#	200#				12	g	S-u20c
269Ds(a)265Hsm		11280.1	20.				4	NGSa	95Ho03
*269Sg(a)265Rf		After 1.3 h one event only							99Og.A*W
*269Hs(a)265Sgm		Event number 2 only; first event rejected, see ref.						M	02Ho11**
*269Hs(a)265Sgm		Two events E(a)=9230, 9180 both following 300 us 273Ds						H	02Ho11**
*269Hs(a)265Sgm		Three events E(a)=9180, 9100, 8880; latter probably due to energy loss						h	03Tu05**
270Db(a)266Lr		8019.0	30.5	8310#	200#	5.0D	D	KGSa	14Kh04,*
270Db(a)266Lr		8310#	200#				5	g	S-u212
270Sg(a)266Rf		8870#	200#				7	g	S-u20c
270Bh(a)266Db		9064.5	81.2				10	HDba	07Og02
270Hs(a)266Sg		9324.3	52.8	9069.898	37.701	-4.8F	F	KGSa	03Tu05,*
270Hs(a)266Sg		9024	52	9069.898	37.701	1.5o	o	kGSa	06Dv01,*
270Hs(a)266Sg		9013.8	50.	9069.898	37.701	1.1	-7-	kGSa	08Dv02,*
270Hs(a)266Sg		9123.4	77.	9069.898	37.701	-.7	-7-	HGSa	10Gr04,*
270Hs(a)266Sg		9155.8	80.	9069.898	37.701	-1.1	-7-	KDba	13Og03
270Hs(a)266Sg	ave	9069.898	37.701				7		average
270Mt(a)266Bh		10181.1	70.	10180#	100#	-.0o	o	GRIa	08Mo09
270Mt(a)266Bh		10414.5	71.	10180#	100#	-2.7D	D	GRIa	12Mo25,*
270Mt(a)266Bh		10180#	100#				10	g	S-u212,G
270Ds(a)266Hs		11196.2	50.8	11116.993	28.422	-1.6o	o	HGSa	01Ho06
270Ds(a)266Hs		11117.0	28.4				5	HGSa	11Ac.A
270Dsm(a)266Hs		12333	50	12508.600	53.852	2.5B	B	HGSa	01Ho06
270Dsm(a)266Hs		12508.6	20.				5	HGSa	11Ac.A
270Dsm(a)266Hsm		11318	50	11405.200	72.139	1.2o	o	HGSa	01Ho06
270Dsm(a)266Hsm		11405.2	52.				6	HGSa	11Ac.A
270Bhp(IT)270Bh		690#	200#				11	k	S-u169
*270Db(a)266Lr		Trends from Mass Surface TMS suggest 270Db 290 keV less bound						G	GAu212**
*270Hs(a)266Sg		F : re-assigned to 269Hs						K	06Dv01**
*270Hs(a)266Sg		Symmetrized from E(a)=9160(+70--30); also E(a)=8970 keV						k	GAu06c*G
*270Hs(a)266Sg		4 events at 8850(1.62s), 8900(0.05s), 8920(0.5s), 8880(0.4s)						K	GAu14a**
*270Hs(a)266Sg		2 events at 8760(0.27s), 8810(0.27s); E(a)=8880(50) for both experiments						K	GAu14a**
*270Hs(a)266Sg		Symmetrized from E(a)=9020(+50--100); independent from previous item						H	GAu113**
*270Mt(a)266Bh		Trends from Mass Surface TMS suggest 270Mt 230 keV more bound						G	GAu212**
*270Mt(a)266Bh		TMS agrees better with 2008Mo09=10181.1(70.)						g	GAu212*G
271Sg(a)267Rfp		8658	80	8668.200	95.360	.1o	o	HDba	04Og12
271Sg(a)267Rfp		8668.2	81.2				10	HDba	06Og05
271Bh(a)267Db		9490.3	162.4	9420.000	86.023	-.4o	o	GDba	12St.A
271Bh(a)267Db		9409.1	71.0	9420.000	86.023	.1o	o	GGSa	13Ru11
271Bh(a)267Db		9420	70				8	GSRv	17Og01
271Hs(a)267Sgp		9439.6	50.7				10	HGSa	08Dv02
271Mt(a)267Bh		9910#	200#				11	h	S-u126
271Ds(a)267Hs		10869.8	20.	10869.974	17.625	.0	-6-	MGSa	98Ho13
271Ds(a)267Hs		10870.8	35.	10869.974	17.625	-.0	-6-	HRIa	04Mo40,*
271Ds(a)267Hs	ave	10869.974	17.625				6		average
271Dsm(a)267Hs		10937.8	20.				6	HBka	04Fo08,*

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 271Dsm(a)267Hs               10803.8     50.      10937.731   20.300     2.7F  F                 H       12Zh04,*
 271Dsm(a)267Hsm              10899.2     20.      10898.626   13.309     -.0  -7-                HGSa    98Ho13
 271Dsm(a)267Hsm              10880.8     50.      10898.626   13.309     .3o  o                  HBka    03Gi05
 271Dsm(a)267Hsm              10883.0     35.      10898.626   13.309     .4  -7-                 HRIa    04Mo40,*
 271Dsm(a)267Hsm              10903.3     20.      10898.626   13.309     -.2  -7-                HBka    04Fo08,*
 271Dsm(a)267Hsm          ave 10898.626   13.309                                7                         average
*271Ds(a)267Hs                 Decay chain number 6 for the long-lived isomer, GAu interpretation    H       04Mo40**
*271Dsm(a)267Hs                Decay chain number 6, GAu interpretation                              H       04Fo08**
*271Dsm(a)267Hs                F : alpha escaped ?                                                   k       GAu126**
*271Dsm(a)267Hsm               GAu : average of decay chains number 2, 5, 10, 13 for short-lived isomer H    04Mo40**
*271Dsm(a)267Hsm               Error my estimate; 04Mo26 claims 35                                   h       AHW048*W
*271Dsm(a)267Hsm               Reconsider relations with 267Hs isomers  {GAu10a:done}                h       AHW048*W
*271Dsm(a)267Hsm               Decay chains number 5 and 7, GAu interpretation                       H       04Fo08**

 272Sg(a)268Rf                 8620#     200#                                   7                 g       S-u20c
 272Bh(a)268Db                 9303.0     20.                                   8                 KBka    15Ga24,*
 272Bh(a)268Db                 9210       10       9303.000    53.852     9.3B  B                 GSRv    17Og01,*
 272Bh(a)268Dbp                9154.9     60.      9156.850    64.901     .0o  o                  HDba    04Og03
 272Bh(a)268Dbp                9144.7     60.9     9156.850    64.901     .2o  o                  KDba    12Og02
 272Bh(a)268Dbp                9126.4     30.4     9156.850    64.901     .5  -9-                 KDba    13Og01,*
 272Bh(a)268Dbp                9187.3     30.4     9156.850    64.901     -.5  -9-                KGSa    13Ru11,*
 272Bh(a)268Dbp           ave  9156.850   41.377                                9                         average
 272Hs(a)268Sg                 9780#     200#                                   7                 h       S-u126
 272Mt(a)268Bh                10350#     300#                                   9                 h       S-u127
 272Ds(a)268Hs                10690#     300#                                   9                 g       S-u20c
 272Rg(a)268Mt                10981.9     20.      11197.427   13.308    10.8B  B                 MGSa    95Ho04,*
 272Rg(a)268Mt                11191.9     20.      11197.427   13.308     .3  -9-                 hGSa    02Ho11,*
 272Rg(a)268Mt                11184.7     35.      11197.427   13.308     .4  -9-                 HRIa    04Mo26,*
 272Rg(a)268Mt                11207.1     20.3     11197.427   13.308     -.5  -9-                HBka    04Fo08,*
 272Rg(a)268Mt            ave 11197.427   13.308                                9                         average
 272Bhp(IT)272Bh                180      100              *                     Z                 k       S-u126
*272Bh(a)268Db                 Average 9.16(2) 9.20(5) 9.18(5) 9.16(5)                               K       15Ga24**
*272Bh(a)268Db                 E(a)=8.55-9.20 MeV                                                    G       17Og01**
*272Bh(a)268Dbp                Average E(a) of 20 events; error increased                            K       13Og01**
*272Bh(a)268Dbp                Average E(a) of 8 events; error increased                             K       13Ru11**
*272Rg(a)268Mt                 B : one event only; E(K) in coincidence may explain disagreement      M       GAu035**
*272Rg(a)268Mt                 Two events E(a)=11008 and 11046 keV                                   M       02Ho11**
*272Rg(a)268Mt                 Also others up to E(a)=11560 keV                                      H       04Mo26**
*272Rg(a)268Mt                 One event only                                                        H       04Fo08**

 273Sg-u                     139475#     429#                                   2                 g   1.0 S-u20c
 273Bh(a)269Db                 9110#     200#                                   8                 g       S-u20c
 273Hs(a)269Sg                 8992.0     20.      9650.000    64.031    12.2   Z                 mDba    99Og.A,W
 273Hs(a)269Sg                 9732.9     40.      9650.000    64.031    -1.3o  o                 G       10El06
 273Hs(a)269Sg                 9671.9     40.6     9650.000    64.031     -.3o  o                 GDba    15Ut02
 273Hs(a)269Sg                 9670       40       9650.000    64.031     -.3o  o                 GSRv    16Ho09
 273Hs(a)269Sg                 9670       40       9650.000    64.031     -.3o  o                 GSRv    17Og01
 273Hs(a)269Sg                 9650       40                                    8                 GDba    18Ut02,G
 273Mt(a)269Bh                10880#     200#                                   8                 g       S-u20c
 273Ds(a)269Hs                 9875.0     20.      11366.900   53.964    27.7F  F                 mGSa    96Ho13,*
 273Ds(a)269Hs                11248.1     30.      11366.900   53.964     2.0F  F                 HGSa    96Ho13,*
 273Ds(a)269Hs                11519.1     60.      11366.900   53.964    -1.9F  F                 hDba    96La12,*
 273Ds(a)269Hs                11366.9     20.3                                  8                 MGSa    02Ho11,*
 273Ds(a)269Hs                11311.0     70.      11366.900   53.964     .6    U *               HRIa    08Mo09
 273Ds(a)269Hs                11194.3     81.2     11366.900   53.964     1.8B  B                 KRIa    13Su04
 273Rg(a)269Mt                11160#     250#                                  13                 g       S-u211
 273Hsp(IT)273Hs                200#     100#                                   9                 g       S-u211,G
*273Hs(a)269Sg                 After 4.5 m one event only                                                    99Og.A*W
*273Hs(a)269Sg                 Combining new results with all previous results                       g       GAu20c*G
*273Hs(a)269Sg                 Trends from Mass Surface TMS suggest 273Hs    50 keV less bound       g       GAu212*G
*273Hs(a)269Sg                 TMS agrees better with 2010Ellison06 9732.9(40.)                      g       GAu212*G
*273Ds(a)269Hs                 F : this event is distrusted, see ref.                                M       02Ho11**
*273Ds(a)269Hs                 F : event number 2, probably to excited state in 269Hs                h       GAu035**
*273Ds(a)269Hs                 F : this event is distrusted, see ref.; average 4 others E(a)=11720 keV  H    02Ho11**
*273Ds(a)269Hs                 And one E(a)=11080 keV                                                h       02Ho11**
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*273Hsp(IT)273Hs	for 277Ds						g		GAu211*G
274Bh(a)270Db	8930.6	101.5	8940.000	60.000	.1o	o	KDba		11Og04,*
274Bh(a)270Db	8890.0	50.7	8940.000	60.000	.7o	o	GDba		13Og04
274Bh(a)270Db	8971.2	30.5	8940.000	60.000	-.5o	o	GGSa		14Kh04
274Bh(a)270Db	8940	60				6	GSRv		17Og01
274Hs(a)270Sg	9550#	100#				8	g		S-u20b
274Mt(a)270Bhp	9904.8	101.5				12	HDba		07Og02
274Ds(a)270Hs	11660#	300#				8	h		S-u127
274Rg(a)270Mt	11477.9	70.				11	HRIa		08Mo09,*
*274Bh(a)270Db	All results from this work were first published in ref.						H		10Og01**
*274Bh(a)270Db	E(a)=8.73-8.84 MeV, unc. increased from 30 to 60 keV for "0" state						G		17Og01**
*274Rg(a)270Mt	Also one E(a)=11150(70) keV						H		08Mo09**
275Bh-u	145766#	644#				2	g	1.0	S-u20b
275Hs(a)271Sg	9437.5	71.0	9450.000	53.852	.1o	o	HDba		04Og12
275Hs(a)271Sg	9437.5	60.9	9450.000	53.852	.2o	o	GDba		06Og05
275Hs(a)271Sg	9450	15	9450.000	53.852	-.0o	o	GSRv		16Ho09
275Hs(a)271Sg	9450	20				11	GSRv		17Og01
275Mt(a)271Bh	10482.8	90.	10482.700	51.010	-.0	U *	kDba		04Og03
275Mt(a)271Bh	10503.0	60.	10482.700	51.010	-.3	U *	kDba		12St.A
275Mt(a)271Bh	10482.7	10.1				9	KGSa		13Ru11
275Ds(a)271Hs	11550#	200#				11	g		S-u20c
275Rg(a)271Mt	11870#	300#				12	g		S-u20c
275Hsp(IT)275Hs	260#	100#				12	g		S-u20c,G
*275Hsp(IT)275Hs	for 279Ds						g		GAu20c*G
276Bh-u	149169#	644#				2	g	1.0	S-u20c
276Cn-u	161418#	537#				2	g	1.0	S-u211
276Hs(a)272Sg	9240#	200#				8	g		S-u20b
276Mt(a)272Bh	10253	65	10100.000	10.000	-2.4o	o	KDba		04Og03,*
276Mt(a)272Bh	10212	84	10100.000	10.000	-1.3	U	KDba		12Og02,*
276Mt(a)272Bh	10160	16	10100.000	10.000	-3.8B	B	KDba		13Og01,*
276Mt(a)272Bh	10102.3	10.1	10100.000	10.000	-.2o	o	GGSa		13Ru11,*
276Mt(a)272Bh	10093.0	20.	10100.000	10.000	.3o	o	GBka		15Ga24,*
276Mt(a)272Bh	10100	10				9	GSRv		17Og01
276Mtm(a)272Bh	10354	84	*			Z	gDba		12Og02,*
276Ds(a)272Hs	11110#	200#				8	h		S-u123
276Rg(a)272Mt	11480#	400#				10	h		S-u127
276Mtp(IT)276Mt	300	100	*			Z	k		S-u124
*276Mt(a)272Bh	E(a)=9710(60) to 434 and 363 keV levels						K		13Ru11**
*276Mt(a)272Bh	E(a)=9670(80) to 434 and 363 keV levels, and one 9260(64) keV						K		13Ru11**
*276Mt(a)272Bh	Average for 18 events E(a)=9622(16) to 434 and 363 keV levels						K		13Ru11**
*276Mt(a)272Bh	E(a)=9530(10) to 434 keV level; also E(a)=9600(10) to 362 keV level						K		13Ru11**
*276Mt(a)272Bh	Average of 9 events E(a)=9570-9630 =9590 to 362 keV level						K		15Ga24**
*	~ also one event E(a)=9890(20) to 60 keV level						K		15Ga24**
*276Mt(a)272Bh	E(a)=8.52-10.01 MeV						G		17Og01**
*276Mtm(a)272Bh	E(a)=9810(80) to 434 and 363 keV levels						g		13Ru11**
*276Mtm(a)272Bh	E(a)=9810(80), 9260(640) with long T1/2; no sufficient information						g		12Og02**
277Bh-u	151477#	644#				2	g	1.0	S-u20c
277Hs(a)273Sg	9030#	200#				3	g		S-u20c
277Mt(a)273Bh	9900#	100#				9	g		S-u20c
277Ds(a)273Hsp	10999.2	20.	10700.000	64.031	-5.6	Z	mDba		99Og.A,W
277Ds(a)273Hsp	10725.2	40.	10700.000	64.031	-.4o	o	G		10El06
277Ds(a)273Hsp	10704.8	40.6	10700.000	64.031	-.1o	o	GDba		15Ut02
277Ds(a)273Hsp	10720	40	10700.000	64.031	-.3o	o	GSRv		16Ho09
277Ds(a)273Hsp	10710	40	10700.000	64.031	-.2o	o	GSRv		17Og01
277Ds(a)273Hsp	10700	40				10	GDba		18Ut02
277Rg(a)273Mt	11200#	200#				9	g		S-u211
277Cn(a)273Ds	11622.2	30.				9	hGSa		96Ho13,*
277Cn(a)273Ds	11821.0	30.	11622.200	58.310	-3.4F	F	MGSa		96Ho13,*
277Cn(a)273Ds	11486.2	40.6	11622.200	58.310	2.1C	C	HRIa		04MoZU,G

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 277Cn(a)273Ds                  11486.2      40.      11622.200    58.310     2.1B  B              HRIa     08Mo09,*
 277Cn(a)273Ds                  11232.4      81.2     11622.200    58.310     4.1B  B              KRIa     13Su04
 277Hsm(IT)277Hs                  100#      100#                                    4              h        S-f126
 277Hsp(IT)277Hs                  620#      200#                                    4              g        S-u20b,G
*277Ds(a)273Hsp               B : after 1.3 s one event only                                                990g.A*W
*277Cn(a)273Ds                And one E(a)=11170(20) Q(a)=11334.(20.) keV                          H        02Ho11**
*277Cn(a)273Ds                F : this event is distrusted, see ref.                               M        02Ho11**
*277Cn(a)273Ds                E(a) cited in 05Gu33     {BPf}                                       h        04MoZU*G
*277Cn(a)273Ds                And one E(a)=11090(70) keV                                                    08Mo09**
*277Hsp(IT)277Hs              for 281Ds                                                            g        GAu20b*G

 278Bh-u                       154988#      429#                                    2              g   1.0 S-u20c
 278Hs-u                       153753#      322#                                    2              g   1.0 S-u20c
 278Mt(a)274Bh                   9689.7     190.       9580.000    30.000     -.6   U              KDba     110g04
 278Mt(a)274Bh                   9527.3      71.       9580.000    30.000     .6o   o              GDba     120g06
 278Mt(a)274Bh                   9689.6      30.4      9580.000    30.000    -1.9o  o              GDba     130g04
 278Mt(a)274Bh                   9588.2      30.       9580.000    30.000     -.1o  o              GGSa     14Kh04
 278Mt(a)274Bh                   9580        30                                     7              GSRv     170g01,*
 278Ds(a)274Hs                  10420#      200#                                    9              g        S-u20c
 278Rg(a)274Mt                  10846.3      81.2                                  13              HDba     070g02
 278Cn(a)274Ds                  11220#      200#                                    9              g        S-u20b
 278Nh(a)274Rg                  11850.8      40.      11992.800    78.873     2.2o  o              GRIa     08Mo09,*
 278Nh(a)274Rg                  11992.8      61.                                   12              GRIa     12Mo25
 278Mtp(IT)278Mt                  390#      100#                                    8              g        S-u20c,G
*278Mt(a)274Bh                E(a)=9.38-9.55 MeV                                                   G        170g01**
*278Nh(a)274Rg                Also one E(a)=11520(40) keV                                          H        08Mo09**
*278Mtp(IT)278Mt              for 282Rg                                                            g        GAu20c*G

 279Hs-u                       157274#      644#                                    2              g   1.0 S-u20b
 279Nh-u                       171187#      644#                                    2              g   1.0 S-u20c
 279Mt(a)275Bh                   9380#      300#                                    3              k        S-u168
 279Ds(a)275Hsp                  9841.3      60.9      9847.133    60.379     .1o   o              HDba     040g12
 279Ds(a)275Hsp                  9841.3      60.9      9847.133    60.379     .1 -13-              HDba     060g05
 279Ds(a)275Hsp                  9847        15        9847.133    60.379     .0 -13-              HDba     060g05
 279Ds(a)275Hsp                  9850        20        9847.133    60.379    -.1 -13-              HDba     060g05
 279Ds(a)275Hsp            ave   9847.133    33.848                                13                       average
 279Rg(a)275Mt                  10521.1     162.3     10530.000   167.631     .1o   o              GDba     040g03
 279Rg(a)275Mt                  10530       160                                    10              GSRv     170g01
 279Cn(a)275Ds                  10930#      200#                                   12              g        S-u20c
 279Dsp(IT)279Ds                  230#      100#                                   14              g        S-u20b,G
 279Rgp(IT)279Rg                   40#      100#                                   11              g        S-u20c,G
*279Dsp(IT)279Ds              for 283Cn                                                            g        GAu20b*G
*279Rgp(IT)279Rg              for 283Nh                                                            g        GAu20c*G

 280Hs-u                       159335#      644#                                    2              g   1.0 S-u20c
 280Mt-u                       161579#      644#                                    2              g   1.0 S-u20c
 280Nh-u                       173098#      429#                                    2              g   1.0 S-u20c
 280Ds(a)276Hs                   9710#      200#                                    9              g        S-u20c
 280Rg(a)276Mt                  10128.6      60.      10148.800    10.200     .3o   o              KDba     040g03,*
 280Rg(a)276Mt                  10128.6      60.      10148.800    10.200     .3    U              KDba     120g02,*
 280Rg(a)276Mt                  10148.8      10.2     10148.800    10.200     -.0o  o              GGSa     13Ru11,*
 280Rg(a)276Mt                  10088.0      15.2     10148.800    10.200     4.0B  B              KDba     130g01,*
 280Rg(a)276Mt                  10148.8      10.2                                  10              KBka     15Ga24,*
 280Rg(a)276Mt                  10124.8      20.      10148.800    10.200     1.2   Z              gBka     15Ga24,*
 280Cn(a)276Ds                  10690#      200#                                    9              g        S-u20b
 280Rgp(IT)280Rg                  120       100                *                    Z              k        S-u127
*280Rg(a)276Mt                E(a)=9750(60) to 237 keV level                                       K        13Ru11**
*280Rg(a)276Mt                E(a)=9750(60) to 237 keV level                                       K        13Ru11**
*280Rg(a)276Mt                E(a)=9770(10) to 237 keV level                                       K        13Ru11**
*280Rg(a)276Mt                Average of 19 events E(a)=9710(15) to 237 keV level                  K        13Ru11**
*280Rg(a)276Mt                E(a)=9770(10) to 237 keV level, combining results from 13*Ru*11      G        15Ga24**
*280Rg(a)276Mt                E(a)=9.09-10.07 MeV                                                  G        170g01**
*280Rg(a)276Mt                Highest E(a)=9980(20)                                                g        15Ga24**
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 281Mt-u                     163608#     644#                                     2                g    1.0 S-u20c
 281Nh-u                     173710#     322#                                     2                k    1.0 S-u169
 281Ds(a)277Hsp                8957.8    180.        8853.000    58.310     -.6F  F                HDba      99Og10,*
 281Ds(a)277Hsp                8825.9    100.        8853.000    58.310      .2F  F                HDba      04Mo15,*
 281Ds(a)277Hsp                8856.3     30.4       8853.000    58.310     -.1o  o                HGSt      10Du06
 281Ds(a)277Hsp                8853.3     25.        8853.000    58.310     -.0o  o                GGSt      11Ga19
 281Ds(a)277Hsp                8853.3     15.        8853.000    58.310     -.0o  o                GGSa      12Ho12
 281Ds(a)277Hsp                8853       30                                      5                GSRv      16Ho09
 281Ds(a)277Hsp                8850       30         8853.000    58.310      .1o  o                GSRv      17Og01
 281Dsm(a)277Hsm               9449.8     15.                                     5                HGSa      12Ho12,*
 281Rg(a)277Mt                 9454.8     40.6       9900#      400#        6.9o  o                KDba      13Og04
 281Rg(a)277Mt                 9410       50         9900#      400#        6.9D  D                GSRv      17Og01,*
 281Rg(a)277Mt                 9900#     400#                                    10                g         S-u212
 281Cn(a)277Ds                10459.2     40.       10430.000    64.031     -.5o  o                G         10El06
 281Cn(a)277Ds                10448.9     40.6      10430.000    64.031     -.3o  o                GDba      15Ut02
 281Cn(a)277Ds                10450       40        10430.000    64.031     -.3o  o                GSRv      16Ho09
 281Cn(a)277Ds                10450       40        10430.000    64.031     -.3o  o                GSRv      17Og01
 281Cn(a)277Ds                10430       40                                     11                GDba      18Ut02
 281Dsp(IT)281Ds                 70#     100#                                     6                g         S-u20b,G
*281Ds(a)277Hsp              F : wrong alpha chain, see 285Cn and 289Fl                            H         GAu109**
*281Ds(a)277Hsp              F : non traceable information                                         H         GAu10b**
*281Dsm(a)277Hsm             Assignment of 293Lvm-289Flm-285Cnm-281Dsm-277Hsm chain is tentv       H         12Ho12**
*281Rg(a)277Mt               Trends from Mass Surface TMS suggest 281Rg   490 keV less bound       G         GAu212**
*281Dsp(IT)281Ds             for 285Cn                                                             g         GAu20b*G

 282Ds-u                     166174#     322#                                     2                g    1.0 S-u20c
 282Mt(a)278Bh                 8960      180         8660#      200#       -1.6D  D                GSRv      16Ho09,*
 282Mt(a)278Bh                 8660#     200#                                     3                g         S-u212
 282Rg(a)278Mtp                9129.7    101.4       9160.000    30.000      .3o  o                KDba      11Og04
 282Rg(a)278Mtp                9139.8     50.7       9160.000    30.000      .3o  o                GDba      13Og04
 282Rg(a)278Mtp                9180.4     30.4       9160.000    30.000     -.3o  o                GGSa      14Kh04,*
 282Rg(a)278Mtp                9160       30                                      9                GSRv      17Og01,*
 282Cn(a)278Ds                 9667.4    100.       10150#      200#        4.3F  F                HDba      04Mo15,*
 282Cn(a)278Ds                10150#     200#                                    10                g         S-u20c
 282Nh(a)278Rg                10783.2     81.2                                   14                HDba      07Og02
*282Mt(a)278Bh               re-interprete results from 99Og10                                     G         16Ho09**
*282Mt(a)278Bh               Trends from Mass Surface TMS suggest 282Mt   300 keV more bound       G         GAu212**
*282Rg(a)278Mtp              also observed E(a)=8860(30) keV                                       K         14Kh04**
*282Rg(a)278Mtp              E(a)=8.86-9.05 MeV                                                    G         17Og01**
*282Cn(a)278Ds               F : non traceable information                                         H         GAu10b**

 283Ds-u                     169437#     537#                                     2                g    1.0 S-u20c
 283Rg(a)279Mt                 9370#     100#                                     4                g         S-u20c
Careful,LABSAV BUFFER at 100 below      max 10100
 283Cn(a)279Dsp                9677       70         9658.000    52.202     -.2o  o                HDba      04Og07
 283Cn(a)279Dsp                9677.0     60.9       9658.000    52.202     -.2o  o                HDba      04Og12
 283Cn(a)279Dsp                9677.0     60.9       9658.000    52.202     -.2o  o                GDba      06Og05
 283Cn(a)279Dsp                9606.0     60.9       9658.000    52.202      .7o  o                G         07Ei02
 283Cn(a)279Dsp                9656.7     15.2       9658.000    52.202      .0o  o                GGSa      07Ho18
 283Cn(a)279Dsp                9788.6    100.        9658.000    52.202    -1.2   U *              HBka      09St21
 283Cn(a)279Dsp                9658       15                                     15                GSRv      16Ho09
 283Cn(a)279Dsp                9660       20         9658.000    52.202     -.0o  o                GSRv      17Og01
 283Cn(a)279Dsp                9585.5     51.        9658.000    52.202     1.0   U *              GRIa      17Ka31
 283Nh(a)279Rgp               10265.4     90.       10376.900    51.010     1.1   U *              KDba      04Og03
 283Nh(a)279Rgp               10376.9     10.1                                   12                KGSa      13Ru11

 284Ds-u                     171187#     537#                                     2                g    1.0 S-u20c
 284Rg-u                     173882#     537#                                     2                g    1.0 S-u20c
 284Cn(a)280Ds                 9301.3     50.        9670#      150#        7.4F  F                HDba      01Og01,*
 284Cn(a)280Ds                 9269.0    100.        9670#      150#        4.0F  F                hDba      04Mo15,*
 284Cn(a)280Ds                 9869.2    192.7       9670#      150#       -1.0D  D                GRIa      17Ka66,*
 284Cn(a)280Ds                 9670#     150#                                    10                g         S-u212
 284Nh(a)280Rg                10254.6     20.3      10280.003    38.118      .5 -11-               GGSa      13Ru11,*
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 284Nh(a)280Rg                10305.3     20.      10280.003    38.118     -.5 -11-           GBka      15Ga24,*
 284Nh(a)280Rg                10120       50       10280.003    38.118     3.2B  B            GSRv      17Og01,*
 284Nh(a)280Rg          ave   10280.003   38.118                             11                         average
 284Nh(a)280Rgp               10143.1     60.9         *                      Z               kDba      04Og03
 284Nh(a)280Rgp               10112.6     50.          *                      Z               kDba      12Og02,G
 284Nh(a)280Rgp               10097.4     15.          *                      Z               kDba      13Og01,G
 284Fl(a)280Cn                10700#     300#                                10               g         S-u211
*284Cn(a)280Ds              F : no alpha observed in later work by same group; re-assigned to 285Cn  H         04Og07**
*284Cn(a)280Ds              F : non traceable information                                     H         GAu10b**
*284Cn(a)280Ds              Alternatively 284Cn could decay by SF                             G         17Ka66*W
*284Cn(a)280Ds              Trends from Mass Surface TMS suggest 284Cn   200 keV more bound   G         GAu212**
*284Nh(a)280Rg              Highest E(a)=10110(10), error increased                           K         13Ru11**
*284Nh(a)280Rg              Highest E(a)=10160(20)                                            K         15Ga24**
*284Nh(a)280Rg              E(a)=9.10-10.11 MeV; unc. increased from 10 to 50 keV for "O" state  G      17Og01**
*284Nh(a)280Rg              Trends from Mass Surface TMS disagrees with the Superheavy Review SRv  G     GAu211**
*284Nh(a)280Rgp             Also E(a)=9886(62) keV                                            k         12Og02*G
*284Nh(a)280Rgp             Average E(a) of 21 events                                         k         13Og01*G

 285Rg-u                     175771#     644#                                 2               g    1.0 S-u20c
 285Cn(a)281Dsp                8793.7     50.       9318.403    58.946     7.4F  F            HDba      99Og10,*
 285Cn(a)281Dsp                8793.7    100.       9318.403    58.946     4.7F  F            hDba      04Mo15,*
 285Cn(a)281Dsp                9290.6     60.9      9318.403    58.946      .4o  o            HDba      04Og07
 285Cn(a)281Dsp                9280.5     50.       9318.403    58.946      .5o  o            GDba      07Og01
 285Cn(a)281Dsp                9341.3     30.4      9318.403    58.946     -.4o  o            HGSt      10Du06
 285Cn(a)281Dsp                9341.3     30.4      9318.403    58.946     -.4o  o            GGSt      11Ga19
 285Cn(a)281Dsp                9314.9     15.       9318.403    58.946      .1  -7-           HGSa      12Ho12
 285Cn(a)281Dsp                9320       15        9318.403    58.946     -.0  -7-           GSRv      16Ho09
 285Cn(a)281Dsp                9320       20        9318.403    58.946     -.0o  o            GSRv      17Og01
 285Cn(a)281Dsp                9320.8     30.4      9318.403    58.946     -.0  -7-           GRIa      17Ka66
 285Cn(a)281Dsp         ave    9318.404   31.220                              7                         average
 285Cnm(a)281Dsm               9845.4     15.2                                6               HGSa      12Ho12,*
 285Nh(a)281Rg                 9878.9     81.1     10010.000    40.000     1.4B  B            HDba      11Og04,*
 285Nh(a)281Rg                10026.9     62.      10010.000    40.000     -.2o  o            KDba      12Og02,*
 285Nh(a)281Rg                 9767.3    183.      10010.000    40.000     1.3B  B            KDba      12Og06
 285Nh(a)281Rg                10031.0    162.      10010.000    40.000     -.1o  o            KDba      13Og01
 285Nh(a)281Rg                 9990.4     41.      10010.000    40.000      .3o  o            KDba      13Og04
 285Nh(a)281Rg                10008.7     20.3     10010.000    40.000      .0o  o            GDba      16Fo16,*
 285Nh(a)281Rg                10010       40                                 11               GSRv      17Og01,*
 285Fl(a)281Cn                10558.4     50.7     10560.000    70.711      .0o  o            GDba      15Ut02
 285Fl(a)281Cn                10560       50       10560.000    70.711     -.0o  o            GSRv      16Ho09
 285Fl(a)281Cn                10560       50       10560.000    70.711     -.0o  o            GSRv      17Og01
 285Fl(a)281Cn                10560       50                                 12               GDba      18Ut02,G
*285Cn(a)281Dsp             F : one event at 15.4 m, later work yields much shorter half-lives  H       GAu109**
*285Cn(a)281Dsp             F : non traceable information                                     H         GAu10b**
*285Cnm(a)281Dsm            Assignment of 293Lvm-289Flm-285Cnm-281Dsm-277Hsm chain is tentv   H         12Ho12**
*285Nh(a)281Rg              And E(a)=9480(110) keV                                            H         11Og04**
*285Nh(a)281Rg              Also E(a)=9740(80) and 9480(110) keV                              H         12Og02**
*285Nh(a)281Rg              reanalyzed data of 11*Og*04, 12*Og*02, 12*Og*06, 13*Og*01 and 13*Og*04  K   16Fo16**
*                            ~ unweighted average of the 4 highest energy events as selected by  K      GAu16a**
*                            ~ the evaluator: s06=9857 s11=9902 s12=9845 s13=9867 in Table~2  K         GAu16a**
*285Nh(a)281Rg              E(a) = 9.47-10.18 MeV                                             G         17Og01**
*285Fl(a)281Cn              Trends from Mass Surface TMS suggest 285Fl   100 keV more bound   g         GAu212*G

 286Cn-u                     178691#     751#                                 2               g    1.0 S-u20c
 286Rg(a)282Mt                 8793       45        8630#      100#       -2.4D  D            GSRv      16Ho09,*
 286Rg(a)282Mt                 8630#     100#                                 4               g         S-u212
 286Nh(a)282Rg                 9766.9    100.       9790.000    50.000      .2o  o            GDba      11Og04
 286Nh(a)282Rg                 9817.5    111.6      9790.000    50.000     -.2o  o            GDba      12Og06
 286Nh(a)282Rg                 9432.1    304.3      9790.000    50.000     1.2F  F            GGSa      14Kh04,*
 286Nh(a)282Rg                 9790       50                                 10               GSRv      17Og01,*
 286Fl(a)282Cn                10142.1    100.      10355.066    40.568     2.1F  F            HDba      04Mo15,*
 286Fl(a)282Cn                10172.5    314.4     10355.066    40.568      .6o  o            HDba      04Og07
 286Fl(a)282Cn                10345       60       10355.066    40.568      .2o  o            HDba      04Og12
 286Fl(a)282Cn                10334.7     60.9     10355.066    40.568      .3o  o            GDba      06Og05
 286Fl(a)282Cn                10375.4     40.      10355.066    40.568     -.5o  o            GBka      09St21
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286Fl(a)282Cn		10456.5	100.	10355.066	40.568	-1.0o	o	GBka		10El06
286Fl(a)282Cn		10355.1	40.6	10355.066	40.568	-.0o	o	GSRv		16Ho09
286Fl(a)282Cn		10355.1	40.6				11	GSRv		17Og01
286Nhp(IT)286Nh		310	100	*			Z	k		S-u127
*286Rg(a)282Mt		Trends from Mass Surface TMS suggest 286Rg 160 keV more bound						G		GAu212**
*286Nh(a)282Rg		Only partial energy						G		19Kh04**
*286Nh(a)282Rg		E(a) = 9.61-9.75 MeV						G		17Og01**
*286Nh(a)282Rg		Trends from Mass Surface TMS suggest 286Nh 30 keV less bound						g		GAu212*G
*286Fl(a)282Cn		F : non traceable information						H		GAu10b**
287Cn-u		181826#	751#				2	g	1.0	S-u20c
287Nh(a)283Rg		9650#	200#				5	g		S-u20b
287Fl(a)283Cn		10435.7	20.3	10166.800	52.259	-5.0F	F	HDba		99Og07,*
287Fl(a)283Cn		10182.2	70.	10166.800	52.259	-.2o	o	HDba		04Og07
287Fl(a)283Cn		10161.9	60.8	10166.800	52.259	.1o	o	HDba		04Og12
287Fl(a)283Cn		10161.9	60.8	10166.800	52.259	.1o	o	GDba		06Og05
287Fl(a)283Cn		10166.8	15.2				16	GSRv		16Ho09
287Fl(a)283Cn		10170	20	10166.800	52.259	-.1o	o	GSRv		17Og01
287Mc(a)283Nh		10740	90	10760.000	70.711	.2o	o	kDba		04Og03
Careful,LABSAV BUFFER at 50 below		max 10100								
287Mc(a)283Nh		10740	60	10760.000	70.711	.3o	o	GDba		12St.A
287Mc(a)283Nh		10780.5	50.7	10760.000	70.711	-.3o	o	GGSa		13Ru11
287Mc(a)283Nh		10760	50				13	GSRv		17Og01
*287Fl(a)283Cn		F : 2 evts at 1.32 s, 14.4 s, later work yields T=1.7 s						H		GAu109**
288Cn-u		183501#	751#				2	g	1.0	S-u20c
288Nh-u		186764#	751#				2	g	1.0	S-u20b
288Fl(a)284Cn		9968.8	50.	10076.487	11.933	2.2F	F	HDba		01Og01,*
288Fl(a)284Cn		9958.8	100.	10076.487	11.933	1.2F	F	hDba		04Mo15,*
288Fl(a)284Cn		10090.3	80.	10076.487	11.933	-.2o	o	HDba		04Og07
288Fl(a)284Cn		10090.3	70.	10076.487	11.933	-.2o	o	HDba		04Og12
288Fl(a)284Cn		10080.2	60.8	10076.487	11.933	-.1	-11-	HDba		07Og01
288Fl(a)284Cn		10090.3	30.	10076.487	11.933	-.5o	o	HGSt		10Du06
288Fl(a)284Cn		10090.3	30.	10076.487	11.933	-.5o	o	GGSt		11Ga19
288Fl(a)284Cn		10067.0	15.	10076.487	11.933	.6o	o	GGSa		12Ho12
288Fl(a)284Cn		10074.1	15.2	10076.487	11.933	.2	-11-	GSRv		16Ho09
288Fl(a)284Cn		10070	30	10076.487	11.933	.2o	o	GSRv		17Og01
288Fl(a)284Cn		10080.2	20.3	10076.487	11.933	-.2	-11-	GRIa		17Ka66
288Fl(a)284Cn	ave	10076.487	11.933				11			average
288Mc(a)284Nh		10607.6	60.8	10650.000	50.000	.5o	o	GDba		04Og03
288Mc(a)284Nh		10627.8	60.	10650.000	50.000	.3o	o	GDba		12Og02
288Mc(a)284Nh		10727.2	82.1	10650.000	50.000	-.8o	o	GDba		13Og01,*
288Mc(a)284Nh		10698.8	10.1	10650.000	50.000	-1.0o	o	GGSa		13Ru11,*
288Mc(a)284Nh		10754.6	20.3	10650.000	50.000	-1.9o	o	GBka		15Ga24,*
288Mc(a)284Nh		10650	50				12	GSRv		17Og01,*
*288Fl(a)284Cn		F : T=1800(+2100--600) ms, later work yields shorter half-lives						H		GAu109**
*		~ re-assigned to 289Fl						H		04Og07**
*288Fl(a)284Cn		F : non traceable information						H		GAu10b**
*288Mc(a)284Nh		Highest E(a)=10578(81); avg 24 events would yield E(a)=10480 Q(a)=10627.8K								13Og01**
*288Mc(a)284Nh		Average of 2 highest E(a)=10560(10) 10540(10)						K		13Ru11**
*288Mc(a)284Nh		Average of 2 highest E(a)=10610(20) 10600(20)						K		15Ga24**
*288Mc(a)284Nh		E(a)=10.21-10.67 MeV, Qa=10.65(0.01) MeV in ref.; unc. increased						G		17Og01**
289Nh-u		188461#	537#				2	g	1.0	S-u20c
289Fl(a)285Cn		9846.5	50.7	9954.180	65.364	1.5F	F	HDba		99Og10,*
289Fl(a)285Cn		9846.5	101.4	9954.180	65.364	1.0F	F	hDba		04Mo15,*
289Fl(a)285Cn		9958.1	60.	9954.180	65.364	-.1o	o	HDba		04Og07
289Fl(a)285Cn		9958.1	50.	9954.180	65.364	-.1o	o	GDba		07Og01
289Fl(a)285Cn		10008.8	30.	9954.180	65.364	-.9o	o	HGSt		10Du06
289Fl(a)285Cn		10008.8	30.	9954.180	65.364	-.9o	o	GGSt		11Ga19
289Fl(a)285Cn		9956.0	15.2	9954.180	65.364	-.0o	o	GGSa		12Ho12
289Fl(a)285Cn		9974	15	9954.180	65.364	-.4	-8-	GSRv		16Ho09
289Fl(a)285Cn		9980	20	9954.180	65.364	-.5o	o	GSRv		17Og01
289Fl(a)285Cn		9917.3	50.7	9954.180	65.364	.5	-8-	GRIa		17Ka66

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 289Fl(a)285Cn             ave    9954.180    42.100                                8                  average
 289Flm(a)285Cnm                 10169.9      15.                                   7            HGSa   12Ho12,*
 289Mc(a)285Nh                   10455.0      90.      10490.000    50.000      .3o  o           HDba   11Og04
 289Mc(a)285Nh                   10522.8      62.      10490.000    50.000     -.4o  o           KDba   12Og02,*
 289Mc(a)285Nh                   10404.2      71.      10490.000    50.000     1.0o  o           KDba   12Og06
 289Mc(a)285Nh                   10546.2      81.      10490.000    50.000     -.6o  o           KDba   13Og01
 289Mc(a)285Nh                   10607.0     152.      10490.000    50.000     -.7o  o           KDba   13Og04
 289Mc(a)285Nh                   10510.7      20.3     10490.000    50.000     -.4o  o           GDba   16Fo16,*
 289Mc(a)285Nh                   10490        50                                   12            GSRv   17Og01,*
 289Lv(a)285Fl                   11100#      300#                                  13            h      S-u111
*289Fl(a)285Cn                F : one event at 30.4 s, later work yields much shorter half-lives     H      GAu109**
*289Fl(a)285Cn                F : non traceable information                                          H      GAu10b**
*289Flm(a)285Cnm              Assignment of 293Lvm-289Flm-285Cnm-281Dsm-277Hsm chain is tentv        H      12Ho12**
*289Mc(a)285Nh                Also E(a)=10310(90) keV                                                H      12Og02**
*289Mc(a)285Nh                reanalyzed data of 11*Og*04, 12*Og*02, 12*Og*06, 13*Og*01 and 13*Og*04 K      16Fo16**
*                              ~ unweighted average of the 3 highest energy events selected by       K      GAu16a**
*                              ~ the evaluator: s06=10370 s12=10364 s14=10362 in Table~2             K      GAu16a**
*289Mc(a)285Nh                E(a)=10.15-10.54 MeV                                                   G      17Og01**


 290Nh(a)286Rg                    9846        45        9380#      100#       -6.9D  D           GSRv   16Ho09,*
 290Nh(a)286Rg                    9380#      100#                                   5            g      S-u212
 290Fl(a)286Cn                    9856.2      30.4                                  3            GRIa   17Ka66,*
 290Mc(a)286Nh                   10454.4      40.6     10410.000    40.000     -.7o  o           GGSa   14Kh04,G
 290Mc(a)286Nh                   10410        40                                   11            GSRv   17Og01,*
 290Mc(a)286Nhp                  10089.4     405.6          *                       Z            kDba   11Og04
 290Mc(a)286Nhp                  10160.3     264.           *                       Z            kDba   12Og06
 290Lv(a)286Fl                   10920.9     100.      10996.833    57.586      .7F  F           HDba   04Mo15,*
 290Lv(a)286Fl                   11002.0      81.1     10996.833    57.586     -.1o  o           HDba   04Og07
 290Lv(a)286Fl                   10991.8      81.1     10996.833    57.586      .1o  o           KDba   06Og05
 290Lv(a)286Fl                   10999.9      65.9     10996.833    57.586     -.0o  o           GDba   12Og06
 290Lv(a)286Fl                   11002.0      60.8     10996.833    57.586     -.1 -12-          GSRv   16Ho09
 290Lv(a)286Fl                   11002.0      71.0     10996.833    57.586     -.1o  o           GSRv   17Og01
 290Lv(a)286Fl                   11013.2     142.0     10996.833    57.586     -.1o  o           GDba   18Br13
 290Lv(a)286Fl                   10952.3     178.5     10996.833    57.586      .2 -12-          GDba   20Vo07,*
 290Lv(a)286Fl             ave   10996.833    57.586                               12                   average
 290Mcp(IT)290Mc                   110       100            *                       Z            k      S-u111
*290Nh(a)286Rg                Authors say assignment is tentative                                    G      16Ho09**
*290Nh(a)286Rg                Trends from Mass Surface TMS suggest 290Nh   470 keV more bound        G      GAu212**
*290Fl(a)286Cn                Alternatively it could be 289Fl(a)285Cn                                G      17Ka66**
*290Mc(a)286Nh                Ref. reported lower Ea=9950(400) Qa=10089.5(400.) to level at 365(70) keVkDba 11Og04*G
*290Mc(a)286Nh                E(a)=9.78-10.31 MeV                                                    G      17Og01**
*290Mc(a)286Nh                Trends from Mass Surface TMS suggest 290Mc   100 keV less bound        g      GAu212*G
*290Lv(a)286Fl                F : non traceable information                                          H      GAu10b**
*290Lv(a)286Fl                Same event as in 18*Br*13                                              G      20Vo07**
*290Lv(a)286Fl                Trends from Mass Surface TMS suggest 290Lv(a)=11070 keV                g      GAu212*G


 291Fl-u                        194848#      751#                                   2            g   1.0 S-u212
 291Mc(a)287Nh                   10300#      200#                                   6            g      S-u20c
 291Lv(a)287Fl                   10890        70       10890.000    86.023     -.0o  o           HDba   04Og07
 291Lv(a)287Fl                   10890        70       10890.000    86.023     -.0o  o           GDba   06Og05
 291Lv(a)287Fl                   10890        70       10890.000    86.023     -.0o  o           GSRv   16Ho09
 291Lv(a)287Fl                   10890        70                                   17            GSRv   17Og01
 291Ts(a)287Mc                   11480#      400#                                  14            k      S-u16a


 292Mc-u                        200323#      751#                                   2            g   1.0 S-u20b
 292Lv(a)288Fl                   10707.0      50.      10791.190    12.167     1.7F  F           HDba   01Og01,*
 292Lv(a)288Fl                   10676.5     100.      10791.190    12.167     1.1F  F           hDba   04Mo15,*
Last LAB accepted in LABSAV            BUFFER(10100)
 292Lv(a)288Fl                   10808.3      71.0     10791.190    12.167     -.2   U           GDba   04Og12
 292Lv(a)288Fl                   10772.8      15.2     10791.190    12.167     1.2o  o           GGSa   12Ho12
 292Lv(a)288Fl                   10775.9      15.2     10791.190    12.167     1.0 -12-          GSRv   16Ho09
 292Lv(a)288Fl                   10777.9      20.3     10791.190    12.167      .7o  o           GSRv   17Og01
 292Lv(a)288Fl                   10818.4      20.3     10791.190    12.167    -1.3 -12-          GRIa   17Ka66,G
 292Lv(a)288Fl             ave   10791.190    12.167                               12                   average
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 292Ts(a)288Mc              11530#    400#                                 13                g        S-u211
*292Lv(a)288Fl             F : daughter and grand-daughter re-assigned to 289Fl and 285Cn         H        GAu109**
*292Lv(a)288Fl             F : non traceable information                                          H        GAu10b**
*292Lv(a)288Fl             Trends from Mass Surface TMS suggest 292Lv(a)=10890 keV                g        GAu212*G

 293Lv(a)289Fl              10676     60      10677.327   64.379      .0o  o                    HDba     04Og07,G
 293Lv(a)289Fl              10686.1   60.8    10677.327   64.379     -.1o  o                    GDba     07Og01
 293Lv(a)289Fl              10679.0   15.2    10677.327   64.379     -.0o  o                    GGSa     12Ho12
 293Lv(a)289Fl              10705     15      10677.327   64.379     -.5  -9-                   GSRv     16Ho09
 293Lv(a)289Fl              10710     20      10677.327   64.379     -.6o  o                    GSRv     17Og01
 293Lv(a)289Fl              10635.2   40.6    10677.327   64.379      .7  -9-                   GRIa     17Ka66
 293Lv(a)289Fl         ave  10677.327 40.554                               9                             average
 293Lvm(a)289Flm            10647.6   15.2                                 8                    HGSa     12Ho12,*
 293Ts(a)289Mc              11182.9   81.1    11320.000   50.000     1.4o  o                    KDba     11Og04,*
 293Ts(a)289Mc              10949.7   71.     11320.000   50.000     4.3B  B                    KDba     12Og06,*
 293Ts(a)289Mc              11253.9   91.2    11320.000   50.000      .6o  o                    KDba     13Og04,*
 293Ts(a)289Mc              11293.4   20.3    11320.000   50.000      .5o  o                    GDba     16Fo16,*
 293Ts(a)289Mc              11320     50                               13                    GSRv     17Og01,*
 293Og(a)289Lv              11920#    500#                                 14                h        S-u126
*293Lv(a)289Fl             previously we had 03Og.A  10676 70 293Lv(a)289Fl 10530 70 0, ref. lost   h        GAu128*G
*293Lvm(a)289Flm           Assignment of 293Lvm-289Flm-285Cnm-281Dsm-277Hsm chain is tentv         H        12Ho12**
*293Ts(a)289Mc             The three results above from the Dubna group are independant           k        FGK16a*W
*293Ts(a)289Mc             reanalyzed data of 11*Og*04, 12*Og*02, 12*Og*06, 13*Og*01 and 13*Og*04  K        16Fo16**
*                           ~ unweighted average of the 8 highest energy events selected by       K        GAu16a**
*                           ~ the evaluator: s02=11140 s03=11080 s07=11142 s08=11114 s12=11183     K        GAu16a**
*                           ~ s13=11203 s14=11059 s16=11190 in Table~2                            K        GAu16a**
*293Ts(a)289Mc             E(a)=10.60-11.20 MeV                                                   G        17Og01**

 294Ts(a)290Mc              11202.6   40.6    11180.000   40.000     -.4o  o                    GGSa     14Kh04,G
 294Ts(a)290Mc              11180     40                               12                    GSRv     17Og01,*
 294Ts(a)290Mcp             10959.4   100.           *                    Z                    kDba     11Og04
 294Ts(a)290Mcp             11111.4   71.            *                    Z                    kDba     12Og06
 294Og(a)290Lv              11800.9   100.    11867.327   31.296      .7F  F                    HDba     04Mo15,*
 294Og(a)290Lv              11810.9   60.     11867.327   31.296      .9o  o                    HDba     04Og12
 294Og(a)290Lv              11810.9   60.     11867.327   31.296      .9o  o                    KDba     06Og05
 294Og(a)290Lv              11840.3   65.9    11867.327   31.296      .4o  o                    GDba     12Og06
 294Og(a)290Lv              11821.1   60.8    11867.327   31.296      .8o  o                    GSRv     16Ho09
 294Og(a)290Lv              11821.1   60.8    11867.327   31.296      .8 -13-                   GSRv     17Og01
 294Og(a)290Lv              11878.9   30.4    11867.327   31.296     -.4o  o                    GDba     18Br13
 294Og(a)290Lv              11883.9   36.5    11867.327   31.296     -.5 -13-                   GDba     20Vo07,*
 294Og(a)290Lv         ave  11867.327 31.296                               13                            average
*294Ts(a)290Mc             Ref. reported lower Ea=10810(100) Qa=10959.4(100.) to level at 243(70) kekDba     11Og04*G
*294Ts(a)290Mc             E(a)=10.81-11.07 MeV                                                   G        17Og01**
*294Og(a)290Lv             F : non traceable information                                          H        GAu10b**
*294Og(a)290Lv             Same event as in 18*Br*13                                              G        20Vo07**

