Nubase table

EXPLANATION OF TABLE

Data are presented in groups ordered according to mass number A.

Nuclide	Nuclidic name: mass number $A = N + Z$ and element symbol (for $Z > 103$ see Section 2).
Mass excess	Mass excess $[M(\text{in u})-A]$, in keV, and its one standard deviation uncertainty as given in the most recent "Atomic Mass Evaluation" (AME'95). No updatings have been made for mass-excesses or for isomeric excitation energies. When important new information exist, remarks have been added. The rounding policy is that of AME'95. # in place of decimal point: value and uncertainty derived not from purely experimental data, but at least partly from systematic trends (cf. AME'95).
Excitation energy	Energy difference, in keV, between levels adopted as higher level and ground state, and its one standard deviation uncertainty, as given in AME'95 (see explanation for "Mass excess" above). # in place of decimal point: value and uncertainty derived from systematic trends (see above). The excitation energy is followed by its origin code, when derived from a method other than γ-ray spectrometry: MD Mass doublet RQ Reaction energy difference AD α energy difference BD β energy difference p proton decay Nm estimated value derived with help of Nilsson model When the existence of an isomer is questionable, the following codes are used: EU existence of isomer is under discussion (e.g., ^{141}Tb^m). If existence is strongly doubted, no excitation energy and no mass are given. They are replaced by the mention "non-existent" (e.g., ^{138}Pm^n). RN isomer is proved not to exist (e.g., ^{184}Lu^m). Excitation energy and mass are replaced by the mention "non-existent" (e.g., ^{168}Re^m). Isomeric assignment: * In case the uncertainty σ on the excitation energy E is larger than half that energy ($\sigma > E/2$) an asterix has been added (e.g., ^{130}In and ^{130}In^m). & In case the ordering of the ground- and isomeric-states have been reversed compared to ENSDF, an ampersand sign has been added (e.g., ^{87}Nb and ^{87}Nb^m).

Half-life	s = seconds; m = minutes; h = hours; d = days; y = years; 1 y (tropical year 1900) = 31 556 925.974 7 s or 365.242 198 78 d STABLE = stable nuclide or nuclide for which no finite value for half-life has been found. # in place of decimal point: value and uncertainty derived not from purely experimental data, but at least partly from systematic trends.

subunits:

ms:	10^{-3} s	millisecond		ky :	10^{3} y	kiloyear
μs :	10^{-6} s	microsecond		My:	10^{6} y	megayear
ns :	10^{-9} s	nanosecond		Gy:	10^{9} y	gigayear
ps :	10^{-12} s	picosecond		Ty :	10^{12} y	terayear
fs :	10^{-15} s	femtosecond		Py :	10^{15} y	petayear
as :	10^{-18} s	attosecond		Ey :	10^{18} y	exayear
zs :	10^{-21} s	zeptosecond		Zy :	10^{21} y	zettayear
ys :	10^{-24} s	yoctosecond		Yy :	10^{24} y	yottayear

J^{π} Spin and parity:

- () uncertain spin and/or parity.
- # indicates values estimated from systematic trends in neighboring nuclides with same Z and N parities.
- high high spin.
- low low spin.

Ens Year of the archival file of the ENSDF.

Reference Reference keys:

- 92Pa05 Updates to ENSDF derived from regular journal. These keys are taken from Nuclear Data Sheets. Where not yet available, the style 97Ya.1 has been used.
- 95Am.A Updates to ENSDF derived from abstract, preprint, private communication, conference, thesis or annual report.

The reference keys are followed by one, two or three letter codes which specifies the added or modified physical quantities:

- T for half-life
- J for spin and/or parity
- E for the isomer excitation energy
- D for decay mode and/or intensity
- I for identification

Decay modes and intensities	Decay modes followed by their intensities (in %), and their one standard deviation uncertainties. The special notation 1.8e–12 stands for 1.8×10^{-12}. The ordering is according to decreasing intensities.

α	α emission	
p 2p	proton-emission	2-proton emission
n 2n	neutron emission	2-neutron emission
ϵ	electron capture	
e^+	positron emission	
β^+	β^+ decay ($\beta^+ = \epsilon + e^+$)	
β^-	β^- decay	
$2\beta^-$	double β^- decay	
$2\beta^+$	double β^+ decay	
β^-n	β^- delayed neutron emission	
β^-2n	β^- delayed 2-neutron emission	
β^+p	β^+ delayed proton emission	
β^+2p	β^+ delayed 2-proton emission	
$\beta^-\alpha$	β^- delayed α emission	
$\beta^+\alpha$	β^+ delayed α emission	
β^-d	β^- delayed deuteron emission	
IT	internal transition	
SF	spontaneous fission	
β^+SF	β^+ delayed fission	
β^-SF	β^- delayed fission	
^{24}Ne...	heavy cluster emission	

For long-lived nuclides:

IS	Isotopic abundance
...	list is continued in a remark, at the end of the A-group

*	A remark on the corresponding nuclide is given below the block of data corresponding to the same A.

Remarks. For nuclides indicated with an asterix at the end of the line, remarks have been added. They are collected in groups at the end of each block of data corresponding to the same A. They start with a code letter, like the ones for the "Reference" above, indicating to which quantity the remark applies. They give:

1. Continuation for the list of decays. In this case, the remark starts with three dots.
2. Information explaining how a value has been derived.
3. Reasons for changing a value or its uncertainty as given by the authors or for rejecting it.
4. Complementary references for updated data.
5. Separate values entering an adopted average.
6. The original value and its upper and lower uncertainties in the case of an asymmetric result (see Section 6).
7. New data on masses that were not included in the most recent "Atomic Mass Evaluation" (AME'95), but that are of importance in determining the isomeric ordering or the isomeric excitation energy.
8. Post cut-off date (December 31, 1996) information.

Nuclide	Mass excess (keV)		Excitation energy(keV)	Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{1}n	8071.323	0.002		614.6	s	1.1	$1/2^+$	94	96By03 T	β^-=100	*
^{1}H	7288.969	0.001		STABLE			$1/2^+$	94		IS=99.985 1	
*^{1}n	T : mean life 96By03=889.2(4.8) s combined with 7 other values, see 96By03										**
^{2}H	13135.720	0.001		STABLE			1^+	94		IS=0.015 1	
^{3}H	14949.794	0.001		12.33	y	0.06	$1/2^+$	96		β^-=100	
^{3}He	14931.204	0.001		STABLE			$1/2^+$	87		IS=0.000137 3	
^{4}H	25930	110		100	ys	20	2^-	82	92Ti02 D	n=100	*
^{4}He	2424.911	0.001		STABLE			0^+	94		IS=99.999863 3	
^{4}Li	25320	210		91	ys	9	2^-	94	92Ti02 D	p=100	*
*^{4}H	T : from 91Go19										**
*^{4}Li	T : from 65Ce02										**
^{5}H	36830	950		80	ys	30	$1/2^+$#	84	95Al.A TD	n=100	*
^{5}He	11390	50		760	ys	30	$3/2^-$	84		n=100	
^{5}Li	11680	50		300	ys		$3/2^-$	84		p=100	
^{5}Be	38000#	4000#					$1/2^+$#	84		p ?	
*^{5}H	T : average 91Go19=66(25) 95Al.A=110										**
^{6}H	41860	260		320	ys	60	(2^-)	84	88Aj01 DJ	3n ?; 4n ?	*
^{6}He	17594.1	1.0		806.7	ms	1.5	0^+	84	90Ri01 D	β^-=100; β^-d=0.00028 5	
^{6}Li	14086.3	0.5		STABLE			1^+	94		IS=7.5 2	
^{6}Be	18374	5		5.0	zs	0.3	0^+	84		2p=100	
*^{6}H	T : from 86Be35 D : see discussion in the text										**
^{7}He	26110	30		2.9	zs	0.5	$(3/2)^-$	89		n=100	
^{7}Li	14907.7	0.5		STABLE			$3/2^-$	89		IS=92.5 2	
^{7}Be	15769.5	0.5		53.29	d	0.07	$3/2^-$	89		ϵ=100	*
^{7}B	27870	70		350	ys	50	$(3/2^-)$	89		p=100	
*^{7}Be	T : average of 3 values in ENSDF. See also 96Ja10=53.12(0.07)										**
^{8}He	31598	7		119.0	ms	1.5	0^+	89	88Aj01 D	β^-=100; β^-n=16 1; β^-t=0.9 1	*
^{8}Li	20946.2	0.5		838	ms	6	2^+	89	88Aj01 D	β^-=100; $\beta^-\alpha$=100	*
^{8}Be	4941.66	0.04		67	as	17	0^+	94		α=100	
^{8}B	22921.0	1.1		770	ms	3	2^+	89	88Aj01 D	β^+=100; $\beta^+\alpha$=100	*
^{8}C	35094	23		2.0	zs	0.4	0^+	89		2p=100	
*^{8}He	D : β^-n intensity is from 88Aj01; β^-t intensity from 86Bo41										**
*^{8}Li	D : β^- decay to first 2^+ state in ^{8}Be, which decays 100% in 2 α										**
*^{8}B	D : β^+ to 2 excited states in ^{8}Be, then α and γ, but not to ^{8}Be ground-state										**
^{9}He	40820	60		7	zs	4	$1/2^-$#	89	88Aj01 D	n=100	*
^{9}Li	24953.9	1.9		178.3	ms	0.4	$3/2^-$	89	95Re.A D	β^-=100; β^-n=50.8 2	*
^{9}Be	11347.6	0.4		STABLE			$3/2^-$	89		IS=100.	
^{9}B	12415.7	1.0		800	zs	300	$3/2^-$	94		p=100	
^{9}C	28913.7	2.2		126.5	ms	0.9	$(3/2^-)$	89	88Aj01 D	β^+=100; β^+p=23; $\beta^+\alpha$=17	*
*^{9}He	T : derived from width 100(60) keV in 95Bo.B										**
*^{9}Li	D : also 92Te03 β^-n=51(1)%, outweighed										**
*^{9}C	D : β^+=12% and 11% to 2 excited p-emitting states in ^{9}B, and 17% to α emitter										**
^{10}He	48810	70		2.7	zs	1.8	0^+		94Os04 T	2n=100	*
^{10}Li	33050	15		2.0	zs	0.5	$(1^-,2^-)$	89	94Yo01 TJ	n=100	
^{10}Be	12606.6	0.4		1.51	My	0.06	0^+	88		β^-=100	
^{10}B	12050.8	0.4		STABLE			3^+	94		IS=19.9 2	
^{10}C	15698.6	0.4		19.290	s	0.012	0^+	94	90Ba02 T	β^+=100	
^{10}N	39700#	400#					1^-#			p ?	
*^{10}He	D : most probably 2 neutron emitter from S2n=- -1070(70) keV										**

Nuclide	Mass excess (keV)		Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{11}Li	40796	27		8.59 ms 0.14	$3/2^-$	92	96Mu19T	β^-=100; β^-n=84.9 8; β^-2n=4.1 4; ...	*
^{11}Be	20174	6		13.81 s 0.08	$1/2^+$	92	81Al03 D	β^-=100; $\beta^-\alpha$=2.9 4	
^{11}B	8668.0	0.4		STABLE	$3/2^-$	92		IS=80.1 2	
^{11}C	10650.5	1.0		20.39 m 0.02	$3/2^-$	92		β^+=100	
^{11}N	24960	180		500 ys 80	$1/2^+$	92	96Ax01 TJ	p=100	
*^{11}Li	D : ...; β^-3n=1.9 2; β^-nα=1.00 6; β^-t=0.014 3; β^-d=0.013 5								**
*^{11}Li	D : β^-n, β^-2n and β^-3n intensities are from 89Ha.2's evaluation;								**
*^{11}Li	D : β^-nα intensity is from 84La27; β^-d intensity from 96Mu19;								**
*^{11}Li	D : β^-t: average 84La27=0.010(4)% 96Mu19=0.020(5)%								**
*d^{11}Li	T : average 96Mu19=8.2(0.2) 95Re.A=8.4(0.2) 81Bj01=8.83(0.12) 74Ro31=8.5(0.2)								**
^{12}Li	50100#	1000#		< 10 ns			74Bo05 T	n ?	
^{12}Be	25076	15		21.3 ms 0.1	0^+	94	95Re.A TD	β^-=100; β^-n=0.52 9	
^{12}B	13368.9	1.4		20.20 ms 0.02	1^+	92	66Sc23 D	β^-=100; $\beta^-\alpha$=1.6 3	
^{12}C	0.0	0.0		STABLE	0^+	94		IS=98.89 1	
^{12}N	17338.1	1.0		11.000ms0.016	1^+	92	66Sc23 D	β^+=100; $\beta^+\alpha$=3.5 5	
^{12}O	32048	18		580 ys 30	0^+	92	95Kr03 T	2p=60 30; β^+ ?	
^{13}Be	33660	500		2.7 zs 1.8	$(1/2^-)$		95Pe12 T	n ?	*
^{13}B	16562.2	1.1		17.36 ms 0.16	$3/2^-$	94		β^-=100; β^-n=0.28 4	
^{13}C	3125.011	0.001		STABLE	$1/2^-$	94		IS=1.11 1	
^{13}N	5345.46	0.27		9.965 m 0.004	$1/2^-$	94		β^+=100	
^{13}O	23111	10		8.58 ms 0.05	$(3/2^-)$	93	70Es03 D	β^+=100; β^+p=10.9 20	
*^{13}Be	T : an upper limit of 10 ns was previously obtained by 74Bo05								**
^{14}Be	39880	110		4.35 ms 0.17	0^+	93		β^-=100; β^-n=81 4; β^-2n=5 2	
^{14}B	23664	21		12.3 ms 0.3	2^-	93	95Re.A TD	β^-=100; β^-n=6.04 23	
^{14}C	3019.892	0.004		5.73 ky 0.04	0^+	94		β^-=100	
^{14}N	2863.417	0.001		STABLE	1^+	94		IS=99.634 9	
^{14}O	8006.46	0.07		70.606 s 0.018	0^+	93		β^+=100	
^{14}F	33610#	400#			2^-#			p ?	
^{15}B	28967	22		9.87 ms 0.07	$3/2^-$	93	95Re.A TD	β^-=100; β^-n=93.6 12; β^-2n=0.4 2	*
^{15}C	9873.1	0.8		2.449 s 0.005	$1/2^+$	94		β^-=100	
^{15}N	101.438	0.001		STABLE	$1/2^-$	94		IS=0.366 9	
^{15}O	2855.4	0.5		122.24 s 0.16	$1/2^-$	94		β^+=100	
^{15}F	16780	130		460 ys 90	$(1/2^+)$	93		p=100	
*^{15}B	D : β^-2n intensity is from 89Re.A J : given in 91Aj01								**
^{16}B	37080	60		< 190 ps	0^-		96Kr05 T	n ?	
^{16}C	13694	4		747 ms 8	0^+	94	89Re.A D	β^-=100; β^-n=97.9 23	
^{16}N	5683.4	2.6		7.13 s 0.02	2^-	94	74Ne10 D	β^-=100; $\beta^-\alpha$=0.00100 7	
^{16}O	−4736.998	0.001		STABLE	0^+	94		IS=99.762 15	
^{16}F	10680	8		11 zs 6	0^-	93		p=100	
^{16}Ne	23992	20		9 zs	0^+	93		2p=100	
^{17}B	43720	140		5.08 ms 0.05	$(3/2^-)$	93	88Du09 D	β^-=100; β^-n=63 1; β^-2n=11 7; ...	*
^{17}C	21037	17		193 ms 5	$(3/2,5/2)^+$	93	95Ba28 J	β^-=100; β^-n=28.4 13	*
^{17}N	7871	15		4.173 s 0.004	$1/2^-$	94	94Do08 D	β^-=100; β^-n=95 1; $\beta^-\alpha$=0.0025 4	
^{17}O	−809.00	0.21		STABLE	$5/2^+$	94		IS=0.038 3	
^{17}F	1951.70	0.25		64.49 s 0.16	$5/2^+$	94		β^+=100	
^{17}Ne	16490	50		109.2 ms 0.6	$1/2^-$	93	88Bo39 D	β^+=100; β^+p=96.0 9; $\beta^+\alpha$=2.7 9	
*^{17}B	D : ...; β^-3n=3.5 7; β^-4n=0.4 3								**
*^{17}C	T : average 95Sc03=193(6) 95Re.A=188(10) 86Cu01=202(17)								**
*^{17}C	D : β^-n intensity is from 95Re.A								**

Nuclide	Mass excess (keV)		Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{18}B	52320#	800#		< 26 ns	4^-#		93Po.A T	n ?	
^{18}C	24920	30		92 ms 2	0^+	96	95Sc03 T	β^-=100; β^-n=31.5 15	*
^{18}N	13117	20		624 ms 12	1^-	96	95Re.A D	β^-=100; β^-n=10.9 9; $\beta^-\alpha$=12.2 6	*
^{18}O	−782.1	0.8		Stable	0^+	96		IS=0.200 12	
^{18}F	873.4	0.6		109.77 m 0.05	1^+	96		β^+=100	
^{18}Ne	5306.8	1.5		1.672 s 0.008	0^+	96		β^+=100	
^{18}Na	25320#	400#			1^-#			p ?; β^+ ?	
*^{18}C	D : β^-n intensity is from 95Re.A								**
*^{18}N	D : β^-n intensity is from 95Re.A; $\beta^-\alpha$ intensity from 89Zh04								**
^{19}B	59360#	400#		> 200 ns	$3/2^-$#		86Po13 T	β^- ?	
^{19}C	32830	110		46.2 ms 2.3	$(1/2^+)$		88Du09 TD	β^-=100; β^-n=47 3; β^-2n=7 3	*
^{19}N	15860	16		271 ms 8	$(1/2,3/2,5/2)^-$	96	95Re.A TD	β^-=100; β^-n=54.6 14	*
^{19}O	3334	3		26.464 s 0.009	$5/2^+$	96	94It.A T	β^-=100	
^{19}F	−1487.40	0.07		Stable	$1/2^+$	96		IS=100.	
^{19}Ne	1751.1	0.6		17.296 s 0.005	$1/2^+$	96	94Ko.A T	β^+=100	
^{19}Na	12929	12		< 40 ns	$5/2^+$#	93	93Po.A T	p=100	*
*^{19}C	T : average 88Du09=49(4) 95Re.A=44(4) 95Oz02=45.5(4.0) J : from 95Ba28								**
*^{19}N	J : from 95Oz02								**
*^{19}Na	D : most probably proton emitter from Sp=−333(12) keV								**
^{20}C	37560	200		16 ms 3	0^+		90Mu06 TD	β^-=100; β^-n=72 14	*
^{20}N	21770	50		130 ms 7		93	95Re.A TD	β^-=100; β^-n=57.0 25	
^{20}O	3796.9	1.2		13.51 s 0.05	0^+	93		β^-=100	
^{20}F	−17.40	0.08		11.163 s 0.008	2^+	95	96Ti.1 T	β^-=100	
^{20}Ne	−7041.930	0.002		Stable	0^+	94		IS=90.48 3	
^{20}Na	6845	7		447.9 ms 2.3	2^+	94	89Cl02 D	β^+=100; $\beta^+\alpha$=25.0 4	
^{20}Mg	17571	27		90 ms 6	0^+	94	95Pi03 T	β^+=100; β^+p=3 2	*
*^{20}C	T : average 90Mu06=14(+6−5) 95Re.A 16.7(3.5)								**
*^{20}Mg	T : average 95Pi03=95(3) 92Go10=82(4) D : β^+p intensity is from 81Ay01								**
^{21}C	45960#	500#		< 30 ns	$1/2^+$#		93Po.A T	n ?	
^{21}N	25230	90		87 ms 6	$1/2^-$#		90Mu06 TD	β^-=100; β^-n=80 6	*
^{21}O	8062	12		3.42 s 0.10	$(1/2,3/2,5/2)^+$	93		β^-=100	
^{21}F	−47.6	1.8		4.158 s 0.020	$5/2^+$	94		β^-=100	
^{21}Ne	−5731.72	0.04		Stable	$3/2^+$	94		IS=0.27 1	
^{21}Na	−2184.3	0.7		22.49 s 0.04	$3/2^+$	94		β^+=100	
^{21}Mg	10912	16		122 ms 3	$(5/2,3/2)^+$	93	73Se08 D	β^+=100; β^+p=32.6 10; $\beta^+\alpha$<0.5	*
^{21}Al	26120#	300#		< 35 ns	$1/2^+$#		93Po.A T	p ?	
*^{21}N	T : average 90Mu06=95(+15−11) 95Re.A=83.6(6.7)								**
*^{21}N	D : β^-n : average 90Mu06=84(9)% 95Re.A=78(7)%								**
*^{21}Mg	J : from mirror ^{21}F, there is a preference for $5/2^+$								**
^{22}C	52580#	900#		> 200 ns	0^+	93	86Po13 T	β^- ?	
^{22}N	32080	200		18 ms 5			90Mu06 TD	β^-=100; β^-n=35 5	*
^{22}O	9280	60		2.25 s 0.15	0^+	93	95Re.A D	β^-=100; β^-n<22	
^{22}F	2794	12		4.23 s 0.04	$4^+,(3^+)$	94	95Re.A D	β^-=100; β^-n<11	
^{22}Ne	−8024.34	0.22		Stable	0^+	94		IS=9.25 3	
^{22}Na	−5182.1	0.5		2.6019 y 0.0004	3^+	94		β^+=100	
^{22}Mg	−396.8	1.4		3.857 s 0.009	0^+	94		β^+=100	
^{22}Al	18180#	90#		80 ms 40	4^+	93	ABBW D	β^+=100; β^+2p≈2.5; β^+p≈0.8	*
^{22}Si	32160#	200#		29 ms 2	0^+		96Bl11 TD	β^+=100; β^+p=32 4	
*^{22}N	T : average 90Mu06=24(+7−6) 95Re.A=14(5.6)								**
*^{22}Al	T : symmetrized from 70(+50−35)								**
*^{22}Al	D : β^+p≈0.8% and β^+2p≈2.5% deduced from β^+p+β^+2p≈2.9(+2.1−1.5)%								**
*^{22}Al	D : in 82Ca16 and from β^+2p/β^+p≈3.7 (average of 1.9 and 5.5) in 84Ca29								**

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{23}N	37740# 710#		> 200 ns	1/2$^-$#		85La03 T	β^- ?	
^{23}O	14620 100		90 ms 40	1/2$^+$#	93	90Mu06T	β^-=100; β^-n=31 7	*
^{23}F	3330 80		2.23 s 0.14	(3/2,5/2)$^+$	93	95Re.A T	β^-=100; β^-n<14	
^{23}Ne	−5153.64 0.25		37.24 s 0.12	5/2$^+$	94		β^-=100	
^{23}Na	−9529.49 0.21		STABLE	3/2$^+$	94		IS=100.	
^{23}Mg	−5472.7 1.3		11.317 s 0.011	3/2$^+$	94		β^+=100	
^{23}Al	6767 25		470 ms 30	5/2$^+$#	93	95Ti08 D	β^+=100; β^+p=8 4	*
^{23}Si	23770# 200#		> 200 ns	3/2$^+$#		86La17 T	β^+ ?	*

*^{23}O T : symmetrized from 82(+45−28) **
*^{23}Al D : β^+p=3.5(1.9)% from the IAS. Total=3.5×4.8/2.2=7.6% **
*^{23}Si T : 42.3(0.4) ms; β^+=100%; β^+p≈88%; β^+2p=3.6(0.3)% in post cut-off date 97Bl04 **

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{24}N	47040# 500#		< 52 ns			93Po.A T	n ?	
^{24}O	18970 310		70 ms 30	0$^+$	93	90Mu06T	β^-=100; β^-n=58 12	*
^{24}F	7540 70		400 ms 50	(1,2,3)$^+$	93	95Re.A TD	β^-=100; β^-n<5.9	*
^{24}Ne	−5948 10		3.38 m 0.02	0$^+$	93		β^-=100	
^{24}Na	−8417.60 0.22		14.9590 h 0.0012	4$^+$	94		β^-=100	
^{24}Na^m	−7945.39 0.22	472.207 0.009	20.20 ms 0.07	1$^+$	94		IT≈100; β^-=0.05	
^{24}Mg	−13933.38 0.19		STABLE	0$^+$	94		IS=78.99 3	
^{24}Al	−55 4		2.053 s 0.004	4$^+$	93	94Ba54 D	β^+=100; $\beta^+\alpha$=0.035 6; β^+p=0.0016 3	*
^{24}Al^m	371 4	425.8 0.1	131.3 ms 2.5	1$^+$	93		IT=82 3; β^+=18 3; $\beta^+\alpha$=0.028 6	
^{24}Si	10755 19		100 ms 40	0$^+$	93	81Ay01 D	β^+=100; β^+p=8 5	*
^{24}P	32000# 500#			1$^+$#			p ?; β^+ ?	

*^{24}O T : symmetrized from 61(+32−19) **
*^{24}F T : average 95Re.A=440(70) 86Du07=340(80) **
*^{24}Al D : β^+p derived from β^+p/$\beta^+\alpha$=0.047(2) 94Ba54 uses $\beta^+\alpha$=0.026%, no reason given **
*^{24}Si D : symmetrized from β^+p=7(+6−4)% **

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{25}O	27140# 370#		< 50 ns	3/2$^+$#		93Po.A T	n ?	
^{25}F	11270 80		87 ms 16	5/2$^+$#		95Re.A TD	β^-=100; β^-n=24 5	
^{25}Ne	−2060 40		602 ms 8	(1/2,3/2)$^+$	93		β^-=100	
^{25}Na	−9357.5 1.2		59.1 s 0.6	5/2$^+$	93		β^-=100	
^{25}Mg	−13192.73 0.19		STABLE	5/2$^+$	94		IS=10.00 1	
^{25}Al	−8915.7 0.7		7.183 s 0.012	5/2$^+$	94		β^+=100	
^{25}Si	3825 10		220 ms 3	5/2$^+$	93	93Ro06 D	β^+=100; β^+p=36.81 5	
^{25}P	18870# 200#		< 30 ns	1/2$^+$#		93Po.A T	p ?	

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{26}O	35160# 430#		< 40 ns	0$^+$		93Po.A T	n ?; β^-=0	*
^{26}F	18290 120		190 ms 110			95Re.A TD	β^-=100; β^-n<32	
^{26}Ne	430 50		197 ms 1	0$^+$	93	92Te03 TD	β^-=100; β^-n=0.13 3	
^{26}Na	−6902 14		1.077 s 0.005	3$^+$	93	92Te03 T	β^-=100	*
^{26}Mg	−16214.48 0.19		STABLE	0$^+$	94		IS=11.01 2	
^{26}Al	−12210.34 0.20		740 ky 30	5$^+$	94		β^+=100	
^{26}Al^m	−11982.03 0.20	228.305 0.013	6.3452 s 0.0019	0$^+$	94		β^+=100	
^{26}Si	−7145 3		2.234 s 0.013	0$^+$	94		β^+=100	
^{26}P	10970# 200#		30 ms 25	(3$^+$)	93	ABBW D	β^+=100; β^+2p≈1; β^+p≈0.9	*
^{26}S	25970# 300#			0$^+$			2p ?	

*^{26}O D : in 96Fa01 experiment, several hundred of ^{26}O events expected, none observed **
*^{26}Na T : average 92Te03=1.074(0.006) 73Al13=1.087(0.012) **
*^{26}P T : symmetrized from 20(+35−15) **
*^{26}P D : β^+p≈0.9% and β^+2p≈1% deduced from β^+p+β^+2p≈1.9% in ENSDF **
*^{26}P D : and β^+2p/β^+p≈1.2 (average of 0.9 and 1.4) in 84Ca29 **

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{27}F	25050 420		> 200 ns	5/2$^+$#	93	85La03 T	β^- ?	
^{27}Ne	7090 90		32 ms 2	3/2$^+$#	93	92Te03 TD	β^-=100; β^-n=2.0 5	
^{27}Na	−5580 40		301 ms 6	5/2$^+$	93	84Gu19 D	β^-=100; β^-n=0.13 4	
^{27}Mg	−14586.50 0.20		9.458 m 0.012	1/2$^+$	93		β^-=100	
^{27}Al	−17196.83 0.13		STABLE	5/2$^+$	94		IS=100.	
^{27}Si	−12384.43 0.16		4.16 s 0.02	5/2$^+$	94		β^+=100	
^{27}P	−750 40		260 ms 80	1/2$^+$	93	96Og01 D	β^+=100; β^+p=0.07	
^{27}S	17510# 200#		21 ms 4	(5/2$^+$)	93	91Bo32 TJD	β^+=100; β^+2p=2.0 10; β^+p=?	

Nuclide	Mass excess (keV)		Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{28}F	33230#	510#		$<$ 40 ns			93Po.A T	n ?	
^{28}Ne	11280	110		11 ms 4	0^+	93	92Te03 TD	β^-=100; β^-n=22 3	*
^{28}Na	−1030	80		30.5 ms 0.4	1^+	93		β^-=100; β^-n=0.58 12	
^{28}Mg	−15018.8	2.0		20.91 h 0.03	0^+	93		β^-=100	
^{28}Al	−16850.55	0.14		2.2414 m 0.0012	3^+	94		β^-=100	
^{28}Si	−21492.793	0.002		Stable	0^+	94		IS=92.23 1	
^{28}P	−7161	4		270.3 ms 0.5	3^+	93	79Ho27D	β^+=100; β^+p=0.0013 4; ...	*
^{28}S	4070	160		125 ms 10	0^+	93	89Po10 D	β^+=100; β^+p=20.7 19	
^{28}Cl	26560#	500#			1^+#			p ?	
*^{28}Ne	T : average 95Re.A=8.2(2.5) 92Te03=17(4)								**
*^{28}P	D : ...; $\beta^+\alpha$=0.00086 25								**
^{29}F	40300#	580#		$>$ 200 ns	$5/2^+$#		89Gu03T	β^- ?	
^{29}Ne	18020	300		200 ms 100	$3/2^+$#		92Te03 TD	β^-=100	
^{29}Na	2620	90		44.9 ms 1.2	$3/2^{(+\#)}$	93	90En08 J	β^-=100; β^-n=25.9 23	*
^{29}Mg	−10661	29		1.30 s 0.12	$3/2^+$	94		β^-=100	
^{29}Al	−18215.5	1.2		6.56 m 0.06	$5/2^+$	93		β^-=100	
^{29}Si	−21895.025	0.028		Stable	$1/2^+$	96		IS=4.67 21	
^{29}P	−16951.9	0.7		4.142 s 0.015	$1/2^+$	96		β^+=100	
^{29}S	−3160	50		187 ms 4	$5/2^+$	93	79Vi01 D	β^+=100; β^+p=46.4 10	
^{29}Cl	13140#	200#		$<$ 20 ns	$3/2^+$#		93Po.A T	p ?	
*^{29}Na	D : β^-n : average 95Re.A=27.1(1.6)% 84La03=21.5(3.0)%								**
^{30}Ne	22240	820		$>$ 200 ns	0^+		85La03 T	β^- ?	
^{30}Na	8590	90		48 ms 2	2^+	93		β^-=100; β^-n=30 4; β^-2n=1.17 16; ...	*
^{30}Mg	−8880	70		335 ms 17	0^+	93	84La03 D	β^-=100; β^-n$<$0.06	
^{30}Al	−15872	14		3.60 s 0.06	3^+	93		β^-=100	
^{30}Si	−24432.88	0.04		Stable	0^+	94		IS=3.10 1	
^{30}P	−20200.6	0.4		2.498 m 0.004	1^+	94		β^+=100	
^{30}S	−14063	3		1.178 s 0.005	0^+	94		β^+=100	
^{30}Cl	4440#	200#		$<$ 30 ns	3^+#		93Po.A T	p ?	
^{30}Ar	20080#	300#		$<$ 20 ns	0^+	93	93Po.A T	p ?	
*^{30}Na	D : ...; $\beta^-\alpha$=5.5e−5 20								**
^{31}Ne	30840#	900#		$>$ 260 ns	$7/2^-$#		96Sa34 T	β^- ?; β^-n ?	
^{31}Na	12660	160		17.0 ms 0.4	$(3/2^+)$	93	93Kl02 J	β^-=100; β^-n=37 5; β^-2n=0.9 2; ...	*
^{31}Mg	−3220	80		230 ms 20	$3/2^+$	96	90En08D	β^-=100; β^-n=1.7 3	
^{31}Al	−14954	20		644 ms 25	$(5/2,3/2)^+$	93	95Re.A D	β^-=100; β^-n$<$1.6	*
^{31}Si	−22948.96	0.07		157.3 m 0.3	$3/2^+$	93		β^-=100	
^{31}P	−24440.99	0.18		Stable	$1/2^+$	94		IS=100.	
^{31}S	−19044.9	1.5		2.572 s 0.013	$1/2^+$	93		β^+=100	
^{31}Cl	−7060	50		150 ms 25	$3/2^+$	93	85Ay02D	β^+=100; β^+p=0.7	
^{31}Ar	11300#	210#		15 ms 3	$(5/2^+,3/2^+)$		87Bo36 TJ	β^+=100; β^+p=55 7; β^+2p=2.48 15; ...	*
*^{31}Na	D : ...; β^-3n$<$0.05 D : all from 84Gu19								**
*^{31}Al	J : from systematics there is a preference for $5/2^+$								**
*^{31}Ar	D : ...; β^+3p=2.1 10 D : all from 92Ba01. $\beta^+\alpha$ and β^+pα not found								**
^{32}Ne	37180#	880#		$>$ 200 ns	0^+		90Gu02T	β^- ?; β^-n ?	
^{32}Na	18300	480		13.2 ms 0.4	$(3^-,4^-)$	93	93Kl02 J	β^-=100; β^-n=24 7; β^-2n=8 2	
^{32}Mg	−800	100		95 ms 16	0^+	93	95Re.A T	β^-=100; β^-n=2.4 5	*
^{32}Al	−11060	90		31.7 ms 0.8	1^+	96	95Re.A TD	β^-=100; β^-n=0.7 5	
^{32}Si	−24080.9	2.2		132 y 13	0^+	93	93Ch10T	β^-=100	
^{32}P	−24305.32	0.19		14.262 d 0.014	1^+	94		β^-=100	
^{32}S	−26015.98	0.11		Stable	0^+	94		IS=95.02 9	
^{32}Cl	−13331	7		298 ms 1	1^+	93	79Ho27D	β^+=100; $\beta^+\alpha$=0.054 8; β^+p=0.026 5	
^{32}Ar	−2180	50		98 ms 2	0^+	93		β^+=100; β^+p=43 3	
^{32}K	20420#	500#			1^+#			p ?	
*^{32}Mg	T : average 95Re.A=85(13) 84La03=120(20)								**

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{33}Na	25510	1490			8.2	ms	0.4	3/2$^+$#	93		β^-=100; β^-n=52 20; β^-2n=12 5	
^{33}Mg	5200	150			90	ms	20	7/2$^-$#	96		β^-=100; β^-n=17 5	
^{33}Al	−8500	70			40.5	ms	2.8	5/2$^+$#	93	95Re.A TD	β^-=100; β^-n=8.5 7	
^{33}Si	−20492	16			6.18	s	0.18	3/2$^+$#	93		β^-=100	
^{33}P	−26337.7	1.1			25.34	d	0.12	1/2$^+$	94		β^-=100	
^{33}S	−26586.24	0.11			Stable			3/2$^+$	94		IS=0.75 1	
^{33}Cl	−21003.5	0.5			2.511	s	0.003	3/2$^+$	93		β^+=100	
^{33}Ar	−9380	30			173.0	ms	2.0	1/2$^+$	93		β^+=100; β^+p=38.7 10	
^{33}K	6760#	200#			< 25	ns		3/2$^+$#		93Po.A T	p ?	
^{34}Na	32510#	1050#			5.5	ms	1.0	1$^+$	93	ABBW D	β^-=100; β^-2n≈50; β^-n≈15	*
^{34}Mg	8450	260			20	ms	10	0$^+$	93		β^-=100; β^-n ?	
^{34}Al	−2860	90			42	ms	6	4$^-$#	93	95Re.A TD	β^-=100; β^-n=12.5 25	*
^{34}Si	−19957	14			2.77	s	0.20	0$^+$	93		β^-=100	
^{34}P	−24558	5			12.43	s	0.08	1$^+$	93		β^-=100	
^{34}S	−29931.85	0.10			Stable			0$^+$	94		IS=4.21 8	
^{34}Cl	−24440.57	0.12			1.5264	s	0.0014	0$^+$	94		β^+=100	
^{34}Cl^m	−24294.21	0.12	146.36	0.03	32.00	m	0.04	3$^+$	94		β^+=55.4 6; IT=44.6 6	
^{34}Ar	−18378	3			845	ms	3	0$^+$	94		β^+=100	
^{34}K	−1480#	300#			< 40	ns		1$^+$#		93Po.A T	p ?	
^{34}Ca	13150#	300#			< 35	ns		0$^+$		93Po.A T	p ?	
*^{34}Na	D : β^-n≈15%, β^-2n≈50% estimated from $P_n = \beta^-n + 2 \times \beta^-2n$=115(20)% in 84La03											**
*^{34}Na	D : assuming β^-n/β^-2n=0.3 from trends in the ^{30}Na-^{33}Na series: 26 41 3 4											**
*^{34}Al	D : β^-n=27(5)% in Ensdf, not used											**
^{35}Na	41150#	1550#			1.5	ms	0.5	3/2$^+$#	93		β^-=100; β^-n=?	
^{35}Mg	16290#	440#			70	ms	40	7/2$^-$#		95Re.A TD	β^-=100; β^-n=52 46	
^{35}Al	−60	140			30	ms	4	5/2$^+$#	93	95Re.A TD	β^-=100; β^-n=26 4	
^{35}Si	−14360	40			780	ms	120	7/2$^-$#	93	95Re.A D	β^-=100; β^-n<5.26	
^{35}P	−24857.6	1.9			47.3	s	0.7	1/2$^+$	93		β^-=100	
^{35}S	−28846.37	0.09			87.51	d	0.12	3/2$^+$	94		β^-=100	
^{35}Cl	−29013.51	0.04			Stable			3/2$^+$	94		IS=75.77 5	
^{35}Ar	−23048.2	0.8			1.775	s	0.004	3/2$^+$	94		β^+=100	
^{35}K	−11167	20			190	ms	30	3/2$^+$	94		β^+=100; β^+p=0.37 15	
^{35}Ca	4440#	70#			50	ms	30	1/2$^+$#	94		β^+=100; β^+2p=?	*
*^{35}Ca	D : β^+p=20%# to the IAS, estimated by 85Ay01											**
^{36}Mg	20910#	900#			> 200	ns		0$^+$		89Gu03 T	β^- ?	
^{36}Al	5920	270			90	ms	40			95Re.A TD	β^-=100; β^-n<31	
^{36}Si	−12400	100			450	ms	60	0$^+$	93	95Re.A D	β^-=100; β^-n=12 5	
^{36}P	−20251	13			5.6	s	0.3		93		β^-=100	
^{36}S	−30663.96	0.23			Stable			0$^+$	93		IS=0.02 1	
^{36}Cl	−29521.89	0.08			301	ky	2	2$^+$	94		β^-=98.1 1; β^+=1.9 1	
^{36}Ar	−30230.44	0.25			Stable			0$^+$	94		IS=0.3365 30; 2β^+ ?	
^{36}K	−17425	8			342	ms	2	2$^+$	93		β^+=100; β^+p=0.048 14; ...	*
^{36}Ca	−6440	40			102	ms	2	0$^+$	93	95Tr02 TD	β^+=100; β^+p=56.8 13	
^{36}Sc	13900#	500#									p ?	
*^{36}K	D : ...; $\beta^+\alpha$=0.0034 13											**
^{37}Mg	29100#	900#			> 260	ns		7/2$^-$#		96Sa34 T	β^- ?; β^-n ?	
^{37}Al	9600	540			> 1	μs		3/2$^+$#		91Or01 T	β^- ?	
^{37}Si	−6520	130			90	ms	60	7/2$^-$#		95Re.A TD	β^-=100; β^-n=17 13	
^{37}P	−18990	40			2.31	s	0.13	1/2$^+$#	93		β^-=100	
^{37}S	−26896.22	0.25			5.05	m	0.02	7/2$^-$	94		β^-=100	
^{37}Cl	−31761.52	0.05			Stable			3/2$^+$	94		IS=24.23 5	
^{37}Ar	−30948.0	0.3			35.04	d	0.04	3/2$^+$	94		ϵ=100	
^{37}K	−24799.24	0.27			1.226	s	0.007	3/2$^+$	94		β^+=100	
^{37}Ca	−13161	22			181.1	ms	1.0	3/2$^+$	93	95Tr03 TD	β^+=100; β^+p=74.5 7	
^{37}Sc	2840#	300#						7/2$^-$#			p ?	

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{38}Al	15740# 560#		> 200 ns			89Gu03T	β^- ?	
^{38}Si	−3740 270		> 1 μs	0^+		91Zh24 T	β^- ?; β^-n ?	
^{38}P	−14470 140		640 ms 140		93	95Re.A D	β^-=100; β^-n=12 5	
^{38}S	−26861 7		170.3 m 0.7	0^+	94		β^-=100	
^{38}Cl	−29797.98 0.11		37.24 m 0.05	2^-	93		β^-=100	
^{38}Cl^m	−29126.62 0.11	671.361 0.008	715 ms 3	5^-	93		IT=100	
^{38}Ar	−34714.8 0.5		Stable	0^+	94		IS=0.0632 5	
^{38}K	−28801.7 0.7		7.636 m 0.018	3^+	94		β^+=100	
^{38}K^m	−28671.3 0.8	130.4 0.3	923.9 ms 0.6	0^+	94		β^+=100	
^{38}Ca	−22059 5		440 ms 8	0^+	93		β^+=100	
^{38}Sc	−4940# 300#		< 300 ns	2^-#		94Bl10 T	p ?	
^{38}Sc^m	−4240# 320#	700# 100#		5^-#			p ?	
^{38}Ti	9100# 250#		< 120 ns	0^+		96Bl21 T	2p ?	

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{39}Al	20400# 600#		> 200 ns	$3/2^+$#		89Gu03T	β^- ?	
^{39}Si	2140# 400#		> 1 μs	$7/2^-$#		90Au.AT	β^- ?	
^{39}P	−12650 150		190 ms 50	$1/2^+$#	93	95Re.A TD	β^-=100; β^-n=26 8	
^{39}S	−23160 50		11.5 s 0.5	$(3/2,5/2,7/2)^-$	93		β^-=100	
^{39}Cl	−29800.7 1.7		55.6 m 0.2	$3/2^+$	93		β^-=100	
^{39}Ar	−33242 5		269 y 3	$7/2^-$	94		β^-=100	
^{39}K	−33806.84 0.28		Stable	$3/2^+$	94		IS=93.2581 44	
^{39}Ca	−27276.3 1.8		859.6 ms 1.4	$3/2^+$	94		β^+=100	
^{39}Sc	−14168 24		< 300 ns	$7/2^-$#	93	94Bl10 T	p=100	*
^{39}Ti	1230# 100#		26 ms 8	$3/2^+$#	92	90De43 TD	β^+=100; β^+p=85 15; β^+2p=?	*

*^{39}Sc D : most probably proton emitter from Sp=−602(24) keV **
*^{39}Ti D : β^+2p decay observed by 92Mo15 **
*^{39}Ti T : symmetrized from 26(+8−7) **

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{40}Al			> 260 ns			96Sa34 T	β^- ?; β^-n ?	*
^{40}Si	5400# 500#		> 200 ns	0^+		89Gu03T	β^- ?	
^{40}P	−8340 200		290 ms 80		93	89Le16 T	β^-=100; β^-n=30 10	*
^{40}S	−22850 230		8.8 s 2.2	0^+	93		β^-=100	
^{40}Cl	−27560 30		1.35 m 0.02	2^-	93		β^-=100	
^{40}Ar	−35039.890 0.004		Stable	0^+	93		IS=99.6003 30	
^{40}K	−33535.02 0.27		1.277 Gy 0.008	4^-	94		IS=0.0117 1; β^-=89.28 13; ...	*
^{40}Ca	−34846.11 0.29		Stable	0^+	94		IS=96.941 18; 2β^+ ?	
^{40}Sc	−20526 4		182.3 ms 0.7	4^-	93		β^+=100; β^+p=0.44 7; ...	*
^{40}Ti	−8850 160		60 ms 15	0^+	93	90De43 TD	β^+=100; β^+p=43 6	*
^{40}V	10330# 500#			2^-#			p ?	

*^{40}Al I : tentative. Only one event has been observed **
*^{40}P T : symmetrized from 260(+100−60) **
*^{40}K D : ...; β^+=10.72 13 **
*^{40}Sc D : ...; $\beta^+\alpha$=0.017 5 **
*^{40}Ti T : symmetrized from 56(+18−12) and post cut-off date 97Li.1=55(2) ms **
*^{40}Ti T : post cut-off date 97Po.A=51.8(0.4) ms and β^+p=100.5(2.7)%. In the work **
*^{40}Ti T : of 90De43, not all the β^+p activity was observed **

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{41}Si	11830# 600#		> 200 ns	$7/2^-$#		89Gu03T	β^- ?	
^{41}P	−4840 470		120 ms 20	$1/2^+$#	93		β^-=100; β^-n=30 10	
^{41}S	−18600 210		2.6 s 1.4	$7/2^-$#		95Re.A TD	β^-=100; β^-n ?	
^{41}Cl	−27340 60		38.4 s 0.8	$(1/2,3/2)^+$	93		β^-=100	
^{41}Ar	−33067.3 0.7		109.34 m 0.12	$7/2^-$	94		β^-=100	
^{41}K	−35558.87 0.26		Stable	$3/2^+$	94		IS=6.7302 44	
^{41}Ca	−35137.5 0.4		103 ky 4	$7/2^-$	94		ϵ=100	
^{41}Sc	−28642.2 0.3		596.3 ms 1.7	$7/2^-$	94		β^+=100	
^{41}Ti	−15710# 40#		80 ms 2	$3/2^+$	93		β^+=100; β^+p≈100	
^{41}V	−240# 250#			$7/2^-$#			p ?	