 295Og(a)291Lv              11810.4   71.0    11700#     200#      -1.3F  F                    HDba     04Og05,*
 295Og(a)291Lv              11700#    200#                                 18                h        S-u109
 End of Intab main table                          time is   27.
1 High Precision Data:
      pi+(2B+)pi-             1021.99800    0.00100
      H12-C                  93900.38277    0.00017
      n-H                      839.88401    0.00047
      n(B-)1H                  782.34700    0.00044
      D6-C                   84610.66706    0.00009
      n2-D                    3228.05396    0.00094
      H2-D                    1548.28595    0.00003
      1H(n,g)2H               2224.56623    0.00044
      3H4-C                  64197.12528    0.00032
      H D-C                  21926.80974    0.00002
      3He4-C                 64117.28787    0.00024
      n3-3H                   9945.46639    0.00142
      H3-3H                   7425.81437    0.00008
      n3-3He                  9965.42574    0.00142
```

H3-3He	7445.77373	0.00006
D2-H 3H	4329.24247	0.00008
3H-H D	-5877.52842	0.00008
D3-3H2	10206.77089	0.00016
3He-H D	-5897.48777	0.00005
D3-3He2	10246.68960	0.00012
3H-3He	19.95935	0.00006
2H(n,g)3H	6257.23006	0.00045
2H(d,p)3H	4032.66383	0.00008
2H(d,n)3He	3268.90885	0.00044
3H(B-)3He	18.59202	0.00006
3H(p,n)3He	-763.75498	0.00044
4He3-C	7809.76239	0.00047
4He-H4	-28696.87346	0.00017
D2-4He	25600.30156	0.00016
H 3H-4He	21271.05909	0.00018
3H4-4He3	56387.36289	0.00057
3He4-4He3	56307.52548	0.00053
3He(d,p)4He	18353.05484	0.00016
4He-6Li.667	-7483.71171	0.00105
6Li(p,a)3He	4019.71676	0.00145
6Li(d,a)4He	22372.77160	0.00147
C14-12Cxm12	0.00000	0.00013
C H-13C	4470.19656	0.00025
C D-13C H	2921.91061	0.00025
13C-u	3354.83534	0.00025
12C(n,g)13C	4946.30873	0.00050
12C(d,p)13C	2721.74250	0.00024
13C(p,d)12C	-2721.74250	0.00024
13C(d,t)12C	1310.92133	0.00024
C H2-N	12576.05954	0.00024
C D-N	11027.77359	0.00024
C H4-N D	14124.34550	0.00024
C D2-N H2	9479.48764	0.00025
14N-u	3074.00425	0.00024
13C H-14N	8105.86298	0.00010
14N(d,a)12C	13574.22386	0.00027
12C(3He,p)14N	4778.83098	0.00023
13C(p,g)14N	7550.56356	0.00009
13C(3He,d)14N	2057.08848	0.00010
C D H-15N	21817.91148	0.00062
C H3-15N	23366.19743	0.00062
14N D-15N H	9241.85193	0.00066
15N(p,a)12C	4965.49329	0.00060
15N(d,a)13C	7687.23579	0.00063
14N(n,g)15N	10833.29680	0.00075
14N(d,p)15N	8608.73057	0.00061
16O-H16	-130285.89111	0.00035
C H2 D-O	34837.22238	0.00031
C D2-O	33288.93643	0.00032
C4-O3	15256.14223	0.00096
C H4-O	36385.50833	0.00031
16O-u	-5085.38074	0.00032
N D-O	22261.16284	0.00025
N2-C O	11233.38925	0.00038
16O(d,a)14N	3110.38802	0.00028
17O2-28Si D3	-20968.35605	0.00129
17O-16O H	-3607.89520	0.00070
17O(p,a)14N	1191.87416	0.00065
17O(d,a)15N	9800.60472	0.00086
16O(n,g)17O	4143.08010	0.00078
16O(d,p)17O	1918.51387	0.00065
C D3-18O	43145.72140	0.00069
C3-18O2	1680.77573	0.00138
18O(p,a)15N	3979.80076	0.00088
17O(n,g)18O	8045.37019	0.00101
17O(d,p)18O	5820.80396	0.00091

28Si H3-C 19F	1998.46805	0.00093
C D4-H 19F	50178.91741	0.00088
13C D3-19F	47257.00680	0.00084
19F(p,a)16O	8113.61225	0.00084
19F(d,a)17O	10032.12612	0.00101
28Si-u	-23073.46558	0.00055
C2 D2-28Si	51277.02127	0.00055
15N2-28Si H2	7641.19832	0.00130
C2 H4-28Si	54373.59317	0.00055
13C2 H2-28Si	45433.20005	0.00052
29Si-28Si H	-8256.90198	0.00024
28Si(n,g)29Si	8473.60250	0.00049
28Si(d,p)29Si	6249.03627	0.00023
O2-31P H	8242.20894	0.00069
31P-28Si H3	-26639.63244	0.00070
O2-31P	16067.24084	0.00069
31P(p,a)28Si	1916.30788	0.00067
31P(d,a)29Si	8165.34415	0.00071
O2-32S	17758.06498	0.00142
C2 H8-32S	90529.08164	0.00141
32S-O2	-17758.06498	0.00142
32S-C2 D4	-84335.93784	0.00141
31P(p,g)32S	8863.96378	0.00143
31P(3He,d)32S	3370.48870	0.00143
33S-32S H	-8437.29682	0.00030
31P(3He,p)33S	9787.56169	0.00146
32S(n,g)33S	8641.63923	0.00052
32S(d,p)33S	6417.07299	0.00028
128Xe-129Xe.992	-2011.85870	0.00150
131Xe-129Xe1.016	1826.78002	0.00142
187Re-187Os	2.65076	0.00106
187Re(B-)187Os	2.46917	0.00099

*

1 Equation	Signif	Noyau	Flux	Noyau	Flux	Noyau	Flux	Noyau	Flux	Noyau	Flux	Noyau	Flux
pi+	100.0	0pi+	100.00										
pi+(2B+)pi-	99.9	0pi-	99.88										
H12-C	21.8	1H	21.76										
n-H	0.0												
D6-C	82.5	2H	82.49										
H2-D	66.9	1H	58.49	2H	8.45								
1H(n,g)2H	99.9	1 n	99.94										
H D-C	15.6	1H	7.32	2H	8.25								
H3-3He	32.7	1H	6.90	3He	25.83								
3H-H D	29.7	1H	-0.38	2H	0.11	3H	29.94						
3He-H D	60.4	1H	-1.92	2H	0.55	3He	61.81						
3H-3He	82.4	3H	70.06	3He	12.36								
4He3-C	100.0	4He	100.00										
6Li2-C	100.0	6Li	99.96										
6He-7Li.857	100.0	6He	99.99										
7Li-H7	99.8	7Li	99.80										
6Li(n,g)7Lii	39.0	7Lii	39.02										
7Li(p,n)7Be	100.0	7Be	100.00										
8C-u	37.5	8C	37.46										
8He-6Li1.333	25.2	6Li	0.01	8He	25.14								
8Li-6Li1.333	21.4	6Li	0.03	8Li	21.34								
8He-7Li1.143	74.9	7Li	0.05	8He	74.86								
6Li(d,g)8Bej	42.9	8Bej	42.92										
6Li(3He,n)8B	100.0	8B	99.97										
7Li(n,g)8Li	78.8	7Li	0.13	8Li	78.66								
9Be-7Li1.286	67.1	7Li	-0.01	9Be	67.09								
9Be(p,3He)7Lii	61.0	7Lii	60.98										
9He(g,n)8He	56.2	9He	56.16										
9Be(pi-,pi+)9He	43.8	9He	43.84										
10Be-7Li1.429	44.4	7Li	0.01	10Be	44.37								
10B-u	100.0	10B	100.00										
10C-10B	67.2	10C	67.20										
10Be(p,t)8Bej	57.1	8Bej	57.08	10Be	0.04								

9Be(n,g)10Be	88.5	9Be	32.90	10Be	55.56			
10B(p,n)10C	32.8	10C	32.80					
11Be-6Li1.833	83.1	11Be	83.06					
11Be-7Li1.571	17.0	7Li	0.01	11Be	16.94			
11C-14N.786	100.0	11C	100.00					
11B-u	100.0	11B	100.00					
7Li(a,g)11Bxi	20.9	11Bxi	20.93					
9Be(3He,p)11Bxi	79.1	11Bxi	79.07					
9Be(3He,n)11Cxi	50.0	11Cxi	50.00					
11B(3He,t)11Cxi	50.0	11Cxi	50.00					
12Be-C	79.4	12Be	79.36					
12C(a,8He)8C	62.5	8C	62.54					
9Be(7Li,a)12Bxi	13.7	12Bxi	13.75					
10Be(t,p)12Be	20.7	10Be	0.03	12Be	20.64			
10B(3He,p)12Cxi	30.8	12Cxi	30.77					
11B(d,p)12B	10.9	12B	10.91					
11B(d,n)12Cxi	69.2	12Cxi	69.23					
C D2-14C H2	20.0	14C	20.04					
13C H-14N	96.5	13C	78.17	14N	18.30			
14C H2-N D	80.0	14C	79.95	14N	0.06			
14O-14N	100.0	14O	100.00					
14C(d,a)12B	89.1	12B	89.09					
14C(p,3He)12Bxi	86.3	12Bxi	86.25					
14N(p,t)12N	100.0	12N	99.98					
14C(7Li,7Be)14B	100.0	14B	100.00					
C D H-15N	60.9	1H	-0.02	15N	60.90			
C H3-15N	13.5	1H	0.02	15N	13.47			
14N(p,g)15O	29.7	15O	29.66					
15N(p,n)15O	70.1	15O	70.13					
16O-H16	26.4	1H	7.77	16O	18.62			
C4-O3	50.3	16O	50.26					
N2-C O	81.9	14N	77.93	16O	4.01			
14C(14C,12N)16B	16.8	12N	0.02	16B	16.76			
14C(3He,n)16Oxj	23.0	16Oxj	22.99					
14N(3He,p)16Oxi	54.4	16Oxi	54.45					
14N(d,g)16Oxj	77.0	16Oxj	77.01					
16B(g,n)15B	94.8	15B	11.56	16B	83.24			
15N(p,g)16Oxi	45.6	16Oxi	45.55					
16F(p)15O	58.6	15O	0.20	16F	58.44			
16O(3He,t)16F	41.6	16F	41.56					
17O2-28Si D3	84.5	2H	0.01	17O	83.22	28Si	1.25		
17Ne-22Ne.773	100.0	17Ne	100.00					
17O-16O H	18.9	1H	0.02	16O	2.10	17O	16.78		
16O(p,g)17F	100.0	17F	100.00					
C D3-18O	86.9	2H	0.05	18O	86.82			
C3-18O2	13.2	18O	13.18					
18Na-u	30.3	18Na	30.33					
18Ne-22Ne.818	99.9	18Ne	99.90					
18O(48Ca,51V)15B	88.4	15B	88.44					
17O(p,g)18F	59.6	18F	59.63					
18Na(p)17Ne	69.7	18Na	69.67					
18O(p,n)18F	40.4	18F	40.37					
28Si H3-C 19F	18.1	1H	0.05	19F	13.87	28Si	4.13		
13C D3-19F	86.0	2H	0.01	13C	-0.16	19F	86.13		
19Na(p)18Ne	22.9	18Ne	0.02	19Na	22.93			
C D4-20Ne	40.2	2H	0.02	20Ne	40.23			
20Ne(3He,t)20Na-36Ar()36K	100.0	20Na	100.00					
21Na-21Ne	100.0	21Na	100.00					
20Ne(n,g)21Ne	100.0	21Ne	100.00					
22Ne-u	99.7	22Ne	99.68					
22Na-39K.564	9.9	22Na	9.88					
22Mg-39K.564	10.6	22Mg	10.60					
22Na-24Mg.917	9.3	22Na	9.25	24Mg	0.07			
22Na-23Na.957	42.6	22Na	42.59					
22Mg-23Na.957	46.8	22Mg	46.76					
22Na-22Ne	18.6	22Ne	0.26	22Na	18.31			
22Mg-22Ne	5.5	22Ne	0.06	22Mg	5.48			

22Mg-22Na	57.1	22Na	19.97	22Mg	37.15					
22Mgi(a)18Ne	60.2	18Ne	0.08	22Mgi	60.08					
22Mgi(2p)20Ne	22.8	22Mgi	22.80							
22Mgi(p)21Na	17.1	22Mgi	17.12							
23F-u	86.3	23F	86.29							
23Na-u	100.0	23Na	99.95							
23Ali(2p)21Na	44.2	23Ali	44.23							
22Ne(18O,17F)23F	13.7	23F	13.71							
23Ali(p)22Mg	55.8	23Ali	55.77							
24Mg-H24	98.0	24Mg	98.03							
24Al-23Na1.043	95.7	24Al	95.74							
24Mg(3He,8Li)19Na	77.1	19Na	77.07							
24Mg(3He,t)24Al-36Ar()36K	13.5	24Mg	0.01	24Al	4.26	36Ar	0.05	36K	9.13	
25Ne-u	57.8	25Ne	57.84							
25Al-25Mg	100.0	25Mg	0.01	25Al	99.98					
24Mg(n,g)25Mg	44.6	24Mg	1.89	25Mg	42.69					
25Ali(IT)25Al	84.7	25Al	0.02	25Ali	84.66					
26F-u	92.6	26F	92.64							
26Mg-H26	85.3	26Mg	85.30							
26Al-26Mg	15.8	26Mg	0.87	26Al	14.92					
26Alm-26Mg	16.2	26Mg	0.86	26Alm	15.38					
26Mg(7Li,8B)25Ne	42.2	8B	0.03	25Ne	42.16					
25Mg(n,g)26Mg	54.4	25Mg	45.86	26Mg	8.52					
25Mg(p,g)26Al	74.9	25Mg	11.44	26Al	63.50					
26Alm(IT)26Al	99.4	26Al	14.82	26Alm	84.62					
27F-u	9.5	27F	9.51							
27Mg-23Na1.174	11.4	23Na	0.02	27Mg	11.42					
27Al-23Na1.174	88.6	23Na	0.02	27Al	88.54					
27Al(p,t)25Ali	15.4	25Ali	15.34	27Al	0.01					
27F(g,n)26F	97.9	26F	7.36	27F	90.49					
26Mg(n,g)27Mg	92.6	26Mg	4.05	27Mg	88.58					
15N2-28Si H2	29.5	1H	0.01	15N	25.63	28Si	3.87			
C2 H4-28Si	48.4	28Si	48.35							
13C2 H2-28Si	53.4	1H	0.02	13C	21.83	28Si	31.52			
27Al(p,g)28Si	11.5	27Al	11.45							
28Si(3He,a)27Sii	78.7	27Sii	78.72							
28Si(3He,t)28P-36Ar()36K	100.0	28P	100.00							
29Na-u	36.7	29Na	36.71							
29Na-39K.744	63.3	29Na	63.29							
29Mg-u	0.1	29Mg	0.09							
29P 40Ar-u	59.4	29P	59.37							
29Mg-23Na1.261	99.9	29Mg	99.91							
29Si-28Si H	100.0	29Si	100.00							
29Si(p,t)27Sii	21.3	27Sii	21.28							
28Si(p,g)29P	40.2	29P	40.23							
28Si(p,g)29Pxi	24.2	29Pxi	24.17							
29Pxi(IT)29P	76.2	29P	0.39	29Pxi	75.83					
30Ne-u	72.5	30Ne	72.52							
30Na-O1.876	82.1	30Na	82.12							
30Na-39K.769	17.9	30Na	17.88							
30Mg-O1.876	14.1	30Mg	14.12							
30Mg-39K.769	85.9	30Mg	85.88							
30Al-O1.875	55.1	30Al	55.07							
30Al-39K.769	44.9	30Al	44.93							
31Ne-u	32.7	31Ne	32.73							
O2-31P H	64.5	1H	-0.01	16O	16.23	31P	48.24			
31P-28Si H3	61.9	1H	-0.02	28Si	10.19	31P	51.76			
31S-31P	96.9	31S	96.88							
30Ne(n,g)31Ne	94.7	30Ne	27.48	31Ne	67.27					
32S-O2	50.2	16O	5.32	32S	44.91					
32S-C2 D4	55.1	2H	0.01	32S	55.06					
32Cl(p)31S	79.3	31S	3.12	32Cl	76.16					
32S(3He,t)32Cl-36Ar()36K	30.4	32Cl	23.84	36Ar	0.04	36K	6.50			
33Mg-O2.062	85.1	33Mg	85.07							
33Mg-39K.846	14.9	33Mg	14.93							
33S-32S H	100.0	32S	0.02	33S	99.98					
32S(p,g)33Cl	79.9	33Cl	79.94							

32S(p,g)33Cli	36.9	33Cli	36.86						
33Cli(IT)33Cl	83.2	33Cl	20.06	33Cli	63.14				
34Cl-34S	49.0	34S	17.99	34Cl	31.02				
34Clm-34S	41.3	34S	10.69	34Clm	30.66				
34S-34Ar	14.1	34S	1.24	34Ar	12.89				
34Ar-34Cl	54.2	34Cl	2.19	34Ar	52.03				
34Clm-34Ar	39.3	34Clm	4.22	34Ar	35.08				
33S(n,g)34S	23.7	33S	0.01	34S	23.68				
33S(p,g)34Cl	48.4	33S	0.01	34Cl	48.40				
34Clm(IT)34Cl	83.5	34Cl	18.40	34Clm	65.13				
C3-35Cl H	55.8	35Cl	55.82						
C5 H10-35Cl2	15.3	35Cl	15.27						
34S(n,g)35S	75.0	34S	46.39	35S	28.64				
35S(B-)35Cl	90.9	35S	71.36	35Cl	19.54				
36Ar-u	99.9	36Ar	99.91						
36K-39K.923	84.4	36K	84.37						
35Cl(n,g)36Cl	100.0	35Cl	0.89	36Cl	99.09				
36S(p,n)36Cl	37.3	36S	36.37	36Cl	0.91				
C3 H6 O2-37Cl2	85.5	37Cl	85.47						
C5 H12-35Cl 37Cl	13.5	35Cl	4.24	37Cl	9.26				
36S(p,g)37Cl	65.5	36S	63.63	37Cl	1.84				
38Ca-H6 O2	48.4	38Ca	48.38						
38Ar-39K.974	32.0	38Ar	32.00	39K	0.01				
38K-39K.974	22.7	38K	22.70	39K	0.01				
38K-38Ar	50.0	38Ar	23.51	38K	26.53				
38Kxm-38Ar	71.9	38Ar	27.35	38Kxm	44.55				
38Ar-38Ca	32.4	38Ar	17.14	38Ca	15.26				
38Kxm-38K	60.1	38K	26.13	38Kxm	33.98				
38Ca-38K	45.2	38K	24.64	38Ca	20.54				
38Kxm-38Ca	37.3	38Kxm	21.47	38Ca	15.82				
39Ca 19F-39K1.487	100.0	39Ca	100.00						
39K-40Ar	99.8	39K	99.84	40Ar	0.01				
C3 H4-40Ar	44.7	40Ar	44.69						
C2 D8-40Ar	34.2	2H	0.04	40Ar	34.18				
20Ne2-40Ar	73.8	20Ne	59.77	40Ar	14.07				
40Ca-H40	100.0	40Ca	99.99						
40Ti-u	81.8	40Ti	81.81						
40S-41K.976	20.7	40S	20.68						
40S-40Ar	79.3	40S	79.32						
39K(n,g)40K	61.1	39K	0.12	40K	60.93				
40Ca(pi+,pi-)40Ti	18.2	40Ti	18.19						
41K-40Ar H	99.9	41K	99.93						
40K(n,g)41K	39.1	40K	39.07	41K	0.07				
40Ca(n,g)41Ca	99.6	40Ca	0.01	41Ca	99.59				
40Ca(p,g)41Sc	68.7	41Sc	68.68						
41Scr(IT)41Sc	89.8	41Sc	31.32	41Scr	58.44				
42Sc-42Ca	66.2	42Ca	10.21	42Sc	56.01				
42Scm-42Ca	62.2	42Ca	2.96	42Scm	59.28				
42Ti-42Ca	11.7	42Ca	0.06	42Ti	11.59				
42Scm-42Sc	55.3	42Sc	15.88	42Scm	39.38				
42Ti-42Sc	50.0	42Sc	0.64	42Ti	49.34				
42Ti-42Scm	40.4	42Scm	1.34	42Ti	39.07				
41Ca(n,g)42Ca	86.0	41Ca	0.36	42Ca	85.67				
41Ca(p,g)42Scr-40Ca()41Sc	90.3	41Ca	0.06	41Scr	41.56	42Scr	48.72		
42Ca(3He,t)42Sc-26Mg()26A	11.3	26Mg	0.39	26Al	6.76	42Ca	0.63	42Sc	3.48
42Scr(IT)42Sc	75.3	42Sc	23.98	42Scr	51.28				
43Ti-u	37.7	43Ti	37.69						
40Ca(a,n)43Ti	39.6	43Ti	39.59						
41K(3He,p)43Cai	23.2	43Cai	23.16						
43Vxi(2p)41Sc	88.8	43Vxi	88.78						
42Ca(n,g)43Ca	99.3	42Ca	0.48	43Ca	98.83				
42Ca(3He,d)43Sci	16.7	43Sci	16.70						
43Vxi(p)42Ti	11.2	43Vxi	11.22						
43Ca(3He,t)43Sci	83.3	43Ca	0.04	43Sci	83.30				
44V-u	13.8	44V	13.79						
44V-32S	86.2	44V	86.21						
43Ca(n,g)44Ca	98.6	43Ca	1.13	44Ca	97.49				

44Ca(p,d)43Cai	76.8	43Cai	76.84	44Ca	0.01				
43Ca(3He,d)44Sci	24.4	44Sci	24.37						
44Ca(3He,t)44Sci	75.8	44Ca	0.16	44Sci	75.63				
45V-45Ti	100.0	45V	100.00						
44Ca(n,g)45Ca	99.4	44Ca	2.33	45Ca	97.03				
45Ca(B-)45Sc	13.6	45Ca	2.97	45Sc	10.64				
45Sc(p,n)45Ti	100.0	45Ti	100.00						
45Sc(3He,t)45Tii	61.4	45Sc	1.06	45Tii	60.33				
46Cr-u	67.2	46Cr	67.19						
46Ti-48Ti.958	94.0	46Ti	94.18	48Ti	-0.22				
46V-46Ti	81.1	46Ti	-5.63	46V	86.77				
32S(16O,2n)46Cr	32.8	46Cr	32.81						
46Ti(3He,6He)43Ti	22.7	43Ti	22.71						
45Sc(p,g)46Ti	88.5	45Sc	88.31	46Ti	0.17				
46Ti(p,d)45Tii	39.7	45Tii	39.67						
46Ca(3He,t)46Sci	72.2	46Ca	9.59	46Sci	62.59				
46Ti(3He,t)46V-47Ti()47V	35.4	46Ti	5.64	46V	13.14	47Ti	2.19	47V	14.41
46Ti(3He,t)46V-48Ti()48Vx	99.6	46Ti	-0.01	46V	0.09	48Vxi	99.52		
46Ti(3He,t)46V-50Ti()50Vx	100.0	50Vxi	100.00						
47Cr-u	67.8	47Cr	67.80						
47Ti-48Ti.979	34.8	47Ti	37.16	48Ti	-2.37				
46Ca(n,g)47Ca	99.9	46Ca	90.41	47Ca	9.46				
46Ti(p,g)47V	91.2	46Ti	5.64	47V	85.59				
47Ca(B-)47Sc	97.5	47Ca	90.54	47Sc	6.96				
47Sc(B-)47Ti	93.0	47Sc	93.04						
48Ca-C4	99.1	48Ca	99.13						
48Ti-N 18O O	11.9	48Ti	11.92						
48Mn-u	51.7	48Mn	51.71						
48Ti O-55Mn1.164	7.2	48Ti	0.13	55Mn	7.04				
48Ti-48Ca	82.2	48Ca	0.87	48Ti	81.32				
48Ti(p,3He)46Sci	37.4	46Sci	37.41						
47Ti(n,g)48Ti	63.4	47Ti	60.65	48Ti	2.77				
48Mni(p)47Cr	67.2	47Cr	18.42	48Mni	48.74				
48Ca(p,n)48Sc	50.0	48Sc	50.00						
48Sc(B-)48Ti	50.0	48Sc	50.00	48Ti	0.01				
48V(B+)48Ti	10.4	48V	10.43						
48Vxi(IT)48V	90.0	48V	89.57	48Vxi	0.48				
48Mni(IT)48Mn	99.5	48Mn	48.29	48Mni	51.26				
49Sc-u	29.3	49Sc	29.27						
49Ti-48Ti1.021	22.6	48Ti	2.20	49Ti	20.40				
49Mn-49Cr	100.0	49Mn	100.00						
48Ca(p,g)49Sc	50.2	49Sc	50.17						
48Ti(n,g)49Ti	61.2	1 n	0.01	48Ti	-6.94	49Ti	68.14		
49Sc(B-)49Ti	20.6	49Sc	20.56	49Ti	0.02				
50Ti-48Ti1.042	49.8	48Ti	4.72	50Ti	45.09				
50V-48Ti1.042	26.6	48Ti	0.40	50V	26.17				
50Cr-48Ti1.042	64.7	48Ti	0.97	50Cr	63.72				
50V-50Ti	26.8	50Ti	5.80	50V	20.99				
50V-50Cr	62.2	50V	29.91	50Cr	32.32				
50Mn-50Cr	52.0	50Mn	51.98						
50Mnm-50Cr	81.2	50Mnm	81.15						
50Mnm-50Mn	55.4	50Mn	36.54	50Mnm	18.85				
50Sc O-19F 35Cl	100.0	50Sc	100.00						
50Cr(3He,6He)47Cr	13.8	47Cr	13.78						
49Ti(n,g)50Ti	60.4	1 n	0.01	49Ti	11.44	50Ti	48.96		
50Cr(d,t)49Cr	100.0	49Cr	100.00						
50Cr(3He,t)50Mn-54Fe()54C	34.9	50Mn	11.47	54Co	23.45				
51Sc H-19F 33S	100.0	51Sc	100.00						
51Ti-39K1.308	5.1	51Ti	5.10						
51V-39K1.308	3.2	39K	0.01	51V	3.14				
51Cr-39K1.308	7.5	39K	0.01	51Cr	7.47				
51V-48Ti1.063	60.8	48Ti	2.76	51V	58.02				
51Cr-51V	6.9	51V	0.62	51Cr	6.27				
50Ti(n,g)51Ti	95.0	50Ti	0.14	51Ti	94.90				
50V(n,g)51V	57.7	50V	22.93	51V	34.74				
50Cr(n,g)51Cr	54.5	50Cr	3.57	51Cr	50.97				
50Cr(p,g)51Mn	93.7	50Cr	0.39	51Mn	93.33				

51V(p,n)51Cr	38.8	51V	3.49	51Cr	35.29				
52Sc-33S 19F	100.0	52Sc	100.00						
52Ti-39K1.333	84.9	52Ti	84.91						
52Co-u	39.7	52Co	39.69						
52Com-u	54.3	52Com	54.34						
52Cr-48Ti1.083	78.2	48Ti	0.28	52Cr	77.92				
52Co-52Cr	60.3	52Cr	0.01	52Co	60.31				
52Com-52Cr	45.7	52Cr	0.01	52Com	45.66				
50Ti(t,p)52Ti	15.1	50Ti	0.01	52Ti	15.09				
53Sc-34S 19F	100.0	53Sc	100.00						
53Cr-48Ti1.104	56.1	48Ti	0.73	53Cr	55.38				
53Co-53Fe	94.3	53Co	94.26						
53Com-53Fe	59.6	53Com	59.57						
53Com-53Co	46.2	53Co	5.74	53Com	40.43				
52Cr(n,g)53Cr	45.6	52Cr	20.68	53Cr	24.94				
52Cr(p,g)53Mn	84.8	52Cr	1.10	53Mn	83.72				
54V-u	44.5	54V	44.46						
54Cr-48Ti1.125	50.4	48Ti	1.33	54Cr	49.05				
54Co-54Fe	46.9	54Co	46.88						
54Com-54Fe	80.8	54Com	80.78						
54Com-54Co	48.9	54Co	29.67	54Com	19.22				
54Fe(p,a)51Mn	15.5	51Mn	6.67	54Fe	8.78				
52Cr(3He,p)54Mni	51.3	52Cr	0.02	54Mni	51.27				
53Cr(n,g)54Cr	64.7	53Cr	19.68	54Cr	45.06				
54Fe(d,t)53Fe	100.0	53Fe	100.00						
54Cr(t,3He)54V	55.5	54V	55.54						
54Cr(3He,t)54Mni	48.8	54Cr	0.03	54Mni	48.73				
55Mn-85Rb.647	12.2	55Mn	12.21						
54Cr(p,g)55Mn	43.2	54Cr	5.86	55Mn	37.30				
54Fe(n,g)55Fe	89.5	54Fe	73.37	55Fe	16.11				
54Fe(p,g)55Co	73.7	54Fe	17.84	55Co	55.83				
55Fe(e)55Mn	90.8	55Mn	6.95	55Fe	83.89				
56Ti-u	93.3	56Ti	93.33						
56V-u	74.1	56V	74.15						
56Fe-85Rb.659	22.9	56Fe	22.93						
56Fe-58Ni.966	31.0	56Fe	4.48	58Ni	26.49				
56Co-58Ni.966	58.4	56Co	50.51	58Ni	7.86				
56Ni-55Co1.018	60.1	55Co	32.68	56Ni	27.38				
56Ni-56Fe	42.4	56Fe	2.57	56Ni	39.83				
56Ni-56Co	67.0	56Co	49.49	56Ni	17.47				
56Fe(p,a)53Mn	25.0	53Mn	16.28	56Fe	8.76				
55Mn(p,g)56Fe	85.3	55Mn	36.07	56Fe	49.24				
56Ti(B-)56V	32.5	56Ti	6.67	56V	25.85				
57Mn-85Rb.671	49.3	57Mn	49.33						
57Mn-39K1.462	33.3	57Mn	33.29						
57Fe-58Ni.983	33.3	57Fe	4.14	58Ni	29.20				
57Ni-58Ni.983	54.6	57Ni	49.88	58Ni	4.75				
57Cu-56Ni1.018	63.4	56Ni	15.33	57Cu	48.04				
57Cu-57Fe	29.2	57Fe	0.69	57Cu	28.56				
57Cu-57Ni	73.5	57Ni	50.12	57Cu	23.40				
55Mn(t,p)57Mn	17.8	55Mn	0.43	57Mn	17.38				
56Fe(n,g)57Fe	99.8	56Fe	11.58	57Fe	88.24				
56Fe(p,g)57Co	29.1	56Fe	0.54	57Co	28.59				
57Fe(p,n)57Co	10.3	57Fe	0.20	57Co	10.07				
58Cu-58Ni	90.3	58Ni	0.06	58Cu	90.22				
58Ni(p,a)55Co	17.8	55Co	11.49	58Ni	6.33				
57Fe(n,g)58Fe	93.1	57Fe	6.67	58Fe	86.38				
57Fe(p,g)58Co	14.1	57Fe	0.06	58Co	14.03				
59Fe-85Rb.694	10.4	59Fe	10.39						
59Zn-58Cu1.017	36.5	58Cu	9.78	59Zn	26.68				
59Zn-59Cu	80.5	59Cu	7.20	59Zn	73.32				
58Fe(n,g)59Fe	99.0	58Fe	9.41	59Fe	89.61				
58Fe(p,g)59Co-56Fe()57Co	41.0	56Fe	-0.09	57Co	28.37	58Fe	4.21	59Co	8.52
59Co(d,t)58Co	62.0	58Co	60.87	59Co	1.10				
58Ni(n,g)59Ni	99.4	58Ni	25.37	59Ni	74.08				
58Ni(p,g)59Cu	62.1	58Ni	-0.31	59Cu	62.45				
59Co(p,n)59Ni	94.5	59Co	90.38	59Ni	4.12				

60Zn-58Ni1.034	65.3	58Ni	0.25	60Zn	65.05
60Zn-59Cu1.017	65.3	59Cu	30.36	60Zn	34.95
60Ni(p,a)57Co	37.1	57Co	32.97	60Ni	4.13
60Ni(d,a)58Co	25.3	58Co	25.10	60Ni	0.21
58Ni(3He,p)60Cui	26.5	60Cui	26.47		
59Ni(n,g)60Ni	99.4	59Ni	21.80	60Ni	77.58
60Ni(3He,t)60Cui	73.5	60Cui	73.53		
61Ga-u	47.8	61Ga	47.79		
60Ni(n,g)61Ni	99.7	60Ni	18.08	61Ni	81.65
61Ga(B+)61Zn	56.8	61Zn	4.58	61Ga	52.21
62Zn-62Ni	67.7	62Zn	67.75		
62Ga-62Ni	51.7	62Ga	51.67		
62Ga-62Zn	80.6	62Zn	32.25	62Ga	48.33
61Ni(n,g)62Ni	87.3	61Ni	18.35	62Ni	68.91
63Fe-39K1.615	57.3	63Fe	57.33		
63Fe-H C2 F2	21.3	63Fe	21.33		
63Fe-C 32S F	21.3	63Fe	21.33		
62Ni(n,g)63Ni	47.5	62Ni	13.08	63Ni	34.44
62Ni(p,g)63Cu	53.7	62Ni	14.93	63Cu	38.76
63Co(B-)63Ni	13.8	63Co	13.79		
63Ni(B-)63Cu	98.4	63Ni	55.13	63Cu	43.25
63Cu(p,n)63Zn	28.1	63Cu	0.80	63Zn	27.33
H C2 F2-64Com.984	86.8	64Com	86.82		
64Com-32S O2	13.2	64Com	13.18		
64Ni-85Rb.753	12.6	64Ni	12.61		
64Ga-85Rb.753	37.6	64Ga	37.64		
C5 H2-64Ga.969	32.7	64Ga	32.67		
64Ga-64Zn	15.1	64Zn	1.96	64Ga	13.11
64Zn(3He,6He)61Zn	95.4	61Zn	95.42	64Zn	0.01
64Ni(t,a)63Co	86.2	63Co	86.21		
63Ni(n,g)64Ni	97.8	63Ni	10.43	64Ni	87.39
63Cu(n,g)64Cu	100.0	63Cu	9.15	64Cu	90.82
64Zn(d,t)63Zn	75.5	63Zn	72.67	64Zn	2.85
64Cu(B-)64Zn	41.6	64Cu	9.18	64Zn	32.39
64Zn(p,n)64Ga	13.7	64Zn	1.78	64Ga	11.95
64Zn(3He,t)64Gai	17.5	64Zn	0.69	64Gai	16.76
64Gai(IT)64Ga	87.9	64Ga	4.63	64Gai	83.24
65Cu-85Rb.765	33.1	65Cu	33.12		
65Ga-85Rb.765	32.1	65Ga	32.06		
C5 H2-65Ge.939	56.7	65Ge	56.75		
65Ge H-85Rb.776	14.0	65Ge	14.05		
65Ge O H-85Rb.965	29.2	65Ge	29.20		
65Ga-65Cu	12.3	65Cu	3.39	65Ga	8.93
65Cu(p,a)62Ni	13.4	62Ni	3.09	65Cu	10.30
64Zn(n,g)65Zn	97.7	64Zn	43.41	65Zn	54.32
64Zn(p,g)65Ga	75.7	64Zn	16.70	65Ga	59.01
65Cu(p,n)65Zn	88.8	65Cu	43.15	65Zn	45.68
66Cu-85Rb.776	10.0	66Cu	10.02		
66Zn(p,a)63Cu	74.0	63Cu	7.98	66Zn	66.02
65Cu(n,g)66Cu	99.8	65Cu	9.83	66Cu	89.98
67Cu-85Rb.788	54.3	67Cu	54.28		
67As-85Rb.788	77.4	67As	77.42		
67As O-85Rb.976	22.6	67As	22.58		
67Ge-67Zn	87.4	67Zn	0.31	67Ge	87.12
64Zn(a,n)67Ge	13.1	64Zn	0.21	67Ge	12.88
66Zn(n,g)67Zn	97.7	66Zn	33.98	67Zn	63.75
67Cu(B-)67Zn	68.8	67Cu	45.72	67Zn	23.10
67Zn(p,n)67Ga	65.9	67Zn	11.55	67Ga	54.35
O 18O-68Co.5	74.5	68Co	74.48		
68Co-34S2.000	25.5	34S	0.01	68Co	25.52
68As-C5 H8	87.5	68As	87.55		
C F3-68As1.015	12.5	68As	12.45		
67Zn(n,g)68Zn	99.9	67Zn	1.29	68Zn	98.63
69Com-39K1.769	92.8	69Com	92.84		
69Com-u	7.2	69Com	7.16		
69Ga-85Rb.812	64.5	69Ga	64.51		
69As-u	67.9	69As	67.94		

C F3-69Se	100.0	69Se	99.96					
69Ga(p,n)69Ge	100.0	69Ga	0.08	69Ge	99.90			
69As(B+)69Ge	26.3	69Ge	0.10	69As	26.23			
69Se(B+)69As	5.9	69As	5.83	69Se	0.04			
70Ga-85Rb.824	31.4	70Ga	31.40					
70Se-u	26.9	70Se	26.93					
70Se-13C F3	73.1	70Se	73.07					
70Zn 35Cl-68Zn 37Cl	10.4	37Cl	0.01	68Zn	1.37	70Zn	9.03	
70Ge(p,a)67Ga	59.7	67Ga	45.65	70Ge	14.01			
69Ga(n,g)70Ga	99.5	69Ga	35.41	70Ga	64.13			
70Zn(p,n)70Ga	92.0	70Zn	87.56	70Ga	4.47			
71Znm-85Rb.835	94.7	71Znm	94.73					
71Ga-85Rb.835	53.3	71Ga	53.27					
71Br H2-C4 H9 O	100.0	71Br	99.98					
71Kr-u	83.8	71Kr	83.81					
71Ga-71Ge	89.5	71Ga	12.24	71Ge	77.24			
70Zn(d,p)71Zn	10.2	70Zn	3.42	71Zn	6.78			
70Ge(n,g)71Ge	99.8	70Ge	85.99	71Ge	13.81			
71Znm(IT)71Zn	98.5	71Zn	93.22	71Znm	5.27			
71Ge(e)71Ga	10.4	71Ga	1.42	71Ge	8.95			
71Kr(e)71Br	16.2	71Br	0.02	71Kr	16.19			
72Ga-85Rb.847	34.3	72Ga	34.29					
71Ga(n,g)72Ga	98.8	71Ga	33.07	72Ga	65.71			
73Cu-85Rb.859	24.6	73Cu	24.64					
73Se-85Rb.859	52.5	73Se	52.49					
73Br-u	13.9	73Br	13.92					
73Br 27Al-85Rb1.176	86.1	73Br	86.08					
73Cu-72Ge1.014	75.4	72Ge	0.03	73Cu	75.36			
72Ge(n,g)73Ge	99.9	72Ge	99.86	73Ge	0.08			
72Ge(3He,d)73As	92.8	73As	92.76					
73Se(B+)73As	54.8	73As	7.24	73Se	47.51			
74Ge-84Kr	100.0	74Ge	99.99					
74Br 27Al-85Rb1.188	84.9	74Br	84.87					
74Kr-85Rb.871	93.3	74Kr	93.25					
74Rb-85Rb.871	82.8	74Rb	82.82					
74Se-74Ge	100.0	74Se	100.00					
73Ge(n,g)74Ge	99.9	73Ge	99.92					
74As(B+)74Ge	82.1	74As	82.08					
74As(B-)74Se	17.9	74As	17.92					
74Se(p,n)74Br	15.1	74Br	15.13					
74Rb(B+)74Kr	23.9	74Kr	6.75	74Rb	17.18			
75Cu-85Rb.882	90.5	75Cu	90.51					
75Cu-72Ge1.042	9.6	72Ge	0.10	75Cu	9.49			
74Se(n,g)75Se	99.9	75Se	99.91					
75As(p,n)75Se	85.4	75As	85.32	75Se	0.09			
76Zn-85Rb.894	61.1	76Zn	61.06					
76Zn-88Rb.864	39.2	76Zn	38.94	88Rb	0.21			
76Kr-85Rb.894	84.0	76Kr	84.03					
76Se-84Kr	100.0	76Se	99.96					
76Ge-76Se	100.0	76Ge	100.00					
77Zn-88Rb.875	22.2	77Zn	22.13	88Rb	0.09			
77Zn-85Rb.906	77.9	77Zn	77.87					
76Ge(3He,d)77As	31.8	77As	31.80					
76Se(n,g)77Se	99.5	76Se	0.03	77Se	99.44			
77As(B-)77Se	17.9	77As	17.88	77Se	0.01			
78Cu-u	36.8	78Cu	36.78					
78Cu-85Rb.918	63.2	78Cu	63.22					
78Zn-88Rb.886	51.8	78Zn	51.63	88Rb	0.13			
78Ga-88Rb.886	11.8	78Ga	11.66	88Rb	0.19			
78Kr-86Kr.907	10.9	78Kr	10.86					
78Zn-85Rb.918	48.4	78Zn	48.37					
78Ga-85Rb.918	88.3	78Ga	88.34					
78Kr-78Se	92.3	78Se	3.48	78Kr	88.83			
78Se(p,a)75As	15.2	75As	14.68	78Se	0.51			
78Se(d,3He)77As	18.0	77As	17.84	78Se	0.15			
77Se(n,g)78Se	95.8	77Se	0.54	78Se	95.30			
79Zn-88Rb.898	67.7	79Zn	67.65	88Rb	0.09			

79Ga-88Rb.898	42.1	79Ga	41.80	88Rb	0.34							
79Zn-85Rb.929	32.3	79Zn	32.35									
79Ga-85Rb.929	58.2	79Ga	58.19									
79Rb-85Rb.929	82.2	79Rb	82.22									
79Sr-85Rb.929	78.4	79Sr	78.37									
79Br-79Rb	20.4	79Br	3.82	79Rb	16.60							
79Sr-79Rb	22.8	79Rb	1.18	79Sr	21.63							
79Ga(B-)79Ge	86.2	79Ga	0.01	79Ge	86.23							
79Ge(B-)79As	14.0	79Ge	13.77	79As	0.24							
80Zn-88Rb.909	14.5	80Zn	14.44	88Rb	0.04							
80Kr-86Kr.930	46.0	80Kr	45.96									
80Zn-85Rb.941	85.6	80Zn	85.56									
80Kr-85Rb.941	19.2	80Kr	19.24									
80Se(p,a)77As	39.9	77As	32.48	80Se	7.41							
80Se(p,t)78Se	20.3	78Se	0.55	80Se	19.76							
80Kr(a,6He)78Kr-78Kr()76K	16.7	76Kr	15.97	78Kr	0.31	80Kr	0.40					
80Se(d,3He)79As	99.8	79As	99.76	80Se	0.01							
79Br(n,g)80Br	99.9	79Br	96.18	80Br	3.76							
80Se(p,n)80Br	99.6	80Se	3.40	80Br	96.24							
81As-88Rb.920	73.9	81As	73.81	88Rb	0.06							
81Rb-85Rb.953	76.1	81Rb	76.06									
81Se-80Kr1.013	25.3	80Kr	8.05	81Se	17.25							
80Se(n,g)81Se	97.2	80Se	25.07	81Se	72.14							
80Kr(d,p)81Kr	9.8	80Kr	2.80	81Kr	6.99							
80Kr(3He,d)81Rb	24.3	80Kr	0.37	81Rb	23.94							
81Kr(e)81Br	88.9	81Br	5.15	81Kr	83.71							
82Kr-86Kr.953	26.0	82Kr	24.56	86Kr	1.41							
82Sr-85Rb.965	64.7	82Sr	64.65									
82Se 35Cl-80Se 37Cl	40.2	35Cl	0.04	37Cl	0.08	80Se	35.78	82Se	4.28			
82Kr-84Kr.976	78.2	82Kr	75.44	84Kr	2.77							
82Se-82Kr	92.5	82Se	92.53									
82Se(p,t)80Se	9.6	80Se	8.57	82Se	1.02							
82Se(d,3He)81As	26.8	81As	26.19	82Se	0.60							
82Se(p,d)81Se	11.8	81Se	10.61	82Se	1.19							
81Br(n,g)82Br	99.9	81Br	94.28	82Br	5.64							
82Br(B-)82Kr	94.4	82Br	94.36									
83Rb-85Rb.976	100.0	83Rb	100.00									
83Kr-84Kr.988	100.0	83Kr	100.00									
83Sr-83Rb	58.7	83Sr	58.73									
82Se(3He,d)83Br	46.0	82Se	0.38	83Br	45.60							
83Br(B-)83Kr	54.4	83Br	54.40									
83Sr(B+)83Rb	41.3	83Sr	41.27									
84Kr-N6	22.0	14N	1.03	84Kr	20.97							
84Y O-97Mo1.031	81.8	84Y	81.80	97Mo	0.02							
84Se-88Rb.955	99.9	84Se	99.89									
84Sr-85Rb.988	88.8	84Sr	88.80									
84Kr-40Ar2	12.4	40Ar	7.06	84Kr	5.32							
C2 O4-84Kr	9.6	16O	0.36	84Kr	9.23							
84Sr(p,t)82Sr	36.3	82Sr	35.35	84Sr	0.99							
84Se(B-)84Br	26.6	84Se	0.11	84Br	26.44							
84Br(B-)84Kr	73.6	84Br	73.56									
84Rb(B+)84Kr	72.7	84Rb	72.74									
84Rb(B-)84Sr	34.1	84Rb	27.26	84Sr	6.83							
84Y(B+)84Sr	19.5	84Sr	1.26	84Y	18.20							
85Rb-84Kr	39.0	84Kr	4.87	85Rb	34.10							
84Sr(d,p)85Sr	14.2	84Sr	2.12	85Sr	12.07							
85Rb(3He,t)85Sr	87.9	85Sr	87.93									
86Zr O-98Mo1.041	30.8	86Zr	30.75	98Mo	0.06							
86Kr-84Kr1.024	29.8	84Kr	19.73	86Kr	10.09							
86Sr-84Kr1.024	58.9	84Kr	5.34	86Sr	53.52							
86Zr-85Rb1.012	69.2	86Zr	69.25									
86Sr-86Kr	49.2	86Kr	2.73	86Sr	46.48							
86Kr-85Rb	69.3	85Rb	65.88	86Kr	3.43							
86Kr-N6	28.1	14N	1.38	86Kr	26.70							
C2 O4-86Kr	12.2	16O	0.48	86Kr	11.70							
86Kr-84Kr	24.9	84Kr	14.61	86Kr	10.30							
87Zr O-97Mo1.062	73.2	87Zr	73.15	97Mo	0.03							

87Mo1.069-C7 H9	46.7	87Mo	46.66		
87Sr-84Kr1.036	47.0	84Kr	5.95	87Sr	41.09
87Mo-85Rb1.024	53.3	87Mo	53.34		
87Sr-86Kr1.012	62.0	86Kr	3.05	87Sr	58.91
87Rb-C6 H14	18.7	87Rb	18.65		
87Rb-86Kr	87.2	86Kr	6.21	87Rb	81.03
87Rb(3He,t)87Sr-81Br()81K	9.9	81Br	0.57	81Kr	9.30
88Zr O-98Mo1.061	70.6	88Zr	70.61	98Mo	0.02
88Nb O-98Mo1.061	66.7	88Nb	66.68		
88Sr-84Kr1.048	46.1	84Kr	4.43	88Sr	41.66
88Sr-86Kr1.023	60.6	86Kr	2.25	88Sr	58.34
87Rb(n,g)88Rb	98.6	88Rb	98.61		
88Nb(B+)88Zr	33.5	88Zr	0.19	88Nb	33.32
89Nb-u	77.7	89Nb	77.73		
89Rb-85Rb1.047	41.9	89Rb	41.90		
89Y-85Rb1.047	48.9	89Y	48.90		
89Y-87Rb1.023	50.8	87Rb	0.01	89Y	50.84
88Sr(n,g)89Sr	100.0	89Sr	99.99		
89Rb(B-)89Sr	56.8	89Rb	56.80	89Sr	0.01
89Zr(B+)89Y	84.6	89Y	0.20	89Zr	84.44
89Nb(B+)89Zr	22.5	89Zr	0.24	89Nb	22.27
90Zr-u	30.2	90Zr	30.23		
90Mo-C7 H6	62.6	90Mo	62.55		
90Ru1.033-C7 H9	14.1	90Ru	14.14		
90Rb-85Rb1.059	59.2	90Rb	59.23		
90Ru-85Rb1.059	85.9	90Ru	85.86		
90Zr-87Rb1.034	62.4	87Rb	0.06	90Zr	62.36
90Zr(3He,6He)87Zr	26.9	87Zr	26.85	90Zr	0.02
90Zr(p,t)88Zr	29.2	88Zr	29.19	90Zr	0.01
89Y(n,g)90Y	100.0	89Y	0.07	90Y	99.93
90Zr(d,t)89Zr	15.3	89Zr	15.32	90Zr	0.02
90Rb(B-)90Sr	42.0	90Rb	40.77	90Sr	1.23
90Sr(B-)90Y	98.8	90Sr	98.77	90Y	0.07
90Nb(B+)90Zr	68.7	90Zr	0.03	90Nb	68.71
90Mo(B+)90Nb	68.7	90Nb	31.29	90Mo	37.45
91Zr-u	16.5	91Zr	16.52		
91Mo-C7 H7	65.1	91Mo	65.10		
91Tc-C7 H7	44.7	91Tc	44.74		
91Ru-C7 H7	37.4	91Ru	37.37		
91Rb-85Rb1.071	70.1	91Rb	70.14		
91Tc-85Rb1.071	22.1	91Tc	22.06		
91Ru-85Rb1.071	36.9	91Ru	36.92		
91Zr-87Rb1.046	28.6	87Rb	0.06	91Zr	28.54
91Tc-94Mo.968	33.3	91Tc	33.20	94Mo	0.07
91Ru-94Mo.968	25.8	91Ru	25.71	94Mo	0.07
90Zr(n,g)91Zr	11.9	90Zr	7.33	91Zr	4.59
91Rb(B-)91Sr	26.3	91Rb	18.36	91Sr	7.95
91Sr(B-)91Y	82.8	91Sr	80.99	91Y	1.79
91Y(B-)91Zr	98.2	91Y	98.21		
91Zr(p,n)91Nb	97.7	91Nb	97.73		
91Mo(B+)91Nb	13.7	91Nb	2.27	91Mo	11.38
92Zr-u	31.6	92Zr	31.58		
92Mo-u	12.8	92Mo	12.81		
92Tc.989-C7 H7	40.0	92Tc	40.01		
92Ru1.011-C7 H9	27.7	92Ru	27.75		
92Rb-85Rb1.082	53.3	92Rb	53.34		
92Sr-85Rb1.082	89.7	92Sr	89.73		
92Tc-85Rb1.082	60.0	92Tc	59.99		
92Ru-85Rb1.082	72.3	92Ru	72.25		
92Zr-87Rb1.057	23.2	87Rb	0.05	92Zr	23.14
92Mo-87Rb1.057	87.2	87Rb	0.02	92Mo	87.18
92Rb(B-n)91Sr	25.6	91Sr	11.06	92Rb	14.51
91Zr(n,g)92Zr	95.5	91Zr	50.34	92Zr	45.19
92Mo(p,d)91Mo	23.5	91Mo	23.52	92Mo	0.01
92Rb(B-)92Sr	39.0	92Rb	31.68	92Sr	7.30
92Sr(B-)92Y	31.8	92Sr	2.97	92Y	28.82
92Y(B-)92Zr	57.8	92Y	57.85		

92Zr(p,n)92Nb	72.8	92Zr	0.02	92Nb	72.73		
93Ru-C7 H9	73.4	93Ru	73.43				
93Rh-C7 H9	55.1	93Rh	55.15				
93Rb-85Rb1.094	70.7	93Rb	70.66				
93Sr-85Rb1.094	65.8	93Sr	65.77				
93Ru-85Rb1.094	26.6	93Ru	26.57				
93Rh-85Rb1.094	44.9	93Rh	44.85				
91Rb-93Rb.489 89Rb.511	15.3	89Rb	1.30	91Rb	11.50	93Rb	2.52
92Zr(n,g)93Zr	97.7	92Zr	0.07	93Zr	97.61		
93Nb(g,n)92Nb	43.8	92Nb	27.27	93Nb	16.57		
93Rb(B-)93Sr	50.2	93Rb	26.45	93Sr	23.75		
93Sr(B-)93Y	34.2	93Sr	10.49	93Y	23.72		
93Y(B-)93Zr	76.3	93Y	76.28	93Zr	0.03		
93Zr(B-)93Nb	55.0	93Zr	2.35	93Nb	52.69		
94Rb-85Rb1.106	70.2	94Rb	70.16				
94Sr-85Rb1.106	98.3	94Sr	98.35				
94Zr-u	77.2	94Zr	77.16				
94Mo-u	13.0	94Mo	13.02				
94Ru-85Rb1.106	56.2	94Ru	56.23				
94Ru-C7 H10	43.8	94Ru	43.77				
94Rh-85Rb1.106	62.2	94Rh	62.19				
94Rh-C7 H10	37.8	94Rh	37.81				
94Zr-87Rb1.080	22.6	87Rb	0.03	94Zr	22.54		
94Mo-87Rb1.080	18.8	87Rb	0.03	94Mo	18.73		
94Rb-88Rb1.068	29.7	88Rb	0.15	94Rb	29.58		
94Zr(d,a)92Y	13.3	92Y	13.33				
93Nb(n,g)94Nb	99.9	93Nb	30.74	94Nb	69.21		
94Sr(B-)94Y	41.2	94Sr	1.65	94Y	39.59		
94Y(B-)94Zr	50.3	94Y	50.23	94Zr	0.02		
94Nb(B-)94Mo	31.0	94Nb	30.80	94Mo	0.19		
95Sr-85Rb1.118	38.9	95Sr	38.90				
95Mo-u	12.2	95Mo	12.17				
95Rh-85Rb1.118	85.9	95Rh	85.93				
95Rh.989-C7 H10	14.1	95Rh	14.07				
95Sr-97Zr.979	38.9	95Sr	38.89	97Zr	0.01		
94Rb-95Rb.660 92Rb.341	13.2	92Rb	0.31	94Rb	0.25	95Rb	12.66
94Zr(n,g)95Zr	91.7	94Zr	0.28	95Zr	91.43		
94Mo(n,g)95Mo	89.1	94Mo	67.91	95Mo	21.15		
95Rb(B-)95Sr	53.5	95Rb	51.38	95Sr	2.10		
95Sr(B-)95Y	52.4	95Sr	20.10	95Y	32.31		
95Y(B-)95Zr	56.6	95Y	56.21	95Zr	0.41		
95Zr(B-)95Nb	10.8	95Zr	8.16	95Nb	2.63		
95Nb(B-)95Mo	97.5	95Nb	97.37	95Mo	0.15		
95Tc(B+)95Mo	97.4	95Tc	97.42				
95Ru(B+)95Tc	12.3	95Tc	2.58	95Ru	9.74		
96Kr-u	11.5	96Kr	11.51				
96Kr-85Rb1.129	88.5	96Kr	88.49				
96Zr-87Rb1.103	13.1	87Rb	0.03	96Zr	13.04		
96Zr-u	52.2	96Zr	52.21				
96Rb-88Rb1.091	99.7	96Rb	99.71				
96Sr-97Zr.990	82.6	96Sr	82.59				
96Y-97Zr.990	92.0	96Y	91.95				
96Zr-96Nb	68.2	96Zr	5.41	96Nb	62.83		
96Zr-96Mo	75.3	96Zr	29.25	96Mo	46.09		
96Nb-96Mo	45.7	96Nb	37.17	96Mo	8.52		
96Ru-96Mo	100.0	96Ru	100.00				
95Rb-96Rb.742 92Rb.258	26.0	92Rb	0.16	95Rb	25.52	96Rb	0.29
96Zr(d,a)94Y	10.2	94Y	10.18				
96Zr(t,a)95Y	11.5	95Y	11.49				
95Mo(n,g)96Mo	96.3	95Mo	66.53	96Mo	29.82		
96Ru(p,d)95Ru	90.3	95Ru	90.26				
96Sr(B-)96Y	25.5	96Sr	17.41	96Y	8.05		
97Rb-88Rb1.102	13.0	88Rb	0.09	97Rb	12.95		
97Rb-85Rb1.141	87.0	97Rb	87.03				
97Sr-85Rb1.141	86.8	97Sr	86.80				
97Mo-87Rb1.115	20.5	87Rb	0.02	97Mo	20.52		
97Mo-u	24.1	97Mo	24.09				

97Sr-97Zr	13.2	97Sr	13.20	97Zr	0.01		
95Rb-97Rb.490 93Rb.511	10.8	93Rb	0.37	95Rb	10.45	97Rb	0.02
96Zr(n,g)97Zr	100.0	96Zr	0.08	97Zr	99.91		
96Mo(n,g)97Mo	59.1	96Mo	15.37	97Mo	43.77		
96Mo(3He,d)97Tc	53.0	96Mo	0.01	97Tc	52.95		
97Zr(B-)97Nb	50.0	97Zr	0.01	97Nb	50.01		
97Nb(B-)97Mo	50.0	97Nb	49.99	97Mo	0.03		
97Mo(p,n)97Tc	47.1	97Mo	0.03	97Tc	47.05		
98Rb-85Rb1.153	29.1	98Rb	29.11				
98Rb-u	70.9	98Rb	70.89				
98Sr-85Rb1.153	88.0	98Sr	88.01				
98Mo-u	12.4	98Mo	12.43				
C7 H14-98Ru	91.6	98Ru	91.57				
98Pd-85Rb1.153	99.6	98Pd	99.64				
98Ag-85Rb1.153	78.0	98Ag	78.00				
98Sr-97Zr1.010	12.0	97Zr	0.02	98Sr	11.99		
98Zr-97Zr1.010	82.2	98Zr	82.17				
96Zr(t,p)98Zr	17.8	98Zr	17.83				
97Mo(n,g)98Mo	98.4	97Mo	11.50	98Mo	86.90		
97Mo(3He,d)98Tc	29.2	97Mo	0.01	98Tc	29.21		
98Mo(p,n)98Tc	11.4	98Mo	0.01	98Tc	11.40		
98Tc(B-)98Ru	10.6	98Tc	2.16	98Ru	8.43		
98Ag(B+)98Pd	22.4	98Pd	0.36	98Ag	22.00		
99Sr-85Rb1.165	52.8	99Sr	52.78				
99Zr-u	35.2	99Zr	35.19				
99Pd-96Mo1.031	99.3	99Pd	99.31				
99Sr-97Zr1.021	47.2	97Zr	0.02	99Sr	47.22		
99Zr-97Zr1.021	64.8	99Zr	64.81				
98Mo(n,g)99Mo	99.5	98Mo	0.59	99Mo	98.95		
99Tc(p,d)98Tc	59.0	98Tc	57.23	99Tc	1.76		
99Mo(B-)99Tc	79.3	99Mo	1.05	99Tc	78.24		
99Tc(B-)99Ru	22.3	99Tc	20.01	99Ru	2.34		
99Rh(B+)99Ru	11.2	99Rh	11.25				
99Pd(B+)99Rh	89.4	99Rh	88.75	99Pd	0.69		
100Rb-u	55.0	100Rb	54.99				
100Rb-85Rb1.176	45.0	100Rb	45.01				
100Sr-85Rb1.176	44.9	100Sr	44.86				
100Zr-u	23.6	100Zr	23.59				
100Mo-87Rb1.149	32.1	87Rb	0.01	100Mo	32.10		
100Mo-u	65.2	100Mo	65.20				
100Rh-u	17.9	100Rh	17.89				
100Sr-97Zr1.031	55.2	97Zr	0.01	100Sr	55.14		
100Zr-97Zr1.031	76.4	100Zr	76.41				
100Mo-100Ru	99.2	100Mo	2.67	100Ru	96.52		
96Ru(16O,12C)100Pd	46.0	100Pd	46.01				
99Ru(n,g)100Ru	100.0	99Ru	97.66	100Ru	2.33		
100Rh(B+)100Ru	82.1	100Ru	0.01	100Rh	82.11		
101Zr-u	20.0	101Zr	20.00				
101Pd-96Mo1.052	93.2	101Pd	93.22				
101Zr-97Zr1.041	80.0	101Zr	80.00				
100Ru(n,g)101Ru	99.5	100Ru	1.15	101Ru	98.31		
101Pd(B+)101Rh	95.2	101Rh	88.41	101Pd	6.78		
102Cd-85Rb1.200	88.2	102Cd	88.23				
102In-85Rb1.200	14.3	102In	14.26				
102Cd-96Mo1.063	11.8	96Mo	0.06	102Cd	11.77		
102In-96Mo1.063	85.7	96Mo	0.01	102In	85.74		
102Zr-97Zr1.052	92.0	102Zr	92.02				
102Nb-97Zr1.052	99.4	102Nb	99.39				
102Mo-97Zr1.052	82.8	102Mo	82.76				
102Nbm-102Nb	94.8	102Nb	0.61	102Nbm	94.21		
102Pd-102Ru	100.0	102Ru	0.01	102Pd	99.99		
100Mo(t,p)102Mo	17.3	100Mo	0.02	102Mo	17.24		
100Mo(3He,p)102Tc	21.0	100Mo	0.01	102Tc	20.99		
102Pd(p,t)100Pd	54.0	100Pd	53.99	102Pd	0.01		
101Ru(n,g)102Ru	100.0	101Ru	1.69	102Ru	98.28		
102Zr(B-)102Nbm	13.8	102Zr	7.98	102Nbm	5.79		
103Cd-85Rb1.212	85.7	103Cd	85.66				

103In-85Rb1.212	76.8	103In	76.82							
103In-u	12.9	103In	12.94							
103Cd-96Mo1.073	14.0	96Mo	0.06	103Cd	13.96					
103Rh(p,t)101Rh	13.2	101Rh	11.59	103Rh	1.62					
102Ru(n,g)103Ru	99.9	102Ru	0.72	103Ru	99.18					
103Ru(B-)103Rh	98.4	103Ru	0.06	103Rh	98.38					
103In(B+)103Cd	10.6	103Cd	0.38	103In	10.24					
C8 H8-104Ru	10.0	104Ru	9.96							
104Cd-85Rb1.224	89.3	104Cd	89.34							
104Sn-87Rb1.195	92.9	104Sn	92.87							
104Cd-96Mo1.083	10.7	96Mo	0.06	104Cd	10.66					
104Mo-97Zr1.072	97.2	104Mo	97.24							
104Ru(d,a)102Tc	80.2	102Tc	79.01	104Ru	1.24					
104Ru(d,t)103Ru-148Gd()14	64.8	103Ru	0.76	104Ru	57.70	147Gd	6.16	148Gd	0.18	
104Mo(B-)104Tc	73.0	104Mo	2.76	104Tc	70.25					
104Tc(B-)104Ru	30.0	104Tc	29.75	104Ru	0.21					
105Cd-85Rb1.235	99.2	105Cd	99.23							
105Sn-85Rb1.235	36.1	105Sn	36.05							
105Sn-87Rb1.207	58.0	105Sn	57.96							
105Mo-97Zr1.082	98.4	105Mo	98.38							
104Ru(n,g)105Ru	100.0	104Ru	30.89	105Ru	69.06					
105Mo(B-)105Tc	60.6	105Mo	1.62	105Tc	58.98					
105Tc(B-)105Ru	41.1	105Tc	41.02	105Ru	0.12					
105Ru(B-)105Rh	50.8	105Ru	25.36	105Rh	25.43					
105Rh(B-)105Pd	78.4	105Rh	74.57	105Pd	3.85					
105Cd(B+)105Ag	91.8	105Ag	91.06	105Cd	0.77					
106Nb-52Cr2.038	88.5	52Cr	0.27	106Nb	88.19					
106Pd-u	20.2	106Pd	20.18							
106Cd-u	26.8	106Cd	26.77							
106Cd-85Rb1.247	43.3	106Cd	43.33							
106Sn-85Rb1.247	39.5	106Sn	39.46							
106Sn-87Rb1.218	51.7	106Sn	51.71							
106Nb-102Ru1.039	12.8	102Ru	0.98	106Nb	11.81					
106Ru-105Ru1.010	41.9	105Ru	5.14	106Ru	36.72					
106Cd-106Pd	99.8	106Pd	69.92	106Cd	29.90					
105Pd(n,g)106Pd	99.6	105Pd	95.99	106Pd	3.65					
105Pd(3He,d)106Ag	12.5	105Pd	0.15	106Ag	12.34					
106Ru(B-)106Rh	100.0	106Ru	63.29	106Rh	36.68					
106Rh(B-)106Pd	64.0	106Rh	63.32	106Pd	0.71					
106Ag(e)106Pd	81.3	106Pd	0.33	106Ag	81.02					
C8 H11-107Ag	10.9	107Ag	10.89							
107Cd-85Rb1.259	88.0	107Cd	87.99							
107In-u	24.7	107In	24.71							
107Sb-87Rb1.230	58.9	107Sb	58.94							
107Sb-133Cs.805	21.1	107Sb	21.07							
107Ag(p,t)105Ag	11.2	105Ag	8.94	107Ag	2.29					
106Pd(n,g)107Pd	98.9	106Pd	5.22	107Pd	93.66					
107Ag(p,d)106Ag	10.4	106Ag	6.64	107Ag	3.81					
107Pd(B-)107Ag	59.7	107Pd	6.34	107Ag	53.33					
107Cd(B+)107Ag	41.1	107Ag	29.68	107Cd	11.45					
107In(B+)107Cd	75.8	107Cd	0.55	107In	75.29					
108Pd-u	40.0	108Pd	40.04							
108Cd-85Rb1.271	27.5	108Cd	27.46							
108Cd-u	25.1	108Cd	25.06							
108Sn-87Rb1.241	95.9	108Sn	95.92							
108Te-87Rb1.241	93.7	108Te	93.73							
108Pd-108Cd	86.5	108Pd	40.83	108Cd	45.72					
108Te(a)104Sn	13.4	104Sn	7.13	108Te	6.27					
108In(B+)108Cd	88.8	108Cd	0.17	108In	88.60					
108Sn(B+)108In	15.5	108In	11.40	108Sn	4.08					
109Rh-120Sn.908	36.7	109Rh	35.71	120Sn	0.98					
109Cd-85Rb1.282	75.3	109Cd	75.34							
109Sb-87Rb1.253	91.8	109Sb	91.78							
109Te-87Rb1.253	54.0	109Te	54.04							
109Te-133Cs.820	32.1	109Te	32.13							
109Te(a)105Sn	13.4	105Sn	5.99	109Te	7.41					
108Pd(n,g)109Pd	99.7	108Pd	19.12	109Pd	80.60					

108Cd(3He,d)109In-110Cd()	90.9	108Cd	1.58	109In	69.97	110Cd	0.07	111In	19.32
109Pd(B-)109Ag	49.2	109Pd	19.40	109Ag	29.76				
109Cd(e)109Ag	35.2	109Ag	13.68	109Cd	21.51				
109In(B+)109Cd	33.2	109Cd	3.15	109In	30.03				
109Sb(B+)109Sn	30.3	109Sn	22.08	109Sb	8.22				
110Pd-u	28.0	110Pd	27.98						
110Cd-u	12.0	110Cd	11.95						
110Te-133Cs.827	84.0	110Te	84.03						
110Ru-105Ru1.048	97.5	105Ru	0.23	110Ru	97.22				
110Pd-110Cd	80.0	110Pd	71.41	110Cd	8.58				
110Te(a)106Sn	24.8	106Sn	8.82	110Te	15.97				
110Pd(d,3He)109Rh	64.8	109Rh	64.29	110Pd	0.52				
109Ag(n,g)110Ag	99.9	109Ag	56.56	110Ag	43.29				
110Ru(B-)110Rh	15.1	110Ru	2.78	110Rh	12.28				
110Rh(B-)110Pd	87.7	110Rh	87.72	110Pd	0.01				
110Ag(B-)110Cd	58.9	110Ag	56.71	110Cd	2.19				
111I-87Rb1.276	70.0	111I	70.00						
111I(a)107Sb	50.0	107Sb	19.98	111I	30.00				
110Cd(n,g)111Cd	96.5	110Cd	77.20	111Cd	19.32				
112Rh-u	15.8	112Rh	15.82						
112Rh-120Sn.933	18.5	112Rh	18.51						
112Pd-120Sn.933	89.0	112Pd	88.80	120Sn	0.16				
112Sn-120Sn.933	25.0	112Sn	2.10	120Sn	22.86				
112Sn-112Cd	99.2	112Cd	1.96	112Sn	97.19				
112Sn(3He,6He)109Sn	77.9	109Sn	77.92	112Sn	0.02				
110Pd(t,p)112Pd	10.8	110Pd	0.08	112Pd	10.70				
111Cd(n,g)112Cd	89.0	111Cd	80.68	112Cd	8.29				
112Rh(B-)112Pd	66.2	112Rh	65.68	112Pd	0.50				
112Cd(p,n)112In	50.0	112In	50.02						
112In(B-)112Sn	50.0	112In	49.98	112Sn	0.03				
113Ru-u	20.5	113Ru	20.49						
113Xe-133Cs.850	82.2	113Xe	82.17						
113Ru-105Ru1.076	79.6	105Ru	0.08	113Ru	79.51				
113Cd-112Cd1.009	64.9	112Cd	35.19	113Cd	29.71				
113In-112Cd1.009	65.0	112Cd	48.40	113In	16.58				
113Xe(a)109Te	24.3	109Te	6.43	113Xe	17.83				
113In(p,t)111In-115In()11	11.7	111In	11.65	113In	0.07				
113In(p,t)111In-112Cd()11	69.1	110Cd	0.01	111In	69.03	112Cd	0.07	113In	-0.01
112Cd(d,p)113Cd	11.5	112Cd	6.08	113Cd	5.38				
112Sn(n,g)113Sn	69.9	112Sn	0.65	113Sn	69.27				
113Sn(B+)113In	16.8	113In	0.10	113Sn	16.67				
114Rh-u	41.0	114Rh	40.99						
114Sb-u	68.1	114Sb	68.09						
114Rh-120Sn.950	59.0	114Rh	59.01						
113Cd(n,g)114Cd	98.4	113Cd	5.43	114Cd	92.94				
113In(n,g)114In	88.1	113In	6.17	114In	81.91				
114Sn(d,t)113Sn	14.1	113Sn	14.06						
114In(B-)114Sn	18.2	114In	18.09	114Sn	0.12				
114Sn(p,n)114Sb	31.9	114Sb	31.91						
115Ag-133Cs.865	66.8	115Ag	66.77						
115Pd-120Sn.958	93.7	115Pd	93.63	120Sn	0.03				
115Sn-120Sn.958	22.4	120Sn	22.38						
113Cd-115In.983	59.5	113Cd	59.48	115In	0.01				
113In-115In.983	77.1	113In	77.09	115In	0.01				
115In-115Sn	100.0	115Sn	99.97						
115In-129Xe	100.0	115In	99.98						
114Cd(d,p)115Cd	100.0	115Cd	99.98						
114Sn(n,g)115Sn	99.9	114Sn	99.88	115Sn	0.02				
115Pd(B-)115Ag	18.7	115Pd	6.37	115Ag	12.38				
115Ag(B-)115Cd	20.9	115Ag	20.85	115Cd	0.02				
116Rh-u	37.2	116Rh	37.18						
116Te-u	97.4	116Te	97.35						
116I-u	40.9	116I	40.87						
116Xe-133Cs.872	99.6	116Xe	99.64						
116Rh-120Sn.967	62.8	116Rh	62.82						
116Cd 35Cl-114Cd 37Cl	9.7	35Cl	0.11	37Cl	0.24	114Cd	7.06	116Cd	2.25
116Cd-116Sn	98.5	116Cd	97.75	116Sn	0.79				

115Sn(n,g)116Sn	99.1	115Sn	0.01	116Sn	99.09		
115Sn(3He,d)116Sb-120Sn()	29.6	116Sb	24.93	120Sn	0.31	121Sb	4.32
116Sn(p,n)116Sb	75.1	116Sn	0.01	116Sb	75.07		
116I(B+)116Te	47.8	116Te	2.65	116I	45.11		
116Xe(B+)116I	14.4	116I	14.02	116Xe	0.36		
117Ag-133Cs.880	82.9	117Ag	82.93				
117Te-u	46.4	117Te	46.37				
117I-u	88.5	117I	88.46				
117Pd-120Sn.975	95.8	117Pd	95.78	120Sn	0.06		
116Sn(n,g)117Sn	96.9	116Sn	0.12	117Sn	96.79		
116Sn(3He,d)117Sb	71.2	117Sb	71.17				
117Pd(B-)117Ag	21.3	117Pd	4.22	117Ag	17.07		
117In(B-)117Sn	94.3	117In	94.35				
117Sn(p,n)117Sb	17.8	117Sn	0.05	117Sb	17.78		
117Te(B+)117Sb	61.8	117Sb	11.05	117Te	50.72		
117I(B+)117Te	14.5	117Te	2.91	117I	11.54		
118Pd-129Xe.915	38.8	118Pd	38.77				
118Pd-120Sn.983	64.5	118Pd	61.23	120Sn	3.23		
117Sn(n,g)118Sn	99.8	117Sn	3.16	118Sn	96.61		
119Ag-133Cs.895	97.3	119Ag	97.32				
119Sb-u	17.4	119Sb	17.42				
119Xe-u	13.8	119Xe	13.79				
119Xe-133Cs.895	86.2	119Xe	86.21				
119Sn(t,a)118In-118Sn()11	100.0	118In	100.00				
118Sn(n,g)119Sn	95.9	118Sn	3.34	119Sn	92.55		
118Sn(3He,d)119Sb	48.8	118Sn	0.05	119Sb	48.77		
119Ag(B-)119Cd	80.7	119Ag	2.68	119Cd	77.98		
119Cd(B-)119In	22.7	119Cd	22.02	119In	0.65		
119Sb(e)119Sn	34.0	119Sn	0.16	119Sb	33.81		
120Pd-129Xe.930	31.4	120Pd	31.38				
120Pd-120Sn	72.2	120Pd	68.62	120Sn	3.59		
120Sn(d,3He)119In	13.2	119In	13.15				
120Sn(t,a)119In-118Sn()11	91.9	117In	5.65	119In	86.20	120Sn	0.01
120Sn(d,t)119Sn	19.7	119Sn	7.29	120Sn	12.42		
121Xe-133Cs.910	85.0	121Xe	84.98				
121Cs-133Cs.910	37.7	121Cs	37.65				
121Cs-u	16.3	121Cs	16.30				
120Sn(n,g)121Sn	99.5	120Sn	2.04	121Sn	97.46		
120Te(3He,d)121I	99.4	120Te	0.04	121I	99.40		
121Te(B+)121Sb	73.7	121Sb	0.13	121Te	73.59		
121I(B+)121Te	27.0	121Te	26.41	121I	0.60		
121Cs(B+)121Xe	61.1	121Xe	15.02	121Cs	46.05		
122Cd-133Cs.917	27.6	122Cd	27.57				
122Cs-133Cs.917	56.8	122Cs	56.76				
122Cs-u	43.2	122Cs	43.24				
122Cd-130Xe.938	72.4	122Cd	72.43				
122Te(p,t)120Te-132Ba()13	99.9	120Te	97.97	130Ba	0.19	132Ba	1.78
122Te(p,t)120Te-144Sm()14	99.8	120Te	1.99	142Sm	96.74	144Sm	1.02
122Sn(d,t)121Sn	61.0	121Sn	2.54	122Sn	58.49		
121Sb(n,g)122Sb	100.0	121Sb	95.55	122Sb	4.44		
122Sb(B-)122Te	68.3	122Sb	67.59	122Te	0.75		
123Xe-133Cs.925	62.0	123Xe	61.99				
123Cd-130Xe.946	99.6	123Cd	99.60				
123Te-123Sb	100.0	123Sb	98.13	123Te	1.84		
122Sn(n,g)123Sn	93.8	122Sn	41.51	123Sn	52.33		
123Sb(g,n)122Sb	28.3	122Sb	27.97	123Sb	0.32		
122Te(n,g)123Te	100.0	122Te	98.77	123Te	1.20		
122Te(3He,d)123I	96.8	122Te	0.48	123I	96.34		
123Cd(B-)123In	32.3	123Cd	0.40	123In	31.92		
123In(B-)123Sn	43.7	123In	43.38	123Sn	0.36		
123Sn(B-)123Sb	11.7	123Sn	10.16	123Sb	1.55		
123Xe(B+)123I	41.7	123I	3.66	123Xe	38.01		
124Cd-133Cs.932	32.0	124Cd	31.98				
124Cd-130Xe.954	67.8	124Cd	67.84				
124Sn-129Xe.961	45.1	124Sn	45.09				
124Sn-120Sn1.033	46.2	120Sn	12.36	124Sn	33.84		
124Sn-124Te	98.6	124Sn	16.12	124Te	82.51		

124Xe-124Te	100.0	124Te	0.64	124Xe	99.35				
124Sn(d,3He)123In	24.8	123In	24.71	124Sn	0.05				
124Sn(d,t)123Sn	42.0	123Sn	37.15	124Sn	4.85				
123Te(n,g)124Te	100.0	123Te	96.96	124Te	3.01				
124Cd(B-)124In	61.3	124Cd	0.17	124In	61.13				
124In(B-)124Sn	38.9	124In	38.87	124Sn	0.04				
125La-u	86.5	125La	86.55						
125Cs-133Cs.940	70.4	125Cs	70.38						
125Ba-133Cs.940	97.9	125Ba	97.87						
124Te(n,g)125Te	100.0	124Te	13.84	125Te	86.15				
124Xe(n,g)125Xe	99.9	124Xe	0.65	125Xe	99.30				
125Cs(B+)125Xe	30.3	125Xe	0.70	125Cs	29.62				
125La(B+)125Ba	15.6	125Ba	2.13	125La	13.45				
126Xe-134Xe.940	0.0								
126Cd-133Cs.947	43.8	126Cd	43.83						
126Cs-133Cs.947	73.2	126Cs	73.17						
126Cd-130Xe.969	56.2	126Cd	56.17						
126Xe-128Xe.984	100.0	126Xe	100.00						
125Te(n,g)126Te	100.0	125Te	13.84	126Te	86.11				
126I(B+)126Te	53.9	126Te	2.08	126I	51.84				
126Cs(B+)126Xe	26.8	126Cs	26.83						
C10 H7-127I	20.9	127I	20.91						
127La-u	86.6	127La	86.57						
127In-133Cs.955	80.1	127In	80.06						
127Inn-133Cs.955	57.9	127Inn	57.87						
127Sn 34S-133Cs1.211	68.1	127Sn	68.12						
127Cs-133Cs.955	81.7	127Cs	81.68						
127Ba-133Cs.955	97.7	127Ba	97.73						
126Te(n,g)127Te	99.9	126Te	1.68	127Te	98.27				
127I(g,n)126I	83.4	126I	48.16	127I	35.25				
127In(B-)127Sn	36.2	127In	19.94	127Sn	16.21				
127Inn(B-)127Sn	43.7	127Inn	42.13	127Sn	1.55				
127Sn(B-)127Sb	17.9	127Sn	14.12	127Sb	3.83				
127Sb(B-)127Te	96.4	127Sb	96.17	127Te	0.27				
127Te(B-)127I	25.4	127Te	1.46	127I	23.96				
127Xe(e)127I	97.9	127I	6.76	127Xe	91.19				
127Cs(B+)127Xe	27.1	127Xe	8.81	127Cs	18.32				
127La(B+)127Ba	15.7	127Ba	2.27	127La	13.43				
128Sn-u	57.7	128Sn	57.65						
C10 H8-128Xe	0.0								
128Cd-133Cs.962	60.6	128Cd	60.60						
128Cs-133Cs.962	19.7	128Cs	19.71						
128Ba-133Cs.962	1.8	128Ba	1.77						
128Cd-130Xe.985	39.4	128Cd	39.40						
128Te 35Cl-126Te 37Cl	12.7	35Cl	0.01	37Cl	0.02	126Te	10.13	128Te	2.55
128Xe-129Xe.992	100.0	128Xe	100.00						
128Te-128Xe	47.1	128Te	47.08						
127I(n,g)128I	100.0	127I	13.10	128I	86.88				
128Sn(B-)128Sbm	87.4	128Sn	42.35	128Sbm	45.02				
128Sbm(B-)128Te	55.0	128Sbm	54.98	128Te	0.04				
128I(B-)128Xe	13.1	128I	13.11						
128Cs(B+)128Xe	80.3	128Cs	80.29						
129Sn-u	35.8	129Sn	35.77						
129Xe-120Sn1.075	19.6	120Sn	19.57						
129Xe2-86Kr3	28.0	86Kr	16.10	129Xe	11.93				
129La-u	58.3	129La	58.33						
129In-133Cs.970	10.0	129In	9.98						
129Cs-133Cs.970	12.2	129Cs	12.19						
129In-130Xe.992	53.3	129In	53.25						
129Inm-130Xe.992	36.6	129Inm	36.62						
C10 H10-129Xe	13.6	1H	-0.01	129Xe	13.58				
C3 O6-129Xe	9.0	16O	0.58	129Xe	8.43				
129Xe2-84Kr3	11.5	84Kr	6.78	129Xe	4.70				
128Te(n,g)129Te	100.0	128Te	1.22	129Te	98.77				
129Inm(IT)129In	99.8	129In	36.57	129Inm	63.28				
129In(B-)129Sn	44.0	129In	0.20	129Sn	43.75				
129Inm(B-)129Sn	20.6	129Inm	0.10	129Sn	20.48				

129Te(B-)129I	61.5	129Te	1.23	129I	60.22				
129I(B-)129Xe	39.8	129I	39.78						
129Cs(B+)129Xe	82.9	129Cs	82.93						
129Ba(B+)129Cs	49.6	129Cs	4.88	129Ba	44.70				
129La(B+)129Ba	47.9	129Ba	6.28	129La	41.67				
130Ba-85Rb1.529	0.8	130Ba	0.82						
130In-133Cs.977	92.3	130In	92.28						
130Inm-133Cs.977	79.4	130Inm	79.41						
130Inn-133Cs.977	59.7	130Inn	59.66						
130Sn-133Cs.977	26.6	130Sn	26.58						
130Cs-133Cs.977	47.6	130Cs	47.62						
130Te 35Cl-128Te 37Cl	49.3	35Cl	0.07	37Cl	0.14	128Te	49.11		
130In-130Inn	18.4	130In	7.72	130Inn	10.70				
130Inm-130Inn	23.0	130Inm	10.99	130Inn	12.03				
130Inm-130Te	9.6	130Inm	9.61						
130Inn-130Te	17.6	130Inn	17.62						
130Sn-130Xe	73.3	130Sn	73.26						
130Te-130Xe	34.8	130Te	22.13	130Xe	12.67				
130Ba-130Xe	98.9	130Ba	98.86						
130Te-129Xe	78.0	129Xe	0.12	130Te	77.87				
130Xe-129Xe	50.7	129Xe	0.48	130Xe	50.22				
130Ba(p,t)128Ba-144Sm()14	99.3	128Ba	98.23	130Ba	0.11	142Sm	0.98	144Sm	0.01
129Xe(3He,d)130Cs	17.5	130Cs	17.46						
130Ba(d,t)129Ba	49.0	129Ba	49.02	130Ba	0.02				
130Sn(B-)130Sb	90.2	130Sn	0.16	130Sb	90.03				
130Sb(B-)130Te	10.0	130Sb	9.97						
130Cs(B+)130Xe	34.9	130Cs	34.92						
131Cd-u	63.1	131Cd	63.10						
131Ce-u	95.7	131Ce	95.69						
131Pr-u	81.2	131Pr	81.17						
131Nd-u	97.0	131Nd	96.96						
131Cd-133Cs.985	36.9	131Cd	36.90						
131In-133Cs.985	33.3	131In	33.35						
131Inm-133Cs.985	88.3	131Inm	88.32						
131Sn 34S-133Cs1.241	80.9	131Sn	80.88						
131Xe-129Xe1.016	89.1	129Xe	47.55	131Xe	41.55				
131In-130Xe1.008	66.7	131In	66.65						
131Inm-130Xe1.008	11.7	131Inm	11.68						
131Sb-130Xe1.008	94.6	131Sb	94.59						
131Xe-132Xe.992	84.3	131Xe	58.45	132Xe	25.85				
131Sn(B-)131Sb	24.5	131Sn	19.12	131Sb	5.41				
131Pr(B+)131Ce	13.7	131Ce	4.31	131Pr	9.35				
131Nd(B+)131Pr	12.5	131Pr	9.49	131Nd	3.04				
132Xe-C3 O6	15.1	16O	0.96	132Xe	14.19				
132La-u	33.9	132La	33.94						
132Ce-u	53.3	132Ce	53.33						
132Ce O-142Sm1.042	46.9	132Ce	46.67	142Sm	0.23				
132Sb-130Xe1.015	83.4	132Sb	83.40						
132Te-130Xe1.015	75.8	132Te	75.76						
132Sn-133Cs.992	61.1	132Sn	61.08						
132Sb-133Cs.992	16.6	132Sb	16.60						
132Cs-133Cs.992	73.2	132Cs	73.17						
132Sn-132Xe	38.9	132Sn	38.92						
132Xe-C10 H10	32.7	1H	-0.02	132Xe	32.76				
132Xe-130Xe	37.8	130Xe	37.10	132Xe	0.68				
132Xe-129Xe	13.5	129Xe	6.37	132Xe	7.14				
132Xe2-86Kr3	10.5	86Kr	6.01	132Xe	4.52				
14N10-132Xe	11.0	14N	1.29	132Xe	9.72				
132Te(B-)132I	75.8	132Te	24.24	132I	51.58				
132I(B-)132Xe	48.4	132I	48.42						
132La(B+)132Ba	66.1	132Ba	0.02	132La	66.06				
133I-u	15.7	133I	15.68						
133Sb-136Xe.978	11.3	133Sb	11.28						
133Sb-130Xe1.023	70.5	133Sb	70.47						
133Te-130Xe1.023	93.0	133Te	93.00						
133Sn-134Xe.993	72.5	133Sn	72.53						
133Sn-133Cs	27.5	133Sn	27.47						

133I-133Cs	84.3	133I	84.32				
133Cs-C3 O6	10.9	16O	0.26	133Cs	10.65		
133Cs-132Xe	47.4	132Xe	2.83	133Cs	44.61		
133Cs-129Xe	47.4	129Xe	2.72	133Cs	44.71		
133Cs(g,n)132Cs	26.8	132Cs	26.83				
132Ba(n,g)133Ba	99.8	132Ba	98.20	133Ba	1.59		
133Sb(B-)133Te	25.3	133Sb	18.26	133Te	7.00		
133Ba(e)133Cs	98.4	133Ba	98.41				
134Te-130Xe1.031	71.0	134Te	70.96				
134Te-136Xe.985	20.6	134Te	20.57				
134Xe-132Xe1.015	100.0	134Xe	100.00				
134I-133Cs1.008	58.8	134I	58.79				
133Cs(n,g)134Cs	99.9	133Cs	0.02	134Cs	99.89		
134Te(B-)134I	49.7	134Te	8.46	134I	41.21		
134Cs(B-)134Ba	39.3	134Cs	0.09	134Ba	39.21		
135Ce-u	13.5	135Ce	13.50				
135Sb-130Xe1.038	83.6	135Sb	83.60				
135Te-130Xe1.038	40.6	135Te	40.65				
135Sb-133Cs1.015	16.4	135Sb	16.40				
135Te-133Cs1.015	59.4	135Te	59.35				
135I-133Cs1.015	92.4	135I	92.44				
135Cs-135Ba	92.2	135Cs	86.58	135Ba	5.60		
134Cs(n,g)135Cs	13.2	134Cs	0.01	135Cs	13.20		
134Ba(n,g)135Ba	96.1	134Ba	60.79	135Ba	35.27		
135I(B-)135Xe	40.7	135I	7.56	135Xe	33.15		
135Xe(B-)135Cs	67.1	135Xe	66.85	135Cs	0.22		
135La(B+)135Ba	88.9	135Ba	0.01	135La	88.92		
135Ce(B+)135La	97.6	135La	11.08	135Ce	86.50		
136Xe-28Si4 D12	19.8	2H	0.01	28Si	0.68	136Xe	19.13
136Sb-130Xe1.046	84.7	136Sb	84.70				
136Te-130Xe1.046	62.4	136Te	62.40				
136Sb-133Cs1.023	15.3	136Sb	15.30				
136Te-133Cs1.023	13.0	136Te	12.97				
136Pr-133Cs1.023	67.2	136Pr	67.21				
136Te-136Xe	24.0	136Te	23.99				
136Xe-136Ba	28.6	136Xe	0.01	136Ba	28.59		
136Ce-136Ba	100.0	136Ba	0.03	136Ce	99.95		
136Xe-13C3 O6	81.8	13C	0.16	16O	0.82	136Xe	80.85
135Ba(n,g)136Ba	99.4	135Ba	59.12	136Ba	40.26		
136Te(B-)136I	50.3	136Te	0.65	136I	49.67		
136I(B-)136Xe	50.3	136I	50.33				
136Pr(B+)136Ce	32.8	136Ce	0.02	136Pr	32.79		
137Nd-u	17.6	137Nd	17.60				
137Sm-u	36.3	137Sm	36.28				
137Te-130Xe1.054	69.8	137Te	69.75				
137Te-133Cs1.030	30.2	137Te	30.25				
137Pr-133Cs1.030	33.9	137Pr	33.90				
137Nd-133Cs1.030	80.8	137Nd	80.83				
137Sm-133Cs1.030	53.5	137Sm	53.49				
136Ba(n,g)137Ba	98.3	136Ba	31.11	137Ba	67.17		
136Ce(n,g)137Ce	100.0	136Ce	0.04	137Ce	99.96		
137Pr(B+)137Ce	66.1	137Ce	0.04	137Pr	66.10		
137Pmm(B+)137Nd	66.7	137Nd	1.57	137Pmm	65.16		
137Sm(B+)137Pmm	45.1	137Pmm	34.84	137Sm	10.23		
138Prm-u	33.9	138Prm	33.89				
138Pm-u	17.2	138Pm	17.24				
138Te-130Xe1.062	74.8	138Te	74.81				
138Te-133Cs1.038	25.2	138Te	25.19				
138Xe-133Cs1.038	74.0	138Xe	73.97				
138Cs-133Cs1.038	49.3	138Cs	49.32				
138Nd-133Cs1.038	96.4	138Nd	96.40				
138Pm-133Cs1.038	79.2	138Pm	79.16				
138Xe-136Xe1.015	26.0	138Xe	26.03				
138Ba-136Xe1.015	31.1	136Xe	0.01	138Ba	31.09		
138Ce-136Xe1.015	9.9	138Ce	9.94				
138La-138Ba	82.5	138Ba	1.34	138La	81.15		
138Ce-138Ba	38.3	138Ba	0.95	138Ce	37.33		

138La-138Ce	71.5	138La	18.85	138Ce	52.69				
137Ba(n,g)138Ba	99.4	137Ba	32.83	138Ba	66.60				
138Cs(B-)138Ba	50.7	138Cs	50.68	138Ba	0.02				
138Prm(B+)138Ce	66.1	138Ce	0.02	138Prm	66.11				
138Pm(B+)138Nd	7.2	138Nd	3.60	138Pm	3.60				
139Pm-133Cs1.045	94.6	139Pm	94.57						
139La-136Xe1.022	94.5	139La	94.47						
139Ce(B+)139La	99.9	139La	0.01	139Ce	99.88				
139Pr(B+)139Ce	99.7	139Ce	0.12	139Pr	99.63				
139Nd(B+)139Pr	30.5	139Pr	0.37	139Nd	30.14				
139Pm(B+)139Nd	75.3	139Nd	69.86	139Pm	5.43				
140Te-130Xe1.077	26.5	140Te	26.47						
140Pmm-u	22.1	140Pmm	22.15						
140Te-133Cs1.053	73.5	140Te	73.53						
140Cs-133Cs1.053	79.1	140Cs	79.05						
140Ba-133Cs1.053	36.7	140Ba	36.69						
140Ce O-133Cs1.173	31.8	140Ce	31.78						
140Pmm-133Cs1.053	77.9	140Pmm	77.85						
139La(n,g)140La	100.0	139La	5.52	140La	94.48				
140Cs(B-)140Ba	39.9	140Cs	20.95	140Ba	18.97				
140Ba(B-)140La	38.2	140Ba	38.05	140La	0.14				
140La(B-)140Ce	44.6	140La	5.39	140Ce	39.26				
141Ba-u	58.0	141Ba	57.95						
141Cs-133Cs1.060	38.1	141Cs	38.06						
141Ba-133Cs1.060	27.2	141Ba	27.22						
141Sm-133Cs1.060	42.8	141Sm	42.83						
141Eu-133Cs1.060	81.8	141Eu	81.82						
141Cs-136Xe1.037	20.1	141Cs	20.13						
141Cs(B-n)140Ba	15.0	140Ba	6.29	141Cs	8.75				
140Ce(n,g)141Ce	99.9	140Ce	25.26	141Ce	74.62				
141Cs(B-)141Ba	41.1	141Cs	33.06	141Ba	8.05				
141Ba(B-)141La	10.7	141Ba	6.77	141La	3.96				
141La(B-)141Ce	96.4	141La	96.04	141Ce	0.39				
141Ce(B-)141Pr	79.4	141Ce	25.00	141Pr	54.37				
141Eu(B+)141Sm	25.5	141Sm	7.32	141Eu	18.18				
142Cs-133Cs1.068	33.4	142Cs	33.36						
142Ba-133Cs1.068	33.7	142Ba	33.73						
142Ba-u	48.8	142Ba	48.78						
142Pm-u	88.6	142Pm	88.65						
142Cs-136Xe1.044	47.6	142Cs	47.57						
140Ce(t,p)142Ce	24.4	140Ce	3.71	142Ce	20.69				
141Pr(n,g)142Pr	99.9	141Pr	45.63	142Pr	54.29				
142Cs(B-)142Ba	31.1	142Cs	18.85	142Ba	12.23				
142Ba(B-)142La	11.2	142Ba	5.25	142La	5.97				
142La(B-)142Ce	94.9	142La	94.03	142Ce	0.86				
142Pr(B-)142Nd	67.3	142Pr	45.70	142Nd	21.63				
142Sm(B+)142Pm	11.4	142Pm	11.35	142Sm	0.06				
143Cs-133Cs1.075	91.5	143Cs	91.49						
143Ba-133Cs1.075	20.5	143Ba	20.55						
143Ba-u	72.8	143Ba	72.81						
143La-u	81.8	143La	81.79						
142Ce(n,g)143Ce	100.0	142Ce	78.45	143Ce	21.52				
142Nd(n,g)143Nd	99.9	142Nd	77.38	143Nd	22.53				
142Nd(3He,d)143Pm	28.8	142Nd	0.21	143Pm	28.57				
143Cs(B-)143Ba	15.1	143Cs	8.51	143Ba	6.64				
143La(B-)143Ce	19.9	143La	18.21	143Ce	1.68				
143Ce(B-)143Pr	86.9	143Ce	76.80	143Pr	10.15				
143Pr(B-)143Nd	93.5	143Pr	89.85	143Nd	3.62				
144Cs-133Cs1.083	42.9	144Cs	42.89						
144Ba-133Cs1.083	26.1	144Ba	26.09						
144Ba-u	70.9	144Ba	70.88						
144Eu-133Cs1.083	46.4	144Eu	46.41						
144Eu-u	14.9	144Eu	14.90						
144Sm-144Nd	91.6	144Nd	5.38	144Sm	86.21				
144Sm(3He,6He)141Sm	50.6	141Sm	49.85	144Sm	0.74				
143Nd(n,g)144Nd	99.9	143Nd	60.94	144Nd	39.01				
143Nd(3He,d)144Pm-142Nd()	91.1	142Nd	0.13	143Nd	-0.12	143Pm	49.18	144Pm	41.86

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144Sm(p,d)143Sm-148Gd()14 100.0  143Sm  100.00
144Cs(B-)144Ba             40.5  144Cs   37.50  144Ba    3.04
144Eu(B+)144Sm             39.1  144Sm    0.44  144Eu   38.69
145Cs-133Cs1.090           98.6  145Cs   98.58
145La-u                    98.1  145La   98.07
145Ce-u                    15.6  145Ce   15.58
145Gd-u                    99.6  145Gd   99.56
145Tb-u                    16.9  145Tb   16.85
144Cs-145Cs.662 142Cs.338  21.2  142Cs    0.22  144Cs   19.61  145Cs    1.42
144Nd(n,g)145Nd            96.0  144Nd   11.48  145Nd   84.49
144Nd(3He,d)145Pm          25.5  144Nd    0.17  145Pm   25.36
144Nd(3He,d)145Pm-143Nd()  91.0  143Nd    0.20  144Nd   -0.20  144Pm   57.41  145Pm   33.60
144Sm(n,g)145Sm            99.2  144Sm    7.01  145Sm   92.21
144Sm(3He,d)145Eu          91.6  144Sm    0.61  145Eu   90.97
145La(B-)145Ce             19.5  145La    1.93  145Ce   17.54
145Ce(B-)145Pr             67.9  145Ce   66.88  145Pr    0.99
145Pr(B-)145Nd             49.5  145Pr   49.50  145Nd    0.02
145Sm(e)145Pm              43.7  145Pm   41.04  145Sm    2.65
145Tb(B+)145Gd             83.6  145Gd    0.44  145Tb   83.15
146La-u                    99.8  146La   99.76
146Ce-u                    72.8  146Ce   72.78
146Eu-133Cs1.098           18.5  146Eu   18.50
146Dy-85Rb1.718            99.6  146Dy   99.64
146Ho-133Cs1.098           50.0  146Ho   50.00
146Ho-85Rb1.718            50.0  146Ho   50.00
146Er-85Rb1.718            61.2  146Er   61.21
146Sm(a)142Nd              46.8  142Nd    0.64  146Sm   46.13
144Sm(3He,p)146Eu          24.6  144Sm    0.49  146Eu   24.09
146Nd(d,3He)145Pr          49.5  145Pr   49.50  146Nd    0.02
145Nd(n,g)146Nd            99.4  145Nd   15.50  146Nd   83.94
146Sm(3He,a)145Sm          32.5  145Sm    2.13  146Sm   30.40
146La(B-)146Ce             24.1  146La    0.24  146Ce   23.82
146Ce(B-)146Pr             79.8  146Ce    3.40  146Pr   76.40
146Pr(B-)146Nd             23.6  146Pr   23.60  146Nd    0.02
146Eu(B+)146Sm             51.7  146Sm    5.70  146Eu   45.96
146Tb(B+)146Gd             80.1  146Gd    0.13  146Tb   79.97
146Dy(B+)146Tb             20.4  146Tb   20.03  146Dy    0.36
147Ce-u                    92.1  147Ce   92.07
147Tb-133Cs1.105           52.5  147Tb   52.46
147Ho-133Cs1.105           47.4  147Ho   47.37
147Ho-85Rb1.729            52.6  147Ho   52.63
147Tm-85Rb1.729            44.5  147Tm   44.54
147Eu(a)143Pm              36.7  143Pm   22.24  147Eu   14.42
146Nd(n,g)147Nd            99.4  146Nd   14.47  147Nd   84.96
147Tb(p)146Gd              23.0  146Gd    3.93  147Tb   19.04
147Tm(p)146Er              94.2  146Er   38.79  147Tm   55.46
147Ce(B-)147Pr             60.3  147Ce    7.93  147Pr   52.37
147Pr(B-)147Nd             47.8  147Pr   47.63  147Nd    0.16
147Nd(B-)147Pm             32.1  147Nd   14.41  147Pm   17.67
147Pm(B-)147Sm             93.7  147Pm   82.33  147Sm   11.40
147Eu(B+)147Sm             57.9  147Sm    1.14  147Eu   56.78
147Gd(B+)147Eu             25.5  147Eu   18.85  147Gd    6.69
147Tb(B+)147Gd             29.5  147Gd    0.95  147Tb   28.50
148Ce-u                    85.5  148Ce   85.46
148Eu-133Cs1.113           50.8  148Eu   50.83
148Dy-133Cs1.113           79.0  148Dy   78.99
148Eu-142Sm1.042           39.7  142Sm    0.84  148Eu   38.90
148Nd 35Cl2-144Nd 37Cl2    11.6   35Cl    0.01   37Cl    0.03  144Nd    0.26  148Nd   11.31
148Nd 35Cl-146Nd 37Cl      62.2   37Cl    0.01  146Nd    1.55  148Nd   60.65
148Sm(a)144Nd              79.3  144Nd   43.90  148Sm   35.40
148Eu(a)144Pm              11.0  144Pm    0.72  148Eu   10.27
148Gd(a)144Sm             100.0  144Sm    3.48  148Gd   96.49
148Sm(p,t)146Sm            12.6  146Sm   12.31  148Sm    0.25
148Gd(p,t)146Gd-65Cu()63C  90.0   63Cu    0.06   65Cu    0.21  146Gd   88.91  148Gd    0.80
148Nd(d,t)147Nd            17.1  147Nd    0.47  148Nd   16.66
147Sm(n,g)148Sm            92.8  147Sm   71.54  148Sm   21.24
148Gd(p,d)147Gd-148Sm()14  89.0  147Sm    0.51  147Gd   86.20  148Sm   -0.14  148Gd    2.40
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148Ce(B-)148Pr	80.6	148Ce	14.54	148Pr	66.03				
148Pr(B-)148Nd	34.4	148Pr	33.97	148Nd	0.42				
148Tb(B+)148Gd	9.7	148Gd	0.11	148Tb	9.54				
148Dy(B+)148Tb	89.4	148Tb	83.15	148Dy	6.27				
149Ho-u	14.3	149Ho	14.29						
149Dy-142Sm1.049	36.5	142Sm	0.66	149Dy	35.88				
149Sm 35Cl-147Sm 37Cl	23.6	35Cl	0.02	37Cl	0.04	147Sm	15.40	149Sm	8.16
149Gd(a)145Sm	55.7	145Sm	3.00	149Gd	52.71				
149Tb(a)145Eu	94.8	145Eu	9.03	149Tb	85.76				
148Nd(3He,d)149Pm	24.2	148Nd	10.97	149Pm	13.19				
148Sm(n,g)149Sm	24.2	148Sm	15.43	149Sm	8.81				
149Pm(B-)149Sm	87.9	149Pm	86.81	149Sm	1.05				
149Eu(e)149Sm	14.3	149Sm	0.23	149Eu	14.12				
149Gd(e)149Eu	47.5	149Eu	29.70	149Gd	17.82				
149Tb(B+)149Gd	18.8	149Gd	8.31	149Tb	10.51				
149Dy(B+)149Tb	48.2	149Tb	3.73	149Dy	44.50				
149Ho(B+)149Dy	47.2	149Dy	14.72	149Ho	32.48				
150Ce-u	91.9	150Ce	91.88						
150Pr-u	83.4	150Pr	83.35						
150Tbm-u	89.2	150Tbm	89.24						
150Ho-133Cs1.128	50.4	150Ho	50.36						
150Er-u	32.9	150Er	32.91						
150Sm 35Cl-148Sm 37Cl	39.7	35Cl	0.04	37Cl	0.07	148Sm	27.82	150Sm	11.75
150Nd-150Sm	100.0	150Nd	99.62	150Sm	0.34				
150Gd(a)146Sm	44.9	146Sm	5.45	150Gd	39.41				
150Tb(a)146Eu	91.9	146Eu	11.45	150Tb	80.48				
150Dy(a)146Gd	99.0	146Gd	7.03	150Dy	91.98				
149Sm(n,g)150Sm	95.1	149Sm	81.75	150Sm	13.37				
150Ce(B-)150Pr	12.8	150Ce	8.12	150Pr	4.65				
150Pr(B-)150Nd	12.2	150Pr	12.00	150Nd	0.17				
150Eu(B-)150Gd	91.0	150Eu	53.31	150Gd	37.68				
150Tb(B+)150Gd	31.2	150Gd	11.67	150Tb	19.52				
150Ho(e)150Dy	27.3	150Dy	1.90	150Ho	25.40				
150Er(B+)150Ho	78.3	150Ho	24.24	150Er	54.01				
151Pr-u	76.5	151Pr	76.49						
151Er-u	87.9	151Er	87.88						
151Yb-151Er	87.9	151Er	0.23	151Yb	87.64				
151Tb(a)147Eu	58.4	147Eu	9.95	151Tb	48.47				
151Eu(p,t)149Eu	56.8	149Eu	56.17	151Eu	0.67				
150Nd(n,g)151Nd	100.0	150Nd	0.17	151Nd	99.83				
150Nd(3He,d)151Pm	80.0	150Nd	0.04	151Pm	79.97				
150Sm(n,g)151Sm	99.5	150Sm	66.23	151Sm	33.27				
151Eu(p,d)150Eu	47.1	150Eu	46.69	151Eu	0.44				
151Yb(ep)150Er	12.6	150Er	0.25	151Yb	12.36				
151Pr(B-)151Nd	23.7	151Pr	23.51	151Nd	0.17				
151Pm(B-)151Sm	20.0	151Pm	20.03						
151Sm(B-)151Eu	80.2	151Sm	22.53	151Eu	57.70				
151Gd(e)151Eu	85.8	151Eu	0.70	151Gd	85.11				
151Tb(B+)151Gd	66.4	151Gd	14.89	151Tb	51.53				
152Tm-u	88.1	152Tm	88.08						
152Yb-136Ce O	91.5	152Yb	91.49						
152Sm 35Cl-150Sm 37Cl	10.9	35Cl	0.04	37Cl	0.08	150Sm	8.30	152Sm	2.49
152Gd-152Sm	98.2	152Sm	77.87	152Gd	20.30				
152Ho(a)148Tb	99.9	148Tb	7.31	152Ho	92.59				
152Er(a)148Dy	99.5	148Dy	14.74	152Er	84.75				
150Nd(t,p)152Nd	66.4	150Nd	0.01	152Nd	66.44				
151Sm(n,g)152Sm	57.3	151Sm	44.19	152Sm	13.11				
151Eu(n,g)152Eu	99.5	151Eu	40.49	152Eu	58.98				
152Nd(B-)152Pm	85.0	152Nd	33.56	152Pm	51.42				
152Pm(B-)152Sm	48.6	152Pm	48.58						
152Eu(B+)152Sm	32.6	152Sm	4.95	152Eu	27.69				
152Yb(B+)152Tm	20.4	152Tm	11.92	152Yb	8.51				
153Pr-u	79.7	153Pr	79.67						
153Pr-80Kr1.913	10.3	80Kr	0.11	153Pr	10.16				
153Pr-86Kr1.779	10.2	153Pr	10.17						
153Nd-u	32.2	153Nd	32.16						
153Nd-80Kr1.913	41.5	80Kr	5.69	153Nd	35.85				

153Nd-86Kr1.779	31.0	153Nd	30.96						
153Pm-u	17.9	153Pm	17.89						
153Pm-80Kr1.913	18.1	80Kr	0.30	153Pm	17.81				
153Pm-86Kr1.779	17.9	153Pm	17.89						
153Dy(a)149Gd	69.0	149Gd	21.16	153Dy	47.84				
153Er(a)149Dy	99.9	149Dy	4.90	153Er	94.99				
153Tm(a)149Ho	99.6	149Ho	53.23	153Tm	46.40				
152Eu(n,g)153Eu	99.7	152Eu	13.33	153Eu	86.33				
152Gd(n,g)153Gd	99.0	152Gd	79.70	153Gd	19.32				
153Nd(B-)153Pm	14.0	153Nd	1.03	153Pm	12.96				
153Tb(B+)153Gd	59.1	153Gd	0.41	153Tb	58.70				
153Dy(B+)153Tb	93.5	153Tb	41.30	153Dy	52.16				
154Dy-133Cs1.158	17.6	154Dy	17.63						
154Sm 35Cl-152Sm 37Cl	80.1	35Cl	0.03	37Cl	0.06	152Sm	1.58	154Sm	78.46
154Sm-154Gd	21.4	154Sm	20.97	154Gd	0.38				
154Yb-138Ce O	13.0	138Ce	0.01	154Yb	12.96				
154Dy(a)150Gd	92.8	150Gd	11.23	154Dy	81.61				
154Hom(a)150Tbm	99.7	150Tbm	10.76	154Hom	88.95				
154Er(a)150Dy	97.7	150Dy	6.13	154Er	91.58				
154Yb(a)150Er	99.9	150Er	12.83	154Yb	87.04				
154Sm(d,3He)153Pm	33.9	153Pm	33.44	154Sm	0.46				
153Eu(n,g)154Eu	98.6	153Eu	13.67	154Eu	84.96				
153Gd(n,g)154Gd	98.4	153Gd	80.27	154Gd	18.14				
154Eu(B-)154Gd	14.2	154Eu	12.40	154Gd	1.79				
154Hom(B+)154Dy	11.8	154Dy	0.77	154Hom	11.05				
155Pr-u	35.5	155Pr	35.47						
155Pr-80Kr1.938	31.4	80Kr	0.13	155Pr	31.24				
155Pr-86Kr1.802	33.3	155Pr	33.29						
155Nd-u	33.4	155Nd	33.41						
155Nd-80Kr1.938	33.7	80Kr	0.48	155Nd	33.17				
155Nd-86Kr1.802	33.4	155Nd	33.41						
155Pm-u	33.1	155Pm	33.14						
155Pm-80Kr1.938	35.6	80Kr	1.85	155Pm	33.73				
155Pm-86Kr1.802	33.1	155Pm	33.14						
155Ho-u	39.1	155Ho	39.08						
155Yb-155Eu	12.1	155Eu	0.07	155Yb	12.08				
155Gd O-C15	7.3	155Gd	7.32						
155Yb(a)151Er	99.8	151Er	11.89	155Yb	87.92				
155Lu(a)151Tm	76.0	151Tm	76.00						
155Lun(a)151Tm	38.6	151Tm	24.00	155Lun	14.57				
154Eu(n,g)155Eu	99.8	154Eu	1.68	155Eu	98.11				
154Gd(n,g)155Gd	99.4	154Gd	79.69	155Gd	19.71				
155Ho(B+)155Dy	68.8	155Dy	7.88	155Ho	60.92				
155Lun(IT)155Lu	85.4	155Lun	85.43						
156Pm-u	29.4	156Pm	29.45						
156Pm-80Kr1.950	8.7	80Kr	4.96	156Pm	3.77				
156Pm-86Kr1.814	3.5	156Pm	3.52						
156Pmm-u	63.4	156Pmm	63.43						
156Er-u	77.6	156Er	77.63						
156Dy-156Gd	100.0	156Gd	0.71	156Dy	99.28				
156Yb-156Tm	5.1	156Tm	4.46	156Yb	0.65				
156Tm(a)152Ho	96.9	152Ho	7.41	156Tm	89.51				
156Yb(a)152Er	97.5	152Er	15.25	156Yb	82.28				
156Hf(a)152Yb	65.3	156Hf	65.29						
156Hfm(a)152Yb	37.1	156Hfm	37.09						
154Sm(t,p)156Sm	11.6	154Sm	0.11	156Sm	11.45				
154Eu(t,p)156Eu	71.0	154Eu	0.95	156Eu	70.08				
155Gd(n,g)156Gd	99.8	155Gd	70.08	156Gd	29.76				
155Gd(a,t)156Tb-158Gd()15	100.0	156Tb	100.00						
156Dy(d,t)155Dy	92.2	155Dy	92.12	156Dy	0.08				
156Pmm(IT)156Pm	99.8	156Pm	63.27	156Pmm	36.57				
156Sm(B-)156Eu	90.2	156Sm	88.55	156Eu	1.66				
156Eu(B-)156Gd	28.4	156Eu	28.26	156Gd	0.13				
156Tm(B+)156Er	28.4	156Er	22.37	156Tm	6.03				
156Hfm(IT)156Hf	97.6	156Hf	34.70	156Hfm	62.89				
157Nd-u	99.5	157Nd	99.50						
157Nd-80Kr1.963	0.3	80Kr	0.10	157Nd	0.25				

157Nd-86Kr1.826	0.2	157Nd	0.25						
157Pm-u	33.5	157Pm	33.47						
157Pm-80Kr1.963	33.9	80Kr	0.85	157Pm	33.05				
157Pm-86Kr1.826	33.5	157Pm	33.47						
157Sm-u	32.9	157Sm	32.89						
157Sm-80Kr1.963	36.4	80Kr	2.18	157Sm	34.23				
157Sm-86Kr1.826	32.9	157Sm	32.89						
157Ho-u	70.5	157Ho	70.53						
157Er-u	90.0	157Er	89.96						
157Tm-u	74.6	157Tm	74.56						
157Lu-u	17.4	157Lu	17.44						
157Yb-157Tm	29.3	157Tm	25.44	157Yb	3.87				
157Yb(a)153Er	98.0	153Er	5.01	157Yb	93.02				
157Lum(a)153Tm	99.3	153Tm	53.60	157Lum	45.67				
156Gd(n,g)157Gd	98.6	156Gd	73.51	157Gd	25.10				
156Gd(a,t)157Tb-158Gd()15	16.1	156Gd	-3.15	157Tb	5.58	158Gd	3.74	159Tb	9.91
156Dy(d,p)157Dy	52.5	156Dy	0.64	157Dy	51.81				
157Tb(e)157Gd	98.1	157Gd	3.70	157Tb	94.42				
157Ho(B+)157Dy	22.6	157Dy	0.83	157Ho	21.80				
157Er(B+)157Ho	17.7	157Ho	7.67	157Er	10.04				
157Lum(IT)157Lu	99.6	157Lu	82.56	157Lum	17.05				
158Pm-u	75.1	158Pm	75.05						
158Sm-u	29.2	158Sm	29.20						
158Sm-80Kr1.975	32.8	80Kr	1.79	158Sm	31.00				
158Sm-86Kr1.837	29.8	158Sm	29.83						
158Eu-u	98.4	158Eu	98.35						
158Er-u	81.4	158Er	81.45						
158Tm-u	81.4	158Tm	81.45						
158Yb-142Sm1.113	15.1	142Sm	0.49	158Yb	14.60				
158Pm-158Gd	59.6	158Pm	24.95	158Gd	34.64				
158Yb(a)154Er	79.6	154Er	8.42	158Yb	71.14				
158Hf(a)154Yb	100.0	158Hf	100.00						
158Gd(t,a)157Eu-156Gd()15	69.2	155Eu	1.82	156Gd	-0.95	157Eu	67.33	158Gd	0.96
157Gd(n,g)158Gd	99.5	157Gd	63.02	158Gd	36.49				
158Gd(d,t)157Gd-159Tb()15	18.1	157Gd	0.27	158Gd	-0.19	158Tb	17.61	159Tb	0.39
157Gd(a,t)158Tb-158Gd()15	40.7	157Gd	0.61	158Gd	-0.43	158Tb	39.63	159Tb	0.88
158Dy(d,t)157Dy	52.5	157Dy	47.36	158Dy	5.16				
158Sm(B-)158Eu	11.6	158Sm	9.98	158Eu	1.65				
158Tb(B-)158Dy	17.0	158Tb	3.15	158Dy	13.86				
158Tm(B+)158Er	37.1	158Er	18.55	158Tm	18.55				
159Pm-u	35.8	159Pm	35.85						
159Pm-80Kr1.988	32.4	80Kr	0.41	159Pm	31.98				
159Pm-86Kr1.849	32.2	159Pm	32.17						
159Sm-u	33.5	159Sm	33.54						
159Sm-80Kr1.988	34.1	80Kr	1.21	159Sm	32.93				
159Sm-86Kr1.849	33.5	159Sm	33.54						
159Eu-u	21.5	159Eu	21.51						
159Eu-80Kr1.988	22.8	80Kr	1.73	159Eu	21.04				
159Eu-86Kr1.849	21.5	159Eu	21.51						
159Tb 35Cl2-155Gd 37Cl2	10.3	35Cl	0.08	37Cl	0.15	155Gd	2.88	159Tb	7.22
159Tb 35Cl-157Gd 37Cl	27.7	35Cl	0.04	37Cl	0.09	157Gd	7.31	159Tb	20.31
159Tam(a)155Lu	100.0	155Lu	100.00						
158Gd(n,g)159Gd	99.8	158Gd	6.52	159Gd	93.24				
158Gd(a,t)159Tb-164Dy()16	21.4	158Gd	0.67	159Tb	9.99	164Dy	4.89	165Ho	5.81
159Tb(d,t)158Tb-164Dy()16	40.8	158Tb	39.61	159Tb	0.94	163Dy	-0.12	164Dy	0.41
159Gd(B-)159Tb	25.0	159Gd	6.76	159Tb	18.21				
159Dy(e)159Tb	79.2	159Tb	14.39	159Dy	64.86				
160Er-u	94.7	160Er	94.75						
160Tm-u	89.9	160Tm	89.94						
160Gd 35Cl-158Gd 37Cl	49.9	35Cl	0.06	37Cl	0.12	158Gd	10.44	160Gd	39.31
160Dy 35Cl-158Dy 37Cl	17.7	37Cl	0.01	158Dy	17.49	160Dy	0.16		
160Gd-160Dy	35.1	160Gd	28.66	160Dy	6.44				
160Hf(a)156Yb	98.9	156Yb	17.07	160Hf	81.82				
160W(a)156Hf	100.0	160W	100.00						
160Dy(p,t)158Dy	64.1	158Dy	63.48	160Dy	0.58				
160Gd(t,a)159Eu-158Gd()15	69.2	157Eu	32.67	158Gd	-0.96	159Eu	35.95	160Gd	1.50
159Tb(n,g)160Tb	99.2	159Tb	6.18	160Tb	93.02				

160Tm(B+)160Er	15.3	160Er	5.25	160Tm	10.06				
161Sm-u	31.7	161Sm	31.69						
161Sm-80Kr2.013	37.6	80Kr	0.99	161Sm	36.62				
161Sm-86Kr1.872	31.7	161Sm	31.69						
161Eu-u	34.5	161Eu	34.53						
161Eu-80Kr2.013	34.7	80Kr	0.41	161Eu	34.31				
161Eu-86Kr1.872	31.2	161Eu	31.16						
161Hf-u	70.4	161Hf	70.40						
161Dy 35Cl-159Tb 37Cl	22.1	35Cl	0.03	37Cl	0.06	159Tb	17.77	161Dy	4.27
161Hf(a)157Yb	20.7	157Yb	3.10	161Hf	17.55				
161Tam(a)157Lum	93.8	157Lum	37.29	161Tam	56.51				
161Dy(p,t)159Dy	38.6	159Dy	35.14	161Dy	3.47				
160Gd(a,t)161Tb-158Gd()15	55.5	158Gd	8.12	159Tb	-6.18	160Gd	30.53	161Tb	23.01
160Tb(n,g)161Tb	84.0	160Tb	6.98	161Tb	76.99				
160Dy(n,g)161Dy	99.9	160Dy	92.82	161Dy	7.07				
160Dy(3He,d)161Ho-164Dy()	100.0	161Ho	100.00						
161Re(p)160W	79.2	161Re	79.16						
161Rem(IT)161Re	99.0	161Re	20.85	161Rem	78.18				
162Sm-136Xe1.191	50.9	162Sm	50.93						
162Sm-84Kr1.929	49.1	162Sm	49.07						
162Eu-84Kr1.929	77.7	162Eu	77.73						
162Eu-133Cs1.218	5.5	162Eu	5.53						
162Eum-84Kr1.929	47.9	162Eum	47.88						
162Eum-133Cs1.218	36.2	162Eum	36.17						
162Eum-162Eu	32.7	162Eu	16.74	162Eum	15.96				
162Er-162Dy	99.9	162Er	99.93						
162Hf(a)158Yb	95.2	158Yb	14.26	162Hf	80.96				
162W(a)158Hf	100.0	162W	100.00						
161Dy(n,g)162Dy	99.9	161Dy	85.20	162Dy	14.71				
161Dy(3He,d)162Ho-164Dy()	100.0	162Ho	100.00						
163Gd-82Kr1.988	50.8	163Gd	50.79						
163Gdm-82Kr1.988	50.8	163Gdm	50.79						
163Hf-u	84.5	163Hf	84.53						
163Ho-163Dy	41.5	163Dy	19.61	163Ho	21.93				
163Dy O-C15	33.3	163Dy	33.29						
163Ho O-C15	26.2	163Ho	26.17						
163Rem(a)159Tam	100.0	159Tam	100.00						
162Dy(n,g)163Dy	99.8	162Dy	106.21	163Dy	-6.39				
162Dy(3He,d)163Ho-164Dy()	56.0	162Dy	-20.92	163Ho	21.05	164Dy	21.20	165Ho	34.65
162Er(d,p)163Er	21.0	162Er	0.07	163Er	20.92				
163Gdm(IT)163Gd	98.4	163Gd	49.21	163Gdm	49.21				
163Ho(e)163Dy	58.4	163Dy	27.58	163Ho	30.85				
163Er(B+)163Ho	58.2	163Er	58.15						
164Eu-136Xe1.206	32.4	164Eu	32.40						
164Eu-84Kr1.952	67.6	164Eu	67.60						
164Gd-84Kr1.952	80.0	164Gd	80.00						
164Tm-u	75.0	164Tm	74.99						
164Hf-u	32.0	164Hf	32.01						
164Gd-171Yb.959	20.0	164Gd	20.00						
164Er-164Dy	100.0	164Dy	0.02	164Er	99.97				
164W(a)160Hf	99.3	160Hf	18.18	164W	81.16				
164Os(a)160W	80.0	164Os	79.99						
163Dy(n,g)164Dy	99.4	163Dy	26.01	164Dy	73.43				
163Dy(3He,d)164Ho-164Dy()	67.1	163Dy	0.02	164Dy	0.06	164Ho	67.09	165Ho	-0.03
164Er(d,t)163Er	20.9	163Er	20.93	164Er	0.01				
164Tm(B+)164Er	25.0	164Er	0.01	164Tm	25.01				
165Eu-136Xe1.213	74.1	165Eu	74.12						
165Eu-84Kr1.964	25.9	165Eu	25.88						
165Gd-84Kr1.964	87.1	165Gd	87.11						
165Tb-136Xe1.213	15.5	165Tb	15.52						
165Tb-84Kr1.964	84.5	165Tb	84.48						
165Yb-u	90.2	165Yb	90.19						
165Lu-u	90.2	165Lu	90.19						
165Ta-u	23.6	165Ta	23.59						
165W-u	84.9	165W	84.94						
165Gd O-171Yb1.058	12.9	165Gd	12.89						
165W(a)161Hf	27.1	161Hf	12.05	165W	15.06				

165Rem(a)161Tam	98.7	161Tam	43.49	165Rem	55.19				
165Irm(a)161Rem	70.2	161Rem	21.82	165Irm	48.38				
165Ho(g,n)164Ho	32.9	164Ho	32.91	165Ho	0.03				
164Er(n,g)165Er	96.0	164Er	-0.12	165Er	96.11				
164Er(a,t)165Tm-168Er()16	55.4	164Er	0.12	165Tm	48.45	168Er	0.58	169Tm	6.28
165Irm(p)164Os	71.6	164Os	20.01	165Irm	51.62				
165Tm(B+)165Er	55.4	165Er	3.89	165Tm	51.55				
165Lu(B+)165Yb	19.6	165Yb	9.81	165Lu	9.81				
166Tb-136Xe1.221	14.7	166Tb	14.67						
166Tb-84Kr1.976	85.3	166Tb	85.33						
166W-u	11.5	166W	11.47						
166W(a)162Hf	96.9	162Hf	19.04	166W	77.89				
166Os(a)162W	100.0	166Os	100.00						
165Ho(n,g)166Ho	100.0	165Ho	51.05	166Ho	48.95				
166Ho(B-)166Er	55.7	166Ho	51.06	166Er	4.59				
167Gd-136Xe1.228	18.5	167Gd	18.53						
167Gd-84Kr1.988	81.5	167Gd	81.47						
167Tb-136Xe1.228	25.5	167Tb	25.52						
167Tb-84Kr1.988	74.5	167Tb	74.48						
167W(a)163Hf	23.0	163Hf	15.47	167W	7.49				
167Irm(a)163Rem	100.0	163Rem	100.00						
166Er(n,g)167Er	98.7	166Er	95.37	167Er	3.29				
166Er(a,t)167Tm-168Er()16	99.4	166Er	0.04	167Tm	99.01	168Er	-0.01	169Tm	0.34
167Ir(p)166Os	76.6	167Ir	76.63						
167Yb(B+)167Tm	90.1	167Tm	0.99	167Yb	89.11				
167Irm(IT)167Ir	93.7	167Ir	23.37	167Irm	70.35				
168Lu-u	54.9	168Lu	54.94						
168W-u	22.5	168W	22.50						
168Yb-170Yb.988	99.4	168Yb	99.39						
168Yb-168Er	95.6	168Er	94.98	168Yb	0.61				
168W(a)164Hf	86.8	164Hf	67.99	168W	18.85				
168Os(a)164W	98.8	164W	18.84	168Os	79.95				
167Er(n,g)168Er	99.2	167Er	95.79	168Er	3.45				
167Er(a,t)168Tm-168Er()16	100.0	168Tm	100.00						
168Yb(d,t)167Yb	10.9	167Yb	10.89						
168Lu(B+)168Yb	45.1	168Lu	45.06						
169W-u	30.5	169W	30.51						
169Tm 35Cl2-165Ho 37Cl2	16.1	35Cl	0.07	37Cl	0.14	165Ho	8.50	169Tm	7.36
169Tm 35Cl-167Er 37Cl	8.9	35Cl	0.02	37Cl	0.03	167Er	0.91	169Tm	7.97
169Rem(a)165Ta	99.1	165Ta	76.41	169Rem	22.67				
169Irm(a)165Rem	98.6	165Rem	44.81	169Irm	53.80				
170Yb-129Xe1.318	55.0	129Xe	1.39	170Yb	53.60				
170Yb-132Xe1.288	47.2	132Xe	0.78	170Yb	46.40				
170W-u	22.3	170W	22.27						
170Re-u	19.6	170Re	19.63						
170Os-u	11.4	170Os	11.42						
170Er 35Cl-168Er 37Cl	10.9	35Cl	0.01	37Cl	0.02	168Er	0.15	170Er	10.71
170Os(a)166W	99.2	166W	10.65	170Os	88.58				
170Pt(a)166Os	84.4	170Pt	84.38						
169Tm(n,g)170Tm	98.8	169Tm	65.76	170Tm	33.04				
170Tm(B-)170Yb	67.0	170Tm	66.96						
171Yb-129Xe1.326	100.0	171Yb	99.99						
171Os-u	85.3	171Os	85.27						
171Os(a)167W	99.6	167W	92.51	171Os	7.10				
171Aum(a)167Irm	68.6	167Irm	29.65	171Aum	38.99				
170Er(n,g)171Er	97.8	170Er	25.31	171Er	72.47				
170Er(a,t)171Tm-168Er()16	79.8	168Er	0.84	169Tm	12.28	170Er	62.61	171Tm	4.05
170Yb(a,t)171Lu-174Yb()17	72.7	171Lu	61.48	175Lu	11.20				
171Aum(p)170Pt	76.6	170Pt	15.62	171Aum	61.01				
171Er(B-)171Tm	29.1	171Er	27.53	171Tm	1.57				
171Tm(B-)171Yb	94.4	171Tm	94.38						
171Lu(B+)171Yb	38.5	171Lu	38.52						
172Yb-132Xe1.303	100.0	172Yb	100.00						
172Re-u	51.9	172Re	51.90						
172Os(a)168W	92.8	168W	58.65	172Os	34.11				
172Pt(a)168Os	97.3	168Os	20.05	172Pt	77.20				
170Er(t,p)172Er	88.8	170Er	1.36	172Er	87.44				

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171Yb(a,t)172Lu-174Yb()17 100.0  172Lu  100.00
172Er(B-)172Tm            82.5  172Er   12.56  172Tm   69.95
172Tm(B-)172Yb            30.0  172Tm   30.05
173Yb-129Xe1.341          57.9  129Xe    1.14  173Yb   56.73
173Yb-132Xe1.311          43.9  132Xe    0.64  173Yb   43.27
173Os-u                   28.7  173Os   28.65
173Os(a)169W              96.9  169W    69.49  173Os   27.44
173Ir(a)169Rem            89.7  169Rem  77.33  173Ir   12.41
173Aum(a)169Irm           98.5  169Irm  46.20  173Aum  52.28
172Yb(a,t)173Lu-174Yb()17 100.0  173Lu  100.00
174Yb-129Xe1.349          71.0  129Xe    1.11  174Yb   69.88
174Yb-132Xe1.318          30.7  132Xe    0.62  174Yb   30.11
174Os-u                   13.4  174Os   13.43
174Os(a)170W              89.6  170W    77.73  174Os   11.84
174Irm(a)170Re            98.4  170Re   80.37  174Irm  17.98
173Yb(a,t)174Lu-174Yb()17 100.0  174Lu  100.00
175Os-u                   17.7  175Os   17.74
175Ir-u                   19.6  175Ir   19.64
175Lu 35Cl-173Yb 37Cl     13.8   35Cl    0.02   37Cl    0.03  175Lu   13.70
175Pt(a)171Os             99.7  171Os    7.63  175Pt   92.04
174Yb(n,g)175Yb           99.9  175Yb   99.92
174Hf(n,g)175Hf           99.5  174Hf   13.83  175Hf   85.67
175Yb(B-)175Lu            54.3  175Yb    0.08  175Lu   54.24
176Yb-129Xe1.364          74.2  129Xe    0.47  176Yb   73.73
176Yb-132Xe1.333          26.5  132Xe    0.26  176Yb   26.27
176Lu 37Cl-143Nd 35Cl2    24.7   35Cl    0.05   37Cl    0.04  143Nd   12.82  176Lu   11.80
176Os-u                   15.3  176Os   15.32
176Ir-u                    8.4  176Ir    8.37
176Hf 35Cl-174Hf 37Cl     76.1   35Cl    0.01   37Cl    0.02  174Hf   74.24  176Hf    1.88
176Ir(a)172Re             49.4  172Re   48.10  176Ir    1.31
176Pt(a)172Os             99.4  172Os   65.89  176Pt   33.53
176Hg(a)172Pt             94.7  172Pt   22.80  176Hg   71.88
176Hf(p,t)174Hf           12.2  174Hf   11.93  176Hf    0.30
175Lu(n,g)176Lu           99.7  175Lu   20.86  176Lu   78.89
176Lu(B-)176Hf            76.5  176Lu    1.87  176Hf   74.59
177Pt-u                   28.8  177Pt   28.76
177Pt(a)173Os             99.2  173Os   43.91  177Pt   55.26
177Au(a)173Ir             98.5  173Ir   87.59  177Au   10.91
177Tlm(a)173Aum           85.5  173Aum  47.72  177Tlm  37.79
177Hf(p,t)175Hf           15.8  175Hf   14.33  177Hf    1.44
176Lu(n,g)177Lu           99.3  176Lu    7.44  177Lu   91.83
177Tlm(p)176Hg            90.3  176Hg   28.12  177Tlm  62.21
177Lu(B-)177Hf            78.4  177Lu    8.11  177Hf   70.30
178Yb-85Rb2.094           56.6  178Yb   56.60
178Os-u                   23.8  178Os   23.77
178Ir-u                   45.4  178Ir   45.36
178Pt-u                   13.1  178Pt   13.12
178Aun-133Cs1.338         87.3  178Aun  87.32
178Pt(a)174Os             99.1  174Os   74.73  178Pt   24.39
178Aun(a)174Irm           94.7  174Irm  82.02  178Aun  12.68
176Yb(t,p)178Yb           43.4  178Yb   43.40
176Lu(t,p)178Lum          34.3  176Lu    0.01  178Lum  34.26
177Hf(n,g)178Hf           99.2  177Hf   28.26  178Hf   70.91
178Lum(IT)178Lu           76.3  178Lu   10.59  178Lum  65.74
179Re-u                   77.7  179Re   77.74
179Os-u                   30.8  179Os   30.78
179Ir-u                   12.2  179Ir   12.23
179Au-u                   16.4  179Au   16.40
179Hg-208Pb.861           78.8  179Hg   78.78
179Pt(a)175Os             89.5  175Os   82.26  179Pt    7.21
179Au(a)175Ir             97.3  175Ir   80.36  179Au   16.95
179Hg(a)175Pt             29.2  175Pt    7.97  179Hg   21.22
179Hf(t,a)178Lu-178Hf()17 89.5  177Lu    0.06  178Lu   89.41  178Hf   -0.04  179Hf    0.06
178Hf(n,g)179Hf           99.8  178Hf   29.13  179Hf   70.70
179Ta(e)179Hf             99.4  179Hf    6.45  179Ta   92.98
179Re(B+)179W             28.7  179W     6.47  179Re   22.26
180Os-u                   31.7  180Os   31.65
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180Pt-u	12.9	180Pt	12.90						
180Au-133Cs1.353	92.9	180Au	92.91						
180Hg-208Pb.865	38.0	180Hg	38.04						
180W-180Hf	98.2	180Hf	16.54	180W	81.67				
180W(a)176Hf	41.5	176Hf	23.23	180W	18.27				
180Pt(a)176Os	97.2	176Os	84.68	180Pt	12.48				
180Au(a)176Ir	93.4	176Ir	90.32	180Au	3.13				
180Hg(a)176Pt	99.3	176Pt	66.47	180Hg	32.83				
180Hf(t,a)179Lu-178Hf()17	100.0	179Lu	100.00						
179Hf(n,g)180Hf	99.5	179Hf	16.02	180Hf	83.46				
180W(d,t)179W	93.6	179W	93.53	180W	0.06				
181Ta O-202Tl.975	56.4	181Ta	26.06	202Tl	30.34				
181Os-u	64.0	181Os	64.01						
181Pt-u	48.0	181Pt	47.98						
181Hg-208Pb.870	17.0	181Hg	17.04						
181Tl-133Cs1.361	78.9	181Tl	78.91						
181Ta 35Cl-179Hf 37Cl	15.2	35Cl	0.01	37Cl	0.01	179Hf	6.78	181Ta	8.45
181Hg(a)177Pt	98.9	177Pt	15.97	181Hg	82.96				
181Tl(a)177Au	98.0	177Au	89.09	181Tl	8.90				
181Ta(p,t)179Ta	15.0	179Ta	7.02	181Ta	8.02				
182Os-u	60.6	182Os	60.55						
182Ir-u	56.3	182Ir	56.30						
182Pt-u	21.9	182Pt	21.93						
182Au-u	45.1	182Au	45.09						
182Hg-u	12.2	182Hg	12.23						
182Hg-208Pb.875	55.5	182Hg	55.47						
182Pt(a)178Os	97.4	178Os	76.23	182Pt	21.22				
182Au(a)178Ir	98.6	178Ir	54.64	182Au	43.96				
182Hg(a)178Pt	94.8	178Pt	62.49	182Hg	32.30				
181Ta(n,g)182Ta	99.9	181Ta	31.10	182Ta	68.79				
182Ta(B-)182W	34.4	182Ta	31.21	182W	3.23				
183W O-C2 35Cl5	16.3	35Cl	0.69	183W	15.61				
183Os-u	76.7	183Os	76.72						
183Ir-u	77.9	183Ir	77.95						
183Pt-u	22.7	183Pt	22.74						
183Au-u	11.4	183Au	11.37						
183Hg-208Pb.880	32.0	183Hg	31.97						
183Tl-133Cs1.376	82.9	183Tl	82.94						
183W 35Cl-181Ta 37Cl	29.2	35Cl	0.02	37Cl	0.03	181Ta	26.38	183W	2.75
183Pt(a)179Os	92.6	179Os	69.22	183Pt	23.37				
183Au(a)179Ir	99.0	179Ir	87.77	183Au	11.25				
183Hg(a)179Pt	98.4	179Pt	92.79	183Hg	5.59				
183Tlm(a)179Au	83.7	179Au	66.65	183Tlm	17.10				
182W(n,g)183W	100.0	182W	102.81	183W	-2.86				
183Ir(B+)183Os	27.9	183Os	23.28	183Ir	4.60				
183Tlm(IT)183Tl	100.0	183Tl	17.06	183Tlm	82.90				
184W-u	28.3	184W	28.28						
184Os-u	24.4	184Os	24.39						
184Pt-u	27.8	184Pt	27.84						
184Hg-u	23.2	184Hg	23.20						
184Hg-204Pb.902	26.1	184Hg	26.10	204Pb	0.01				
184Hg-208Pb.885	28.9	184Hg	28.92						
184Tl-133Cs1.383	21.5	184Tl	21.46						
184Os-184W	46.5	184W	15.68	184Os	30.79				
184Pt(a)180Os	93.9	180Os	68.35	184Pt	25.56				
184Hg(a)180Pt	96.4	180Pt	74.62	184Hg	21.77				
184Tl(a)180Au	82.5	180Au	3.97	184Tl	78.54				
184Pb(a)180Hg	98.7	180Hg	29.13	184Pb	69.59				
183W(n,g)184W	98.9	183W	73.02	184W	25.86				
185Pt-u	39.7	185Pt	39.72						
185Hg-u	11.1	185Hg	11.07						
185Hg-208Pb.889	25.5	185Hg	25.48						
185Pt(a)181Os	96.3	181Os	35.99	185Pt	60.28				
185Hg(a)181Pt	97.3	181Pt	52.02	185Hg	45.25				
185Bim(a)181Tl	75.7	181Tl	12.19	185Bim	63.50				
184W(n,g)185W	99.9	184W	15.40	185W	84.46				
185Re(d,t)184Re-187Re()18	100.0	184Re	100.00						

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184Os(n,g)185Os            95.2  184Os   44.39  185Os   50.83
185Bim(p)184Pb             66.9  184Pb   30.41  185Bim  36.50
185W(B-)185Re              43.8  185W    15.54  185Re   28.21
185Os(e)185Re              87.8  185Re   38.63  185Os   49.17
186Pt-u                    60.6  186Pt   60.55
186Au-u                    56.3  186Au   56.30
186Hg-u                    17.3  186Hg   17.34
186Hg-204Pb.912            56.3  186Hg   56.34  204Pb    0.01
186Tl-133Cs1.398           86.2  186Tl   86.15
186W 35Cl-184W 37Cl        12.6   35Cl    0.01   37Cl    0.02  184W     1.90  186W    10.67
186Pt(a)182Os              78.9  182Os   39.45  186Pt   39.45
186Au(a)182Ir              87.4  182Ir   43.70  186Au   43.70
186Hg(a)182Pt              83.2  182Pt   56.85  186Hg   26.32
186Tl(a)182Au              24.8  182Au   10.95  186Tl   13.85
186W(p,t)184W-184W()182W   41.5  182W    -6.04  184W    12.87  186W    34.69
185Re(n,g)186Re            99.9  185Re   27.61  186Re   72.30
186Re(B-)186Os             48.8  186Re   27.70  186Os   21.15
187Pt-u                    74.2  187Pt   74.17
187Au-u                    64.8  187Au   64.82
187Hg-u                    14.7  187Hg   14.70
187Hg-208Pb.899            47.6  187Hg   47.61
187Pb-133Cs1.406           85.9  187Pb   85.85
187Re 35Cl-185Re 37Cl       9.5   35Cl    0.01   37Cl    0.03  185Re    5.55  187Re    3.95
187Re-187Os                57.8  187Re   51.70  187Os    6.08
187Au(a)183Ir              31.4  183Ir   17.45  187Au   13.92
187Hg(a)183Pt              48.7  183Pt   28.93  187Hg   19.74
187Hgm(a)183Pt             52.3  183Pt   24.96  187Hgm  27.34
187Tlm(a)183Au             91.2  183Au   77.38  187Tlm  13.86
187Pb(a)183Hg              76.6  183Hg   62.44  187Pb   14.15
186W(n,g)187W             100.0  186W    54.64  187W    45.33
186Os(n,g)187Os            69.8  186Os   39.45  187Os   30.32
187W(B-)187Re              62.9  187W    54.67  187Re    8.25
187Re(B-)187Os             40.1  187Re   35.92  187Os    4.23
187Au(B+)187Pt             47.1  187Pt   25.83  187Au   21.26
187Hgm(IT)187Hg            46.4  187Hg   17.95  187Hgm  28.44
187Tlm(IT)187Tl            44.7  187Tl   30.76  187Tlm  13.92
187Pbm(IT)187Pb            60.7  187Pbm  60.68
188Hg-u                     5.9  188Hg    5.89
188Hg-208Pb.904            19.2  188Hg   19.15
188Pt(a)184Os              65.1  184Os    0.43  188Pt   64.71
188Hg(a)184Pt              52.2  184Pt   46.61  188Hg    5.58
187Os(n,g)188Os            98.3  187Os   57.49  188Os   40.79
188Ir(B+)188Os             32.0  188Os    0.07  188Ir   31.94
188Pt(e)188Ir              75.5  188Ir   68.06  188Pt    7.40
189Hg-u                    65.0  189Hg   65.04
189Hgm-208Pb.909           92.1  189Hgm  92.07
189Pb-u                    19.7  189Pb   19.71
189Pb(a)185Hg              82.4  185Hg   15.23  189Pb   67.21
189Pbm(a)185Hg             27.6  185Hg    2.96  189Pbm  24.66
188Os(n,g)189Os            80.3  188Os   59.14  189Os   21.12
189Pt(B+)189Ir             46.5  189Ir   30.29  189Pt   16.20
189Hgm(IT)189Hg            42.9  189Hg   34.96  189Hgm   7.93
189Pbm(IT)189Pb            88.4  189Pb   13.08  189Pbm  75.34
190W-u                     74.6  190W    74.56
190Hg-208Pb.913            72.6  190Hg   72.58
190Tlm-133Cs1.429          63.8  190Tlm  63.82
186Os-190Pt.979            53.1  186Os   39.41  190Pt   13.72
190Os-190Pt                62.1  190Os   29.50  190Pt   32.56
190Pt(p,t)188Pt            28.1  188Pt   27.90  190Pt    0.19
189Os(n,g)190Os            97.1  189Os   78.88  190Os   18.27
190Pt(p,d)189Pt            83.8  189Pt   83.80  190Pt    0.01
190W(B-)190Re              25.8  190W    25.44  190Re    0.36
191Au-133Cs1.436           99.6  191Au   99.55
191Hg-u                    22.0  191Hg   21.97
191Hg-208Pb.918            68.0  191Hg   67.96
191Pb-u                     4.1  191Pb    4.11
191Bi-133Cs1.436           87.4  191Bi   87.35
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191Pbm(a)187Hgm	51.3	187Hgm	44.22	191Pbm	7.11				
191Bi(a)187Tl	71.3	187Tl	69.24	191Bi	2.04				
191Bi(a)187Tlm	82.8	187Tlm	72.22	191Bi	10.60				
191Po(a)187Pb	93.9	191Po	93.93						
191Po(a)187Pbm	45.4	187Pbm	39.32	191Po	6.07				
191Ir(p,t)189Ir	69.9	189Ir	69.71	191Ir	0.19				
190Os(n,g)191Os	99.9	190Os	0.57	191Os	99.35				
191Os(B-)191Ir	90.4	191Os	0.65	191Ir	89.75				
191Hg(B+)191Au	10.5	191Au	0.45	191Hg	10.07				
192Pb(a)188Hg	88.0	188Hg	69.37	192Pb	18.59				
192Os(p,t)190Os	50.6	190Os	0.02	192Os	50.59				
192Pt(p,t)190Pt	13.0	190Pt	0.18	192Pt	12.78				
191Ir(n,g)192Ir	99.9	191Ir	8.47	192Ir	91.42				
192Pt(p,d)191Pt	22.9	191Pt	25.95	192Pt	-3.01				
192Pt(p,d)191Pt-194Pt()19	80.7	191Pt	74.05	192Pt	3.01	193Pt	3.61	194Pt	0.06
192Ir(B-)192Pt	89.8	192Ir	2.55	192Pt	87.22				
193Hg-208Pb.928	32.9	193Hg	32.93						
193Pb-u	8.1	193Pb	8.10						
193Bi-133Cs1.451	62.0	193Bi	62.01						
193Bi(a)189Tl	92.2	189Tl	70.33	193Bi	21.90				
193Bim(a)189Tl	93.8	189Tl	29.67	193Bim	64.11				
192Os(n,g)193Os	99.9	192Os	18.63	193Os	81.24				
193Ir(t,a)192Os-191Ir()19	30.9	190Os	0.01	191Ir	1.59	192Os	30.69	193Ir	-1.42
192Ir(n,g)193Ir	99.7	192Ir	6.00	193Ir	93.72				
193Os(B-)193Ir	23.0	193Os	18.76	193Ir	4.28				
193Pt(e)193Ir	99.8	193Ir	3.42	193Pt	96.39				
193Hg(B+)193Au	74.5	193Au	7.47	193Hg	67.07				
194Pt-u	63.1	194Pt	63.11						
190Os-194Pt.979	57.0	190Os	51.62	194Pt	5.34				
190Pt-194Pt.979	58.1	190Pt	53.33	194Pt	4.74				
194Pb(a)190Hg	67.1	190Hg	27.42	194Pb	39.63				
194Bin(a)190Tlm	78.1	190Tlm	36.18	194Bin	41.93				
194Pt(d,a)192Ir-192Os()19	99.8	190Re	99.64	192Os	0.09	192Ir	0.03		
195Hg-208Pb.938	78.6	195Hg	78.62						
195Tl-u	22.0	195Tl	22.01						
195Tl-133Cs1.466	21.8	195Tl	21.85						
195Pb-u	4.7	195Pb	4.74						
195Bi-133Cs1.466	89.5	195Bi	89.47						
195Po-133Cs1.466	96.6	195Po	96.59						
195Pom-133Cs1.466	93.8	195Pom	93.84						
195Po(a)191Pb	99.3	191Pb	95.89	195Po	3.41				
195Pom(a)191Pbm	99.0	191Pbm	92.89	195Pom	6.16				
194Pt(n,g)195Pt	98.8	194Pt	26.75	195Pt	72.08				
195Au(e)195Pt	100.0	195Pt	0.01	195Au	99.96				
195Hg(B+)195Au	21.4	195Au	0.04	195Hg	21.38				
195Pbm(IT)195Pb	99.9	195Pb	95.26	195Pbm	4.65				
196Pb-208Pb.942	21.3	196Pb	21.31						
196Po-133Cs1.474	84.1	196Po	84.10						
196Po(a)192Pb	97.3	192Pb	81.41	196Po	15.90				
195Pt(n,g)196Pt	98.6	195Pt	27.91	196Pt	70.74				
196Au(B+)196Pt	17.9	196Pt	0.26	196Au	17.63				
196Au(B-)196Hg	60.7	196Au	30.66	196Hg	30.08				
197Pbm-133Cs1.481	73.6	197Pbm	73.59						
197Po-133Cs1.481	92.6	197Po	92.61						
197At-133Cs1.481	18.4	197At	18.36						
197Atm-133Cs1.481	41.8	197Atm	41.82						
197Au(a,8He)193Au	92.6	193Au	92.53	197Au	0.03				
197Po(a)193Pb	99.3	193Pb	91.90	197Po	7.39				
197At(a)193Bi	97.7	193Bi	16.09	197At	81.64				
197Atm(a)193Bim	94.1	193Bim	35.89	197Atm	58.18				
196Pt(n,g)197Pt	94.0	196Pt	29.00	197Pt	65.01				
197Au(g,n)196Au	52.2	196Au	51.71	197Au	0.48				
196Hg(n,g)197Hg	97.1	196Hg	12.95	197Hg	84.10				
197Pt(B-)197Au	70.0	197Pt	34.26	197Au	35.70				
197Pbm(IT)197Pb	100.0	197Pb	73.58	197Pbm	26.40				
198Hg-u	66.8	198Hg	66.77						
198Pb-208Pb.952	26.3	198Pb	26.31						

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198Bi-u                    97.3  198Bi   97.34
198Po-208Pb.952            60.5  198Po   60.52
198At-133Cs1.489           69.8  198At   69.84
198Hg 35Cl-196Hg 37Cl      57.3   37Cl    0.01  196Hg   56.96  198Hg    0.32
198Pt-197Au1.005           54.2  197Au    0.78  198Pt   53.46
198Po(a)194Pb              99.9  194Pb   60.37  198Po   39.48
198Atm(a)194Bin            95.3  194Bin  58.07  198Atm  37.27
198Pt(p,d)197Pt            47.3  197Pt    0.73  198Pt   46.54
197Au(n,g)198Au            99.3  197Au   63.01  198Au   36.31
198Au(B-)198Hg             65.8  198Au   43.91  198Hg   21.86
198Atm(IT)198At            83.8  198At   27.22  198Atm  56.62
199Hg-C2 35Cl5             35.3   35Cl    2.26  199Hg   33.00
199Hg-183W O               16.4  183W    11.49  199Hg    4.90
199Bi-u                    27.9  199Bi   27.93
199Pom-133Cs1.496          93.0  199Pom  92.98
199Bim(a)195Tl             92.5  195Tl   56.14  199Bim  36.40
199Pom(a)195Pbm            99.5  195Pbm  95.35  199Pom   4.12
199At(a)195Bi              99.6  195Bi   10.53  199At   89.02
199Hg(p,t)197Hg            16.1  197Hg   15.90  199Hg    0.24
198Au(n,g)199Au            99.8  198Au   19.78  199Au   79.99
199Au(B-)199Hg             36.8  199Au   20.01  199Hg   16.84
199Bim(IT)199Bi            97.5  199Bi   33.91  199Bim  63.60
200Au-u                    71.2  200Au   71.16
200Aum-u                   72.6  200Aum  72.57
200Hg 35Cl-198Hg 37Cl      27.5   35Cl    0.26   37Cl    0.28  198Hg   11.05  200Hg   15.95
200Po(a)196Pb              99.0  196Pb   78.69  200Po   20.32
199Hg(n,g)200Hg            98.2  199Hg   34.52  200Hg   63.71
200Au(B-)200Hg             28.8  200Au   28.84  200Hg    0.01
200Aum(B-)200Hg            27.4  200Aum  27.43  200Hg    0.01
201Hg 35Cl-199Hg 37Cl      43.3   35Cl    0.01   37Cl    0.22  199Hg   10.50  201Hg   32.57
201Po(a)197Pb              97.5  197Pb   26.42  201Po   71.09
201Pb(B+)201Tl             21.4  201Tl   11.06  201Pb   10.35
202Pb-133Cs1.519           85.6  202Pb   85.62
202Bi-u                    25.1  202Bi   25.10
202Hg 35Cl-200Hg 37Cl      31.7   35Cl    0.01   37Cl    0.17  200Hg    8.43  202Hg   23.13
202Tl-203Tl.995            70.8  202Tl   69.66  203Tl    1.10
202Po(a)198Pb              99.3  198Pb   73.69  202Po   25.58
202At(a)198Bi             100.0  198Bi    2.66  202At   97.34
202Frm(a)198At             26.7  198At    2.94  202Frm  23.77
202Frm(a)198Atm            82.3  198Atm   6.11  202Frm  76.23
202Hg(d,3He)201Au-206Pb() 100.0  201Au  100.00
201Hg(n,g)202Hg            96.8  201Hg   64.08  202Hg   32.72
203Po-133Cs1.526           68.9  203Po   68.92
203At-u                    14.4  203At   14.44
203Fr-133Cs1.526           15.5  203Fr   15.49
203At-208Pb.976            20.8  203At   20.80
203Rnm-208Pb.976            3.2  203Rnm   3.20
203Tl 35Cl-201Hg 37Cl       4.5   37Cl    0.02  201Hg    3.35  203Tl    1.12
203At(a)199Bi              99.9  199Bi   38.16  203At   61.69
203Rnm(a)199Pom            99.7  199Pom   2.89  203Rnm  96.80
203Fr(a)199At              95.5  199At   10.98  203Fr   84.51
203Tl(p,t)201Tl            88.9  201Tl   88.94  203Tl    0.01
202Hg(d,p)203Hg-204Hg()20  52.0  202Hg    0.75  203Hg    3.17  204Hg   -0.12  205Hg   48.16
203Hg(B-)203Tl             91.2  203Hg   90.46  203Tl    0.76
203Pb(e)203Tl              10.4  203Tl    0.02  203Pb   10.41
204Hg-u                    77.6  204Hg   77.56
204At-u                    84.0  204At   84.03
204Hg 35Cl2-200Hg 37Cl2    23.3   35Cl   -0.02   37Cl    0.37  200Hg   11.90  204Hg   11.06
204Rn-208Pb.981            80.6  204Rn   80.65
204Hg 35Cl-202Hg 37Cl      31.6   35Cl   -0.02   37Cl    0.09  202Hg   21.01  204Hg   10.49
204Pb(a,8He)200Pb          84.0  200Pb   84.03
204Po(a)200Pb              99.7  200Pb   15.97  204Po   83.77
204Rn(a)200Po              99.0  200Po   79.68  204Rn   19.35
204Pb(p,t)202Pb            14.4  202Pb   14.38  204Pb    0.03
204Hg(d,3He)203Au-206Pb() 100.0  203Au  100.00
204Hg(d,t)203Hg             7.3  203Hg    6.37  204Hg    0.89
203Tl(n,g)204Tl            93.5  203Tl   91.68  204Tl    1.86
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204Pb(p,d)203Pb	52.1	203Pb	52.08						
204Tl(B-)204Pb	97.0	204Tl	95.23	204Pb	1.79				
205Po-u	19.3	205Po	19.26						
205Rn-208Pb.986	31.9	205Rn	31.85	208Pb	0.01				
205Tl 35Cl-203Tl 37Cl	19.3	35Cl	0.07	37Cl	0.15	203Tl	5.30	205Tl	13.77
205Po(a)201Pb	94.9	201Pb	89.65	205Po	5.24				
205Rn(a)201Po	97.1	201Po	28.91	205Rn	68.15				
204Hg(d,p)205Hg	52.0	204Hg	0.12	205Hg	51.84				
205Tl(d,t)204Tl	63.9	204Tl	2.92	205Tl	60.98				
204Pb(n,g)205Pb	98.8	204Pb	98.05	205Pb	0.79				
205Bi(B+)205Pb	45.7	205Pb	0.02	205Bi	45.67				
206At-u	23.4	206At	23.43						
206Rn-133Cs1.549	37.6	206Rn	37.56						
206Pb 35Cl2-202Hg 37Cl2	23.8	35Cl	0.11	37Cl	0.55	202Hg	22.38	206Pb	0.78
206Rn-208Pb.990	37.6	206Rn	37.56						
206At(a)202Bi	97.6	202Bi	74.90	206At	22.70				
206Rn(a)202Po	99.3	202Po	74.42	206Rn	24.88				
206Fr(a)202At	100.0	202At	2.67	206Fr	97.29				
205Tl(n,g)206Tl	93.4	205Tl	9.47	206Tl	83.89				
205Tl(3He,d)206Pb	13.0	205Tl	12.99	206Pb	0.01				
205Pb(n,g)206Pb	99.6	205Pb	99.19	206Pb	0.46				
207Fr-133Cs1.556	88.8	207Fr	88.81						
207Po(a)203Pb	96.3	203Pb	37.51	207Po	58.83				
207Rn(a)203Po	97.3	203Po	31.08	207Rn	66.21				
207Fr(a)203At	12.0	203At	3.07	207Fr	8.91				
205Tl(t,p)207Tl	12.9	205Tl	0.10	207Tl	12.83				
206Pb(n,g)207Pb	99.4	206Pb	98.69	207Pb	0.66				
207Tl(B-)207Pb	45.1	207Tl	45.15						
207Po(B+)207Bi	43.7	207Bi	2.58	207Po	41.17				
208Pb-u	98.7	208Pb	98.67						
208Po-133Cs1.564	5.3	208Po	5.26						
208Fr-133Cs1.564	92.7	208Fr	92.67						
208Po(a)204Pb	94.8	204Pb	0.10	208Po	94.74				
208Rn(a)204Po	99.6	204Po	16.23	208Rn	83.40				
208Fr(a)204At	19.7	204At	15.97	208Fr	3.69				
207Pb(n,g)208Pb	99.8	207Pb	99.34	208Pb	0.47				
209Fr-226Ra.925	62.2	209Fr	61.74	226Ra	0.45				
209Bi(a)205Tl	12.3	205Tl	2.68	209Bi	9.62				
209At(a)205Bi	95.5	205Bi	54.33	209At	41.16				
209Rn(a)205Po	99.3	205Po	75.49	209Rn	23.80				
209Bi(p,t)207Bi	97.7	207Bi	97.42	209Bi	0.33				
208Pb(d,p)209Pb	11.3	209Pb	11.29						
209Pb(B-)209Bi	91.2	209Pb	87.42	209Bi	3.81				
210Fr-226Ra.929	36.2	210Fr	35.84	226Ra	0.32				
210Ac-u	15.6	210Ac	15.62						
210Bi(a)206Tl	49.8	206Tl	16.11	210Bi	33.67				
210Po(a)206Pb	99.8	206Pb	0.05	210Po	99.73				
210Fr(a)206At	96.5	206At	53.87	210Fr	42.60				
210Ac(a)206Fr	87.1	206Fr	2.71	210Ac	84.38				
209Bi(n,g)210Bi	99.9	209Bi	86.24	210Bi	13.61				
210Pb(B-)210Bi	99.7	210Pb	98.82	210Bi	0.83				
210Bi(B-)210Po	52.2	210Bi	51.89	210Po	0.27				
211Fr-133Cs1.586	73.6	211Fr	73.62						
211Fr-226Ra.934	26.7	211Fr	26.38	226Ra	0.35				
211Ra-133Cs1.586	39.3	211Ra	39.35						
211Ra-u	3.9	211Ra	3.90						
211Ac-u	29.6	211Ac	29.64						
211Bi(a)207Tl	99.8	207Tl	42.03	211Bi	57.79				
211Ra(a)207Rn	90.5	207Rn	33.79	211Ra	56.75				
211Ac(a)207Fr	72.6	207Fr	2.28	211Ac	70.36				
211Pb(B-)211Bi	46.0	211Pb	3.82	211Bi	42.21				
212Fr-133Cs1.594	88.7	212Fr	88.73						
212Fr-226Ra.938	11.6	212Fr	11.27	226Ra	0.34				
212Ra-u	17.0	212Ra	16.98						
212Ac-u	85.5	212Ac	85.55						
212Po(a)208Pb	99.9	208Pb	-0.01	212Po	99.90				
212Ra(a)208Rn	99.6	208Rn	16.60	212Ra	83.02				

212Ac(a)208Fr	18.1	208Fr	3.64	212Ac	14.45
212Pb(B-)212Bi	60.3	212Pb	30.87	212Bi	29.40
212Bi(B-)212Po	70.7	212Bi	70.60	212Po	0.10
213Fr-133Cs1.602	46.2	213Fr	46.21		
213Fr-u	14.5	213Fr	14.52		
213Ra-133Cs1.602	77.2	213Ra	77.15		
213Ac-u	41.6	213Ac	41.60		
213Po(a)209Pb	95.1	209Pb	1.29	213Po	93.84
213Fr(a)209At	98.1	209At	58.84	213Fr	39.26
213Ra(a)209Rn	99.0	209Rn	76.20	213Ra	22.85
213Ac(a)209Fr	96.7	209Fr	38.26	213Ac	58.40
213Bi(B-)213Po	29.2	213Bi	23.02	213Po	6.16
214Ac-u	22.2	214Ac	22.16		
214Po(a)210Pb	100.0	210Pb	1.18	214Po	98.81
214At(a)210Bi	84.2	214At	84.24		
214Atn(a)210Bi	76.3	214Atn	76.29		
214Ac(a)210Fr	99.4	210Fr	21.57	214Ac	77.84
214Pb(B-)214Bi	31.5	214Pb	0.53	214Bi	30.97
214Bi(B-)214Po	69.2	214Bi	69.03	214Po	0.14
215Bi-133Cs1.617	14.0	215Bi	14.05		
215Po(a)211Pb	99.4	211Pb	96.18	215Po	3.26
216Po(a)212Pb	97.9	212Pb	69.13	216Po	28.80
216Ac(a)212Fr	100.0	216Ac	100.00		
217At(a)213Bi	98.9	213Bi	76.98	217At	21.96
218Po(a)214Pb	100.0	214Pb	99.47	218Po	0.53
218Rn(a)214Po	95.6	214Po	1.04	218Rn	94.58
218Frm(a)214At	87.7	214At	15.76	218Frm	71.94
218Frm(a)214Atn	51.8	214Atn	23.71	218Frm	28.06
219At-133Cs1.647	16.2	219At	16.25		
219At(a)215Bi	90.0	215Bi	85.95	219At	4.01
219Rn(a)215Po	99.9	215Po	96.74	219Rn	3.19
220Rn(a)216Po	99.9	216Po	71.20	220Rn	28.72
220Pam(a)216Ac	95.3	220Pam	95.29		
220Pan(a)216Ac	54.7	220Pan	54.70		
221Fr(a)217At	98.6	217At	78.04	221Fr	20.54
222Rn(a)218Po	100.0	218Po	99.47	222Rn	0.51
222Ra(a)218Rn	68.3	218Rn	5.42	222Ra	62.89
223Rn-133Cs1.677	58.3	223Rn	58.28		
223Rn-u	41.7	223Rn	41.72		
223Fr(a)219At	84.8	219At	79.75	223Fr	5.10
223Ra(a)219Rn	100.0	219Rn	96.81	223Ra	3.15
224Rn-133Cs1.684	43.4	224Rn	43.36		
224Rn-u	56.6	224Rn	56.64		
224Ra(a)220Rn	99.8	220Rn	71.28	224Ra	28.54
224Np(a)220Pam	95.3	220Pam	4.71	224Np	90.57
224Np(a)220Pan	54.7	220Pan	45.30	224Np	9.43
225Rn-133Cs1.692	27.0	225Rn	27.03		
225Rn-u	73.0	225Rn	72.97		
225Fr-u	84.2	225Fr	84.15		
225Ac(a)221Fr	98.5	221Fr	79.46	225Ac	19.08
225Fr(B-)225Ra	16.1	225Fr	15.85	225Ra	0.28
225Ra(B-)225Ac	23.4	225Ra	2.30	225Ac	21.11
226Rn-133Cs1.699	43.8	226Rn	43.77		
226Rn-u	56.2	226Rn	56.23		
226Fr-u	26.5	226Fr	26.47		
226Fr-133Cs1.699	73.5	226Fr	73.53		
226Ra(a)222Rn	100.0	222Rn	99.49	226Ra	0.50
226Th(a)222Ra	98.7	222Ra	37.11	226Th	61.62
226Ac(B-)226Th	50.8	226Ac	12.43	226Th	38.38
227Rn-133Cs1.707	63.4	227Rn	63.39		
227Rn-u	36.6	227Rn	36.61		
227Fr-u	20.5	227Fr	20.46		
227Fr-133Cs1.707	79.5	227Fr	79.54		
227Ac(a)223Fr	100.0	223Fr	94.90	227Ac	5.07
227Th(a)223Ra	100.0	223Ra	96.85	227Th	3.14
227Ac(B-)227Th	99.4	227Ac	2.56	227Th	96.86
228Rn-133Cs1.714	62.5	228Rn	62.52		

228Rn-u	37.5	228Rn	37.48				
228Fr-u	20.4	228Fr	20.40				
228Fr-133Cs1.714	79.6	228Fr	79.60				
228Th(a)224Ra	99.6	224Ra	71.46	228Th	28.14		
229Fr-133Cs1.722	70.2	229Fr	70.24				
229Fr-u	12.8	229Fr	12.79				
229Fr-238U.962	17.2	229Fr	16.98	238U	0.23		
229Th(a)225Ra	99.1	225Ra	97.42	229Th	1.67		
229Pa(a)225Ac	72.4	225Ac	59.82	229Pa	12.56		
230Fr-133Cs1.729	87.7	230Fr	87.67				
230Fr-u	12.3	230Fr	12.33				
230Th(a)226Ra	98.5	226Ra	98.04	230Th	0.43		
230Pa(a)226Ac	99.4	226Ac	87.57	230Pa	11.81		
230Th(p,t)228Th-232Th()23	98.0	228Th	71.23	230Th	22.04	232Th	4.72
230Th(d,t)229Th	13.4	229Th	10.38	230Th	3.04		
230Pa(e)230Th	89.0	230Th	0.80	230Pa	88.19		
231Ra-133Cs1.737	33.8	231Ra	33.78				
231Ra-u	66.2	231Ra	66.22				
231Pa(a)227Ac	98.4	227Ac	92.38	231Pa	5.97		
231Pa(p,t)229Pa	90.1	229Pa	87.44	231Pa	2.62		
230Th(n,g)231Th	98.1	230Th	27.94	231Th	70.15		
231Th(B-)231Pa	53.3	231Th	5.59	231Pa	47.67		
232Ra-133Cs1.744	57.1	232Ra	57.11				
232Ra-u	42.9	232Ra	42.89				
C24 H16-232Th 37Cl 35Cl	6.0	35Cl	0.01	37Cl	0.01	232Th	6.01
232U(a)228Th	100.0	228Th	0.63	232U	99.36		
233Ra-u	29.5	233Ra	29.51				
233Ra-133Cs1.752	70.5	233Ra	70.49				
233U O2-208Pb1.274	82.9	208Pb	0.04	233U	82.88		
233U(a)229Th	91.9	229Th	87.95	233U	3.91		
232Th(n,g)233Th	99.9	232Th	8.23	233Th	91.69		
233Th(B-)233Pa	13.8	233Th	8.31	233Pa	5.47		
233Pa(B-)233U	18.8	233Pa	9.92	233U	8.83		
234U(a)230Th	53.1	230Th	45.74	234U	7.36		
234U(d,t)233U	2.7	233U	1.87	234U	0.80		
235U O2-208Pb1.284	15.3	208Pb	0.09	235U	15.20		
235U(a)231Th	26.7	231Th	24.26	235U	2.49		
235Np(a)231Pa	53.9	231Pa	43.74	235Np	10.13		
234U(n,g)235U	81.1	234U	69.62	235U	11.51		
235Np(e)235U	90.8	235U	0.90	235Np	89.87		
236U(a)232Th	81.2	232Th	81.05	236U	0.19		
236Pu(a)232U	100.0	232U	0.63	236Pu	99.36		
235U(n,g)236U	52.5	235U	28.21	236U	24.33		
237Np(a)233Pa	88.2	233Pa	84.60	237Np	3.64		
237Pu(a)233U	9.8	233U	2.51	237Pu	7.28		
236U(n,g)237U	85.4	236U	1.05	237U	84.34		
C24 H20-238U 35Cl2	4.1	35Cl	0.05	238U	4.07		
238U O2-208Pb1.298	70.6	208Pb	0.16	238U	70.48		
238Pu(a)234U	89.7	234U	22.22	238Pu	67.46		
239Pu O-208Pb1.226	17.0	208Pb	0.07	239Pu	16.89		
239Pu(a)235U	67.3	235U	41.69	239Pu	25.65		
238Pu(n,g)239Pu	37.7	238Pu	32.31	239Pu	5.43		
239Np(B-)239Pu	65.1	239Np	53.81	239Pu	11.29		
240Pu(a)236U	89.9	236U	74.43	240Pu	15.49		
240Cm(a)236Pu	99.9	236Pu	0.64	240Cm	99.27		
239Pu(n,g)240Pu	69.9	239Pu	40.74	240Pu	29.21		
240U(B-)240Npm	42.6	240U	0.21	240Npm	42.39		
240Npm(IT)240Np	83.0	240Np	67.91	240Npm	15.11		
240Np(B-)240Pu	32.1	240Np	32.09	240Pu	0.01		
240Npm(B-)240Pu	42.5	240Npm	42.50	240Pu	0.03		
241Am O-C22	4.4	241Am	4.42				
241Pu(a)237U	15.9	237U	15.66	241Pu	0.24		
241Am(a)237Np	99.7	237Np	96.36	241Am	3.36		
241Cm(a)237Pu	98.8	237Pu	92.72	241Cm	6.09		
240Pu(n,g)241Pu	99.9	240Pu	55.26	241Pu	44.60		
241Pu(B-)241Am	99.0	241Pu	7.88	241Am	91.15		
241Cm(e)241Am	94.2	241Am	1.07	241Cm	93.14		

242Pu O2-208Pb1.317	9.8	208Pb	0.04	242Pu	9.72
242Pu(a)238U	52.8	238U	25.22	242Pu	27.53
242Cm(a)238Pu	100.0	238Pu	0.23	242Cm	99.77
241Pu(n,g)242Pu	72.7	241Pu	19.15	242Pu	53.57
243Am O-208Pb1.245	70.3	208Pb	0.22	243Am	70.11
243Am O-C22	10.2	243Am	10.24		
243Am(a)239Np	65.1	239Np	46.19	243Am	18.91
242Pu(n,g)243Pu	58.9	242Pu	1.79	243Pu	57.13
243Pu(B-)243Am	11.5	243Pu	10.72	243Am	0.74
244Pu O2-208Pb1.327	34.2	208Pb	0.03	244Pu	34.18
244Pu(a)240U	99.9	240U	99.79	244Pu	0.06
244Cf(a)240Cm	99.2	240Cm	0.73	244Cf	98.46
244Pu(d,t)243Pu	22.5	243Pu	21.25	244Pu	1.25
245Cm(a)241Pu	81.9	241Pu	28.14	245Cm	53.81
245Cf(a)241Cm	98.4	241Cm	0.77	245Cf	97.61
246Cm O-208Pb1.260	18.9	208Pb	0.02	246Cm	18.93
246Es-u	6.2	246Es	6.24		
246Cm(a)242Pu	87.3	242Pu	7.39	246Cm	79.92
246Cf(a)242Cm	99.4	242Cm	0.23	246Cf	99.15
244Pu(t,p)246Pu	55.6	244Pu	0.05	246Pu	55.58
246Pu(B-)246Amm	88.9	246Pu	44.42	246Amm	44.49
246Amm(B-)246Cm	55.6	246Amm	55.51	246Cm	0.11
247Cm(a)243Pu	70.4	243Pu	10.90	247Cm	59.52
246Cm(d,p)247Cm	21.1	246Cm	1.04	247Cm	20.07
248Cm O-208Pb1.269	67.5	208Pb	-0.02	248Cm	67.55
248Cm(a)244Pu	96.5	244Pu	64.46	248Cm	32.04
248Fm(a)244Cf	78.5	244Cf	1.54	248Fm	76.98
248Cm(d,t)247Cm	20.8	247Cm	20.42	248Cm	0.41
249Cf-208Pb1.197	55.9	208Pb	0.20	249Cf	55.71
249Md-u	54.5	249Md	54.55		
249Cf O-C22	8.5	249Cf	8.54		
249Cf(a)245Cm	81.9	245Cm	46.19	249Cf	35.75
249Fm(a)245Cf	79.3	245Cf	2.39	249Fm	76.92
250Md-u	0.4	250Md	0.36		
250Fm(a)246Cf	52.7	246Cf	0.85	250Fm	51.87
250Md(a)246Es	94.3	246Es	93.76	250Md	0.54
251Fm-u	11.6	251Fm	11.63		
251No-133Cs1.887	96.1	251No	96.10		
251Nom-133Cs1.887	86.5	251Nom	86.54		
251Nom(IT)251No	17.4	251No	3.90	251Nom	13.46
252No-133Cs1.895	30.6	252No	30.59		
252No(a)248Fm	92.4	248Fm	23.02	252No	69.41
253No-133Cs1.902	32.0	253No	32.04		
253No(a)249Fm	90.3	249Fm	23.08	253No	67.20
253Lr(a)249Md	99.6	249Md	45.45	253Lr	54.17
254No-133Cs1.910	0.3	254No	0.30		
254No-133Cs1.910	99.3	254No	99.28		
254Lr-133Cs1.910	99.3	254Lr	99.27		
254Lrm-133Cs1.910	97.5	254Lrm	97.52		
254No(a)250Fm	48.5	250Fm	48.13	254No	0.42
254Lr(a)250Md	99.1	250Md	99.10	254Lr	0.05
255No-133Cs1.917	88.8	255No	88.83		
255Lr-133Cs1.917	98.6	255Lr	98.65		
255Lrm-133Cs1.917	94.6	255Lrm	94.59		
255No(a)251Fm	99.5	251Fm	88.37	255No	11.17
255Lr(a)251Md	30.3	251Md	28.97	255Lr	1.35
255Lrm(a)251Md	76.4	251Md	71.03	255Lrm	5.41
257Rf-133Cs1.932	1.9	257Rf	1.87		
257Db-u	46.2	257Db	46.21		
257Rf(a)253No	98.9	253No	0.76	257Rf	98.13
257Db(a)253Lr	99.6	253Lr	45.83	257Db	53.79
258Db(a)254Lr	82.1	254Lr	0.68	258Db	81.42
258Db(a)254Lrm	21.1	254Lrm	2.48	258Db	18.58

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1 Noyau    Flux  Equation         Flux  Equation         Flux  Equation         Flux  Equation         Flux  Equation
   0pi+   100.00 pi+
   0pi-    99.88 pi+(2B+)pi-
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1 n	99.94	1H(n,g)2H	0.01	48Ti(n,g)49Ti	0.01	49Ti(n,g)50Ti				
1H	58.49	H2-D	21.76	H12-C	7.77	16O-H16	7.32	H D-C	6.90	H3-3He
2H	82.49	D6-C	8.45	H2-D	8.25	H D-C	0.55	3He-H D	0.11	3H-H D
3H	70.06	3H-3He	29.94	3H-H D						
3He	61.81	3He-H D	25.83	H3-3He	12.36	3H-3He				
4He	100.00	4He3-C								
6He	99.99	6He-7Li.857								
6Li	99.96	6Li2-C	0.03	8Li-6Li1.333	0.01	8He-6Li1.333				
7Li	99.80	7Li-H7	0.13	7Li(n,g)8Li	0.05	8He-7Li1.143	0.01	10Be-7Li1.429	0.01	11Be-7Li1.571
7Lii	60.98	9Be(p,3He)7Lii	39.02	6Li(n,g)7Lii						
7Be	100.00	7Li(p,n)7Be								
8He	74.86	8He-7Li1.143	25.14	8He-6Li1.333						
8Li	78.66	7Li(n,g)8Li	21.34	8Li-6Li1.333						
8Bej	57.08	10Be(p,t)8Bej	42.92	6Li(d,g)8Bej						
8B	99.97	6Li(3He,n)8B	0.03	26Mg(7Li,8B)25N						
8C	62.54	12C(a,8He)8C	37.46	8C-u						
9He	56.16	9He(g,n)8He	43.84	9Be(pi-,pi+)9He						
9Be	67.09	9Be-7Li1.286	32.90	9Be(n,g)10Be						
10Be	55.56	9Be(n,g)10Be	44.37	10Be-7Li1.429	0.04	10Be(p,t)8Bej	0.03	10Be(t,p)12Be		
10B	100.00	10B-u								
10C	67.20	10C-10B	32.80	10B(p,n)10C						
11Be	83.06	11Be-6Li1.833	16.94	11Be-7Li1.571						
11B	100.00	11B-u								
11Bxi	79.07	9Be(3He,p)11Bxi	20.93	7Li(a,g)11Bxi						
11C	100.00	11C-14N.786								
11Cxi	50.00	11B(3He,t)11Cxi	50.00	9Be(3He,n)11Cxi						
12Be	79.36	12Be-C	20.64	10Be(t,p)12Be						
12B	89.09	14C(d,a)12B	10.91	11B(d,p)12B						
12Bxi	86.25	14C(p,3He)12Bxi	13.75	9Be(7Li,a)12Bxi						
12Cxi	69.23	11B(d,n)12Cxi	30.77	10B(3He,p)12Cxi						
12N	99.98	14N(p,t)12N	0.02	14C(14C,12N)16B						
13C	78.17	13C H-14N	21.83	13C2 H2-28Si	0.16	136Xe-13C3 O6				
14B	100.00	14C(7Li,7Be)14B								
14C	79.95	14C H2-N D	20.04	C D2-14C H2						
14N	77.93	N2-C O	18.30	13C H-14N	1.38	86Kr-N6	1.29	14N10-132Xe	1.03	84Kr-N6
14O	100.00	14O-14N								
15B	88.44	18O(48Ca,51V)15	11.56	16B(g,n)15B						
15N	60.90	C D H-15N	25.63	15N2-28Si H2	13.47	C H3-15N				
15O	70.13	15N(p,n)15O	29.66	14N(p,g)15O	0.20	16F(p)15O				
16B	83.24	16B(g,n)15B	16.76	14C(14C,12N)16B						
16O	50.26	C4-O3	18.62	16O-H16	16.23	O2-31P H	5.32	32S-O2	4.01	N2-C O
16Oxi	54.45	14N(3He,p)16Oxi	45.55	15N(p,g)16Oxi						
16Oxj	77.01	14N(d,g)16Oxj	22.99	14C(3He,n)16Oxj						
16F	58.44	16F(p)15O	41.56	16O(3He,t)16F						
17O	83.22	17O2-28Si D3	16.78	17O-16O H						
17F	100.00	16O(p,g)17F								
17Ne	100.00	17Ne-22Ne.773								
18O	86.82	C D3-18O	13.18	C3-18O2						
18F	59.63	17O(p,g)18F	40.37	18O(p,n)18F						
18Ne	99.90	18Ne-22Ne.818	0.08	22Mgi(a)18Ne	0.02	19Na(p)18Ne				
18Na	69.67	18Na(p)17Ne	30.33	18Na-u						
19F	86.13	13C D3-19F	13.87	28Si H3-C 19F						
19Na	77.07	24Mg(3He,8Li)19	22.93	19Na(p)18Ne						
20Ne	59.77	20Ne2-40Ar	40.23	C D4-20Ne						
20Na	100.00	20Ne(3He,t)20Na								
21Ne	100.00	20Ne(n,g)21Ne								
21Na	100.00	21Na-21Ne								
22Ne	99.68	22Ne-u	0.26	22Na-22Ne	0.06	22Mg-22Ne				
22Na	42.59	22Na-23Na.957	19.97	22Mg-22Na	18.31	22Na-22Ne	9.88	22Na-39K.564	9.25	22Na-24Mg.917
22Mg	46.76	22Mg-23Na.957	37.15	22Mg-22Na	10.60	22Mg-39K.564	5.48	22Mg-22Ne		
22Mgi	60.08	22Mgi(a)18Ne	22.80	22Mgi(2p)20Ne	17.12	22Mgi(p)21Na				
23F	86.29	23F-u	13.71	22Ne(18O,17F)23						
23Na	99.95	23Na-u	0.02	27Mg-23Na1.174	0.02	27Al-23Na1.174				
23Ali	55.77	23Ali(p)22Mg	44.23	23Ali(2p)21Na						
24Mg	98.03	24Mg-H24	1.89	24Mg(n,g)25Mg	0.07	22Na-24Mg.917	0.01	24Mg(3He,t)24Al		
24Al	95.74	24Al-23Na1.043	4.26	24Mg(3He,t)24Al						
25Ne	57.84	25Ne-u	42.16	26Mg(7Li,8B)25N						

25Mg	45.86	25Mg(n,g)26Mg	42.69	24Mg(n,g)25Mg	11.44	25Mg(p,g)26Al	0.01	25Al-25Mg		
25Al	99.98	25Al-25Mg	0.02	25Ali(IT)25Al						
25Ali	84.66	25Ali(IT)25Al	15.34	27Al(p,t)25Ali						
26F	92.64	26F-u	7.36	27F(g,n)26F						
26Mg	85.30	26Mg-H26	8.52	25Mg(n,g)26Mg	4.05	26Mg(n,g)27Mg	0.87	26Al-26Mg	0.86	26Alm-26Mg
26Al	63.50	25Mg(p,g)26Al	14.92	26Al-26Mg	14.82	26Alm(IT)26Al	6.76	42Ca(3He,t)42Sc		
26Alm	84.62	26Alm(IT)26Al	15.38	26Alm-26Mg						
27F	90.49	27F(g,n)26F	9.51	27F-u						
27Mg	88.58	26Mg(n,g)27Mg	11.42	27Mg-23Na1.174						
27Al	88.54	27Al-23Na1.174	11.45	27Al(p,g)28Si	0.01	27Al(p,t)25Ali				
27Sii	78.72	28Si(3He,a)27Si	21.28	29Si(p,t)27Sii						
28Si	48.35	C2 H4-28Si	31.52	13C2 H2-28Si	10.19	31P-28Si H3	4.13	28Si H3-C 19F	3.87	15N2-28Si H2
28P	100.00	28Si(3He,t)28P-								
29Na	63.29	29Na-39K.744	36.71	29Na-u						
29Mg	99.91	29Mg-23Na1.261	0.09	29Mg-u						
29Si	100.00	29Si-28Si H								
29P	59.37	29P 40Ar-u	40.23	28Si(p,g)29P	0.39	29Pxi(IT)29P				
29Pxi	75.83	29Pxi(IT)29P	24.17	28Si(p,g)29Pxi						
30Ne	72.52	30Ne-u	27.48	30Ne(n,g)31Ne						
30Na	82.12	30Na-O1.876	17.88	30Na-39K.769						
30Mg	85.88	30Mg-39K.769	14.12	30Mg-O1.876						
30Al	55.07	30Al-O1.875	44.93	30Al-39K.769						
31Ne	67.27	30Ne(n,g)31Ne	32.73	31Ne-u						
31P	51.76	31P-28Si H3	48.24	O2-31P H						
31S	96.88	31S-31P	3.12	32Cl(p)31S						
32S	55.06	32S-C2 D4	44.91	32S-O2	0.02	33S-32S H				
32Cl	76.16	32Cl(p)31S	23.84	32S(3He,t)32Cl-						
33Mg	85.07	33Mg-O2.062	14.93	33Mg-39K.846						
33S	99.98	33S-32S H	0.01	33S(p,g)34Cl	0.01	33S(n,g)34S				
33Cl	79.94	32S(p,g)33Cl	20.06	33Cli(IT)33Cl						
33Cli	63.14	33Cli(IT)33Cl	36.86	32S(p,g)33Cli						
34S	46.39	34S(n,g)35S	23.68	33S(n,g)34S	17.99	34Cl-34S	10.69	34Clm-34S	1.24	34S-34Ar
34Cl	48.40	33S(p,g)34Cl	31.02	34Cl-34S	18.40	34Clm(IT)34Cl	2.19	34Ar-34Cl		
34Clm	65.13	34Clm(IT)34Cl	30.66	34Clm-34S	4.22	34Clm-34Ar				
34Ar	52.03	34Ar-34Cl	35.08	34Clm-34Ar	12.89	34S-34Ar				
35S	71.36	35S(B-)35Cl	28.64	34S(n,g)35S						
35Cl	55.82	C3-35Cl H	19.54	35S(B-)35Cl	15.27	C5 H10-35Cl2	4.24	C5 H12-35Cl 37C	2.26	199Hg-C2 35Cl5
36S	63.63	36S(p,g)37Cl	36.37	36S(p,n)36Cl						
36Cl	99.09	35Cl(n,g)36Cl	0.91	36S(p,n)36Cl						
36Ar	99.91	36Ar-u	0.05	24Mg(3He,t)24Al	0.04	32S(3He,t)32Cl-				
36K	84.37	36K-39K.923	9.13	24Mg(3He,t)24Al	6.50	32S(3He,t)32Cl-				
37Cl	85.47	C3 H6 O2-37Cl2	9.26	C5 H12-35Cl 37C	1.84	36S(p,g)37Cl	0.55	206Pb 35Cl2-202	0.37	204Hg 35Cl2-200
38Ar	32.00	38Ar-39K.974	27.35	38Kxm-38Ar	23.51	38K-38Ar	17.14	38Ar-38Ca		
38K	26.53	38K-38Ar	26.13	38Kxm-38K	24.64	38Ca-38K	22.70	38K-39K.974		
38Kxm	44.55	38Kxm-38Ar	33.98	38Kxm-38K	21.47	38Kxm-38Ca				
38Ca	48.38	38Ca-H6 O2	20.54	38Ca-38K	15.82	38Kxm-38Ca	15.26	38Ar-38Ca		
39K	99.84	39K-40Ar	0.12	39K(n,g)40K	0.01	51V-39K1.308	0.01	51Cr-39K1.308	0.01	38Ar-39K.974
39Ca	100.00	39Ca 19F-39K1.4								
40S	79.32	40S-40Ar	20.68	40S-41K.976						
40Ar	44.69	C3 H4-40Ar	34.18	C2 D8-40Ar	14.07	20Ne2-40Ar	7.06	84Kr-40Ar2	0.01	39K-40Ar
40K	60.93	39K(n,g)40K	39.07	40K(n,g)41K						
40Ca	99.99	40Ca-H40	0.01	40Ca(n,g)41Ca						
40Ti	81.81	40Ti-u	18.19	40Ca(pi+,pi-)40						
41K	99.93	41K-40Ar H	0.07	40K(n,g)41K						
41Ca	99.59	40Ca(n,g)41Ca	0.36	41Ca(n,g)42Ca	0.06	41Ca(p,g)42Scr-				
41Sc	68.68	40Ca(p,g)41Sc	31.32	41Scr(IT)41Sc						
41Scr	58.44	41Scr(IT)41Sc	41.56	41Ca(p,g)42Scr-						
42Ca	85.67	41Ca(n,g)42Ca	10.21	42Sc-42Ca	2.96	42Scm-42Ca	0.63	42Ca(3He,t)42Sc	0.48	42Ca(n,g)43Ca
42Sc	56.01	42Sc-42Ca	23.98	42Scr(IT)42Sc	15.88	42Scm-42Sc	3.48	42Ca(3He,t)42Sc	0.64	42Ti-42Sc
42Scm	59.28	42Scm-42Ca	39.38	42Scm-42Sc	1.34	42Ti-42Scm				
42Scr	51.28	42Scr(IT)42Sc	48.72	41Ca(p,g)42Scr-						
42Ti	49.34	42Ti-42Sc	39.07	42Ti-42Scm	11.59	42Ti-42Ca				
43Ca	98.83	42Ca(n,g)43Ca	1.13	43Ca(n,g)44Ca	0.04	43Ca(3He,t)43Sc				
43Cai	76.84	44Ca(p,d)43Cai	23.16	41K(3He,p)43Cai						
43Sci	83.30	43Ca(3He,t)43Sc	16.70	42Ca(3He,d)43Sc						
43Ti	39.59	40Ca(a,n)43Ti	37.69	43Ti-u	22.71	46Ti(3He,6He)43				
43Vxi	88.78	43Vxi(2p)41Sc	11.22	43Vxi(p)42Ti						

44Ca	97.49	43Ca(n,g)44Ca	2.33	44Ca(n,g)45Ca	0.16	44Ca(3He,t)44Sc	0.01	44Ca(p,d)43Cai		
44Sci	75.63	44Ca(3He,t)44Sc	24.37	43Ca(3He,d)44Sc						
44V	86.21	44V-32S	13.79	44V-u						
45Ca	97.03	44Ca(n,g)45Ca	2.97	45Ca(B-)45Sc						
45Sc	88.31	45Sc(p,g)46Ti	10.64	45Ca(B-)45Sc	1.06	45Sc(3He,t)45Ti				
45Ti	100.00	45Sc(p,n)45Ti								
45Tii	60.33	45Sc(3He,t)45Ti	39.67	46Ti(p,d)45Tii						
45V	100.00	45V-45Ti								
46Ca	90.41	46Ca(n,g)47Ca	9.59	46Ca(3He,t)46Sc						
46Sci	62.59	46Ca(3He,t)46Sc	37.41	48Ti(p,3He)46Sc						
46Ti	94.18	46Ti-48Ti.958	5.64	46Ti(3He,t)46V-	5.64	46Ti(p,g)47V	0.17	45Sc(p,g)46Ti		
46V	86.77	46V-46Ti	13.14	46Ti(3He,t)46V-	0.09	46Ti(3He,t)46V-				
46Cr	67.19	46Cr-u	32.81	32S(16O,2n)46Cr						
47Ca	90.54	47Ca(B-)47Sc	9.46	46Ca(n,g)47Ca						
47Sc	93.04	47Sc(B-)47Ti	6.96	47Ca(B-)47Sc						
47Ti	60.65	47Ti(n,g)48Ti	37.16	47Ti-48Ti.979	2.19	46Ti(3He,t)46V-				
47V	85.59	46Ti(p,g)47V	14.41	46Ti(3He,t)46V-						
47Cr	67.80	47Cr-u	18.42	48Mni(p)47Cr	13.78	50Cr(3He,6He)47				
48Ca	99.13	48Ca-C4	0.87	48Ti-48Ca						
48Sc	50.00	48Ca(p,n)48Sc	50.00	48Sc(B-)48Ti						
48Ti	81.32	48Ti-48Ca	11.92	48Ti-N 180 O	4.72	50Ti-48Ti1.042	2.77	47Ti(n,g)48Ti	2.76	51V-48Ti1.063
48V	89.57	48Vxi(IT)48V	10.43	48V(B+)48Ti						
48Vxi	99.52	46Ti(3He,t)46V-	0.48	48Vxi(IT)48V						
48Mn	51.71	48Mn-u	48.29	48Mni(IT)48Mn						
48Mni	51.26	48Mni(IT)48Mn	48.74	48Mni(p)47Cr						
49Sc	50.17	48Ca(p,g)49Sc	29.27	49Sc-u	20.56	49Sc(B-)49Ti				
49Ti	68.14	48Ti(n,g)49Ti	20.40	49Ti-48Ti1.021	11.44	49Ti(n,g)50Ti	0.02	49Sc(B-)49Ti		
49Cr	100.00	50Cr(d,t)49Cr								
49Mn	100.00	49Mn-49Cr								
50Sc	100.00	50Sc O-19F 35Cl								
50Ti	48.96	49Ti(n,g)50Ti	45.09	50Ti-48Ti1.042	5.80	50V-50Ti	0.14	50Ti(n,g)51Ti	0.01	50Ti(t,p)52Ti
50V	29.91	50V-50Cr	26.17	50V-48Ti1.042	22.93	50V(n,g)51V	20.99	50V-50Ti		
50Vxi	100.00	46Ti(3He,t)46V-								
50Cr	63.72	50Cr-48Ti1.042	32.32	50V-50Cr	3.57	50Cr(n,g)51Cr	0.39	50Cr(p,g)51Mn		
50Mn	51.98	50Mn-50Cr	36.54	50Mnm-50Mn	11.47	50Cr(3He,t)50Mn				
50Mnm	81.15	50Mnm-50Cr	18.85	50Mnm-50Mn						
51Sc	100.00	51Sc H-19F 33S								
51Ti	94.90	50Ti(n,g)51Ti	5.10	51Ti-39K1.308						
51V	58.02	51V-48Ti1.063	34.74	50V(n,g)51V	3.49	51V(p,n)51Cr	3.14	51V-39K1.308	0.62	51Cr-51V
51Cr	50.97	50Cr(n,g)51Cr	35.29	51V(p,n)51Cr	7.47	51Cr-39K1.308	6.27	51Cr-51V		
51Mn	93.33	50Cr(p,g)51Mn	6.67	54Fe(p,a)51Mn						
52Sc	100.00	52Sc-33S 19F								
52Ti	84.91	52Ti-39K1.333	15.09	50Ti(t,p)52Ti						
52Cr	77.92	52Cr-48Ti1.083	20.68	52Cr(n,g)53Cr	1.10	52Cr(p,g)53Mn	0.27	106Nb-52Cr2.038	0.02	52Cr(3He,p)54Mn
52Co	60.31	52Co-52Cr	39.69	52Co-u						
52Com	54.34	52Com-u	45.66	52Com-52Cr						
53Sc	100.00	53Sc-34S 19F								
53Cr	55.38	53Cr-48Ti1.104	24.94	52Cr(n,g)53Cr	19.68	53Cr(n,g)54Cr				
53Mn	83.72	52Cr(p,g)53Mn	16.28	56Fe(p,a)53Mn						
53Fe	100.00	54Fe(d,t)53Fe								
53Co	94.26	53Co-53Fe	5.74	53Com-53Co						
53Com	59.57	53Com-53Fe	40.43	53Com-53Co						
54V	55.54	54Cr(t,3He)54V	44.46	54V-u						
54Cr	49.05	54Cr-48Ti1.125	45.06	53Cr(n,g)54Cr	5.86	54Cr(p,g)55Mn	0.03	54Cr(3He,t)54Mn		
54Mni	51.27	52Cr(3He,p)54Mn	48.73	54Cr(3He,t)54Mn						
54Fe	73.37	54Fe(n,g)55Fe	17.84	54Fe(p,g)55Co	8.78	54Fe(p,a)51Mn				
54Co	46.88	54Co-54Fe	29.67	54Com-54Co	23.45	50Cr(3He,t)50Mn				
54Com	80.78	54Com-54Fe	19.22	54Com-54Co						
55Mn	37.30	54Cr(p,g)55Mn	36.07	55Mn(p,g)56Fe	12.21	55Mn-85Rb.647	7.04	48Ti O-55Mn1.16	6.95	55Fe(e)55Mn
55Fe	83.89	55Fe(e)55Mn	16.11	54Fe(n,g)55Fe						
55Co	55.83	54Fe(p,g)55Co	32.68	56Ni-55Co1.018	11.49	58Ni(p,a)55Co				
56Ti	93.33	56Ti-u	6.67	56Ti(B-)56V						
56V	74.15	56V-u	25.85	56Ti(B-)56V						
56Fe	49.24	55Mn(p,g)56Fe	22.93	56Fe-85Rb.659	11.58	56Fe(n,g)57Fe	8.76	56Fe(p,a)53Mn	4.48	56Fe-58Ni.966
56Co	50.51	56Co-58Ni.966	49.49	56Ni-56Co						
56Ni	39.83	56Ni-56Fe	27.38	56Ni-55Co1.018	17.47	56Ni-56Co	15.33	57Cu-56Ni1.018		
57Mn	49.33	57Mn-85Rb.671	33.29	57Mn-39K1.462	17.38	55Mn(t,p)57Mn				

57Fe	88.24	56Fe(n,g)57Fe	6.67	57Fe(n,g)58Fe	4.14	57Fe-58Ni.983	0.69	57Cu-57Fe	0.20	57Fe(p,n)57Co
57Co	32.97	60Ni(p,a)57Co	28.59	56Fe(p,g)57Co	28.37	58Fe(p,g)59Co-5	10.07	57Fe(p,n)57Co		
57Ni	50.12	57Cu-57Ni	49.88	57Ni-58Ni.983						
57Cu	48.04	57Cu-56Ni1.018	28.56	57Cu-57Fe	23.40	57Cu-57Ni				
58Fe	86.38	57Fe(n,g)58Fe	9.41	58Fe(n,g)59Fe	4.21	58Fe(p,g)59Co-5				
58Co	60.87	59Co(d,t)58Co	25.10	60Ni(d,a)58Co	14.03	57Fe(p,g)58Co				
58Ni	29.20	57Fe-58Ni.983	26.49	56Fe-58Ni.966	25.37	58Ni(n,g)59Ni	7.86	56Co-58Ni.966	6.33	58Ni(p,a)55Co
58Cu	90.22	58Cu-58Ni	9.78	59Zn-58Cu1.017						
59Fe	89.61	58Fe(n,g)59Fe	10.39	59Fe-85Rb.694						
59Co	90.38	59Co(p,n)59Ni	8.52	58Fe(p,g)59Co-5	1.10	59Co(d,t)58Co				
59Ni	74.08	58Ni(n,g)59Ni	21.80	59Ni(n,g)60Ni	4.12	59Co(p,n)59Ni				
59Cu	62.45	58Ni(p,g)59Cu	30.36	60Zn-59Cu1.017	7.20	59Zn-59Cu				
59Zn	73.32	59Zn-59Cu	26.68	59Zn-58Cu1.017						
60Ni	77.58	59Ni(n,g)60Ni	18.08	60Ni(n,g)61Ni	4.13	60Ni(p,a)57Co	0.21	60Ni(d,a)58Co		
60Cui	73.53	60Ni(3He,t)60Cu	26.47	58Ni(3He,p)60Cu						
60Zn	65.05	60Zn-58Ni1.034	34.95	60Zn-59Cu1.017						
61Ni	81.65	60Ni(n,g)61Ni	18.35	61Ni(n,g)62Ni						
61Zn	95.42	64Zn(3He,6He)61	4.58	61Ga(B+)61Zn						
61Ga	52.21	61Ga(B+)61Zn	47.79	61Ga-u						
62Ni	68.91	61Ni(n,g)62Ni	14.93	62Ni(p,g)63Cu	13.08	62Ni(n,g)63Ni	3.09	65Cu(p,a)62Ni		
62Zn	67.75	62Zn-62Ni	32.25	62Ga-62Zn						
62Ga	51.67	62Ga-62Ni	48.33	62Ga-62Zn						
63Fe	57.33	63Fe-39K1.615	21.33	63Fe-H C2 F2	21.33	63Fe-C 32S F				
63Co	86.21	64Ni(t,a)63Co	13.79	63Co(B-)63Ni						
63Ni	55.13	63Ni(B-)63Cu	34.44	62Ni(n,g)63Ni	10.43	63Ni(n,g)64Ni				
63Cu	43.25	63Ni(B-)63Cu	38.76	62Ni(p,g)63Cu	9.15	63Cu(n,g)64Cu	7.98	66Zn(p,a)63Cu	0.80	63Cu(p,n)63Zn
63Zn	72.67	64Zn(d,t)63Zn	27.33	63Cu(p,n)63Zn						
64Com	86.82	H C2 F2-64Com.9	13.18	64Com-32S O2						
64Ni	87.39	63Ni(n,g)64Ni	12.61	64Ni-85Rb.753						
64Cu	90.82	63Cu(n,g)64Cu	9.18	64Cu(B-)64Zn						
64Zn	43.41	64Zn(n,g)65Zn	32.39	64Cu(B-)64Zn	16.70	64Zn(p,g)65Ga	2.85	64Zn(d,t)63Zn	1.96	64Ga-64Zn
64Ga	37.64	64Ga-85Rb.753	32.67	C5 H2-64Ga.969	13.11	64Ga-64Zn	11.95	64Zn(p,n)64Ga	4.63	64Gai(IT)64Ga
64Gai	83.24	64Gai(IT)64Ga	16.76	64Zn(3He,t)64Ga						
65Cu	43.15	65Cu(p,n)65Zn	33.12	65Cu-85Rb.765	10.30	65Cu(p,a)62Ni	9.83	65Cu(n,g)66Cu	3.39	65Ga-65Cu
65Zn	54.32	64Zn(n,g)65Zn	45.68	65Cu(p,n)65Zn						
65Ga	59.01	64Zn(p,g)65Ga	32.06	65Ga-85Rb.765	8.93	65Ga-65Cu				
65Ge	56.75	C5 H2-65Ge.939	29.20	65Ge O H-85Rb.9	14.05	65Ge H-85Rb.776				
66Cu	89.98	65Cu(n,g)66Cu	10.02	66Cu-85Rb.776						
66Zn	66.02	66Zn(p,a)63Cu	33.98	66Zn(n,g)67Zn						
67Cu	54.28	67Cu-85Rb.788	45.72	67Cu(B-)67Zn						
67Zn	63.75	66Zn(n,g)67Zn	23.10	67Cu(B-)67Zn	11.55	67Zn(p,n)67Ga	1.29	67Zn(n,g)68Zn	0.31	67Ge-67Zn
67Ga	54.35	67Zn(p,n)67Ga	45.65	70Ge(p,a)67Ga						
67Ge	87.12	67Ge-67Zn	12.88	64Zn(a,n)67Ge						
67As	77.42	67As-85Rb.788	22.58	67As O-85Rb.976						
68Co	74.48	O 18O-68Co.5	25.52	68Co-34S2.000						
68Zn	98.63	67Zn(n,g)68Zn	1.37	70Zn 35Cl-68Zn						
68As	87.55	68As-C5 H8	12.45	C F3-68As1.015						
69Com	92.84	69Com-39K1.769	7.16	69Com-u						
69Ga	64.51	69Ga-85Rb.812	35.41	69Ga(n,g)70Ga	0.08	69Ga(p,n)69Ge				
69Ge	99.90	69Ga(p,n)69Ge	0.10	69As(B+)69Ge						
69As	67.94	69As-u	26.23	69As(B+)69Ge	5.83	69Se(B+)69As				
69Se	99.96	C F3-69Se	0.04	69Se(B+)69As						
70Zn	87.56	70Zn(p,n)70Ga	9.03	70Zn 35Cl-68Zn	3.42	70Zn(d,p)71Zn				
70Ga	64.13	69Ga(n,g)70Ga	31.40	70Ga-85Rb.824	4.47	70Zn(p,n)70Ga				
70Ge	85.99	70Ge(n,g)71Ge	14.01	70Ge(p,a)67Ga						
70Se	73.07	70Se-13C F3	26.93	70Se-u						
71Zn	93.22	71Znm(IT)71Zn	6.78	70Zn(d,p)71Zn						
71Znm	94.73	71Znm-85Rb.835	5.27	71Znm(IT)71Zn						
71Ga	53.27	71Ga-85Rb.835	33.07	71Ga(n,g)72Ga	12.24	71Ga-71Ge	1.42	71Ge(e)71Ga		
71Ge	77.24	71Ga-71Ge	13.81	70Ge(n,g)71Ge	8.95	71Ge(e)71Ga				
71Br	99.98	71Br H2-C4 H9 O	0.02	71Kr(e)71Br						
71Kr	83.81	71Kr-u	16.19	71Kr(e)71Br						
72Ga	65.71	71Ga(n,g)72Ga	34.29	72Ga-85Rb.847						
72Ge	99.86	72Ge(n,g)73Ge	0.10	75Cu-72Ge1.042	0.03	73Cu-72Ge1.014				
73Cu	75.36	73Cu-72Ge1.014	24.64	73Cu-85Rb.859						
73Ge	99.92	73Ge(n,g)74Ge	0.08	72Ge(n,g)73Ge						
73As	92.76	72Ge(3He,d)73As	7.24	73Se(B+)73As						

73Se	52.49	73Se-85Rb.859	47.51	73Se(B+)73As						
73Br	86.08	73Br 27Al-85Rb1	13.92	73Br-u						
74Ge	99.99	74Ge-84Kr								
74As	82.08	74As(B+)74Ge	17.92	74As(B-)74Se						
74Se	100.00	74Se-74Ge								
74Br	84.87	74Br 27Al-85Rb1	15.13	74Se(p,n)74Br						
74Kr	93.25	74Kr-85Rb.871	6.75	74Rb(B+)74Kr						
74Rb	82.82	74Rb-85Rb.871	17.18	74Rb(B+)74Kr						
75Cu	90.51	75Cu-85Rb.882	9.49	75Cu-72Ge1.042						
75As	85.32	75As(p,n)75Se	14.68	78Se(p,a)75As						
75Se	99.91	74Se(n,g)75Se	0.09	75As(p,n)75Se						
76Zn	61.06	76Zn-85Rb.894	38.94	76Zn-88Rb.864						
76Ge	100.00	76Ge-76Se								
76Se	99.96	76Se-84Kr	0.03	76Se(n,g)77Se						
76Kr	84.03	76Kr-85Rb.894	15.97	80Kr(a,6He)78Kr						
77Zn	77.87	77Zn-85Rb.906	22.13	77Zn-88Rb.875						
77As	32.48	80Se(p,a)77As	31.80	76Ge(3He,d)77As	17.88	77As(B-)77Se	17.84	78Se(d,3He)77As		
77Se	99.44	76Se(n,g)77Se	0.54	77Se(n,g)78Se	0.01	77As(B-)77Se				
78Cu	63.22	78Cu-85Rb.918	36.78	78Cu-u						
78Zn	51.63	78Zn-88Rb.886	48.37	78Zn-85Rb.918						
78Ga	88.34	78Ga-85Rb.918	11.66	78Ga-88Rb.886						
78Se	95.30	77Se(n,g)78Se	3.48	78Kr-78Se	0.55	80Se(p,t)78Se	0.51	78Se(p,a)75As	0.15	78Se(d,3He)77As
78Kr	88.83	78Kr-78Se	10.86	78Kr-86Kr.907	0.31	80Kr(a,6He)78Kr				
79Zn	67.65	79Zn-88Rb.898	32.35	79Zn-85Rb.929						
79Ga	58.19	79Ga-85Rb.929	41.80	79Ga-88Rb.898	0.01	79Ga(B-)79Ge				
79Ge	86.23	79Ga(B-)79Ge	13.77	79Ge(B-)79As						
79As	99.76	80Se(d,3He)79As	0.24	79Ge(B-)79As						
79Br	96.18	79Br(n,g)80Br	3.82	79Br-79Rb						
79Rb	82.22	79Rb-85Rb.929	16.60	79Br-79Rb	1.18	79Sr-79Rb				
79Sr	78.37	79Sr-85Rb.929	21.63	79Sr-79Rb						
80Zn	85.56	80Zn-85Rb.941	14.44	80Zn-88Rb.909						
80Se	35.78	82Se 35Cl-80Se	25.07	80Se(n,g)81Se	19.76	80Se(p,t)78Se	8.57	82Se(p,t)80Se	7.41	80Se(p,a)77As
80Br	96.24	80Se(p,n)80Br	3.76	79Br(n,g)80Br						
80Kr	45.96	80Kr-86Kr.930	19.24	80Kr-85Rb.941	8.05	81Se-80Kr1.013	5.69	153Nd-80Kr1.913	4.96	156Pm-80Kr1.950
81As	73.81	81As-88Rb.920	26.19	82Se(d,3He)81As						
81Se	72.14	80Se(n,g)81Se	17.25	81Se-80Kr1.013	10.61	82Se(p,d)81Se				
81Br	94.28	81Br(n,g)82Br	5.15	81Kr(e)81Br	0.57	87Rb(3He,t)87Sr				
81Kr	83.71	81Kr(e)81Br	9.30	87Rb(3He,t)87Sr	6.99	80Kr(d,p)81Kr				
81Rb	76.06	81Rb-85Rb.953	23.94	80Kr(3He,d)81Rb						
82Se	92.53	82Se-82Kr	4.28	82Se 35Cl-80Se	1.19	82Se(p,d)81Se	1.02	82Se(p,t)80Se	0.60	82Se(d,3He)81As
82Br	94.36	82Br(B-)82Kr	5.64	81Br(n,g)82Br						
82Kr	75.44	82Kr-84Kr.976	24.56	82Kr-86Kr.953						
82Sr	64.65	82Sr-85Rb.965	35.35	84Sr(p,t)82Sr						
83Br	54.40	83Br(B-)83Kr	45.60	82Se(3He,d)83Br						
83Kr	100.00	83Kr-84Kr.988								
83Rb	100.00	83Rb-85Rb.976								
83Sr	58.73	83Sr-83Rb	41.27	83Sr(B+)83Rb						
84Se	99.89	84Se-88Rb.955	0.11	84Se(B-)84Br						
84Br	73.56	84Br(B-)84Kr	26.44	84Se(B-)84Br						
84Kr	20.97	84Kr-N6	19.73	86Kr-84Kr1.024	14.61	86Kr-84Kr	9.23	C2 O4-84Kr	6.78	129Xe2-84Kr3
84Rb	72.74	84Rb(B+)84Kr	27.26	84Rb(B-)84Sr						
84Sr	88.80	84Sr-85Rb.988	6.83	84Rb(B-)84Sr	2.12	84Sr(d,p)85Sr	1.26	84Y(B+)84Sr	0.99	84Sr(p,t)82Sr
84Y	81.80	84Y O-97Mo1.031	18.20	84Y(B+)84Sr						
85Rb	65.88	86Kr-85Rb	34.10	85Rb-84Kr						
85Sr	87.93	85Rb(3He,t)85Sr	12.07	84Sr(d,p)85Sr						
86Kr	26.70	86Kr-N6	16.10	129Xe2-86Kr3	11.70	C2 O4-86Kr	10.30	86Kr-84Kr	10.09	86Kr-84Kr1.024
86Sr	53.52	86Sr-84Kr1.024	46.48	86Sr-86Kr						
86Zr	69.25	86Zr-85Rb1.012	30.75	86Zr O-98Mo1.04						
87Rb	81.03	87Rb-86Kr	18.65	87Rb-C6 H14	0.06	91Zr-87Rb1.046	0.06	90Zr-87Rb1.034	0.05	92Zr-87Rb1.057
87Sr	58.91	87Sr-86Kr1.012	41.09	87Sr-84Kr1.036						
87Zr	73.15	87Zr O-97Mo1.06	26.85	90Zr(3He,6He)87						
87Mo	53.34	87Mo-85Rb1.024	46.66	87Mo1.069-C7 H9						
88Rb	98.61	87Rb(n,g)88Rb	0.34	79Ga-88Rb.898	0.21	76Zn-88Rb.864	0.19	78Ga-88Rb.886	0.15	94Rb-88Rb1.068
88Sr	58.34	88Sr-86Kr1.023	41.66	88Sr-84Kr1.048						
88Zr	70.61	88Zr O-98Mo1.06	29.19	90Zr(p,t)88Zr	0.19	88Nb(B+)88Zr				
88Nb	66.68	88Nb O-98Mo1.06	33.32	88Nb(B+)88Zr						
89Rb	56.80	89Rb(B-)89Sr	41.90	89Rb-85Rb1.047	1.30	91Rb-93Rb.489 8				

89Sr	99.99 88Sr(n,g)89Sr	0.01 89Rb(B-)89Sr			
89Y	50.84 89Y-87Rb1.023	48.90 89Y-85Rb1.047	0.20 89Zr(B+)89Y	0.07 89Y(n,g)90Y	
89Zr	84.44 89Zr(B+)89Y	15.32 90Zr(d,t)89Zr	0.24 89Nb(B+)89Zr		
89Nb	77.73 89Nb-u	22.27 89Nb(B+)89Zr			
90Rb	59.23 90Rb-85Rb1.059	40.77 90Rb(B-)90Sr			
90Sr	98.77 90Sr(B-)90Y	1.23 90Rb(B-)90Sr			
90Y	99.93 89Y(n,g)90Y	0.07 90Sr(B-)90Y			
90Zr	62.36 90Zr-87Rb1.034	30.23 90Zr-u	7.33 90Zr(n,g)91Zr	0.03 90Nb(B+)90Zr	0.02 90Zr(d,t)89Zr
90Nb	68.71 90Nb(B+)90Zr	31.29 90Mo(B+)90Nb			
90Mo	62.55 90Mo-C7 H6	37.45 90Mo(B+)90Nb			
90Ru	85.86 90Ru-85Rb1.059	14.14 90Ru1.033-C7 H9			
91Rb	70.14 91Rb-85Rb1.071	18.36 91Rb(B-)91Sr	11.50 91Rb-93Rb.489 8		
91Sr	80.99 91Sr(B-)91Y	11.06 92Rb(B-n)91Sr	7.95 91Rb(B-)91Sr		
91Y	98.21 91Y(B-)91Zr	1.79 91Sr(B-)91Y			
91Zr	50.34 91Zr(n,g)92Zr	28.54 91Zr-87Rb1.046	16.52 91Zr-u	4.59 90Zr(n,g)91Zr	
91Nb	97.73 91Zr(p,n)91Nb	2.27 91Mo(B+)91Nb			
91Mo	65.10 91Mo-C7 H7	23.52 92Mo(p,d)91Mo	11.38 91Mo(B+)91Nb		
91Tc	44.74 91Tc-C7 H7	33.20 91Tc-94Mo.968	22.06 91Tc-85Rb1.071		
91Ru	37.37 91Ru-C7 H7	36.92 91Ru-85Rb1.071	25.71 91Ru-94Mo.968		
92Rb	53.34 92Rb-85Rb1.082	31.68 92Rb(B-)92Sr	14.51 92Rb(B-n)91Sr	0.31 94Rb-95Rb.660 9	0.16 95Rb-96Rb.742 9
92Sr	89.73 92Sr-85Rb1.082	7.30 92Rb(B-)92Sr	2.97 92Sr(B-)92Y		
92Y	57.85 92Y(B-)92Zr	28.82 92Sr(B-)92Y	13.33 94Zr(d,a)92Y		
92Zr	45.19 91Zr(n,g)92Zr	31.58 92Zr-u	23.14 92Zr-87Rb1.057	0.07 92Zr(n,g)93Zr	0.02 92Zr(p,n)92Nb
92Nb	72.73 92Zr(p,n)92Nb	27.27 93Nb(g,n)92Nb			
92Mo	87.18 92Mo-87Rb1.057	12.81 92Mo-u	0.01 92Mo(p,d)91Mo		
92Tc	59.99 92Tc-85Rb1.082	40.01 92Tc.989-C7 H7			
92Ru	72.25 92Ru-85Rb1.082	27.75 92Ru1.011-C7 H9			
93Rb	70.66 93Rb-85Rb1.094	26.45 93Rb(B-)93Sr	2.52 91Rb-93Rb.489 8	0.37 95Rb-97Rb.490 9	
93Sr	65.77 93Sr-85Rb1.094	23.75 93Rb(B-)93Sr	10.49 93Sr(B-)93Y		
93Y	76.28 93Y(B-)93Zr	23.72 93Sr(B-)93Y			
93Zr	97.61 92Zr(n,g)93Zr	2.35 93Zr(B-)93Nb	0.03 93Y(B-)93Zr		
93Nb	52.69 93Zr(B-)93Nb	30.74 93Nb(n,g)94Nb	16.57 93Nb(g,n)92Nb		
93Ru	73.43 93Ru-C7 H9	26.57 93Ru-85Rb1.094			
93Rh	55.15 93Rh-C7 H9	44.85 93Rh-85Rb1.094			
94Rb	70.16 94Rb-85Rb1.106	29.58 94Rb-88Rb1.068	0.25 94Rb-95Rb.660 9		
94Sr	98.35 94Sr-85Rb1.106	1.65 94Sr(B-)94Y			
94Y	50.23 94Y(B-)94Zr	39.59 94Sr(B-)94Y	10.18 96Zr(d,a)94Y		
94Zr	77.16 94Zr-u	22.54 94Zr-87Rb1.080	0.28 94Zr(n,g)95Zr	0.02 94Y(B-)94Zr	
94Nb	69.21 93Nb(n,g)94Nb	30.80 94Nb(B-)94Mo			
94Mo	67.91 94Mo(n,g)95Mo	18.73 94Mo-87Rb1.080	13.02 94Mo-u	0.19 94Nb(B-)94Mo	0.07 91Tc-94Mo.968
94Ru	56.23 94Ru-85Rb1.106	43.77 94Ru-C7 H10			
94Rh	62.19 94Rh-85Rb1.106	37.81 94Rh-C7 H10			
95Rb	51.38 95Rb(B-)95Sr	25.52 95Rb-96Rb.742 9	12.66 94Rb-95Rb.660 9	10.45 95Rb-97Rb.490 9	
95Sr	38.90 95Sr-85Rb1.118	38.89 95Sr-97Zr.979	20.10 95Sr(B-)95Y	2.10 95Rb(B-)95Sr	
95Y	56.21 95Y(B-)95Zr	32.31 95Sr(B-)95Y	11.49 96Zr(t,a)95Y		
95Zr	91.43 94Zr(n,g)95Zr	8.16 95Zr(B-)95Nb	0.41 95Y(B-)95Zr		
95Nb	97.37 95Nb(B-)95Mo	2.63 95Zr(B-)95Nb			
95Mo	66.53 95Mo(n,g)96Mo	21.15 94Mo(n,g)95Mo	12.17 95Mo-u	0.15 95Nb(B-)95Mo	
95Tc	97.42 95Tc(B+)95Mo	2.58 95Ru(B+)95Tc			
95Ru	90.26 96Ru(p,d)95Ru	9.74 95Ru(B+)95Tc			
95Rh	85.93 95Rh-85Rb1.118	14.07 95Rh.989-C7 H10			
96Kr	88.49 96Kr-85Rb1.129	11.51 96Kr-u			
96Rb	99.71 96Rb-88Rb1.091	0.29 95Rb-96Rb.742 9			
96Sr	82.59 96Sr-97Zr.990	17.41 96Sr(B-)96Y			
96Y	91.95 96Y-97Zr.990	8.05 96Sr(B-)96Y			
96Zr	52.21 96Zr-u	29.25 96Zr-96Mo	13.04 96Zr-87Rb1.103	5.41 96Zr-96Nb	0.08 96Zr(n,g)97Zr
96Nb	62.83 96Zr-96Nb	37.17 96Nb-96Mo			
96Mo	46.09 96Zr-96Mo	29.82 95Mo(n,g)96Mo	15.37 96Mo(n,g)97Mo	8.52 96Nb-96Mo	0.06 102Cd-96Mo1.063
96Ru	100.00 96Ru-96Mo				
97Rb	87.03 97Rb-85Rb1.141	12.95 97Rb-88Rb1.102	0.02 95Rb-97Rb.490 9		
97Sr	86.80 97Sr-85Rb1.141	13.20 97Sr-97Zr			
97Zr	99.91 96Zr(n,g)97Zr	0.02 99Sr-97Zr1.021	0.02 98Sr-97Zr1.010	0.01 97Sr-97Zr	0.01 97Zr(B-)97Nb
97Nb	50.01 97Zr(B-)97Nb	49.99 97Nb(B-)97Mo			
97Mo	43.77 96Mo(n,g)97Mo	24.09 97Mo-u	20.52 97Mo-87Rb1.115	11.50 97Mo(n,g)98Mo	0.03 87Zr O-97Mo1.06
97Tc	52.95 96Mo(3He,d)97Tc	47.05 97Mo(p,n)97Tc			
98Rb	70.89 98Rb-u	29.11 98Rb-85Rb1.153			
98Sr	88.01 98Sr-85Rb1.153	11.99 98Sr-97Zr1.010			

98Zr	82.17	98Zr-97Zr1.010	17.83	96Zr(t,p)98Zr						
98Mo	86.90	97Mo(n,g)98Mo	12.43	98Mo-u	0.59	98Mo(n,g)99Mo	0.06	86Zr O-98Mo1.04	0.02	88Zr O-98Mo1.06
98Tc	57.23	99Tc(p,d)98Tc	29.21	97Mo(3He,d)98Tc	11.40	98Mo(p,n)98Tc	2.16	98Tc(B-)98Ru		
98Ru	91.57	C7 H14-98Ru	8.43	98Tc(B-)98Ru						
98Pd	99.64	98Pd-85Rb1.153	0.36	98Ag(B+)98Pd						
98Ag	78.00	98Ag-85Rb1.153	22.00	98Ag(B+)98Pd						
99Sr	52.78	99Sr-85Rb1.165	47.22	99Sr-97Zr1.021						
99Zr	64.81	99Zr-97Zr1.021	35.19	99Zr-u						
99Mo	98.95	98Mo(n,g)99Mo	1.05	99Mo(B-)99Tc						
99Tc	78.24	99Mo(B-)99Tc	20.01	99Tc(B-)99Ru	1.76	99Tc(p,d)98Tc				
99Ru	97.66	99Ru(n,g)100Ru	2.34	99Tc(B-)99Ru						
99Rh	88.75	99Pd(B+)99Rh	11.25	99Rh(B+)99Ru						
99Pd	99.31	99Pd-96Mo1.031	0.69	99Pd(B+)99Rh						
100Rb	54.99	100Rb-u	45.01	100Rb-85Rb1.176						
100Sr	55.14	100Sr-97Zr1.031	44.86	100Sr-85Rb1.176						
100Zr	76.41	100Zr-97Zr1.031	23.59	100Zr-u						
100Mo	65.20	100Mo-u	32.10	100Mo-87Rb1.149	2.67	100Mo-100Ru	0.02	100Mo(t,p)102Mo	0.01	100Mo(3He,p)102
100Ru	96.52	100Mo-100Ru	2.33	99Ru(n,g)100Ru	1.15	100Ru(n,g)101Ru	0.01	100Rh(B+)100Ru		
100Rh	82.11	100Rh(B+)100Ru	17.89	100Rh-u						
100Pd	53.99	102Pd(p,t)100Pd	46.01	96Ru(16O,12C)10						
101Zr	80.00	101Zr-97Zr1.041	20.00	101Zr-u						
101Ru	98.31	100Ru(n,g)101Ru	1.69	101Ru(n,g)102Ru						
101Rh	88.41	101Pd(B+)101Rh	11.59	103Rh(p,t)101Rh						
101Pd	93.22	101Pd-96Mo1.052	6.78	101Pd(B+)101Rh						
102Zr	92.02	102Zr-97Zr1.052	7.98	102Zr(B-)102Nbm						
102Nb	99.39	102Nb-97Zr1.052	0.61	102Nbm-102Nb						
102Nbm	94.21	102Nbm-102Nb	5.79	102Zr(B-)102Nbm						
102Mo	82.76	102Mo-97Zr1.052	17.24	100Mo(t,p)102Mo						
102Tc	79.01	104Ru(d,a)102Tc	20.99	100Mo(3He,p)102						
102Ru	98.28	101Ru(n,g)102Ru	0.98	106Nb-102Ru1.03	0.72	102Ru(n,g)103Ru	0.01	102Pd-102Ru		
102Pd	99.99	102Pd-102Ru	0.01	102Pd(p,t)100Pd						
102Cd	88.23	102Cd-85Rb1.200	11.77	102Cd-96Mo1.063						
102In	85.74	102In-96Mo1.063	14.26	102In-85Rb1.200						
103Ru	99.18	102Ru(n,g)103Ru	0.76	104Ru(d,t)103Ru	0.06	103Ru(B-)103Rh				
103Rh	98.38	103Ru(B-)103Rh	1.62	103Rh(p,t)101Rh						
103Cd	85.66	103Cd-85Rb1.212	13.96	103Cd-96Mo1.073	0.38	103In(B+)103Cd				
103In	76.82	103In-85Rb1.212	12.94	103In-u	10.24	103In(B+)103Cd				
104Mo	97.24	104Mo-97Zr1.072	2.76	104Mo(B-)104Tc						
104Tc	70.25	104Mo(B-)104Tc	29.75	104Tc(B-)104Ru						
104Ru	57.70	104Ru(d,t)103Ru	30.89	104Ru(n,g)105Ru	9.96	C8 H8-104Ru	1.24	104Ru(d,a)102Tc	0.21	104Tc(B-)104Ru
104Cd	89.34	104Cd-85Rb1.224	10.66	104Cd-96Mo1.083						
104Sn	92.87	104Sn-87Rb1.195	7.13	108Te(a)104Sn						
105Mo	98.38	105Mo-97Zr1.082	1.62	105Mo(B-)105Tc						
105Tc	58.98	105Mo(B-)105Tc	41.02	105Tc(B-)105Ru						
105Ru	69.06	104Ru(n,g)105Ru	25.36	105Ru(B-)105Rh	5.14	106Ru-105Ru1.01	0.23	110Ru-105Ru1.04	0.12	105Tc(B-)105Ru
105Rh	74.57	105Rh(B-)105Pd	25.43	105Ru(B-)105Rh						
105Pd	95.99	105Pd(n,g)106Pd	3.85	105Rh(B-)105Pd	0.15	105Pd(3He,d)106				
105Ag	91.06	105Cd(B+)105Ag	8.94	107Ag(p,t)105Ag						
105Cd	99.23	105Cd-85Rb1.235	0.77	105Cd(B+)105Ag						
105Sn	57.96	105Sn-87Rb1.207	36.05	105Sn-85Rb1.235	5.99	109Te(a)105Sn				
106Nb	88.19	106Nb-52Cr2.038	11.81	106Nb-102Ru1.03						
106Ru	63.29	106Ru(B-)106Rh	36.72	106Ru-105Ru1.01						
106Rh	63.32	106Rh(B-)106Pd	36.68	106Ru(B-)106Rh						
106Pd	69.92	106Cd-106Pd	20.18	106Pd-u	5.22	106Pd(n,g)107Pd	3.65	105Pd(n,g)106Pd	0.71	106Rh(B-)106Pd
106Ag	81.02	106Ag(e)106Pd	12.34	105Pd(3He,d)106	6.64	107Ag(p,d)106Ag				
106Cd	43.33	106Cd-85Rb1.247	29.90	106Cd-106Pd	26.77	106Cd-u				
106Sn	51.71	106Sn-87Rb1.218	39.46	106Sn-85Rb1.247	8.82	110Te(a)106Sn				
107Pd	93.66	106Pd(n,g)107Pd	6.34	107Pd(B-)107Ag						
107Ag	53.33	107Pd(B-)107Ag	29.68	107Cd(B+)107Ag	10.89	C8 H11-107Ag	3.81	107Ag(p,d)106Ag	2.29	107Ag(p,t)105Ag
107Cd	87.99	107Cd-85Rb1.259	11.45	107Cd(B+)107Ag	0.55	107In(B+)107Cd				
107In	75.29	107In(B+)107Cd	24.71	107In-u						
107Sb	58.94	107Sb-87Rb1.230	21.07	107Sb-133Cs.805	19.98	111I(a)107Sb				
108Pd	40.83	108Pd-108Cd	40.04	108Pd-u	19.12	108Pd(n,g)109Pd				
108Cd	45.72	108Pd-108Cd	27.46	108Cd-85Rb1.271	25.06	108Cd-u	1.58	108Cd(3He,d)109	0.17	108In(B+)108Cd
108In	88.60	108In(B+)108Cd	11.40	108Sn(B+)108In						
108Sn	95.92	108Sn-87Rb1.241	4.08	108Sn(B+)108In						
108Te	93.73	108Te-87Rb1.241	6.27	108Te(a)104Sn						

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109Rh     64.29 110Pd(d,3He)109  35.71 109Rh-120Sn.908
109Pd     80.60 108Pd(n,g)109Pd  19.40 109Pd(B-)109Ag
109Ag     56.56 109Ag(n,g)110Ag  29.76 109Pd(B-)109Ag   13.68 109Cd(e)109Ag
109Cd     75.34 109Cd-85Rb1.282  21.51 109Cd(e)109Ag     3.15 109In(B+)109Cd
109In     69.97 108Cd(3He,d)109  30.03 109In(B+)109Cd
109Sn     77.92 112Sn(3He,6He)1  22.08 109Sb(B+)109Sn
109Sb     91.78 109Sb-87Rb1.253   8.22 109Sb(B+)109Sn
109Te     54.04 109Te-87Rb1.253  32.13 109Te-133Cs.820   7.41 109Te(a)105Sn     6.43 113Xe(a)109Te
110Ru     97.22 110Ru-105Ru1.04   2.78 110Ru(B-)110Rh
110Rh     87.72 110Rh(B-)110Pd   12.28 110Ru(B-)110Rh
110Pd     71.41 110Pd-110Cd      27.98 110Pd-u           0.52 110Pd(d,3He)109   0.08 110Pd(t,p)112Pd   0.01 110Rh(B-)110Pd
110Ag     56.71 110Ag(B-)110Cd   43.29 109Ag(n,g)110Ag
110Cd     77.20 110Cd(n,g)111Cd  11.95 110Cd-u           8.58 110Pd-110Cd       2.19 110Ag(B-)110Cd    0.07 108Cd(3He,d)109
110Te     84.03 110Te-133Cs.827  15.97 110Te(a)106Sn
111Cd     80.68 111Cd(n,g)112Cd  19.32 110Cd(n,g)111Cd
111In     69.03 113In(p,t)111In  19.32 108Cd(3He,d)109  11.65 113In(p,t)111In
111I      70.00 111I-87Rb1.276   30.00 111I(a)107Sb
112Rh     65.68 112Rh(B-)112Pd   18.51 112Rh-120Sn.933  15.82 112Rh-u
112Pd     88.80 112Pd-120Sn.933  10.70 110Pd(t,p)112Pd   0.50 112Rh(B-)112Pd
112Cd     48.40 113In-112Cd1.00  35.19 113Cd-112Cd1.00   8.29 111Cd(n,g)112Cd   6.08 112Cd(d,p)113Cd   1.96 112Sn-112Cd
112In     50.02 112Cd(p,n)112In  49.98 112In(B-)112Sn
112Sn     97.19 112Sn-112Cd       2.10 112Sn-120Sn.933   0.65 112Sn(n,g)113Sn   0.03 112In(B-)112Sn    0.02 112Sn(3He,6He)1
113Ru     79.51 113Ru-105Ru1.07  20.49 113Ru-u
113Cd     59.48 113Cd-115In.983  29.71 113Cd-112Cd1.00   5.43 113Cd(n,g)114Cd   5.38 112Cd(d,p)113Cd
113In     77.09 113In-115In.983  16.58 113In-112Cd1.00   6.17 113In(n,g)114In   0.10 113Sn(B+)113In    0.07 113In(p,t)111In
113Sn     69.27 112Sn(n,g)113Sn  16.67 113Sn(B+)113In   14.06 114Sn(d,t)113Sn
113Xe     82.17 113Xe-133Cs.850  17.83 113Xe(a)109Te
114Rh     59.01 114Rh-120Sn.950  40.99 114Rh-u
114Cd     92.94 113Cd(n,g)114Cd   7.06 116Cd 35Cl-114C
114In     81.91 113In(n,g)114In  18.09 114In(B-)114Sn
114Sn     99.88 114Sn(n,g)115Sn   0.12 114In(B-)114Sn
114Sb     68.09 114Sb-u          31.91 114Sn(p,n)114Sb
115Pd     93.63 115Pd-120Sn.958   6.37 115Pd(B-)115Ag
115Ag     66.77 115Ag-133Cs.865  20.85 115Ag(B-)115Cd   12.38 115Pd(B-)115Ag
115Cd     99.98 114Cd(d,p)115Cd   0.02 115Ag(B-)115Cd
115In     99.98 115In-129Xe       0.01 113In-115In.983   0.01 113Cd-115In.983
115Sn     99.97 115In-115Sn       0.02 114Sn(n,g)115Sn   0.01 115Sn(n,g)116Sn
116Rh     62.82 116Rh-120Sn.967  37.18 116Rh-u
116Cd     97.75 116Cd-116Sn       2.25 116Cd 35Cl-114C
116Sn     99.09 115Sn(n,g)116Sn   0.79 116Cd-116Sn       0.12 116Sn(n,g)117Sn   0.01 116Sn(p,n)116Sb
116Sb     75.07 116Sn(p,n)116Sb  24.93 115Sn(3He,d)116
116Te     97.35 116Te-u           2.65 116I(B+)116Te
116I      45.11 116I(B+)116Te    40.87 116I-u           14.02 116Xe(B+)116I
116Xe     99.64 116Xe-133Cs.872   0.36 116Xe(B+)116I
117Pd     95.78 117Pd-120Sn.975   4.22 117Pd(B-)117Ag
117Ag     82.93 117Ag-133Cs.880  17.07 117Pd(B-)117Ag
117In     94.35 117In(B-)117Sn    5.65 120Sn(t,a)119In
117Sn     96.79 116Sn(n,g)117Sn   3.16 117Sn(n,g)118Sn   0.05 117Sn(p,n)117Sb
117Sb     71.17 116Sn(3He,d)117  17.78 117Sn(p,n)117Sb  11.05 117Te(B+)117Sb
117Te     50.72 117Te(B+)117Sb   46.37 117Te-u           2.91 117I(B+)117Te
117I      88.46 117I-u           11.54 117I(B+)117Te
118Pd     61.23 118Pd-120Sn.983  38.77 118Pd-129Xe.915
118In    100.00 119Sn(t,a)118In
118Sn     96.61 117Sn(n,g)118Sn   3.34 118Sn(n,g)119Sn   0.05 118Sn(3He,d)119
119Ag     97.32 119Ag-133Cs.895   2.68 119Ag(B-)119Cd
119Cd     77.98 119Ag(B-)119Cd   22.02 119Cd(B-)119In
119In     86.20 120Sn(t,a)119In  13.15 120Sn(d,3He)119   0.65 119Cd(B-)119In
119Sn     92.55 118Sn(n,g)119Sn   7.29 120Sn(d,t)119Sn   0.16 119Sb(e)119Sn
119Sb     48.77 118Sn(3He,d)119  33.81 119Sb(e)119Sn    17.42 119Sb-u
119Xe     86.21 119Xe-133Cs.895  13.79 119Xe-u
120Pd     68.62 120Pd-120Sn      31.38 120Pd-129Xe.930
120Sn     22.86 112Sn-120Sn.933  22.38 115Sn-120Sn.958  19.57 129Xe-120Sn1.07  12.42 120Sn(d,t)119Sn  12.36 124Sn-120Sn1.03
120Te     97.97 122Te(p,t)120Te   1.99 122Te(p,t)120Te   0.04 120Te(3He,d)121
121Sn     97.46 120Sn(n,g)121Sn   2.54 122Sn(d,t)121Sn
121Sb     95.55 121Sb(n,g)122Sb   4.32 115Sn(3He,d)116   0.13 121Te(B+)121Sb
121Te     73.59 121Te(B+)121Sb   26.41 121I(B+)121Te
121I      99.40 120Te(3He,d)121   0.60 121I(B+)121Te
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121Xe	84.98	121Xe-133Cs.910	15.02	121Cs(B+)121Xe						
121Cs	46.05	121Cs(B+)121Xe	37.65	121Cs-133Cs.910	16.30	121Cs-u				
122Cd	72.43	122Cd-130Xe.938	27.57	122Cd-133Cs.917						
122Sn	58.49	122Sn(d,t)121Sn	41.51	122Sn(n,g)123Sn						
122Sb	67.59	122Sb(B-)122Te	27.97	123Sb(g,n)122Sb	4.44	121Sb(n,g)122Sb				
122Te	98.77	122Te(n,g)123Te	0.75	122Sb(B-)122Te	0.48	122Te(3He,d)123				
122Cs	56.76	122Cs-133Cs.917	43.24	122Cs-u						
123Cd	99.60	123Cd-130Xe.946	0.40	123Cd(B-)123In						
123In	43.38	123In(B-)123Sn	31.92	123Cd(B-)123In	24.71	124Sn(d,3He)123				
123Sn	52.33	122Sn(n,g)123Sn	37.15	124Sn(d,t)123Sn	10.16	123Sn(B-)123Sb	0.36	123In(B-)123Sn		
123Sb	98.13	123Te-123Sb	1.55	123Sn(B-)123Sb	0.32	123Sb(g,n)122Sb				
123Te	96.96	123Te(n,g)124Te	1.84	123Te-123Sb	1.20	122Te(n,g)123Te				
123I	96.34	122Te(3He,d)123	3.66	123Xe(B+)123I						
123Xe	61.99	123Xe-133Cs.925	38.01	123Xe(B+)123I						
124Cd	67.84	124Cd-130Xe.954	31.98	124Cd-133Cs.932	0.17	124Cd(B-)124In				
124In	61.13	124Cd(B-)124In	38.87	124In(B-)124Sn						
124Sn	45.09	124Sn-129Xe.961	33.84	124Sn-120Sn1.03	16.12	124Sn-124Te	4.85	124Sn(d,t)123Sn	0.05	124Sn(d,3He)123
124Te	82.51	124Sn-124Te	13.84	124Te(n,g)125Te	3.01	123Te(n,g)124Te	0.64	124Xe-124Te		
124Xe	99.35	124Xe-124Te	0.65	124Xe(n,g)125Xe						
125Te	86.15	124Te(n,g)125Te	13.84	125Te(n,g)126Te						
125Xe	99.30	124Xe(n,g)125Xe	0.70	125Cs(B+)125Xe						
125Cs	70.38	125Cs-133Cs.940	29.62	125Cs(B+)125Xe						
125Ba	97.87	125Ba-133Cs.940	2.13	125La(B+)125Ba						
125La	86.55	125La-u	13.45	125La(B+)125Ba						
126Cd	56.17	126Cd-130Xe.969	43.83	126Cd-133Cs.947						
126Te	86.11	125Te(n,g)126Te	10.13	128Te 35Cl-126T	2.08	126I(B+)126Te	1.68	126Te(n,g)127Te		
126I	51.84	126I(B+)126Te	48.16	127I(g,n)126I						
126Xe	100.00	126Xe-128Xe.984								
126Cs	73.17	126Cs-133Cs.947	26.83	126Cs(B+)126Xe						
127In	80.06	127In-133Cs.955	19.94	127In(B-)127Sn						
127Inn	57.87	127Inn-133Cs.95	42.13	127Inn(B-)127Sn						
127Sn	68.12	127Sn 34S-133Cs	16.21	127In(B-)127Sn	14.12	127Sn(B-)127Sb	1.55	127Inn(B-)127Sn		
127Sb	96.17	127Sb(B-)127Te	3.83	127Sn(B-)127Sb						
127Te	98.27	126Te(n,g)127Te	1.46	127Te(B-)127I	0.27	127Sb(B-)127Te				
127I	35.25	127I(g,n)126I	23.96	127Te(B-)127I	20.91	C10 H7-127I	13.10	127I(n,g)128I	6.76	127Xe(e)127I
127Xe	91.19	127Xe(e)127I	8.81	127Cs(B+)127Xe						
127Cs	81.68	127Cs-133Cs.955	18.32	127Cs(B+)127Xe						
127Ba	97.73	127Ba-133Cs.955	2.27	127La(B+)127Ba						
127La	86.57	127La-u	13.43	127La(B+)127Ba						
128Cd	60.60	128Cd-133Cs.962	39.40	128Cd-130Xe.985						
128Sn	57.65	128Sn-u	42.35	128Sn(B-)128Sbm						
128Sbm	54.98	128Sbm(B-)128Te	45.02	128Sn(B-)128Sbm						
128Te	49.11	130Te 35Cl-128T	47.08	128Te-128Xe	2.55	128Te 35Cl-126T	1.22	128Te(n,g)129Te	0.04	128Sbm(B-)128Te
128I	86.88	127I(n,g)128I	13.11	128I(B-)128Xe						
128Xe	100.00	128Xe-129Xe.992								
128Cs	80.29	128Cs(B+)128Xe	19.71	128Cs-133Cs.962						
128Ba	98.23	130Ba(p,t)128Ba	1.77	128Ba-133Cs.962						
129In	53.25	129In-130Xe.992	36.57	129Inm(IT)129In	9.98	129In-133Cs.970	0.20	129In(B-)129Sn		
129Inm	63.28	129Inm(IT)129In	36.62	129Inm-130Xe.99	0.10	129Inm(B-)129Sn				
129Sn	43.75	129In(B-)129Sn	35.77	129Sn-u	20.48	129Inm(B-)129Sn				
129Te	98.77	128Te(n,g)129Te	1.23	129Te(B-)129I						
129I	60.22	129Te(B-)129I	39.78	129I(B-)129Xe						
129Xe	47.55	131Xe-129Xe1.01	13.58	C10 H10-129Xe	11.93	129Xe2-86Kr3	8.43	C3 O6-129Xe	6.37	132Xe-129Xe
129Cs	82.93	129Cs(B+)129Xe	12.19	129Cs-133Cs.970	4.88	129Ba(B+)129Cs				
129Ba	49.02	130Ba(d,t)129Ba	44.70	129Ba(B+)129Cs	6.28	129La(B+)129Ba				
129La	58.33	129La-u	41.67	129La(B+)129Ba						
130In	92.28	130In-133Cs.977	7.72	130In-130Inn						
130Inm	79.41	130Inm-133Cs.97	10.99	130Inm-130Inn	9.61	130Inm-130Te				
130Inn	59.66	130Inn-133Cs.97	17.62	130Inn-130Te	12.03	130Inm-130Inn	10.70	130In-130Inn		
130Sn	73.26	130Sn-130Xe	26.58	130Sn-133Cs.977	0.16	130Sn(B-)130Sb				
130Sb	90.03	130Sn(B-)130Sb	9.97	130Sb(B-)130Te						
130Te	77.87	130Te-129Xe	22.13	130Te-130Xe						
130Xe	50.22	130Xe-129Xe	37.10	132Xe-130Xe	12.67	130Te-130Xe				
130Cs	47.62	130Cs-133Cs.977	34.92	130Cs(B+)130Xe	17.46	129Xe(3He,d)130				
130Ba	98.86	130Ba-130Xe	0.82	130Ba-85Rb1.529	0.19	122Te(p,t)120Te	0.11	130Ba(p,t)128Ba	0.02	130Ba(d,t)129Ba
131Cd	63.10	131Cd-u	36.90	131Cd-133Cs.985						
131In	66.65	131In-130Xe1.00	33.35	131In-133Cs.985						

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131Inm     88.32 131Inm-133Cs.98  11.68 131Inm-130Xe1.0
131Sn      80.88 131Sn 34S-133Cs  19.12 131Sn(B-)131Sb
131Sb      94.59 131Sb-130Xe1.00   5.41 131Sn(B-)131Sb
131Xe      58.45 131Xe-132Xe.992  41.55 131Xe-129Xe1.01
131Ce      95.69 131Ce-u           4.31 131Pr(B+)131Ce
131Pr      81.17 131Pr-u           9.49 131Nd(B+)131Pr    9.35 131Pr(B+)131Ce
131Nd      96.96 131Nd-u           3.04 131Nd(B+)131Pr
132Sn      61.08 132Sn-133Cs.992  38.92 132Sn-132Xe
132Sb      83.40 132Sb-130Xe1.01  16.60 132Sb-133Cs.992
132Te      75.76 132Te-130Xe1.01  24.24 132Te(B-)132I
132I       51.58 132Te(B-)132I    48.42 132I(B-)132Xe
132Xe      32.76 132Xe-C10 H10    25.85 131Xe-132Xe.992  14.19 132Xe-C3 O6       9.72 14N10-132Xe       7.14 132Xe-129Xe
132Cs      73.17 132Cs-133Cs.992  26.83 133Cs(g,n)132Cs
132Ba      98.20 132Ba(n,g)133Ba   1.78 122Te(p,t)120Te   0.02 132La(B+)132Ba
132La      66.06 132La(B+)132Ba   33.94 132La-u
132Ce      53.33 132Ce-u          46.67 132Ce O-142Sm1.
133Sn      72.53 133Sn-134Xe.993  27.47 133Sn-133Cs
133Sb      70.47 133Sb-130Xe1.02  18.26 133Sb(B-)133Te   11.28 133Sb-136Xe.978
133Te      93.00 133Te-130Xe1.02   7.00 133Sb(B-)133Te
133I       84.32 133I-133Cs       15.68 133I-u
133Cs      44.71 133Cs-129Xe      44.61 133Cs-132Xe      10.65 133Cs-C3 O6       0.02 133Cs(n,g)134Cs
133Ba      98.41 133Ba(e)133Cs     1.59 132Ba(n,g)133Ba
134Te      70.96 134Te-130Xe1.03  20.57 134Te-136Xe.985   8.46 134Te(B-)134I
134I       58.79 134I-133Cs1.008  41.21 134Te(B-)134I
134Xe     100.00 134Xe-132Xe1.01
134Cs      99.89 133Cs(n,g)134Cs   0.09 134Cs(B-)134Ba    0.01 134Cs(n,g)135Cs
134Ba      60.79 134Ba(n,g)135Ba  39.21 134Cs(B-)134Ba
135Sb      83.60 135Sb-130Xe1.03  16.40 135Sb-133Cs1.01
135Te      59.35 135Te-133Cs1.01  40.65 135Te-130Xe1.03
135I       92.44 135I-133Cs1.015   7.56 135I(B-)135Xe
135Xe      66.85 135Xe(B-)135Cs   33.15 135I(B-)135Xe
135Cs      86.58 135Cs-135Ba      13.20 134Cs(n,g)135Cs   0.22 135Xe(B-)135Cs
135Ba      59.12 135Ba(n,g)136Ba  35.27 134Ba(n,g)135Ba   5.60 135Cs-135Ba       0.01 135La(B+)135Ba
135La      88.92 135La(B+)135Ba   11.08 135Ce(B+)135La
135Ce      86.50 135Ce(B+)135La   13.50 135Ce-u
136Sb      84.70 136Sb-130Xe1.04  15.30 136Sb-133Cs1.02
136Te      62.40 136Te-130Xe1.04  23.99 136Te-136Xe      12.97 136Te-133Cs1.02   0.65 136Te(B-)136I
136I       50.33 136I(B-)136Xe    49.67 136Te(B-)136I
136Xe      80.85 136Xe-13C3 O6    19.13 136Xe-28Si4 D12   0.01 138Ba-136Xe1.01   0.01 136Xe-136Ba
136Ba      40.26 135Ba(n,g)136Ba  31.11 136Ba(n,g)137Ba  28.59 136Xe-136Ba       0.03 136Ce-136Ba
136Ce      99.95 136Ce-136Ba       0.04 136Ce(n,g)137Ce   0.02 136Pr(B+)136Ce
136Pr      67.21 136Pr-133Cs1.02  32.79 136Pr(B+)136Ce
137Te      69.75 137Te-130Xe1.05  30.25 137Te-133Cs1.03
137Ba      67.17 136Ba(n,g)137Ba  32.83 137Ba(n,g)138Ba
137Ce      99.96 136Ce(n,g)137Ce   0.04 137Pr(B+)137Ce
137Pr      66.10 137Pr(B+)137Ce   33.90 137Pr-133Cs1.03
137Nd      80.83 137Nd-133Cs1.03  17.60 137Nd-u           1.57 137Pmm(B+)137Nd
137Pmm     65.16 137Pmm(B+)137Nd  34.84 137Sm(B+)137Pmm
137Sm      53.49 137Sm-133Cs1.03  36.28 137Sm-u          10.23 137Sm(B+)137Pmm
138Te      74.81 138Te-130Xe1.06  25.19 138Te-133Cs1.03
138Xe      73.97 138Xe-133Cs1.03  26.03 138Xe-136Xe1.01
138Cs      50.68 138Cs(B-)138Ba   49.32 138Cs-133Cs1.03
138Ba      66.60 137Ba(n,g)138Ba  31.09 138Ba-136Xe1.01   1.34 138La-138Ba       0.95 138Ce-138Ba       0.02 138Cs(B-)138Ba
138La      81.15 138La-138Ba      18.85 138La-138Ce
138Ce      52.69 138La-138Ce      37.33 138Ce-138Ba       9.94 138Ce-136Xe1.01   0.02 138Prm(B+)138Ce   0.01 154Yb-138Ce O
138Prm     66.11 138Prm(B+)138Ce  33.89 138Prm-u
138Nd      96.40 138Nd-133Cs1.03   3.60 138Pm(B+)138Nd
138Pm      79.16 138Pm-133Cs1.03  17.24 138Pm-u           3.60 138Pm(B+)138Nd
139La      94.47 139La-136Xe1.02   5.52 139La(n,g)140La   0.01 139Ce(B+)139La
139Ce      99.88 139Ce(B+)139La    0.12 139Pr(B+)139Ce
139Pr      99.63 139Pr(B+)139Ce    0.37 139Nd(B+)139Pr
139Nd      69.86 139Pm(B+)139Nd   30.14 139Nd(B+)139Pr
139Pm      94.57 139Pm-133Cs1.04   5.43 139Pm(B+)139Nd
140Te      73.53 140Te-133Cs1.05  26.47 140Te-130Xe1.07
140Cs      79.05 140Cs-133Cs1.05  20.95 140Cs(B-)140Ba
140Ba      38.05 140Ba(B-)140La   36.69 140Ba-133Cs1.05  18.97 140Cs(B-)140Ba    6.29 141Cs(B-n)140Ba
140La      94.48 139La(n,g)140La   5.39 140La(B-)140Ce    0.14 140Ba(B-)140La
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140Ce	39.26 140La(B-)140Ce	31.78 140Ce O-133Cs1.	25.26 140Ce(n,g)141Ce	3.71 140Ce(t,p)142Ce	
140Pmm	77.85 140Pmm-133Cs1.0	22.15 140Pmm-u			
141Cs	38.06 141Cs-133Cs1.06	33.06 141Cs(B-)141Ba	20.13 141Cs-136Xe1.03	8.75 141Cs(B-n)140Ba	
141Ba	57.95 141Ba-u	27.22 141Ba-133Cs1.06	8.05 141Cs(B-)141Ba	6.77 141Ba(B-)141La	
141La	96.04 141La(B-)141Ce	3.96 141Ba(B-)141La			
141Ce	74.62 140Ce(n,g)141Ce	25.00 141Ce(B-)141Pr	0.39 141La(B-)141Ce		
141Pr	54.37 141Ce(B-)141Pr	45.63 141Pr(n,g)142Pr			
141Sm	49.85 144Sm(3He,6He)1	42.83 141Sm-133Cs1.06	7.32 141Eu(B+)141Sm		
141Eu	81.82 141Eu-133Cs1.06	18.18 141Eu(B+)141Sm			
142Cs	47.57 142Cs-136Xe1.04	33.36 142Cs-133Cs1.06	18.85 142Cs(B-)142Ba	0.22 144Cs-145Cs.662	
142Ba	48.78 142Ba-u	33.73 142Ba-133Cs1.06	12.23 142Cs(B-)142Ba	5.25 142Ba(B-)142La	
142La	94.03 142La(B-)142Ce	5.97 142Ba(B-)142La			
142Ce	78.45 142Ce(n,g)143Ce	20.69 140Ce(t,p)142Ce	0.86 142La(B-)142Ce		
142Pr	54.29 141Pr(n,g)142Pr	45.70 142Pr(B-)142Nd			
142Nd	77.38 142Nd(n,g)143Nd	21.63 142Pr(B-)142Nd	0.64 146Sm(a)142Nd	0.21 142Nd(3He,d)143	0.13 143Nd(3He,d)144
142Pm	88.65 142Pm-u	11.35 142Sm(B+)142Pm			
142Sm	96.74 122Te(p,t)120Te	0.98 130Ba(p,t)128Ba	0.84 148Eu-142Sm1.04	0.66 149Dy-142Sm1.04	0.49 158Yb-142Sm1.11
143Cs	91.49 143Cs-133Cs1.07	8.51 143Cs(B-)143Ba			
143Ba	72.81 143Ba-u	20.55 143Ba-133Cs1.07	6.64 143Cs(B-)143Ba		
143La	81.79 143La-u	18.21 143La(B-)143Ce			
143Ce	76.80 143Ce(B-)143Pr	21.52 142Ce(n,g)143Ce	1.68 143La(B-)143Ce		
143Pr	89.85 143Pr(B-)143Nd	10.15 143Ce(B-)143Pr			
143Nd	60.94 143Nd(n,g)144Nd	22.53 142Nd(n,g)143Nd	12.82 176Lu 37Cl-143N	3.62 143Pr(B-)143Nd	0.20 144Nd(3He,d)145
143Pm	49.18 143Nd(3He,d)144	28.57 142Nd(3He,d)143	22.24 147Eu(a)143Pm		
143Sm	100.00 144Sm(p,d)143Sm				
144Cs	42.89 144Cs-133Cs1.08	37.50 144Cs(B-)144Ba	19.61 144Cs-145Cs.662		
144Ba	70.88 144Ba-u	26.09 144Ba-133Cs1.08	3.04 144Cs(B-)144Ba		
144Nd	43.90 148Sm(a)144Nd	39.01 143Nd(n,g)144Nd	11.48 144Nd(n,g)145Nd	5.38 144Sm-144Nd	0.26 148Nd 35Cl2-144
144Pm	57.41 144Nd(3He,d)145	41.86 143Nd(3He,d)144	0.72 148Eu(a)144Pm		
144Sm	86.21 144Sm-144Nd	7.01 144Sm(n,g)145Sm	3.48 148Gd(a)144Sm	1.02 122Te(p,t)120Te	0.74 144Sm(3He,6He)1
144Eu	46.41 144Eu-133Cs1.08	38.69 144Eu(B+)144Sm	14.90 144Eu-u		
145Cs	98.58 145Cs-133Cs1.09	1.42 144Cs-145Cs.662			
145La	98.07 145La-u	1.93 145La(B-)145Ce			
145Ce	66.88 145Ce(B-)145Pr	17.54 145La(B-)145Ce	15.58 145Ce-u		
145Pr	49.50 145Pr(B-)145Nd	49.50 146Nd(d,3He)145	0.99 145Ce(B-)145Pr		
145Nd	84.49 144Nd(n,g)145Nd	15.50 145Nd(n,g)146Nd	0.02 145Pr(B-)145Nd		
145Pm	41.04 145Sm(e)145Pm	33.60 144Nd(3He,d)145	25.36 144Nd(3He,d)145		
145Sm	92.21 144Sm(n,g)145Sm	3.00 149Gd(a)145Sm	2.65 145Sm(e)145Pm	2.13 146Sm(3He,a)145	
145Eu	90.97 144Sm(3He,d)145	9.03 149Tb(a)145Eu			
145Gd	99.56 145Gd-u	0.44 145Tb(B+)145Gd			
145Tb	83.15 145Tb(B+)145Gd	16.85 145Tb-u			
146La	99.76 146La-u	0.24 146La(B-)146Ce			
146Ce	72.78 146Ce-u	23.82 146La(B-)146Ce	3.40 146Ce(B-)146Pr		
146Pr	76.40 146Ce(B-)146Pr	23.60 146Pr(B-)146Nd			
146Nd	83.94 145Nd(n,g)146Nd	14.47 146Nd(n,g)147Nd	1.55 148Nd 35Cl-146N	0.02 146Pr(B-)146Nd	0.02 146Nd(d,3He)145
146Sm	46.13 146Sm(a)142Nd	30.40 146Sm(3He,a)145	12.31 148Sm(p,t)146Sm	5.70 146Eu(B+)146Sm	5.45 150Gd(a)146Sm
146Eu	45.96 146Eu(B+)146Sm	24.09 144Sm(3He,p)146	18.50 146Eu-133Cs1.09	11.45 150Tb(a)146Eu	
146Gd	88.91 148Gd(p,t)146Gd	7.03 150Dy(a)146Gd	3.93 147Tb(p)146Gd	0.13 146Tb(B+)146Gd	
146Tb	79.97 146Tb(B+)146Gd	20.03 146Dy(B+)146Tb			
146Dy	99.64 146Dy-85Rb1.718	0.36 146Dy(B+)146Tb			
146Ho	50.00 146Ho-133Cs1.09	50.00 146Ho-85Rb1.718			
146Er	61.21 146Er-85Rb1.718	38.79 147Tm(p)146Er			
147Ce	92.07 147Ce-u	7.93 147Ce(B-)147Pr			
147Pr	52.37 147Ce(B-)147Pr	47.63 147Pr(B-)147Nd			
147Nd	84.96 146Nd(n,g)147Nd	14.41 147Nd(B-)147Pm	0.47 148Nd(d,t)147Nd	0.16 147Pr(B-)147Nd	
147Pm	82.33 147Pm(B-)147Sm	17.67 147Nd(B-)147Pm			
147Sm	71.54 147Sm(n,g)148Sm	15.40 149Sm 35Cl-147S	11.40 147Pm(B-)147Sm	1.14 147Eu(B+)147Sm	0.51 148Gd(p,d)147Gd
147Eu	56.78 147Eu(B+)147Sm	18.85 147Gd(B+)147Eu	14.42 147Eu(a)143Pm	9.95 151Tb(a)147Eu	
147Gd	86.20 148Gd(p,d)147Gd	6.69 147Gd(B+)147Eu	6.16 104Ru(d,t)103Ru	0.95 147Tb(B+)147Gd	
147Tb	52.46 147Tb-133Cs1.10	28.50 147Tb(B+)147Gd	19.04 147Tb(p)146Gd		
147Ho	52.63 147Ho-85Rb1.729	47.37 147Ho-133Cs1.10			
147Tm	55.46 147Tm(p)146Er	44.54 147Tm-85Rb1.729			
148Ce	85.46 148Ce-u	14.54 148Ce(B-)148Pr			
148Pr	66.03 148Ce(B-)148Pr	33.97 148Pr(B-)148Nd			
148Nd	60.65 148Nd 35Cl-146N	16.66 148Nd(d,t)147Nd	11.31 148Nd 35Cl2-144	10.97 148Nd(3He,d)149	0.42 148Pr(B-)148Nd
148Sm	35.40 148Sm(a)144Nd	27.82 150Sm 35Cl-148S	21.24 147Sm(n,g)148Sm	15.43 148Sm(n,g)149Sm	0.25 148Sm(p,t)146Sm
148Eu	50.83 148Eu-133Cs1.11	38.90 148Eu-142Sm1.04	10.27 148Eu(a)144Pm		

148Gd	96.49	148Gd(a)144Sm	2.40	148Gd(p,d)147Gd	0.80	148Gd(p,t)146Gd	0.18	104Ru(d,t)103Ru	0.11	148Tb(B+)148Gd
148Tb	83.15	148Dy(B+)148Tb	9.54	148Tb(B+)148Gd	7.31	152Ho(a)148Tb				
148Dy	78.99	148Dy-133Cs1.11	14.74	152Er(a)148Dy	6.27	148Dy(B+)148Tb				
149Pm	86.81	149Pm(B-)149Sm	13.19	148Nd(3He,d)149						
149Sm	81.75	149Sm(n,g)150Sm	8.81	148Sm(n,g)149Sm	8.16	149Sm 35Cl-147S	1.05	149Pm(B-)149Sm	0.23	149Eu(e)149Sm
149Eu	56.17	151Eu(p,t)149Eu	29.70	149Gd(e)149Eu	14.12	149Eu(e)149Sm				
149Gd	52.71	149Gd(a)145Sm	21.16	153Dy(a)149Gd	17.82	149Gd(e)149Eu	8.31	149Tb(B+)149Gd		
149Tb	85.76	149Tb(a)145Eu	10.51	149Tb(B+)149Gd	3.73	149Dy(B+)149Tb				
149Dy	44.50	149Dy(B+)149Tb	35.88	149Dy-142Sm1.04	14.72	149Ho(B+)149Dy	4.90	153Er(a)149Dy		
149Ho	53.23	153Tm(a)149Ho	32.48	149Ho(B+)149Dy	14.29	149Ho-u				
150Ce	91.88	150Ce-u	8.12	150Ce(B-)150Pr						
150Pr	83.35	150Pr-u	12.00	150Pr(B-)150Nd	4.65	150Ce(B-)150Pr				
150Nd	99.62	150Nd-150Sm	0.17	150Nd(n,g)151Nd	0.17	150Pr(B-)150Nd	0.04	150Nd(3He,d)151	0.01	150Nd(t,p)152Nd
150Sm	66.23	150Sm(n,g)151Sm	13.37	149Sm(n,g)150Sm	11.75	150Sm 35Cl-148S	8.30	152Sm 35Cl-150S	0.34	150Nd-150Sm
150Eu	53.31	150Eu(B-)150Gd	46.69	151Eu(p,d)150Eu						
150Gd	39.41	150Gd(a)146Sm	37.68	150Eu(B-)150Gd	11.67	150Tb(B+)150Gd	11.23	154Dy(a)150Gd		
150Tb	80.48	150Tb(a)146Eu	19.52	150Tb(B+)150Gd						
150Tbm	89.24	150Tbm-u	10.76	154Hom(a)150Tbm						
150Dy	91.98	150Dy(a)146Gd	6.13	154Er(a)150Dy	1.90	150Ho(e)150Dy				
150Ho	50.36	150Ho-133Cs1.12	25.40	150Ho(e)150Dy	24.24	150Er(B+)150Ho				
150Er	54.01	150Er(B+)150Ho	32.91	150Er-u	12.83	154Yb(a)150Er	0.25	151Yb(ep)150Er		
151Pr	76.49	151Pr-u	23.51	151Pr(B-)151Nd						
151Nd	99.83	150Nd(n,g)151Nd	0.17	151Pr(B-)151Nd						
151Pm	79.97	150Nd(3He,d)151	20.03	151Pm(B-)151Sm						
151Sm	44.19	151Sm(n,g)152Sm	33.27	150Sm(n,g)151Sm	22.53	151Sm(B-)151Eu				
151Eu	57.70	151Sm(B-)151Eu	40.49	151Eu(n,g)152Eu	0.70	151Gd(e)151Eu	0.67	151Eu(p,t)149Eu	0.44	151Eu(p,d)150Eu
151Gd	85.11	151Gd(e)151Eu	14.89	151Tb(B+)151Gd						
151Tb	51.53	151Tb(B+)151Gd	48.47	151Tb(a)147Eu						
151Er	87.88	151Er-u	11.89	155Yb(a)151Er	0.23	151Yb-151Er				
151Tm	76.00	155Lu(a)151Tm	24.00	155Lun(a)151Tm						
151Yb	87.64	151Yb-151Er	12.36	151Yb(ep)150Er						
152Nd	66.44	150Nd(t,p)152Nd	33.56	152Nd(B-)152Pm						
152Pm	51.42	152Nd(B-)152Pm	48.58	152Pm(B-)152Sm						
152Sm	77.87	152Gd-152Sm	13.11	151Sm(n,g)152Sm	4.95	152Eu(B+)152Sm	2.49	152Sm 35Cl-150S	1.58	154Sm 35Cl-152S
152Eu	58.98	151Eu(n,g)152Eu	27.69	152Eu(B+)152Sm	13.33	152Eu(n,g)153Eu				
152Gd	79.70	152Gd(n,g)153Gd	20.30	152Gd-152Sm						
152Ho	92.59	152Ho(a)148Tb	7.41	156Tm(a)152Ho						
152Er	84.75	152Er(a)148Dy	15.25	156Yb(a)152Er						
152Tm	88.08	152Tm-u	11.92	152Yb(B+)152Tm						
152Yb	91.49	152Yb-136Ce O	8.51	152Yb(B+)152Tm						
153Pr	79.67	153Pr-u	10.17	153Pr-86Kr1.779	10.16	153Pr-80Kr1.913				
153Nd	35.85	153Nd-80Kr1.913	32.16	153Nd-u	30.96	153Nd-86Kr1.779	1.03	153Nd(B-)153Pm		
153Pm	33.44	154Sm(d,3He)153	17.89	153Pm-u	17.89	153Pm-86Kr1.779	17.81	153Pm-80Kr1.913	12.96	153Nd(B-)153Pm
153Eu	86.33	152Eu(n,g)153Eu	13.67	153Eu(n,g)154Eu						
153Gd	80.27	153Gd(n,g)154Gd	19.32	152Gd(n,g)153Gd	0.41	153Tb(B+)153Gd				
153Tb	58.70	153Tb(B+)153Gd	41.30	153Dy(B+)153Tb						
153Dy	52.16	153Dy(B+)153Tb	47.84	153Dy(a)149Gd						
153Er	94.99	153Er(a)149Dy	5.01	157Yb(a)153Er						
153Tm	53.60	157Lum(a)153Tm	46.40	153Tm(a)149Ho						
154Sm	78.46	154Sm 35Cl-152S	20.97	154Sm-154Gd	0.46	154Sm(d,3He)153	0.11	154Sm(t,p)156Sm		
154Eu	84.96	153Eu(n,g)154Eu	12.40	154Eu(B-)154Gd	1.68	154Eu(n,g)155Eu	0.95	154Eu(t,p)156Eu		
154Gd	79.69	154Gd(n,g)155Gd	18.14	153Gd(n,g)154Gd	1.79	154Eu(B-)154Gd	0.38	154Sm-154Gd		
154Dy	81.61	154Dy(a)150Gd	17.63	154Dy-133Cs1.15	0.77	154Hom(B+)154Dy				
154Hom	88.95	154Hom(a)150Tbm	11.05	154Hom(B+)154Dy						
154Er	91.58	154Er(a)150Dy	8.42	158Yb(a)154Er						
154Yb	87.04	154Yb(a)150Er	12.96	154Yb-138Ce O						
155Pr	35.47	155Pr-u	33.29	155Pr-86Kr1.802	31.24	155Pr-80Kr1.938				
155Nd	33.41	155Nd-u	33.41	155Nd-86Kr1.802	33.17	155Nd-80Kr1.938				
155Pm	33.73	155Pm-80Kr1.938	33.14	155Pm-u	33.14	155Pm-86Kr1.802				
155Eu	98.11	154Eu(n,g)155Eu	1.82	158Gd(t,a)157Eu	0.07	155Yb-155Eu				
155Gd	70.08	155Gd(n,g)156Gd	19.71	154Gd(n,g)155Gd	7.32	155Gd O-C15	2.88	159Tb 35Cl2-155		
155Dy	92.12	156Dy(d,t)155Dy	7.88	155Ho(B+)155Dy						
155Ho	60.92	155Ho(B+)155Dy	39.08	155Ho-u						
155Yb	87.92	155Yb(a)151Er	12.08	155Yb-155Eu						
155Lu	100.00	159Tam(a)155Lu								
155Lun	85.43	155Lun(IT)155Lu	14.57	155Lun(a)151Tm						
156Pm	63.27	156Pmm(IT)156Pm	29.45	156Pm-u	3.77	156Pm-80Kr1.950	3.52	156Pm-86Kr1.814		

156Pmm	63.43 156Pmm-u	36.57 156Pmm(IT)156Pm			
156Sm	88.55 156Sm(B-)156Eu	11.45 154Sm(t,p)156Sm			
156Eu	70.08 154Eu(t,p)156Eu	28.26 156Eu(B-)156Gd	1.66 156Sm(B-)156Eu		
156Gd	73.51 156Gd(n,g)157Gd	29.76 155Gd(n,g)156Gd	0.71 156Dy-156Gd	0.13 156Eu(B-)156Gd	
156Tb	100.00 155Gd(a,t)156Tb				
156Dy	99.28 156Dy-156Gd	0.64 156Dy(d,p)157Dy	0.08 156Dy(d,t)155Dy		
156Er	77.63 156Er-u	22.37 156Tm(B+)156Er			
156Tm	89.51 156Tm(a)152Ho	6.03 156Tm(B+)156Er	4.46 156Yb-156Tm		
156Yb	82.28 156Yb(a)152Er	17.07 160Hf(a)156Yb	0.65 156Yb-156Tm		
156Hf	65.29 156Hf(a)152Yb	34.70 156Hfm(IT)156Hf			
156Hfm	62.89 156Hfm(IT)156Hf	37.09 156Hfm(a)152Yb			
157Nd	99.50 157Nd-u	0.25 157Nd-86Kr1.826	0.25 157Nd-80Kr1.963		
157Pm	33.47 157Pm-u	33.47 157Pm-86Kr1.826	33.05 157Pm-80Kr1.963		
157Sm	34.23 157Sm-80Kr1.963	32.89 157Sm-u	32.89 157Sm-86Kr1.826		
157Eu	67.33 158Gd(t,a)157Eu	32.67 160Gd(t,a)159Eu			
157Gd	63.02 157Gd(n,g)158Gd	25.10 156Gd(n,g)157Gd	7.31 159Tb 35Cl-157G	3.70 157Tb(e)157Gd	0.61 157Gd(a,t)158Tb
157Tb	94.42 157Tb(e)157Gd	5.58 156Gd(a,t)157Tb			
157Dy	51.81 156Dy(d,p)157Dy	47.36 158Dy(d,t)157Dy	0.83 157Ho(B+)157Dy		
157Ho	70.53 157Ho-u	21.80 157Ho(B+)157Dy	7.67 157Er(B+)157Ho		
157Er	89.96 157Er-u	10.04 157Er(B+)157Ho			
157Tm	74.56 157Tm-u	25.44 157Yb-157Tm			
157Yb	93.02 157Yb(a)153Er	3.87 157Yb-157Tm	3.10 161Hf(a)157Yb		
157Lu	82.56 157Lum(IT)157Lu	17.44 157Lu-u			
157Lum	45.67 157Lum(a)153Tm	37.29 161Tam(a)157Lum	17.05 157Lum(IT)157Lu		
158Pm	75.05 158Pm-u	24.95 158Pm-158Gd			
158Sm	31.00 158Sm-80Kr1.975	29.83 158Sm-86Kr1.837	29.20 158Sm-u	9.98 158Sm(B-)158Eu	
158Eu	98.35 158Eu-u	1.65 158Sm(B-)158Eu			
158Gd	36.49 157Gd(n,g)158Gd	34.64 158Pm-158Gd	10.44 160Gd 35Cl-158G	8.12 160Gd(a,t)161Tb	6.52 158Gd(n,g)159Gd
158Tb	39.63 157Gd(a,t)158Tb	39.61 159Tb(d,t)158Tb	17.61 158Gd(d,t)157Gd	3.15 158Tb(B-)158Dy	
158Dy	63.48 160Dy(p,t)158Dy	17.49 160Dy 35Cl-158D	13.86 158Tb(B-)158Dy	5.16 158Dy(d,t)157Dy	
158Er	81.45 158Er-u	18.55 158Tm(B+)158Er			
158Tm	81.45 158Tm-u	18.55 158Tm(B+)158Er			
158Yb	71.14 158Yb(a)154Er	14.60 158Yb-142Sm1.11	14.26 162Hf(a)158Yb		
158Hf	100.00 158Hf(a)154Yb				
159Pm	35.85 159Pm-u	32.17 159Pm-86Kr1.849	31.98 159Pm-80Kr1.988		
159Sm	33.54 159Sm-u	33.54 159Sm-86Kr1.849	32.93 159Sm-80Kr1.988		
159Eu	35.95 160Gd(t,a)159Eu	21.51 159Eu-u	21.51 159Eu-86Kr1.849	21.04 159Eu-80Kr1.988	
159Gd	93.24 158Gd(n,g)159Gd	6.76 159Gd(B-)159Tb			
159Tb	20.31 159Tb 35Cl-157G	18.21 159Gd(B-)159Tb	17.77 161Dy 35Cl-159T	14.39 159Dy(e)159Tb	9.99 158Gd(a,t)159Tb
159Dy	64.86 159Dy(e)159Tb	35.14 161Dy(p,t)159Dy			
159Tam	100.00 163Rem(a)159Tam				
160Gd	39.31 160Gd 35Cl-158G	30.53 160Gd(a,t)161Tb	28.66 160Gd-160Dy	1.50 160Gd(t,a)159Eu	
160Tb	93.02 159Tb(n,g)160Tb	6.98 160Tb(n,g)161Tb			
160Dy	92.82 160Dy(n,g)161Dy	6.44 160Gd-160Dy	0.58 160Dy(p,t)158Dy	0.16 160Dy 35Cl-158D	
160Er	94.75 160Er-u	5.25 160Tm(B+)160Er			
160Tm	89.94 160Tm-u	10.06 160Tm(B+)160Er			
160Hf	81.82 160Hf(a)156Yb	18.18 164W(a)160Hf			
160W	100.00 160W(a)156Hf				
161Sm	36.62 161Sm-80Kr2.013	31.69 161Sm-u	31.69 161Sm-86Kr1.872		
161Eu	34.53 161Eu-u	34.31 161Eu-80Kr2.013	31.16 161Eu-86Kr1.872		
161Tb	76.99 160Tb(n,g)161Tb	23.01 160Gd(a,t)161Tb			
161Dy	85.20 161Dy(n,g)162Dy	7.07 160Dy(n,g)161Dy	4.27 161Dy 35Cl-159T	3.47 161Dy(p,t)159Dy	
161Ho	100.00 160Dy(3He,d)161				
161Hf	70.40 161Hf-u	17.55 161Hf(a)157Yb	12.05 165W(a)161Hf		
161Tam	56.51 161Tam(a)157Lum	43.49 165Rem(a)161Tam			
161Re	79.16 161Re(p)160W	20.85 161Rem(IT)161Re			
161Rem	78.18 161Rem(IT)161Re	21.82 165Irm(a)161Rem			
162Sm	50.93 162Sm-136Xe1.19	49.07 162Sm-84Kr1.929			
162Eu	77.73 162Eu-84Kr1.929	16.74 162Eum-162Eu	5.53 162Eu-133Cs1.21		
162Eum	47.88 162Eum-84Kr1.92	36.17 162Eum-133Cs1.2	15.96 162Eum-162Eu		
162Dy	106.21 162Dy(n,g)163Dy	14.71 161Dy(n,g)162Dy			
162Ho	100.00 161Dy(3He,d)162				
162Er	99.93 162Er-162Dy	0.07 162Er(d,p)163Er			
162Hf	80.96 162Hf(a)158Yb	19.04 166W(a)162Hf			
162W	100.00 162W(a)158Hf				
163Gd	50.79 163Gd-82Kr1.988	49.21 163Gdm(IT)163Gd			
163Gdm	50.79 163Gdm-82Kr1.98	49.21 163Gdm(IT)163Gd			

163Dy	33.29 163Dy O-C15	27.58 163Ho(e)163Dy	26.01 163Dy(n,g)164Dy	19.61 163Ho-163Dy	0.02 163Dy(3He,d)164
163Ho	30.85 163Ho(e)163Dy	26.17 163Ho O-C15	21.93 163Ho-163Dy	21.05 162Dy(3He,d)163	
163Er	58.15 163Er(B+)163Ho	20.93 164Er(d,t)163Er	20.92 162Er(d,p)163Er		
163Hf	84.53 163Hf-u	15.47 167W(a)163Hf			
163Rem	100.00 167Irm(a)163Rem				
164Eu	67.60 164Eu-84Kr1.952	32.40 164Eu-136Xe1.20			
164Gd	80.00 164Gd-84Kr1.952	20.00 164Gd-171Yb.959			
164Dy	73.43 163Dy(n,g)164Dy	21.20 162Dy(3He,d)163	4.89 158Gd(a,t)159Tb	0.41 159Tb(d,t)158Tb	0.06 163Dy(3He,d)164
164Ho	67.09 163Dy(3He,d)164	32.91 165Ho(g,n)164Ho			
164Er	99.97 164Er-164Dy	0.12 164Er(a,t)165Tm	0.01 164Tm(B+)164Er	0.01 164Er(d,t)163Er	
164Tm	74.99 164Tm-u	25.01 164Tm(B+)164Er			
164Hf	67.99 168W(a)164Hf	32.01 164Hf-u			
164W	81.16 164W(a)160Hf	18.84 168Os(a)164W			
164Os	79.99 164Os(a)160W	20.01 165Irm(p)164Os			
165Eu	74.12 165Eu-136Xe1.21	25.88 165Eu-84Kr1.964			
165Gd	87.11 165Gd-84Kr1.964	12.89 165Gd O-171Yb1.			
165Tb	84.48 165Tb-84Kr1.964	15.52 165Tb-136Xe1.21			
165Ho	51.05 165Ho(n,g)166Ho	34.65 162Dy(3He,d)163	8.50 169Tm 35Cl2-165	5.81 158Gd(a,t)159Tb	0.03 165Ho(g,n)164Ho
165Er	96.11 164Er(n,g)165Er	3.89 165Tm(B+)165Er			
165Tm	51.55 165Tm(B+)165Er	48.45 164Er(a,t)165Tm			
165Yb	90.19 165Yb-u	9.81 165Lu(B+)165Yb			
165Lu	90.19 165Lu-u	9.81 165Lu(B+)165Yb			
165Ta	76.41 169Rem(a)165Ta	23.59 165Ta-u			
165W	84.94 165W-u	15.06 165W(a)161Hf			
165Rem	55.19 165Rem(a)161Tam	44.81 169Irm(a)165Rem			
165Irm	51.62 165Irm(p)164Os	48.38 165Irm(a)161Rem			
166Tb	85.33 166Tb-84Kr1.976	14.67 166Tb-136Xe1.22			
166Ho	51.06 166Ho(B-)166Er	48.95 165Ho(n,g)166Ho			
166Er	95.37 166Er(n,g)167Er	4.59 166Ho(B-)166Er	0.04 166Er(a,t)167Tm		
166W	77.89 166W(a)162Hf	11.47 166W-u	10.65 170Os(a)166W		
166Os	100.00 166Os(a)162W				
167Gd	81.47 167Gd-84Kr1.988	18.53 167Gd-136Xe1.22			
167Tb	74.48 167Tb-84Kr1.988	25.52 167Tb-136Xe1.22			
167Er	95.79 167Er(n,g)168Er	3.29 166Er(n,g)167Er	0.91 169Tm 35Cl-167E		
167Tm	99.01 166Er(a,t)167Tm	0.99 167Yb(B+)167Tm			
167Yb	89.11 167Yb(B+)167Tm	10.89 168Yb(d,t)167Yb			
167W	92.51 171Os(a)167W	7.49 167W(a)163Hf			
167Ir	76.63 167Ir(p)166Os	23.37 167Irm(IT)167Ir			
167Irm	70.35 167Irm(IT)167Ir	29.65 171Aum(a)167Irm			
168Er	94.98 168Yb-168Er	3.45 167Er(n,g)168Er	0.84 170Er(a,t)171Tm	0.58 164Er(a,t)165Tm	0.15 170Er 35Cl-168E
168Tm	100.00 167Er(a,t)168Tm				
168Yb	99.39 168Yb-170Yb.988	0.61 168Yb-168Er			
168Lu	54.94 168Lu-u	45.06 168Lu(B+)168Yb			
168W	58.65 172Os(a)168W	22.50 168W-u	18.85 168W(a)164Hf		
168Os	79.95 168Os(a)164W	20.05 172Pt(a)168Os			
169Tm	65.76 169Tm(n,g)170Tm	12.28 170Er(a,t)171Tm	7.97 169Tm 35Cl-167E	7.36 169Tm 35Cl2-165	6.28 164Er(a,t)165Tm
169W	69.49 173Os(a)169W	30.51 169W-u			
169Rem	77.33 173Ir(a)169Rem	22.67 169Rem(a)165Ta			
169Irm	53.80 169Irm(a)165Rem	46.20 173Aum(a)169Irm			
170Er	62.61 170Er(a,t)171Tm	25.31 170Er(n,g)171Er	10.71 170Er 35Cl-168E	1.36 170Er(t,p)172Er	
170Tm	66.96 170Tm(B-)170Yb	33.04 169Tm(n,g)170Tm			
170Yb	53.60 170Yb-129Xe1.31	46.40 170Yb-132Xe1.28			
170W	77.73 174Os(a)170W	22.27 170W-u			
170Re	80.37 174Irm(a)170Re	19.63 170Re-u			
170Os	88.58 170Os(a)166W	11.42 170Os-u			
170Pt	84.38 170Pt(a)166Os	15.62 171Aum(p)170Pt			
171Er	72.47 170Er(n,g)171Er	27.53 171Er(B-)171Tm			
171Tm	94.38 171Tm(B-)171Yb	4.05 170Er(a,t)171Tm	1.57 171Er(B-)171Tm		
171Yb	99.99 171Yb-129Xe1.32				
171Lu	61.48 170Yb(a,t)171Lu	38.52 171Lu(B+)171Yb			
171Os	85.27 171Os-u	7.63 175Pt(a)171Os	7.10 171Os(a)167W		
171Aum	61.01 171Aum(p)170Pt	38.99 171Aum(a)167Irm			
172Er	87.44 170Er(t,p)172Er	12.56 172Er(B-)172Tm			
172Tm	69.95 172Er(B-)172Tm	30.05 172Tm(B-)172Yb			
172Yb	100.00 172Yb-132Xe1.30				
172Lu	100.00 171Yb(a,t)172Lu				
172Re	51.90 172Re-u	48.10 176Ir(a)172Re			

172Os	65.89	176Pt(a)172Os	34.11	172Os(a)168W						
172Pt	77.20	172Pt(a)168Os	22.80	176Hg(a)172Pt						
173Yb	56.73	173Yb-129Xe1.34	43.27	173Yb-132Xe1.31						
173Lu	100.00	172Yb(a,t)173Lu								
173Os	43.91	177Pt(a)173Os	28.65	173Os-u	27.44	173Os(a)169W				
173Ir	87.59	177Au(a)173Ir	12.41	173Ir(a)169Rem						
173Aum	52.28	173Aum(a)169Irm	47.72	177Tlm(a)173Aum						
174Yb	69.88	174Yb-129Xe1.34	30.11	174Yb-132Xe1.31						
174Lu	100.00	173Yb(a,t)174Lu								
174Hf	74.24	176Hf 35Cl-174H	13.83	174Hf(n,g)175Hf	11.93	176Hf(p,t)174Hf				
174Os	74.73	178Pt(a)174Os	13.43	174Os-u	11.84	174Os(a)170W				
174Irm	82.02	178Aun(a)174Irm	17.98	174Irm(a)170Re						
175Yb	99.92	174Yb(n,g)175Yb	0.08	175Yb(B-)175Lu						
175Lu	54.24	175Yb(B-)175Lu	20.86	175Lu(n,g)176Lu	13.70	175Lu 35Cl-173Y	11.20	170Yb(a,t)171Lu		
175Hf	85.67	174Hf(n,g)175Hf	14.33	177Hf(p,t)175Hf						
175Os	82.26	179Pt(a)175Os	17.74	175Os-u						
175Ir	80.36	179Au(a)175Ir	19.64	175Ir-u						
175Pt	92.04	175Pt(a)171Os	7.97	179Hg(a)175Pt						
176Yb	73.73	176Yb-129Xe1.36	26.27	176Yb-132Xe1.33						
176Lu	78.89	175Lu(n,g)176Lu	11.80	176Lu 37Cl-143N	7.44	176Lu(n,g)177Lu	1.87	176Lu(B-)176Hf	0.01	176Lu(t,p)178Lu
176Hf	74.59	176Lu(B-)176Hf	23.23	180W(a)176Hf	1.88	176Hf 35Cl-174H	0.30	176Hf(p,t)174Hf		
176Os	84.68	180Pt(a)176Os	15.32	176Os-u						
176Ir	90.32	180Au(a)176Ir	8.37	176Ir-u	1.31	176Ir(a)172Re				
176Pt	66.47	180Hg(a)176Pt	33.53	176Pt(a)172Os						
176Hg	71.88	176Hg(a)172Pt	28.12	177Tlm(p)176Hg						
177Lu	91.83	176Lu(n,g)177Lu	8.11	177Lu(B-)177Hf	0.06	179Hf(t,a)178Lu				
177Hf	70.30	177Lu(B-)177Hf	28.26	177Hf(n,g)178Hf	1.44	177Hf(p,t)175Hf				
177Pt	55.26	177Pt(a)173Os	28.76	177Pt-u	15.97	181Hg(a)177Pt				
177Au	89.09	181Tl(a)177Au	10.91	177Au(a)173Ir						
177Tlm	62.21	177Tlm(p)176Hg	37.79	177Tlm(a)173Aum						
178Yb	56.60	178Yb-85Rb2.094	43.40	176Yb(t,p)178Yb						
178Lu	89.41	179Hf(t,a)178Lu	10.59	178Lum(IT)178Lu						
178Lum	65.74	178Lum(IT)178Lu	34.26	176Lu(t,p)178Lu						
178Hf	70.91	177Hf(n,g)178Hf	29.13	178Hf(n,g)179Hf						
178Os	76.23	182Pt(a)178Os	23.77	178Os-u						
178Ir	54.64	182Au(a)178Ir	45.36	178Ir-u						
178Pt	62.49	182Hg(a)178Pt	24.39	178Pt(a)174Os	13.12	178Pt-u				
178Aun	87.32	178Aun-133Cs1.3	12.68	178Aun(a)174Irm						
179Lu	100.00	180Hf(t,a)179Lu								
179Hf	70.70	178Hf(n,g)179Hf	16.02	179Hf(n,g)180Hf	6.78	181Ta 35Cl-179H	6.45	179Ta(e)179Hf	0.06	179Hf(t,a)178Lu
179Ta	92.98	179Ta(e)179Hf	7.02	181Ta(p,t)179Ta						
179W	93.53	180W(d,t)179W	6.47	179Re(B+)179W						
179Re	77.74	179Re-u	22.26	179Re(B+)179W						
179Os	69.22	183Pt(a)179Os	30.78	179Os-u						
179Ir	87.77	183Au(a)179Ir	12.23	179Ir-u						
179Pt	92.79	183Hg(a)179Pt	7.21	179Pt(a)175Os						
179Au	66.65	183Tlm(a)179Au	16.95	179Au(a)175Ir	16.40	179Au-u				
179Hg	78.78	179Hg-208Pb.861	21.22	179Hg(a)175Pt						
180Hf	83.46	179Hf(n,g)180Hf	16.54	180W-180Hf						
180W	81.67	180W-180Hf	18.27	180W(a)176Hf	0.06	180W(d,t)179W				
180Os	68.35	184Pt(a)180Os	31.65	180Os-u						
180Pt	74.62	184Hg(a)180Pt	12.90	180Pt-u	12.48	180Pt(a)176Os				
180Au	92.91	180Au-133Cs1.35	3.97	184Tl(a)180Au	3.13	180Au(a)176Ir				
180Hg	38.04	180Hg-208Pb.865	32.83	180Hg(a)176Pt	29.13	184Pb(a)180Hg				
181Ta	31.10	181Ta(n,g)182Ta	26.38	183W 35Cl-181Ta	26.06	181Ta O-202Tl.9	8.45	181Ta 35Cl-179H	8.02	181Ta(p,t)179Ta
181Os	64.01	181Os-u	35.99	185Pt(a)181Os						
181Pt	52.02	185Hg(a)181Pt	47.98	181Pt-u						
181Hg	82.96	181Hg(a)177Pt	17.04	181Hg-208Pb.870						
181Tl	78.91	181Tl-133Cs1.36	12.19	185Bim(a)181Tl	8.90	181Tl(a)177Au				
182Ta	68.79	181Ta(n,g)182Ta	31.21	182Ta(B-)182W						
182W	102.81	182W(n,g)183W	3.23	182Ta(B-)182W						
182Os	60.55	182Os-u	39.45	186Pt(a)182Os						
182Ir	56.30	182Ir-u	43.70	186Au(a)182Ir						
182Pt	56.85	186Hg(a)182Pt	21.93	182Pt-u	21.22	182Pt(a)178Os				
182Au	45.09	182Au-u	43.96	182Au(a)178Ir	10.95	186Tl(a)182Au				
182Hg	55.47	182Hg-208Pb.875	32.30	182Hg(a)178Pt	12.23	182Hg-u				
183W	73.02	183W(n,g)184W	15.61	183W O-C2 35Cl5	11.49	199Hg-183W O	2.75	183W 35Cl-181Ta		

183Os	76.72	183Os-u	23.28	183Ir(B+)183Os						
183Ir	77.95	183Ir-u	17.45	187Au(a)183Ir	4.60	183Ir(B+)183Os				
183Pt	28.93	187Hg(a)183Pt	24.96	187Hgm(a)183Pt	23.37	183Pt(a)179Os	22.74	183Pt-u		
183Au	77.38	187Tlm(a)183Au	11.37	183Au-u	11.25	183Au(a)179Ir				
183Hg	62.44	187Pb(a)183Hg	31.97	183Hg-208Pb.880	5.59	183Hg(a)179Pt				
183Tl	82.94	183Tl-133Cs1.37	17.06	183Tlm(IT)183Tl						
183Tlm	82.90	183Tlm(IT)183Tl	17.10	183Tlm(a)179Au						
184W	28.28	184W-u	25.86	183W(n,g)184W	15.68	184Os-184W	15.40	184W(n,g)185W	12.87	186W(p,t)184W-1
184Re	100.00	185Re(d,t)184Re								
184Os	44.39	184Os(n,g)185Os	30.79	184Os-184W	24.39	184Os-u	0.43	188Pt(a)184Os		
184Pt	46.61	188Hg(a)184Pt	27.84	184Pt-u	25.56	184Pt(a)180Os				
184Hg	28.92	184Hg-208Pb.885	26.10	184Hg-204Pb.902	23.20	184Hg-u	21.77	184Hg(a)180Pt		
184Tl	78.54	184Tl(a)180Au	21.46	184Tl-133Cs1.38						
184Pb	69.59	184Pb(a)180Hg	30.41	185Bim(p)184Pb						
185W	84.46	184W(n,g)185W	15.54	185W(B-)185Re						
185Re	38.63	185Os(e)185Re	28.21	185W(B-)185Re	27.61	185Re(n,g)186Re	5.55	187Re 35Cl-185R		
185Os	50.83	184Os(n,g)185Os	49.17	185Os(e)185Re						
185Pt	60.28	185Pt(a)181Os	39.72	185Pt-u						
185Hg	45.25	185Hg(a)181Pt	25.48	185Hg-208Pb.889	15.23	189Pb(a)185Hg	11.07	185Hg-u	2.96	189Pbm(a)185Hg
185Bim	63.50	185Bim(a)181Tl	36.50	185Bim(p)184Pb						
186W	54.64	186W(n,g)187W	34.69	186W(p,t)184W-1	10.67	186W 35Cl-184W				
186Re	72.30	185Re(n,g)186Re	27.70	186Re(B-)186Os						
186Os	39.45	186Os(n,g)187Os	39.41	186Os-190Pt.979	21.15	186Re(B-)186Os				
186Pt	60.55	186Pt-u	39.45	186Pt(a)182Os						
186Au	56.30	186Au-u	43.70	186Au(a)182Ir						
186Hg	56.34	186Hg-204Pb.912	26.32	186Hg(a)182Pt	17.34	186Hg-u				
186Tl	86.15	186Tl-133Cs1.39	13.85	186Tl(a)182Au						
187W	54.67	187W(B-)187Re	45.33	186W(n,g)187W						
187Re	51.70	187Re-187Os	35.92	187Re(B-)187Os	8.25	187W(B-)187Re	3.95	187Re 35Cl-185R		
187Os	57.49	187Os(n,g)188Os	30.32	186Os(n,g)187Os	6.08	187Re-187Os	4.23	187Re(B-)187Os		
187Pt	74.17	187Pt-u	25.83	187Au(B+)187Pt						
187Au	64.82	187Au-u	21.26	187Au(B+)187Pt	13.92	187Au(a)183Ir				
187Hg	47.61	187Hg-208Pb.899	19.74	187Hg(a)183Pt	17.95	187Hgm(IT)187Hg	14.70	187Hg-u		
187Hgm	44.22	191Pbm(a)187Hgm	28.44	187Hgm(IT)187Hg	27.34	187Hgm(a)183Pt				
187Tl	69.24	191Bi(a)187Tl	30.76	187Tlm(IT)187Tl						
187Tlm	72.22	191Bi(a)187Tlm	13.92	187Tlm(IT)187Tl	13.86	187Tlm(a)183Au				
187Pb	85.85	187Pb-133Cs1.40	14.15	187Pb(a)183Hg						
187Pbm	60.68	187Pbm(IT)187Pb	39.32	191Po(a)187Pbm						
188Os	59.14	188Os(n,g)189Os	40.79	187Os(n,g)188Os	0.07	188Ir(B+)188Os				
188Ir	68.06	188Pt(e)188Ir	31.94	188Ir(B+)188Os						
188Pt	64.71	188Pt(a)184Os	27.90	190Pt(p,t)188Pt	7.40	188Pt(e)188Ir				
188Hg	69.37	192Pb(a)188Hg	19.15	188Hg-208Pb.904	5.89	188Hg-u	5.58	188Hg(a)184Pt		
189Os	78.88	189Os(n,g)190Os	21.12	188Os(n,g)189Os						
189Ir	69.71	191Ir(p,t)189Ir	30.29	189Pt(B+)189Ir						
189Pt	83.80	190Pt(p,d)189Pt	16.20	189Pt(B+)189Ir						
189Hg	65.04	189Hg-u	34.96	189Hgm(IT)189Hg						
189Hgm	92.07	189Hgm-208Pb.90	7.93	189Hgm(IT)189Hg						
189Tl	70.33	193Bi(a)189Tl	29.67	193Bim(a)189Tl						
189Pb	67.21	189Pb(a)185Hg	19.71	189Pb-u	13.08	189Pbm(IT)189Pb				
189Pbm	75.34	189Pbm(IT)189Pb	24.66	189Pbm(a)185Hg						
190W	74.56	190W-u	25.44	190W(B-)190Re						
190Re	99.64	194Pt(d,a)192Ir	0.36	190W(B-)190Re						
190Os	51.62	190Os-194Pt.979	29.50	190Os-190Pt	18.27	189Os(n,g)190Os	0.57	190Os(n,g)191Os	0.02	192Os(p,t)190Os
190Pt	53.33	190Pt-194Pt.979	32.56	190Os-190Pt	13.72	186Os-190Pt.979	0.19	190Pt(p,t)188Pt	0.18	192Pt(p,t)190Pt
190Hg	72.58	190Hg-208Pb.913	27.42	194Pb(a)190Hg						
190Tlm	63.82	190Tlm-133Cs1.4	36.18	194Bin(a)190Tlm						
191Os	99.35	190Os(n,g)191Os	0.65	191Os(B-)191Ir						
191Ir	89.75	191Os(B-)191Ir	8.47	191Ir(n,g)192Ir	1.59	193Ir(t,a)192Os	0.19	191Ir(p,t)189Ir		
191Pt	74.05	192Pt(p,d)191Pt	25.95	192Pt(p,d)191Pt						
191Au	99.55	191Au-133Cs1.43	0.45	191Hg(B+)191Au						
191Hg	67.96	191Hg-208Pb.918	21.97	191Hg-u	10.07	191Hg(B+)191Au				
191Pb	95.89	195Po(a)191Pb	4.11	191Pb-u						
191Pbm	92.89	195Pom(a)191Pbm	7.11	191Pbm(a)187Hgm						
191Bi	87.35	191Bi-133Cs1.43	10.60	191Bi(a)187Tlm	2.04	191Bi(a)187Tl				
191Po	93.93	191Po(a)187Pb	6.07	191Po(a)187Pbm						
192Os	50.59	192Os(p,t)190Os	30.69	193Ir(t,a)192Os	18.63	192Os(n,g)193Os	0.09	194Pt(d,a)192Ir		
192Ir	91.42	191Ir(n,g)192Ir	6.00	192Ir(n,g)193Ir	2.55	192Ir(B-)192Pt	0.03	194Pt(d,a)192Ir		

192Pt	87.22	192Ir(B-)192Pt	12.78	192Pt(p,t)190Pt	3.01	192Pt(p,d)191Pt				
192Pb	81.41	196Po(a)192Pb	18.59	192Pb(a)188Hg						
193Os	81.24	192Os(n,g)193Os	18.76	193Os(B-)193Ir						
193Ir	93.72	192Ir(n,g)193Ir	4.28	193Os(B-)193Ir	3.42	193Pt(e)193Ir				
193Pt	96.39	193Pt(e)193Ir	3.61	192Pt(p,d)191Pt						
193Au	92.53	197Au(a,8He)193	7.47	193Hg(B+)193Au						
193Hg	67.07	193Hg(B+)193Au	32.93	193Hg-208Pb.928						
193Pb	91.90	197Po(a)193Pb	8.10	193Pb-u						
193Bi	62.01	193Bi-133Cs1.45	21.90	193Bi(a)189Tl	16.09	197At(a)193Bi				
193Bim	64.11	193Bim(a)189Tl	35.89	197Atm(a)193Bim						
194Pt	63.11	194Pt-u	26.75	194Pt(n,g)195Pt	5.34	190Os-194Pt.979	4.74	190Pt-194Pt.979	0.06	192Pt(p,d)191Pt
194Pb	60.37	198Po(a)194Pb	39.63	194Pb(a)190Hg						
194Bin	58.07	198Atm(a)194Bin	41.93	194Bin(a)190Tlm						
195Pt	72.08	194Pt(n,g)195Pt	27.91	195Pt(n,g)196Pt	0.01	195Au(e)195Pt				
195Au	99.96	195Au(e)195Pt	0.04	195Hg(B+)195Au						
195Hg	78.62	195Hg-208Pb.938	21.38	195Hg(B+)195Au						
195Tl	56.14	199Bim(a)195Tl	22.01	195Tl-u	21.85	195Tl-133Cs1.46				
195Pb	95.26	195Pbm(IT)195Pb	4.74	195Pb-u						
195Pbm	95.35	199Pom(a)195Pbm	4.65	195Pbm(IT)195Pb						
195Bi	89.47	195Bi-133Cs1.46	10.53	199At(a)195Bi						
195Po	96.59	195Po-133Cs1.46	3.41	195Po(a)191Pb						
195Pom	93.84	195Pom-133Cs1.4	6.16	195Pom(a)191Pbm						
196Pt	70.74	195Pt(n,g)196Pt	29.00	196Pt(n,g)197Pt	0.26	196Au(B+)196Pt				
196Au	51.71	197Au(g,n)196Au	30.66	196Au(B-)196Hg	17.63	196Au(B+)196Pt				
196Hg	56.96	198Hg 35Cl-196H	30.08	196Au(B-)196Hg	12.95	196Hg(n,g)197Hg				
196Pb	78.69	200Po(a)196Pb	21.31	196Pb-208Pb.942						
196Po	84.10	196Po-133Cs1.47	15.90	196Po(a)192Pb						
197Pt	65.01	196Pt(n,g)197Pt	34.26	197Pt(B-)197Au	0.73	198Pt(p,d)197Pt				
197Au	63.01	197Au(n,g)198Au	35.70	197Pt(B-)197Au	0.78	198Pt-197Au1.00	0.48	197Au(g,n)196Au	0.03	197Au(a,8He)193
197Hg	84.10	196Hg(n,g)197Hg	15.90	199Hg(p,t)197Hg						
197Pb	73.58	197Pbm(IT)197Pb	26.42	201Po(a)197Pb						
197Pbm	73.59	197Pbm-133Cs1.4	26.40	197Pbm(IT)197Pb						
197Po	92.61	197Po-133Cs1.48	7.39	197Po(a)193Pb						
197At	81.64	197At(a)193Bi	18.36	197At-133Cs1.48						
197Atm	58.18	197Atm(a)193Bim	41.82	197Atm-133Cs1.4						
198Pt	53.46	198Pt-197Au1.00	46.54	198Pt(p,d)197Pt						
198Au	43.91	198Au(B-)198Hg	36.31	197Au(n,g)198Au	19.78	198Au(n,g)199Au				
198Hg	66.77	198Hg-u	21.86	198Au(B-)198Hg	11.05	200Hg 35Cl-198H	0.32	198Hg 35Cl-196H		
198Pb	73.69	202Po(a)198Pb	26.31	198Pb-208Pb.952						
198Bi	97.34	198Bi-u	2.66	202At(a)198Bi						
198Po	60.52	198Po-208Pb.952	39.48	198Po(a)194Pb						
198At	69.84	198At-133Cs1.48	27.22	198Atm(IT)198At	2.94	202Frm(a)198At				
198Atm	56.62	198Atm(IT)198At	37.27	198Atm(a)194Bin	6.11	202Frm(a)198Atm				
199Au	79.99	198Au(n,g)199Au	20.01	199Au(B-)199Hg						
199Hg	34.52	199Hg(n,g)200Hg	33.00	199Hg-C2 35Cl5	16.84	199Au(B-)199Hg	10.50	201Hg 35Cl-199H	4.90	199Hg-183W O
199Bi	38.16	203At(a)199Bi	33.91	199Bim(IT)199Bi	27.93	199Bi-u				
199Bim	63.60	199Bim(IT)199Bi	36.40	199Bim(a)195Tl						
199Pom	92.98	199Pom-133Cs1.4	4.12	199Pom(a)195Pbm	2.89	203Rnm(a)199Pom				
199At	89.02	199At(a)195Bi	10.98	203Fr(a)199At						
200Au	71.16	200Au-u	28.84	200Au(B-)200Hg						
200Aum	72.57	200Aum-u	27.43	200Aum(B-)200Hg						
200Hg	63.71	199Hg(n,g)200Hg	15.95	200Hg 35Cl-198H	11.90	204Hg 35Cl2-200	8.43	202Hg 35Cl-200H	0.01	200Aum(B-)200Hg
200Pb	84.03	204Pb(a,8He)200	15.97	204Po(a)200Pb						
200Po	79.68	204Rn(a)200Po	20.32	200Po(a)196Pb						
201Au	100.00	202Hg(d,3He)201								
201Hg	64.08	201Hg(n,g)202Hg	32.57	201Hg 35Cl-199H	3.35	203Tl 35Cl-201H				
201Tl	88.94	203Tl(p,t)201Tl	11.06	201Pb(B+)201Tl						
201Pb	89.65	205Po(a)201Pb	10.35	201Pb(B+)201Tl						
201Po	71.09	201Po(a)197Pb	28.91	205Rn(a)201Po						
202Hg	32.72	201Hg(n,g)202Hg	23.13	202Hg 35Cl-200H	22.38	206Pb 35Cl2-202	21.01	204Hg 35Cl-202H	0.75	202Hg(d,p)203Hg
202Tl	69.66	202Tl-203Tl.995	30.34	181Ta O-202Tl.9						
202Pb	85.62	202Pb-133Cs1.51	14.38	204Pb(p,t)202Pb						
202Bi	74.90	206At(a)202Bi	25.10	202Bi-u						
202Po	74.42	206Rn(a)202Po	25.58	202Po(a)198Pb						
202At	97.34	202At(a)198Bi	2.67	206Fr(a)202At						
202Frm	76.23	202Frm(a)198Atm	23.77	202Frm(a)198At						
203Au	100.00	204Hg(d,3He)203								

203Hg	90.46	203Hg(B-)203Tl	6.37	204Hg(d,t)203Hg	3.17	202Hg(d,p)203Hg				
203Tl	91.68	203Tl(n,g)204Tl	5.30	205Tl 35Cl-203T	1.12	203Tl 35Cl-201H	1.10	202Tl-203Tl.995	0.76	203Hg(B-)203Tl
203Pb	52.08	204Pb(p,d)203Pb	37.51	207Po(a)203Pb	10.41	203Pb(e)203Tl				
203Po	68.92	203Po-133Cs1.52	31.08	207Rn(a)203Po						
203At	61.69	203At(a)199Bi	20.80	203At-208Pb.976	14.44	203At-u	3.07	207Fr(a)203At		
203Rnm	96.80	203Rnm(a)199Pom	3.20	203Rnm-208Pb.97						
203Fr	84.51	203Fr(a)199At	15.49	203Fr-133Cs1.52						
204Hg	77.56	204Hg-u	11.06	204Hg 35Cl2-200	10.49	204Hg 35Cl-202H	0.89	204Hg(d,t)203Hg	0.12	204Hg(d,p)205Hg
204Tl	95.23	204Tl(B-)204Pb	2.92	205Tl(d,t)204Tl	1.86	203Tl(n,g)204Tl				
204Pb	98.05	204Pb(n,g)205Pb	1.79	204Tl(B-)204Pb	0.10	208Po(a)204Pb	0.03	204Pb(p,t)202Pb	0.01	184Hg-204Pb.902
204Po	83.77	204Po(a)200Pb	16.23	208Rn(a)204Po						
204At	84.03	204At-u	15.97	208Fr(a)204At						
204Rn	80.65	204Rn-208Pb.981	19.35	204Rn(a)200Po						
205Hg	51.84	204Hg(d,p)205Hg	48.16	202Hg(d,p)203Hg						
205Tl	60.98	205Tl(d,t)204Tl	13.77	205Tl 35Cl-203T	12.99	205Tl(3He,d)206	9.47	205Tl(n,g)206Tl	2.68	209Bi(a)205Tl
205Pb	99.19	205Pb(n,g)206Pb	0.79	204Pb(n,g)205Pb	0.02	205Bi(B+)205Pb				
205Bi	54.33	209At(a)205Bi	45.67	205Bi(B+)205Pb						
205Po	75.49	209Rn(a)205Po	19.26	205Po-u	5.24	205Po(a)201Pb				
205Rn	68.15	205Rn(a)201Po	31.85	205Rn-208Pb.986						
206Tl	83.89	205Tl(n,g)206Tl	16.11	210Bi(a)206Tl						
206Pb	98.69	206Pb(n,g)207Pb	0.78	206Pb 35Cl2-202	0.46	205Pb(n,g)206Pb	0.05	210Po(a)206Pb	0.01	205Tl(3He,d)206
206At	53.87	210Fr(a)206At	23.43	206At-u	22.70	206At(a)202Bi				
206Rn	37.56	206Rn-133Cs1.54	37.56	206Rn-208Pb.990	24.88	206Rn(a)202Po				
206Fr	97.29	206Fr(a)202At	2.71	210Ac(a)206Fr						
207Tl	45.15	207Tl(B-)207Pb	42.03	211Bi(a)207Tl	12.83	205Tl(t,p)207Tl				
207Pb	99.34	207Pb(n,g)208Pb	0.66	206Pb(n,g)207Pb						
207Bi	97.42	209Bi(p,t)207Bi	2.58	207Po(B+)207Bi						
207Po	58.83	207Po(a)203Pb	41.17	207Po(B+)207Bi						
207Rn	66.21	207Rn(a)203Po	33.79	211Ra(a)207Rn						
207Fr	88.81	207Fr-133Cs1.55	8.91	207Fr(a)203At	2.28	211Ac(a)207Fr				
208Pb	98.67	208Pb-u	0.47	207Pb(n,g)208Pb	0.22	243Am O-208Pb1.	0.20	249Cf-208Pb1.19	0.16	238U O2-208Pb1.
208Po	94.74	208Po(a)204Pb	5.26	208Po-133Cs1.56						
208Rn	83.40	208Rn(a)204Po	16.60	212Ra(a)208Rn						
208Fr	92.67	208Fr-133Cs1.56	3.69	208Fr(a)204At	3.64	212Ac(a)208Fr				
209Pb	87.42	209Pb(B-)209Bi	11.29	208Pb(d,p)209Pb	1.29	213Po(a)209Pb				
209Bi	86.24	209Bi(n,g)210Bi	9.62	209Bi(a)205Tl	3.81	209Pb(B-)209Bi	0.33	209Bi(p,t)207Bi		
209At	58.84	213Fr(a)209At	41.16	209At(a)205Bi						
209Rn	76.20	213Ra(a)209Rn	23.80	209Rn(a)205Po						
209Fr	61.74	209Fr-226Ra.925	38.26	213Ac(a)209Fr						
210Pb	98.82	210Pb(B-)210Bi	1.18	214Po(a)210Pb						
210Bi	51.89	210Bi(B-)210Po	33.67	210Bi(a)206Tl	13.61	209Bi(n,g)210Bi	0.83	210Pb(B-)210Bi		
210Po	99.73	210Po(a)206Pb	0.27	210Bi(B-)210Po						
210Fr	42.60	210Fr(a)206At	35.84	210Fr-226Ra.929	21.57	214Ac(a)210Fr				
210Ac	84.38	210Ac(a)206Fr	15.62	210Ac-u						
211Pb	96.18	215Po(a)211Pb	3.82	211Pb(B-)211Bi						
211Bi	57.79	211Bi(a)207Tl	42.21	211Pb(B-)211Bi						
211Fr	73.62	211Fr-133Cs1.58	26.38	211Fr-226Ra.934						
211Ra	56.75	211Ra(a)207Rn	39.35	211Ra-133Cs1.58	3.90	211Ra-u				
211Ac	70.36	211Ac(a)207Fr	29.64	211Ac-u						
212Pb	69.13	216Po(a)212Pb	30.87	212Pb(B-)212Bi						
212Bi	70.60	212Bi(B-)212Po	29.40	212Pb(B-)212Bi						
212Po	99.90	212Po(a)208Pb	0.10	212Bi(B-)212Po						
212Fr	88.73	212Fr-133Cs1.59	11.27	212Fr-226Ra.938						
212Ra	83.02	212Ra(a)208Rn	16.98	212Ra-u						
212Ac	85.55	212Ac-u	14.45	212Ac(a)208Fr						
213Bi	76.98	217At(a)213Bi	23.02	213Bi(B-)213Po						
213Po	93.84	213Po(a)209Pb	6.16	213Bi(B-)213Po						
213Fr	46.21	213Fr-133Cs1.60	39.26	213Fr(a)209At	14.52	213Fr-u				
213Ra	77.15	213Ra-133Cs1.60	22.85	213Ra(a)209Rn						
213Ac	58.40	213Ac(a)209Fr	41.60	213Ac-u						
214Pb	99.47	218Po(a)214Pb	0.53	214Pb(B-)214Bi						
214Bi	69.03	214Bi(B-)214Po	30.97	214Pb(B-)214Bi						
214Po	98.81	214Po(a)210Pb	1.04	218Rn(a)214Po	0.14	214Bi(B-)214Po				
214At	84.24	214At(a)210Bi	15.76	218Frm(a)214At						
214Atn	76.29	214Atn(a)210Bi	23.71	218Frm(a)214Atn						
214Ac	77.84	214Ac(a)210Fr	22.16	214Ac-u						
215Bi	85.95	219At(a)215Bi	14.05	215Bi-133Cs1.61						

215Po	96.74	219Rn(a)215Po	3.26	215Po(a)211Pb						
216Po	71.20	220Rn(a)216Po	28.80	216Po(a)212Pb						
216Ac	100.00	216Ac(a)212Fr								
217At	78.04	221Fr(a)217At	21.96	217At(a)213Bi						
218Po	99.47	222Rn(a)218Po	0.53	218Po(a)214Pb						
218Rn	94.58	218Rn(a)214Po	5.42	222Ra(a)218Rn						
218Frm	71.94	218Frm(a)214At	28.06	218Frm(a)214Atn						
219At	79.75	223Fr(a)219At	16.25	219At-133Cs1.64	4.01	219At(a)215Bi				
219Rn	96.81	223Ra(a)219Rn	3.19	219Rn(a)215Po						
220Rn	71.28	224Ra(a)220Rn	28.72	220Rn(a)216Po						
220Pam	95.29	220Pam(a)216Ac	4.71	224Np(a)220Pam						
220Pan	54.70	220Pan(a)216Ac	45.30	224Np(a)220Pan						
221Fr	79.46	225Ac(a)221Fr	20.54	221Fr(a)217At						
222Rn	99.49	226Ra(a)222Rn	0.51	222Rn(a)218Po						
222Ra	62.89	222Ra(a)218Rn	37.11	226Th(a)222Ra						
223Rn	58.28	223Rn-133Cs1.67	41.72	223Rn-u						
223Fr	94.90	227Ac(a)223Fr	5.10	223Fr(a)219At						
223Ra	96.85	227Th(a)223Ra	3.15	223Ra(a)219Rn						
224Rn	56.64	224Rn-u	43.36	224Rn-133Cs1.68						
224Ra	71.46	228Th(a)224Ra	28.54	224Ra(a)220Rn						
224Np	90.57	224Np(a)220Pam	9.43	224Np(a)220Pan						
225Rn	72.97	225Rn-u	27.03	225Rn-133Cs1.69						
225Fr	84.15	225Fr-u	15.85	225Fr(B-)225Ra						
225Ra	97.42	229Th(a)225Ra	2.30	225Ra(B-)225Ac	0.28	225Fr(B-)225Ra				
225Ac	59.82	229Pa(a)225Ac	21.11	225Ra(B-)225Ac	19.08	225Ac(a)221Fr				
226Rn	56.23	226Rn-u	43.77	226Rn-133Cs1.69						
226Fr	73.53	226Fr-133Cs1.69	26.47	226Fr-u						
226Ra	98.04	230Th(a)226Ra	0.50	226Ra(a)222Rn	0.45	209Fr-226Ra.925	0.35	211Fr-226Ra.934	0.34	212Fr-226Ra.938
226Ac	87.57	230Pa(a)226Ac	12.43	226Ac(B-)226Th						
226Th	61.62	226Th(a)222Ra	38.38	226Ac(B-)226Th						
227Rn	63.39	227Rn-133Cs1.70	36.61	227Rn-u						
227Fr	79.54	227Fr-133Cs1.70	20.46	227Fr-u						
227Ac	92.38	231Pa(a)227Ac	5.07	227Ac(a)223Fr	2.56	227Ac(B-)227Th				
227Th	96.86	227Ac(B-)227Th	3.14	227Th(a)223Ra						
228Rn	62.52	228Rn-133Cs1.71	37.48	228Rn-u						
228Fr	79.60	228Fr-133Cs1.71	20.40	228Fr-u						
228Th	71.23	230Th(p,t)228Th	28.14	228Th(a)224Ra	0.63	232U(a)228Th				
229Fr	70.24	229Fr-133Cs1.72	16.98	229Fr-238U.962	12.79	229Fr-u				
229Th	87.95	233U(a)229Th	10.38	230Th(d,t)229Th	1.67	229Th(a)225Ra				
229Pa	87.44	231Pa(p,t)229Pa	12.56	229Pa(a)225Ac						
230Fr	87.67	230Fr-133Cs1.72	12.33	230Fr-u						
230Th	45.74	234U(a)230Th	27.94	230Th(n,g)231Th	22.04	230Th(p,t)228Th	3.04	230Th(d,t)229Th	0.80	230Pa(e)230Th
230Pa	88.19	230Pa(e)230Th	11.81	230Pa(a)226Ac						
231Ra	66.22	231Ra-u	33.78	231Ra-133Cs1.73						
231Th	70.15	230Th(n,g)231Th	24.26	235U(a)231Th	5.59	231Th(B-)231Pa				
231Pa	47.67	231Th(B-)231Pa	43.74	235Np(a)231Pa	5.97	231Pa(a)227Ac	2.62	231Pa(p,t)229Pa		
232Ra	57.11	232Ra-133Cs1.74	42.89	232Ra-u						
232Th	81.05	236U(a)232Th	8.23	232Th(n,g)233Th	6.01	C24 H16-232Th 3	4.72	230Th(p,t)228Th		
232U	99.36	232U(a)228Th	0.63	236Pu(a)232U						
233Ra	70.49	233Ra-133Cs1.75	29.51	233Ra-u						
233Th	91.69	232Th(n,g)233Th	8.31	233Th(B-)233Pa						
233Pa	84.60	237Np(a)233Pa	9.92	233Pa(B-)233U	5.47	233Th(B-)233Pa				
233U	82.88	233U O2-208Pb1.	8.83	233Pa(B-)233U	3.91	233U(a)229Th	2.51	237Pu(a)233U	1.87	234U(d,t)233U
234U	69.62	234U(n,g)235U	22.22	238Pu(a)234U	7.36	234U(a)230Th	0.80	234U(d,t)233U		
235U	41.69	239Pu(a)235U	28.21	235U(n,g)236U	15.20	235U O2-208Pb1.	11.51	234U(n,g)235U	2.49	235U(a)231Th
235Np	89.87	235Np(e)235U	10.13	235Np(a)231Pa						
236U	74.43	240Pu(a)236U	24.33	235U(n,g)236U	1.05	236U(n,g)237U	0.19	236U(a)232Th		
236Pu	99.36	236Pu(a)232U	0.64	240Cm(a)236Pu						
237U	84.34	236U(n,g)237U	15.66	241Pu(a)237U						
237Np	96.36	241Am(a)237Np	3.64	237Np(a)233Pa						
237Pu	92.72	241Cm(a)237Pu	7.28	237Pu(a)233U						
238U	70.48	238U O2-208Pb1.	25.22	242Pu(a)238U	4.07	C24 H20-238U 35	0.23	229Fr-238U.962		
238Pu	67.46	238Pu(a)234U	32.31	238Pu(n,g)239Pu	0.23	242Cm(a)238Pu				
239Np	53.81	239Np(B-)239Pu	46.19	243Am(a)239Np						
239Pu	40.74	239Pu(n,g)240Pu	25.65	239Pu(a)235U	16.89	239Pu O-208Pb1.	11.29	239Np(B-)239Pu	5.43	238Pu(n,g)239Pu
240U	99.79	244Pu(a)240U	0.21	240U(B-)240Npm						
240Np	67.91	240Npm(IT)240Np	32.09	240Np(B-)240Pu						

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 240Npm    42.50 240Npm(B-)240Pu  42.39 240U(B-)240Npm   15.11 240Npm(IT)240Np
 240Pu     55.26 240Pu(n,g)241Pu  29.21 239Pu(n,g)240Pu  15.49 240Pu(a)236U      0.03 240Npm(B-)240Pu   0.01 240Np(B-)240Pu
 240Cm     99.27 240Cm(a)236Pu     0.73 244Cf(a)240Cm
 241Pu     44.60 240Pu(n,g)241Pu  28.14 245Cm(a)241Pu    19.15 241Pu(n,g)242Pu   7.88 241Pu(B-)241Am    0.24 241Pu(a)237U
 241Am     91.15 241Pu(B-)241Am    4.42 241Am O-C22       3.36 241Am(a)237Np     1.07 241Cm(e)241Am
 241Cm     93.14 241Cm(e)241Am     6.09 241Cm(a)237Pu     0.77 245Cf(a)241Cm
 242Pu     53.57 241Pu(n,g)242Pu  27.53 242Pu(a)238U      9.72 242Pu O2-208Pb1   7.39 246Cm(a)242Pu     1.79 242Pu(n,g)243Pu
 242Cm     99.77 242Cm(a)238Pu     0.23 246Cf(a)242Cm
 243Pu     57.13 242Pu(n,g)243Pu  21.25 244Pu(d,t)243Pu  10.90 247Cm(a)243Pu    10.72 243Pu(B-)243Am
 243Am     70.11 243Am O-208Pb1.  18.91 243Am(a)239Np    10.24 243Am O-C22       0.74 243Pu(B-)243Am
 244Pu     64.46 248Cm(a)244Pu    34.18 244Pu O2-208Pb1   1.25 244Pu(d,t)243Pu   0.06 244Pu(a)240U      0.05 244Pu(t,p)246Pu
 244Cf     98.46 244Cf(a)240Cm     1.54 248Fm(a)244Cf
 245Cm     53.81 245Cm(a)241Pu    46.19 249Cf(a)245Cm
 245Cf     97.61 245Cf(a)241Cm     2.39 249Fm(a)245Cf
 246Pu     55.58 244Pu(t,p)246Pu  44.42 246Pu(B-)246Amm
 246Amm    55.51 246Amm(B-)246Cm  44.49 246Pu(B-)246Amm
 246Cm     79.92 246Cm(a)242Pu    18.93 246Cm O-208Pb1.   1.04 246Cm(d,p)247Cm   0.11 246Amm(B-)246Cm
 246Cf     99.15 246Cf(a)242Cm     0.85 250Fm(a)246Cf
 246Es     93.76 250Md(a)246Es     6.24 246Es-u
 247Cm     59.52 247Cm(a)243Pu    20.42 248Cm(d,t)247Cm  20.07 246Cm(d,p)247Cm
 248Cm     67.55 248Cm O-208Pb1.  32.04 248Cm(a)244Pu     0.41 248Cm(d,t)247Cm
 248Fm     76.98 248Fm(a)244Cf    23.02 252No(a)248Fm
 249Cf     55.71 249Cf-208Pb1.19  35.75 249Cf(a)245Cm     8.54 249Cf O-C22
 249Fm     76.92 249Fm(a)245Cf    23.08 253No(a)249Fm
 249Md     54.55 249Md-u          45.45 253Lr(a)249Md
 250Fm     51.87 250Fm(a)246Cf    48.13 254No(a)250Fm
 250Md     99.10 254Lr(a)250Md     0.54 250Md(a)246Es     0.36 250Md-u
 251Fm     88.37 255No(a)251Fm    11.63 251Fm-u
 251Md     71.03 255Lrm(a)251Md   28.97 255Lr(a)251Md
 251No     96.10 251No-133Cs1.88   3.90 251Nom(IT)251No
 251Nom    86.54 251Nom-133Cs1.8  13.46 251Nom(IT)251No
 252No     69.41 252No(a)248Fm    30.59 252No-133Cs1.89
 253No     67.20 253No(a)249Fm    32.04 253No-133Cs1.90   0.76 257Rf(a)253No
 253Lr     54.17 253Lr(a)249Md    45.83 257Db(a)253Lr
 254No     99.28 254No-133Cs1.91   0.42 254No(a)250Fm     0.30 254No-133Cs1.91
 254Lr     99.27 254Lr-133Cs1.91   0.68 258Db(a)254Lr     0.05 254Lr(a)250Md
 254Lrm    97.52 254Lrm-133Cs1.9   2.48 258Db(a)254Lrm
 255No     88.83 255No-133Cs1.91  11.17 255No(a)251Fm
 255Lr     98.65 255Lr-133Cs1.91   1.35 255Lr(a)251Md
 255Lrm    94.59 255Lrm-133Cs1.9   5.41 255Lrm(a)251Md
 257Rf     98.13 257Rf(a)253No     1.87 257Rf-133Cs1.93
 257Db     53.79 257Db(a)253Lr    46.21 257Db-u
 258Db     81.42 258Db(a)254Lr    18.58 258Db(a)254Lrm
1                                          A T O M I C   M A S S   A D J U S T M E N T
0                                                 DATE 23 Jun 2021 TIME 09:05
0                                                       A=   0 TO 295
                                                        for analysis


  Number of Primary Reactions  1144         Chi Sq for Reactions   511.441         P.C.F. =    1.042
  Number of Primary Doublets   1096         Chi Sq for Doublets    470.923         P.C.F. =    1.022
  Number of Equations          2240         Sum of (V/S)**2's      982.364     TOTAL C.F. =    1.032
                                            Sum of V/S's            22.915
0 Number of Unknowns   1318          Nb. of Degree of Freedom   922   CF should Range    0.977 -  1.023
0 System that had been Solved:      2240 equations in  1318 unknowns
0 Inversion Error     0.3542D-10  for nucl 1870750



  Distribution of v/s for the        2240  primaries
        0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0
        0     0     0     1     0     0     0     0     1     2
        4     0     6     4    11    16     8    23    25    33
       29    33    59    45    57    72   110   106   122   184
      355   189   127   101    78    68    59    56    32    37
```

```
        34    21    31    15     9    23    17    10     6     3
        10     3     2     2     0     0     0     0     0     0
         0     0     0     0     1     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0
         0
   360 |                                                 |                                                 |
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       |                                          o      |        o                                        |
       |                                     oooo        |       o o o                                     |
       |                                  o o            |          o o oo                                 |
     0  ---------------------------------------------------------------------------------------------------
       |         |         |         |         |         |         |         |         |         |         |
       -5        -4        -3        -2        -1         0         1         2         3         4         5
0

          0 Values below v/s=-4.95 and     0 above +4.95
0


  OPTIONS
                   PHASE 4 OPTIONS
                   START FROM INVERTED
                   PUBLICATION 30
                   LINES 64
                   LINES 85
                   ANALYSIS
                   INPUTAB,COMBINED



  STANDARD MASSES               KEV                                  MMU
   120060                  0.00000     0.000                  0.00000     0.000
0 Xzero  0.9314941024  ( 0.0000000003)
 Lab statistics start                                     time is   28.
1                                       V/S summed by LAB, from     11 to 2951180

      10100/10100 Labs   primary       |   All U Data         |   All B C D data     |   All F data         |   All O data
                         secondary     |       W              |       K L            |       V              |       Q
                         R             |                      |                      |                      |
 Lab cases chi sq    PCF  used  totPCF | cases  chi sq    PCF | cases chi sq    PCF  | cases chi sq      PCF  | cases chi sq    PCF
 1.0   88  40.851   1.062        1.062 |  1      0.15     0.61 |  2   211.51    16.03 |  0       *       *   |  0       *       *
```