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{42}Si	15000# 700#		> 200 ns	0^+		90Le03 T	β^- ?	
^{42}P	80# 500#		120 ms 30		93	89Le16 T	β^-=100; β^-n=50 20	*
^{42}S	−17240 330		560 ms 60	0^+		95So03 TD	β^-=100; β^-n<4	
^{42}Cl	−24990 110		6.8 s 0.3		93		β^-=100	
^{42}Ar	−34420 40		32.9 y 1.1	0^+	93		β^-=100	
^{42}K	−35021.3 0.3		12.360 h 0.003	2^-	94		β^-=100	
^{42}Ca	−38546.8 0.4		STABLE	0^+	94		IS=0.647 9	
^{42}Sc	−32120.9 0.4		681.3 ms 0.7	0^+	94		β^+=100	
^{42}Sc^m	−31504.6 0.4	616.28 0.06	61.7 s 0.4	7^+,(5^+,6^+)	94		β^+=100	
^{42}Ti	−25121 5		199 ms 6	0^+	93		β^+=100	
^{42}V	−8170# 200#		< 55 ns	2^-#		92Bo37 T	p ?	
^{42}Cr	5990# 300#		> 350 ns	0^+		96Bl21 T	β^+ ?; 2p ?	*

*^{42}P T : symmetrized from 110(+40−20) **
*^{42}Cr T : 20 ms expected from systematics of β^+ half-lives **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{43}P	3080# 500#		33 ms 3	$1/2^+$#		95So03 TD	β^-=100; β^-n=100	
^{43}S	−12480 840		240 ms 70	$7/2^-$#	93	89Le16 T	β^-=100; β^-n=40 10	*
^{43}Cl	−24030 160		3.3 s 0.2	$3/2^+$#	93		β^-=100; β^-n ?	
^{43}Ar	−31980 70		5.37 m 0.06	$(5/2,3/2)^{(-\#)}$	93		β^-=100	*
^{43}K	−36593 9		22.3 h 0.1	$3/2^+$	93		β^-=100	
^{43}Ca	−38408.4 0.5		STABLE	$7/2^-$	94		IS=0.135 6	
^{43}Sc	−36187.6 1.9		3.891 h 0.012	$7/2^-$	94		β^+=100	
^{43}Ti	−29320 7		509 ms 5	$7/2^-$	93		β^+=100	
^{43}V	−18020# 230#		> 800 ms	$7/2^-$#		92Bo37 T	β^+ ?	*
^{43}Cr	−2140# 90#		22 ms 4	$(3/2^+)$		92Bo37 TJD	β^+=100; β^+p=23 6; β^+2p=6 5; $\beta^+\alpha$?	*

*^{43}S T : symmetrized from 220(+80−50) **
*^{43}Ar J : from systematics, there is a preference for $5/2^-$ **
*^{43}V T : to be confirmed. 80 ms expected from systematics of β^+ half-life **
*^{43}Cr T : symmetrized from 21(+4−3) **
*^{43}Cr D : from β^+p($1/2^+$)=17(4)% and β^+p+β^+2p(IAS)=12(4)%, as analyzed with 96Po.A **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{44}P	9200# 700#		> 200 ns			89Gu03 T	β^- ?	
^{44}S	−10880# 500#		123 ms 10	0^+	93	93So06 TD	β^-=100; β^-n=18 3	
^{44}Cl	−19990 220		434 ms 60			95So03 TD	β^-=100; β^-n<8	
^{44}Ar	−32262 20		11.87 m 0.05	0^+	93		β^-=100	
^{44}K	−35810 40		22.13 m 0.19	2^-	93		β^-=100	
^{44}Ca	−41469.1 0.9		STABLE	0^+	94		IS=2.086 12	
^{44}Sc	−37815.8 1.8		3.927 h 0.008	2^+	94		β^+=100	
^{44}Sc^m	−37544.7 1.8	271.13 0.11	58.6 h 0.1	6^+	94		IT=98.80 7; β^+=1.20 7	
^{44}Ti	−37548.3 0.8		49 y 3	0^+	94		ϵ=100	*
^{44}V	−23850# 80#		111 ms 7	(2^+)	93	97Ha04 TJ	β^+=100; $\beta^+\alpha$=?	
^{44}V^m	−23550# 130#	300# 100#	150 ms 3	(6^+)		97Ha04 TJD	β^+=100	
^{44}Cr	−13540# 130#		54 ms 4	0^+		96Fa09 D	β^+=100; β^+p=7 3	*
^{44}Mn	6400# 500#		< 105 ns	2^-#		92Bo37 T	p ?	

*^{44}Ti T : T=49(3) years is, in ENSDF, the average of 3 measurements. Two recent **
*^{44}Ti T : measurements are at variance: 88Alzw=67(1) and 96No.A=62(2) **
*^{44}Cr T : 53(+4−3) from 92Bo37 **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{45}P	14100# 800#		> 200 ns	$1/2^+$#	93	90Le03 T	β^- ?	
^{45}S	−4830# 600#		82 ms 13	$3/2^-$#		95So03 TD	β^-=100; β^-n=54	
^{45}Cl	−18910 650		400 ms 40	$3/2^+$#	95		β^-=100; β^-n=24 4	
^{45}Ar	−29720 60		21.48 s 0.15	$(1/2,3/2,5/2)^-$	95		β^-=100	*
^{45}K	−36608 10		17.3 m 0.6	$3/2^+$	95		β^-=100	
^{45}Ca	−40812.5 0.9		162.67 d 0.25	$7/2^-$	95	94Lo04 T	β^-=100	
^{45}Sc	−41069.3 1.1		STABLE	$7/2^-$	95		IS=100.	
^{45}Sc^m	−41056.9 1.1	12.40 0.05	318 ms 7	$3/2^+$	95		IT=100	

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{45}Ti	−39006.9 1.2		184.8 m 0.5	$7/2^-$	95		β^+=100	
^{45}V	−31874 17		547 ms 6	$7/2^-$	95		β^+=100	
^{45}Cr	−19410#100#		* 50 ms 6	$7/2^-$#	95		β^+=100; β^+p>27	
^{45}Cr^m	−19310#120#	100# 70#	* 1# ms	$3/2^+$#			IT ?; β^+ ?	
^{45}Mn	−5110#300#		< 70 ns	$7/2^-$#		92Bo37 T	p ?	
^{45}Fe	13560#400#		> 350 ns	$3/2^+$#		96Bl21 T	p ?; 2p ?	*

*^{45}Ar J : $7/2^-$ is expected from theory and from systematics. See ENSDF. **
*^{45}Fe T : but not observed by 92Bo37, with <250 ns; T=10 ms expected from **
*^{45}Fe T : systematics of β^+ half-lives **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{46}P	22200#900#		> 200 ns			90Le03 T	β^- ?	
^{46}S	−400#700#		> 200 ns	0^+		89Gu03T	β^- ?	
^{46}Cl	−14790#500#		220 ms 40			93So06 TD	β^-=100; β^-n=60 9	
^{46}Ar	−29720 40		8.4 s 0.6	0^+	93		β^-=100	
^{46}K	−35419 16		105 s 10	$2^{(-)}$	93	82To02 J	β^-=100	
^{46}Ca	−43134.9 2.4		STABLE	0^+	93		IS=0.004 3; $2\beta^-$?	
^{46}Sc	−41758.6 1.1		83.79 d 0.04	4^+	93		β^-=100	
^{46}Sc^m	−41616.1 1.1	142.528 0.007	18.75 s 0.04	1^-	93		IT=100	
^{46}Ti	−44125.3 1.1		STABLE	0^+	93		IS=8.25 3	
^{46}V	−37073.9 1.5		422.37 ms 0.20	0^+	93		β^+=100	
^{46}V^m	−36272.4 1.5	801.52 0.10	1.02 ms 0.07	3^+	93		IT=100	
^{46}Cr	−29471 20		260 ms 60	0^+	93		β^+=100	
^{46}Mn	−12370#110#		42 ms 7	(4^+)	93	92Bo37 TDJ	β^+=100; β^+p=22 2; β^+2p ?; $\beta^+\alpha$?	*
^{46}Mn^m	−12220#120#	150# 50#	1# ms	1^-#			β^+ ?	
^{46}Fe	760#350#		28 ms 15	0^+	93	92Bo37 TD	β^+=100; β^+p=?	*

*^{46}Mn T : symmetrized from 41(+7−6) **
*^{46}Fe T : symmetrized from 20(+20−8) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{47}S	7100#800#		> 200 ns	$3/2^-$#	95	89Gu03T	β^- ?	
^{47}Cl	−11230#600#		> 200 ns	$3/2^+$#	95	89Gu03T	β^-=100; β^-n<3	
^{47}Ar	−25910 100		580 ms 120	$3/2^-$#	95	89Ba.B T	β^-=100; β^-n<1	*
^{47}K	−35697 8		17.50 s 0.24	$1/2^+$	95		β^-=100	
^{47}Ca	−42339.7 2.3		4.536 d 0.003	$7/2^-$	95		β^-=100	
^{47}Sc	−44331.6 2.1		3.3492 d 0.0006	$7/2^-$	95		β^-=100	
^{47}Ti	−44931.7 1.0		STABLE	$5/2^-$	95		IS=7.44 2	
^{47}V	−42003.9 1.1		32.6 m 0.3	$3/2^-$	95		β^+=100	
^{47}Cr	−34552 14		500 ms 15	$3/2^-$	95		β^+=100	
^{47}Mn	−22260#160#		100 ms 50	$5/2^-$#	95	96Fa09 TD	β^+=100; β^+p=3.4 9	
^{47}Fe	−6620#260#		41 ms 22	$7/2^-$#		92Bo37 TD	β^+=100; β^+p=?	*
^{47}Co				$7/2^-$#			p ?	

*^{47}Ar D : from 95So03 **
*^{47}Fe T : symmetrized from 27(+32−10) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{48}S	12100#900#		> 200 ns	0^+		90Le03 T	β^- ?	
^{48}Cl	−4800#700#		> 200 ns			89Gu03T	β^- ?	
^{48}Ar	−23220#300#			0^+			β^- ?	
^{48}K	−32124 24		6.8 s 0.2	(2^-)	95		β^-=100; β^-n=1.14 15	
^{48}Ca	−44215 4		51 Ey 23	0^+	95	96Ba80 TD	IS=0.187 4; $2\beta^-$=?; β^- ?	*
^{48}Sc	−44493 5		43.67 h 0.09	6^+	95		β^-=100	
^{48}Ti	−48487.0 1.0		STABLE	0^+	95		IS=73.72 3	
^{48}V	−44474.7 2.6		15.9735 d 0.0025	4^+	95		β^+=100	
^{48}Cr	−42815 7		21.56 h 0.03	0^+	95		β^+=100	
^{48}Mn	−29000# 70#		158.1 ms 2.2	4^+	95	87Se07 D	β^+=100; β^+p=0.28 4; $\beta^+\alpha$=6e−4	*
^{48}Fe	−18110#100#		44 ms 7	0^+	95	96Fa09 TD	β^+=100; β^+p=3.6 11	
^{48}Co	1640#400#			6^+#			p ?	

*^{48}Ca T : symmetrized from 43(+24−11 statistics + 14 systematics) **
*^{48}Ca T : also T>36Ey from 70Ba61. Single β^- decay: T>6Ey (95% CL), from 85Al17 **
*^{48}Mn D : one $\beta^+\alpha$ event was observed, versus 437 β^+p, in fig.4 of 87Se07 **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{49}S	20500# 1000#		< 200 ns	$3/2^-$#		90Le03 T	n ?	*
^{49}Cl	−100# 800#		> 170 ns	$3/2^+$#	95		β^- ?	
^{49}Ar	−16600# 500#		> 170 ns	$3/2^-$#	95		β^- ?	
^{49}K	−30320 70		1.26 s 0.05	$(3/2^+)$	95		β^-=100; β^-n=86 9	
^{49}Ca	−41290 4		8.718 m 0.006	$3/2^-$	95		β^-=100	
^{49}Sc	−46552 4		57.2 m 0.2	$7/2^-$	95		β^-=100	
^{49}Ti	−48558.0 1.0		STABLE	$7/2^-$	95		IS=5.41 2	
^{49}V	−47956.2 1.3		330 d 15	$7/2^-$	95		ϵ=100	
^{49}Cr	−45325.4 2.6		42.3 m 0.1	$5/2^-$	95		β^+=100	
^{49}Mn	−37611 24		382 ms 7	$5/2^-$	95		β^+=100	
^{49}Fe	−24580# 160#		70 ms 3	$(7/2^-)$	95	96Fa09 TJD	β^+=100; β^+p=52 10	
^{49}Co	−9580# 260#		< 35 ns	$7/2^-$#		94Bl10 T	p ?; β^+ ?	
^{49}Ni			> 350 ns	$7/2^-$#		96Bl21 T	p ?; β^+ ?	
*^{49}S	I : statistics precludes any conclusion, say authors							**
^{50}Cl	7200# 900#						β^- ?	
^{50}Ar	−13100# 700#		> 170 ns	0^+	95		β^- ?	
^{50}K	−25350 280		472 ms 4	$(0^-,1,2^-)$	95		β^-=100; β^-n=29 3	
^{50}Ca	−39571 9		13.9 s 0.6	0^+	95		β^-=100	
^{50}Sc	−44538 16		102.5 s 0.5	5^+	95		β^-=100	
^{50}Sc^m	−44281 16	256.895 0.010	350 ms 40	$2^+,3^+$	95		IT>97.5; β^-<2.5	
^{50}Ti	−51425.8 1.0		STABLE	0^+	95		IS=5.18 2	
^{50}V	−49217.5 1.3		150 Py 40	6^+	95		IS=0.250 2; β^+=83 11; β^-=17 11	*
^{50}Cr	−50254.5 1.3		STABLE >180Py	0^+	95		IS=4.345 13; 2β^+ ?	
^{50}Mn	−42621.5 1.4		283.9 ms 0.5	0^+	95		β^+=100	
^{50}Mn^m	−42393 7	229 7	1.75 m 0.03	5^+	95		β^+=100	
^{50}Fe	−34470 60		150 ms 30	0^+	95		β^+=100; β^+p≈0	
^{50}Co	−17200# 170#		44 ms 4	(6^+)	95	96Fa09 TJD	β^+=100; β^+p=54 12	
^{50}Ni	−3790# 260#		> 300 ns	0^+		94Bl10 T	β^+ ?	
*^{50}V	T : symmetrized from 140(+40−30)							**
^{51}Cl	12600# 1000#		> 200 ns	$3/2^+$#		90Le03 T	β^- ?	
^{51}Ar	−6300# 700#		> 200 ns	$3/2^-$#	91	89Gu03T	β^- ?	
^{51}K	−22000# 500#		365 ms 5	$3/2^+$#	92		β^-=100; β^-n=47 5	
^{51}Ca	−35890 90		10.0 s 0.8	$3/2^-$#	91		β^-=100; β^-n ?	
^{51}Sc	−43219 20		12.4 s 0.1	$(7/2)^-$	91		β^-=100	
^{51}Ti	−49726.9 1.3		5.76 m 0.01	$3/2^-$	91		β^-=100	
^{51}V	−52197.5 1.3		STABLE	$7/2^-$	91		IS=99.750 2	
^{51}Cr	−51444.8 1.3		27.702 d 0.004	$7/2^-$	91		ϵ=100	
^{51}Mn	−48237.0 1.3		46.2 m 0.1	$5/2^-$	91		β^+=100	
^{51}Fe	−40217 15		305 ms 5	$(5/2^-)$	91		β^+=100	
^{51}Co	−27270# 150#		> 200 ns	$7/2^-$#		87Po04 T	β^+ ?	
^{51}Ni	−11440# 260#		> 200 ns	$7/2^-$#		87Po04 T	β^+ ?	
^{52}Ar	−1710# 900#			0^+			β^- ?	
^{52}K	−16200# 700#		105 ms 5	2^-#	94	ABBW D	β^-=100; β^-n≈64; β^-2n≈21	*
^{52}Ca	−32510 470		4.6 s 0.3	0^+	94	83La23 D	β^-=100; β^-n<2	
^{52}Sc	−40380 230		8.2 s 0.2	3^+	94		β^-=100	
^{52}Ti	−49464 7		1.7 m 0.1	0^+	94		β^-=100	
^{52}V	−51437.4 1.3		3.743 m 0.005	3^+	94		β^-=100	
^{52}Cr	−55412.8 1.4		STABLE	0^+	94		IS=83.789 18	
^{52}Mn	−50701.1 2.4		5.591 d 0.003	6^+	94		β^+=100	
^{52}Mn^m	−50323.4 2.4	377.749 0.005	21.1 m 0.2	2^+	94		β^+=98.25 5; IT=1.75 5	
^{52}Fe	−48329 10		8.275 h 0.008	0^+	94		β^+=100	
^{52}Fe^m	−41510 130	6820 130	45.9 s 0.6	(12^+)	94		β^+=100	
^{52}Co	−33920# 70#		115 ms 23	(6^+)		97Ha04 TJD	β^+=100	
^{52}Co^m	−33550# 120#	370# 100#	104 ms 11	2^+#		97Ha04 TD	β^+=?; IT ?	*
^{52}Ni	−22650# 80#		38 ms 5	0^+		94Fa06 TD	β^+=100; β^+p>17	
^{52}Cu	−2630# 260#			3^+#			p ?	
*^{52}K	D : β^-n≈64%, β^-2n≈21% estimated from $P_n = \beta^-n + 2 \times \beta^-2n$=107(20)% in 83La23							**
*^{52}K	D : and assuming β^-n/β^-2n=3 as in ^{32}Na							**
*^{52}Co^m	I : Tentative: no specific evidence for ^{52}Co^m, say authors in 97Ha04							**

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference		Decay modes and intensities (%)	
^{53}Ar	5800#	1000#						5/2$^-$#				β^- ?; β^-n ?	
^{53}K	−12000#	700#			30	ms	5	3/2$^+$#	90	ABBW	D	β^-=100; β^-n≈67; β^-2n≈17	*
^{53}Ca	−27900#	500#			90	ms	15	3/2$^-$#	90			β^-=100; β^-n>30	*
^{53}Sc	−37970#	300#			900	ms	900	7/2$^-$#		95So.A	TD	β^-=100; β^-n ?	
^{53}Ti	−46820	100			32.7	s	0.9	(3/2)$^-$	90			β^-=100	
^{53}V	−51845	3			1.61	m	0.04	7/2$^-$	90			β^-=100	
^{53}Cr	−55280.6	1.4			STABLE			3/2$^-$	90			IS=9.501 17	
^{53}Mn	−54683.6	1.4			3.74	My	0.04	7/2$^-$	96			ϵ=100	
^{53}Fe	−50941.3	2.1			8.51	m	0.02	7/2$^-$	90			β^+=100	
^{53}Fe^m	−47900.9	2.1	3040.4	0.3	2.58	m	0.04	19/2$^-$	90			IT=100	
^{53}Co	−42639	18			240	ms	20	7/2$^-$#	90			β^+=100	
^{53}Co^m	−39445	24	3194	30 p	247	ms	12	(19/2$^-$)	90			β^+≈98.5; p≈1.5	
^{53}Ni	−29380#	160#			45	ms	15	7/2$^-$#	90	76Vi02	D	β^+=100; β^+p≈45	
^{53}Cu	−13460#	260#			< 300	ns		3/2$^-$#		93Bl.A	T	p ?; β^+ ?	
*^{53}K	D : β^-n≈67%, β^-2n≈17% estimated from P_n = β^-n + 2 × β^-2n=100(30)% in 83La23												**
*^{53}K	D : and assuming β^-n/β^-2n=4 as in ^{33}Na												**
*^{53}Ca	D : β^-n=40(10)% is a lower limit, see ENSDF												**
^{54}K	−5600#	900#			10	ms	5	2$^-$#	95			β^-=100; β^-n=?	
^{54}Ca	−23590#	700#			80#	ms		0$^+$	95			β^- ?; β^-n ?	
^{54}Sc	−34470	470			230	ms	70	3$^+$#	95	95So.A	TD	β^-=100; β^-n ?	
^{54}Ti	−45760	230			1.5	s	0.4	0$^+$	95	96Do23	TD	β^-=100	
^{54}V	−49887	15			49.8	s	0.5	3$^+$	95			β^-=100	
^{54}Cr	−56928.3	1.4			STABLE			0$^+$	95			IS=2.365 7	
^{54}Mn	−55551.3	1.7			312.3	d	0.4	3$^+$	95			ϵ=100; β^- <2.9e−4; e$^+$ <5.7e−7	
^{54}Fe	−56248.4	1.3			STABLE			0$^+$	95			IS=5.845 35; 2β^+ ?	
^{54}Co	−48005.3	1.3			193.23	ms	0.14	0$^+$	95			β^+=100	
^{54}Co^m	−47806	4	199	4	1.48	m	0.02	(7)$^+$	95			β^+=100	
^{54}Ni	−39210	50			143	ms	23	0$^+$	95	95Re.B	T	β^+=100	
^{54}Cu	−21690#	210#			< 75	ns		3$^+$#		94Bl10	T	p ?	
^{54}Zn	−6570#	400#						0$^+$				2p ?	
^{55}K	−570#	1000#						3/2$^+$#				β^- ?; β^-n ?	
^{55}Ca	−18120#	700#						5/2$^-$#				β^- ?	
^{55}Sc	−30340#	1030#			130	ms	40	7/2$^-$#		95So.A	TD	β^-=100; β^-n ?	
^{55}Ti	−41810	240			570	ms	70	3/2$^-$#		96Do23	TD	β^-=100	*
^{55}V	−49150	100			6.54	s	0.15	7/2$^-$#	95			β^-=100	
^{55}Cr	−55103.3	1.4			3.497	m	0.003	3/2$^-$	95			β^-=100	
^{55}Mn	−57706.4	1.3			STABLE			5/2$^-$	95			IS=100.	
^{55}Fe	−57475.0	1.3			2.73	y	0.03	3/2$^-$	95			ϵ=100	
^{55}Co	−54023.7	1.4			17.53	h	0.03	7/2$^-$	95			β^+=100	
^{55}Ni	−45330	11			207	ms	5	7/2$^-$	95	95Re.B	T	β^+=100	*
^{55}Cu	−31620#	300#			> 200	ns		3/2$^-$#	95			β^+ ?; p ?	
^{55}Zn	−14920#	250#						5/2$^-$#				β^+ ?; 2p ?	
*^{55}Ti	T : average 96Do23=600(40) 95Am.A=400(100)												**
*^{55}Ni	T : average 95Re.B=209(3) 87Ha.A=212.1(3.8) 84Ay01=208(5) 77Ho25=189(5)												**
*^{55}Ni	T : and 76Ed.A=219(6)												**
^{56}Ca	−13240#	900#						0$^+$				β^- ?	
^{56}Sc	−25470#	700#						3$^+$#				β^- ?	
^{56}Ti	−39130	280			150	ms	30	0$^+$		96Do23	TD	β^-=100; β^-n ?	
^{56}V	−46240	240			230	ms	25	3$^+$#		96So.A	TD	β^-=100; β^-n ?	
^{56}Cr	−55289	10			5.94	m	0.10	0$^+$	93			β^-=100	
^{56}Mn	−56905.6	1.4			2.5785	h	0.0002	3$^+$	93			β^-=100	
^{56}Fe	−60601.0	1.4			STABLE			0$^+$	93			IS=91.754 36	
^{56}Co	−56035.0	2.4			77.27	d	0.03	4$^+$	93			β^+=100	
^{56}Ni	−53900	11			5.9	d	0.1	0$^+$	93			β^+=100	
^{56}Cu	−38600#	140#			> 200	ns		4$^+$#		87Po04	T	β^+ ?	
^{56}Zn	−25730#	260#			36	ms	10	0$^+$		95Wa.A	T	β^+ ?	*
^{56}Ga	−4740#	260#						3$^+$#				p ?	
*^{56}Zn	T : half-life is derived from experimental (p,n) cross sections												**

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{57}Ca	−7120#	1000#						$5/2^-$#			β^- ?; β^-n ?	
^{57}Sc	−21390#	700#						$7/2^-$#			β^- ?	
^{57}Ti	−34560#	930#			80	ms	50	$5/2^-$#		96Do23 TD	β^-=100; β^-n ?	*
^{57}V	−44380	250			320	ms	30	$7/2^-$#		96So.A TD	β^-=100; β^-n ?	
^{57}Cr	−52390	90			21.1	s	1.0	$3/2^-,5/2^-,7/2^-$	93		β^-=100	
^{57}Mn	−57485	3			85.4	s	1.8	$5/2^-$	93		β^-=100	
^{57}Fe	−60175.7	1.4			STABLE			$1/2^-$	93		IS=2.119 10	
^{57}Co	−59339.7	1.4			271.79	d	0.09	$7/2^-$	93		ϵ=100	
^{57}Ni	−56075.5	2.9			35.60	h	0.06	$3/2^-$	93		β^+=100	
^{57}Cu	−47305	16			196.3	ms	0.7	$3/2^-$	93	96Se01 T	β^+=100	
^{57}Zn	−32690#	140#			40	ms	10	$7/2^-$#	93	76Vi02 D	β^+=100; β^+p≈65	
^{57}Ga	−15900#	260#						$1/2^-$#			p ?	

*^{57}Ti T : average 96Do23=56(20) 95Am.A=180(40) **

^{58}Sc	−15770#	800#						3^+#			β^- ?	
^{58}Ti	−31570#	700#			> 150	ns		0^+		92We04T	β^- ?	
^{58}V	−40380	260			218	ms	26	3^+#		96So.A TD	β^-=100; β^-n ?	*
^{58}Cr	−51930	240			7.0	s	0.3	0^+	90		β^-=100	
^{58}Mn	−55900	30			3.0	s	0.1	0^+	96		β^-=100	*
^{58}Mn^m	−55830	30	71.78	0.05	65.3	s	0.7	3^+	96	92Sc.A E	β^-≈100; IT=?	*
^{58}Fe	−62148.8	1.4			STABLE			0^+	90		IS=0.282 4	
^{58}Co	−59841.4	1.7			70.82	d	0.03	2^+	90		β^+=100	*
^{58}Co^m	−59816.5	1.7	24.889	0.021	9.15	h	0.10	5^+	90		IT=100	*
^{58}Ni	−60223.0	1.4			STABLE		>700Ey	0^+	96	93Va19 T	IS=68.077 9; 2β^+ ?	
^{58}Cu	−51660.0	2.5			3.204	s	0.007	1^+	90		β^+=100	
^{58}Zn	−42290	50			65#	ms		0^+	90		β^+=100; β^+p=60#	*
^{58}Ga	−23990#	210#			*			2^+#			p ?	
^{58}Ga^m	−23960#	210#	30#	30#	*			5^+#			p ?	
^{58}Ge	−8370#	320#						0^+			2p ?	

*^{58}V T : average 95Am.A=270(40) 96So.A=205(20) **

*^{58}Mn J : 1^+ in post cut-off date ENSDF'97 **

*^{58}Mn^m J : $(4)^+$; T=65.2(0.5) s and IT=20%# in post cut-off date ENSDF'97 **

*^{58}Co T : 70.86(0.07) d in post cut-off date ENSDF'97 **

*^{58}Co^m T : 9.04(0.11) d and E=24.95(0.06) in post cut-off date ENSDF'97 **

*^{58}Zn T : from estimated T=50-80 ms, from ENSDF D : β^+p=50-70%# estimated in ENSDF **

^{59}Sc	−11140#	900#						$7/2^-$#			β^- ?; β^-n ?	
^{59}Ti	−26120#	700#						$5/2^-$#			β^- ?	
^{59}V	−37910	330			140	ms	70	$7/2^-$#	93	95So.A TD	β^-=100; β^-n ?	*
^{59}Cr	−47850	250			460	ms	50	$5/2^-$#	93	96Do23 T	β^-=100	
^{59}Mn	−55473	29			4.6	s	0.1	$3/2^-,5/2^-$	94		β^-=100	
^{59}Fe	−60658.4	1.4			44.503	d	0.006	$3/2^-$	93		β^-=100	
^{59}Co	−62223.6	1.4			STABLE			$7/2^-$	93		IS=100.	
^{59}Ni	−61151.1	1.4			80	ky	11	$3/2^-$	93	94Ru.1 T	β^+=100	*
^{59}Cu	−56351.5	1.7			81.5	s	0.5	$3/2^-$	93		β^+=100	
^{59}Zn	−47260	40			182.0	ms	1.8	$3/2^-$	93		β^+=100; β^+p=0.10 3	
^{59}Ga	−34120#	170#						$3/2^-$#			p ?	
^{59}Ge	−17000#	280#						$7/2^-$#			2p ?	

*^{59}V T : average 95Am.A=200(30) 95So.A=70(40) **

*^{59}Ni T : average of discrepant 94Ru.1=108(13) 81No08=76(5) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{60}Ti	−22690# 800#			0^+			β^- ?	
^{60}V	−33070 560		220 ms 30	3^+#		95Am.A TD	β^-=100; β^-n ?	
^{60}Cr	−46830 260		490 ms 60	0^+	93	96Do23 T	β^-=100	*
^{60}Mn	−52910 270		51 s 6	0^+	94		β^-=100	
^{60}Mn^m	−52640 270	271.90 0.10	1.77 s 0.02	3^+	94	92Sc.A E	β^-=88.5 8; IT=11.5 8	
^{60}Fe	−61407 4		1.5 My 0.3	0^+	93		β^-=100	
^{60}Co	−61644.2 1.4		5.2714 y 0.0005	5^+	93		β^-=100	
^{60}Co^m	−61585.6 1.4	58.59 0.01	10.467 m 0.006	2^+	93		IT≈100; β^-=0.24 3	
^{60}Ni	−64468.1 1.4		Stable	0^+	96		IS=26.223 8	
^{60}Cu	−58341.2 2.5		23.7 m 0.4	2^+	93		β^+=100	
^{60}Zn	−54183 11		2.38 m 0.05	0^+	93		β^+=100	
^{60}Ga	−40000# 110#		> 1.2 μs	2^+#		95Bl06 T	β^+ ?	
^{60}Ge	−27770# 230#			0^+			β^+ ?; 2p ?	
^{60}As	−6400# 600#			5^+#			p ?	
^{60}As^m	−6340# 600#	60# 20#		2^+#			p ?	

*^{60}Cr T : average 96Do23=510(150) 95Am.A=380(30) and 88Bo06=570(60) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{61}Ti	−16750# 900#			$1/2^-$#			β^- ?; β^-n ?	
^{61}V	−30360# 700#		> 150 ns	$7/2^-$#		92We04 T	β^- ?	
^{61}Cr	−42760 280		260 ms 20	$5/2^-$#	93	95Am.A TD	β^-=100; β^-n ?	
^{61}Mn	−51740 260		710 ms 10	$(5/2)^-$	93		β^-=100	
^{61}Fe	−58917 20		5.98 m 0.06	$3/2^-,5/2^-$	93		β^-=100	
^{61}Co	−62895.0 1.6		1.650 h 0.005	$7/2^-$	93		β^-=100	
^{61}Ni	−64216.8 1.4		Stable	$3/2^-$	93		IS=1.140 1	
^{61}Cu	−61979.6 1.8		3.333 h 0.005	$3/2^-$	93		β^+=100	
^{61}Zn	−56342 16		89.1 s 0.2	$3/2^-$	93		β^+=100	
^{61}Ga	−47350# 200#		150 ms 30	$3/2^-$#	93	93Wi03 TD	β^+=100	
^{61}Ge	−33730# 300#		40 ms 15	$3/2^-$#	93		β^+=100; β^+p≈80	
^{61}As	−18050# 600#			$3/2^-$#			p ?	

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{62}V	−25020# 700#		> 150 ns	3^+#		95Cz.A T	β^- ?	
^{62}Cr	−41170 370		160 ms 10	0^+		95Am.A TD	β^-=100; β^-n ?	
^{62}Mn	−48470 260		880 ms 150	(3^+)	90		β^-=100; β^-n ?	
^{62}Fe	−58898 15		68 s 2	0^+	90		β^-=100	
^{62}Co	−61428 20		1.50 m 0.04	2^+	90		β^-=100	
^{62}Co^m	−61406 21	22 5	13.91 m 0.05	5^+	90		β^->99; IT<1	
^{62}Ni	−66742.7 1.4		Stable	0^+	90		IS=3.634 2	
^{62}Cu	−62795 4		9.74 m 0.02	1^+	90		β^+=100	
^{62}Zn	−61167 10		9.186 h 0.013	0^+	90		β^+=100	
^{62}Ga	−51996 28		116.12 ms 0.23	0^+	90		β^+=100	
^{62}Ge	−42240# 140#		> 150 ns	0^+		91Mo10 T	β^+ ?	*
^{62}As	−24960# 300#			1^+#			p ?	*

*^{62}Ge I : T=113(+6−5) ms in 93Wi03 (table 1) is a misprint for ^{62}Ga **

*^{62}As D : p-unstable from estimated Sp=−1476#(422#) keV **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{63}V	−21660# 900#		> 150 ns	$7/2^-$#		95Cz.A T	β^- ?	
^{63}Cr	−35530# 700#		70 ms 10	$1/2^-$#		95Am.A TD	β^-=100; β^-n ?	
^{63}Mn	−46750 280		282 ms 18	$5/2^-$#	91	85Bo49 T	β^-=100	*
^{63}Fe	−55780 190		6.1 s 0.6	$(5/2)^-$	91		β^-=100	
^{63}Co	−61837 20		26.9 s 0.4	$(7/2)^-$	91	94It.A T	β^-=100	*
^{63}Ni	−65509.2 1.4		100.1 y 2.0	$1/2^-$	91		β^-=100	
^{63}Cu	−65576.2 1.4		Stable	$3/2^-$	91		IS=69.17 3	
^{63}Zn	−62209.3 2.1		38.47 m 0.05	$3/2^-$	91		β^+=100	
^{63}Ga	−56690 100		32.4 s 0.5	$3/2^-,5/2^-$	91		β^+=100	
^{63}Ge	−46910# 200#		97 ms 22	$3/2^-$#		93Wi03 TD	β^+=100	*
^{63}As	−33820# 500#			$3/2^-$#			p ?	*

*^{63}Mn T : average 95Am.A=290(20) 85Bo49=250(40) **

*^{63}Co T : average 94It.A=26.41(0.27) 72Jo08=27.5(0.3) 69Wa15=26(1) **

*^{63}Ge T : symmetrized from 95(+23−20) **

*^{63}As D : p-unstable from estimated Sp=−1132#(522#) keV **

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference		Decay modes and intensities (%)	
^{64}V					>150	ns				95Cz.A	T	β^- ?	
^{64}Cr	−33350#	700#			>1	μs		0^+		89Ar.A	T	β^- ?	
^{64}Mn	−43100	330			240	ms	30	3^+#	96	95Am.A	TD	β^-=100; β^-n ?	
^{64}Fe	−55080	280			2.0	s	0.2	0^+	96			β^-=100	
^{64}Co	−59789	20			300	ms	30	1^+	96			β^-=100	
^{64}Ni	−67095.9	1.4			STABLE			0^+	96			IS=0.926 1	
^{64}Cu	−65420.8	1.4			12.700	h	0.002	1^+	96			β^+=61.0 3; β^-=39.0 3	
^{64}Zn	−65999.5	1.7			STABLE		>2.3Ey	0^+	96	85No03	T	IS=48.6 3; $2\beta^+$?	
^{64}Ga	−58835	4			2.627	m	0.012	$0^{(+\#)}$	96			β^+=100	
^{64}Ge	−54420	250			63.7	s	2.5	0^+	96			β^+=100	
^{64}As	−39520#	360#			>1.2	μs		0^+#		95Bl06	T	β^+ ?	
^{65}Cr	−27600#	900#			>150	ns		$1/2^-$#		95Cz.A	T	β^- ?	
^{65}Mn	−40890	560			160	ms	30	$5/2^-$#	93	95Am.A	TD	β^-=100; β^-n ?	
^{65}Fe	−51290	280			760	ms	50	$1/2^-$#	93	95Am.A	T	β^-=100	*
^{65}Co	−59164	13			1.20	s	0.06	$(7/2)^-$	93			β^-=100	
^{65}Ni	−65122.6	1.5			2.5172	h	0.0003	$5/2^-$	93			β^-=100	
^{65}Cu	−67259.7	1.7			STABLE			$3/2^-$	93			IS=30.83 3	
^{65}Zn	−65907.8	1.7			244.26	d	0.26	$5/2^-$	93			β^+=100	
^{65}Ga	−62652.9	1.8			15.2	m	0.2	$3/2^-$	93			β^+=100	
^{65}Ge	−56410	100			30.9	s	0.5	$(3/2)^-$	93	87Vi01	D	β^+=100; β^+p=0.011 3	
^{65}As	−47060#	390#			190	ms	11	$3/2^-$#	93	95Mo26	T	β^+=100	
^{65}Se	−32920#	600#			<50	ms		$3/2^-$#	93	94Mo.A	T	β^+=100; β^+p=?	*
*^{65}Fe	T : supersedes 94Cz02=450(150) from same group												**
*^{65}Se	D : from 92Ba.A												**
^{66}Cr					>150	ns		0^+		95Cz.A	T	β^- ?	
^{66}Mn	−36500#	700#			220	ms	40			95Am.A	TD	β^-=100; β^-n ?	
^{66}Fe	−50320	330			600	ms	60	0^+	92	95Am.A	TD	β^-=100; β^-n ?	
^{66}Co	−56050	270			230	ms	20	3^+#	91			β^-=100	
^{66}Ni	−66029	16			54.6	h	0.4	0^+	92			β^-=100	
^{66}Cu	−66254.3	1.7			5.088	m	0.011	1^+	92			β^-=100	
^{66}Zn	−68896.3	1.5			STABLE			0^+	92			IS=27.9 2	
^{66}Ga	−63721	3			9.49	h	0.07	0^+	91			β^+=100	
^{66}Ge	−61620	30			2.26	h	0.05	0^+	92			β^+=100	
^{66}As	−51820#	200#			95.77	ms	0.23		91			β^+=100	
^{66}Se	−41720#	300#			>1.2	μs		0^+		95Bl06	T	β^+ ?	
^{67}Mn	−33700#	800#			>150	ns		$5/2^-$#		95Cz.A	T	β^- ?	
^{67}Fe	−46570	470			500	ms	100	$1/2^-$#	91	95Am.A	TD	β^-=100; β^-n ?	
^{67}Co	−55320	280			320	ms	30	$7/2^-$#	91	85Bo49	T	β^-=100	*
^{67}Ni	−63742	19			21	s	1	$1/2^-$#	94			β^-=100	
^{67}Ni^m	−63060#	100#	680#	100#				$9/2^+$#				β^- ?; IT ?	*
^{67}Cu	−67300	8			61.83	h	0.12	$3/2^-$	91			β^-=100	
^{67}Zn	−67877.2	1.6			STABLE			$5/2^-$	91			IS=4.1 1	
^{67}Ga	−66876.7	1.8			3.2612	d	0.0006	$3/2^-$	96			ϵ=100	
^{67}Ge	−62654	5			18.9	m	0.3	$1/2^-$	91			β^+=100	
^{67}As	−56640	100			42.5	s	1.2	$(5/2^-)$	91			β^+=100	
^{67}Se	−46490#	200#			69	ms	15	$5/2^-$#		95Bl23	TD	β^+=100; β^+p=0.5 1	*
^{67}Br	−32800#	500#						$1/2^-$#				p ?	
*^{67}Co	T : average 95Am.A=310(20) 85Bo49=420(70)												**
*^{67}Ni^m	E : estimated from $9/2^+$ in isotones 71Ge=198(0) 69Zn=438(0)												**
*^{67}Se	T : average 95Bl23=60(+17−11) 94Ba50=107(35)												**
*^{67}Se	T : post cut-off date 97Oi.1: values from 95Bl23 for ^{67}Se and ^{71}Kr questioned												**

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{68}Mn							>150	ns				95Cz.A T	β^- ?	
^{68}Fe	−44240#	700#					100	ms	60	0^+	96		β^-=100; β^-n ?	
^{68}Co	−51830	330					310	ms	30		96	95Am.A T	β^-=100	*
^{68}Ni	−63486	17					17	s	5	0^+	96		β^-=100	*
^{68}Cu	−65540	50					31.1	s	1.5	1^+	96		β^-=100	
^{68}Cu^m	−64820	50	721.6	0.7			3.75	m	0.05	(6^-)	96		IT=84 1; β^-=16 1	
^{68}Zn	−70004.0	1.6					STABLE			0^+	96		IS=18.8 4	
^{68}Ga	−67082.9	2.0					67.629	m	0.024	1^+	96		β^+=100	
^{68}Ge	−66977	6					270.8	d	0.3	0^+	96		ϵ=100	
^{68}As	−58880	100					151.6	s	0.8	3^+	96		β^+=100	
^{68}Se	−54150#	300#					35.5	s	0.7	0^+	96		β^+=100	
^{68}Br	−38890#	540#					<1.2	μs		3^+#		95Bl06 T	p ?	
*^{68}Co	T : supersedes 91Be33=180(100) from same group													**
*^{68}Ni	T : symmetrized from 19(+3−6)													**
^{69}Mn							>150	ns		$5/2^-$#		95Cz.A T	β^- ?	
^{69}Fe	−39400#	800#					90	ms	10	$1/2^-$#		95Am.A TD	β^-=100; β^-n ?	
^{69}Co	−51050	370					270	ms	50	$7/2^-$#	90	91Be33 TD	β^-=100; β^-n ?	
^{69}Ni	−60380	140					11.4	s	0.3	$1/2^-$#	90		β^-=100	
^{69}Ni^m	−59990#	170#	390#	100#						$9/2^+$#			β^- ?; IT ?	*
^{69}Cu	−65740	8					2.85	m	0.15	$3/2^-$	90		β^-=100	
^{69}Zn	−68414.9	1.7					56.4	m	0.9	$1/2^-$	90		β^-=100	
^{69}Zn^m	−67976.3	1.7	438.64	0.02			13.76	h	0.02	$9/2^+$	90		IT≈100; β^-=0.033 3	
^{69}Ga	−69321	3					STABLE			$3/2^-$	90		IS=60.108 6	
^{69}Ge	−67094	3					39.05	h	0.10	$5/2^-$	90		β^+=100	
^{69}As	−63080	30					15.2	m	0.2	$5/2^-$	90		β^+=100	
^{69}Se	−56300	30					27.4	s	0.2	$(1/2^-)$	90	95Po01 J	β^+=100; β^+p=0.045 10	
^{69}Br	−46410#	310#					<24	ns		$1/2^-$#	90	96Pf01 T	p ?	
^{69}Kr	−32300#	500#					>1.2	μs		$5/2^-$#		95Bl06 T	β^+ ?	*
*^{69}Ni^m	E : estimated from $9/2^+$ in isotones ^{73}Ge=−66(0) ^{71}Zn=157(1)													**
*^{69}Kr	T : 32(10) ms from β^+p in post cut-off date 97Xu01													**
^{70}Fe							>150	ns		0^+		95Cz.A T	β^- ?	
^{70}Co	−46750#	700#					230	ms	20		93	95Am.A TD	β^-=100; β^-n ?	
^{70}Ni	−59490	330					>1	μs		0^+	93	93Se.A T	β^- ?	
^{70}Cu	−62960	15				*	4.5	s	1.0	1^+	93		β^-=100	
^{70}Cu^m	−62820	80	140	80	BD	*	47	s	5	$3^-,4^-,5^-$	93		β^-=100	
^{70}Zn	−69559	3					STABLE			0^+	93		IS=0.6 1; 2β^- ?	*
^{70}Ga	−68905	3					21.14	m	0.03	1^+	93		β^-≈100; ϵ=0.41 6	
^{70}Ge	−70560.3	1.7					STABLE			0^+	93		IS=21.23 4	
^{70}As	−64340	50					52.6	m	0.3	$4^{(+\#)}$	93		β^+=100	
^{70}Se	−61940#	210#					41.1	m	0.3	0^+	93		β^+=100	
^{70}Br	−51590#	360#				*	79.1	ms	0.8		93		β^+=100	
^{70}Br^m	−51590#	370#	0#	100#		*	2.2	s	0.2		93		β^+=?; IT ?	
^{70}Kr	−40980#	400#					>1.2	μs		0^+		95Bl06 T	β^+ ?	
*^{70}Zn	T : >500 Ty in ENSDF is for 0ν-2β^- decay alone													**
^{71}Fe							>150	ns		$7/2^+$#		95Cz.A T	β^- ?	
^{71}Co	−44960#	800#					270	ms	50	$7/2^-$#	93	95Am.A TD	β^-=100; β^-n ?	
^{71}Ni	−55890	370					1.9	s	0.4	$1/2^-$#	93		β^-=100	
^{71}Cu	−62760	40					19.5	s	1.6	$(3/2^-)$	93		β^-=100	
^{71}Zn	−67322	11					2.45	m	0.10	$1/2^-$	93		β^-=100	
^{71}Zn^m	−67164	11	157.7	1.3			3.96	h	0.05	$9/2^+$	93		β^-≈100; IT≤0.05	
^{71}Ga	−70136.8	1.8					STABLE			$3/2^-$	93		IS=39.892 6	