A2	0	*	*	2.5	*	4	0.95	0.76	0	*	*	0	*	*	0	*	*
ACC	0	*	*	2.5	*	5	6.49	1.78	0	*	*	0	*	*	0	*	*
ANB	1	0.273	0.815		0.815	12	11.30	1.51	1	9.84	4.89	0	*	*	0	*	*
ANL	18	13.626	1.356		1.356	66	69.48	1.60	1	13.55	5.74	0	*	*	0	*	*
Ald	7	4.416	1.238		1.238	76	35.56	1.07	1	9.96	4.92	1	27.40	8.16	0	*	*
Anv	68	19.662	0.838		0.838	13	2.53	0.69	1	7.62	4.30	0	*	*	12	5.13	1.02
Ara	86	40.089	1.064		1.064	11	2.71	0.77	1	5.94	3.80	0	*	*	18	7.86	1.03
Arp	7	1.499	0.721		0.721	2	0.08	0.31	2	2154.40	51.16	0	*	*	2	2.14	1.61
Auc	5	3.707	1.342		1.342	3	2.33	1.37	4	87.75	7.30	6	451.38	13.52	2	7.56	3.03
B07	4	0.914	0.745	1.5	1.118	6	15.24	2.48	3	45.71	6.08	0	*	*	2	2.35	1.69
B08	2	0.429	0.722	1.5	1.083	12	9.89	1.42	3	56.79	6.78	0	*	*	0	*	*
B09	0	*	*	1.5	*	1	0.64	1.25	0	*	*	0	*	*	0	*	*
BIP	3	0.128	0.321		0.321	0	*	*	1	12.59	5.53	0	*	*	1	4.62	3.35
BL1	0	*	*	4.0	*	3	2.38	1.39	0	*	*	1	0.63	1.24	0	*	*
BNL	3	2.538	1.434		1.434	16	27.93	2.06	3	44.37	5.99	2	219.04	16.31	0	*	*
BNn	16	19.477	1.720		1.720	10	8.62	1.45	2	42.73	7.20	0	*	*	2	1.44	1.32
Bar	1	1.472	1.891		1.891	6	3.21	1.14	0	*	*	0	*	*	0	*	*
Bdn	146	60.640	1.005		1.005	49	61.59	1.75	22	839.39	9.63	21	21453.34	384.10	7	6.98	1.56
Bea	1	1.415	1.854		1.854	1	0.22	0.74	1	5.20	3.56	0	*	*	0	*	*
Ber	4	0.511	0.557		0.557	5	5.11	1.58	1	30.65	8.63	0	*	*	3	3.14	1.59
Bir	0	*	*		*	13	10.31	1.39	0	*	*	0	*	*	0	*	*
Bka	66	24.717	0.954		0.954	16	11.34	1.31	6	208.21	9.18	4	113.73	8.31	15	8.75	1.19
Bkp	0	*	*		*	0	*	*	0	*	*	1	113.78	16.63	0	*	*
Bld	3	2.324	1.372		1.372	9	10.18	1.66	2	97.17	10.86	1	37.06	9.49	0	*	*
Bor	5	5.731	1.669		1.669	5	1.08	0.73	4	269.69	12.80	0	*	*	6	8.14	1.82
Brk	6	3.355	1.166		1.166	27	38.01	1.85	4	89.17	7.36	0	*	*	1	1.05	1.60
Bwg	13	5.441	1.008		1.008	53	71.07	1.80	62	4791.55	13.70	0	*	*	15	18.54	1.73
C1	0	*	*	2.5	*	4	1.04	0.80	0	*	*	0	*	*	0	*	*
C2	0	*	*	2.5	*	8	4.23	1.13	0	*	*	0	*	*	0	*	*
C3	2	0.482	0.765	2.5	1.912	5	0.62	0.55	0	*	*	0	*	*	0	*	*
C4	0	*	*	2.5	*	4	0.11	0.26	0	*	*	0	*	*	0	*	*
C5	0	*	*	2.5	*	1	2.54	2.48	0	*	*	0	*	*	0	*	*
CIT	11	11.220	1.574		1.574	40	50.96	1.76	0	*	*	0	*	*	0	*	*
CP1	113	32.714	0.839		0.839	73	114.56	1.95	9	461.76	11.16	1	26.01	7.95	4	4.25	1.61
CP2	27	4.637	0.646		0.646		*	*		*	*	0	*	*	0	*	*
CR1	0	*	*	2.5	*	5	1.15	0.75	0	*	*	0	*	*	0	*	*
CR2	0	*	*	1.5	*	8	10.60	1.79	0	*	*	0	*	*	0	*	*
CRn	0	*	*		*	1	4.67	3.37	2	37.32	6.73	0	*	*	0	*	*
CS1	0	*	*		*	5	3.80	1.36	0	*	*	4	733.19	21.10	0	*	*
Can	18	8.379	1.063		1.063	15	11.17	1.35	3	3746.97	55.09	0	*	*	0	*	*
ChR	8	7.033	1.461		1.461	27	29.00	1.62	4	72.35	6.63	0	*	*	1	2.72	2.57
Chi	0	*	*		*	2	0.36	0.66	0	*	*	0	*	*	0	*	*
Daa	65	25.110	0.969		0.969	8	0.96	0.54	3	178.67	12.03	1	0.55	1.16	8	6.16	1.37
Dap	9	1.500	0.636		0.636	2	0.20	0.49	2	21.20	5.08	0	*	*	6	3.06	1.11
Dar	5	5.490	1.633		1.633	3	1.20	0.99	0	*	*	0	*	*	2	0.86	1.02
Dba	57	20.628	0.938		0.938	14	4.16	0.85	6	79.91	5.69	19	214.33	5.24	64	69.14	1.62
Dbb	18	1.772	0.489		0.489	6	7.81	1.78	1	5.14	3.53	2	11.33	3.71	3	0.08	0.25
Dbn	14	12.203	1.455		1.455	12	28.93	2.42	6	371.14	12.26	0	*	*	0	*	*
Dbp	0	*	*		*	1	0.38	0.96	0	*	*	0	*	*	0	*	*
Dlf	1	1.208	1.713		1.713	5	3.20	1.25	0	*	*	0	*	*	0	*	*
Duk	0	*	*		*	5	6.95	1.84	0	*	*	0	*	*	0	*	*
FS1	84	26.670	0.878		0.878	6	1.23	0.71	0	*	*	0	*	*	12	4.54	0.96
GA1	2	0.498	0.778	1.5	1.167	10	5.12	1.12	0	*	*	0	*	*	14	5.14	0.94
GA2	0	*	*	1.5	*	0	*	*	0	*	*	0	*	*	0	*	*
GA3	9	3.153	0.923	1.5	1.384	12	4.92	1.00	0	*	*	0	*	*	19	7.00	0.95
GA4	3	3.868	1.770	1.5	2.655	3	0.41	0.58	0	*	*	0	*	*	14	6.79	1.09
GA5	5	0.384	0.432	1.5	0.648	5	5.02	1.56	0	*	*	0	*	*	29	12.82	1.04
GA6	0	*	*	1.5	*	8	4.57	1.18	0	*	*	0	*	*	2	0.83	1.00
GA7	14	2.498	0.658	1.5	0.988	10	8.73	1.46	9	15.73	2.06	0	*	*	1	0.47	1.07
GA8	8	6.527	1.408	1.5	2.112	4	1.31	0.89	0	*	*	0	*	*	0	*	*
GR1	15	3.618	0.766		0.766	29	27.17	1.51	0	*	*	0	*	*	0	*	*
GS1	0	*	*		*	107	42.40	0.98	0	*	*	0	*	*	15	11.75	1.38
GS2	208	100.798	1.085		1.085	173	212.35	1.73	9	146.65	6.29	1	7.15	4.17	0	*	*
GS3	23	12.695	1.158		1.158	4	6.37	1.97	3	65.07	7.26	0	*	*	47	29.35	1.23
GS4	0	*	*		*	2	0.21	0.50	0	*	*	0	*	*	0	*	*
GSI	11	6.979	1.242		1.242	6	3.26	1.15	2	99.07	10.97	1	71.58	13.19	4	1.89	1.07
GSa	182	52.563	0.838		0.838	63	57.98	1.50	22	1493.82	12.84	24	2001.60	14.23	125	95.23	1.36