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference		Decay modes and intensities (%)	
^{71}Ge	−69904.9	1.7			11.43	d	0.03	$1/2^-$	93			ϵ=100	
^{71}Ge^m	−69706.5	1.7	198.367	0.010	20.40	ms	0.17	$9/2^+$	93			IT=100	
^{71}As	−67892	4			65.28	h	0.15	$5/2^-$	93			β^+=100	
^{71}Se	−63090#	200#			4.74	m	0.05	$5/2^-$	93			β^+=100	
^{71}Br	−56590#	300#			21.4	s	0.6	$(5/2)^-$	93			β^+=100	
^{71}Kr	−46100#	300#			81	ms	16	$5/2^-$#	93	95Bl23	TD	β^+=100; β^+p=5.2 6	*
^{71}Rb	−32300#	500#						$5/2^-$#				p ?	
*^{71}Kr	T : average 95Bl23=64(+8−5) 81Ew01=97(9)												**
*^{71}Kr	T : post cut-off date 97Oi.1: T=100(3) ms β^+p=2.1(7)% at variance with 95Bl23												**
*^{71}Kr	T : and J^π=($5/2^-$). Values from 95Bl23 for ^{67}Se and ^{71}Kr questioned.												**
^{72}Fe					> 150	ns		0^+		95Cz.A	T	β^- ?	
^{72}Co	−40600#	800#			100	ms	50			95Am.A	TD	β^-=100; β^-n ?	
^{72}Ni	−54680	470			1.30	s	0.10	0^+		95Am.A	TD	β^-=100; β^-n ?	*
^{72}Cu	−60060#	200#			6.6	s	0.1	(1^+)	95			β^-=100	
^{72}Zn	−68128	6			46.5	h	0.1	0^+	95			β^-=100	
^{72}Ga	−68586.5	2.0			14.10	h	0.02	3^-	95			β^-=100	
^{72}Ga^m	−68466.8	2.0	119.66	0.05	39.68	ms	0.13	(0^+)	95			IT=100	
^{72}Ge	−72585.6	1.5			Stable			0^+	95			IS=27.66 3	
^{72}As	−68229	4			26.0	h	0.1	2^-	95			β^+=100	
^{72}Se	−67894	12			8.40	d	0.08	0^+	95			ϵ=100	
^{72}Br	−59150	260			78.6	s	2.4	3^+	95			β^+=100	
^{72}Br^m	−59050	260	100.92	0.03	10.6	s	0.3	1^-	95			IT≈100; β^+=?	
^{72}Kr	−54110	270			17.2	s	0.3	0^+	95			β^+=100	
^{72}Rb	−38120#	500#			< 1.2	μs		3^+#		95Bl06	T	p ?	
^{72}Rb^m	−38020#	500#	100#	50#				1^-#				p ?	
*^{72}Ni	T : supersedes 92Be.A=2.06(0.30) from same group												**
^{73}Co					> 150	ns		$7/2^-$#		95En07	T	β^- ?	
^{73}Ni	−50230#	600#			800	ms	100	$7/2^+$#	93	95Am.A	T	β^-=100; β^-n ?	*
^{73}Cu	−59160#	300#			3.9	s	0.3	$3/2^-$#	93			β^-=100; β^-n ?	
^{73}Zn	−65410	40			23.5	s	1.0	$(1/2)^-$	93			β^-=100	
^{73}Zn^m	−65220	40	195.5	2.0	5.8	s	0.8	$(7/2^+)$	93			IT=?; β^-=?	
^{73}Ga	−69704	6			4.86	h	0.03	$3/2^-$	93			β^-=100	
^{73}Ge	−71297.1	1.5			Stable			$9/2^+$	93			IS=7.73 1	
^{73}Ge^m	−71230.4	1.5	66.716	0.019	499	ms	11	$1/2^-$	93			IT=100	
^{73}As	−70956	4			80.30	d	0.06	$3/2^-$	93			ϵ=100	
^{73}Se	−68216	11			7.15	h	0.08	$9/2^+$	93			β^+=100	
^{73}Se^m	−68190	11	25.71	0.04	39.8	m	1.3	$3/2^-$	93			IT=72.6 3; β^+=27.4 3	
^{73}Br	−63530	130			3.4	m	0.2	$1/2^-$	93			β^+=100	
^{73}Kr	−56890	140			27.0	s	1.2	$5/2^-$	93			β^+=100; β^+p=0.68 12	
^{73}Rb	−46230#	480#			< 30	ns		$5/2^-$#		96Pf01	T	p ?	
^{73}Sr	−31700#	600#			> 25	ms		$1/2^-$#		93Ba61	TD	β^+=100; β^+p=?	
*^{73}Ni	T : supersedes 90Be13=900(150) from same group												**
^{74}Co					> 150	ns				95En07	T	β^- ?	
^{74}Ni	−48520#	700#			500	ms	200	0^+	95	95Am.A	T	β^-=100; β^-n ?	*
^{74}Cu	−55700#	400#			1.594	s	0.010	1^+#	95			β^-=100	
^{74}Zn	−65710	50			95.6	s	1.2	0^+	95			β^-=100	
^{74}Ga	−68050	70			8.12	m	0.12	(3^-)	95			β^-=100	
^{74}Ga^m	−67990	70	59.571	0.014	9.5	s	1.0	(0)	95			IT=?; β^-=25#	
^{74}Ge	−73422.0	1.5			Stable			0^+	95			IS=35.94 2	
^{74}As	−70859.6	2.2			17.77	d	0.02	2^-	95			β^+=66 2; β^-=34 2	
^{74}Se	−72212.6	1.5			Stable			0^+	95			IS=0.89 2; 2β^+ ?	
^{74}Br	−65306	15			25.4	m	0.3	(0^-)	95			β^+=100	
^{74}Br^m	−65292	15	13.58	0.21	46	m	2	$4^{(+\#)}$	95			β^+=100	
^{74}Kr	−62170	60			11.50	m	0.11	0^+	95			β^+=100	
^{74}Rb	−51730	720			64.9	ms	0.5	(0^+)	95			β^+=100	
^{74}Sr	−40700#	500#			> 1.2	μs		0^+		95Bl06	T	β^+ ?	
*^{74}Ni	T : supersedes 90Be13=1100(500) from same group												**

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{75}Co			> 150 ns	7/2$^-$#		95En07 T	β^- ?	
^{75}Ni	−43810# 800#		700 ms 400	7/2$^+$#		95Am.ATD	β^-=100; β^-n=1.6#	*
^{75}Cu	−54310# 500#		1.224 s 0.003	3/2$^-$#	90	91Kr15 T	β^-=100; β^-n=3.5 6	
^{75}Zn	−62470 70		10.2 s 0.2	(7/2$^+$)	90		β^-=100	
^{75}Ga	−68464 7		126 s 2	3/2$^-$	90		β^-=100	
^{75}Ge	−71855.9 1.5		82.78 m 0.04	1/2$^-$	96		β^-=100	
^{75}Ge^m	−71716.2 1.5	139.69 0.03	47.7 s 0.5	7/2$^+$	96		IT≈100; β^-=0.030 6	
^{75}As	−73032.5 1.6		Stable	3/2$^-$	96		IS=100.	
^{75}As^m	−72728.6 1.6	303.9243 0.0011	16.79 ms 0.15	9/2$^+$	96		IT=100	
^{75}Se	−72168.8 1.5		119.79 d 0.04	5/2$^+$	96		ϵ=100	*
^{75}Br	−69139 14		96.7 m 1.3	3/2$^-$	90		β^+=100	
^{75}Kr	−64242 15		4.3 m 0.2	5/2$^+$	90	95Ke04 J	β^+=100	
^{75}Rb	−57222 8		19.0 s 1.2	(3/2$^-$,5/2$^-$)	90		β^+=100	
^{75}Sr	−46650# 300#		100 ms 50	3/2$^-$#		95Bl23 TD	β^+=?; β^+p=6.5 33	*

*^{75}Ni D : β^-n=1.6%# estimated by 85Re01 **
*^{75}Se T : see ^{75}As decay data set of Ensdf: 80Ho17's weight decreased by LWM method **
*^{75}Sr T : symmetrized from 71(+71−24) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{76}Ni	−41610# 900#		440 ms 400	0$^+$		95Am.ATD	β^-=100; β^-n ?	*
^{76}Cu	−50310# 600#		* 641 ms 6	(3,5)	95	90Wi12 J	β^-=100; β^-n=3 2	
^{76}Cu^m	−50310# 630#	0# 200#	* 1.27 s 0.30	(1,3)	95	90Wi12 J	β^-=100	
^{76}Zn	−62040 120		5.7 s 0.3	0$^+$	95		β^-=100	
^{76}Ga	−66200 90		32.6 s 0.6	(2$^+$,3$^+$)	95		β^-=100	
^{76}Ge	−73212.9 1.5		1.09 Zy 0.13	0$^+$	95	94Ba15 T	IS=7.44 2; 2β^-=100	*
^{76}As	−72289.6 1.6		1.0778 d 0.0020	2$^-$	95		β^-≈100; ϵ<0.02	
^{76}Se	−75251.6 1.5		Stable	0$^+$	95		IS=9.36 11	
^{76}Br	−70289 9		16.2 h 0.2	1$^-$	95		β^+=100	
^{76}Br^m	−70186 9	102.58 0.03	1.31 s 0.02	(4)$^+$	95		IT>99.4; β^+<0.6	
^{76}Kr	−68979 11		14.8 h 0.1	0$^+$	95		β^+=100	
^{76}Rb	−60481 8		36.5 s 0.6	1$^{(-)}$	95	78Ha08 D	β^+=100; $\beta^+\alpha$=3.8e−7 10	
^{76}Sr	−54390# 300#		8.9 s 0.3	0$^+$	95		β^+=100	

*^{76}Ni T : symmetrized from 240(+550−240) **
*^{76}Ge T : average 94Ba15=1.42(0.13) 90Va18=0.90(0.10) **
*^{76}Ge T : 93Br22=0.84(+0.10−0.08)(2σ) and 90Mi23=1.1(+0.6−0.3)(2σ) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{77}Ni	−36490# 1000#		> 150 ns	9/2$^+$#		95En07 T	β^- ?	
^{77}Cu	−48480# 700#		469 ms 8	3/2$^-$#	89	91Kr15 T	β^-=100	
^{77}Zn	−58600 130		2.08 s 0.05	(7/2$^+$)	94		β^-=100	
^{77}Zn^m	−57830 130	772.39 0.12	1.05 s 0.10	(1/2$^-$)	94		IT>50; β^-<50	
^{77}Ga	−65870 60		13.2 s 0.2	(3/2$^-$)	89		β^-=100	
^{77}Ge	−71214.1 1.8		11.30 h 0.01	7/2$^+$	89		β^-=100	
^{77}Ge^m	−71054.4 1.8	159.7 0.1	52.9 s 0.6	1/2$^-$	89		β^-=79 2; IT=21 2	
^{77}As	−73916.2 2.2		38.83 h 0.05	3/2$^-$	89		β^-=100	
^{77}Se	−74599.0 1.5		Stable	1/2$^-$	89		IS=7.63 6	
^{77}Se^m	−74437.1 1.5	161.9200 0.0013	17.36 s 0.05	7/2$^+$	89		IT=100	
^{77}Br	−73234 3		57.036 h 0.006	3/2$^-$	89		β^+=100	
^{77}Br^m	−73128 3	105.85 0.09	4.28 m 0.10	9/2$^+$	89		IT=100	
^{77}Kr	−70171 9		74.4 m 0.6	5/2$^+$	89		β^+=100	
^{77}Rb	−64826 8		3.80 m 0.04	3/2$^-$	89	93Al03 T	β^+=100	*
^{77}Sr	−57970 150		9.0 s 0.2	5/2$^+$	89	92Li11 J	β^+=100; β^+p<0.25	
^{77}Y	−46930# 300#		< 1.2 μs	5/2$^+$#		95Bl06 T	p ?; β^+ ?	

*^{77}Rb T : average 93Al03=3.78(0.04) 72Ar02=3.90(0.10) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{78}Ni	−33720# 1100#		> 150 ns	0$^+$		95En07 T	β^- ?	
^{78}Cu	−43960# 800#		342 ms 11			91Kr15 T	β^-=100	
^{78}Zn	−57220 160		1.47 s 0.15	0$^+$	91		β^-=100	
^{78}Ga	−63660 80		5.09 s 0.05	(3$^+$)	91		β^-=100	
^{78}Ge	−71862 4		88 m 1	0$^+$	91		β^-=100	
^{78}As	−72816 10		90.7 m 0.2	2$^-$	91		β^-=100	
^{78}Se	−77025.7 1.5		Stable	0$^+$	91		IS=23.78 9	

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{78}Br	−73452	4			6.46	m	0.04	1^+	91		$\beta^+\approx100$; $\beta^-<0.01$	*
^{78}Kr	−74160	7			STABLE		>110Ey	0^+	91	94Sa31 T	IS=0.35 2; $2\beta^+$?	*
^{78}Rb	−66936	8			17.66	m	0.08	$0^{(+)}$	91		β^+=100	
^{78}Rb^m	−66825	8	111.20	0.10	5.74	m	0.05	$4^{(-)}$	91	91Mc.A E	β^+=90 2; IT=10 2	
^{78}Sr	−63175	8			159	s	8	0^+	91	92Gr09 T	β^+=100	
^{78}Y	−52630#	400#			> 150	ns				92Ye04 T	β^+ ?	
*^{78}Br	D : β^- branch is uncertain. See ENSDF											**
*^{78}Kr	T : limit given here is for the K-e$^+$ decay (theoretically faster)											**
^{79}Cu	−41660#	900#			188	ms	25	$3/2^-$#	94		β^-=100; β^-n=55 17	
^{79}Zn	−53400#	270#			995	ms	19	$(9/2^+)$	94		β^-=100; β^-n=1.3 4	
^{79}Ga	−62490	120			2.847	s	0.003	$(3/2^-)$	94		β^-=100; β^-n=0.089 19	
^{79}Ge	−69490	90			18.98	s	0.03	$(1/2)^-$	94		β^-=100	
^{79}Ge^m	−69300	90	185.95	0.04	39.0	s	1.0	$(7/2^+)$	94		β^-=96 1; IT=4 1	
^{79}As	−73636	6			9.01	m	0.15	$3/2^-$	94		β^-=100	
^{79}Se	−75916.9	1.5			< 650	ky		$7/2^+$	94		β^-=100	
^{79}Se^m	−75821.1	1.5	95.77	0.03	3.92	m	0.01	$1/2^-$	94		IT$\approx$100; β^-=0.056 11	
^{79}Br	−76068.0	1.9			STABLE			$3/2^-$	94		IS=50.69 7	
^{79}Br^m	−75860.5	1.9	207.52	0.10	4.86	s	0.04	$9/2^+$	94		IT=100	
^{79}Kr	−74442	4			35.04	h	0.10	$1/2^-$	94		β^+=100	
^{79}Kr^m	−74312	4	129.78	0.05	50	s	3	$7/2^+$	94		IT=100	
^{79}Rb	−70797	7			22.9	m	0.5	$5/2^+$	94		β^+=100	
^{79}Sr	−65477	9			2.25	m	0.10	$3/2^{(-)}$	94		β^+=100	
^{79}Y	−58360	450			14.8	s	0.6	$(5/2^+)$	94		β^+=100; β^+p ?	
^{79}Zr	−47360#	400#						$5/2^+$#			β^+ ?; β^+p ?	
^{80}Cu	−35500#	900#			> 150	ns				95En07 T	β^- ?	
^{80}Zn	−51780	170			545	ms	16	0^+	92		β^-=100; β^-n=1.0 5	
^{80}Ga	−59070	120			1.697	s	0.011	(3)	92	93Ru01 D	β^-=100; β^-n=0.89 6	
^{80}Ge	−69448	23			29.5	s	0.4	0^+	92		β^-=100	
^{80}As	−72118	21			15.2	s	0.2	1^+	92		β^-=100	
^{80}Se	−77759.4	1.9			STABLE			0^+	92		IS=49.61 10; $2\beta^-$?	
^{80}Br	−75888.8	1.9			17.68	m	0.02	1^+	92		β^-=91.7 2; β^+=8.3 2	
^{80}Br^m	−75803.0	1.9	85.843	0.004	4.4205	h	0.0008	5^-	92		IT=100	
^{80}Kr	−77893	4			STABLE			0^+	92		IS=2.25 2	
^{80}Rb	−72173	7			33.4	s	0.7	1^+	92	93Al03 T	β^+=100	
^{80}Sr	−70305	8			106.3	m	1.5	0^+	92		β^+=100	
^{80}Y	−61170#	400#			35	s	2	(3,4,5)	92		β^+=100	
^{80}Zr	−55380#	300#			> 150	ns		0^+	92	92Ye04 T	β^+ ?	*
*^{80}Zr	T : > 10 μs in post cut-off date 97Is.A											**
^{81}Zn	−46130#	400#			290	ms	50	$5/2^+$#	97		β^-=100; β^-n=7.5 30	
^{81}Ga	−57980	190			1.217	s	0.005	$(5/2^-)$	97		β^-=100; β^-n=11.9 7	
^{81}Ge	−66300	120			8	s	2	$9/2^+$#	97		β^-=100	*
^{81}Ge^m	−65620	120	679.13	0.04	8	s	2	$(1/2^+)$	97		$\beta^-\approx$100; IT<1	
^{81}As	−72533	6			33.3	s	0.8	$3/2^-$	97		β^-=100	
^{81}Se	−76389.1	2.0			18.45	m	0.12	$1/2^-$	97		β^-=100	
^{81}Se^m	−76286.1	2.0	102.99	0.06	57.28	m	0.02	$7/2^+$	97		IT$\approx$100; β^-=0.052 14	
^{81}Br	−77974.4	2.8			STABLE			$3/2^-$	97		IS=49.31 7	
^{81}Kr	−77693.6	2.9			229	ky	11	$7/2^+$	97		ϵ=100	
^{81}Kr^m	−77503.1	2.9	190.62	0.04	13.10	s	0.03	$1/2^-$	97		IT$\approx$100; ϵ=0.0025 4	
^{81}Rb	−75456	6			4.576	h	0.005	$3/2^-$	97		β^+=100	
^{81}Rb^m	−75370	6	86.31	0.07	30.5	m	0.3	$9/2^+$	97		IT=97.6 6; β^+=2.4 6	
^{81}Sr	−71527	8			22.3	m	0.4	$1/2^-$	97		β^+=100	
^{81}Y	−66020	60			70.4	s	1.0	$(5/2^+)$	97		β^+=100	
^{81}Zr	−58860	300			15	s	5	$3/2^-$#	97		β^+=100; β^+p=?	
^{81}Nb	−47460#	400#			800#	ms		$3/2^-$#	97		β^+ ?; β^+p ?; p ?	*
*^{81}Ge	T : derived from 7.6(0.6), for mixture of ground-state and isomer with almost same half-life											**
*^{81}Nb	T : estimated half-life is for β^+ decay; p-decay would be much shorter											**

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{82}Zn	−42070#	400#				> 150	ns		0^+		95Cz.A T	β^- ?	
^{82}Ga	−52950#	300#				599	ms	2	(1,2,3)	95	93Ru01D	β^-=100; β^-n=21.5 23	
^{82}Ge	−65620	240				4.6	s	0.4	0^+	95		β^-=100	
^{82}As	−70320	200			*	19.1	s	0.5	(1^+)	95		β^-=100	
^{82}As^m	−70075	25	250	200	BD*	13.6	s	0.4	(5^-)	95		β^-=100	
^{82}Se	−77593.4	2.1				121	Ey	17	0^+	95		IS=8.73 6; 2β^-=100	*
^{82}Br	−77495.9	2.8				35.30	h	0.02	5^-	95		β^-=100	
^{82}Br^m	−77450.0	2.8	45.9492	0.0010		6.13	m	0.05	2^-	95		IT=97.6 3; β^-=2.4 3	
^{82}Kr	−80588.6	2.6				STABLE			0^+	95		IS=11.6 1	
^{82}Rb	−76189	7				1.273	m	0.002	1^+	95		β^+=100	
^{82}Rb^m	−76121	7	68.9	1.5		6.472	h	0.006	5^-	95		$\beta^+\approx$100; IT<0.33	
^{82}Sr	−76009	6				25.55	d	0.15	0^+	95		ϵ=100	
^{82}Y	−68190	100				9.5	s	0.3	1^+	96		β^+=100	
^{82}Zr	−64190	510				32	s	5	0^+	95		β^+=100	
^{82}Nb	−52970#	300#				> 150	ns				92Ye04 T	β^+ ?	

*^{82}Se T : symmetrized from 108(+26−6) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{83}Zn						> 150	ns		$5/2^+$#		95Cz.A T	β^- ?	
^{83}Ga	−49490#	500#				308	ms	1	$3/2^-$#	92	91Kr15 T	β^-=100; β^-n=40 14	*
^{83}Ge	−61000#	300#				1.85	s	0.06	$(5/2^+)$	92		β^-=100	
^{83}As	−69880	220				13.4	s	0.3	$(5/2^-,3/2^-)$	92		β^-=100	
^{83}Se	−75340	4				22.3	m	0.3	$9/2^+$	92		β^-=100	
^{83}Se^m	−75112	4	228.50	0.20		70.1	s	0.4	$1/2^-$	92		β^-=100	
^{83}Br	−79009	4				2.40	h	0.02	$3/2^-$	92		β^-=100	
^{83}Kr	−79982	3				STABLE			$9/2^+$	92		IS=11.5 1	
^{83}Kr^m	−79940	3	41.543	0.007		1.83	h	0.02	$1/2^-$	92		IT=100	
^{83}Rb	−79073	6				86.2	d	0.1	$5/2^-$	92		ϵ=100	
^{83}Rb^m	−79031	6	42.11	0.04		7.8	ms	0.7	$9/2^+$		68Et01 T	IT=100	
^{83}Sr	−76797	9				32.41	h	0.03	$7/2^+$	96		β^+=100	
^{83}Sr^m	−76538	9	259.15	0.09		4.95	s	0.12	$1/2^-$	96		IT=100	
^{83}Y	−72330	40				7.08	m	0.06	$(9/2^+)$	92		β^+=100	
^{83}Y^m	−72270	40	62.00	0.20		2.85	m	0.02	$(3/2^-)$	92		β^+=60 5; IT=40 5	
^{83}Zr	−66460	100				44	s	1	$1/2^-$#	92		β^+=100; β^+p=?	
^{83}Zr^m			non existent		RN	8	s	1	high		87Ra06I		
^{83}Nb	−58960	310				4.1	s	0.3	$(5/2^+)$	92		β^+=100	
^{83}Mo	−47750#	500#							$3/2^-$#			β^+ ?; β^+p ?	

*^{83}Ga D : β^-n intensity is from 93Ru01 **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{84}Ga	−44400#	600#				85	ms	10			91Kr15 TD	β^-=100; β^-n=70 15	
^{84}Ge	−58400#	400#				954	ms	14	0^+	89	93Ru01TD	β^-=100; β^-n=10.8 6	*
^{84}As	−66080#	300#			*	4.02	s	0.03	$0^{(-)},1^{(-)},2^-$	89	93Ru01TD	β^-=100; β^-n=0.28 4	
^{84}As^m	−66080#	320#	0#	100#	*	650	ms	150		89		β^-=100	
^{84}Se	−75950	15				3.1	m	0.1	0^+	89		β^-=100	
^{84}Br	−77776	25				31.80	m	0.08	2^-	89		β^-=100	
^{84}Br^m	−77460	100	320	100	BD	6.0	m	0.2	$(5^-,6^-)$	89		β^-=100	
^{84}Kr	−82431	3				STABLE			0^+	89		IS=57.0 3	
^{84}Rb	−79750	3				32.77	d	0.14	2^-	89		β^+=96.2 5; β^-=3.8 5	
^{84}Rb^m	−79285	3	464.62	0.09		20.26	m	0.04	6^-	89		IT=100; β^+ ?	
^{84}Sr	−80644	3				STABLE			0^+	89		IS=0.56 1; 2β^+ ?	
^{84}Y	−74160	90			*	4.6	s	0.2	1^+	89		β^+=100	
^{84}Y^m	−74240	170	−80	190	BD*	40	m	1	(5^-)	89		β^+=100	
^{84}Zr	−71490#	200#				25.9	m	0.8	0^+	96		β^+=100	
^{84}Nb	−61880#	300#				12	s	3	(3^+)	89		β^+=100; β^+p ?	
^{84}Mo	−55810#	400#				> 150	ns		0^+		94He28 T	β^+ ?	

*^{84}Ge T : average 93Ru01=947(11) 91Kr15=984(23) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{85}Ga						> 150	ns		$3/2^-$#		95Cz.A T	β^- ?	
^{85}Ge	−53380#	500#				540	ms	50	$5/2^+$#		91Kr15 TD	β^-=100; β^-n=14 3	
^{85}As	−63520#	300#				2.022	s	0.009	$(3/2^-)$	91	93Ru01 DT	β^-=100; β^-n=59.4 24	*
^{85}Se	−72429	30				31.7	s	0.9	$(5/2^+)$	91		β^-=100	
^{85}Br	−78611	19				2.90	m	0.06	$3/2^-$	91		β^-=100	
^{85}Kr	−81480.6	3.0				10.756	y	0.018	$9/2^+$	91		β^-=100	
^{85}Kr^m	−81176	3	304.871	0.020		4.480	h	0.008	$1/2^-$	91		β^-=78.6 4; IT=21.4 4	
^{85}Rb	−82167.7	2.3				STABLE			$5/2^-$	91		IS=72.165 20	
^{85}Sr	−81103	3				64.84	d	0.02	$9/2^+$	91		ϵ=100	
^{85}Sr^m	−80864	3	238.66	0.06		67.63	m	0.04	$1/2^-$	91		IT=86.6 4; β^+=13.4 4	
^{85}Y	−77848	25				2.68	h	0.05	$(1/2)^-$	94		β^+=100	
^{85}Y^m	−77828	25	19.8	0.5		4.86	h	0.13	$9/2^+$	94		$\beta^+\approx$100; IT<0.002	
^{85}Zr	−73150	100				7.86	m	0.04	$7/2^+$	94		β^+=100	
^{85}Zr^m	−72860	100	292.2	0.3		10.9	s	0.3	$(1/2^-)$	94		IT$\leq$92; β^+>8	
^{85}Nb	−67150	220				20.9	s	0.7	$(9/2^+)$	91		β^+=100	
^{85}Mo	−59070#	400#				> 150	ns		$9/2^+$#		92Ye04 T	β^+ ?	
^{85}Tc	−47560#	500#				500#	ms		$9/2^+$#			β^+ ?; β^+p ?; p ?	*
*^{85}As	T : average 93Ru01=2.002(0.013) 91Kr15=2.032(0.012) 68To19=2.028(0.012)												**
*^{85}Tc	T : estimated half-life is for β^+ decay; p-decay would be much shorter												**
^{86}Ga						> 150	ns				95Cz.A T	β^- ?	
^{86}Ge	−50050#	600#				> 150	ns		0^+		94Be24 T	β^- ?; β^-n ?	
^{86}As	−59400#	400#				945	ms	8		88	93Ru01 TD	β^-=100; β^-n=33 4	
^{86}Se	−70541	16				15.3	s	0.9	0^+	88		β^-=100	
^{86}Br	−75640	11				55.1	s	0.4	(2^-)	88		β^-=100	
^{86}Kr	−83265.9	1.1				STABLE			0^+	88		IS=17.3 2; 2β^- ?	
^{86}Rb	−82747.3	2.3				18.631	d	0.018	2^-	94		$\beta^-\approx$100; ϵ=0.0052 5	
^{86}Rb^m	−82191.2	2.3	556.0	0.2		1.017	m	0.003	6^-	94		IT=100	*
^{86}Sr	−84521.6	2.2				STABLE			0^+	88		IS=9.86 1	
^{86}Y	−79282	14				14.74	h	0.02	4^-	88		β^+=100	
^{86}Y^m	−79064	14	218.30	0.20		48	m	1	(8^+)	88		IT=99.31 4; β^+=0.69 4	
^{86}Zr	−77810	30				16.5	h	0.1	0^+	88		β^+=100	
^{86}Nb	−69830	90			*	88	s	1	(5^+)	88		β^+=100	
^{86}Nb^m	−69580#	180#	250#	160#	*	56	s	8	high		94Sh07 TD	β^+=100	
^{86}Mo	−64560	440				19.6	s	1.1	0^+		94Sh07 TD	β^+=100	
^{86}Tc	−53210#	300#				> 150	ns				92Ye04 T	β^+ ?	
*^{86}Rb^m	E : 556.05(0.18) in post cut-off date ENSDF'97												**
^{87}Ge						> 150	ns		$5/2^+$#		95Cz.A T	β^- ?	
^{87}As	−56280#	500#				560	ms	110	$(3/2^-)$	91	93Ru01 DT	β^-=100; β^-n=15.4 22	*
^{87}Se	−66580	40				5.50	s	0.14	$(5/2^+)$	91	93Ru01 DT	β^-=100; β^-n=0.36 8	*
^{87}Br	−73857	18				55.60	s	0.15	$3/2^-$	91	93Ru01 D	β^-=100; β^-n=2.52 7	
^{87}Kr	−80710.0	1.3				76.3	m	0.6	$5/2^+$	91		β^-=100	
^{87}Rb	−84595.0	2.5				47.5	Gy	0.4	$3/2^-$	91		IS=27.835 20; β^-=100	
^{87}Sr	−84878.4	2.2				STABLE			$9/2^+$	96		IS=7.00 1	
^{87}Sr^m	−84489.9	2.2	388.532	0.003		2.803	h	0.003	$1/2^-$	96		IT$\approx$100; ϵ=0.30 8	
^{87}Y	−83016.8	2.6				79.8	h	0.3	$1/2^-$	96		β^+=100	
^{87}Y^m	−82636.0	2.6	380.79	0.07		13.37	h	0.03	$9/2^+$	96		IT=98.43 10; β^+=1.57 10	
^{87}Zr	−79348	8				1.68	h	0.01	$(9/2)^+$	91		β^+=100	
^{87}Zr^m	−79012	8	335.73	0.24		14.0	s	0.2	$(1/2)^-$	91		IT=100	
^{87}Nb	−74180	60			&	3.7	m	0.1	$(1/2^-)$	96		β^+=100	
^{87}Nb^m	−74180	60	3.9	0.1	&	2.6	m	0.1	$(9/2^+)$	96	91Ju05 E	β^+=100	
^{87}Mo	−67690	220				13.4	s	0.4	$7/2^+$#	91		β^+=100; β^+p=?	
^{87}Tc	−59120#	300#				> 150	ns		$9/2^+$#		92Ye04 T	β^+ ?	
^{87}Ru	−47340#	600#				> 1.5	μs		$9/2^+$#		95Le14 T	β^+ ?	
*^{87}As	T : average 93Ru01=485(40) 78Cr03=730(60)												**
*^{87}Se	T : average 93Ru01=5.29(11) 70Kr05=5.85(15) 70De08=5.90(20) 71To13=5.41(10)												**

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{88}Ge						> 150	ns		0^+		95Cz.A T	β^- ?	
^{88}As	−51640#	600#				> 150	ns				94Be24 T	β^- ?; β^-n ?	
^{88}Se	−63880	50				1.52	s	0.03	0^+	88	93Ru01 D	β^-=100; β^-n=0.99 10	
^{88}Br	−70730	40				16.36	s	0.07	(1^-)	88	93Ru01 TD	β^-=100; β^-n=6.58 18	*
^{88}Kr	−79692	13				2.84	h	0.03	0^+	88		β^-=100	
^{88}Rb	−82606	4				17.78	m	0.11	2^-	88		β^-=100	
^{88}Sr	−87919.7	2.2				Stable			0^+	88		IS=82.58 1	
^{88}Y	−84297.1	2.7				106.65	d	0.04	4^-	88		β^+=100	
^{88}Y^m	−83622.6	2.7	674.55	0.04		13.9	ms	0.2	$(8)^+$	88		IT=100	
^{88}Zr	−83624	10				83.4	d	0.3	0^+	88		ϵ=100	
^{88}Nb	−76420#	200#				* 14.5	m	0.1	(8^+)	88		β^+=100	
^{88}Nb^m	−76030	100	390#	220#	BD	* 7.8	m	0.1	(4^-)	88		β^+=100	
^{88}Mo	−72701	20				8.0	m	0.2	0^+	88		β^+=100	
^{88}Tc	−62570#	300#				* 5.8	s	0.2	3^+		96Od01 TJD	β^+=100	
^{88}Tc^m	−62570#	420#	0#	300#		* 6.4	s	0.8	(6^+)		96Od01 TJD	β^+=100	
^{88}Ru	−55500#	500#				> 150	ns		0^+		94He28 T	β^+ ?	
*^{88}Br	T : average 93Ru01=16.34(0.08) 74Gr29=16.5(0.2)												**
^{89}Ge						> 150	ns		$1/2^+$#		95Cz.A T	β^- ?	
^{89}As	−47290#	600#				> 150	ns		$3/2^-$#		94Be24 T	β^- ?	
^{89}Se	−59600#	300#				410	ms	40	$(5/2^+)$	90	93Ru01 D	β^-=100; β^-n=7.8 25	
^{89}Br	−68570	60				4.40	s	0.03	$(3/2^-,5/2^-)$	90	93Ru01 D	β^-=100; β^-n=13.8 4	*
^{89}Kr	−76720	50				3.15	m	0.04	$3/2^{(+)}$	90	95Ke04 J	β^-=100	
^{89}Rb	−81711	6				15.15	m	0.12	$3/2^-$	90		β^-=100	
^{89}Sr	−86207.0	2.2				50.53	d	0.07	$5/2^+$	96		β^-=100	
^{89}Y	−87702.1	2.3				Stable			$1/2^-$	96		IS=100.	
^{89}Y^m	−86793.1	2.3	908.96	0.04		15.663	s	0.005	$9/2^+$	96	94It.A T	IT=100	
^{89}Zr	−84869	3				78.41	h	0.12	$9/2^+$	90		β^+=100	
^{89}Zr^m	−84281	3	587.84	0.09		4.18	m	0.01	$1/2^-$	90		IT=93.77 12; β^+=6.23 12	
^{89}Nb	−80580	40				* 1.9	h	0.2	$(9/2^+)$	90		β^+=100	
^{89}Nb^m	−80580#	50#	0#	30#		* 1.18	h	0.10	$(1/2^-)$	90		β^+=100	
^{89}Mo	−75003	15				2.04	m	0.11	$(9/2^+)$	90		β^+=100	
^{89}Mo^m	−74616	15	387.5	0.3		190	ms	15	$(1/2^-)$	90		IT=100	
^{89}Tc	−67490	210				* 12.8	s	0.9	$(9/2^+)$		91He04 TDJ	β^+=100	
^{89}Tc^m	−67490#	370#	0#	300#		* 12.9	s	0.8	$(1/2^-)$		91He04 TDJ	β^+=100	
^{89}Ru	−59510#	500#				> 150	ns		$9/2^+$#		92Ye04 T	β^+ ?	
^{89}Rh	−47150#	500#				> 1.5	μs		$9/2^+$#		95Le14 T	β^+ ?	
*^{89}Br	T : Ensdf averages 8 values. Also 93Ru01=4.348(0.022)												**
^{90}As						> 150	ns				95Cz.A T	β^- ?	
^{90}Se	−56430#	400#				> 150	ns		0^+		94Be24 T	β^- ?; β^-n ?	
^{90}Br	−64610	80				1.910	s	0.010		93	93Ru01 TD	β^-=100; β^-n=25.2 9	*
^{90}Kr	−74963	19				32.32	s	0.09	0^+	93		β^-=100	
^{90}Rb	−79355	8				158	s	5	0^-	93		β^-=100	
^{90}Rb^m	−79248	8	106.90	0.03		258	s	4	3^-	93		β^-=97.4 4; IT=2.6 4	
^{90}Sr	−85941.9	2.7				28.84	y	0.05	0^+	93	96Wo06T	β^-=100	*
^{90}Y	−86487.9	2.3				64.10	h	0.08	2^-	93		β^-=100	
^{90}Y^m	−85805.9	2.3	682.03	0.06		3.19	h	0.01	7^+	93		IT≈100; β^-=0.0018 2	
^{90}Zr	−88767.9	2.2				Stable			0^+	93		IS=51.45 3	
^{90}Zr^m	−86448.9	2.2	2319.000	0.010		809.2	ms	2.0	5^-	93		IT=100	
^{90}Nb	−82657	5				14.60	h	0.05	8^+	93		β^+=100	
^{90}Nb^m	−82532	5	124.67	0.25		18.81	s	0.06	4^-	93		IT=100	
^{90}Nb^n	−82275	5	382.01	0.25		6.19	ms	0.08	1^+	93		IT=100	
^{90}Mo	−80168	6				5.56	h	0.09	0^+	96		β^+=100	
^{90}Tc	−71210	240				* 8.7	s	0.2	1^+	93		β^+=100	
^{90}Tc^m	−70900	300	310	390	BD	* 49.2	s	0.4	$4,5,6^{(+\#)}$	93		β^+=100	
^{90}Ru	−65410#	400#				11	s	3	0^+	93	94Zh26 T	β^+=100	*
^{90}Rh	−53220#	500#				> 150	ns				94He28 T	β^+ ?	
*^{90}Br	T : supersedes 80Al15=1.92(0.02) from same group												**
*^{90}Sr	T : average 96Wo06=28.79(0.06) 92Sc.B=28.78(0.04) 94Ma50=28.915(0.038)												**
*^{90}Ru	T : updates 91Zh29=13(5) from same authors												**

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{91}As						> 150	ns		3/2$^-$#		95Cz.A T	β^- ?	
^{91}Se	−50890#	500#				270	ms	50	1/2$^+$#	90		β^-=100; β^-n=21 10	
^{91}Br	−61510	70				541	ms	5	3/2$^-$#	90	93Ru01 D	β^-=100; β^-n=20 3	
^{91}Kr	−71310	60				8.57	s	0.04	5/2$^{(+)}$	90	95Ke04 J	β^-=100	
^{91}Rb	−77748	8				58.4	s	0.4	3/2$^{(-)}$	90		β^-=100	
^{91}Sr	−83639	6				9.63	h	0.05	5/2$^+$	90		β^-=100	
^{91}Y	−86346.3	2.8				58.51	d	0.06	1/2$^-$	90		β^-=100	
^{91}Y^m	−85790.7	2.8	555.58	0.05		49.71	m	0.04	9/2$^+$	90		IT>98.5; β^-<1.5	
^{91}Zr	−87891.1	2.2				Stable			5/2$^+$	90		IS=11.22 4	
^{91}Nb	−86638	3				680	y	130	9/2$^+$	90	91Hi.A D	$\epsilon\approx$100; e$^+$=0.0138 25	
^{91}Nb^m	−86534	3	104.49	0.09		60.86	d	0.22	1/2$^-$	90	91Hi.A D	IT=93 4; ϵ=7 4; e$^+$=0.0028 2	
^{91}Mo	−82204	11				15.49	m	0.01	9/2$^+$	90		β^+=100	
^{91}Mo^m	−81551	11	653.01	0.09		65.0	s	0.7	1/2$^-$	90		IT=50.1 12; β^+=49.9 12	
^{91}Tc	−75980	200			*	3.14	m	0.02	(9/2)$^+$	90		β^+=100	
^{91}Tc^m	−75800	220	180	100	*	3.3	m	0.1	(1/2)$^-$	90	ABBW E	β^+>99; IT<1	*
^{91}Ru	−68580	500			*	9	s	1	(9/2$^+$)	90		β^+=100	
^{91}Ru^m	−68180#	580#	400#	300#	*	7.6	s	0.8	(1/2$^-$)	90		$\beta^+\approx$100; β^+p=?; IT ?	
^{91}Rh	−59100#	400#				> 150	ns		9/2$^+$#		94He28 T	β^+ ?	
^{91}Pd	−47060#	600#				> 1.5	μs		9/2$^+$#		95Le14 T	β^+ ?	

*^{91}Tc^m E : less than 350 keV, from Ensdf **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{92}As						> 150	ns				95Cz.A T	β^- ?	
^{92}Se	−47200#	600#				> 150	ns		0$^+$		95Cz.A T	β^- ?	
^{92}Br	−56580	50				343	ms	15	(2$^-$)	92	93Ru01 D	β^-=100; β^-n=33.1 21	
^{92}Kr	−68788	12				1.840	s	0.008	0$^+$	94		β^-=100; β^-n=0.033 3	
^{92}Rb	−74775	7				4.492	s	0.020	0$^-$	94		β^-=100; β^-n=0.0107 5	
^{92}Sr	−82875	7				2.71	h	0.01	0$^+$	92		β^-=100	
^{92}Y	−84815	9				3.54	h	0.01	2$^-$	95		β^-=100	
^{92}Zr	−88454.6	2.1				Stable			0$^+$	94		IS=17.15 2	
^{92}Nb	−86449.0	2.7				34.7	My	2.4	(7)$^+$	94		$\beta^+\approx$100; β^-<0.05	
^{92}Nb^m	−86313.5	2.7	135.5	0.4		10.15	d	0.02	(2)$^+$	94		β^+=100	
^{92}Mo	−86805	4				Stable		>300Py	0$^+$	94	85No03 T	IS=14.84 4; 2β^+ ?	*
^{92}Tc	−78935	26				4.23	m	0.15	(8)$^+$	94		β^+=100	
^{92}Ru	−74410#	300#				3.65	m	0.05	0$^+$	94		β^+=100	
^{92}Rh	−63360#	400#				> 150	ns		6$^+$#		94He28 T	β^+ ?	*
^{92}Pd	−55500#	500#				> 150	ns		0$^+$		94He28 T	β^+ ?	

*^{92}Mo T : T>190 Ey (2 σ) in post cut-off date 97Ba.1 **

*^{92}Rh J : (6$^+$) in post cut-off date 97Ka07 **

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{93}Se					> 150	ns		$1/2^+$#		95Cz.A T	β^- ?	
^{93}Br	−53000#	300#			102	ms	10	$3/2^-$#	93	88Kr10 TD	β^-=100; β^-n=11 4	*
^{93}Kr	−64030	100			1.286	s	0.010	$1/2^{(+)}$	93	95Ke04 J	β^-=100; β^-n=1.95 11	*
^{93}Rb	−72626	8			5.84	s	0.02	$5/2^-$	93		β^-=100; β^-n=1.35 7	*
^{93}Sr	−80088	8			7.423	m	0.024	$5/2^+$	93		β^-=100	
^{93}Y	−84224	11			10.18	h	0.08	$1/2^-$	93		β^-=100	
^{93}Y^m	−83465	11	758.721	0.021	820	ms	40	$7/2^+$	93		IT=100	*
^{93}Zr	−87117.4	2.1			1.53	My	0.10	$5/2^+$	93		β^-=100	
^{93}Nb	−87208.7	2.2			STABLE			$9/2^+$	93		IS=100.	
^{93}Nb^m	−87177.9	2.2	30.82	0.17	16.13	y	0.14	$1/2^-$	93		IT=100	
^{93}Mo	−86804	4			4.0	ky	0.8	$5/2^+$	93		ϵ=100	
^{93}Mo^m	−84379	4	2424.89	0.03	6.85	h	0.07	$21/2^+$	93		IT≈100; β^+=0.12 1	
^{93}Tc	−83603	4			2.75	h	0.05	$9/2^+$	93		β^+=100	
^{93}Tc^m	−83211	4	391.84	0.08	43.5	m	1.0	$1/2^-$	93		IT=76.7 11; β^+=23.3 11	
^{93}Ru	−77270	90			59.7	s	0.6	$(9/2)^+$	93		β^+=100	
^{93}Ru^m	−76540	90	734.40	0.10	10.8	s	0.3	$(1/2)^-$	93	83Ay01 D	β^+=78.0 23; IT=22.0 23; ...	*
^{93}Rh	−69170#	400#			> 150	ns		$(9/2^+)$		94He28 T	β^+ ?	*
^{93}Pd	−59700#	400#			3#	s		$9/2^+$#	93		β^+ ?	*

*^{93}Br D : symmetrized from β^-n=10(+5−3)% **
*^{93}Kr D : β^-n intensity is from 93Ru01 J : $1/2^+$ in post cut-off date ENSDF'97 **
*^{93}Rb D : β^-n=1.39(7)% in post cut-off date ENSDF'97 **
*^{93}Y^m E : 758.719(0.021) in post cut-off date ENSDF'97 **
*^{93}Ru^m D : ...; β^+p=0.027 5 D : β^+p=0.010(2)% in ENSDF is not correct **
*^{93}Rh J : from 95Ro06 **
*^{93}Pd I : β^+p precursor with T=60(20): not trusted **

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{94}Se					> 150	ns		0^+		95Cz.A T	β^- ?	
^{94}Br	−47800#	400#			70	ms	20		92		β^-=100; β^-n=30 10	
^{94}Kr	−61140#	300#			200	ms	10	0^+	92		β^-=100; β^-n=5.7 22	
^{94}Rb	−68551	9			2.702	s	0.005	$3^{(-)}$	92	93Ru01 D	β^-=100; β^-n=10.01 23	
^{94}Sr	−78842	7			75.3	s	0.2	0^+	92		β^-=100	
^{94}Y	−82350	8			18.7	m	0.1	2^-	92		β^-=100	
^{94}Zr	−87266.3	2.3			STABLE		>6Py	0^+	92	90Ba.A T	IS=17.38 4; 2β^- ?	
^{94}Nb	−86364.9	2.2			20.3	ky	1.6	$(6)^+$	92		β^-=100	
^{94}Nb^m	−86324.0	2.2	40.902	0.012	6.263	m	0.004	3^+	92		IT=99.50 6; β^-=0.50 6	
^{94}Mo	−88410.3	1.8			STABLE			0^+	92		IS=9.25 3	
^{94}Tc	−84155	4			293	m	1	7^+	92		β^+=100	
^{94}Tc^m	−84080	4	75.5	1.9	52.0	m	1.0	$(2)^+$	92		β^+≈100; IT<0.1	
^{94}Ru	−82568	13			51.8	m	0.6	0^+	92		β^+=100	
^{94}Rh	−72940#	450#			* 70.6	s	0.6	$(2^+,4^+)$	92	96Jo06 J	β^+=100; β^+p=1.8 5	
^{94}Rh^m	−72640	400	300#	200#	* 25.8	s	0.2	(8^+)	92		β^+=100	
^{94}Pd	−66350#	400#			9.0	s	0.5	0^+	92		β^+=100	
^{94}Ag	−53300#	500#			10#	ms		0^+#			β^+ ?	*
^{94}Ag^m	−51950#	640#	1350#	400#	420	ms	50	(9^+)		94Sc35 TJD	β^+=100; β^+p=?	