GSt	7	2.555	0.942		0.942	4	1.33	0.90	0	*	*	0	*	*	8	2.48	0.87
GT1	10	4.968	1.099	1.5	1.648	39	17.00	1.03	2	9.75	3.44	0	*	*	24	8.66	0.94
GT2	3	0.190	0.392	2.5	0.980	49	17.80	0.94	1	2.89	2.65	0	*	*	18	4.61	0.79
GT3	0	*	*	2.5	*	8	6.84	1.44	12	9.64	1.40	0	*	*	0	*	*
Gea	6	1.262	0.715		0.715		*	*		*	*	0	*	*	0	*	*
Got	4	3.143	1.382		1.382	7	17.37	2.46	3	61.89	7.08	0	*	*	0	*	*
Gr1	2	0.355	0.657	2.5	1.641		*	*		*	*	0	*	*	0	*	*
Grn	4	1.835	1.056		1.056		*	*		*	*	0	*	*	0	*	*
Gsn	22	11.818	1.142		1.142	15	20.15	1.81	14	577.79	10.01	1	4.62	3.35	23	12.70	1.16
H11	0	*	*	4.0	*	10	5.35	1.14	0	*	*	0	*	*	0	*	*
H12	0	*	*	4.0	*	17	25.50	1.91	2	22.09	5.18	0	*	*	0	*	*
H13	0	*	*	4.0	*	3	2.29	1.36	0	*	*	0	*	*	0	*	*
H14	0	*	*	4.0	*	5	3.51	1.31	0	*	*	0	*	*	0	*	*
H15	0	*	*	4.0	*	5	0.16	0.28	0	*	*	0	*	*	0	*	*
H16	0	*	*	4.0	*	4	9.65	2.42	0	*	*	0	*	*	1	0.18	0.66
H17	0	*	*	4.0	*	11	8.35	1.36	0	*	*	0	*	*	0	*	*
H18	1	0.426	1.017	4.0	4.067	8	7.09	1.47	0	*	*	0	*	*	0	*	*
H19	0	*	*	4.0	*	1	0.73	1.33	1	9.77	4.87	0	*	*	0	*	*
H20	0	*	*	2.5	*	2	1.08	1.14	0	*	*	0	*	*	0	*	*
H21	0	*	*	2.5	*	19	10.84	1.18	0	*	*	0	*	*	1	1.16	1.68
H22	0	*	*	2.5	*	10	5.06	1.11	0	*	*	0	*	*	0	*	*
H23	0	*	*	2.5	*	15	9.98	1.27	0	*	*	0	*	*	0	*	*
H24	0	*	*	2.5	*	0	*	*	2	35.18	6.54	0	*	*	0	*	*
H25	9	6.663	1.341	2.5	3.353	23	13.38	1.19	0	*	*	0	*	*	0	*	*
H26	1	0.193	0.685	2.5	1.712	1	1.19	1.70	0	*	*	0	*	*	1	0.01	0.18
H27	1	1.170	1.686	2.5	4.215	15	16.62	1.64	0	*	*	0	*	*	0	*	*
H28	2	0.004	0.067	2.5	0.167	7	6.86	1.54	0	*	*	0	*	*	0	*	*
H29	0	*	*	2.5	*	2	12.25	3.86	0	*	*	0	*	*	0	*	*
H30	0	*	*	2.5	*	3	3.69	1.73	0	*	*	0	*	*	0	*	*
H31	1	0.272	0.813	2.5	2.033	2	1.07	1.14	0	*	*	0	*	*	0	*	*
H32	0	*	*	2.5	*	5	22.59	3.31	2	30.15	6.05	0	*	*	0	*	*
H33	7	1.503	0.722	2.5	1.805	1	0.04	0.32	0	*	*	0	*	*	0	*	*
H34	0	*	*	2.5	*	3	0.12	0.31	2	36.96	6.70	0	*	*	0	*	*
H35	3	2.672	1.471	2.5	3.678	3	2.56	1.44	0	*	*	0	*	*	0	*	*
H36	4	5.023	1.747	2.5	4.367	4	0.98	0.77	0	*	*	0	*	*	0	*	*
H37	2	3.076	1.933	2.5	4.832		*	*		*	*	0	*	*	0	*	*
H38	0	*	*	2.5	*	2	0.51	0.79	0	*	*	0	*	*	0	*	*
H39	0	*	*	4.0	*	8	11.55	1.87	0	*	*	0	*	*	0	*	*
H40	1	0.425	1.016	2.5	2.540	11	18.86	2.04	0	*	*	0	*	*	0	*	*
H41	3	0.332	0.519	2.5	1.297	3	0.26	0.46	0	*	*	0	*	*	0	*	*
H42	2	0.178	0.464	1.5	0.697	3	1.37	1.05	0	*	*	0	*	*	0	*	*
H43	2	0.188	0.478	1.5	0.717	2	1.32	1.27	0	*	*	0	*	*	0	*	*
H44	0	*	*	1.5	*	7	3.92	1.17	0	*	*	0	*	*	0	*	*
H45	0	*	*	1.5	*	1	0.90	1.48	0	*	*	0	*	*	0	*	*
H46	0	*	*	1.5	*	1	0.38	0.96	0	*	*	0	*	*	0	*	*
H47	0	*	*	1.5	*	4	11.55	2.65	1	8.62	4.58	0	*	*	0	*	*
H48	4	3.083	1.368	2.5	3.421	2	0.67	0.90	0	*	*	0	*	*	0	*	*
H49	3	1.708	1.176	2.5	2.941	2	0.06	0.26	0	*	*	0	*	*	0	*	*
Ham	0	*	*		*	7	2.15	0.86	0	*	*	0	*	*	0	*	*
Har	3	2.724	1.485		1.485	35	32.99	1.51	0	*	*	0	*	*	0	*	*
Hei	10	2.179	0.728		0.728	24	24.45	1.57	4	106.12	8.03	0	*	*	0	*	*
Hep	8	1.890	0.758		0.758		*	*		*	*	0	*	*	0	*	*
ILL	1	1.031	1.582		1.582	14	12.48	1.47	0	*	*	0	*	*	0	*	*
ILn	66	31.801	1.082		1.082	20	33.47	2.02	2	135.47	12.83	0	*	*	5	2.72	1.15
INS	2	0.214	0.510		0.510	2	3.92	2.18	2	801.43	31.20	0	*	*	0	*	*
IRS	21	15.393	1.334		1.334	50	62.27	1.74	10	243.16	7.69	0	*	*	12	7.64	1.24
IRa	2	0.719	0.935		0.935	1	0.00	0.01	0	*	*	1	16.75	6.38	0	*	*
IS1	3	0.544	0.664		0.664		*	*		*	*	0	*	*	0	*	*
ISa	40	20.083	1.104		1.104	3	2.94	1.54	1	9.44	4.79	0	*	*	1	0.00	0.05
Ida	6	4.759	1.388		1.388	4	10.75	2.56	1	10.69	5.10	0	*	*	0	*	*
Isa	2	0.011	0.115		0.115		*	*		*	*	0	*	*	0	*	*
J1	0	*	*	2.5	*	3	3.83	1.76	0	*	*	0	*	*	0	*	*
J2	0	*	*	2.5	*	3	1.24	1.00	0	*	*	0	*	*	1	1.06	1.61
J3	0	*	*	2.5	*	1	0.14	0.59	0	*	*	0	*	*	0	*	*
J5	0	*	*	2.5	*	7	3.70	1.13	0	*	*	0	*	*	2	0.27	0.58
J6	0	*	*	2.5	*	5	4.04	1.40	0	*	*	0	*	*	0	*	*
JAE	11	4.705	1.019		1.019	4	2.04	1.11	2	16.73	4.51	0	*	*	0	*	*

JAa	9	2.923	0.888		0.888	4	0.19	0.34	1	13.88	5.81	1	4.58	3.34	4	0.08	0.21
JAn	2	0.024	0.172		0.172		*	*		*	*	0	*	*	0	*	*
JY0	7	7.378	1.600		1.600	12	17.72	1.89	0	*	*	0	*	*	0	*	*
JY1	200	59.979	0.854		0.854	46	51.88	1.66	7	77.96	5.20	3	2256.83	42.75	4	6.09	1.92
JY2	7	3.346	1.078		1.078	2	0.36	0.66	0	*	*	0	*	*	0	*	*
Jul	1	0.136	0.574		0.574	0	*	*	0	*	*	0	*	*	0	*	*
Jva	3	0.792	0.801		0.801		*	*		*	*	0	*	*	0	*	*
Jya	129	36.980	0.835		0.835	19	7.25	0.96	2	343.31	20.42	1	0.76	1.36	57	46.80	1.41
Jyp	9	2.165	0.764		0.764	0	*	*	0	*	*	0	*	*	3	0.33	0.52
Jyv	4	1.710	1.019		1.019	11	15.79	1.87	15	1992.26	17.96	0	*	*	4	0.87	0.73
KVI	4	0.714	0.658		0.658	0	*	*	1	42.17	10.12	0	*	*	0	*	*
Kop	9	2.672	0.849		0.849	115	74.19	1.25	0	*	*	0	*	*	0	*	*
Kum	21	5.670	0.810		0.810	3	3.03	1.57	4	74.80	6.74	0	*	*	1	1.28	1.77
Kur	9	3.440	0.964		0.964	32	25.80	1.40	4	57.63	5.92	0	*	*	21	6.47	0.87
Kyu	4	2.071	1.121		1.121	4	9.57	2.41	0	*	*	0	*	*	0	*	*
LAl	26	24.046	1.499		1.499	54	42.67	1.39	1	23.99	7.63	0	*	*	0	*	*
LBL	0	*	*		*	8	8.02	1.56	1	10.89	5.14	0	*	*	0	*	*
LZ1	22	14.444	1.263		1.263	27	28.75	1.61	0	*	*	0	*	*	5	5.40	1.62
Lis	3	2.011	1.276		1.276	8	7.35	1.49	1	174.24	20.57	0	*	*	2	3.81	2.15
Liv	2	0.006	0.082		0.082		*	*		*	*	0	*	*	0	*	*
Ltn	5	5.402	1.620		1.620	2	4.57	2.36	0	*	*	0	*	*	0	*	*
Lvn	62	12.202	0.691		0.691	4	0.43	0.51	0	*	*	1	0.73	1.33	13	3.45	0.80
Lvp	0	*	*		*	2	1.47	1.33	0	*	*	0	*	*	1	0.05	0.35
Lza	35	6.366	0.665		0.665	14	9.34	1.27	0	*	*	0	*	*	3	0.33	0.52
M15	0	*	*	2.5	*	56	26.87	1.08	2	37.75	6.77	0	*	*	0	*	*
M16	4	0.373	0.476	2.5	1.189	71	28.79	0.99	0	*	*	0	*	*	0	*	*
M17	0	*	*	2.5	*	37	33.67	1.49	0	*	*	0	*	*	0	*	*
M18	0	*	*	2.5	*	4	7.66	2.16	0	*	*	0	*	*	0	*	*
M19	0	*	*	2.5	*	0	*	*	0	*	*	0	*	*	1	0.28	0.82
M20	2	6.016	2.703	2.5	6.758	4	5.03	1.75	0	*	*	0	*	*	0	*	*
M21	7	9.916	1.855	2.5	4.638	7	3.60	1.12	0	*	*	0	*	*	0	*	*
M22	0	*	*	2.5	*	2	0.20	0.49	0	*	*	0	*	*	0	*	*
M23	0	*	*	4.0	*	6	5.34	1.47	0	*	*	0	*	*	0	*	*
M24	0	*	*	2.5	*	3	1.29	1.02	0	*	*	0	*	*	0	*	*
M25	0	*	*	2.5	*	3	0.70	0.76	0	*	*	0	*	*	0	*	*
MA1	22	9.590	1.029		1.029	8	2.67	0.90	0	*	*	0	*	*	21	12.93	1.22
MA2	7	2.538	0.939		0.939	11	6.19	1.17	1	24.26	7.68	0	*	*	0	*	*
MA3	5	2.056	1.000		1.000	4	3.79	1.52	0	*	*	0	*	*	0	*	*
MA4	17	6.634	0.974		0.974	4	1.27	0.88	1	13.34	5.69	0	*	*	0	*	*
MA5	33	11.874	0.935		0.935	12	4.71	0.98	0	*	*	0	*	*	0	*	*
MA6	34	14.993	1.035		1.035	9	1.31	0.59	0	*	*	0	*	*	1	0.98	1.55
MA7	12	3.385	0.828		0.828	4	2.33	1.19	0	*	*	0	*	*	0	*	*
MA8	171	74.014	1.025		1.025	101	81.30	1.40	3	50.24	6.38	3	34.35	5.27	30	23.99	1.39
MA9	0	*	*		*	4	2.76	1.29	0	*	*	0	*	*	0	*	*
MI1	9	4.714	1.128		1.128	13	15.89	1.72	0	*	*	0	*	*	0	*	*
MI2	5	3.515	1.307		1.307	4	1.08	0.81	0	*	*	0	*	*	0	*	*
MI3	4	0.010	0.077		0.077		*	*		*	*	0	*	*	0	*	*
MIT	5	3.570	1.317		1.317	200	189.77	1.52	4	62.46	6.16	0	*	*	3	1.10	0.94
MMn	62	22.799	0.945		0.945	19	8.21	1.02	3	81.12	8.11	0	*	*	5	2.69	1.14
MR1	6	4.318	1.322		1.322	11	5.11	1.06	0	*	*	0	*	*	0	*	*
MS1	92	45.847	1.100		1.100	24	26.15	1.63	0	*	*	0	*	*	7	0.29	0.31
MSU	29	28.643	1.549		1.549	47	63.15	1.81	7	638.44	14.89	1	285.77	26.35	0	*	*
MT1	9	6.629	1.338		1.338	19	24.25	1.76	11	38.26	2.91	0	*	*	20	16.72	1.43
MZ1	0	*	*	2.5	*	3	17.91	3.81	0	*	*	0	*	*	0	*	*
MZ2	0	*	*	2.5	*	1	0.90	1.48	0	*	*	0	*	*	0	*	*
MZ3	4	0.230	0.373		0.373	0	*	*	0	*	*	0	*	*	1	0.02	0.20
Ma8	5	2.849	1.176	1.5	1.765	5	1.89	0.96	0	*	*	0	*	*	0	*	*
Man	3	1.465	1.089		1.089	12	7.52	1.23	0	*	*	0	*	*	0	*	*
Mar	2	0.720	0.935		0.935	2	7.87	3.09	0	*	*	0	*	*	0	*	*
McG	14	9.320	1.272		1.272	4	5.29	1.79	3	227.34	13.57	0	*	*	0	*	*
McM	41	25.821	1.237		1.237	44	37.24	1.43	3	28.19	4.78	0	*	*	1	7.16	4.17
Mex	3	1.909	1.243		1.243	38	77.38	2.22	8	172.82	7.24	0	*	*	0	*	*
Min	9	10.414	1.677		1.677	44	55.51	1.75	1	7.20	4.18	0	*	*	0	*	*
Mtr	2	4.551	2.351		2.351	5	7.74	1.94	0	*	*	0	*	*	0	*	*
Mun	14	7.777	1.162		1.162	11	31.64	2.64	3	41.27	5.78	8	110.13	5.78	0	*	*
NBS	2	0.000	0.025		0.025	3	3.25	1.62	0	*	*	0	*	*	1	0.33	0.90
NDm	24	10.119	1.012		1.012	49	46.47	1.52	1	35.21	9.25	0	*	*	1	0.86	1.45