*^{94}Ag J : as predicted by 94Sc35 **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{95}Br						> 150	ns		3/2$^-$#		95Cz.A T	β^- ?	
^{95}Kr	−56040#	400#				780	ms	30	1/2$^{(+)}$	95	95Ke04 J	β^-=100	
^{95}Rb	−65839	19				377.5	ms	0.8	5/2$^-$	95		β^-=100; β^-n=8.73 20	
^{95}Sr	−75117	8				23.90	s	0.14	1/2$^+$	94		β^-=100	
^{95}Y	−81204	8				10.3	m	0.1	1/2$^-$	94		β^-=100	
^{95}Zr	−85657.6	2.3				64.02	d	0.05	5/2$^+$	95		β^-=100	
^{95}Nb	−86782.5	1.9				34.975	d	0.007	9/2$^+$	95		β^-=100	
^{95}Nb^m	−86546.8	1.9	235.68	0.02		86.6	h	0.8	1/2$^-$	95		IT=94.4 6; β^-=5.6 6	
^{95}Mo	−87708.1	1.8				STABLE			5/2$^+$	95		IS=15.92 5	
^{95}Tc	−86017	5				20.0	h	0.1	9/2$^+$	95		β^+=100	
^{95}Tc^m	−85978	5	38.89	0.05		61	d	2	1/2$^-$	95		β^+=96.12 32; IT=3.88 32	
^{95}Ru	−83450	12				1.643	h	0.014	5/2$^+$	94		β^+=100	
^{95}Rh	−78340	150				5.02	m	0.10	(9/2)$^+$	94		β^+=100	
^{95}Rh^m	−77800	150	543.3	0.3		1.96	m	0.04	(1/2)$^-$	94		IT=88 5; β^+=12 5	
^{95}Pd	−70150#	400#				10#	s		9/2$^+$#	95		β^+ ?	*
^{95}Pd^m	−68280	300	1870#	500#		13.3	s	0.3	(21/2$^+$)	95		β^+=?; IT=5#; β^+p=0.90 16	*
^{95}Ag	−60100#	400#				2.0	s	0.1	(9/2$^+$)		94Sc35 TJD	β^+=100; β^+p=?	*

*^{95}Pd T : 1.35(0.26) s in post cut-off date 97Sc.1, if the 1219.3 keV γ originates from ground-state **
*^{95}Pd^m E : $Q(\beta^+$p)=4300(300) to 2644.85 level in ^{94}Ru from figures in 82Ku15 and 82No06 **
*^{95}Ag T : to be replaced by post cut-off date 97Sc.1=1.74(0.13), for $\beta^+\gamma$ activity, same authors **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{96}Br						> 150	ns				95Cz.A T	β^- ?	
^{96}Kr	−53030#	500#				> 50	ms		0$^+$		95Ke04 T	β^- ?	
^{96}Rb	−61214	26				203	ms	3	2$^+$	95	93Ru01 D	β^-=100; β^-n=13.4 4	*
^{96}Rb^m	−61210#	200#	0#	200#		> 1	ms		1$^{(-\#)}$		81Bo30 JT	β^- ?; IT ?; β^-n ?	*
^{96}Sr	−72954	25				1.07	s	0.01	0$^+$	93		β^-=100	
^{96}Y	−78341	22				5.34	s	0.05	0$^-$	93		β^-=100	
^{96}Y^m	−77204	21	1140	30	BD	9.6	s	0.2	(8)$^+$	93		β^-=100	
^{96}Zr	−85441	3				39	Ey	9	0$^+$	93	93Ka12 T	IS=2.80 2; 2β^-=100	*
^{96}Nb	−85604	4				23.35	h	0.05	6$^+$	93		β^-=100	
^{96}Mo	−88791.0	1.8				STABLE			0$^+$	93		IS=16.68 5	
^{96}Tc	−85818	5				4.28	d	0.07	7$^+$	93		β^+=100	
^{96}Tc^m	−85784	5	34.28	0.07		51.5	m	1.0	4$^+$	93		IT=98.0 5; β^+=2.0 5	
^{96}Ru	−86072	8				STABLE		>67Py	0$^+$	93	85No03 T	IS=5.52 6; 2β^+ ?	
^{96}Rh	−79626	13				9.90	m	0.10	(6$^+$)	93		β^+=100	
^{96}Rh^m	−79574	13	52.0	0.1		1.51	m	0.02	(3$^+$)	93		IT=60 5; β^+=40 5	
^{96}Pd	−76180	150				122	s	2	0$^+$	93		β^+=100	
^{96}Ag	−64570#	400#				5.1	s	0.4	(8$^+$,9$^+$)	93	96He25 D	β^+=100; β^+p=3.7 9	*
^{96}Cd	−56100#	500#							0$^+$			β^+ ?	

*^{96}Rb T : ENSDF average of 8 values. See also 201(1) of 93Ru01 **
*^{96}Rb^m I : non-observation by 81Th04 is not in contradiction with 81Bo30 experiment **
*^{96}Rb^m I : existence of this isomer is discussed in ENSDF **
*^{96}Zr T : observation of 2β^- decay by 93Ka12 questionned by 96Ba37 **
*^{96}Zr T : and 94Ar29 reports limit for single β^- decay: T>38Ey (90% CL) **
*^{96}Ag : post cut-off date 97Sc.1=4.50(0.06) s and β^+p=11.9(2.6)%, in discrepancy **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{97}Br						> 150	ns		3/2$^-$#		95Cz.A T	β^- ?	
^{97}Kr	−47920#	500#				> 150	ns		3/2$^+$#		94Be24 T	β^- ?; β^-n ?	
^{97}Rb	−58365	28				169.9	ms	0.7	3/2$^+$	93	93Ru01D	β^-=100; β^-n=25.7 8	
^{97}Sr	−68792	19				429	ms	5	1/2$^+$	93		β^-=100; β^-n<0.05	
^{97}Y	−76260	12				3.75	s	0.03	(1/2$^-$)	93	93Ru01D	β^-=100; β^-n=0.058 7	
^{97}Y^m	−75592	12	667.51	0.23		1.17	s	0.03	(9/2)$^+$	93		β^->99.3; IT<0.7; β^-n<0.08	
^{97}Y^n	−72737	12	3523.3	0.4		142	ms	8	(27/2$^-$)	93		IT≥80; β^-≤20	
^{97}Zr	−82949	3				16.90	h	0.05	1/2$^+$	93		β^-=100	
^{97}Nb	−85606.9	2.6				72.1	m	0.7	9/2$^+$	93		β^-=100	
^{97}Nb^m	−84863.5	2.6	743.35	0.03		52.7	s	1.8	1/2$^-$	93		IT=100	
^{97}Mo	−87540.8	1.8				Stable			5/2$^+$	93		IS=9.55 3	
^{97}Tc	−87221	5				2.6	My	0.4	9/2$^+$	93		ϵ=100	
^{97}Tc^m	−87124	5	96.56	0.06		90.1	d	1.0	1/2$^-$	93		IT≈100; ϵ<0.34	
^{97}Ru	−86112	8				2.9	d	0.1	5/2$^+$	93		β^+=100	
^{97}Rh	−82590	40				30.7	m	0.6	9/2$^+$	93		β^+=100	
^{97}Rh^m	−82330	40	258.85	0.17		46.2	m	1.6	1/2$^-$	93		β^+=94.4 6; IT=5.6 6	
^{97}Pd	−77800	300				3.10	m	0.09	(5/2$^+$)	93		β^+=100	
^{97}Ag	−70790#	400#				25.3	s	0.3	(9/2$^+$)	93	95Sc.A T	β^+=100	
^{97}Cd	−60600#	400#				2.8	s	0.6	9/2$^+$#	93	95Sc.A T	β^+=100; β^+p=?	

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{98}Kr						> 150	ns		0$^+$		95Cz.A T	β^- ?	
^{98}Rb	−54300	30				114	ms	5	(1,0)$^{(-\#)}$	93	93Ru01D	β^-=100; β^-n=13.8 6; ...	*
^{98}Rb^m	−53920	120	380	120	BD	96	ms	3	(4,5)$^{(+\#)}$	93		β^-=100	
^{98}Sr	−66629	26				653	ms	2	0$^+$	93	93Ru01D	β^-=100; β^-n=0.25 5	
^{98}Y	−72452	24				548	ms	2	(0)$^-$	93	93Ru01D	β^-=100; β^-n=0.331 24	
^{98}Y^m	−72040	30	410	30	BD	2.0	s	0.2	(5$^+$)	93	94St31 J	β^-=?; IT=10#; β^-n=3.4 10	
^{98}Zr	−81276	20				30.7	s	0.4	0$^+$	93		β^-=100	
^{98}Nb	−83526	6				2.86	s	0.06	1$^+$	93		β^-=100	
^{98}Nb^m	−83442	7	84	4		51.3	m	0.4	(5$^+$)	93		β^-≈100; IT=0.1#	
^{98}Mo	−88112.0	1.8				Stable		>100Ty	0$^+$	93	52Fr23 T	IS=24.13 7; 2β^- ?	*
^{98}Tc	−86428	4				4.2	My	0.3	(6)$^+$	93		β^-=100	
^{98}Ru	−88224	6				Stable			0$^+$	93		IS=1.88 6	
^{98}Rh	−83167	12			*	8.7	m	0.2	(2)$^+$	93		β^+=100	
^{98}Rh^m	−83110#	50#	60#	50#	*	3.5	m	0.3	(5$^+$)	93		β^+=?; IT ?	
^{98}Pd	−81300	21				17.7	m	0.3	0$^+$	93		β^+=100	
^{98}Ag	−72880	150				46.7	s	0.9	(5$^+$)	93	96He25D	β^+=100; β^+p=0.0012 5	*
^{98}Cd	−67460#	210#				9.2	s	0.3	0$^+$	93	96He25D	β^+=100; β^+p<0.025	
^{98}In	−53800#	500#				> 1.5	μs				95Le14 T	β^+ ?	

*^{98}Rb D : ...; β^-2n=0.051 7 **
*^{98}Rb T : Several other results reported in Ensdf. See also 109(1) of 93Ru01 **
*^{98}Mo T : limit given here is for 0ν-$2\beta^-$ decay (theoretically faster, see text) **
*^{98}Ag D : symmetrized from β^+p=0.0011(+5−4)% **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{99}Kr						> 150	ns		3/2$^+$#		95Cz.A T	β^- ?	
^{99}Rb	−50840	150				50.3	ms	0.7	(5/2$^+$)	95	93Ru01D	β^-=100; β^-n=15.9 20	
^{99}Sr	−62120	140				269	ms	1	3/2$^+$	95		β^-=100; β^-n=0.100 19	
^{99}Y	−70202	24				1.470	s	0.007	(5/2$^+$)	95		β^-=100; β^-n=1.9 4	
^{99}Zr	−77769	20				2.1	s	0.1	(1/2$^+$)	95		β^-=100	
^{99}Nb	−82327	13				15.0	s	0.2	9/2$^+$	95		β^-=100	
^{99}Nb^m	−81962	13	365.29	0.14		2.6	m	0.2	1/2$^-$	95		β^-=?; IT<3.8	
^{99}Mo	−85966.1	1.8				65.94	h	0.01	1/2$^+$	95		β^-=100	
^{99}Tc	−87323.3	1.9				211.1	ky	1.2	9/2$^+$	95		β^-=100	
^{99}Tc^m	−87180.6	1.9	142.6833	0.0011		6.01	h	0.01	1/2$^-$	95		IT≈100; β^-=0.0037 6	
^{99}Ru	−87617.0	2.0				Stable			5/2$^+$	95		IS=12.7 1	
^{99}Rh	−85574	7				16.1	d	0.2	1/2$^-$	95		β^+=100	
^{99}Rh^m	−85510	7	64.3	0.4		4.7	h	0.1	9/2$^+$	95		β^+≈100; IT<0.16	
^{99}Pd	−82188	15				21.4	m	0.2	(5/2)$^+$	95		β^+=100	
^{99}Ag	−76760	150				124	s	3	(9/2)$^+$	95		β^+=100	
^{99}Ag^m	−76250	150	506.1	0.4		10.5	s	0.5	(1/2$^-$)	95		IT=100	
^{99}Cd	−69850#	210#				16	s	3	(5/2$^+$)	95		β^+=100; β^+p=0.21 8; $\beta^+\alpha$<1e-4	*
^{99}In	−60910#	500#				> 150	ns		9/2$^+$#		94Sc22 T	β^+ ?	

*^{99}Cd D : symmetrized from β^+p=0.17(+11−5)% **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^{π}	Ens	Reference	Decay modes and intensities (%)	
^{100}Kr			> 150 ns	0^+		95Cz.A T	β^- ?	
^{100}Rb	−46700# 300#		51 ms 8	(3^+)	90	93Ru01D	β^-=100; β^-n=5.6 12; β^-2n=0.15 5	*
^{100}Sr	−60220 130		202 ms 3	0^+	90	93Ru01D	β^-=100; β^-n=0.98 23	*
^{100}Y	−67290 80		* 735 ms 7	$1^-,2^-$	90	93Ru01D	β^-=100; β^-n=1.02 7	*
^{100}Y^m	−67090# 220#	200# 200#	* 940 ms 30	$(3,4,5)^{(+\#)}$	90		β^-=100	
^{100}Zr	−76600 40		7.1 s 0.4	0^+	90		β^-=100	
^{100}Nb	−79939 26		1.5 s 0.2	1^+	90		β^-=100	
^{100}Nb^m	−79471 28	470 40 BD	2.99 s 0.11	$(4^+,5^+)$	90		β^-=100	
^{100}Mo	−86184 6		10.2 Ey 0.8	0^+	90	95Da37T	IS=9.63 3; 2β^-=100	*
^{100}Tc	−86016.4 2.2		15.8 s 0.1	1^+	90	93Ga09D	$\beta^-\approx$100; ϵ=0.0018 9	
^{100}Ru	−89218.8 2.0		STABLE	0^+	90		IS=12.6 1	
^{100}Rh	−85589 20		20.8 h 0.1	1^-	90		β^+=100	
^{100}Rh^m	−85481 20	107.6 0.2	4.6 m 0.2	(5^+)	90		IT$\approx$98.3; $\beta^+\approx$1.7	
^{100}Pd	−85227 11		3.63 d 0.09	0^+	90		ϵ=100	
^{100}Ag	−78180 80		2.01 m 0.09	$(5)^+$	90		β^+=100	
^{100}Ag^m	−78160 80	15.52 0.16	2.24 m 0.13	$(2)^+$	90		β^+=?; IT ?	
^{100}Cd	−74310 100		49.1 s 0.5	0^+	90		β^+=100	
^{100}In	−64130 380		6.2 s 0.7	6^+#	96	95Sz01 TD	β^+=100; β^+p>3.9	*
^{100}Sn	−56860# 430#		1.1 s 0.4	0^+		95Fa.A TD	β^+=100; β^+p<0.17	*

*^{100}Rb T : ENSDF average of 3 values. See also 53(2) of 85Pf.A J : from 95Pf04 **
*^{100}Rb D : β^-2n intensity is derived from β^-2n/β^-n=0.027(7), in 81Jo.A **
*^{100}Sr D : β^-n=0.78(13)% in post cut-off date ENSDF'97 **
*^{100}Y D : β^-n=0.92(8)% in post cut-off date ENSDF'97 **
*^{100}Mo T : average 95Da37=9.5(0.9) 91Ej02=11.5(+3−2) and 91El04=11.6(+3.4−0.8) **
*^{100}Mo T : and post cut-off date 97Al02=7.6(+2.2−1.4) not used yet **
*^{100}Mo T : 10.0(1.0) in post cut-off date ENSDF'97 **
*^{100}In T : average 95Sz01=6.1(0.9) 95Fa.A=6.3(+1.0−0.9); 95Fa.A supersedes 95Sc33 **
*^{100}Sn T : symmetrized from 0.94(+0.54−0.27) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^{π}	Ens	Reference	Decay modes and intensities (%)	
^{101}Rb	−43600 170		32 ms 4	$3/2^+$#	94		β^-=100; β^-n=31 6	
^{101}Sr	−55410 120		118 ms 3	$(5/2^-)$	94	95Lh04 J	β^-=100; β^-n=2.37 14	
^{101}Y	−64910 100		426 ms 20	$(5/2^+)$	94	96Me09T	β^-=100; β^-n=1.94 18	*
^{101}Zr	−73460 30		2.1 s 0.3	$(3/2^+)$	94		β^-=100	
^{101}Nb	−78943 19		7.1 s 0.3	$(5/2\#)^+$	94		β^-=100	
^{101}Mo	−83512 6		14.61 m 0.03	$1/2^+$	94		β^-=100	
^{101}Tc	−86336 24		14.22 m 0.01	$(9/2)^+$	94		β^-=100	
^{101}Ru	−87949.6 2.0		STABLE	$5/2^+$	94		IS=17.0 1	
^{101}Rh	−87408 17		3.3 y 0.3	$1/2^-$	94		ϵ=100	
^{101}Rh^m	−87251 17	157.32 0.04	4.34 d 0.01	$9/2^+$	94		ϵ=93.6 2; IT=6.4 2	
^{101}Pd	−85428 18		8.47 h 0.06	$(5/2^+)$	94		β^+=100	
^{101}Ag	−81220 100		11.1 m 0.3	$9/2^+$	94		β^+=100	
^{101}Ag^m	−80950 100	274.1 0.3	3.10 s 0.10	$1/2^-$	94		IT=100	
^{101}Cd	−75750 150		1.2 m 0.2	$(5/2^+)$	94		β^+=100	
^{101}In	−68410# 300#		16 s 3	$9/2^+$#	94		β^+=100; β^+p=?	
^{101}Sn	−59560# 500#		3 s 1	$5/2^+$#		95Ja16 TD	β^+=100; β^+p=?	

*^{101}Y T : average 96Me09=400(20) 86Wa17=440(20) and 83Wo10=500(50) **
*^{101}Y T : 93Ru01=279(9) at variance, not used **

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{102}Rb	−38000#	500#					37	ms	5		91		β^-=100; β^-n=18 8	
^{102}Sr	−53080	110					69	ms	6	0^+	91	93Ru01 D	β^-=100; β^-n=5.5 15	
^{102}Y	−61890	90				*	300	ms	10	low	91	96Me09 D	β^-=100; β^-n=4.9 11	*
^{102}Y^m	−61690#	220#	200#	200#		*	360	ms	40	high	91		β^-=100; β^-n=6.0 17	
^{102}Zr	−71740	50					2.9	s	0.2	0^+	91		β^-=100	
^{102}Nb	−76350	40					1.3	s	0.2	1^+	91		β^-=100	
^{102}Nb^m	−76220	50	120	50	BD		4.3	s	0.4	high	91		β^-=100	
^{102}Mo	−83558	21					11.3	m	0.2	0^+	91		β^-=100	
^{102}Tc	−84568	9				*	5.28	s	0.15	1^+	91		β^-=100	
^{102}Tc^m	−84548	13	20	10		*	4.35	m	0.07	(4,5)	91		β^-=98 2; IT=2 2	
^{102}Ru	−89097.9	2.0					STABLE			0^+	91		IS=31.6 2	
^{102}Rh	−86775	5					206.0	d	2.1	$(1^-,2^-)$	91	92Ta.A T	β^+=80 5; β^-=20 5	*
^{102}Rh^m	−86634	5	140.75	0.08			3.76	y	0.10	$6^{(+)}$	91	92Ta.A T	$\beta^+\approx$100; IT=0.23 3	
^{102}Pd	−87926	3					STABLE			0^+	91		IS=1.02 1; 2β^+ ?	
^{102}Ag	−81970	70					12.9	m	0.3	5^+	91		β^+=100	
^{102}Ag^m	−81960	70	9.3	0.4			7.7	m	0.5	2^+	91		β^+=51 5; IT=49 5	
^{102}Cd	−79380	70					5.5	m	0.5	0^+	91		β^+=100	
^{102}In	−70130	390					22	s	1	(6^+)	91	95Sz01 TDJ	β^+=100; β^+p=0.0093 13	
^{102}Sn	−64750#	400#					4.6	s	1.4	0^+	91	95Fa.A TD	β^+=100; β^+p ?	

*^{102}Y D : β^-n: average 96Me09=4.0(1.5)% ENSDF=6.0(1.7)% **
*^{102}Rh T : average 92Ta.A=206(3) 61Hi06=206(3) **

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{103}Sr	−47550#	500#					> 150	ns				95Cz.A T	β^- ?	
^{103}Y	−58740#	300#					224	ms	19	$5/2^+$#		96Me09 TD	β^-=100; β^-n=8.3 3	*
^{103}Zr	−68370	110					1.3	s	0.1	$(5/2^-)$	94	91Ho16 J	β^-=100	
^{103}Nb	−75320	70					1.5	s	0.2	$(5/2^+)$	93		β^-=100	
^{103}Mo	−80850	60					67.5	s	1.5	$(3/2^+)$	93		β^-=100	
^{103}Tc	−84599	10					54.2	s	0.8	$5/2^+$	93		β^-=100	
^{103}Ru	−87258.9	2.0					39.26	d	0.02	$3/2^+$	93		β^-=100	
^{103}Ru^m	−87020.7	2.1	238.2	0.7			1.69	ms	0.07	$11/2^-$	93		IT=100	
^{103}Rh	−88022.3	2.8					STABLE			$1/2^-$	93		IS=100.	
^{103}Rh^m	−87982.5	2.8	39.756	0.006			56.114	m	0.009	$7/2^+$	93		IT=100	
^{103}Pd	−87479.2	2.9					16.991	d	0.019	$5/2^+$	93		ϵ=100	
^{103}Ag	−84792	17					65.7	m	0.7	$7/2^+$	94		β^+=100	
^{103}Ag^m	−84658	17	134.44	0.04			5.7	s	0.3	$1/2^-$	94		IT=100	
^{103}Cd	−80650	15					7.3	m	0.1	$5/2^+$	93	87Bu01 J	β^+=100	
^{103}In	−74600	25					65	s	7	$(9/2)^+$	93		β^+=100	
^{103}Sn	−66950#	300#					7	s	3	$5/2^+$#	93		β^+=100; β^+p=?	
^{103}Sb	−55780#	500#					> 1.5	μs		$5/2^+$#		95Le14 T	β^+ ?	

*^{103}Y T : average 96Me09=230(20) 96Lh04=190(50) **

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{104}Sr	−44400#	700#					> 150	ns		0^+		95Cz.A T	β^- ?	
^{104}Y	−54540#	400#					> 150	ns			96		β^- ?	
^{104}Zr	−66340#	400#					1.2	s	0.3	0^+	94		β^-=100	
^{104}Nb	−72230	110				*	4.9	s	0.3	(1^+)	94	96Me09 TD	β^-=100; β^-n=0.06 3	*
^{104}Nb^m	−72010	100	220	120	BD	*	920	ms	40	high	94	96Me09 D	β^-=100; β^-n=0.05 3	
^{104}Mo	−80330	60					60	s	2	0^+	94		β^-=100	
^{104}Tc	−82490	50					18.3	m	0.3	(3^+)	96		β^-=100	
^{104}Ru	−88091	4					STABLE			0^+	94		IS=18.7 2; 2β^- ?	
^{104}Rh	−86950.0	2.8					42.3	s	0.4	1^+	96		$\beta^-\approx$100; β^+=0.45 10	
^{104}Rh^m	−86821.0	2.8	128.967	0.004			4.34	m	0.03	5^+	96		IT$\approx$100; β^-=0.13 1	
^{104}Pd	−89391	5					STABLE			0^+	96		IS=11.14 8	
^{104}Ag	−85112	6					69.2	m	1.0	5^+	96		β^+=100	
^{104}Ag^m	−85105	6	6.9	0.4			33.5	m	2.0	2^+	96		$\beta^+\approx$100; IT<0.07	
^{104}Cd	−83976	10					57.7	m	1.0	0^+	96		β^+=100	
^{104}In	−76070	140					1.80	m	0.03	(5^+)	96	87Eb02 J	β^+=100	
^{104}In^m	−75980	140	93.48	0.10			15.7	s	0.5	(3^+)	96		IT=80; β^+=20	
^{104}Sn	−71550	150					20.8	s	0.5	0^+	96		β^+=100	
^{104}Sb	−59350#	360#					470	ms	130		96	95Fa.A TD	β^+=?; β^+p<7; p<7; α ?	*

*^{104}Nb T : average 96Me09=5.0(0.4) 76Ah06=4.8(0.4) **
*^{104}Nb D : β^-n=0.71% of 83En03, at variance, not used **
*^{104}Sb T : symmetrized from 440(+150−110) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{105}Sr						>150	ns				95Cz.A T	β^- ?	
^{105}Y	−51150#	500#				>150	ns		$5/2^+$#		94Be24 T	β^- ?	
^{105}Zr	−62360#	400#				600	ms	100			96Me09 TD	β^-=100; β^-n ?	
^{105}Nb	−70850	100				2.95	s	0.06	$(5/2^+)$	94	96Me09 D	β^-=100; β^-n=1.7 9	
^{105}Mo	−77340	70				35.6	s	1.6	$(5/2^-)$	93		β^-=100	
^{105}Tc	−82290	60				7.6	m	0.1	$(3/2^-)$	93		β^-=100	
^{105}Ru	−85930	4				4.44	h	0.02	$3/2^+$	93		β^-=100	
^{105}Rh	−87847	5				35.36	h	0.06	$7/2^+$	93		β^-=100	
^{105}Rh^m	−87717	5	129.781	0.004		45	s		$1/2^-$	93		IT=100	
^{105}Pd	−88414	5				STABLE			$5/2^+$	93		IS=22.33 8	
^{105}Ag	−87068	11				41.29	d	0.07	$1/2^-$	93		β^+=100	
^{105}Ag^m	−87043	11	25.465	0.012		7.23	m	0.16	$7/2^+$	93		IT≈100; β^+=0.34 7	
^{105}Cd	−84330	11				55.5	m	0.4	$5/2^+$	93		β^+=100	
^{105}In	−79481	17				5.07	m	0.07	$9/2^+$	93	87Eb02 J	β^+=100	
^{105}In^m	−78807	17	674.1	0.3		48	s	6	$(1/2)^-$	93		IT=100	
^{105}Sn	−73220	90				34	s	1	$5/2^+$#	93	95Pf01 T	β^+=100; β^+p=?	
^{105}Sb	−63780	150				1.12	s	0.16	$(5/2^+)$		94Ti03 JD	β^+ ?; p≈1; β^+p ?	*

*^{105}Sb T : from 95Fa.A, supersedes 95Sc28=1.30(0.15), preliminary from same group **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{106}Y	−46370#	700#				>150	ns				95Cz.A T	β^- ?	
^{106}Zr	−59700#	500#				>150	ns		0^+		94Be24 T	β^- ?	
^{106}Nb	−66890#	300#				920	ms	40	2^+#	94	96Me09 TD	β^-=100; β^-n=4.5 3	*
^{106}Mo	−76257	22				8.73	s	0.12	0^+	94	95Jo02 T	β^-=100	
^{106}Tc	−79777	14				35.6	s	0.6	(1,2)	94		β^-=100	
^{106}Ru	−86324	8				373.59	d	0.15	0^+	94		β^-=100	
^{106}Rh	−86364	8				29.80	s	0.08	1^+	94		β^-=100	
^{106}Rh^m	−86228	11	136	12	BD	131	m	2	$(6)^+$	94		β^-=100	
^{106}Pd	−89905	5				STABLE			0^+	94		IS=27.33 3	
^{106}Ag	−86940	5				23.96	m	0.04	1^+	94		β^+=?; β^-≈0.5	
^{106}Ag^m	−86850	5	89.66	0.07		8.28	d	0.02	6^+	94		β^+=100; IT≤4.2e−6	
^{106}Cd	−87134	6				STABLE		>6.6Ey	0^+	94	96Ba46 T	IS=1.25 4; 2β^+ ?	*
^{106}In	−80610	14				6.2	m	0.1	7^+	94		β^+=100	
^{106}In^m	−80581	14	28.6	0.3		5.2	m	0.1	(3^+)	94		β^+=100	
^{106}Sn	−77430	50				1.92	m	0.08	0^+	94		β^+=100	
^{106}Sb	−66360#	310#				600	ms	200	(4^+)	94	94Se01 J	β^+=100	*
^{106}Te	−58030#	400#				70	μs	20	0^+	94	94Pa11 T	α=100	*

*^{106}Nb T : average 96Me09=900(20) 83Sh06=1020(50) **
*^{106}Cd T : also 96Da25>0.26 Ey for same channel **
*^{106}Sb T : from 95Le.B, Fig. 4, preliminary **
*^{106}Te T : average 94Pa11=60(+40−20) 81Sc17=60(+30−10) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{107}Y						>150	ns		$5/2^+$#		95Cz.A T	β^- ?	
^{107}Zr	−55090#	600#				>150	ns				94Be24 T	β^- ?	
^{107}Nb	−64920#	400#				300	ms	9	$5/2^+$#	94	96Me09 TD	β^-=100; β^-n=6.0 15	*
^{107}Mo	−72940	160				3.5	s	0.5		94		β^-=100	
^{107}Tc	−79100	150				21.2	s	0.2	$5/2^+$#	96		β^-=100	
^{107}Ru	−83920	120				3.75	m	0.05	$(5/2)^+$	96		β^-=100	
^{107}Rh	−86861	12				21.7	m	0.4	$7/2^+$	94		β^-=100	
^{107}Pd	−88372	6				6.5	My	0.3	$5/2^+$	96		β^-=100	
^{107}Pd^m	−88157	6	214.9	0.5		21.3	s	0.5	$11/2^-$	96		IT=100	
^{107}Ag	−88405	6				STABLE			$1/2^-$	96		IS=51.839 7	
^{107}Ag^m	−88312	6	93.125	0.019		44.3	s	0.2	$7/2^+$	96		IT=100	
^{107}Cd	−86988	7				6.50	h	0.02	$5/2^+$	96		β^+=100	
^{107}In	−83562	13				32.4	m	0.3	$9/2^+$	94		β^+=100	
^{107}In^m	−82884	13	678.5	0.3		50.4	s	0.6	$1/2^-$	94		IT=100	
^{107}Sn	−78560	90				2.90	m	0.05	$(5/2^+)$	96		β^+=100	
^{107}Sb	−70650#	300#				4.6	s	0.8	$(5/2^+)$	96	96Hu.A TD	β^+=100	*
^{107}Te	−60510#	300#				3.1	ms	0.1	$5/2^+$#	96		α=70 30; β^+=30 30	

*^{107}Nb T : average 96Me09=300(30) 91Hi02=300(10) **
*^{107}Sb T : value is now in post cut-off date 97Sh.1 **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{108}Y						> 150	ns				95Cz.A T	β^- ?	
^{108}Zr	−51900#	700#				> 150	ns		0^+		95Cz.A T	β^- ?	
^{108}Nb	−60540#	500#				193	ms	17	(2^+)		96Pe25 TJ	β^-=100; β^-n=6.2 5	*
^{108}Mo	−71190#	200#				1.09	s	0.02	0^+	95		β^-=100	
^{108}Tc	−75940	130				5.17	s	0.07	(2^+)	95		β^-=100	
^{108}Ru	−83660	120				4.55	m	0.05	0^+	94		β^-=100	
^{108}Rh	−85020	110			*&	16.8	s	0.5	1^+	94		β^-=100	
^{108}Rh^m	−85070	40	−60	110	BD*&	6.0	m	0.3	(5^+)	94		β^-=100	
^{108}Pd	−89522	4				STABLE			0^+	95		IS=26.46 9	
^{108}Ag	−87604	6				2.37	m	0.01	1^+	95		β^-=97.15 20; β^+=2.85 20	
^{108}Ag^m	−87495	6	109.440	0.007		418	y	21	6^+	95		β^+=91.3 6; IT=8.7 6	*
^{108}Cd	−89253	6				STABLE		>410Py	0^+	95	95Da.3 T	IS=0.89 2; 2β^+ ?	
^{108}In	−84100	40				58.0	m	1.2	7^+	94		β^+=100	
^{108}In^m	−84070	40	29.75	0.05		39.6	m	0.7	2^+	94		β^+=100	
^{108}Sn	−82000	40				10.30	m	0.08	0^+	95		β^+=100	
^{108}Sb	−72510#	210#				7.4	s	0.3	(4^+)	95	95Ce01 J	β^+=100; β^+p ?	*
^{108}Te	−65680	150				2.1	s	0.1	0^+	95	85Ti02 D	β^+=51 4; α=49 4; ...	*
^{108}I	−52820#	360#				36	ms	6	1^+#	95	94Pa12 D	α=?; β^+=9#; p<1	*

*^{108}Nb T : average 96Me09=190(20) 96Pe25=200(30) from same group but obtained with **
*^{108}Nb T : different methods D : β^-n intensity is from 96Me09 **
*^{108}Ag^m T : discrepant results: 418(7) 310(130) 127(21), see ENSDF **
*^{108}Sb T : average 96Hu.A=7.6(0.3) 76Ox01=7.0(0.5); 7.6(0.3) is now in post cut-off date 97Sh.1 **
*^{108}Te D : ...; β^+p=2.4 10; $\beta^+\alpha$<0.065 **
*^{108}I D : β^+=9%# estimated by 94Pa12 using theoretical β^+ half-life ≈400 ms **

^{109}Zr						> 150	ns				95Cz.A T	β^- ?	
^{109}Nb	−58100#	500#				190	ms	30	$5/2^+$#	96	96Me09TD	β^-=100; β^-n=31 5	
^{109}Mo	−67250#	300#				530	ms	60		94		β^-=100	
^{109}Tc	−74870#	210#				870	ms	40	$5/2^+$#	94	96Me09D	β^-=100; β^-n=0.08 2	
^{109}Ru	−80850	70				34.5	s	1.0	$(5/2^+)$	96		β^-=100	
^{109}Rh	−85012	12				80	s	2	$7/2^+$	94		β^-=100	
^{109}Pd	−87604	4				13.7012	h	0.0024	$5/2^+$	94		β^-=100	
^{109}Pd^m	−87415	4	188.990	0.010		4.696	m	0.003	$11/2^-$	94		IT=100	
^{109}Ag	−88720	3				STABLE			$1/2^-$	94		IS=48.161 7	
^{109}Ag^m	−88632	3	88.0341	0.0011		39.6	s	0.2	$7/2^+$	94		IT=100	
^{109}Cd	−88505	4				462.6	d	0.4	$5/2^+$	96		ϵ=100	
^{109}In	−86485	6				4.2	h	0.1	$9/2^+$	96		β^+=100	
^{109}In^m	−85835	6	650.1	0.3		1.34	m	0.07	$1/2^-$	96		IT=100	
^{109}In^n	−84383	6	2101.8	0.2		209	ms	6	$(19/2^+)$	96		IT=100	
^{109}Sn	−82636	10				18.0	m	0.2	$5/2^{(+)}$	96		β^+=100	
^{109}Sb	−76256	19				17.0	s	0.7	$(5/2^+)$	96		β^+=100	
^{109}Te	−67570	70				4.6	s	0.3	$(5/2^+)$	96	85Ti02 D	β^+=?; α=3.9 13; ...	*
^{109}I	−57570	150				100	μs	5	$(5/2^+)$	96	87Gi02 J	p≈100; α<0.5	*

*^{109}Te D : ...; β^+p=9.4 31; $\beta^+\alpha$<0.005 J : from 95Pa01 **
*^{109}I D : from 94Pa11 **

^{110}Zr						> 150	ns		0^+		95Cz.A T	β^- ?	
^{110}Nb	−53390#	600#				170	ms	20	2^+#		96Me09TD	β^-=100; β^-n=40 8	
^{110}Mo	−65460#	400#				300	ms	40	0^+		94Lh02 T	β^-=100; β^-n ?	
^{110}Tc	−71360#	400#				920	ms	30	(2^+)	93	94Lh02 J	β^-=100; β^-n=0.04 2	*
^{110}Ru	−80140	230				14.6	s	1.0	0^+	93		β^-=100	
^{110}Rh	−82950	220			*	3.2	s	0.2	1^+	93		β^-=100	
^{110}Rh^m	−82950	100	0	200	BD*	28.5	s	1.5	(>3)	93		β^-=100	
^{110}Pd	−88350	11				STABLE		>600Py	0^+	93	52Wi26 T	IS=11.72 9; 2β^- ?	
^{110}Ag	−87458	3				24.6	s	0.2	1^+	93		β^-≈100; ϵ=0.30 6	
^{110}Ag^m	−87340	3	117.59	0.05		249.76	d	0.20	6^+	93		β^-=98.64 6; IT=1.36 6	
^{110}Cd	−90349.7	3.0				STABLE			0^+	93		IS=12.49 12	

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{110}In	−86472	12			4.9	h	0.1	7^+	93		β^+=100	
^{110}In^m	−86410	12	62.08	0.04	69.1	m	0.5	2^+	93	89Kr12 E	β^+=100	
^{110}Sn	−85835	16			4.11	h	0.10	0^+	93		ϵ=100	
^{110}Sb	−77540#	200#			23.0	s	0.4	3^+	93		β^+=100	
^{110}Te	−72280	50			18.6	s	0.8	0^+	93		$\beta^+\approx$100; $\alpha\approx$0.003	
^{110}I	−60350#	310#			650	ms	20	1^+#	93		β^+=83 4; α=17 4; β^+p=11 3; ...	*
^{110}Xe	−51720#	400#			600#	ms		0^+	93		β^+ ?; α ?	

*^{110}Tc D : β^-n intensity is from 96Me09 **
*^{110}I D : ...; $\beta^+\alpha$=1.1 3 **

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{111}Nb					> 150	ns		$5/2^+$#		95Cz.A T	β^- ?	
^{111}Mo	−61000#	500#			> 150	ns				94Be24 T	β^- ?	
^{111}Tc	−69820#	400#			290	ms	20	$5/2^+$#	96	96Me09TD	β^-=100; β^-n=0.85 20	*
^{111}Ru	−76790#	300#			2.12	s	0.07	$(5/2^+)$	96	96Lh.B J	β^-=100	
^{111}Rh	−82290#	210#			11	s	1	$(7/2^+)$	96		β^-=100	
^{111}Pd	−86030	40			23.4	m	0.2	$5/2^+$	96		β^-=100	
^{111}Pd^m	−85860	40	172.18	0.08	5.5	h	0.1	$11/2^-$	96		IT=73 3; β^-=27 3	
^{111}Ag	−88217	3			7.45	d	0.01	$1/2^-$	96		β^-=100	
^{111}Ag^m	−88157	3	59.82	0.04	64.8	s	0.8	$7/2^+$	96		IT=99.3 2; β^-=0.7 2	
^{111}Cd	−89254.2	3.0			STABLE			$1/2^+$	96		IS=12.80 8	
^{111}Cd^m	−88858	3	396.214	0.021	48.54	m	0.05	$11/2^-$	96		IT=100	
^{111}In	−88389	5			2.8047	d	0.0005	$9/2^+$	96		ϵ=100	
^{111}In^m	−87852	5	536.95	0.06	7.7	m	0.2	$1/2^-$	96		IT=100	
^{111}Sn	−85944	7			35.3	m	0.6	$7/2^+$	96		β^+=100	
^{111}Sb	−80840#	200#			75	s	1	$(5/2^+)$	96		β^+=100	
^{111}Te	−73480	70			19.3	s	0.4	$5/2^+$#	96		β^+=100; β^+p=?	
^{111}I	−64950#	300#			2.5	s	0.2	$5/2^+$#	96		$\beta^+\approx$100; α=0.088	
^{111}Xe	−54370#	300#			740	ms	200	$5/2^+$#	96	94Pa11 D	β^+ ?; α=10 7	*
^{111}Xe^m			non existent	EU	900	ms	200			90Tu.A T		*

*^{111}Tc T : supersedes 88Pe13=300(30) from same group **
*^{111}Xe D : symmetrized from α=8(+8−5)% **
*^{111}Xe^m I : from assigning α decay to isomer in older version of ENSDF **

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{112}Nb					> 150	ns		2^+#		95Cz.A T	β^- ?	
^{112}Mo	−58830#	600#			> 150	ns		0^+		94Be24 T	β^- ?	
^{112}Tc	−65910#	500#			230	ms	20	2^+#	97	96Me09TD	β^-=100; β^-n=2.6 5	
^{112}Ru	−75870#	540#			1.75	s	0.07	0^+	97		β^-=100	
^{112}Rh	−79540#	500#			* 2.1	s	0.3	1^+	97		β^-=100	
^{112}Rh^m	−79340#	520#	200#	150#	* 6.8	s	0.2	> 3	97		β^-=100	
^{112}Pd	−86337	18			21.03	h	0.05	0^+	97		β^-=100	
^{112}Ag	−86625	17			3.130	h	0.009	$2^{(-)}$	97		β^-=100	
^{112}Cd	−90581.0	2.8			STABLE			0^+	97		IS=24.13 14	
^{112}In	−87995	5			14.97	m	0.10	1^+	97		β^+=56 3; β^-=44 3	
^{112}In^m	−87838	5	156.59	0.05	20.56	m	0.06	4^+	97		IT=100	
^{112}Sn	−88659	4			STABLE			0^+	97		IS=0.97 1; 2β^+ ?	
^{112}Sb	−81604	23			51.4	s	1.0	3^+	97		β^+=100	
^{112}Te	−77260	170			2.0	m	0.2	0^+	97		β^+=100	
^{112}I	−67100#	210#			3.42	s	0.11	1^+#	97	78Ro19 D	$\beta^+\approx$100; α=0.0012; ...	*
^{112}Xe	−59930	150			2.7	s	0.8	0^+	97	94Pa11 D	$\beta^+\approx$100; α=0.9 8	*
^{112}Cs	−46270#	300#			500	μs	100	1^+#	97		p=?; α ?	

*^{112}I D : ...; β^+p=0.88 10; $\beta^+\alpha$=0.104 12 **
*^{112}I D : β^+p and $\beta^+\alpha$ are derived from β^+p/α=735(80) β^+p/$\beta^+\alpha$=8.5(2), in 85Ti02 **
*^{112}Xe D : α intensity is estimated from 94Pa11=0.8(+1.1−0.5)% and 78Ro19=0.84% **

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{113}Nb					> 150	ns		5/2+#		95Cz.A T	β^- ?	
^{113}Mo	−54000#	600#			> 150	ns				94Be24 T	β^- ?	
^{113}Tc	−63970#	600#			130	ms	50	5/2+#	94		β^-=100	
^{113}Ru	−72150#	500#			800	ms	50		94		β^-=100	
^{113}Rh	−78790#	400#			2.80	s	0.12	(7/2+)	94	93Pe11 TJ	β^-=100	*
^{113}Pd	−83690	40			93	s	5	(5/2)+	94		β^-=100	
^{113}Pd^m	−83610	40	81.1	0.3	300	ms	100	(9/2−)	94	93Pe11 T	IT=100	
^{113}Pd^n			non existent	RN	> 100	s			94	81Me17I	IT ?	*
^{113}Ag	−87033	17			5.37	h	0.05	1/2−	94		β^-=100	
^{113}Ag^m	−86990	17	43.50	0.10	68.7	s	1.6	7/2+	94		IT=64 7; β^-=36 7	
^{113}Cd	−89049.9	2.8			7.7	Py	0.3	1/2+	94	96Da11 T	IS=12.22 8; β^-=100	
^{113}Cd^m	−88786.3	2.8	263.59	0.12	14.1	y	0.5	11/2−	94		$\beta^-\approx$100; IT=0.14	
^{113}In	−89366	3			Stable			9/2+	94		IS=4.29 2	
^{113}In^m	−88974	3	391.691	0.008	1.6582	h	0.0006	1/2−	94		IT=100	
^{113}Sn	−88330	4			115.09	d	0.04	1/2+	94		β^+=100	
^{113}Sn^m	−88253	4	77.389	0.019	21.4	m	0.4	7/2+	94		IT=91.1 23; β^+=8.9 23	
^{113}Sb	−84414	22			6.67	m	0.07	5/2+	94		β^+=100	
^{113}Te	−78310#	200#			1.7	m	0.2	(7/2+)	94		β^+=100	
^{113}I	−71120	50			6.6	s	0.2	5/2+	94		β^+=100; α=3.31e−7; $\beta^+\alpha$?	
^{113}Xe	−62050	90			2.74	s	0.08	5/2+#	94	85Ti02 D	$\beta^+\approx$100; $\alpha\approx$0.011 5; β^+p=7 4; ...	*
^{113}Cs	−51660	150			17	μs	2	(5/2+)	94	94Pa12 T	p$\approx$100; $\beta^+\approx$0.03	*

*^{113}Rh T : supersedes 88Pe13=2.72(0.22) from same group **
*^{113}Pd^n I : existence is not possible since discovery of ^{113}Pd^m by 93Pe11 **
*^{113}Xe D : ...; $\beta^+\alpha\approx$0.007 4 **
*^{113}Xe D : α=0.0024-0.0204% from estimated limit for the reduced width, see 85Ti02 **
*^{113}Xe D : β^+p and $\beta^+\alpha$ derived from β^+p/α=605(35) and β^+p/$\beta^+\alpha$=500-1500 in 85Ti02 **
*^{113}Cs J : from 87Gi02 **

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{114}Mo					> 150	ns		0+		95Cz.A T	β^- ?	
^{114}Tc	−59730#	600#			> 150	ns		2+#		94Be24 T	β^- ?	
^{114}Ru	−70790#	360#			530	ms	60	0+	95		β^-=100; β^-n ?	
^{114}Rh	−75590#	300#			* 1.85	s	0.05	1+	95		β^-=100; β^-n ?	
^{114}Rh^m	−75390#	340#	200#	150#	* 1.85	s	0.05	(> 3)	95		β^-=100	
^{114}Pd	−83494	25			2.42	m	0.06	0+	95		β^-=100	
^{114}Ag	−84945	26			4.6	s	0.1	1+	95		β^-=100	
^{114}Ag^m	−84746	26	198.9	0.5	1.50	ms	0.05	(< 7+)	95		IT=100	
^{114}Cd	−90021.3	2.8			Stable	>92Py		0+	95	95Da.3 T	IS=28.73 28; 2β^- ?	*
^{114}In	−88569	3			71.9	s	0.1	1+	95		β^-=99.50 15; β^+=0.50 15	
^{114}In^m	−88379	3	190.29	0.03	49.51	d	0.01	5+	95		IT=96.75 24; β^+=3.25 24	
^{114}In^n	−88067	3	501.93	0.03	43.1	ms	0.6	8−	95		IT=100	
^{114}Sn	−90558	3			Stable			0+	95		IS=0.65 1	
^{114}Sb	−84680	200			3.49	m	0.03	3+	95		β^+=100	
^{114}Te	−81920#	200#			15.2	m	0.7	0+	96		β^+=100	
^{114}I	−72800#	300#			2.1	s	0.2	1+	96		β^+=100; β^+p ?	
^{114}I^m	−72530#	300#	265.9	0.5	6.2	s		(7)	96		β^+=91 2; IT=9 2	*
^{114}Xe	−66930#	210#			10.0	s	0.4	0+	95		β^+=100	
^{114}Cs	−54570#	310#			570	ms	20	(1+)	95	96He25 D	$\beta^+\approx$100; α=0.018 6; ...	*
^{114}Ba	−45700#	450#			500	ms	230	0+	95	95Ja.A TD	β^+=?; α<0.37; β^+p=?; ...	*

*^{114}Cd T : > 7 Ey, given in Ensdf, is for 0ν-2β^- decay alone **
*^{114}I^m D : Ensdf'95 "β^+<100; IT<100" re-evaluated for Nubase by J. Blachot, based on **
*^{114}I^m D : ^{114}I IT decay, see Ensdf **
*^{114}Cs D : ...; β^+p=8.7 13; $\beta^+\alpha$=0.19 3 **
*^{114}Cs D : β^+p intensity is from 96He25; $\beta^+\alpha$ derived from β^+p/$\beta^+\alpha$=45.5(12) in 85Ti02 **
*^{114}Ba D : ...; ^{12}C<0.038 D : α and ^{12}C intensities are from 95Gu10 **
*^{114}Ba T : symmetrized from 440(+250−150) **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{115}Mo							$>$ 150 ns			95Cz.A T	β^- ?	
^{115}Tc	−57490#	700#					$>$ 150 ns	$5/2^+$#		94Be24 T	β^- ?	
^{115}Ru	−66780#	600#					740 ms 80		94	92Ay02 T	β^-=100; β^-n ?	
^{115}Rh	−74400	500					990 ms 50	$(7/2^+)$	94		β^-=100	
^{115}Pd	−80400	60					25 s 2	$(5/2^+)$	94		β^-=100	
^{115}Pd^m	−80310	60	89.3	0.2			50 s 3	$(11/2^-)$	94		β^-=92.0 20; IT=8.0 20	
^{115}Ag	−84990	30					20.0 m 0.5	$1/2^-$	92		β^-=100	
^{115}Ag^m	−84950	30	41.10	0.20			18.0 s 0.7	$7/2^+$	92		β^-=79.0 3; IT=21.0 3	
^{115}Cd	−88090.9	2.8					53.46 h 0.10	$1/2^+$	96		β^-=100	
^{115}Cd^m	−87909.9	2.8	181.0	0.5			44.6 d 0.3	$11/2^-$	96		β^-=100	
^{115}In	−89537	4					441 Ty 25	$9/2^+$	94		IS=95.71 2; β^-=100	
^{115}In^m	−89201	4	336.24	0.03			4.486 h 0.004	$1/2^-$	94		IT=95.0 7; β^-=5.0 7	
^{115}Sn	−90032.6	3.0					STABLE	$1/2^+$	96		IS=0.34 1	
^{115}Sb	−87003	20					32.1 m 0.3	$5/2^+$	96		β^+=100	
^{115}Te	−82360	110				*	5.8 m 0.2	$7/2^+$	96		β^+=100	
^{115}Te^m	−82350	110	10	7		*	6.7 m 0.4	$(1/2)^+$	96	ABBW E	$\beta^+\approx$100; IT ?	*
^{115}I	−76460#	470#					1.3 m 0.2	$(5/2^+)$	96		β^+=100	
^{115}Xe	−68430#	240#					18 s 4	$(5/2^+)$	94		β^+=100; β^+p=0.34 6; $\beta^+\alpha$=0.0003 1	
^{115}Cs	−59670#	430#					1.4 s 0.8	$9/2^+$#	94		β^+=100; β^+p$\approx$0.07	
^{115}Ba	−48710#	600#					400 ms 200	$5/2^+$#		95Gu01TD	β^+=100; β^+p=?	

*^{115}Te^m E : less than 20 keV, from ENSDF **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{116}Tc							$>$ 150 ns			95Cz.A T	β^- ?	
^{116}Ru	−65060#	700#					$>$ 150 ns	0^+		94Be24 T	β^- ?	
^{116}Rh	−71060#	500#				*	680 ms 60	1^+	95		β^-=100; β^-n ?	
^{116}Rh^m	−70860#	520#	200#	150#		*	900 ms 400	(5,6,7)	95		β^-=100	
^{116}Pd	−79960	60					11.8 s 0.4	0^+	96		β^-=100	
^{116}Ag	−82570	50					2.68 m 0.10	$(2)^-$	95		β^-=100	
^{116}Ag^m	−82490	50	81.90	0.20			8.6 s 0.3	(5^+)	95		β^-=94.0 15; IT=6.0 15	
^{116}Cd	−88720	3					34 Ey 3	0^+	95	94Ku25T	IS=7.49 12; $2\beta^-$=100	*
^{116}In	−88250	4					14.10 s 0.03	1^+	95		$\beta^-\approx$100; $\epsilon<0.06$#	
^{116}In^m	−88123	4	127.267	0.006			54.29 m 0.17	5^+	95		β^-=100	
^{116}In^n	−87960	4	289.660	0.006			2.18 s 0.04	8^-	95		IT=100	
^{116}Sn	−91524.7	3.0					STABLE	0^+	95		IS=14.54 11	
^{116}Sb	−86818	6					15.8 m 0.8	3^+	95		β^+=100	
^{116}Sb^m	−86430	40	380	40	BD		60.3 m 0.6	8^-	95		β^+=100	
^{116}Te	−85310	90					2.49 h 0.04	0^+	96		β^+=100	
^{116}I	−77560	140					2.91 s 0.15	1^+	96		β^+=100	
^{116}Xe	−72900#	250#					59 s 2	0^+	95		β^+=100	
^{116}Cs	−62490	350				*	700 ms 40	(1^+)	95		β^+=100; β^+p=0.28 7; $\beta^+\alpha$=0.049 25	
^{116}Cs^m	−62390#	360#	100#	60#		*	3.85 s 0.13	$>4^+$	95		β^+=100; β^+p=0.51 15; $\beta^+\alpha$=0.008 2	
^{116}Ba	−54330#	500#					1.35 s 0.15	0^+		95Ja.A TD	β^+=100; β^+p=?	*

*^{116}Cd T : average 94Ku25=26(+9−5) 95Da09=27(+5−4; +9−6) 96Ar.1=37.5(3.5 statistics + 2.0 systematics) **
*^{116}Ba T : supersedes 95Gu01=300(200) ms from same group **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{117}Tc							$>$ 150 ns	$5/2^+$#		95Cz.A T	β^- ?	
^{117}Ru	−60740#	800#					$>$ 150 ns		96		β^- ?	
^{117}Rh	−69540#	600#					440 ms 40	$(7/2^+)$	96		β^-=100	
^{117}Pd	−76530#	300#					4.3 s 0.3	$(5/2^+)$	96		β^-=100	
^{117}Pd^m	−76330#	300#	203.2	0.3			19.1 ms 0.7	$(11/2^-)$	96		IT=100	
^{117}Ag	−82270	50					73.6 s 1.4	$(1/2^-)$	96		β^-=100	*
^{117}Ag^m	−82240	50	28.60	0.20			5.34 s 0.05	$(7/2^+)$	96		β^-=94.0 15; IT=6.0 15	
^{117}Cd	−86426	3					2.49 h 0.04	$1/2^+$	96		β^-=100	
^{117}Cd^m	−86290	3	136.4	0.2			3.36 h 0.05	$(11/2)^-$	96		β^-=100	
^{117}In	−88943	6					43.2 m 0.3	$9/2^+$	96		β^-=100	
^{117}In^m	−88628	6	315.302	0.012			116.2 m 0.3	$1/2^-$	96		β^-=52.9 15; IT=47.1 15	
^{117}Sn	−90398.0	2.9					STABLE	$1/2^+$	96		IS=7.68 7	
^{117}Sn^m	−90083.4	2.9	314.58	0.04			13.60 d 0.04	$11/2^-$	96		IT=100	

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{117}Sb	−88641	9				2.80	h	0.01	$5/2^+$	96		β^+=100	
^{117}Te	−85107	19				62	m	2	$1/2^+$	96		β^+=100	
^{117}Te^m	−84791	22	316	12		103	ms	3	$11/2^-$	96		IT=100	*
^{117}I	−80440	70				2.22	m	0.04	$(5/2)^+$	96		β^+=100	
^{117}Xe	−73990	180				61	s	2	$5/2^{(+)}$	96		β^+=100; β^+p=0.0029 6	
^{117}Cs	−66470	50			*	8.4	s	0.6	$9/2^+$#	96		β^+=100	
^{117}Cs^m	−66320#	110#	150#	100#	*	6.5	s	0.4	$3/2^+$#	96		β^+=100	
^{117}Ba	−56950#	650#				1.75	s	0.07	$(3/2)^{(+\#)}$	96		β^+=100; β^+p=?; $\beta^+\alpha$=?	*
^{117}La	−46570#	890#							$11/2^-$#			β^+ ?	

*^{117}Ag T : symmetrized from 72.8(+2.0−0.7) **
*^{117}Te^{m}E : probably decays by unobserved low-energy M2 to 296.0 level, from ENSDF; **
*^{117}Te^{m}E : half-life suggests an energy below 40 keV, thus 296.0 + 20(12) **
*^{117}Ba D : and β^+p/$\beta^+\alpha$=350-1200 **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{118}Tc						> 150	ns				95Cz.A T	β^- ?	
^{118}Ru	−58660#	900#				> 150	ns		0^+		94Be24 T	β^- ?	
^{118}Rh	−65740#	700#				> 150	ns				94Be24 T	β^- ?	
^{118}Pd	−75470	210				1.9	s	0.1	0^+	95		β^-=100	
^{118}Ag	−79570	60				3.76	s	0.15	1^-	95	93Ja03 J	β^-=100	
^{118}Ag^m	−79440	60	127.49	0.05		2.0	s	0.2	$4^{(+)}$	95	95Ap.AE	β^-=59; IT=41	
^{118}Cd	−86709	20				50.3	m	0.2	0^+	95		β^-=100	
^{118}In	−87230	8				5.0	s	0.5	1^+	95		β^-=100	
^{118}In^m	−87130#	50#	100#	50#		4.364	m	0.007	5^+	95	94It.A T	β^-=100	
^{118}In^n	−86990#	50#	240#	50#		8.5	s	0.3	8^-	95		IT=98.6 3; β^-=1.4 3	*
^{118}Sn	−91653.1	2.9				STABLE			0^+	95		IS=24.22 11	
^{118}Sb	−87996	4				3.6	m	0.1	1^+	95		β^+=100	
^{118}Sb^m	−87746	6	250	6	BD	5.00	h	0.02	8^-	95		β^+=100	
^{118}Te	−87723	16				6.00	d	0.02	0^+	95		ϵ=100	
^{118}I	−80690	80				13.7	m	0.5	2^-	95		β^+=100	
^{118}I^m	−80500	80	190.1	1.0		8.5	m	0.5	(7^-)	95	94Ka39E	$\beta^+\approx$100; IT ?	
^{118}Xe	−77710	1000				3.8	m	0.9	0^+	95		β^+=100	
^{118}Cs	−68414	13			*	14	s	2	2	95		β^+=100; β^+p<0.042 6; ...	*
^{118}Cs^m	−68310#	60#	100#	60#	*	17	s	3	(7^-)	95	93Be46 J	β^+=100; β^+p<0.042 6; ...	*
^{118}Ba	−62000#	500#				5.2	s	0.2	0^+		95Ja.A TD	β^+=100; β^+p ?	
^{118}La	−49770#	800#										β^+ ?	

*^{118}In^n E : 138.2(0.5) keV above ^{118}In^m, from ENSDF **
*^{118}Cs D : ...; $\beta^+\alpha$<0.0024 4 **
*^{118}Cs^{m}D : ...; $\beta^+\alpha$<0.0024 4 **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{119}Ru						> 150	ns				95Cz.A T	β^- ?	
^{119}Rh	−63940#	800#				> 150	ns		$7/2^+$#		94Be24 T	β^- ?	
^{119}Pd	−72020#	300#				920	ms	130		93		β^-=100	
^{119}Ag	−78560	90			*&	6.0	s	0.5	$(1/2^-)$	94		β^-=100	
^{119}Ag^m	−78540#	90#	20#	20#	*&	2.1	s	0.1	$(7/2^+)$	94		β^-=100	*
^{119}Cd	−83910	80				2.69	m	0.02	$3/2^+$	93		β^-=100	
^{119}Cd^m	−83760	80	146.54	0.11		2.20	m	0.02	$(11/2^-)$	93		β^-=100	
^{119}In	−87704	8				2.4	m	0.1	$9/2^+$	93		β^-=100	
^{119}In^m	−87393	8	311.37	0.03		18.0	m	0.3	$1/2^-$	93		β^-=94.4 15; IT=5.6 15	
^{119}Sn	−90067.2	2.8				STABLE			$1/2^+$	93		IS=8.58 4	
^{119}Sn^m	−89977.7	2.8	89.531	0.013		293.1	d	0.7	$11/2^-$	93		IT=100	
^{119}Sb	−89473	8				38.19	h	0.22	$5/2^+$	93		ϵ=100	
^{119}Sb^m	−86632	8	2841.1	0.6		850	ms	90	$(25/2^+)$	93		IT=100	
^{119}Te	−87180	8				16.03	h	0.05	$1/2^+$	93		β^+=100	
^{119}Te^m	−86919	8	260.96	0.05		4.70	d	0.04	$11/2^-$	93		$\beta^+\approx$100; IT<0.008	
^{119}I	−83670	60				19.1	m	0.4	$5/2^+$	93		β^+=100	
^{119}Xe	−78660	120				5.8	m	0.3	$5/2^{(+)}$	93	90Ne.A J	β^+=100	
^{119}Cs	−72311	14			*	43.0	s	0.2	$9/2^+$	93	75Ho09D	β^+=100; $\beta^+\alpha$<2e−6	
^{119}Cs^m	−72260#	30#	50#	30#	*	30.4	s	0.1	$3/2^{(+)}$	93		β^+=100	
^{119}Ba	−64220	1020				5.4	s	0.3	$(5/2^+)$	93		β^+=100; β^+p=?	
^{119}La	−54970#	700#							$11/2^-$#			β^+ ?	
^{119}Ce	−44000#	900#							$5/2^+$#			β^+ ?	

*^{119}Ag^{m}E : estimated from $7/2^+$ in isotopes ^{113}Ag=43(0) ^{115}Ag=41(0) ^{117}Ag=28(0) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{120}Ru						> 150	ns		0^+		95Cz.A T	β^- ?	
^{120}Rh	−59820#	800#				> 150	ns				94Be24 T	β^- ?	
^{120}Pd	−70770#	400#				500	ms	100	0^+		93Ja03 T	β^-=100	
^{120}Ag	−75650	70				1.23	s	0.03	3^+	88	93Ru01D	β^-=100; β^-n<0.003	
^{120}Ag^m	−75450	70	203	1		320	ms	40	6^-	88		β^-≈63; IT≈37	
^{120}Cd	−83973	19				50.80	s	0.21	0^+	88		β^-=100	
^{120}In	−85730	40			*	3.08	s	0.08	1^+	88		β^-=100	
^{120}In^m	−85670	70	70	60	*	46.2	s	0.8	5^+	88	87Eb02 J	β^-=100	
^{120}In^n	−85430#	200#	300#	200#	*	47.3	s	0.5	$8^{(-)}$	88	79Fo10 J	β^-=100	
^{120}Sn	−91103.3	2.5				STABLE			0^+	88		IS=32.59 10	
^{120}Sb	−88423	8			*	15.89	m	0.04	1^+	88		β^+=100	
^{120}Sb^m	−88420#	100#	0#	100#	*	5.76	d	0.02	8^-	88		β^+=100	
^{120}Te	−89405	10				STABLE			0^+	88		IS=0.096 2; 2β^+ ?	
^{120}I	−83790	18			*	81.0	m	0.6	2^-	88		β^+=100	
^{120}I^m	−83470	150	320	150	BD*	53	m	4	(7^-)	88	95Ka17J	β^+=100	
^{120}Xe	−81830	40				40	m	1	0^+	88		β^+=100	
^{120}Cs	−73888	10			*	61.2	s	1.8	$2^{(-\#)}$	94	93Al03 T	β^+=100; $\beta^+\alpha$<2.0e−5 4; β^+p<7e−6 3	*
^{120}Cs^m	−73790#	60#	100#	60#	*	57	s	6	7^-#	94	75Ho09D	β^+=100; $\beta^+\alpha$<2.0e−5 4; β^+p<7e−6 3	
^{120}Ba	−68890	300				24	s	2	0^+	88	92Xu04T	β^+=100	
^{120}La	−57690#	600#				2.8	s	0.2		88		β^+=100; β^+p=?	
^{120}Ce	−49710#	800#				250#	ms	150#	0^+			β^+ ?	
*^{120}Cs	T : average 93Al03=60(2) 77Ge03=64(3)												**
*^{120}Cs	D : isomers not distinguished by 75Ho09 in $\beta^+\alpha$ and β^+p. Values replaced												**
*^{120}Cs	D : by upper limits for both (cf. ENSDF evaluation of ^{118}Cs)												**
^{121}Rh	−57680#	900#				> 150	ns		$7/2^+$#		94Be24 T	β^- ?	
^{121}Pd	−66900#	500#				> 150	ns				94Be24 T	β^- ?	
^{121}Ag	−74660	150				780	ms	10	$(7/2^+)$	91	93Ru01D	β^-=100; β^-n=0.076 5	
^{121}Cd	−81060	80				13.5	s	0.3	$(3/2^+)$	91		β^-=100	
^{121}Cd^m	−80850	80	214.89	0.10		8.3	s	0.8	$(11/2^-)$	91		β^-=100	
^{121}In	−85838	27				23.1	s	0.6	$9/2^+$	91		β^-=100	
^{121}In^m	−85524	27	313.69	0.10		3.88	m	0.10	$1/2^-$	91		β^-=98.8 2; IT=1.2 2	
^{121}Sn	−89202.8	2.5				27.06	h	0.04	$3/2^+$	91		β^-=100	
^{121}Sn^m	−89196.5	2.5	6.30	0.08		55	y	5	$11/2^-$	91		IT=77.6 20; β^-=22.4 20	
^{121}Sb	−89592.9	2.3				STABLE			$5/2^+$	91		IS=57.21 5	
^{121}Te	−88557	25				19.40	d	0.10	$1/2^+$	96	94Si.A T	β^+=100	*
^{121}Te^m	−88263	25	293.98	0.03		154	d	7	$11/2^-$	96		IT=88.6 11; β^+=11.4 11	
^{121}I	−86288	11				2.12	h	0.01	$5/2^+$	91		β^+=100	
^{121}Xe	−82543	24				40.1	m	2.0	$5/2^{(+)}$	91		β^+=100	
^{121}Cs	−77143	14				155	s	4	$3/2^{(+)}$	91		β^+=100	
^{121}Cs^m	−77075	14	68.5	0.3		122	s	3	$9/2^{(+)}$	91		β^+=83; IT=17	
^{121}Ba	−70340	300				29.7	s	1.5	$5/2^{(+)}$	96		β^+=100; β^+p=0.02 1	
^{121}La	−62400#	500#				5.3	s	0.2	$11/2^-$#	92		β^+=100; β^+p ?	
^{121}Ce	−52470#	700#							$5/2^+$#			β^+ ?	
^{121}Pr	−41580#	800#				1.4	s	0.8	$(3/2^-)$	91	90Bo39 JD	p=?; β^+ ?; β^+p ?	
*^{121}Te	T : difference with 73Ka45=16.78(0.35) is remarkable												**

Nuclide	Mass excess (keV)	Excitation energy (keV)		Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{122}Rh				50# ms				β^- ?	
^{122}Pd	−65390#500#			> 150 ns	0^+		94Be24 T	β^- ?	
^{122}Ag	−71430#210#			* 520 ms 14	(3^+)	94	95Fe12 T	β^-=100; β^-n=0.186 10	*
^{122}Ag^m	−71350#220#	80# 50#		* 1.5 s 0.5	8^-#	94		β^-=100; β^-n ?	
^{122}Cd	−80570#210#			5.24 s 0.03	0^+	94		β^-=100	
^{122}In	−83580 50			* 1.5 s 0.3	1^+	94		β^-=100	
^{122}In^m	−83540# 80#	40# 60#		* 10.3 s 0.6	5^+	94		β^-=100	
^{122}In^n	−83290 130	290 140	BD	10.8 s 0.4	8^-	94		β^-=100	
^{122}Sn	−89944.9 2.7			Stable	0^+	94		IS=4.63 3; 2β^- ?	
^{122}Sb	−88328.5 2.2			2.7238 d 0.0002	2^-	94		β^-=97.59 12; β^+=2.41 12	
^{122}Sb^m	−88164.9 2.2	163.5591 0.0017		4.191 m 0.003	$(8)^-$	94		IT=100	
^{122}Te	−90311.1 1.9			Stable	0^+	94		IS=2.603 4	
^{122}I	−86077 5			3.63 m 0.06	1^+	94		β^+=100	
^{122}Xe	−85190 90			20.1 h 0.1	0^+	94		ϵ=100	
^{122}Cs	−78132 16			21.18 s 0.19	1^+	96	93Al03 T	β^+=100; $\beta^+\alpha$<2e−7	*
^{122}Cs^m	−78009 10	123 19	MD	3.70 m 0.11	8^-	96		β^+=100	
^{122}Cs^n	−78005 16	127.0 0.5		360 ms 20	$(5)^-$	96		IT=100	
^{122}Ba	−74280#300#			1.95 m 0.15	0^+	94		β^+=100	
^{122}La	−64540#500#			8.7 s 0.7		94		β^+=100; β^+p=?	
^{122}Ce	−57740#600#			1# s 0.5#	0^+	94		β^+ ?; β^+p ?	*
^{122}Pr	−45040#800#							β^+ ?	

*^{122}Ag D : β^-n intensity is from 93Ru01 **
*^{122}Cs T : average 93Al03=21.2(0.2) 69Ch18=21.0(0.7) **
*^{122}Cs D : $\beta^+\alpha$ intensity upper limit is from 75Ho09 **
*^{122}Ce I : T=8.7(0.7) s in NDS 71 (1994) was misprint for ^{122}La. Corrected in Ensdf **

Nuclide	Mass excess (keV)	Excitation energy (keV)		Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{123}Pd	−61240#600#			> 150 ns			94Be24 T	β^- ?	
^{123}Ag	−69960#300#			296 ms 6	$(7/2^+)$	94	95Fe12 T	β^-=100; β^-n=0.55 5	*
^{123}Cd	−77310 40			2.10 s 0.02	$(3/2)^+$	94		β^-=100	
^{123}Cd^m	−76990 40	316.52 0.23		1.82 s 0.03	$(11/2^-)$	94		β^-=?; IT=?	
^{123}In	−83426 24			5.98 s 0.06	$9/2^+$	94		β^-=100	
^{123}In^m	−83099 24	327.21 0.04		47.8 s 0.5	$1/2^-$	94		β^-=100	
^{123}Sn	−87819.5 2.7			129.2 d 0.4	$11/2^-$	94		β^-=100	
^{123}Sn^m	−87794.9 2.7	24.6 0.4		40.06 m 0.01	$3/2^+$	94		β^-=100	
^{123}Sb	−89222.5 2.0			Stable	$7/2^+$	94		IS=42.79 5	
^{123}Te	−89169.2 1.8			> 600 Ty	$1/2^+$	94	96Al30 T	IS=0.908 2; ϵ=100	*
^{123}Te^m	−88921.6 1.8	247.55 0.04		119.7 d 0.1	$11/2^-$	94		IT=100	
^{123}I	−87935 4			13.27 h 0.08	$5/2^+$	94		β^+=100	
^{123}Xe	−85259 15			2.08 h 0.02	$1/2^+$	94	90Ne.AJ	β^+=100	
^{123}Cs	−81049 12			5.87 m 0.04	$1/2^+$	94	93Al03 T	β^+=100	*
^{123}Cs^m	−80892 12	156.74 0.21		1.64 s 0.12	$(11/2)^-$	94		IT=100	
^{123}Ba	−75590#300#			2.7 m 0.4	$5/2^+$	94		β^+=100	
^{123}La	−68710#400#			17 s 3	$11/2^-$#	94		β^+=100	
^{123}Ce	−60070#500#			3.8 s 0.2	$(5/2)^{(+\#)}$	94		β^+=100; β^+p=?	
^{123}Pr	−50340#700#				$3/2^+$#			β^+ ?	

*^{123}Ag T : average 95Fe12=293(7) 86Ma42=300(20) 83Re05=300(10) D : from 93Ru01 **
*^{123}Te T : and 24(9) Ey for ϵ(K), same authors **
*^{123}Te I : This nuclide is not considered 'stable' since K ϵ has been observed **
*^{123}Cs T : average 93Al03=5.87(0.05) 68Ch18=5.87(0.05) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^{π}	Ens	Reference	Decay modes and intensities (%)	
^{124}Pd						200#	ms		0^+			β^- ?	
^{124}Ag	−66570#	400#				172	ms	5	3^+#		95Fe12 T	β^-=100; β^-n>0.1	*
^{124}Ag^m	−66570#	410#	0#	100#					8^-#		95Kr.A I	β^- ?; IT ?	*
^{124}Cd	−76710	60				900	ms	200	0^+	85		β^-=100	*
^{124}In	−80880	50			*	3.17	s	0.05	3^+	85		β^-=100	*
^{124}In^m	−80900	50	−20	70	BD*	2.4	s	0.4	$8^{(-\#)}$	85	79Fo10 J	$\beta^-\approx$100; IT ?	*
^{124}Sn	−88236.1	1.4				STABLE		>100Py	0^+	85	52Ka41 T	IS=5.79 5; 2β^- ?	
^{124}Sb	−87618.6	2.0				60.20	d	0.03	3^-	85		β^-=100	
^{124}Sb^m	−87607.7	2.0	10.8633	0.0011		93	s	5	5^+	85		IT=75 5; β^-=25 5	*
^{124}Sb^n	−87581.8	2.0	36.8456	0.0015		20.2	m	0.2	8^-	85		IT=100	*
^{124}Te	−90523.1	1.5				STABLE			0^+	85		IS=4.816 6	
^{124}I	−87363.5	2.4				4.1760	d	0.0003	2^-	85	92Wo03 T	β^+=100	
^{124}Xe	−87657.5	2.0				STABLE		>48Py	0^+	96	89Ba22 T	IS=0.10 1; 2β^+ ?	
^{124}Cs	−81743	12				30.9	s	0.4	1^+	85	93Al03 T	β^+=100	*
^{124}Cs^m	−81280	12	462.6	0.5		6.3	s	0.2	$(7)^+$	85		IT=100	*
^{124}Ba	−79095	14				11.9	m	1.0	0^+	85		β^+=100	*
^{124}La	−70300#	300#			*	29	s	1	$(7^-,8^-)$	85	92Id01 JT	β^+=100	
^{124}La^m	−70200#	320#	100#	100#	*	2#	s		low		92Id01 J	IT ?	
^{124}Ce	−64720#	500#				6	s	2	0^+	85		β^+=100	
^{124}Pr	−53130#	600#				1.2	s	0.2			86Wi15 TD	β^+=100; β^+p=?	

*^{124}Ag D : β^-n intensity limit is from 93Ru01 **
*^{124}Ag^{m}I : "There is some evidence for a low-spin and a high-spin isomer in ^{124}Ag" **
*^{124}Cd T : 1.25(0.02) s in post cut-off date ENSDF'97 **
*^{124}In T : 3.11(0.10) s in post cut-off date ENSDF'97 **
*^{124}In^m T : 3.7(0.2) s in post cut-off date ENSDF'97 **
*^{124}Sb^m E : 10.8630(0.0011) in post cut-off date ENSDF'97 **
*^{124}Sb^n E : 36.8440(0.0014) and $J^{\pi}=(8)^-$ in post cut-off date ENSDF'97 **
*^{124}Cs T : average 93Al03=30.9(0.5) 78Ek05=30.8(0.5) **
*^{124}Cs^m E : 462.55(0.17) in post cut-off date ENSDF'97 **
*^{124}Ba T : 11.0(0.5) s in post cut-off date ENSDF'97 **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^{π}	Ens	Reference	Decay modes and intensities (%)
^{125}Ag	−64700#	400#				166	ms	7	$7/2^+$#		95Fe12 TD	β^-=100; β^-n=?
^{125}Cd	−73360	70			*	650	ms	20	$(3/2)^+$	94		β^-=100
^{125}Cd^m	−73310	50	50	70	BD*	570	ms	90	$(11/2^-)$	94		β^-=100
^{125}In	−80480	30				2.36	s	0.04	$9/2^{(+)}$	94		β^-=100
^{125}In^m	−80120	30	360.12	0.09		12.2	s	0.2	$1/2^{(-)}$	94		β^-=100
^{125}Sn	−85897.8	1.5				9.64	d	0.03	$11/2^-$	94		β^-=100
^{125}Sn^m	−85870.3	1.5	27.50	0.14		9.52	m	0.05	$3/2^+$	94		β^-=100
^{125}Sb	−88261.1	2.8				2.7582	y	0.0011	$7/2^+$	94		β^-=100
^{125}Te	−89027.8	1.9				STABLE			$1/2^+$	94		IS=7.139 6
^{125}Te^m	−88883.0	1.9	144.795	0.010		57.40	d	0.15	$11/2^-$	94		IT=100
^{125}I	−88842.0	1.9				59.408	d	0.008	$5/2^+$	94		ϵ=100
^{125}Xe	−87189.5	2.0				16.9	h	0.2	$1/2^+$	94	90Ne.A J	β^+=100
^{125}Xe^m	−86936.7	2.0	252.8	0.3		57	s	1	$9/2^-$	94	90Ne.A J	IT=100
^{125}Cs	−84091	8				45	m	1	$1/2^{(+)}$	94	81Th06 J	β^+=100
^{125}Ba	−79530	250				3.5	m	0.4	$1/2^{(+)}$	94		β^+=100
^{125}La	−73900#	300#				76	s	6	$(11/2^-)$	94		β^+=100
^{125}Ce	−66570#	400#				9.0	s	0.6	$(5/2^+)$	94	83Ni05 D	β^+=100; β^+p=?
^{125}Pr	−57910#	500#				3.3	s	0.7	$3/2^+$#		95Os03 TD	β^+=100; β^+p ?

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference		Decay modes and intensities (%)	
^{126}Ag	−61010#	400#					107	ms	12	3^+#		95Fe12	TD	β^-=100; β^-n=?	
^{126}Cd	−72330	50					506	ms	15	0^+	93			β^-=100	
^{126}In	−77810	40				*	1.60	s	0.10	$3^{(+)}$	93			β^-=100	
^{126}In^m	−77710	50	100	60	BD	*	1.64	s	0.05	$8^{(-\#)}$	93	79Fo10	J	β^-=100	
^{126}Sn	−86020	11					207	ky	21	0^+	93	96Ha45	T	β^-=100	*
^{126}Sb	−86400	30					12.46	d	0.03	$(8)^-$	93			β^-=100	
^{126}Sb^m	−86380	30	17.7	0.3			19.15	m	0.08	$(5)^+$	93			β^-=86 4; IT=14 4	
^{126}Sb^n	−86360	30	40.4	0.3			11	s		$(3)^-$	93			IT=100	
^{126}Te	−90070.3	1.9					Stable			0^+	93			IS=18.952 11	
^{126}I	−87915	4					13.11	d	0.05	2^-	93			β^+=56.3 20; β^-=43.7 20	
^{126}Xe	−89173	6					Stable			0^+	93			IS=0.09 1; 2β^+ ?	
^{126}Cs	−84349	12					1.64	m	0.02	1^+	93			β^+=100	
^{126}Ba	−82676	14					100	m	2	0^+	93			β^+=100	
^{126}La	−75110#	300#					54	s	2		94			β^+=100	
^{126}Ce	−70700#	400#					50	s	3	0^+	93			β^+=100	
^{126}Pr	−60260#	500#					3.12	s	0.18	(>5)	93	88Ba42	TJ	β^+=100; β^+p=?	*
^{126}Nd	−53030#	700#					500#	ms	300#	0^+				β^+ ?	
*^{126}Sn	T : half-life has been determined from isotopic abundance 0.000923(87)%														**
*^{126}Pr	T : average 95Os03=3.14(0.22) 88Ba42=3.0(0.4) and 83Ni05=3.2(0.6)														**
^{127}Ag	−58800#	500#					79	ms	3	$7/2^+$#		96Wo.A	TD	β^-=100; β^-n=?	*
^{127}Cd	−68530	70					370	ms	70	$(3/2^+)$	96			β^-=100	
^{127}In	−76990	40					1.09	s	0.01	$9/2^{(+)}$	96	87Eb02	J	β^-=100; β^-n≤0.03	
^{127}In^m	−76530	70	460	70	BD		3.67	s	0.04	$(1/2^-)$	96			β^-=100; β^-n=0.69 4	
^{127}Sn	−83508	25					2.10	h	0.04	$(11/2^-)$	96			β^-=100	
^{127}Sn^m	−83503	25	4.7	0.3			4.13	m	0.03	$(3/2^+)$	96			β^-=100	
^{127}Sb	−86709	6					3.85	d	0.05	$7/2^+$	96			β^-=100	
^{127}Te	−88290	3					9.35	h	0.07	$3/2^+$	96			β^-=100	
^{127}Te^m	−88202	3	88.26	0.08			109	d	2	$11/2^-$	96			IT=97.6 2; β^-=2.4 2	
^{127}I	−88987	4					Stable			$5/2^+$	96			IS=100.	
^{127}Xe	−88325	4					36.4	d	0.1	$1/2^+$	96			ϵ=100	
^{127}Xe^m	−88028	4	297.10	0.08			69.2	s	0.9	$9/2^-$	96			IT=100	
^{127}Cs	−86240	9					6.25	h	0.10	$1/2^+$	96			β^+=100	
^{127}Ba	−82790	100					12.7	m	0.4	$1/2^+$	96			β^+=100	
^{127}Ba^m	−82710	100	80.33	0.12			1.9	s	0.2	$7/2^-$	96			IT=100	
^{127}La	−78100#	220#					5.1	m	0.1	$(11/2^-)$	96			β^+=100	
^{127}La^m	−78090#	220#	14.8	1.2			3.7	m	0.4	$(3/2^+)$	96			β^+≈100; IT ?	
^{127}Ce	−71960#	300#				*	29	s	2	$(5/2^+)$	96	96Ge07	T	β^+=100	
^{127}Ce^m	−71960#	320#	0#	100#		*	34	s	2	$(1/2^+)$		96Ge07	TJD	β^+=100	
^{127}Pr	−64430#	400#					4.9	s	0.3	$3/2^+$#	96			β^+=100	
^{127}Nd	−55420#	600#					1.8	s	0.4	$5/2^+$#	96			β^+=100; β^+p=?	
*^{127}Ag	T : supersedes 95Fe12=109(25) from same group														**

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{128}Ag							58	ms	5			96Wo.A TD	β^-=100; β^-n=?	
^{128}Cd	−67290	290					340	ms	30	0^+	84	86Go10 T	β^-=100	
^{128}In	−74360	50					776	ms	24	$(2,3)^+$	84	93Ru01 TD	β^-=100; β^-n=0.038 3	
^{128}In^m	−74040	50	320	60	BD		776	ms	24	$(7,8)^-$	84	93Ru01 T	β^-=100	
^{128}Sn	−83336	27					59.1	m	0.5	0^+	84		β^-=100	
^{128}Sn^m	−81245	27	2091.48	0.12			6.5	s	0.5	(7^-)	84		IT=100	
^{128}Sb	−84610	25				*	9.01	h	0.03	8^-	84		β^-=100	
^{128}Sb^m	−84600	24	10	7		*	10.4	m	0.2	5^+	84	95Au04 E	β^-=96.4; IT=3.6	
^{128}Te	−88993.6	1.8					2.2	Yy	0.3	0^+	84	96Ta04 T	IS=31.687 11; 2β^-=100	*
^{128}I	−87742	4					24.99	m	0.02	1^+	84		β^-=93.1 8; β^+=6.9 8	
^{128}Xe	−89860.8	1.4					Stable			0^+	84		IS=1.91 3	
^{128}Cs	−85932	6					3.640	m	0.014	1^+	84	93Al03 T	β^+=100	*
^{128}Ba	−85410	11					2.43	d	0.05	0^+	84		ϵ=100	
^{128}La	−78760	400				*	5.0	m	0.3	(5^+)	84	95Ha16 J	β^+=100	*
^{128}La^m	−78660#	410#	100#	100#		*	1#	m		low		95Ha16 J	IT ?	*
^{128}Ce	−75570#	300#					4.07	m	0.12	0^+	84	92Ha.C T	β^+=100	*
^{128}Pr	−66320#	400#					3.15	s	0.25	(4,5)		88Ba42 TJ	β^+=100; β^+p=?	*
^{128}Nd	−60180#	600#					5#	s		0^+	84	83Ni05 T	β^+ ?; β^+p ?	*
^{128}Pm	−48200#	900#										93Li40 D	β^+ ?; p=0	

*^{128}Te T : see also 92Be30=7.7(0.4) not used for consistency with ^{130}Te (see below) **
*^{128}Te D : from 92Be30 **
*^{128}Cs T : average 93Al03=3.66(0.02) 76He04=3.62(0.02) **
*^{128}La T : and 5.4(0.2) m in post cut-off date 97Ha.1 **
*^{128}La^m T : half-life shorter than 2 m, J^π=(1^+,2^+) in post cut-off date 97Ha.1 **
*^{128}Ce T : to be replaced by post cut-off date 97Ha.1=4.1(0.3) m, from same authors **
*^{128}Pr T : average 88Ba42=3.1(0.3) 85Wi07=3.2(+0.5−0.4) D : from 85Wi07 **
*^{128}Nd T : 83Ni05 gave 4(2) s. Proved, by 85Wi07, to be due to ^{128}Pr, not to ^{128}Nd **

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{129}Ag							50#	ms		$7/2^+$#		95Fe12 ID	β^-=100; β^-n=?	*
^{129}Cd	−63100#	400#					270	ms	40	$3/2^+$#	96	86Go10 D	β^-=100; β^-n ?	
^{129}In	−72980	130					611	ms	4	$9/2^+$#	96	93Ru01 T	β^-=100; β^-n=0.25 5	*
^{129}In^m	−72600	140	380	70	BD		1.23	s	0.03	$1/2^-$#	96		β^-≈100; IT<0.3; β^-n=2.5 5	
^{129}Sn	−80630	120					2.23	m	0.04	$3/2^+$#	96		β^-=100	
^{129}Sn^m	−80590	120	35.2	0.3			6.9	m	0.1	$11/2^-$#	96		β^-≈100; IT≈0.002	
^{129}Sb	−84626	21					4.40	h	0.01	$7/2^+$	96		β^-=100	
^{129}Sb^m	−82775	21	1851.05	0.10			17.7	m	0.1	$(19/2^-)$	96		β^-=85; IT=15	
^{129}Te	−87006	3					69.6	m	0.3	$3/2^+$	96		β^-=100	
^{129}Te^m	−86901	3	105.50	0.05			33.6	d	0.1	$11/2^-$	96		IT=63 17; β^-=37 17	
^{129}I	−88504	3					15.7	My	0.4	$7/2^+$	96		β^-=100	
^{129}Xe	−88697.4	0.8					Stable			$1/2^+$	96		IS=26.4 6	
^{129}Xe^m	−88461.3	0.8	236.14	0.05			8.88	d	0.02	$11/2^-$	96		IT=100	
^{129}Cs	−87501	5					32.06	h	0.06	$1/2^+$	96		β^+=100	
^{129}Ba	−85070	11					2.23	h	0.11	$1/2^+$	96		β^+=100	
^{129}Ba^m	−85062	11	8.42	0.06			2.16	h	0.02	$7/2^+$#	96		β^+≈100; IT=?	
^{129}La	−81350	50					11.6	m	0.2	$3/2^+$	96		β^+=100	
^{129}La^m	−81180	50	172.1	0.4			560	ms	50	$11/2^-$	96		IT=100	
^{129}Ce	−76300#	210#					3.5	m	0.3	$(5/2^+)$	96	93Al03 T	β^+=100	*
^{129}Pr	−69990#	300#				*&	30	s	4	$(3/2^+)$	96	96Gi08 J	β^+=100	
^{129}Pr^m	−69910#	310#	80#	80#		*&				$11/2^-$#			β^+ ?	*
^{129}Nd	−62170#	360#					4.9	s	0.2	$5/2^+$#	96		β^+=100; β^+p=?	
^{129}Pm	−52950#	800#								$5/2^+$#			β^+ ?	

*^{129}Ag I : observed, by 95Fe12, with low statistics in β^-n decay **
*^{129}In T : average 93Ru01=611(5) 86Wa17=610(10) **
*^{129}Ce J : from 96Gi08 ($5/2^+$ in Ensdf was from theory) **
*^{129}Pr^m E : estimated from $11/2^-$ in isotopes ^{131}Pr=152(0) ^{133}Pr=167(0) ^{135}Pr=358(0) **
*^{129}Pr^m E : 382.7 J^π=$(11/2^-)$ in post cut-off date 97Gi.2 **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{130}Cd	−61500#	400#				200	ms	40	0^+	90		β^-=100; β^-n≈4	
^{130}In	−70000	50			*	278	ms	3	1^-	90	85Re.A T	β^-=100; β^-n=1.01 22	*
^{130}In^m	−69950	50	50	50	BD*	538	ms	5	(10^-)	90	93Ru01 TD	β^-=100; β^-n=1.65 18	*
^{130}In^n	−69600	60	400	60	BD	550	ms	10	(5^+)	90	93Ru01 D	β^-=100; β^-n=1.65 18	
^{130}Sn	−80246	29				3.72	m	0.04	0^+	90		β^-=100	
^{130}Sn^m	−78299	29	1946.88	0.10		1.7	m	0.1	(7^-)	90		β^-=100	
^{130}Sb	−82394	25				39.5	m	0.8	(8^-)	90		β^-=100	
^{130}Sb^m	−82389	25	5.10	0.20		6.3	m	0.2	$(5)^+$	90	94Wa.AE	β^-=100	
^{130}Te	−87352.9	1.9				790	Zy	100	0^+	90	96Ta04 TD	IS=33.799 10; 2β^-=100	*
^{130}I	−86933	3				12.36	h	0.03	5^+	90		β^-=100	
^{130}I^m	−86893	3	39.9525	0.0013		9.0	m	0.1	2^+	90		IT=84 2; β^-=16 2	
^{130}Xe	−89881.8	0.9				Stable			0^+	94		IS=4.1 1	
^{130}Cs	−86903	8				29.21	m	0.04	1^+	90		β^+=98.4; β^-=1.6	
^{130}Cs^m	−86740	8	163.25	0.11		3.46	m	0.06	5^-	90		IT≈100; β^+=0.16 2	
^{130}Ba	−87271	7				Stable			0^+	94		IS=0.106 2; 2β^+ ?	
^{130}Ba^m	−84796	7	2475.12	0.18		8.8	ms	0.2	8^-	94	94Br15 T	IT=100	
^{130}La	−81670#	210#				8.7	m	0.1	$3^{(+)}$	96		β^+=100	
^{130}Ce	−79460#	610#				22.9	m	0.5	0^+	94	96Xu04 T	β^+=100	
^{130}Pr	−71370#	300#				40.0	s	0.4	(6, 7)	94	88Ba42 J	β^+=100	
^{130}Pr^m	−71370#	300#							2^+#		88Ba42 J		*
^{130}Nd	−66340#	500#				28	s	3	0^+	90		β^+=100	
^{130}Pm	−55470#	700#				2.3	s	0.5		90	85Wi07 T	β^+=100; β^+p=?	*
^{130}Sm	−47850#	900#				500#	ms	300#	0^+			β^+ ?	

*^{130}In D : β^-n intensity is from 93Ru01 **
*^{130}In^m T : average 93Ru01=542(9) 85Re.A=532(6) and 86Wa17=550(10) **
*^{130}In^m T : 76Lu02=580(10) at variance, not used **
*^{130}Te T : see also numerous (not used) results in 95Tr07 **
*^{130}Pr^m J : there is also a low-spin component in ^{130}Pr activity **
*^{130}Pm T : symmetrized from 2.2(+0.6−0.4) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{131}Cd						180#	ms		$7/2^-$#			β^- ?	
^{131}In	−68220	80				280	ms	30	$(9/2^+)$	94	93Ru01 D	β^-=100; β^-n=2.2 3	
^{131}In^m	−67860	80	350	40	BD	350	ms	50	$(1/2^-)$	94		β^-≈100; β^-n≤2.0 4; ...	*
^{131}In^n	−64120	100	4100	80	BD	320	ms	60	$(19/2^+..23/2^+)$	94		β^->99; β^-n=0.028 5; IT<1	
^{131}Sn	−77390	70				56.0	s	0.5	$(3/2^+)$	94		β^-=100	
^{131}Sn^m	−77150	70	241.8	0.8		58.4	s	0.5	$(11/2^-)$	94		β^-=100; IT≤0.000401 13	
^{131}Sb	−82020	70				23.03	m	0.04	$(7/2^+)$	94		β^-=100	
^{131}Te	−85211.3	2.0				25.0	m	0.1	$3/2^+$	94		β^-=100	
^{131}Te^m	−85029.1	2.0	182.250	0.020		30	h	2	$11/2^-$	94		β^-=77.8 16; IT=22.2 16	
^{131}I	−87444.8	1.1				8.02070	d	0.00011	$7/2^+$	94		β^-=100	
^{131}Xe	−88415.6	1.0				Stable			$3/2^+$	94		IS=21.2 4	
^{131}Xe^m	−88251.7	1.0	163.930	0.008		11.84	d	0.07	$11/2^-$	94		IT=100	
^{131}Cs	−88063	5				9.689	d	0.016	$5/2^+$	94		ϵ=100	
^{131}Ba	−86693	7				11.50	d	0.06	$1/2^+$	94		β^+=100	
^{131}Ba^m	−86506	7	187.14	0.12		14.6	m	0.2	$9/2^-$	94		IT=100	
^{131}La	−83730	100				59	m	2	$3/2^+$	94		β^+=100	
^{131}Ce	−79710	410				10.2	m	0.3	$(7/2^+)$	96		β^+=100	
^{131}Ce^m	−79650	410	61.8	0.1		5.0	m	1.0	$(1/2^+)$	96	96Gi08 E	β^+=100	
^{131}Pr	−74460	440				1.50	m	0.03	$(3/2^+)$	94	96Gi08 T	β^+=100	*
^{131}Pr^m	−74310	440	152.4	0.2		5.7	s	0.2	$(11/2^-)$	94	96Ge12 ED	IT=96.4 12; β^+=3.6 12	
^{131}Nd	−67900	460				33	s	3	$(5/2)^{(+\#)}$	94	96Ge12 T	β^+=100; β^+p=?	
^{131}Pm	−59800#	600#							$5/2^+$#	94		β^+ ?; β^+p ?	
^{131}Sm	−50400#	900#				1.2	s	0.2	$5/2^+$#	94		β^+=100; β^+p=?	