NRL	0	*	*		*	2	3.68	2.11	0	*	*	0	*	*	0	*	*
Nob	1	0.000	0.024		0.024	7	12.01	2.04	0	*	*	0	*	*	1	0.26	0.79
Nvl	6	3.706	1.225		1.225	4	4.26	1.61	0	*	*	0	*	*	0	*	*
OH1	0	*	*	2.5	*	8	9.88	1.73	1	9.01	4.68	0	*	*	0	*	*
OR1	0	*	*		*	7	7.20	1.58	1	10.11	4.96	0	*	*	0	*	*
ORa	69	23.388	0.907		0.907	15	9.81	1.26	2	243.47	17.20	0	*	*	0	*	*
ORb	10	1.182	0.536		0.536	0	*	*	1	14.55	5.95	0	*	*	3	0.47	0.62
ORn	17	13.062	1.366		1.366	8	9.48	1.70	2	20.34	4.97	0	*	*	1	2.27	2.35
ORp	6	0.866	0.592		0.592	1	0.33	0.90	0	*	*	0	*	*	4	0.69	0.65
Oak	20	10.681	1.139		1.139	52	56.47	1.62	8	199.49	7.78	1	67.24	12.78	0	*	*
Ora	59	21.211	0.935		0.935	4	5.85	1.88	8	701.39	14.59	0	*	*	2	0.50	0.78
Orm	22	4.637	0.716		0.716	1	0.38	0.96	1	9.94	4.91	0	*	*	2	0.41	0.71
Ors	14	11.353	1.404		1.404	25	52.74	2.26	9	133.03	5.99	3	92.40	8.65	0	*	*
Osa	0	*	*		*	4	8.08	2.22	1	103.67	15.87	0	*	*	0	*	*
P10	0	*	*	1.5	*	7	3.62	1.12	0	*	*	0	*	*	0	*	*
P11	0	*	*	1.5	*	5	3.85	1.37	0	*	*	0	*	*	0	*	*
P12	0	*	*	2.5	*	7	3.63	1.12	0	*	*	0	*	*	0	*	*
P13	0	*	*		*	8	7.32	1.49	0	*	*	0	*	*	0	*	*
P15	0	*	*	2.5	*	0	*	*	0	*	*	0	*	*	0	*	*
P20	0	*	*	2.5	*	19	6.47	0.91	0	*	*	0	*	*	0	*	*
P21	1	0.856	1.443	2.5	3.606	31	29.55	1.52	3	29.52	4.89	0	*	*	0	*	*
P22	0	*	*	2.5	*	30	17.41	1.19	0	*	*	0	*	*	0	*	*
P23	0	*	*	2.5	*	27	9.75	0.94	0	*	*	0	*	*	0	*	*
P24	0	*	*	2.5	*	32	11.86	0.95	6	51.15	4.55	0	*	*	0	*	*
P31	4	3.296	1.415	2.5	3.537	4	2.23	1.16	0	*	*	2	1.01	1.11	0	*	*
P32	0	*	*	2.5	*	16	14.00	1.46	0	*	*	1	0.68	1.28	0	*	*
P33	1	0.001	0.049	2.5	0.122	8	7.16	1.47	0	*	*	3	0.83	0.82	0	*	*
P34	0	*	*	2.5	*	3	1.59	1.14	0	*	*	1	22.29	7.36	0	*	*
P40	6	1.772	0.847		0.847	9	22.59	2.47	4	73.51	6.68	1	11.35	5.25	9	15.91	2.07
PTB	7	1.748	0.779		0.779	0	*	*	1	16.45	6.32	0	*	*	0	*	*
PTc	3	2.800	1.506		1.506	3	4.55	1.92	2	4238.44	71.75	0	*	*	3	1.25	1.01
Pb1	0	*	*	2.5	*	5	8.29	2.01	0	*	*	2	11.13	3.68	0	*	*
Pen	0	*	*		*	1	0.33	0.89	0	*	*	0	*	*	0	*	*
Phi	9	7.398	1.413		1.413	61	92.56	1.92	4	180.37	10.47	0	*	*	0	*	*
Pit	4	2.496	1.231		1.231	67	31.46	1.07	0	*	*	0	*	*	0	*	*
Pri	6	4.290	1.318		1.318	10	10.19	1.57	2	19.12	4.82	1	78.86	13.84	0	*	*
Prn	5	2.062	1.001		1.001		*	*		*	*	0	*	*	0	*	*
Ptn	8	1.363	0.643		0.643	4	4.59	1.67	0	*	*	0	*	*	0	*	*
R04	0	*	*	4.0	*	136	99.92	1.34	1	11.94	5.38	0	*	*	0	*	*
R05	0	*	*	4.0	*	61	26.56	1.03	1	7.68	4.32	0	*	*	0	*	*
R07	0	*	*	1.5	*	44	15.47	0.92	0	*	*	0	*	*	0	*	*
R08	0	*	*	1.5	*	26	12.53	1.08	0	*	*	0	*	*	0	*	*
R09	0	*	*	4.0	*	80	49.42	1.23	2	15.25	4.30	0	*	*	0	*	*
R10	0	*	*	4.0	*	46	30.77	1.27	2	19.69	4.89	0	*	*	0	*	*
R11	0	*	*	1.5	*	84	50.63	1.21	1	8.80	4.62	0	*	*	0	*	*
R12	0	*	*	1.5	*	119	57.89	1.09	0	*	*	0	*	*	0	*	*
R13	0	*	*	1.5	*	21	30.23	1.87	0	*	*	0	*	*	0	*	*
RI1	16	8.328	1.125		1.125	27	20.06	1.34	1	23.39	7.54	3	21.36	4.16	0	*	*
RIa	25	4.410	0.655		0.655	17	9.72	1.18	7	59.36	4.54	2	106.70	11.38	9	9.21	1.58
RIm	5	0.045	0.148		0.148	0	*	*	0	*	*	0	*	*	1	0.01	0.18
RT1	10	2.099	0.714		0.714	2	1.54	1.37	6	16.28	2.57	0	*	*	0	*	*
Rez	2	0.351	0.653		0.653	9	7.16	1.39	0	*	*	0	*	*	0	*	*
Ric	1	0.342	0.912		0.912	34	28.21	1.42	1	17.44	6.51	0	*	*	2	0.97	1.09
Roc	4	0.722	0.662		0.662	12	7.87	1.26	0	*	*	0	*	*	0	*	*
SAn	2	3.079	1.934		1.934		*	*		*	*	0	*	*	0	*	*
SH1	57	23.505	1.001		1.001	23	25.36	1.64	0	*	*	0	*	*	3	0.61	0.70
SH2	12	1.387	0.530		0.530	1	0.62	1.22	0	*	*	0	*	*	0	*	*
SPa	13	7.889	1.214		1.214	8	2.32	0.84	0	*	*	0	*	*	0	*	*
SRv	4	0.176	0.327		0.327	0	*	*	6	201.19	9.03	0	*	*	18	0.80	0.33
ST1	0	*	*		*	1	0.01	0.18	0	*	*	0	*	*	0	*	*
ST2	8	1.822	0.744		0.744	15	16.81	1.65	0	*	*	0	*	*	5	1.57	0.87
Sac	3	1.225	0.996		0.996	6	5.74	1.53	0	*	*	0	*	*	0	*	*
Spe	0	*	*		*	0	*	*	1	25.40	7.86	0	*	*	0	*	*
Str	3	1.023	0.910		0.910	4	6.98	2.06	1	41.83	10.08	0	*	*	0	*	*
Stu	30	28.585	1.521		1.521	64	125.89	2.19	21	493.70	7.56	2	50.78	7.85	34	65.71	2.17
TG1	23	27.658	1.709	1.5	2.564	33	16.37	1.10	1	13.57	5.74	0	*	*	6	2.21	0.95
TG2	0	*	*		*	4	7.77	2.17	0	*	*	0	*	*	0	*	*

```
 TG3   12  12.027   1.560        1.560 |  1      4.53      3.32 |  0        *        *  |  0        *        *  |  0        *        *
 TO1    0    *        *    1.5     *   |  8      4.12      1.12 |  0        *        *  |  2      5.97      2.69 | 11      5.70      1.12
 TO2    9   2.508   0.823  1.5   1.234 |  3      0.36      0.54 |  0        *        *  |  0        *        *  |  1      3.85      3.06
 TO3    4   6.161   1.934  1.5   2.902 | 29     45.20      1.95 |  1      9.78     4.88 |  0        *        *  |  4      2.80      1.30
 TO4   11   4.389   0.985  1.5   1.477 | 24     19.51      1.41 |  0        *        *  |  0        *        *  |  0        *        *
 TO5    4   0.887   0.734  1.5   1.101 | 32      6.64      0.71 |  0        *        *  |  0        *        *  |  3      1.55      1.12
 TO6    7   6.249   1.473  1.5   2.209 | 51     60.62      1.70 |  0        *        *  |  0        *        *  |  0        *        *
 TR1    9   1.924   0.721        0.721 | 10      5.27      1.13 |  0        *        *  |  0        *        *  |  2      0.00      0.07
 TT1   57  18.929   0.898        0.898 | 27     19.95      1.34 |  1     11.06     5.18 |  0        *        *  | 25     13.29      1.14
 Tal    4   1.920   1.080        1.080 | 78     57.33      1.34 |  3     95.48     8.79 |  0        *        *  |  0        *        *
 Tex   10   3.654   0.942        0.942 |  9      6.07      1.28 |  2     16.47     4.47 |  0        *        *  |  1      3.70      3.00
 Tkm    5   0.636   0.556        0.556 |  5      2.35      1.07 |  0        *        *  |  1     46.13     10.59 |  0        *        *
 Tky    1   2.211   2.318        2.318 |  2      2.85      1.86 |  0        *        *  |  0        *        *  |  0        *        *
 Trs    2   1.084   1.147        1.147 | 28     49.20      2.07 |  2     29.01     5.94 |  1    210.13     22.59 |  0        *        *
 Tst    0    *        *            *   |  0       *         *   |  0        *        *  |  0        *        *  |  0        *        *
 Utr   13  14.766   1.661        1.661 | 16     23.16      1.88 |  1     11.42     5.27 |  0        *        *  |  0        *        *
 VUn    6   3.767   1.235        1.235 |  4     10.29      2.50 |  0        *        *  |  0        *        *  |  0        *        *
 WA1    2   0.484   0.767  2.5   1.917 |  6      2.19      0.94 |  6     57.94     4.84 |  1      4.53      3.32 |  8      1.79      0.74
 Win    3   0.299   0.492        0.492 |  5     13.38      2.55 |  0        *        *  |  0        *        *  |  0        *        *
 Wis    1   0.126   0.554        0.554 | 17     18.28      1.62 |  1     10.12     4.96 |  0        *        *  |  0        *        *
 Yal    4   0.900   0.739        0.739 | 17     37.71      2.32 |  1      8.40     4.52 |  0        *        *  |  0        *        *
 Zur    1   0.642   1.249        1.249 |  7     10.50      1.91 |  0        *        *  |  0        *        *  |  2      6.14      2.73
 nb of flags + number of labs =      4486876
 Lab statistics end                                      time is   28.
1 Calculation of "CONSTANTS" For Derived Q-values
0    a-2d       : -23846.5299  0.0002
0    3He-t      :    -18.5920  0.0001
0    p-n        :   -782.3470  0.0004
0    p+n-d      :   2224.5662  0.0004
0    p+2n-t     :   8481.7963  0.0009
0    p-a+t      :  19813.8661  0.0002
0    p+d-3He    :   5493.4751  0.0001
0    2p+n-3He   :   7718.0413  0.0004
0    -a+n+3He   :  20577.6211  0.0005
0    d+n-t      :   6257.2301  0.0004
0    a-d-p-n    : -26071.0962  0.0005
0    a-d+p-3He  : -18353.0548  0.0002
0    a-d+n-t    : -17589.2999  0.0005
1
 USE of ARRAYS :
    4065 / 4450 masses (total)           0 /    50 stand. added in Ph4
       7 /   20 option cards            18 /    29 secondaries in CHAIN
   16719 /17500 data in N4            2747 /  3300 secondaries in CHAIN
 NORMAL END OF PHASE 4                                   time is   28.


 Program used  ph4dk  only
    Data used  a0dsskgy.inv

 Ending Job  a0p4kqgy.output  on
The current date is: Wed 06/23/2021
Enter the new date: (mm-dd-yy)
The current time is:  9:05:53.97
Enter the new time:
```