*^{131}In^m D : ...; IT LE 0.018 **
*^{131}Pr T : average 96Gi08=1.57(0.07) 93Al03=1.48(0.02) and 83Ga.A=1.58(0.05) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^{π}	Ens	Reference	Decay modes and intensities (%)	
^{132}In	−62490	70				206	ms	4	(7^-)	92	93Ru01TD	β^-=100; β^-n=5.2 12	*
^{132}Sn	−76621	26				39.7	s	0.5	0^+	92		β^-=100	
^{132}Sb	−79724	23				2.79	m	0.05	(4^+)	92		β^-=100	
^{132}Sb^{m}	−79520	40	200	30		4.15	m	0.05	(8^-)	92	89St06 E	β^-=100	
^{132}Te	−85210	11				3.204	d	0.013	0^+	92		β^-=100	
^{132}I	−85703	11				2.295	h	0.013	4^+	92		β^-=100	
^{132}I^{m}	−85595	10	108	15	BD	1.387	h	0.015	(8^-)	92		IT=86 2; β^-=14 2	
^{132}Xe	−89279.5	1.1				STABLE			0^+	92		IS=26.9 5	
^{132}Xe^{m}	−86527.2	1.1	2752.27	0.17		8.39	ms	0.11	(10^+)	92		IT=100	
^{132}Cs	−87160	3				6.479	d	0.007	2^+	92		β^+=98.13 9; β^-=1.87 9	
^{132}Ba	−88440	3				STABLE			0^+	94		IS=0.101 3; 2β^+ ?	
^{132}La	−83730	40				4.8	h	0.2	2^-	94		β^+=100	
^{132}La^{m}	−83540	40	188.18	0.11		24.3	m	0.5	6^-	94		IT=76; β^+=24	
^{132}Ce	−82450#	200#				3.51	h	0.11	0^+	96		β^+=100	
^{132}Ce^{m}	−80110#	200#	2340.8	0.5		13	ms	1	$(8^-,9^-)$	96		IT=100	
^{132}Pr	−75340#	200#			*	1.49	m	0.11	(2^+)	94	94Bu18JT	β^+=100	*
^{132}Pr^{m}	−75340#	220#	0#	100#	*				(5^+)		90Ko25J	β^+ ?	
^{132}Nd	−71610#	300#				1.56	m	0.10	0^+	94	95Bu11T	β^+=100	*
^{132}Pm	−61710#	500#				6.3	s	0.7	(3^+)	92		β^+=100; β^+p≈5e−5	
^{132}Sm	−55130#	700#				4.0	s	0.3	0^+	92		β^+=100; β^+p ?	
^{132}Eu	−42700#	900#									93Li40 D	β^+ ?; p=0	

*^{132}In T : average 93Ru01=221(11) 85Re.A=204(6) and 86Wa17=204(6) **

*^{132}Pr T : average 94Bu18=1.47(0.12) 74Ar27=1.6(0.3) **

*^{132}Nd T : average 95Bu11=1.47(0.12) 77Bo02=1.75(0.17) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^{π}	Ens	Reference	Decay modes and intensities (%)	
^{133}In	−57440#	400#				180	ms	15	$(9/2^+)$	95	96Ho16JT	β^-=100; β^-n=85 10	*
^{133}In^{m}	−57110#	400#	330#	40#		180#	ms	100#	$(1/2^-)$		96Ho16J	IT ?	
^{133}Sn	−70970	80				1.45	s	0.03	$(7/2^-)$	95	93Ru01D	β^-=100; β^-n=0.0294 24	
^{133}Sb	−78960	80				2.5	m	0.1	$(7/2^+)$	95		β^-=100	
^{133}Te	−82960	80				12.5	m	0.3	$(3/2^+)$	95		β^-=100	
^{133}Te^{m}	−82630	80	334.26	0.04		55.4	m	0.4	$(11/2^-)$	95		β^-=82.5 30; IT=17.5 30	
^{133}I	−85878	26				20.8	h	0.1	$7/2^+$	95		β^-=100	
^{133}I^{m}	−84244	26	1634.174	0.017		9	s	2	$(19/2^-)$	95		IT=100	
^{133}Xe	−87648	4				5.243	d	0.001	$3/2^+$	95		β^-=100	
^{133}Xe^{m}	−87415	4	233.221	0.018		2.19	d	0.01	$11/2^-$	95		IT=100	
^{133}Cs	−88075.7	3.0				STABLE			$7/2^+$	95		IS=100.	
^{133}Ba	−87558	3				10.51	y	0.05	$1/2^+$	95		ϵ=100	
^{133}Ba^{m}	−87270	3	288.247	0.009		38.9	h	0.1	$11/2^-$	95		IT≈100; ϵ=0.0096 11	
^{133}La	−85330	200				3.912	h	0.008	$5/2^+$	95		β^+=100	
^{133}Ce	−82390#	200#				97	m	4	$1/2^+$	95		β^+=100	
^{133}Ce^{m}	−82350#	200#	37.1	0.8		4.9	h	0.4	$9/2^-$	95		β^+=100	
^{133}Pr	−78060#	200#				6.5	m	0.3	$(3/2^+)$	95		β^+=100	
^{133}Nd	−72460#	300#				70	s	10	$(7/2^+)$	95		β^+=100	
^{133}Nd^{m}	−72330#	300#	127.97	0.11		70	s		$(1/2)^+$	95	95Br24 D	β^+=100	
^{133}Pm	−65470#	500#			&	15	s	3	$(3/2^+)$	95	96Ga17J	β^+=100	
^{133}Pm^{m}	−65340#	500#	130.4	1.0	&				$(11/2^-)$		96Ga17EJ	β^+ ?; IT ?	
^{133}Sm	−57070#	600#				3.7	s	0.7	$5/2^+$#	95		β^+=100; β^+p=?	
^{133}Eu	−47600#	900#							$11/2^-$#			β^+ ?	

*^{133}In D : β^-n intensity is from 93Ru01 **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{134}In	−51550#	500#				138	ms	8	high		96Ho16 TJ	β^-=100; β^-n>17; β^-2n<4	*
^{134}Sn	−66640	100				1.12	s	0.08	0^+	94		β^-=100; β^-n=17 13	
^{134}Sb	−74010	50			*	780	ms	60	(0^-)	95		β^-=100	
^{134}Sb^m	−73930	110	80	110	BD*	10.22	s	0.09	(7^-)	95		β^-=100; β^-n=0.091 8	
^{134}Te	−82400	30				41.8	m	0.8	0^+	95		β^-=100	
^{134}I	−83949	15				52.5	m	0.2	$(4)^+$	94		β^-=100	
^{134}I^m	−83633	15	316.49	0.22		3.60	m	0.10	$(8)^-$	94		IT=97.7 10; β^-=2.3 10	
^{134}Xe	−88124.4	0.8				STABLE		>11Py	0^+	94	89Ba22 T	IS=10.4 2; 2β^- ?	
^{134}Xe^m	−86158.9	0.9	1965.5	0.5		290	ms	17	7^-	94		IT=100	
^{134}Cs	−86895.9	3.0				2.0648	y	0.0010	4^+	94		β^-=100; ϵ=0.0003 1	
^{134}Cs^m	−86757	3	138.7441	0.0026		2.903	h	0.008	8^-	94		IT=100	
^{134}Ba	−88954.5	3.0				STABLE			0^+	95		IS=2.417 27	
^{134}La	−85241	26				6.45	m	0.16	1^+	94		β^+=100	
^{134}Ce	−84740	200				3.16	d	0.04	0^+	94		ϵ=100	
^{134}Pr	−78550#	300#			*	17	m	2	2^-	94		β^+=100	
^{134}Pr^m	−78550	220	0#	200#	*	11	m		(5^-)	94		β^+=100	
^{134}Nd	−75780#	330#				8.5	m	1.5	0^+	96		β^+=100	
^{134}Pm	−66610#	390#			*	22	s	1	(5^+)	94		β^+=100	
^{134}Pm^m	−66610#	400#	0#	100#	*	5	s		(2^+)	94		β^+=100	
^{134}Sm	−61460#	500#				10	s	1	0^+	94		β^+=100	
^{134}Eu	−50000#	700#				500	ms	200		94		β^+=100; β^+p=?	

*^{134}In D : β^-n and β^-2n intensity limits are from 95Jo.A **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{135}In						100#	ms		$9/2^+$#			β^- ?; β^-n ?	*
^{135}Sn	−60800#	400#				> 150	ns		$7/2^-$#		94Be24 T	β^- ?; β^-n ?	
^{135}Sb	−69710	110				1.680	s	0.015	$7/2^+$#	88	93Ru01TD	β^-=100; β^-n=17.6 22	*
^{135}Te	−77830	90				19.0	s	0.2	$(7/2^-)$	88		β^-=100	
^{135}I	−83788	23				6.57	h	0.02	$7/2^+$	88		β^-=100	
^{135}Xe	−86436	10				9.14	h	0.02	$3/2^+$	88		β^-=100	
^{135}Xe^m	−85909	10	526.551	0.013		15.29	m	0.05	$11/2^-$	88		IT≈100; β^-=0.004	
^{135}Cs	−87587	3				2.3	My	0.3	$7/2^+$	88		β^-=100	
^{135}Cs^m	−85954	3	1632.9	1.5		53	m	2	$19/2^-$	88		IT=100	
^{135}Ba	−87855.9	3.0				STABLE			$3/2^+$	88		IS=6.592 18	
^{135}Ba^m	−87588	3	268.219	0.020		28.7	h	0.2	$11/2^-$	88		IT=100	
^{135}La	−86656	10				19.5	h	0.2	$5/2^+$	88		β^+=100	
^{135}Ce	−84630	11				17.7	h	0.2	$1/2^{(+)}$	96		β^+=100	
^{135}Ce^m	−84184	11	445.8	0.2		20	s	1	$11/2^{(-)}$	96		IT=100	
^{135}Pr	−80910	150				24	m	2	$3/2^{(+)}$	96		β^+=100	
^{135}Nd	−76160#	210#				12.4	m	0.6	$9/2^-$	96		β^+=100	
^{135}Nd^m	−76100#	210#	65.1	0.5		5.5	m	0.5	$(1/2^+)$	96	89Ko07E	β^+=100	
^{135}Pm	−70220#	320#			*	49	s	3	$(5/2^+)$	96	89Ko07TJ	β^+=100	
^{135}Pm^m	−70120#	250#	100#	200#	*	40	s	3	$(11/2^-)$	96	89Ko07TJ	β^+=100	
^{135}Sm	−63020#	500#			*	10.3	s	0.5	$(7/2^+)$	96		β^+=100; β^+p=0.02 1	
^{135}Sm^m	−63020#	580#	0#	300#	*	2.4	s	0.9	$(3/2^+,5/2^+)$	88	89Vi04 TJD	β^+=100	*
^{135}Eu	−54290#	600#				1.5	s	0.2	$11/2^-$#	96		β^+=100; β^+p ?	
^{135}Gd						1.1	s	0.2	$5/2^+$#		96Xu07TD	β^+=100; β^+p≈2	

*^{135}In I : T=195(3) ms in 93Kr05 is a misprint for ^{133}In **

*^{135}Sb T : average 93Ru01=1.662(0.010) 77Ru04=1.706(0.014) and 68To19=1.700(0.020) **

*^{135}Sm^m I : existence of ^{135}Sm^m is discussed in ENSDF **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{136}Sn	−56500#	500#				> 150	ns		0^+		94Be24 T	β^- ?; β^-n ?	
^{136}Sb	−64590#	300#				923	ms	14	1^-#	94	93Ru01TD	β^-=100; β^-n=17 3	*
^{136}Te	−74420	50				17.63	s	0.08	0^+	94	93Ru01TD	β^-=100; β^-n=1.30 6	*
^{136}I	−79500	50				83.4	s	1.0	(1^-)	94		β^-=100	
^{136}I^m	−78850	110	650	120	BD	46.9	s	1.0	(6^-)	94		β^-=100	
^{136}Xe	−86424	7				Stable		>210Ey	0^+	94	93Vu02 T	IS=8.9 1; 2β^- ?	
^{136}Cs	−86344	4			*	13.16	d	0.03	5^+	94		β^-=100	
^{136}Cs^m	−86140#	140#	200#	140#	*	19	s	2	8^-	94		IT=?; β^- ?	
^{136}Ba	−88892.4	3.0				Stable			0^+	94		IS=7.854 36	
^{136}Ba^m	−86862	3	2030.52	0.02		308.4	ms	1.9	7^-	94		IT=100	
^{136}La	−86020	70				9.87	m	0.03	1^+	94		β^+=100	
^{136}La^m	−85780	70	241	7		114	ms	3	$(7,8)^{(-\#)}$	94	ABBW E	IT=100	*
^{136}Ce	−86500	50				Stable			0^+	94		IS=0.19 1; 2β^+ ?	
^{136}Pr	−81370	50				13.1	m	0.1	2^+	94		β^+=100	
^{136}Nd	−79160	60				50.7	m	0.3	0^+	96		β^+=100	
^{136}Pm	−71310	210			*	107	s	6	$5^{(+)},6^-$	94		β^+=100	
^{136}Pm^m	−71070#	320#	240#	240#	*	47	s	2	(2^+)	94		β^+=100	
^{136}Sm	−66790#	400#				47	s	2	0^+	94		β^+=100	
^{136}Eu	−56360#	500#			*	3.3	s	0.3	(7^+)	94	89Vi04 D	β^+=100; β^+p=0.09 3	
^{136}Eu^m	−56360#	710#	0#	500#	*	3.7	s	0.3	(3^+)	94	89Vi04 D	β^+=100; β^+p=0.09 3	
^{136}Gd	−49300#	700#				1#	s	0.5#	0^+			β^+ ?	

*^{136}Sb T : supersedes 76Lu02=820(20) from same group **

*^{136}Te T : average 93Ru01=17.66(0.09) 78Cr03=17.5(0.2) **

*^{136}La^m E : less than 22 keV above 230.1 level, from Ensdf, thus 230.1 + 11(7) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{137}Sn	−50500#	600#				> 150	ns		$5/2^-$#		94Be24 T	β^- ?	
^{137}Sb	−60260#	400#				> 150	ns		$7/2^+$#		94Be24 T	β^- ?; β^-n ?	
^{137}Te	−69560	120				2.49	s	0.05	$(7/2^-)$	94	93Ru01D	β^-=100; β^-n=2.99 16	
^{137}I	−76501	28				24.13	s	0.12	$(7/2^+)$	94	93Ru01TD	β^-=100; β^-n=7.14 23	*
^{137}Xe	−82379	7				3.818	m	0.013	$7/2^-$	94		β^-=100	
^{137}Cs	−86551.1	3.0				30.07	y	0.03	$7/2^+$	96		β^-=100	
^{137}Ba	−87726.8	3.0				Stable			$3/2^+$	94		IS=11.23 4	
^{137}Ba^m	−87065	3	661.660	0.003		2.552	m	0.001	$11/2^-$	94		IT=100	
^{137}La	−87130	50				60	ky	20	$7/2^+$	94		ϵ=100	
^{137}Ce	−85900	50				9.0	h	0.3	$3/2^+$	94		β^+=100	
^{137}Ce^m	−85650	50	254.29	0.05		34.4	h	0.3	$11/2^-$	94		IT=99.22 3; β^+=0.78 3	
^{137}Pr	−83200	50				1.28	h	0.03	$5/2^+$	94		β^+=100	
^{137}Nd	−79510	70				38.5	m	1.5	$1/2^+$	96		β^+=100	
^{137}Nd^m	−78990	70	519.6	0.5		1.60	s	0.15	$11/2^-$	96		IT=100	
^{137}Pm	−73860#	140#			*&	2#	m		$5/2^+$#			β^+ ?	
^{137}Pm^m	−73860	90	0#	100#	*&	2.4	m	0.1	$11/2^-$	94		β^+=100	
^{137}Sm	−67960	110				45	s	1	$(9/2^-)$	94		β^+=100	
^{137}Sm^m	−67780#	120#	180#	50#		20#	s		$1/2^+$#			β^+ ?	
^{137}Eu	−60350#	500#				8.4	s	0.5	$(11/2^-)$	94	88Be.A T	β^+=100	
^{137}Gd	−51560#	600#				7	s	3	$7/2^+$#	94		β^+=100; β^+p=?	

*^{137}I T : supersedes 74Ru08=24.5(0.2) from same group **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{138}Sb	−55000#	500#				> 150	ns		2^-#		94Be24 T	β^- ?; β^-n ?	
^{138}Te	−65930#	210#				1.4	s	0.4	0^+	95		β^-=100; β^-n=6.3 21	
^{138}I	−72300	80				6.49	s	0.07	(2^-)	95	93Ru01D	β^-=100; β^-n=5.46 18	*
^{138}Xe	−80120	40				14.08	m	0.08	0^+	95		β^-=100	
^{138}Cs	−82893	10				33.41	m	0.18	3^-	95		β^-=100	
^{138}Cs^m	−82813	10	79.9	0.3		2.91	m	0.08	6^-	95		IT=81 2; β^-=19 2	
^{138}Ba	−88267.2	3.0				Stable			0^+	95		IS=71.70 7	
^{138}La	−86529	4				105	Gy	2	5^+	95		IS=0.0902 2; β^+=66.4 5; ...	*
^{138}Ce	−87574	11				Stable			0^+	95		IS=0.25 1; 2β^+ ?	
^{138}Ce^m	−85445	11	2129.17	0.12		8.65	ms	0.20	7^-	95		IT=100	

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{138}Pr	−83137	15				1.45	m	0.05	1^+	95		β^+=100	
^{138}Pr^m	−82773	23	364	22	BD	2.12	h	0.04	7^-	95		β^+=100	
^{138}Nd	−82040	#200#				5.04	h	0.09	0^+	95		β^+=100	
^{138}Pm	−75040	#320#			*&	3.24	m	0.05	$(5^-,4^+)$	95		β^+=100	
^{138}Pm^m	−74950	#210#	80	260	BD*&	10	s	2	1^+	95		β^+=100	
^{138}Pm^n			non existent		EU	3.24	m	0.05	(3^+)	95	81De38I	β^+=100	*
^{138}Sm	−71220	#300#				3.1	m	0.2	0^+	95		β^+=100	
^{138}Eu	−61990	#400#				12.1	s	0.6	(6^-)	95		β^+=100	
^{138}Gd	−55920	#500#				5#	s	2#	0^+	95		β^+ ?	
^{138}Tb	−43900	#800#				400#	ms				93Li40 D	β^+ ?; p=0	

*^{138}I T : ENSDF averages 6 values. Also 93Ru01=6.23(0.03) **
*^{138}La D : ...; β^-=33.6 5 **
*^{138}Pm^n D : Arguments for a third isomer, with intermediate spin, is not convincing **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{139}Sb	−50570	#600#				> 150	ns		$7/2^+$#		94Be24 T	β^- ?	
^{139}Te	−60800	#400#				> 150	ns		$5/2^-$#		94Be24 T	β^- ?; β^-n ?	
^{139}I	−68840	30				2.282	s	0.010	$(7/2^+)$	89	93Ru01TD	β^-=100; β^-n=10.0 3	*
^{139}Xe	−75650	21				39.68	s	0.14	$3/2^-$	89		β^-=100	
^{139}Cs	−80707	4				9.27	m	0.05	$7/2^+$	89		β^-=100	
^{139}Ba	−84919.3	3.0				83.06	m	0.28	$7/2^-$	89		β^-=100	
^{139}La	−87236	3				STABLE			$7/2^+$	89		IS=99.9098 2	
^{139}Ce	−86958	8				137.640	d	0.023	$3/2^+$	89		ϵ=100	
^{139}Ce^m	−86204	8	754.24	0.08		56.54	s	0.13	$11/2^-$	89	94It.A T	IT=100	
^{139}Pr	−84829	8				4.41	h	0.04	$5/2^+$	89		β^+=100	
^{139}Nd	−82040	50				29.7	m	0.5	$3/2^+$	89		β^+=100	
^{139}Nd^m	−81810	50	231.15	0.05		5.50	h	0.20	$11/2^-$	89		β^+=88.2 4; IT=11.8 4	
^{139}Pm	−77540	60				4.15	m	0.05	$(5/2)^+$	89		β^+=100	
^{139}Pm^m	−77350	60	188.7	0.3		180	ms	20	$(11/2)^-$	89		IT≈100; β^+=0.16#	
^{139}Sm	−72375	15				2.57	m	0.10	$1/2^{(+)}$	89	87Al.A J	β^+=100	
^{139}Sm^m	−71917	15	457.8	0.4		10.7	s	0.6	$(11/2)^-$	89		IT=93.7 5; β^+=6.3 5	
^{139}Eu	−65360	#150#				17.9	s	0.6	$(11/2)^-$	89		β^+=100	
^{139}Gd	−57680	#500#				5.7	s	0.4	$9/2^-$#	89	88Be.A T	β^+≈100; β^+p=?	*
^{139}Tb	−48410	#700#				700#	ms		$5/2^+$#			β^+ ?	

*^{139}I T : average 93Ru01=2.280(0.011) 80Al15=2.29(0.02) **
*^{139}Gd T : average 88Be.A=5.8(0.4) 83Ni05=4.9(1.0) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{140}Te	−57100	#500#				> 150	ns		0^+		94Be24 T	β^- ?; β^-n ?	
^{140}I	−64080	#210#				860	ms	40	$(3)^{(-\#)}$	95		β^-=100; β^-n=9.3 10	
^{140}Xe	−73000	60				13.60	s	0.10	0^+	95		β^-=100	
^{140}Cs	−77056	9				63.7	s	0.3	1^-	95		β^-=100	
^{140}Ba	−83276	8				12.752	d	0.003	0^+	95		β^-=100	
^{140}La	−84326	3				1.6781	d	0.0003	3^-	95		β^-=100	
^{140}Ce	−88088	3				STABLE			0^+	95		IS=88.48 10	
^{140}Pr	−84700	7				3.39	m	0.01	1^+	95		β^+=100	
^{140}Nd	−84477	19				3.37	d	0.02	0^+	95		ϵ=100	
^{140}Pm	−78430	30				9.2	s	0.2	1^+	95		β^+=100	
^{140}Pm^m	−77990	70	440	70	BD	5.95	m	0.05	8^-	95		β^+=100	
^{140}Sm	−75459	15				14.82	m	0.12	0^+	95		β^+=100	
^{140}Eu	−66990	50				1.51	s	0.02	1^+	95		β^+=100	
^{140}Eu^m	−66780	50	210	15		125	ms	2	5^-#	95	ABBW E	IT≈100; β^+<1	*
^{140}Gd	−61530	#400#				15.8	s	0.4	0^+	95	91Fi03 T	β^+=100	
^{140}Tb	−50730	#900#				2.4	s	0.2	5	95	91Fi03 D	β^+=100; β^+p=0.26 13	*
^{140}Dy	−43040	#900#				700#	ms	400#	0^+			β^+ ?	

*^{140}Eu^m E : less than 50 keV above 185.3 level, from ENSDF, thus 185.3 + 25(15) **
*^{140}Tb D : 0.26(13)% is for β^+p decay (not p, as given by ENSDF) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{141}Te	−51800#	500#				> 150	ns		$5/2^-$#		94Be24 T	β^- ?; β^-n ?	
^{141}I	−60710#	300#				430	ms	20	$7/2^+$#	91	93Ru01 D	β^-=100; β^-n=22 3	
^{141}Xe	−68330	90				1.73	s	0.01	$5/2^{(-\#)}$	91	93Ru01 D	β^-=100; β^-n=0.043 3	*
^{141}Cs	−74479	10				24.94	s	0.06	$7/2^+$	91	93Ru01 D	β^-=100; β^-n=0.035 3	
^{141}Ba	−79730	8				18.27	m	0.07	$3/2^-$	91		β^-=100	
^{141}La	−82943	5				3.92	h	0.03	$(7/2^+)$	91		β^-=100	
^{141}Ce	−85445	3				32.501	d	0.005	$7/2^-$	91		β^-=100	
^{141}Pr	−86026	3				Stable			$5/2^+$	91		IS=100.	
^{141}Nd	−84203	4				2.49	h	0.03	$3/2^+$	91		β^+=100	
^{141}Nd^m	−83446	4	756.7	0.1		62.0	s	0.8	$11/2^-$	91		IT≈100; β^+<0.05	
^{141}Pm	−80475	27				20.90	m	0.05	$5/2^+$	91		β^+=100	
^{141}Sm	−75946	12				10.2	m	0.2	$1/2^+$	91		β^+=100	
^{141}Sm^m	−75770	12	175.8	0.3		22.6	m	0.2	$11/2^-$	91		β^+≈100; IT=0.31 3	
^{141}Eu	−69968	28				40.7	s	0.5	$5/2^+$	91	93Al03 T	β^+=100	*
^{141}Eu^m	−69872	28	96.4	0.1		2.7	s	0.3	$11/2^-$	91		IT=86 3; β^+=14 3	*
^{141}Gd	−63150#	300#				14	s	4	$(1/2^+)$	91		β^+=100; β^+p=0.03 1	
^{141}Gd^m	−62770#	300#	377.8	0.2		24.5	s	0.5	$(11/2^-)$	91		β^+=89 2; IT=11 2	
^{141}Tb	−54810#	600#			*	3.5	s	0.2	$(5/2^-)$	91		β^+=100	
^{141}Tb^m	−54810#	630#	0#	200#	EU*	7.9	s	0.6	$11/2^-$#	91	88Be.A I	β^+=100	*
^{141}Dy	−45470#	700#				900	ms	200	$(9/2^-)$	91		β^+=100; β^+p=?	

*^{141}Xe J : positive parity, adopted by Ensdf, is the only case for even-Z/odd-N **
*^{141}Xe J : nuclides in this region. Needs to be confirmed. **
*^{141}Eu T : average 93Al03=41.4(0.7) 77De25=40.0(0.7) **
*^{141}Eu^m D : symmetrized from IT=87(+2−4)% and β^+=13(+4−2)% **
*^{141}Tb^m I : existence discussed in 88Be.A. Provisionally accepted **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{142}Te	−47970#	600#				> 150	ns		0^+		94Be24 T	β^- ?	
^{142}I	−55720#	400#				200	ms		2^-#		75Kr17 T	β^-=100; β^-n=25#	
^{142}Xe	−65480	100				1.22	s	0.02	0^+	91	93Ru01 D	β^-=100; β^-n=0.41 3	
^{142}Cs	−70521	11				1.689	s	0.011	0^-	91	93Ru01 TD	β^-=100; β^-n=0.091 4	*
^{142}Ba	−77828	6				10.6	m	0.2	0^+	91		β^-=100	
^{142}La	−80039	6				91.1	m	0.5	2^-	91		β^-=100	
^{142}Ce	−84543	3				Stable		>50Py	0^+	91	61Ma05 T	IS=11.08 10; 2β^- ?; α ?	*
^{142}Pr	−83797	3				19.12	h	0.04	2^-	91		β^-≈100; ϵ=0.0164 8	
^{142}Pr^m	−83793	3	3.6815	0.0011		14.6	m	0.5	5^-	91		IT=100	
^{142}Nd	−85959.5	2.8				Stable			0^+	91		IS=27.13 12	
^{142}Pm	−81090	40				40.5	s	0.5	1^+	91		β^+=100	
^{142}Pm^m	−80210	40	883.17	0.16		2.0	ms	0.2	$(8)^-$	91		IT=100	
^{142}Sm	−78997	11				72.49	m	0.05	0^+	96		β^+=100	
^{142}Eu	−71350	30				2.36	s	0.10	1^+	96	91Fi03 T	β^+=100	*
^{142}Eu^m	−70830	40	520	50	BD	1.223	m	0.008	8^-	96	93Al03 T	β^+=100	
^{142}Gd	−66850#	300#				70.2	s	0.6	0^+	91		β^+=100	
^{142}Tb	−56950#	760#				597	ms	17	1^+	91	91Fi03 D	β^+=100; β^+p=0.0022 11	
^{142}Tb^m	−56670#	760#	280.1	1.0		303	ms	7	(5^-)	91	91Fi03 D	IT≈100; β^+<0.5	
^{142}Dy	−50050#	790#				2.3	s	0.3	0^+	91	91Fi03 D	β^+=100; β^+p=0.06 3	
^{142}Ho	−37390#	1000#				300#	ms				93Li40 D	β^+ ?; p=0	

*^{142}Cs T : average 93Ru01=1.684(0.014) 77Re05=1.70(0.02) **
*^{142}Ce T : lower limit is for α decay (not double β^- decay, as given by Ensdf) **
*^{142}Eu T : average 91Fi03=2.34(0.12) 75Ke08=2.4(0.2) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{143}I	−52100#	400#				> 150	ns		$7/2^+$#		94Be24 T	β^- ?	*
^{143}Xe	−60650#	220#				300	ms	30	$5/2^-$	91		β^-=100	
^{143}Cs	−67691	22				1.791	s	0.008	$3/2^+$	91	93Ru01 TD	β^-=100; β^-n=1.62 6	*
^{143}Ba	−73945	13				14.33	s	0.08	$5/2^-$	91		β^-=100	
^{143}La	−78191	15				14.2	m	0.1	$(7/2)^+$	91		β^-=100	
^{143}Ce	−81616	3				33.039	h	0.006	$3/2^-$	91		β^-=100	
^{143}Pr	−83078	3				13.57	d	0.02	$7/2^+$	91		β^-=100	
^{143}Nd	−84011.8	2.8				Stable			$7/2^-$	96		IS=12.18 6	
^{143}Pm	−82970	4				265	d	7	$5/2^+$	91		β^+=100	
^{143}Sm	−79528	4				8.83	m	0.01	$3/2^+$	91		β^+=100	
^{143}Sm^m	−78774	4	754.0	0.2		66	s	2	$11/2^-$	91		IT≈100; β^+=0.24 6	
^{143}Sm^n	−76734	4	2794.7	0.5		30	ms	3	$23/2^{(-)}$	91		IT=100	
^{143}Eu	−74253	13				2.586	m	0.026	$5/2^+$	96	93Al03 T	β^+=100	*
^{143}Gd	−68240	200				39	s	2	$(1/2)^+$	91	78Fi02 D	β^+=100; β^+p=?; $\beta^+\alpha$=?	*
^{143}Gd^m	−68090	200	152.6	0.5		112	s	2	$11/2^-$	91	78Fi02 D	β^+=100; β^+p=?; $\beta^+\alpha$=?	
^{143}Tb	−60780#	400#			*	12	s	1	$(11/2^-)$	94		β^+=100	
^{143}Tb^m	−60780#	450#	0#	200#	*	< 21	s		$5/2^+$#	94		β^+ ?	
^{143}Dy	−52320#	500#				3.9	s	0.4	$1/2^+$#		83Ni05 TD	β^+=100; β^+p=?	*
^{143}Ho	−42210#	700#				300#	ms		$11/2^-$#			β^+ ?	

*^{143}I D : from systematics, β^-n can be estimated β^-n=40%# **
*^{143}Cs T : average 93Ru01=1.809(9) 79En02=1.78(1) 77Re05=1.79(2) 76Lu02=1.78(1) **
*^{143}Eu T : average 93Al03=2.57(0.03) 74Ke07=2.63(0.05) **
*^{143}Gd D : 78Fi02: β^+p and/or $\beta^+\alpha$ for ^{143}Gd+^{143}Gd^m=0.001%, 39 particles detected **
*^{143}Dy T : average 84Ni03=3.2(0.6) 83Ni05=4.1(0.3) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{144}I	−46940#	500#				> 150	ns		1^-#		94Be24 T	β^- ?	*
^{144}Xe	−57540#	320#				1.15	s	0.20	0^+	89		β^-=100; β^-n ?	
^{144}Cs	−63316	28			*	993	ms	13	$1^{(-\#)}$	89	93Ru01 TD	β^-=100; β^-n=3.20 21	*
^{144}Cs^m	−63020#	200#	300#	200#	*	< 1	s		(> 3)	89		β^-=?; IT ?	
^{144}Ba	−71780	14				11.5	s	0.2	0^+	89		β^-=100; β^-n=3.6 7	
^{144}La	−74900	60				40.8	s	0.4	(3^-)	89		β^-=100	
^{144}Ce	−80441	4				284.893	d	0.008	0^+	89		β^-=100	
^{144}Pr	−80760	4				17.28	m	0.05	0^-	89		β^-=100	
^{144}Pr^m	−80701	4	59.03	0.03		7.2	m	0.3	3^-	89		IT≈100; β^-=0.07	
^{144}Nd	−83757.5	2.8				2.29	Py	0.16	0^+	96		IS=23.80 12; α=100	
^{144}Pm	−81426	4				363	d	14	5^-	89		β^+=100	
^{144}Sm	−81976	3				Stable			0^+	89		IS=3.1 1; 2β^+ ?; α ?	
^{144}Eu	−75661	18				10.2	s	0.1	1^+	96		β^+=100	
^{144}Gd	−71920#	200#				4.5	m	0.1	0^+	96		β^+=100	
^{144}Tb	−62850#	300#				1	s		(1^+)	89		β^+=100; β^+p ?	
^{144}Tb^m	−62450#	300#	396.9	0.5		4.25	s	0.15	(6^-)	89		IT=66; β^+=34; β^+p ?	
^{144}Dy	−56760#	400#				9.1	s	0.4	0^+	89		β^+=100; β^+p=?	
^{144}Ho	−45050#	600#				700	ms	100		89		β^+=100; β^+p=?	
^{144}Er	−36710#	800#				400#	ms	200#	0^+			β^+ ?	

*^{144}I D : from systematics, β^-n can be estimated β^-n=40%# **
*^{144}Cs T : average 93Ru01=982(5) 79Ri09=1000(10) and 79En02=1030(10) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference		Decay modes and intensities (%)	
^{145}Xe	−52470#	400#				900	ms	300	$3/2^-$#		71Wo02	TD	β^-=100	
^{145}Cs	−60190	50				582	ms	6	$3/2^+$	93	93Ru01	TD	β^-=100; β^-n=14.3 8	*
^{145}Ba	−68070	60				4.31	s	0.16	$5/2^-$	93			β^-=100	
^{145}La	−72990	70				24.8	s	2.0	$(5/2^+)$	93	96Ur02	J	β^-=100	
^{145}Ce	−77100	40				3.01	m	0.06	$(3/2)^-$	93			β^-=100	
^{145}Pr	−79636	8				5.984	h	0.010	$7/2^+$	93			β^-=100	
^{145}Nd	−81441.6	2.8				Stable			$7/2^-$	93			IS=8.30 6	
^{145}Pm	−81279	4				17.7	y	0.4	$5/2^+$	93			ϵ=100; α=2.8e−7	
^{145}Sm	−80662	3				340	d	3	$7/2^-$	93			ϵ=100	
^{145}Eu	−78002	4				5.93	d	0.04	$5/2^+$	93			β^+=100	
^{145}Gd	−72950	40				23.0	m	0.4	$1/2^+$	96			β^+=100	
^{145}Gd^m	−72200	40	748.7	0.1		85	s	3	$11/2^-$	96			IT=94.3 5; β^+=5.7 5	
^{145}Tb	−66250#	230#			*	20#	m		$(3/2^+)$	96	93To04	J	β^+ ?	
^{145}Tb^m	−66250	200	0#	100#	*	30.9	s	0.7	$(11/2^-)$	96	93Al03	T	β^+=100	*
^{145}Dy	−58730#	300#				9.5	s	1.0	$(1/2^+)$	93	93Al03	T	β^+=100; β^+p=?	*
^{145}Dy^m	−58610#	300#	118.2	0.2		14.1	s	0.7	$(11/2^-)$	93	93To04	T	β^+=100	*
^{145}Ho	−49480#	600#				2.4	s	0.1	$(11/2^-)$	93			β^+=100	
^{145}Er	−39630#	700#				900	ms	300	$1/2^+$#	93			β^+=100; β^+p=?	

*^{145}Cs T : average 93Ru01=579(6) 82Ra13=594(13) **
*^{145}Tb^m T : average 93Al03=31.6(0.6) 82No08=29.5(1.0) and 82Al07=29.5(1.5) **
*^{145}Dy T : average 93Al03=10.5(1.5) 93To04=6(2) and 84Sc.C=10(1) **
*^{145}Dy^m T : average 93To04=14.5(1.0) 82No08=13.6(1.0) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference		Decay modes and intensities (%)	
^{146}Xe	−49090#	400#				$>$ 150	ns		0^+	90	94Be24	T	β^- ?	
^{146}Cs	−55740	80				323	ms	6	1^-	90	93Ru01	TD	β^-=100; β^-n=14.2 5	*
^{146}Ba	−65110	80				2.22	s	0.07	0^+	90	93Ru01	D	β^-=100; β^-n$<$0.02	
^{146}La	−69210	70			*	6.27	s	0.10	2^-	90	93Ru01	D	β^-=100; β^-n$\leq$0.007	
^{146}La^m	−69080	150	130	130	*	10.0	s	0.1	(6^-)	90	79Ke02	E	β^-=100	*
^{146}Ce	−75740	70				13.52	m	0.13	0^+	90			β^-=100	
^{146}Pr	−76770	60				24.15	m	0.18	$(2)^-$	90			β^-=100	
^{146}Nd	−80935.5	2.8				Stable			0^+	90			IS=17.19 9; 2β^- ?; α ?	
^{146}Pm	−79464	5				5.53	y	0.05	3^-	90			ϵ=66.0 13; β^-=34.0 13	
^{146}Sm	−81006	4				103	My	5	0^+	90			α=100	
^{146}Eu	−77128	7				4.59	d	0.03	4^-	90			β^+=100	
^{146}Gd	−76098	5				48.27	d	0.10	0^+	96			ϵ=100	
^{146}Tb	−67830	50			*	8	s	4	1^+	90			β^+=100	
^{146}Tb^m	−67680#	110#	150#	100#	*	24.1	s	0.5	5^-	90	93Al03	T	β^+=100	
^{146}Tb^n	−66900#	110#	930#	100#		1.18	ms	0.02	(10^+)	90			IT=100	*
^{146}Dy	−62670	110				33.2	s	0.7	0^+	90	93Al03	T	β^+=100	
^{146}Dy^m	−59730	110	2935.6	0.7		150	ms	20	(10^+)	90			IT=100	
^{146}Ho	−52070#	500#				3.6	s	0.3	(10^+)	90			β^+=100; β^+p=?	
^{146}Er	−44600#	600#				1.7	s	0.6	0^+		93To05	TD	β^+=100; β^+p=?	
^{146}Tm	−31210#	700#				235	ms		(6^-)		93Li18	TD	p$\approx$100; β^+ ?	
^{146}Tm^m	−31140#	700#	71	7	p	72	ms		(10^+)		93Li18	TD	p$\approx$100; β^+ ?	

*^{146}Cs T : average 93Ru01=321(2) 76Lu02=343(7) **
*^{146}La^m E : derived from $Q(^{146}La^m)$=6660(120) in 79Ke02 **
*^{146}Tb^n E : 779.6 keV above ^{146}Tb^m, from Ensdf **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{147}Xe	−43770#	500#				> 150	ns		3/2$^-$#		94Be24 T	β^- ?; β^-n ?	
^{147}Cs	−52290	150				225	ms	5	(3/2$^+$)	92	93Ru01 D	β^-=100; β^-n=28.5 17	
^{147}Ba	−61490	90				893	ms	1	(3/2$^-$)	92	93Ru01 D	β^-=100; β^-n=0.06 3	
^{147}La	−67240	80				4.015	s	0.008	(5/2$^+$)	92	93Ru01 D	β^-=100; β^-n=0.040 3	*
^{147}Ce	−72180	50				56.4	s	1.0	(5/2$^-$)	92		β^-=100	
^{147}Pr	−75470	40				13.4	m	0.4	(3/2$^+$)	92		β^-=100	
^{147}Nd	−78156.3	2.8				10.98	d	0.01	5/2$^-$	92		β^-=100	
^{147}Pm	−79052.3	2.9				2.6234	y	0.0002	7/2$^+$	96		β^-=100	
^{147}Sm	−79276.4	2.9				106	Gy	2	7/2$^-$	92		IS=15.0 2; α=100	
^{147}Eu	−77555	4				24.1	d	0.6	5/2$^+$	92		$\beta^+\approx$100; α=0.0022 6	
^{147}Gd	−75368	4				38.06	h	0.12	7/2$^-$	96		β^+=100	
^{147}Tb	−70759	12				1.7	h	0.1	(1/2$^+$)	96		β^+=100	*
^{147}Tb^m	−70708	12	50.6	0.9		1.87	m	0.05	(11/2)$^-$	96	93Al03 T	β^+=100	*
^{147}Dy	−64390	50				40	s	10	1/2$^+$	92	84To07 D	β^+=100; β^+p$\approx$0.05	
^{147}Dy^m	−63640	50	750.5	0.4		55	s	1	11/2$^-$	92		β^+=65 4; IT=35 4	
^{147}Ho	−56040#	400#				5.8	s	0.4	(11/2$^-$)	92		β^+=100; β^+p ?	
^{147}Er	−47220#	500#			&	2.5	s		(1/2$^+$)	92		β^+=100; β^+p=?	
^{147}Er^m	−47120#	500#	100#	50#	&	2.5	s	0.2	(11/2$^-$)	92		β^+=100	*
^{147}Tm	−36250#	600#				580	ms	40	(11/2$^-$)	92	93To02 TD	β^+=85 5; p=15 5	*

*^{147}La J : from 96Ur02 **
*^{147}Tb T : 1.64(0.03) h in post cut-off date 97Wa04 **
*^{147}Tb^m T : average 93Al03=1.92(0.07) 73Bo13=1.83(0.06) E : from 87Li09 **
*^{147}Er^m E : estimated from 11/2$^-$ in isotones ^{141}Sm=175(0) ^{143}Gd=152(0) ^{145}Dy=118(0) **
*^{147}Tm T : average 93To02=640(60) 83La27=560(40) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{148}Cs	−47600	590				158	ms	7		90	93Ru01 D	β^-=100; β^-n=25.1 25	
^{148}Ba	−58050	140				607	ms	25	0$^+$	90	93Ru01 D	β^-=100; β^-n=0.4 3	
^{148}La	−63160	130				1.05	s	0.01	(2$^-$)	90	93Ru01 D	β^-=100; β^-n=0.15 3	
^{148}Ce	−70430	120				56	s	1	0$^+$	90		β^-=100	
^{148}Pr	−72490	90			*	2.27	m	0.04	1$^-$	90		β^-=100	
^{148}Pr^m	−72440#	90#	50#	30#	*	2.0	m	0.1	(4)	90	ABBW E	β^-=100	*
^{148}Nd	−77418	3				STABLE		>3.0Ey	0$^+$	90	82Be20 T	IS=5.76 3; 2β^- ?; α ?	
^{148}Pm	−76878	7				5.370	d	0.009	1$^-$	90		β^-=100	
^{148}Pm^m	−76741	7	137.00	0.10		41.29	d	0.11	6$^-$	90		β^-=95.0 4; IT=5.0 4	
^{148}Sm	−79346.6	2.9				7	Py	3	0$^+$	90		IS=11.3 1; α=100	
^{148}Eu	−76239	18				54.5	d	0.5	5$^-$	90		β^+=100; α=9.4e−7 28	
^{148}Gd	−76280	3				74.6	y	3.0	0$^+$	96		α=100; 2β^+ ?	
^{148}Tb	−70520	30				60	m	1	2$^-$	90		β^+=100	
^{148}Tb^m	−70430	30	90.1	0.3		2.20	m	0.05	9$^+$	90		β^+=100	
^{148}Dy	−67830	30				3.1	m	0.1	0$^+$	90		β^+=100	
^{148}Ho	−58430#	270#			*	2.2	s	1.1	1$^+$	90		β^+=100	
^{148}Ho^m	−58430	250	0#	100#	*	9.49	s	0.12	6$^-$	90	93Al03 T	β^+=100; β^+p=0.08 1	*
^{148}Ho^n	−57740#	290#	690#	100#		2.35	ms	0.04	(10$^+$)	90		IT=100	*
^{148}Er	−51750#	400#				4.6	s	0.2	0$^+$	90		β^+=100; β^+p$\approx$0.15	
^{148}Tm	−39540#	700#				700	ms	200	(10$^+$)	90		β^+=100	
^{148}Yb	−30960#	800#				250#	ms	150#	0$^+$			β^+ ?	

*^{148}Pr^m E : derived from ENSDF estimate E<90 keV **
*^{148}Ho^m T : average 93Al03=9.30(0.20) 89Ta11=9.59(0.15) **
*^{148}Ho^n E : 694.4 keV above ^{148}Ho^m, from ENSDF **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{149}Cs	−44040#	300#				> 50	ms		$3/2^+$#	95	87Ra12T	β^- ?; β^-n ?	
^{149}Ba	−53600#	400#				344	ms	7	$3/2^-$#	95		β^-=100; β^-n=0.43 12	
^{149}La	−61130#	300#				1.05	s	0.03	$5/2^+$#	95	93Ru01D	β^-=100; β^-n=1.4 3	
^{149}Ce	−66800	80				5.3	s	0.2	$3/2^-$#	95		β^-=100	
^{149}Pr	−70988	11				2.26	m	0.07	$(5/2^+)$	95		β^-=100	
^{149}Nd	−74385	3				1.728	h	0.001	$5/2^-$	95		β^-=100	
^{149}Pm	−76076	4				53.08	h	0.05	$7/2^+$	95		β^-=100	
^{149}Sm	−77146.8	2.9				STABLE		>2Py	$7/2^-$	95		IS=13.8 1	
^{149}Eu	−76451	5				93.1	d	0.4	$5/2^+$	95		ϵ=100	
^{149}Gd	−75138	4				9.28	d	0.10	$7/2^-$	96		β^+=100; α=4.3e−4 10	
^{149}Tb	−71500	5				4.118	h	0.025	$1/2^+$	95		β^+=83.3 17; α=16.7 17	
^{149}Tb^m	−71464	5	35.78	0.13		4.16	m	0.04	$11/2^-$	95		$\beta^+\approx$100; α=0.022 3	
^{149}Dy	−67688	11				4.20	m	0.14	$7/2^{(-)}$	95	88Ah02J	β^+=100	
^{149}Dy^m	−65027	11	2661.1	0.4		490	ms	15	$(27/2^-)$	95		IT=99.3 3; β^+=0.7 3	
^{149}Ho	−61674	22				21.1	s	0.2	$(11/2^-)$	95		β^+=100	
^{149}Ho^m	−61625	22	48.80	0.20		56	s	3	$(1/2^+)$	95		β^+=100	
^{149}Er	−53860#	470#				4	s	2	$(1/2^+)$	95		β^+=100; β^+p=7 2	
^{149}Er^m	−53120#	470#	741.8	0.2		8.9	s	0.2	$(11/2^-)$	95		β^+=96.5 7; IT=3.5 7; β^+p=0.18 7	
^{149}Tm	−44110#	600#				900	ms	200	$(11/2^-)$	95		β^+=100; β^+p=0.26 15	*
^{149}Yb	−34020#	700#				600#	ms		$(1/2^+,3/2^+)$	95		β^+ ?	