B.3 Comparison

This is the file obtained from the AME, comparing the AME2020 (Mass Excess (A)) with the adjusted AME (Mass Excess (B)). Only nuclides for which the uncertainty has improved by at least 10 percentage points are shown.

```
1 mass comparison between file  a0dsskgw.  and file  a0dsskgz.               TG3

          vs=|Ma-Mb|/min(ua,ub)     du=|ua-ub|/min(ua,ub)
            Printed are nuclei for which:
               -   vs  > 0.40          (* if vs>1.2)
               -   du  > 0.10          (* if du>1.2)
               - Ma-Mb > 1.0
               and  added or deleted nuclei
                    origin changed
                    syst --> exp  or  exp-->syst

   Z   A Chm                          Mass Excess(A)    Mass Excess(B)    MB-MA
  88 225 Ra   | vs= 0.80  du= 0.50 |  21993.0     2.6   21994.4     1.7 |    1.4
  90 229 Th   | vs= 0.99  du= 0.71 |  29585.5     2.4   29586.9     1.4 |    1.4
  90 230 Th   | vs= 2.62* du= 0.49 |  30862.5     1.2   30864.6     0.8 |    2.1
  90 231 Th   | vs= 2.60* du= 0.48 |  33815.8     1.2   33817.9     0.8 |    2.1
  90 232 Th   | vs= 2.62* du= 0.39 |  35446.7     1.4   35449.4     1.0 |    2.7
  90 233 Th   | vs= 2.62* du= 0.39 |  38731.6     1.4   38734.3     1.0 |    2.7
  91 233 Pa   | vs= 2.75* du= 0.49 |  37489.4     1.3   37491.9     0.9 |    2.5

  92 233 U    | vs= 1.57* du= 1.65*|  36919.1     2.3   36920.4     0.8 |    1.3

  90 234 Th   | vs= 2.23* du= 0.17 |  40613.0     2.6   40617.9     2.2 |    4.9
  92 234 U    | vs= 4.35* du= 0.94 |  38145.0     1.1   38147.5     0.6 |    2.5

  92 235 U    | vs= 4.67* du= 1.04 |  40918.8     1.1   40921.3     0.5 |    2.6

  93 235 Np   | vs= 2.47* du= 0.38 |  41043.0     1.4   41045.5     1.0 |    2.5
  92 236 U    | vs= 4.72* du= 1.05 |  42444.6     1.1   42447.1     0.5 |    2.6
```

```
92 237 U    | vs= 3.61* du= 0.70 |  45390.1     1.2   45392.7     0.7 |     2.6
93 237 Np   | vs= 4.50* du= 0.99 |  44871.6     1.1   44874.1     0.6 |     2.5
94 237 Pu   | vs= 1.77* du= 0.23 |  45091.7     1.7   45094.1     1.4 |     2.5

92 238 U    | vs= 7.58* du= 1.30*|  47307.7     1.5   47312.7     0.7 |     4.9

93 238 Np   | vs= 4.25* du= 0.90 |  47454.6     1.1   47457.1     0.6 |     2.5
94 238 Pu   | vs= 4.25* du= 0.91 |  46163.1     1.1   46165.7     0.6 |     2.5
92 239 U    | vs= 7.32* du= 1.23*|  50572.7     1.5   50577.6     0.7 |     4.9
93 239 Np   | vs= 3.83* du= 0.55 |  49311.0     1.3   49314.2     0.8 |     3.2

94 239 Pu   | vs= 4.75* du= 1.07 |  48588.2     1.1   48590.8     0.5 |     2.6

95 239 Am   | vs= 1.43* du= 0.14 |  49390.4     2.0   49392.8     1.7 |     2.5
94 240 Pu   | vs= 4.83* du= 1.09 |  50125.3     1.1   50127.9     0.5 |     2.6
94 241 Pu   | vs= 4.83* du= 1.09 |  52955.1     1.1   52957.7     0.5 |     2.6

95 241 Am   | vs= 4.61* du= 1.02 |  52934.3     1.1   52936.9     0.6 |     2.5

96 241 Cm   | vs= 1.94* du= 0.26 |  53701.8     1.6   53704.2     1.3 |     2.5

94 242 Pu   | vs= 5.01* du= 0.86 |  54716.9     1.2   54720.2     0.7 |     3.4

95 242 Am   | vs= 4.53* du= 1.00 |  55468.0     1.1   55470.6     0.6 |     2.5

96 242 Cm   | vs= 4.21* du= 0.90 |  54803.7     1.1   54806.2     0.6 |     2.5

95 243 Am   | vs= 5.91* du= 1.09 |  57175.0     1.4   57178.9     0.7 |     3.9
|
94 244 Pu   | vs=14.62* du= 2.60*|  59806.0     2.3   59796.5     0.7 |    -9.5

95 244 Am   | vs= 2.26* du= 0.32 |  59879.1     1.5   59881.7     1.1 |     2.6
95 244 Amm  | vs= 5.87* du= 1.08 |  59968.4     1.4   59972.3     0.7 |     3.9
96 244 Cm   | vs= 4.82* du= 1.09 |  58451.8     1.1   58454.4     0.5 |     2.6
96 245 Cm   | vs= 3.83* du= 0.96 |  61004.5     1.1   61006.8     0.6 |     2.3
```

```
                          |
 96 248 Cm  | vs=15.04* du= 2.71*|  67392.7     2.4   67383.2     0.6 |   -9.6

 96 249 Cm  | vs=14.01* du= 2.47*|  70750.7     2.4   70741.1     0.7 |   -9.6
 97 249 Bk  | vs= 2.82* du= 0.80 |  69846.3     1.2   69848.3     0.7 |    1.9

 98 249 Cf  | vs= 3.45* du= 1.09 |  69722.7     1.2   69724.7     0.6 |    1.9

 98 252 Cf  | vs=15.02* du= 2.70*|  76034.6     2.4   76025.0     0.6 |   -9.6

NORMAL END OF MASS-FILE COMPARE          DATE 20 Oct 2021 TIME 20:24
```

Erklärung

Hiermit erkläre ich, Jacques Joseph Wilhelmus van de Laar, dass ich die vorliegende Arbeit selbst verfasst habe und nur die angegebenen Quellen und Hilfsmittel verwendet habe.

Mainz, den 20.04.2022

Jacques J. W. van de Laar