*^{149}Tm D : symmetrized from β^+p=0.2(+2−1)% **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{150}Cs	−39150#	500#				> 50	ms				87Ra12T	β^- ?; β^-n ?	
^{150}Ba	−50660#	500#				300	ms		0^+	95		β^-=100; β^-n ?	
^{150}La	−57220#	400#				510	ms	30	(3^+)	97	95Ok02TJ	β^-=100; β^-n=2.7 3	
^{150}Ce	−64990	120				4.0	s	0.6	0^+	95		β^-=100	
^{150}Pr	−68000	80				6.19	s	0.16	$(1)^-$	96		β^-=100	
^{150}Nd	−73694	4				21	Ey	5	0^+	96	95Ar08 TD	IS=5.64 3; 2β^-=100	*
^{150}Pm	−73607	20				2.68	h	0.02	(1^-)	95		β^-=100	
^{150}Sm	−77061.1	2.9				STABLE			0^+	96		IS=7.4 1	
^{150}Eu	−74801	7				36.9	y	0.9	$5^{(-)}$	95		β^+=100	
^{150}Eu^m	−74759	7	42.1	0.5		12.8	h	0.1	0^-	95		β^-=89 2; β^+=11 2; IT$\leq$5e−8	
^{150}Gd	−75772	7				1.79	My	0.08	0^+	96		α=100; 2β^+ ?	
^{150}Tb	−71116	8				3.48	h	0.16	(2^-)	96		$\beta^+\approx$100; α<0.05	
^{150}Tb^m	−70640	50	470	50	BD	5.8	m	0.2	9^+	96		$\beta^+\approx$100; IT ?	
^{150}Dy	−69322	5				7.17	m	0.05	0^+	96		β^+=64 5; α=36 5	
^{150}Ho	−62080#	100#			*	76.8	s	1.8	2^-	95	93Al03 T	β^+=100	*
^{150}Ho^m	−61960	50	120#	110#	*	23.3	s	0.3	$(9)^+$	95		β^+=100	
^{150}Er	−57970#	100#				18.5	s	0.7	0^+	95		β^+=100	
^{150}Tm	−46880#	500#			*&				(1^+)		88Ni02 J	β^+=100	
^{150}Tm^m	−46740#	520#	140#	140#	*&	2.20	s	0.06	(6^-)	95	96Ga24T	β^+=100; β^+p=1.2 3	*
^{150}Tm^n	−46070#	520#	810#	140#		5.2	ms	0.3	(10^+)	95		IT=100	*
^{150}Yb	−39130#	600#				700#	ms	300#	0^+			β^+ ?	
^{150}Lu	−25460#	700#				35	ms	10	$(5^-,6^-)$	95	93Se04 J	p=?; β^+=20#	

*^{150}Nd T : symmetrized from 18.8(+6.6−3.9 statistics + 1.9 systematics) **

*^{150}Ho T : average 93Al03=78(2) 82No08=72(4) **

*^{150}Tm^m T : average 96Ga24=2.22(0.07) 88Ni02=2.15(0.10) and 87To05=2.2(0.2) **

*^{150}Tm^m T : 82No08=3.5(0.6) at variance, not used D : from 88Ni02 **

*^{150}Tm^n E : 671.6 keV above ^{150}Tm^m, from ENSDF **

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^{π}	Ens	Reference	Decay modes and intensities (%)	
^{151}Cs	−35400#700#		> 50 ms	$3/2^+$#	89	87Ra12T	β^- ?; β^-n ?	
^{151}Ba	−45920#600#		> 150 ns	$3/2^-$#		94Be24T	β^- ?	
^{151}La	−54440#500#		> 150 ns	$5/2^+$#		94Be24T	β^- ?	
^{151}Ce	−61440#300#		1.02 s 0.06	$3/2^-$#	89		β^-=100	
^{151}Pr	−66860 40		18.90 s 0.07	$(1/2,3/2,5/2)^-$	89		β^-=100	*
^{151}Nd	−70957 4		12.44 m 0.07	$(3/2)^+$	89		β^-=100	*
^{151}Pm	−73399 6		28.40 h 0.04	$5/2^+$	89		β^-=100	
^{151}Sm	−74586.2 2.9		90 y 8	$5/2^-$	89		β^-=100	
^{151}Eu	−74662.9 2.9		STABLE	$5/2^+$	89		IS=47.8 15	
^{151}Gd	−74199 4		124 d 1	$7/2^-$	89		ϵ=100; α=1.0e−6 6	*
^{151}Tb	−71634 5		17.609 h 0.001	$1/2^{(+)}$	96		$\beta^+\approx$100; α=0.0095 15	
^{151}Tb^m	−71534 5	99.54 0.06	25 s 3	$(11/2^-)$	96		IT=93.8 4; β^+=6.2 4	
^{151}Dy	−68763 4		17.9 m 0.3	$7/2^{(-)}$	96		β^+=94.4 4; α=5.6 4	
^{151}Ho	−63639 12		35.2 s 0.1	$11/2^{(-)}$	89	87Ne.AJ	β^+=?; α=22 3	
^{151}Ho^m	−63598 12	41.10 0.20	47.2 s 1.0	$1/2^{(+)}$	89	91To08ED	α=77 18; β^+ ?	*
^{151}Er	−58260#300#		23.5 s 1.3	$(7/2^-)$	89		β^+=100	
^{151}Er^m	−55680#300#	2585.5 0.6	580 ms 20	$(27/2^-)$	89		IT=95.3 3; β^+=4.7 3	
^{151}Tm	−50830#140#		& 4.13 s 0.11	$(11/2^-)$	89		β^+=100	*
^{151}Tm^m	−50780#130#	45# 15#	& 5.2 s 2.0	$(1/2^+)$	89		β^+=100	*
^{151}Yb	−41690#320#		* 1.6 s 0.5	$(1/2^+)$	89	86To12T	β^+=100; β^+p=?	*
^{151}Yb^m	−41690#590#	0# 500#	* 1.6 s 0.5	$(11/2^-)$	89	86To12TD	β^+=100; β^+p=?	*
^{151}Lu	−30600#600#		*&	$1/2^+$#			β^+ ?	*
^{151}Lu^m	−30600#600#	0# 100#	*& 85 ms 10	$(11/2^-)$	89	93Se04D	p=?; β^+=30#	*

*^{151}Pr J : $(3/2^-)$ in post cut-off date ENSDF'97 **
*^{151}Nd J : $3/2^-$ in post cut-off date ENSDF'97 **
*^{151}Gd D : α=0.8e−6(+8−4)% in post cut-off date ENSDF'97 **
*^{151}Ho^m D : symmetrized from α=80(+15−20)% J : from 87Ne.A **
*^{151}Tm T : 4.17(0.10) s in post cut-off date ENSDF'97 **
*^{151}Tm^{m}T : 6.6(1.4) s in post cut-off date ENSDF'97 **
*^{151}Tm^{m}E : 97Da07=96.4(7.0) keV should replace the estimated AME'95=45# in next AME **
*^{151}Tm^{m}E : AME'95=45# estimated from $11/2^-$ in isotopes ^{153}Tm: 43(0) ^{155}Tm: 41(6) **
*^{151}Yb T : derived from 1.6(0.1), for mixture of ground-state and isomer with almost same half-life **
*^{151}Yb^m D : IT=0.4%# in post cut-off date ENSDF'97 **
*^{151}Lu I : Low spin ground-state not believed to exist. Kept for consistency with AME'95. **
*^{151}Lu^m T : 88(10) ms in post cut-off date ENSDF'97 **

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^{π}	Ens	Reference	Decay modes and intensities (%)	
^{152}Ba	−42700#700#			0^+			β^- ?	
^{152}La	−50200#600#		> 150 ns		96		β^- ?	
^{152}Ce	−59260#400#		1.1 s 0.3	0^+	96	90Ta07T	β^-=100	*
^{152}Pr	−63710#300#		3.63 s 0.12	(4^-)	97		β^-=100	
^{152}Nd	−70160 30		11.4 m 0.2	0^+	97		β^-=100	
^{152}Pm	−71270 70		* 4.12 m 0.08	1^+	97		β^-=100	
^{152}Pm^m	−71120 80	140 110	BD* 7.52 m 0.08	4^-	97		β^-=100	
^{152}Pm^n	−71020#170#	250# 150#	* 13.8 m 0.2	(8)	97		$\beta^-\approx$100; IT=?	*
^{152}Sm	−74772.6 2.9		STABLE	0^+	97		IS=26.7 2	
^{152}Eu	−72898.3 2.9		13.537 y 0.006	3^-	97		β^+=72.1 3; β^-=27.9 3	
^{152}Eu^m	−72852.7 2.9	45.5998 0.0004	9.3116 h 0.0013	0^-	97		β^-=72 4; β^+=28 4	
^{152}Eu^n	−72750.5 2.9	147.86 0.10	96 m 1	8^-	97		IT=100	
^{152}Gd	−74717.1 3.0		108 Ty 8	0^+	97		IS=0.20 1; α=100; 2β^+ ?	
^{152}Tb	−70730 40		17.5 h 0.1	2^-	97		β^+=100; α<7e−7	
^{152}Tb^m	−70230 40	501.74 0.19	4.2 m 0.1	8^+	97		IT=78.8 8; β^+=21.2 8	
^{152}Dy	−70129 5		2.38 h 0.02	0^+	97		$\epsilon\approx$100; α=0.100 7	
^{152}Ho	−63580 30		161.8 s 0.3	2^-	97		β^+=88 3; α=12 3	
^{152}Ho^m	−63420 30	160 1	50.0 s 0.4	9^+	97		β^+=89.2 17; α=10.8 17	
^{152}Er	−60470 30		10.3 s 0.1	0^+	97		α=90 4; β^+=10 4	
^{152}Tm	−51880#300#		* 8.0 s 1.0	$(2\#)^-$	97		β^+=100	
^{152}Tm^m	−51680#330#	200# 150#	* 5.2 s 0.6	$(9)^+$	97		β^+=100	
^{152}Yb	−46420#360#		3.04 s 0.06	0^+	97		β^+=100; β^+p ?	
^{152}Lu	−33900#700#		650 ms 70	$(5^-,6^-)$	97	88Ni02T	β^+=100; β^+p=15 7	*

*^{152}Ce T : average 90Ta07=1.4(0.2) 91Ay.A=0.8(0.3) **
*^{152}Pm^n E : ENSDF: "Probably feeds 7.52 m level" at 140 keV **
*^{152}Lu T : average 88Ni02=600(100) 87To02=700(100) **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{153}Ba	−37620#	900#								$5/2^-$#			β^- ?	
^{153}La	−47090#	700#					> 150	ns		$5/2^+$#		94Be24 T	β^- ?	
^{153}Ce	−55350#	500#					> 150	ns		$3/2^-$#		94Be24 T	β^- ?	
^{153}Pr	−61810#	300#					4.3	s	0.2	$5/2^-$#	90		β^-=100	
^{153}Nd	−67352	27					28.9	s	0.4	$3/2^-$#	90		β^-=100	*
^{153}Pm	−70688	11					5.250	m	0.017	$5/2^-$	90	87Gr.A T	β^-=100	
^{153}Sm	−72569.0	2.9					46.27	h	0.01	$3/2^+$	90		β^-=100	
^{153}Sm^m	−72470.6	2.9	98.4	0.2			10.6	ms	0.3	$11/2^-$	90		IT=100	
^{153}Eu	−73377.3	2.9					STABLE			$5/2^+$	90		IS=52.2 15	
^{153}Gd	−72892.9	3.0					241.6	d	0.2	$3/2^-$	90		ϵ=100	
^{153}Tb	−71324	5					2.34	d	0.01	$5/2^+$	90		β^+=100	
^{153}Dy	−69153	5					6.4	h	0.1	$7/2^{(-)}$	96		$\beta^+\approx$100; α=0.0094 14	
^{153}Ho	−65023	6					2.02	m	0.03	$11/2^{(-)}$	90	93Al03 T	$\beta^+\approx$100; α=0.051 25	*
^{153}Ho^m	−64954	6	68.7	0.4			9.3	m	0.5	$1/2^+$	90	94Xu09E	$\beta^+\approx$100; α=0.18 8	
^{153}Er	−60460	11					37.1	s	0.2	$7/2^{(-)}$	94	85Ah.1 J	α=53 3; β^+=47 3	
^{153}Tm	−54001	22					1.48	s	0.01	$(11/2^-)$	90		α=91 3; β^+=9 3	
^{153}Tm^m	−53958	22	43.20	0.20			2.5	s	0.2	$(1/2^+)$	90	89Ko02ED	α=92 3; β^+=?	
^{153}Yb	−47310#	300#					4.2	s	0.1	$(7/2^-)$	95	88Wi05D	β^+=?; α=50#; β^+p=0.008 2	
^{153}Lu	−38480#	600#				*	900	ms	200	$(11/2^-)$	95	89Ni04 TD	β^+=?; α ?	
^{153}Lu^m	−38450#	620#	50#	150#		*				$1/2^+$#			β^+ ?	*

*^{153}Nd J : (1/2,3/2,5/2) in ENSDF suggested by apparent feeding of $3/2^+$ 450keV level **
*^{153}Ho J : from 87Ne.A **
*^{153}Lu^m E : 80(5) keV in post cut-off date 97Ir01 **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{154}La	−42480#	800#											β^- ?	
^{154}Ce	−52800#	600#					> 150	ns		0^+		94Be24 T	β^- ?	
^{154}Pr	−58320#	400#					2.3	s	0.1	(3^+)	93	96To05 J	β^-=100	
^{154}Nd	−65690	110					25.9	s	0.2	0^+	97		β^-=100	
^{154}Pm	−68420	70				*	1.73	m	0.10	(0,1)	93		β^-=100	
^{154}Pm^m	−68370	110	50	130	BD	*	2.68	m	0.07	(3,4)	93		β^-=100	
^{154}Sm	−72465.3	3.0					STABLE			0^+	93		IS=22.7 2; 2β^- ?	
^{154}Eu	−71748.0	2.9					8.593	y	0.004	3^-	93		$\beta^-\approx$100; ϵ=0.02 1	
^{154}Eu^m	−71602.7	2.9	145.3	0.3			46.3	m	0.4	(8^-)	93		IT=100	
^{154}Gd	−73716.3	2.9					STABLE			0^+	93		IS=2.18 3	
^{154}Tb	−70150	50				*	21.5	h	0.4	0	93		$\beta^+\approx$100; β^-<0.1	
^{154}Tb^m	−70140	50	12	7		*	9.4	h	0.4	3^-	93	ABBW E	β^+=78.2 7; IT=21.8 7; β^-<0.1	*
^{154}Tb^n	−69950#	160#	200#	150#		*	22.7	h	0.5	7^-	93		β^+=98.2 6; IT=1.8 6	
^{154}Dy	−70400	9					3.0	My	1.5	0^+	96		α=100; 2β^+ ?	
^{154}Ho	−64649	9					11.76	m	0.19	2^-	93	87Ne.A J	$\beta^+\approx$100; α=0.019 5	
^{154}Ho^m	−64390	50	260	50	AD		3.10	m	0.14	8^+	93		β^+=100; α<0.001; IT$\approx$0	
^{154}Er	−62618	6					3.73	m	0.09	0^+	97		$\beta^+\approx$100; α=0.47 13	
^{154}Tm	−54560#	110#				*	8.1	s	0.3	(2^-)	94		β^+=56 15; α=44 15	
^{154}Tm^m	−54370	50	200#	120#		*	3.30	s	0.07	(9^+)	94		α=?; β^+=10#	*
^{154}Yb	−50080#	100#					409	ms	2	0^+	94	96Pa01 T	α=92.8 20; β^+=7.2 20	
^{154}Lu	−39960#	500#				*&	2#	s		(2^-)		97Da07J	β^+ ?	
^{154}Lu^m	−39900#	500#	59	9		*&	1.12	s	0.08	(9^+)	94	97Da07JE	$\beta^+\approx$100; β^+p=?; $\beta^+\alpha$=?; α=0.002#	*
^{154}Hf	−33300#	700#					2	s	1	0^+	94		$\beta^+\approx$100; $\alpha\approx$0	

*^{154}Tb^m E : less than 25 keV, from ENSDF **
*^{154}Tm^{m}D : $\beta^+\approx$10% using calculated ϵ half-life 30 s, from ENSDF **
*^{154}Tm^{m}D : IT decay has not been observed. Assumed by ENSDF to be negligible **
*^{154}Lu^m D : β^+p and $\beta^+\alpha$ modes observed by 88Vi02; β^+p confirmed by 90Sh.A **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{155}La	−39000#	900#							$5/2^+$#			β^- ?	
^{155}Ce	−48400#	700#				> 150	ns		$5/2^-$#		94Be24 T	β^- ?	
^{155}Pr	−55900#	500#							$5/2^-$#			β^- ?	
^{155}Nd	−62760	150				8.9	s	0.2	$3/2^-$#	94		β^-=100	
^{155}Pm	−66980	30				41.5	s	0.2	$(5/2^-)$	94		β^-=100	
^{155}Sm	−70201.2	3.0				22.3	m	0.2	$3/2^-$	94		β^-=100	
^{155}Eu	−71828.0	2.9				4.7611	y	0.0013	$5/2^+$	94		β^-=100	
^{155}Gd	−72080.1	2.9				STABLE			$3/2^-$	94		IS=14.80 5	
^{155}Gd^m	−71959.1	2.9	121.05	0.19		31.97	ms	0.27	$11/2^-$	94		IT=100	
^{155}Tb	−71259	12				5.32	d	0.06	$3/2^+$	94		ϵ=100	
^{155}Dy	−69164	12				9.9	h	0.2	$3/2^-$	96		β^+=100	
^{155}Ho	−66062	23				48	m	1	$5/2^+$	94		β^+=100	
^{155}Er	−62220	50				5.3	m	0.3	$7/2^-$	94		$\beta^+\approx$100; α=0.022 7	
^{155}Tm	−56643	13				21.6	s	0.2	$(11/2^-)$	95		β^+=98.1 3; α=1.9 3	
^{155}Tm^m	−56602	14	41	6		45	s	3	$(1/2^+)$	95		β^+>92; α<8	
^{155}Yb	−50490#	300#				1.793	s	0.019	$(7/2^-)$	94	96Pa01 T	α=89 4; β^+=11 4	*
^{155}Lu	−42630#	130#				* 138	ms	8	$(1/2^+)$	94	97Da07 TJD	α=76 16; β^+ ?	*
^{155}Lu^m	−42610#	140#	26#	16#		* 68.6	ms	1.6	$(11/2^-)$	94	97Da07 TD	α=88 4; β^+ ?	*
^{155}Lu^n	−40830#	140#	1800#	50#		2.696	ms	0.028	$(25/2^-)$	94	96Pa01 T	$\alpha\approx$100; IT ?	*
^{155}Hf	−34690#	600#				890	ms	120	$7/2^-$#	94		β^+=100; α ?	

*^{155}Yb T : average 96Pa01=1.80(0.02) 91To08=1.75(0.05) **
*^{155}Lu T : average 97Da07=150(24) 96Pa01=136(9) 91To09=140(20) **
*^{155}Lu^m T : average 96Pa01=70(1) 97Da07=63(2) 91To09=66(7) 79Ho10=70(6) **
*^{155}Lu^m E : 97Da07=−19.9(6.2) keV should replace the estimated AME'95=26# in next AME **
*^{155}Lu^m E : the negative sign means inversion of high and low spin isomeric states **
*^{155}Lu^m D : α: average 97Da07=90(2)% 79Ho10=79(4)% with Birge ratio B=4.4 **
*^{155}Lu^n T : average 96Pa01=2.71(0.03) 81Ho.A=2.62(0.07) **
*^{155}Lu^n E : 96Pa01=1781(2) keV above the $(11/2^-)$ isomer will become the exact **
*^{155}Lu^n E : excitation energy after inversion of the $(1/2^+)$ and the $(11/2^-)$ levels **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{156}Ce	−45400#	800#							0^+			β^- ?	
^{156}Pr	−52050#	600#										β^- ?	
^{156}Nd	−60360#	400#				5.47	s	0.11	0^+	92		β^-=100	
^{156}Pm	−64220	40				26.7	s	0.1	$4^{(-)}$	92		β^-=100	
^{156}Sm	−69372	10				9.4	h	0.2	0^+	92		β^-=100	
^{156}Eu	−70094	6				15.19	d	0.08	0^+	92		β^-=100	
^{156}Gd	−72545.2	2.9				STABLE			0^+	92		IS=20.47 4	
^{156}Tb	−70101	5				5.35	d	0.10	3^-	92		β^+=100; β^- ?	
^{156}Tb^m	−70047	6	54	3		24.4	h	1.0	(7^-)	92		IT=100	*
^{156}Tb^n	−70013	5	88.4	0.2		5.3	h	0.2	(0^+)	92		IT=?; β^+=?	
^{156}Dy	−70534	7				STABLE		>1Ey	0^+	92	58Ri23 T	IS=0.06 1; α ?; $2\beta^+$?	*
^{156}Ho	−65470#	200#				56	m	1	$4^{(+)}$	92	87Ne.A J	β^+=100	
^{156}Ho^m	−65420#	200#	52.2	0.1		9.5	s	1.5	1^+	92	95Ka.A T	IT=?; β^+ ?	*
^{156}Er	−64260	70				19.5	m	1.0	0^+	92		β^+=100	
^{156}Tm	−56810	60				83.8	s	1.8	2^-	92		$\beta^+\approx$100; α=0.064 10	
^{156}Tm^m			non existent		RN	19	s	3	9^+		91To08 I		
^{156}Yb	−53240	30				26.1	s	0.7	0^+	92		β^+=90 2; α=10 2	
^{156}Lu	−43870#	300#				* 494	ms	12	$(2\#)^-$	92	96Pa01 TJ	α=?; β^+=5#	
^{156}Lu^m	−43550#	340#	320#	170#		* 198	ms	2	$(9)^+$	92	96Pa01 TJD	α=94 6; β^+ ?	*
^{156}Hf	−37960#	360#				23	ms	1	0^+	92	96Pa01 TD	α=97 3; β^+ ?	*
^{156}Ta	−26370#	600#				144	ms	24	(2^-)		96Pa01 TJD	β^+=95.8 9; p=4.2 9	*
^{156}Ta^m	−26290#	600#	82	18	p	360	ms	40	(9^+)	92	96Pa01 TJ	p$\approx$100; β^+ ?	*

*^{156}Tb^m E : derived from E3 24h to 4^+ 49.630 level and E(IT)< B(L)=9 keV **
*^{156}Dy T : lower limit is for α decay **
*^{156}Ho^m J : from 87Ne.A, but J=5 is also possible, see ENSDF **
*^{156}Ho^m I : 3 isomers reported in Karlsruhe charts 1981 and 1995. Not traceable **
*^{156}Lu^m D : derived from original α=98(9)% **
*^{156}Hf D : derived from original α=100(6)% **
*^{156}Ta T : supersedes 92Pa05=165(+165−55) from same group J : from 93Li34 **
*^{156}Ta^m T : average 96Pa01=375(54) 93Li34=320(80) **
*^{156}Ta^m E : 96Pa01=102(7) keV should replace the preliminary AME'95=82(18) in next AME **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{157}Ce	−40670#	900#					7/2$^+$#			β^- ?	
^{157}Pr	−49210#	700#					5/2$^-$#			β^- ?	
^{157}Nd	−56570#	500#				2# s	5/2$^-$#	96		β^- ?	*
^{157}Pm	−62220#	300#				10.56 s 0.10	(5/2$^-$)	96		β^-=100	
^{157}Sm	−66740	50				8.03 m 0.07	(3/2$^-$)	96		β^-=100	
^{157}Eu	−69471	6				15.18 h 0.03	5/2$^+$	96		β^-=100	
^{157}Gd	−70833.9	3.0				STABLE	3/2$^-$	96		IS=15.65 3	
^{157}Tb	−70773.8	3.0				71 y 7	3/2$^+$	96		ϵ=100	
^{157}Dy	−69432	7				8.14 h 0.04	3/2$^-$	96		β^+=100	
^{157}Dy^m	−69233	7	199.38	0.07		21.6 ms 1.6	11/2$^-$	96		IT=100	*
^{157}Ho	−66890	50				12.6 m 0.2	7/2$^-$	96		β^+=100	
^{157}Er	−63390	80				18.65 m 0.10	3/2$^-$	96		β^+=100	
^{157}Er^m	−63230	80	155.4	0.3		76 ms 6	(9/2$^+$)	96		IT=100	
^{157}Tm	−58910	110				3.63 m 0.09	1/2$^+$	96		β^+=100	
^{157}Yb	−53410	50				38.6 s 1.0	7/2$^-$	96		β^+=99.5; α=0.5	
^{157}Lu	−46480	22				6.8 s 1.8	(1/2$^+$,3/2$^+$)	96		β^+ ?; α=?	*
^{157}Lu^m	−46448	22	32.0	2.0	AD	4.79 s 0.12	(11/2$^-$)	96		β^+=?; α=6 2	
^{157}Hf	−39000#	300#				115 ms 1	7/2$^-$	96	96Pa01 T	α=86 9; β^+=14 9	
^{157}Ta	−29670#	600#			*	4.3 ms 0.1	1/2$^+$#	96	96Pa01 TD	α=91 9; β^+ ?	*
^{157}Ta^m	−29570#	610#	100#	100#	*	1.7 ms 0.1	high	96	96Pa01 J	α=?; β^+ ?	*

*^{157}Nd T : a half-life of several seconds has been reported. See ENSDF **
*^{157}Dy^m T : as adopted by ENSDF evaluator from 3 inconsistent results **
*^{157}Lu T : ENSDF'96 average of very discrepant 91To09=5.7(0.5) 91Le15,92Po14=9.6(8) **
*^{157}Ta D : derived from original α=95(12)% **
*^{157}Ta^m E : 22(5) keV and J^π=(11/2$^-$) in post cut-off date 97Ir01 **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{158}Pr	−44920#	800#								β^- ?	
^{158}Nd	−54150#	600#					0$^+$			β^- ?	
^{158}Pm	−58970#	400#				4.8 s 0.5		96		β^-=100	
^{158}Sm	−65220	80				5.30 m 0.03	0$^+$	96		β^-=100	
^{158}Eu	−67210	80				45.9 m 0.2	(1$^-$)	96		β^-=100	
^{158}Gd	−70699.9	3.0				STABLE	0$^+$	96		IS=24.84 12	
^{158}Tb	−69479.9	3.0				180 y 11	3$^-$	96		β^+=83.4 7; β^-=16.6 7	
^{158}Tb^m	−69370	3	110.3	1.2		10.70 s 0.17	0$^-$	96		IT≈100; β^- <0.6; β^+ <0.01	
^{158}Dy	−70417	4				STABLE	0$^+$	96		IS=0.10 1; α ?; 2β^+ ?	
^{158}Ho	−66190	30				11.3 m 0.4	5$^+$	96		β^+≥93; α ?	
^{158}Ho^m	−66120	30	67.200	0.010		28 m 2	2$^-$	96		IT>81; β^+<19	
^{158}Ho^n	−66010#	80#	180#	70#		21.3 m 2.3	(9$^+$)	96		β^+≥93; IT≤7	
^{158}Er	−65290#	100#				2.29 h 0.06	0$^+$	96		ϵ=100	
^{158}Tm	−58690#	120#				3.98 m 0.06	2$^-$	96		β^+=100	
^{158}Tm^m	non existent				RN	20 s	(5$^+$)		96Dr.A I		*
^{158}Yb	−56022	10				1.49 m 0.13	0$^+$	96		β^+≈100; α≈0.0021 12	
^{158}Lu	−47350#	120#				10.6 s 0.3	2$^-$	96	95Ga.AJ	β^+=99.09 20; α=0.91 20	
^{158}Hf	−42250#	100#				2.84 s 0.07	0$^+$	96	96Pa01 TD	β^+=55 3; α=45 3	*
^{158}Ta	−31330#	510#			&	49 ms 8	(2$^-$)	96	97Da07TJD	α=96 4; β^+ ?	*
^{158}Ta^m	−31190#	510#	141	9	&	36.0 ms 0.8	(9$^+$)	96	97Da07TJE	α=93 6; β^+ ?; IT ?	*
^{158}W	−24280#	700#				1.0 ms 0.4	0$^+$	96	96Pa01 T	α=100	*

*^{158}Tm^m I : T≈20 s in 81Dr07 was a typo. Value in Fig. 2 was correct. See 96Dr.A **
*^{158}Hf T : average 96Pa01=2.85(0.07) 73To02=2.8(0.2) **
*^{158}Ta T : average 97Da07=72(12) 96Pa01=46(4) with Birge ratio B=2 **
*^{158}Ta D : derived from original α≈100(8)% **
*^{158}Ta^m T : average 97Da07=37.7(1.5) 96Pa01=35(1) 79Ho10=36.8(1.6) **
*^{158}W T : symmetrized from 0.9(+0.4−0.3) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{159}Pr	−41700#	900#							$5/2^-$#			β^- ?	
^{159}Nd	−49940#	700#							$7/2^+$#			β^- ?	
^{159}Pm	−56700#	500#							$5/2^-$#			β^- ?	
^{159}Sm	−62220#	300#				11.37	s	0.15	$(5/2^-)$	94		β^-=100	
^{159}Eu	−66057	8				18.1	m	0.1	$5/2^+$	94		β^-=100	
^{159}Gd	−68571.9	3.0				18.479	h	0.004	$3/2^-$	94		β^-=100	
^{159}Tb	−69542.4	3.0				Stable			$3/2^+$	94		IS=100.	
^{159}Dy	−69177	3				144.4	d	0.2	$3/2^-$	94		ϵ=100	
^{159}Ho	−67339	4				33.05	m	0.11	$7/2^-$	94		β^+=100	
^{159}Ho^m	−67133	4	205.91	0.05		8.30	s	0.08	$1/2^+$	94		IT=100	
^{159}Er	−64570	5				36	m	1	$3/2^-$	94		β^+=100	
^{159}Tm	−60730	70				9.13	m	0.16	$5/2^+$	94		β^+=100	
^{159}Yb	−55750	90				1.72	m	0.10	$5/2^{(-)}$	94	93Al03 T	β^+=100	*
^{159}Lu	−49730	50				12.1	s	1.0	$1/2^+$#	94		$\beta^+\approx$100; α=0.04#	
^{159}Hf	−42850#	300#				5.20	s	0.10	$7/2^-$#	94	96Pa01 T	β^+=59 5; α=41 5	
^{159}Ta	−34550#	120#			&	1.04	s	0.09	$(1/2^+)$		97Da07 TJD	α=34 5; β^+ ?	*
^{159}Ta^m	−34440#	140#	110#	50#	&	514	ms	20	$(11/2^-)$	94	96Pa01 TJ	α=56 5; β^+ ?	*
^{159}W	−25820#	600#				8.2	ms	0.7	$7/2^-$#	94	96Pa01 TD	α=82 16; β^+ ?	*

*^{159}Yb T : supersedes 80Al14=1.40(20) from same group **
*^{159}Ta T : average 97Da07=0.83(0.18) 96Pa01=1.10(0.10) **
*^{159}Ta^m T : average 97Da07=500(11) 96Pa01=544(16) **
*^{159}Ta^m D : average 97Da07=55(1)% 79Ho10=80(5)% **
*^{159}Ta^m E : 97Da07=63.7(5.2) keV should replace the estimated AME'95=110# in next AME **
*^{159}W D : derived from original α=92(23)% **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{160}Nd	−47140#	800#							0^+			β^- ?	
^{160}Pm	−53100#	600#										β^- ?	
^{160}Sm	−60420#	400#				9.6	s	0.3	0^+	97		β^-=100	
^{160}Eu	−63370#	200#				38	s	4	$1^{(-)}$	97		β^-=100	
^{160}Gd	−67951.9	3.0				Stable		>130Py	0^+	97	95Bu18 T	IS=21.86 4; 2β^- ?	
^{160}Tb	−67846.3	3.0				72.3	d	0.2	3^-	97		β^-=100	
^{160}Dy	−69682	3				Stable			0^+	97		IS=2.34 5	
^{160}Ho	−66392	15				25.6	m	0.3	5^+	97		β^+=100	
^{160}Ho^m	−66332	15	59.98	0.03		5.02	h	0.05	2^-	97		IT=65 3; β^+=35 3	
^{160}Ho^n	−66195	22	197	16		3	s		(9^+)	97	ABBW E	IT=100	*
^{160}Er	−66060	50				28.58	h	0.09	0^+	97		ϵ=100	
^{160}Tm	−60460	300				9.4	m	0.3	1^-	97		β^+=100	
^{160}Tm^m	−60390	300	70	20		74.5	s	1.5	5	97		IT=85 5; β^+=15 5	
^{160}Yb	−58160#	210#				4.8	m	0.2	0^+	97		β^+=100	
^{160}Lu	−50280#	230#			*	36.1	s	0.3	2^-#	97		β^+=100; α<1.e−4	
^{160}Lu^m	−50280#	250#	0#	100#	*	40	s	1		97		$\beta^+\approx$100; α ?	
^{160}Hf	−45910	30				13.6	s	0.2	0^+	97		β^+=99.3 2; α=0.7 2	
^{160}Ta	−36000#	310#				1.70	s	0.20	$(2\#)^-$		96Pa01 TJD	β^+ ?; α=?	*
^{160}Ta^m	−35580#	340#	420#	180#		1.55	s	0.04	$(9)^+$	97	96Pa01 TJ	β^+=66#; α=?	*
^{160}W	−29460#	360#				90	ms	5	0^+	97	96Pa01 TD	α=87 8; β^+ ?	*
^{160}Re	−17250#	600#				790	μs	160	(2^-)	97	92Pa05 J	p=91 10; α=9 5	*

*^{160}Ho^n E : less than 55 keV above 169.55 level, from ENSDF **
*^{160}Ta J : from α correlation with ^{156}Lu line **
*^{160}Ta^m J : from α correlation with ^{156}Lu^m line **
*^{160}W T : average 96Pa01=91(5) 81Ho10=81(15) **
*^{160}Re J : protons from $d_{3/2}$ orbital **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{161}Nd	−42540#	900#							$1/2^-$#			β^- ?	
^{161}Pm	−50430#	700#							$5/2^-$#			β^- ?	
^{161}Sm	−56980#	500#							$7/2^+$#			β^- ?	
^{161}Eu	−61780#	300#				26	s	3	$5/2^+$#	90		β^-=100	
^{161}Gd	−65516	3				3.646	m	0.003	$5/2^-$	90	94It.A T	β^-=100	
^{161}Tb	−67472	3				6.88	d	0.03	$3/2^+$	90		β^-=100	
^{161}Dy	−68065	3				STABLE			$5/2^+$	90		IS=18.9 1	
^{161}Ho	−67206	4				2.48	h	0.05	$7/2^-$	90		ϵ=100	
^{161}Ho^m	−66995	4	211.14	0.03		6.76	s	0.07	$1/2^+$	90		IT=100	
^{161}Er	−65203	10				3.21	h	0.03	$3/2^-$	90		β^+=100	
^{161}Tm	−62040	90				30.2	m	0.8	$7/2^+$	90	93Al03 T	β^+=100	
^{161}Yb	−57890#	220#				4.2	m	0.2	$3/2^-$	90		β^+=100	
^{161}Lu	−52590#	240#				77	s	2	$1/2^{(+)}$	90	92Bo.A J	β^+=100	
^{161}Lu^m	−52420#	240#	166	18		7.3	ms	0.4	$(9/2^-)$	90	ABBW E	IT=100	*
^{161}Hf	−46270	70				18.7	s	0.1	$3/2^-$#	90	95Hi12 TD	$\beta^+\approx$100; α=0.30 5	
^{161}Ta	−38780	50				2.89	s	0.14	$1/2^+$#	90	92Ha10 T	β^+=95#; α=?	*
^{161}W	−30660#	310#				409	ms	16	$7/2^-$#	90	96Pa01 TD	α=73 3; β^+=27 3	*
^{161}Re	−20810#	600#			*&				$1/2^+$#			p ?	*
^{161}Re^m	−20810#	630#	0#	200#	*&	14	ms	2	$11/2^-$#	90	96Pa01 T	α=100	*

*^{161}Lu^m E : less than K binding energy (61 keV) above 135.8 level, from ENSDF **
*^{161}Ta T : average 92Ha10=3.00(0.15) 86Ru05=2.7(0.2) **
*^{161}W T : average 96Pa01=409(18) 79Ho10=410(40) **
*^{161}Re T : 370(40) μs, J^π=$1/2^+$, p=100% in post cut-off date 97Ir01 **
*^{161}Re^m E : 123.8(1.3) keV, J^π=$11/2^-$, p=4.8(6)% in post cut-off date 97Ir01 **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{162}Pm	−46310#	800#										β^- ?	
^{162}Sm	−54750#	600#							0^+			β^- ?	
^{162}Eu	−58650#	400#				10.6	s	1.0		91		β^-=100	
^{162}Gd	−64291	5				8.4	m	0.2	0^+	91		β^-=100	
^{162}Tb	−65680	40				7.60	m	0.15	1^-	91		β^-=100	
^{162}Dy	−68190	3				STABLE			0^+	91		IS=25.5 2	
^{162}Ho	−66050	4				15.0	m	1.0	1^+	91		β^+=100	
^{162}Ho^m	−65944	8	106	7		67.0	m	0.7	6^-	91		IT=62; β^+=38	
^{162}Er	−66346	4				STABLE		>140Ty	0^+	91	56Po16 T	IS=0.14 1; α ?; $2\beta^+$?	*
^{162}Tm	−61510	30				21.70	m	0.19	1^-	91		β^+=100	
^{162}Tm^m	−61410	30	96	17		24.3	s	1.7	5^+	91	ABBW E	IT=82 4; β^+=18 4	*
^{162}Yb	−59850#	210#				18.87	m	0.19	0^+	91		β^+=100	
^{162}Lu	−52890#	220#			*	1.37	m	0.02	$1^{(-)}$	91	92Bo.A J	β^+=100	
^{162}Lu^m	−52770#	300#	120#	200#	*	1.5	m		4^-#	91		$\beta^+\approx$100; IT ?	
^{162}Lu^n	−52590#	300#	300#	200#	*	1.9	m			91		$\beta^+\approx$100; IT ?	
^{162}Hf	−49180	11				39.4	s	0.9	0^+	94	95Hi12 TD	$\beta^+\approx$100; α=0.008 1	*
^{162}Ta	−39920#	130#				3.52	s	0.12	3^+#	91		$\beta^+\approx$100; α=0.073 14	
^{162}W	−34150#	100#				1.39	s	0.04	0^+	91		β^+ ?; α=47 3	
^{162}Re	−22630#	510#			&	107	ms	13	(2^-)		97Da07 TJD	α=94 6; β^+ ?	
^{162}Re^m	−22460#	510#	172	8	&	76	ms	9	(9^+)	91	97Da07 ETJ	α=91 5; β^+ ?	*
^{162}Os	−15070#	700#				1.7	ms	0.5	0^+	91	96Bi07 T	α=100	*

*^{162}Er T : lower limit is for α decay **
*^{162}Tm^m E : above 66.90 level and less than 125 keV, from ENSDF **
*^{162}Hf T : average 95Hi12=39.8(0.4) 82Sc15=37.6(0.8) **
*^{162}Re^m T : average 96Pa01=66(7) 97Da07=84.6(6.2) **
*^{162}Re^m D : average 96Pa01=85(9)% 97Da07=94(6)% **
*^{162}Os T : average 96Bi07=1.5(+0.7−0.5) 89Ho12=1.9(0.7) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{163}Pm	−43300#	900#							$5/2^-$#			β^- ?	
^{163}Sm	−50900#	700#							$1/2^-$#			β^- ?	
^{163}Eu	−56630#	500#							$5/2^+$#			β^- ?	
^{163}Gd	−61490#	300#				68	s	3	$7/2^+$#	97		β^-=100	
^{163}Tb	−64605	5				19.5	m	0.3	$3/2^+$	97		β^-=100	
^{163}Dy	−66390	3				Stable			$5/2^-$	97		IS=24.9 2	
^{163}Ho	−66387	3				4.570	ky	0.025	$7/2^-$	97		ϵ=100	
^{163}Ho^m	−66089	3	297.88	0.07		1.09	s	0.03	$1/2^+$	97	88Ka20 T	IT=100	
^{163}Er	−65177	5				75.0	m	0.4	$5/2^-$	97		β^+=100	
^{163}Tm	−62738	6				1.810	h	0.005	$1/2^+$	97		β^+=100	
^{163}Yb	−59370	100				11.05	m	0.25	$3/2^-$	97		β^+=100	
^{163}Lu	−54770	220				238	s	8	$1/2^{(+)}$	97	92Bo.A J	β^+=100	*
^{163}Hf	−49320#	320#				40	s	6	$3/2^-$#	97	95Hi12 D	β^+=100; α<0.0001	
^{163}Ta	−42550	70				11.0	s	0.8	$5/2^-$#	97		$\beta^+\approx$100; $\alpha\approx$0.2	
^{163}W	−34900#	310#				2.75	s	0.25	$3/2^-$#	97		β^+=59 5; α=41 5	
^{163}Re	−26110#	110#				390	ms	70	$(1/2^+)$		97Da07 TJD	α=32 3; β^+ ?	
^{163}Re^m	−25940#	140#	170#	70#		214	ms	5	$(11/2^-)$	97	97Da07 TD	α=66 4; β^+ ?	*
^{163}Os	−16720#	600#				5.5	ms	0.6	$7/2^-$#	97	96Bi07 TD	$\alpha\approx$100; β^+ ?; β^+p ?	
*^{163}Lu	J : positive parity from 92Sc03												**
*^{163}Re^m	E : 97Da07=115.1(4.0) keV should replace the estimated Ame'95=170# in next Ame												**
*^{163}Re^m	T : also 96Pa01=219(23)					J : from 96Pa01							**

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{164}Sm	−48180#	800#							0^+			β^- ?	
^{164}Eu	−53100#	600#										β^- ?	
^{164}Gd	−59750#	400#				45	s	3	0^+	92		β^-=100	
^{164}Tb	−62090	100				3.0	m	0.1	(5^+)	92		β^-=100	
^{164}Dy	−65977	3				Stable			0^+	92		IS=28.2 2	
^{164}Ho	−64990	3				29	m	1	1^+	92		ϵ=60 5; β^-=40 5	
^{164}Ho^m	−64850	3	140.0	0.1		38.0	m	1.0	6^-	92		IT=100	*
^{164}Er	−65953	3				Stable			0^+	92		IS=1.61 2; α ?; 2β^+ ?	
^{164}Tm	−61990	19			*	2.0	m	0.1	1^+	92		β^+=100	
^{164}Tm^m	−61980	20	10	6	*	5.1	m	0.1	6^-	92	ABBW E	IT$\approx$80; $\beta^+\approx$20	*
^{164}Yb	−60990#	100#				75.8	m	1.7	0^+	92		ϵ=100	
^{164}Lu	−54760#	130#				3.14	m	0.03	$1^{(-)}$	94	92Bo.A J	β^+=100	
^{164}Hf	−51770#	200#				111	s	8	0^+	92		β^+=100	
^{164}Ta	−43250#	400#				14.2	s	0.3	(3^+)	96		β^+=100	
^{164}W	−38210	30				6.4	s	0.8	0^+	92		β^+=97.4 17; α=2.6 17	
^{164}Re	−27650#	310#				530	ms	230	$(2\#)^-$	92	96Pa01 TJ	$\alpha\approx$58; $\beta^+\approx$42	*
^{164}Os	−20560#	360#				21	ms	1	0^+	92	96Pa01 T	α=?; β^+=2#	
^{164}Ir						1#	ms					p ?; α ?	
*^{164}Ho^m	T : symmetrized from 37.5(+1.5−0.5)												**
*^{164}Tm^m	E : less than 20 keV, from Ensdf												**
*^{164}Re	T : average 96Pa01=380(160) 81Ho10=880(240)												**
*^{164}Re	J : from α correlation with ^{160}Ta line												**

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{165}Sm	−43800#	900#							5/2$^-$#			β^- ?	
^{165}Eu	−50560#	700#							5/2$^+$#			β^- ?	
^{165}Gd	−56470#	500#							1/2$^-$#			β^- ?	
^{165}Tb	−60660#	200#				2.11	m	0.10	(3/2$^+$)	92		β^-=100	
^{165}Dy	−63621	3				2.334	h	0.001	7/2$^+$	92		β^-=100	
^{165}Dy^m	−63513	3	108.160	0.003		1.257	m	0.006	1/2$^-$	92		IT=97.76 11; β^-=2.24 11	
^{165}Ho	−64907.3	3.0				STABLE			7/2$^-$	92		IS=100.	
^{165}Er	−64531	3				10.36	h	0.04	5/2$^-$	92		ϵ=100	
^{165}Tm	−62939	4				30.06	h	0.03	1/2$^+$	92		β^+=100	
^{165}Yb	−60177	20				9.9	m	0.3	5/2$^-$	92		β^+=100	
^{165}Lu	−56260	80			*	10.74	m	0.10	(7/2$^+$)	92		β^+=100	
^{165}Lu^m	−56260#	130#	0#	100#	EU *	12	m		1/2$^+$	92		β^+ ?	*
^{165}Hf	−51660#	370#				76	s	4	(5/2$^-$)	92		β^+=100	
^{165}Ta	−45810#	220#				31.0	s	1.5	5/2$^-$#	92		β^+=100	
^{165}W	−38810	90				5.1	s	0.5	3/2$^-$#	92		$\beta^+\approx$100; α<0.2	
^{165}Re	−30790#	120#			*&	1#	s		low#			β^+ ?; α ?	*
^{165}Re^m	−30690	70	100#	100#	*&	2.00	s	0.27	11/2$^-$#	92	96Pa01 T	β^+=87 3; α=13 3	*
^{165}Os	−21910#	310#				71.2	ms	2.8	(7/2$^-$)	92	97Da07 J	α>60; β^+<40	*
^{165}Ir	−11570#	400#				< 1#	μs		1/2$^+$#		97Da07 T	p ?; α ?	
^{165}Ir^m	−11570#	410#	230#	110#		300	μs	60	(11/2$^-$)		97Da07 TJD	p=87 4; α=13 4	

*^{165}Lu^m I : existence is discussed in ENSDF. Provisionally accepted **
*^{165}Re E : the mass in AME'95 was −30690(70) keV, see remark for the isomer. **
*^{165}Re D : one α decay event has been observed in post cut-off date 97Po.B **
*^{165}Re^m T : average 96Pa01=1.9(0.3) 81Ho10=2.4(0.6) **
*^{165}Re^m I : this state is the one which was assumed to be the ground-state in AME'95 **
*^{165}Re^m E : 78(57) keV in post cut-off date 97Po.B **
*^{165}Os T : average 96Pa01=71(3) 91Se01=73(8) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{166}Eu	−46600#	800#										β^- ?	
^{166}Gd	−54400#	600#							0$^+$			β^- ?	
^{166}Tb	−57710#	300#				21	s	6			94Ts.A TD	β^-=100	
^{166}Dy	−62593	3				81.6	h	0.1	0$^+$	92		β^-=100	
^{166}Ho	−63079.6	3.0				26.83	h	0.02	0$^-$	92		β^-=100	
^{166}Ho^m	−63074	3	5.985	0.018		1.20	ky	0.18	(7)$^-$	92		β^-=100	
^{166}Er	−64934.5	2.9				STABLE			0$^+$	92		IS=33.6 2	
^{166}Tm	−61895	11				7.70	h	0.03	2$^+$	92		β^+=100	
^{166}Tm^m	−61773	14	122	8		340	ms	25	6$^-$		96Dr07 TJE	IT=100	*
^{166}Yb	−61591	8				56.7	h	0.1	0$^+$	92		ϵ=100	
^{166}Lu	−56110	160				2.65	m	0.10	6$^{(-)}$	92	92Bo.A J	β^+=100	
^{166}Lu^m	−56080	160	34.37	0.05		1.41	m	0.10	3$^{(-)}$	92	92Bo.A J	ϵ=58 5; IT=42 5	
^{166}Lu^n	−56070	160	42.9	0.5		2.12	m	0.10	(0$^-$)	92		β^+>80; IT<20	
^{166}Hf	−53790#	300#				6.77	m	0.30	0$^+$	92		β^+=100	
^{166}Ta	−46140#	300#				34.4	s	0.5	(2)$^+$	92		β^+=100	
^{166}W	−41899	12				18.8	s	0.4	0$^+$	92		$\beta^+\approx$100; α=0.035 12	
^{166}Re	−31860#	140#			*&				low#			β^+ ?; α ?	
^{166}Re^m	−31860#	240#	0#	200#	*&	2.5	s	0.2	6$^+$#	92	92Me10 T	β^+ ?; α=5 2	*
^{166}Os	−25590#	100#				216	ms	9	0$^+$	92	96Pa01 T	α=72 13; β^+=28 13	*
^{166}Ir	−13500#	510#				10.5	ms	2.2	(2$^-$)	92	97Da07 TJD	α=93 3; p=7 3	*
^{166}Ir^m	−13330#	510#	172	6		15.1	ms	0.9	(9$^+$)		97Da07 TJD	α=98.2 6; p=1.8 6	*
^{166}Pt						300	μs	100	0$^+$		96Bi07 TD	α=100	

*^{166}Tm^m E : less than 25 keV above 109.34 level **
*^{166}Re^m T : average 92Me10=2.3(0.2) 84Sc06=2.8(0.3) **
*^{166}Re^m D : α intensity is derived from 2% < α < 8% as discussed in ENSDF **
*^{166}Os T : average 96Pa01=220(7) 91Se01=194(17) **
*^{166}Ir T : 96Pa01=12(1) ms is probably a mixture of both isomers, not used **
*^{166}Ir^m E : from 97Da07=171.5(6.1) keV **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{167}Eu	−43730#	900#							$5/2^+$#			β^- ?	
^{167}Gd	−50700#	600#							$5/2^-$#			β^- ?	
^{167}Tb	−55840#	400#							$3/2^+$#			β^- ?	
^{167}Dy	−59940	60				6.20	m	0.08	$(1/2^-)$	90		β^-=100	
^{167}Ho	−62293	6				3.1	h	0.1	$7/2^-$	90		β^-=100	
^{167}Er	−63299.2	2.9				Stable			$7/2^+$	90		IS=22.95 15	
^{167}Er^m	−63091.4	2.9	207.802	0.005		2.269	s	0.006	$1/2^-$	90		IT=100	
^{167}Tm	−62551	3				9.25	d	0.02	$1/2^+$	90		ϵ=100	
^{167}Yb	−60597	5				17.5	m	0.2	$5/2^-$	90		β^+=100	
^{167}Lu	−57470	100				51.5	m	1.0	$7/2^+$	90		β^+=100	
^{167}Hf	−53470#	210#				2.05	m	0.05	$(5/2^-)$	90		β^+=100	
^{167}Ta	−48460#	430#				1.4	m	0.3	$5/2^-$#	90		β^+=100	*
^{167}W	−42220#	310#				19.9	s	0.5	$3/2^-$#	90		β^+ ?; α=?	*
^{167}Re	−34870#	130#			*&	3.4	s	0.4	$9/2^-$#		92Me10TD	$\alpha\approx$100; β^+ ?	
^{167}Re^m	−34720	90	150#	100#	*&	6.1	s	0.2	$1/2^+$#	90		$\beta^+\approx$99.3; $\alpha\approx$0.7	
^{167}Os	−26500#	310#				810	ms	60	$3/2^-$#	90	96Pa01 T	α=67 9; β^+=33 9	*
^{167}Ir	−17190#	100#				35.2	ms	2.0	$(1/2^+)$	90	97Da07TJD	α=48 6; p=32 4; β^+ ?	
^{167}Ir^m	−16970#	140#	220#	90#		30.0	ms	0.6	$(11/2^-)$		97Da07TJD	α=80 10; β^+ ?; p=0.4 1	*
^{167}Pt						700	μs	200	$7/2^-$#		96Bi07 T	α=100	

*^{167}Ta J : lowest observed state by 92Th02 is $3/2^+$ **
*^{167}W J : lowest observed state by 92Th06 is $13/2^+$ **
*^{167}Os T : average 96Pa01=840(70) 82En03=800(200) and 77Ca23=650(150) **
*^{167}Ir^m E : 97Da07=175.3(2.2) keV should replace the estimated AME'95=220# in next AME **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{168}Gd	−48100#	700#							0^+			β^- ?	
^{168}Tb	−52500#	500#										β^- ?	
^{168}Dy	−58470#	300#				8.7	m	0.3	0^+	94		β^-=100	
^{168}Ho	−60085	29				2.99	m	0.07	3^+	94		β^-=100	
^{168}Ho^m	−60026	29	59	1		132	s	4	(6^+)	94	90Ch37E	IT$\approx$100; β^-<0.5	
^{168}Er	−62999.0	2.9				Stable			0^+	94		IS=26.8 2	
^{168}Tm	−61320	3				93.1	d	0.2	3^+	94		$\beta^+\approx$100; β^-=0.010 7	
^{168}Yb	−61577	4				Stable		>130Ty	0^+	94	56Po16 T	IS=0.13 1; α ?; 2β^+ ?	*
^{168}Lu	−57100	80			*	5.5	m	0.1	$6^{(-)}$	94	92Bo.A J	β^+=100	
^{168}Lu^m	−56880	100	220	130	BD*	6.7	m	0.4	3^+	94		β^+>95; IT<5	
^{168}Hf	−55300#	100#				25.95	m	0.20	0^+	94		β^+=100	
^{168}Ta	−48640#	370#				2.0	m	0.1	$(2^-,3^+)$	94		β^+=100	
^{168}W	−44840#	200#				51	s	2	0^+	94		$\beta^+\approx$100; α=0.0032 10	
^{168}Re	−35760#	400#				4.4	s	0.1	$(5^+,6^+,7^+)$	94		$\beta^+\approx$100; $\alpha\approx$0.005	
^{168}Re^m			non existent		RN	6.6	s	1.5			92Me10I		
^{168}Os	−29960	30				2.06	s	0.06	0^+	94	96Pa01 T	β^+=51 3; α=49 3	*
^{168}Ir	−18660#	330#				125	ms	40	low	94	96Pa01 TJ	α=?; β^+ ?	
^{168}Ir^m	−18600#	350#	60#	120#		161	ms	21	high	94	96Pa01 TJD	α=82 14	
^{168}Pt	−11150#	360#				2.0	ms	0.4	0^+	94	96Bi07 T	α=?; β^+ ?	

*^{168}Yb T : lower limit is for α decay **
*^{168}Os T : average 96Pa01=2.1(0.1) 84Sc06=2.0(0.2) 82En03=2.2(0.1) 78Ca11=1.9(0.1) **
*^{168}Os T : 84Sc06 supersedes 78Sc26=2.4(0.2) from same group **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{169}Gd	−43900#	800#							$7/2^-$#			β^- ?	
^{169}Tb	−50100#	600#							$3/2^+$#			β^- ?	
^{169}Dy	−55610	300				39	s	8	$(5/2^-)$	91		β^-=100	
^{169}Ho	−58807	20				4.7	m	0.1	$7/2^-$	91		β^-=100	
^{169}Er	−60930.8	2.9				9.40	d	0.02	$1/2^-$	91		β^-=100	
^{169}Tm	−61281.9	2.9				STABLE			$1/2^+$	91		IS=100.	
^{169}Yb	−60373	4				32.026	d	0.005	$7/2^+$	91		ϵ=100	
^{169}Yb^m	−60349	4	24.199	0.003		46	s	2	$1/2^-$	91		IT=100	
^{169}Lu	−58080	5				34.06	h	0.05	$7/2^+$	91		β^+=100	
^{169}Lu^m	−58051	5	29.0	0.5		160	s	10	$1/2^-$	91		IT=100	
^{169}Hf	−54810	80				3.24	m	0.04	$(5/2)^-$	91		β^+=100	
^{169}Ta	−50380#	210#				4.9	m	0.4	$(5/2^-)$	91		β^+=100	
^{169}W	−44940#	320#				76	s	6	$(5/2^-)$	91		β^+=100	
^{169}Re	−38350#	210#				8.1	s	0.5	$9/2^-$#	91	92Me10 TD	β^+=?; α=0.005 3	*
^{169}Re^m	−38200#	220#	150#	70#		15.1	s	1.6	$1/2^+$#	91	92Me10 TD	β^+ ?; $\alpha\approx$0.2	*
^{169}Os	−30670	90				3.46	s	0.11	$3/2^-$#	91	96Pa01 T	β^+=89 1; α=11 1	*
^{169}Ir	−22090#	130#			*&	200#	ms		low#			α ?; β^+ ?	*
^{169}Ir^m	−21990	90	100#	100#	*&	308	ms	22	$11/2^-$#	91	96Pa01 TD	α=72 13; β^+=28 13	*
^{169}Pt	−12650#	310#				3.7	ms	1.5	$3/2^-$#	91	96Pa01 T	α=?; β^+ ?	*

*^{169}Re D : α=0.005(3)% derived from original α=0.001% - 0.01% **
*^{169}Re^m T : average 92Me10=16.3(0.8) 84Sc06=12.9(1.1) **
*^{169}Os T : average 96Pa01=3.6(0.2) 95Hi02=3.2(0.3) 84Sc06=3.5(0.2) 82En03=3.4(0.2) **
*^{169}Ir E : the mass in AME'95 was −21990(90) keV, see remark for the isomer. **
*^{169}Ir I : α=50(+40−24)% T=0.64(+0.46−0.24) s in post cut-off date 97Po.B **
*^{169}Ir^m I : this state is the one which was assumed to be the ground-state in AME'95 **
*^{169}Ir^m I : E=182(56) keV, α=84(+16−21)% T=323(+90−66) ms in post cut-off date 97Po.B **
*^{169}Pt T : average 96Pa01=5(3) 81Ho10=2.5(+2.5−1.0) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{170}Tb	−46340#	700#										β^- ?	
^{170}Dy	−53400#	400#				30#	s		0^+			β^- ?	
^{170}Ho	−56250	50			*	2.76	m	0.05	(6^+)	96		β^-=100	
^{170}Ho^m	−56150	60	100	80	BD *	43	s	2	(1^+)	96		β^-=100	
^{170}Er	−60118	3				STABLE			0^+	96		IS=14.9 2; 2β^- ?; α ?	
^{170}Tm	−59803.9	2.9				128.6	d	0.3	1^-	96		$\beta^-\approx$100; ϵ=0.131 10	
^{170}Yb	−60771.9	2.9				STABLE			0^+	96		IS=3.05 6	
^{170}Lu	−57313	19				2.012	d	0.020	0^+	96		β^+=100	
^{170}Lu^m	−57220	19	92.89	0.09		670	ms	100	$(4)^-$	96		IT=100	
^{170}Hf	−56220#	200#				16.01	h	0.13	0^+	96		ϵ=100	
^{170}Ta	−50220#	200#				6.76	m	0.06	(3^+)	96		β^+=100	
^{170}W	−47240#	470#				2.42	m	0.04	0^+	96		$\beta^+\approx$100; α<1#	
^{170}Re	−38970#	400#				9.2	s	0.2	(5^+)	96		$\beta^+\approx$100; α<0.01#	
^{170}Os	−33935	13				7.3	s	0.2	0^+	96	96Pa01 D	β^+=?; α=8.6 6	
^{170}Ir	−23260#	180#			*&	830	ms	300	low	96	96Pa01 TJD	β^+ ?; α=36 10	
^{170}Ir^m	−23260#	210#	0#	100#	*&	1.05	s	0.15	high		96Pa01 JD	α=?; β^+ ?	*
^{170}Pt	−16460#	100#				14.7	ms	0.5	0^+	96	96Bi07 T	α=?; β^+=2#	*

*^{170}Ir^m J : from α correlation with ^{166}Re^m line **
*^{170}Pt D : β^+ intensity is estimated by 96Ak.A **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{171}Tb	−43500#	800#							$3/2^+$#			β^- ?	
^{171}Dy	−49850#	500#							$7/2^-$#			β^- ?	
^{171}Ho	−54530	600				53	s	2	$(7/2^-)$	92		β^-=100	
^{171}Er	−57729	3				7.516	h	0.002	$5/2^-$	92		β^-=100	
^{171}Tm	−59219.0	2.9				1.92	y	0.01	$1/2^+$	92		β^-=100	
^{171}Yb	−59315.4	2.8				STABLE			$1/2^-$	92		IS=14.3 2	
^{171}Yb^m	−59220.1	2.8	95.272	0.005		5.25	ms	0.24	$7/2^+$	92		IT=100	

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{171}Lu	−57837	3				8.24	d	0.03	$7/2^+$	92		β^+=100	
^{171}Lu^m	−57766	3	71.2	0.2		79	s	2	$1/2^-$	92		IT=100	
^{171}Hf	−55430#	200#			*	12.1	h	0.4	$(7/2^+)$	92		β^+=100	
^{171}Hf^m	−55380#	210#	50#	50#	*	29.5	s	0.9	$1/2^-$#		95Ca.A TD	IT=100	
^{171}Ta	−51740#	210#				23.3	m	0.3	$(5/2^-)$	92		β^+=100	
^{171}W	−47080#	280#				2.38	m	0.04	$(5/2^-)$	92		β^+=100	
^{171}Re	−41410#	340#				15.2	s	0.4	$(9/2^-)$	92		β^+=100	
^{171}Os	−34430#	310#				8.3	s	0.2	$(5/2^-)$	92	95Hi02 TD	β^+=98.3 3; α=1.8 2	*
^{171}Ir	−26290#	130#				1.52	s	0.08	$(11/2^-)$	92	96Pa01 TD	α=58 11; β^+=42 11	*
^{171}Pt	−17470#	310#				38	ms	5	$3/2^-$#	92	96Pa01 T	$\alpha\approx$99; $\beta^+\approx$1	*
^{171}Au	−7660#	250#				10	μs		$1/2^+$#		97Da07T	p=?; α ?	
^{171}Au^m	−7360#	140#	300#	200#		1.02	ms	0.10	$(11/2^-)$		97Da07TJD	α=54 4; p=46 4	*

*^{171}Os D : average 95Hi02=1.9(0.3)% 79Ha10=1.7(0.3)% **
*^{171}Ir T : average 96Pa01=1.3(0.2) 78Sc26=1.6(0.1) 78Ca11=1.4(0.2) J : from 92Sc16 **
*^{171}Pt T : average 96Pa01=43(3) 96Uu.1=25(+11−6) 82En03=20(6) and 81De22=40(10) **
*^{171}Au^{m}E : 97Da07 derives E=100-260 keV from experiment. Thus, E=180(50) keV should **
*^{171}Au^{m}E : replace the estimated AME'95=300# in next AME **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{172}Dy	−47400#	600#							0^+			β^- ?	
^{172}Ho	−51400#	400#				25	s	3		95		β^-=100	
^{172}Er	−56493	5				49.3	h	0.3	0^+	95		β^-=100	
^{172}Tm	−57384	6				63.6	h	0.2	2^-	95		β^-=100	
^{172}Yb	−59263.8	2.8				STABLE			0^+	95		IS=21.9 3	
^{172}Lu	−56745	3				6.70	d	0.03	4^-	95		β^+=100	
^{172}Lu^m	−56703	3	41.86	0.04		3.7	m	0.5	1^-	95		IT=100	
^{172}Hf	−56390	50				1.87	y	0.03	0^+	95		ϵ=100	
^{172}Ta	−51470	190				36.8	m	0.3	(3^+)	95		β^+=100	
^{172}W	−48980#	270#				6.6	m	0.9	0^+	95		β^+=100	
^{172}Re	−41650#	310#			*	15	s	3	(5)	95		β^+=100	
^{172}Re^m	−41650#	370#	0#	200#	*	55	s	5	(2)	95		β^+=100	
^{172}Os	−37190#	200#				19.2	s	0.9	0^+	95	95Hi02 D	β^+=?; α=1.1 2	
^{172}Ir	−27350#	400#				4.4	s	0.3	(3^+)	95		β^+=98; α=2	
^{172}Ir^m	−27210#	400#	139	10	AD	2.0	s	0.1	(7^+)	95		β^+=77 3; α=23 3	
^{172}Pt	−21070	30				98	ms	4	0^+	95	96Pa01 T	α=77 21; β^+ ?	*
^{172}Au	−9210#	330#				4.7	ms	1.1	high	95	96Pa01 TJ	α=?; p<2	*

*^{172}Pt T : average 96Pa01=96(3) 82En03=90(10) 81De22=120(10) 75Ga25=100(10) **
*^{172}Pt D : derived from original α=94(32)% **
*^{172}Au T : average 96Pa01=6.3(1.5) 93Se09=4(1) **
*^{172}Au J : from α correlation with ^{168}Ir^m line **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{173}Dy	−43370#	700#							$9/2^+$#			β^- ?	
^{173}Ho	−49100#	400#							$7/2^-$#			β^- ?	
^{173}Er	−53650#	200#				1.434	m	0.017	$(7/2^-)$	95	94It.A T	β^-=100	
^{173}Tm	−56262	5				8.24	h	0.08	$(1/2^+)$	95		β^-=100	
^{173}Yb	−57560.0	2.8				STABLE			$5/2^-$	95		IS=16.12 21	
^{173}Lu	−56889.2	2.8				1.37	y	0.01	$7/2^+$	95		ϵ=100	
^{173}Hf	−55280#	100#				23.6	h	0.1	$1/2^-$	95		β^+=100	
^{173}Ta	−52590#	230#				3.14	h	0.13	$5/2^-$	95		β^+=100	
^{173}W	−48590#	380#				7.6	m	0.2	$5/2^-$	95		β^+=100	
^{173}Re	−43720#	450#				1.98	m	0.26	$(5/2^-)$	95		β^+=100	
^{173}Os	−37450#	310#				22.4	s	0.9	$(5/2^-)$	95	95Hi02 TD	$\beta^+\approx$100; α=0.4 2	
^{173}Ir	−30080#	230#			*	9.0	s	0.8	$(3/2^+,5/2^+)$	95		β^+>93; α<7	
^{173}Ir^m	−29980#	210#	100#	100#	*	2.20	s	0.05	$(11/2^-)$	95		β^+=88 1; α=12 1	
^{173}Pt	−21890	100				363	ms	14	$5/2^-$#	95	96Pa01 T	α=84 6; β^+=16 6	*
^{173}Au	−12870#	140#			*&	10#	ms		low#			α ?; β^+ ?	*
^{173}Au^m	−12670	100	200#	100#	*&	15	ms	2	$11/2^-$#	95	96Pa01 T	α=?; β^+=4#	*

*^{173}Pt T : average 96Pa01=376(11) 82En03=360(20) and 81De22=325(20) **
*^{173}Au E : the mass in AME'95 was −12670(100) keV, see remark for the isomer. **
*^{173}Au I : α=94(+6−42)% T=19.5(+9.0−6.0) ms in post cut-off date 97Po.B **
*^{173}Au^{m}I : this state is the one which was assumed to be the ground-state in AME'95 **
*^{173}Au^{m}I : E=243(55) keV, α=92(+8−27)% T=12(+3−2) ms in post cut-off date 97Po.B **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{174}Ho	−45500#	500#										β^- ?	
^{174}Er	−51850#	300#				3.3	m	0.2	0^+	91		β^-=100	
^{174}Tm	−53870	40				5.4	m	0.1	$(4)^-$	91		β^-=100	
^{174}Yb	−56953.3	2.8				STABLE			0^+	96		IS=31.8 4	
^{174}Lu	−55579.0	2.8				3.31	y	0.05	1^-	96	92Bo.A J	β^+=100	
^{174}Lu^m	−55408.2	2.8	170.83	0.05		142	d	2	6^-	96	92Bo.A J	IT=99.38 2; ϵ=0.62 2	
^{174}Hf	−55852	3				2.0	Py	0.4	0^+	96		IS=0.162 3; α=100; 2β^+ ?	
^{174}Ta	−52010	80				1.05	h	0.03	$3^{(+)}$	91		β^+=100	
^{174}W	−50150#	300#				31	m	1	0^+	96		β^+=100	*
^{174}Re	−43680#	410#				2.40	m	0.04		91		β^+=100	
^{174}Os	−39940#	470#				44	s	4	0^+	96		$\beta^+\approx$100; α=0.024 7	*
^{174}Ir	−30920#	400#				9	s	2	(3^+)	91	92Sc16 T	β^+=99.5 3; α=0.5 3	
^{174}Ir^m	−30730#	400#	193	11	AD	4.9	s	0.3	(7^+)		92Sc16 T	$\beta^+\approx$100; α=0.47 27	
^{174}Pt	−25326	13				898	ms	9	0^+	91	96Pa01 T	α=83 5; β^+=17 5	*
^{174}Au	−14050#	150#				136	ms	23	low	91	96Pa01 TJ	α=?; β^+ ?	*
^{174}Hg						2.7	ms	1.3	0^+		96Uu.1 TD	α=100	*
*^{174}W	T : is ENSDF's average of 4 results; see also 90Me12=35.3(0.5)												**
*^{174}Os	D : symmetrized from α=0.020(+10−4)%												**
*^{174}Pt	T : average 96Pa01=890(20) 82En03=900(10)												**
*^{174}Au	T : average 96Pa01=171(29) 83Sc24=120(20)												**
*^{174}Hg	T : symmetrized from 2.1(+1.8−0.7)												**
^{175}Ho	−42800#	600#							$7/2^-$#			β^- ?	
^{175}Er	−48500#	400#				1.2	m	0.3	$9/2^+$#		96Zh03 TD	β^-=100	
^{175}Tm	−52320	50				15.2	m	0.5	$(1/2^+)$	93	96Zh03 J	β^-=100	
^{175}Yb	−54704.3	2.8				4.185	d	0.001	$7/2^-$	93		β^-=100	
^{175}Yb^m	−54189.4	2.8	514.869	0.007		68.2	ms	0.3	$1/2^-$	93		IT=100	
^{175}Lu	−55174.3	2.6				STABLE			$7/2^+$	93		IS=97.41 2	
^{175}Hf	−54490	3				70	d	2	$5/2^-$	93		ϵ=100	
^{175}Ta	−52490#	100#				10.5	h	0.2	$7/2^+$	93		β^+=100	
^{175}W	−49580#	200#				35.2	m	0.6	$(1/2^-)$	93		β^+=100	
^{175}Re	−45280#	450#				5.89	m	0.05	$(5/2^-)$	93		β^+=100	
^{175}Os	−39980#	300#				1.4	m	0.1	$(5/2^-)$	93		β^+=100	
^{175}Ir	−33270#	340#				9	s	2	$(5/2^-)$	93		β^+=99.15 28; α=0.85 28	
^{175}Pt	−25830#	310#				2.52	s	0.08	$5/2^-$#	93		α=64 5; β^+ ?	
^{175}Au	−17190#	240#			*	195	ms	18	$11/2^-$#	93	96Pa01 T	α=82 17; β^+ ?	*
^{175}Au^m	−17090#	130#	100#	200#	*				$5/2^+$#			α ?; β^+ ?	*
^{175}Hg	−8000#	320#				12	ms	4	$5/2^-$#	93	96Uu.1 T	α=100	*
*^{175}Au	T : average 96Pa01=185(30) 83Sc24=200(22) D : symmetrized from α=94(+6−25)%												**
*^{175}Au^m	T : erroneously 200 ms in AME'95. Was correct in AME'93												**
*^{175}Hg	T : average 96Uu.1=13(+6−4) 96Pa01=8(8)												**
^{176}Er	−46310#	400#							0^+			β^- ?	
^{176}Tm	−49380	100				1.85	m	0.03	(4^+)	90	94It.A T	β^-=100	
^{176}Yb	−53497.2	2.9				STABLE			0^+	96		IS=12.7 2; 2β^- ?; α ?	
^{176}Yb^m	−52447.2	2.9	1050.0	0.3		11.4	s	0.3	(8^-)	96		IT$\geq$90; $\beta^-\leq$10	
^{176}Lu	−53391.0	2.6				37.8	Gy	0.2	7^-	96		IS=2.59 2; β^-=100	
^{176}Lu^m	−53268.1	2.6	122.855	0.006		3.635	h	0.003	1^-	96	91Kl02 E	$\beta^-\approx$100; ϵ=0.095 16	
^{176}Hf	−54583.8	2.7				STABLE			0^+	96		IS=5.206 5	
^{176}Ta	−51470	100				8.09	h	0.05	$(1)^-$	90		β^+=100	
^{176}Ta^m	−51370	100	103.0	1.0		1.1	ms	0.1	(+)	90		IT=100	
^{176}Ta^n	−48650	110	2820	50		1.4	ms	0.1	20^-		94Da11 TE	IT=100	*
^{176}W	−50680#	200#				2.5	h	0.1	0^+	96		ϵ=100	
^{176}Re	−45110#	200#				5.3	m	0.3	$3^{(+)}$	90		β^+=100	
^{176}Os	−41960#	200#				3.6	m	0.5	0^+	90		β^+=100	
^{176}Ir	−33990#	300#				8	s	1		90		β^+=97.9 4; α=2.1 4	
^{176}Pt	−28880#	200#				6.33	s	0.15	0^+	90		β^+ ?; α=38 3	
^{176}Au	−18380#	400#				1.25	s	0.30		90		α=?; β^+=40#	
^{176}Hg	−11720	40				25	ms	9	0^+	90	96Pa01 T	α=?; β^+=1.4#	*
*^{176}Ta^n	E : 2772 + x, from 94Da11 and x estimated 50(50) by NUBASE												**
*^{176}Hg	T : average 96Pa01=18(10) 83Sc24=34(+18−9); 20.5(+4.7−3.6) in post cut-off date 97Po.B												**
*^{176}Hg	D : β^+ intensity is estimated by 96Ak.A; α=94(+6−27)% in post cut-off date 97Po.B												**

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{177}Er	−42500#	600#							1/2$^-$#			β^- ?	
^{177}Tm	−47470#	300#				82	s	13	(1/2$^+$)	93		β^-=100	*
^{177}Yb	−50993	3				1.911	h	0.003	(9/2$^+$)	93		β^-=100	
^{177}Yb^m	−50662	3	331.5	0.3		6.41	s	0.03	(1/2$^-$)	93		IT=100	
^{177}Lu	−52391.9	2.6				6.734	d	0.012	7/2$^+$	93		β^-=100	
^{177}Lu^m	−51421.7	2.6	970.1749	0.0025		160.4	d	0.3	23/2$^-$	93		β^-=78.3 6; IT=21.7 6	
^{177}Hf	−52890.2	2.5				STABLE			7/2$^-$	93		IS=18.606 4	
^{177}Hf^m	−51574.7	2.5	1315.4502	0.0011		1.08	s	0.06	23/2$^+$	93		IT=100	
^{177}Hf^n	−50150.2	2.5	2740.0	0.2		51.4	m	0.5	37/2$^-$	93		IT=100	
^{177}Ta	−51724	4				56.56	h	0.06	7/2$^+$	93		β^+=100	
^{177}W	−49720#	300#				135	m	3	(1/2$^-$)	93		β^+=100	
^{177}Re	−46320#	200#				14	m	1	(5/2$^-$)	93		β^+=100	
^{177}Os	−41880#	280#				2.8	m	0.3	(1/2$^-$)	93		β^+=100	
^{177}Ir	−36170#	450#				30	s	2	(5/2$^-$)	93		$\beta^+\approx$100; α=0.06 1	
^{177}Pt	−29390#	310#				10.0	s	0.4	(5/2$^-$)	93	93Me13 T	β^+=94.4 4; α=5.6 4	*
^{177}Au	−21220#	230#				1.18	s	0.07	5/2$^-$#	93		$\beta^+\geq$60; $\alpha\leq$40	
^{177}Hg	−12730	110				130	ms	5	5/2$^-$#	93		α=85; β^+=15	
^{177}Tl	−2910#	230#				< 1	μs		1/2$^+$#		96Da.A D	p=?; α ?	*
^{177}Tl^m	−2210#	380#	700#	300#					9/2$^-$#			p ?; α ?	*

*^{177}Tm T : symmetrized from 85(+10−15) **
*^{177}Pt T : average 93Me13=9.8(0.4) 82Bo04=11(1) **
*^{177}Tl I : not found by 91Se01, setting an upper limit of 1 micro-second on half-life **
*^{177}Tl I : p=27(+19−14)% with T=17(+6−4) ms and α=73(+14−19)%, in post cut-off date 97Po.B **
*^{177}Tl^m I : E=836(54) keV, p=51(8)% with T=230(+41−33)us and α=49(8)%, in **
*^{177}Tl^m I : post cut-off date 97Po.B **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{178}Tm	−44120#	400#										β^- ?	
^{178}Yb	−49701	10				74	m	3	0$^+$	94		β^-=100	
^{178}Lu	−50346	3				28.4	m	0.2	1$^{(+)}$	94		β^-=100	
^{178}Lu^m	−50222	4	123.7	2.6	RQ	23.1	m	0.3	9$^{(-)}$	94	92Bo.A J	β^-=100	
^{178}Hf	−52445.2	2.5				STABLE			0$^+$	94		IS=27.297 4	
^{178}Hf^m	−51297.8	2.5	1147.423	0.005		4.0	s	0.2	8$^-$	94		IT=100	
^{178}Hf^n	−49999.5	2.5	2445.69	0.11		31	y	1	16$^+$	94	94Ki.A E	IT=100	
^{178}Ta	−50530	100			*	9.31	m	0.03	1$^+$	94		β^+=100	
^{178}Ta^m	−50533	10	0	100	BD *	2.36	h	0.08	(7)$^-$	94		β^+=100	*
^{178}Ta^n	−49060	100	1470	100		59	ms	3	(15$^-$)	94	96Ko13 T	IT=100	*
^{178}W	−50440	100				21.6	d	0.3	0$^+$	94		ϵ=100	
^{178}Re	−45780	210				13.2	m	0.2	(3$^+$)	94		β^+=100	
^{178}Os	−43460	200				5.0	m	0.4	0$^+$	94		β^+=100	
^{178}Ir	−36250#	360#				12	s	2		95		β^+=100	
^{178}Pt	−31940#	470#				21.1	s	0.6	0$^+$	94		β^+=92.3 3; α=7.7 3	
^{178}Au	−22380#	400#				2.6	s	0.5		94		$\beta^+\leq$60; α>40	
^{178}Hg	−16323	15				268	ms	15	0$^+$	94	96Pa01 T	α=?; β^+=30#	*
^{178}Tl	−4450#	210#										α ?; β^+ ?	

*^{178}Ta^m E : 140(90) keV derived from new data on masses. To be changed in next AME **
*^{178}Ta^n E : 1470.6 keV above ^{178}Ta^m, from ENSDF. Should become E=1610(90) in next AME **
*^{178}Ta^n T : average 96Ko13=58(4) 79Du02=60(5) **
*^{178}Ta^n E : 3 isomers are known above the ground-state. The third one is (21$^-$), 290(12) ms at **
*^{178}Ta^n E : 2902 keV above the (7)$^-$ isomer, all from 96Ko13. **
*^{178}Hg T : average 96Pa01=287(23) 91Se01=250(25) and 79Ha10=260(30) **
*^{178}Hg D : β^+ intensity is estimated by 96Ak.A **

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{179}Tm	−41600#	500#						$1/2^+$#			β^- ?	
^{179}Yb	−46420#	300#			8.0	m	0.4	$(1/2^-)$	94		β^-=100	
^{179}Lu	−49067	6			4.59	h	0.06	$7/2^{(+)}$	94		β^-=100	
^{179}Lu^m	−48475	6	592.4	0.4	3.1	ms	0.9	$1/2^{(+)}$	94		IT=100	
^{179}Hf	−50472.9	2.5			STABLE			$9/2^+$	94		IS=13.629 6	
^{179}Hf^m	−50097.9	2.5	375.0367	0.0025	18.67	s	0.04	$1/2^-$	94		IT=100	
^{179}Hf^n	−49367.1	2.5	1105.84	0.19	25.05	d	0.25	$25/2^-$	94		IT=100	
^{179}Ta	−50362	6			1.82	y	0.03	$7/2^+$	94		ϵ=100	
^{179}Ta^m	−49044	6	1318.0	0.4	9.0	ms	0.2	$(25/2^+)$	94		IT=100	
^{179}Ta^n	−47721	6	2640.9	0.6	52	ms	3	$(37/2^+)$	94		IT=100	
^{179}W	−49302	16			37.05	m	0.16	$(7/2)^-$	94		β^+=100	
^{179}W^m	−49080	16	221.926	0.008	6.40	m	0.07	$(1/2)^-$	94		IT≈100; β^+=0.28 3	
^{179}Re	−46590	50			19.5	m	0.1	$(5/2)^+$	95		β^+=100	
^{179}Os	−42890#	230#			6.5	m	0.3	$(1/2^-)$	94		β^+=100	
^{179}Ir	−38050#	400#			79	s	1	$(5/2)^-$	95		β^+=100	
^{179}Pt	−32160#	300#			21.2	s	0.4	$1/2^-$	94		β^+≈100; α=0.24 3	
^{179}Au	−24770#	340#			7.1	s	0.3	$5/2^-$#	94		β^+=78.0 9; α=22.0 9	
^{179}Hg	−16970#	310#			1.09	s	0.04	$5/2^-$#	94		α≈53; β^+=?; β^+p≈0.15	
^{179}Tl	−7950#	140#			190	ms	70	$(1/2^+)$	94	ABBW J	α≈100; β^+ ?	*
^{179}Tl^m	−7400#	240#	560#	210#	1.1	ms	0.4	$(9/2^-)$	94	96Pa01 T	α≈100; IT ?	*

*^{179}Tl T : symmetrized from 160(+90−40) J : from α decay to ^{175}Au^m **

*^{179}Tl^m T : average 96Pa01=0.7(+0.6−0.4) 83Sc24=1.4(0.5) **

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{180}Yb	−44400#	400#			2.4	m	0.5	0^+	94		β^-=100	
^{180}Lu	−46690	70			5.7	m	0.1	5^+	94	95Me03J	β^-=100	
^{180}Lu^m	−46680	70	13.9	0.3	1	s		3^-		95Me03EJT	IT ?	
^{180}Hf	−49789.5	2.5			STABLE			0^+	94		IS=35.100 7	
^{180}Hf^m	−48648.0	2.5	1141.48	0.04	5.5	h	0.1	8^-	94		IT≈100; β^-=0.3 1	
^{180}Ta	−48935	3			8.152	h	0.006	1^+	94		ϵ=86 3; β^-=14 3	
^{180}Ta^m	−48860.3	2.9	75.2	1.3	RQ STABLE		>1.2Py	9^-	94		IS=0.012 2	
^{180}W	−49643	5			STABLE		>1.1Py	0^+	94		IS=0.120 1; α ?; 2β^+ ?	*
^{180}W^m	−48114	5	1529.04	0.03	5.47	ms	0.09	8^-	94		IT=100	
^{180}Re	−45840	30			2.44	m	0.06	$(1)^-$	94		β^+=100	
^{180}Os	−44390#	180#			21.5	m	0.4	0^+	94		β^+=100	
^{180}Ir	−37960#	190#			1.5	m	0.1	$(4,5)^+$	94		β^+=100	
^{180}Pt	−34270#	200#			52	s	3	0^+	94		β^+≈100; α≈0.3	
^{180}Au	−25710#	300#			8.1	s	0.3		94		β^+≤98.2; α≥1.8	
^{180}Hg	−20190#	200#			2.56	s	0.02	0^+	94	93Wa03T	β^+=52 4; α=48 4	
^{180}Tl	−9140#	450#			720	ms	110		94		α=75#; β^+=25#; β^+SF≈1.0e−4	*
^{180}Pb					5	ms	3	0^+		96To08 TD	α=100	*

*^{180}W T : lower limit is for α decay **

*^{180}Tl T : symmetrized from 700(+120−90) **

*^{180}Pb T : symmetrized from 4(+4−2) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{181}Yb	−40850#	400#							$3/2^-$#			β^- ?	
^{181}Lu	−44740#	300#				3.5	m	0.3	$(7/2^+)$	91		β^-=100	
^{181}Hf	−47413.9	2.6				42.39	d	0.06	$1/2^-$	91		β^-=100	
^{181}Ta	−48441.1	2.9				STABLE			$7/2^+$	92		IS=99.988 2	
^{181}W	−48253	5				121.2	d	0.2	$9/2^+$	91		ϵ=100	
^{181}Re	−46515	14				19.9	h	0.7	$5/2^+$	91		β^+=100	
^{181}Os	−43520	200				105	m	3	$1/2^-$	92		β^+=100	
^{181}Os^m	−43470	200	48.9	0.2		2.7	m	0.1	$(7/2)^-$	92	95Ro09E	β^+=100	
^{181}Ir	−39460	210				4.90	m	0.15	$(5/2)^-$	93		β^+=100	
^{181}Pt	−34300#	280#				51	s	5	$1/2^-$	93	95Bi01 D	$\beta^+\approx$100; α=0.074 10	
^{181}Au	−27990#	450#				14.5	s	0.4	$(3/2^-)$	92	95Bi01 TJD	β^+=?; α=2.7 5	*
^{181}Hg	−20670#	310#				3.6	s	0.3	$1/2^{(-)}$	92	72Ho18D	β^+=64 4; α=36 4; ...	*
^{181}Tl	−12200#	380#				3.4	s	0.6	$1/2^+$#	91	92Bo.DTD	α=?; β^+ ?	
^{181}Tl^m	−11600#	430#	600#	200#	EU	2.7	ms	1.0	$9/2^-$#		84Sc.A T	α=?; β^+ ?	*
^{181}Pb	−3060#	160#			&	45	ms	20	$5/2^-$#		96To01 T	α=?; β^+=2#	*
^{181}Pb^m			non existent		RN &				$13/2^+$#	91	96To01 I		*

*^{181}Au T : in agreement with 79Ha10=13(3), but differing noticeably from earlier: **
*^{181}Au T : 68Si01=11.5(1.0) and 68De01=11.3(0.7) **
*^{181}Hg D : ...; β^+p=0.014 4; $\beta^+\alpha$=9e−6 3 D : β^+p from 72Ho18; $\beta^+\alpha$ from 75Ho02 **
*^{181}Tl^m I : not confirmed by 96To01. Provisionally accepted **
*^{181}Pb T : supersedes 89To01=50(+40−30) from same group **
*^{181}Pb^m I : proved by 96To01 not to exist **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{182}Lu	−41720#	300#				2.0	m	0.2	(0,1,2)	95		β^-=100	
^{182}Hf	−46060	7				9	My	2	0^+	95		β^-=100	
^{182}Hf^m	−44887	7	1172.88	0.18		61.5	m	1.5	8^-	95		β^-=58 3; IT=42 3	
^{182}Ta	−46432.7	2.9				114.43	d	0.03	3^-	95		β^-=100	
^{182}Ta^m	−46416.4	2.9	16.263	0.003		283	ms	3	5^+	95		IT=100	
^{182}Ta^n	−45913.1	2.9	519.572	0.018		15.84	m	0.10	10^-	95		IT=100	
^{182}W	−48246.2	2.9				STABLE			0^+	95		IS=26.498 29	
^{182}Re	−45450	100			*	64.0	h	0.5	7^+	95		β^+=100	
^{182}Re^m	−45386	20	60	100	BD*	12.7	h	0.2	2^+	95		β^+=100	
^{182}Os	−44538	25				22.10	h	0.25	0^+	95		ϵ=100	
^{182}Ir	−39000	140				15	m	1	(3^+)	95	95Sa42 J	β^+=100	
^{182}Pt	−36080	200				2.2	m	0.1	0^+	95		$\beta^+\approx$100; α=0.038 2	
^{182}Au	−28300#	360#				15.5	s	0.4	5^+#	95	95Bi01 T	$\beta^+\approx$100; α=0.13 5	*
^{182}Hg	−23520#	470#				10.83	s	0.06	0^+	95	71Ho07D	β^+=84.8 8; α=15.2 8; β^+p<1e−5	*
^{182}Tl	−13400#	400#			*	2.0	s	0.3	2^-#	95	92Bo.DT	β^+>96; α<4	
^{182}Tl^m	−13300#	410#	100#	100#	*	2.9	s	0.5	(7^+)		91Bo22TJ	$\alpha\approx$100; β^+ ?	*
^{182}Pb	−6822	17				60	ms	40	0^+	95		α=?; β^+=2#	*

*^{182}Au T : average 95Bi01=14.5(1.3)(for β^+), 15.3(1.0)(for α) and 92Ro21=15.6(0.4) **
*^{182}Hg D : and α=13.3(0.5)% in post cut-off date 97Ba21 **
*^{182}Tl^m T : average 91Bo22=3.1(1.0) 92Bo.D=2.8(0.6) **
*^{182}Pb T : symmetrized from 55(+40−35) D : β^+ intensity is estimated by 96Ak.A **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{183}Lu	−39520#	300#				58	s	4	(7/2$^+$)	91		β^-=100	
^{183}Hf	−43290	30				1.067	h	0.017	(3/2$^-$)	91		β^-=100	
^{183}Ta	−45295.6	2.9				5.1	d	0.1	7/2$^+$	91		β^-=100	
^{183}W	−46365.6	2.7				STABLE		>110Py	1/2$^-$	93		IS=14.314 4	
^{183}W^m	−46056.1	2.7	309.500	0.003		5.20	s	0.06	11/2$^+$	93		IT=100	
^{183}Re	−45810	8				70.0	d	1.4	5/2$^+$	91		ϵ=100	
^{183}Re^m	−43902	8	1907.6	0.3		1.04	ms	0.05	(25/2$^+$)	91		IT=100	
^{183}Os	−43680#	100#				13.0	h	0.5	9/2$^+$	91		β^+=100	
^{183}Os^m	−43510#	100#	170.71	0.05		9.9	h	0.3	1/2$^-$	91		β^+=85 2; IT=15 2	
^{183}Ir	−40230#	140#				58	m	6	5/2$^-$	91		$\beta^+\approx$100; α=0.05#	
^{183}Pt	−35650#	230#				6.5	m	1.0	1/2$^-$	93	95Bi01 D	$\beta^+\approx$100; α=0.0096 5	
^{183}Pt^m	−35620#	230#	34.50	0.08		43	s	5	(7/2)$^-$	93		$\beta^+\approx$100; α<4e−4; IT ?	
^{183}Au	−30160#	400#				42.7	s	1.2	5/2$^-$	91	95Bi01 TD	$\beta^+\approx$100; α=0.8 2	*
^{183}Hg	−23700#	300#				9.4	s	0.7	1/2$^-$	95		β^+=74.5 15; α=25.5 15; ...	*
^{183}Hg^m	−23460#	300#	240#	40#		5#	s		13/2$^+$#			β^+ ?	
^{183}Tl	−16120#	390#				6.9	s	0.7	(1/2$^+$)	91	92Bo.DT	β^+=?; α=2#	
^{183}Tl^m	−15660#	380#	460#	100#		60	ms	15	(9/2$^-$)	91		α<0.01; IT ?	
^{183}Pb	−7520#	310#			*	300	ms	80	(1/2$^-$)	91		$\alpha\approx$94; $\beta^+\approx$6	
^{183}Pb^m	−7450#	310#	70#	40#	EU*	500#	ms		13/2$^+$#		89To01D	α=?; β^+ ?	*

*^{183}Au T : average 95Bi01=44.6(1.9) 70Ma24=42.0(1.2) J : from 94Pa37 **
*^{183}Hg D : ...; β^+p=5.6e−4 8 D : β^+p in ENSDF adopted data set is not correct **
*^{183}Pb^{m}D : Tentative assignment (cf. AME'95) for the 6781 α line **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{184}Lu	−36170#	400#				20	s	3	(3$^+$)	90	95Kr04TJ	β^-=100	
^{184}Lu^m			non existent		RN	20	s		high		95Kr04I		
^{184}Hf	−41500	40				4.12	h	0.05	0$^+$	90		β^-=100	
^{184}Hf^m	−40230	40	1272.4	0.4		48	s	10	8$^-$		95Kr04TE	β^-=100	
^{184}Ta	−42840	26				8.7	h	0.1	(5$^-$)	90		β^-=100	
^{184}W	−45706.0	2.7				STABLE		>300Py	0$^+$	90		IS=30.642 8	
^{184}Re	−44223	5				38.0	d	0.5	3$^{(-)}$	90		β^+=100	
^{184}Re^m	−44035	5	188.01	0.04		169	d	8	8$^{(+)}$	90		IT=75.4 11; ϵ=24.6 11	
^{184}Os	−44254.5	3.0				STABLE		>56Ty	0$^+$	90		IS=0.020 3; α ?; 2β^+ ?	*
^{184}Ir	−39690	270				3.09	h	0.03	5$^-$	90		β^+=100	
^{184}Pt	−37360#	180#				17.3	m	0.2	0$^+$	90	95Bi01 D	$\beta^+\approx$100; α=0.0017 7	
^{184}Pt^m	−35520#	180#	1839.4	1.6		1.01	ms	0.05	8$^-$	90		IT=100	
^{184}Au	−30300#	190#			&	12	s	2	5$^+$		90Ed01TD	β^+=100	*
^{184}Au^m	−30230#	190#	68.6	0.1	&	49.9	s	2.4	2$^+$	90	94Ib01 EJ	β^+=?; IT=30 10; α=0.013 3	*
^{184}Hg	−26180#	200#				30.6	s	0.3	0$^+$	90		β^+=98.89 6; α=1.11 6	
^{184}Tl	−16990#	300#			*				2$^-$#			β^+ ?	
^{184}Tl^m	−16890#	310#	100#	100#	*	9.7	s	0.6	7$^+$		92Bo.DT	β^+=97.9 7; α=2.1 7	
^{184}Pb	−10990#	200#				550	ms	60	0$^+$	90		α=?; β^+ ?	

*^{184}Os T : lower limit is for α decay **
*^{184}Au J : from 94Ib01 **
*^{184}Au^{m}T : average 95Bi01=45.8(1.8) 72Fi12=53.0(1.4) 70Ha18=47(3) **
*^{184}Au^{m}D : IT intensity is from 93Ro.B; α intensity from 95Bi01 **

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{185}Hf	−38400#	300#			3.5	m	0.6	$3/2^-$#	95		β^-=100	
^{185}Ta	−41396	14			49.4	m	1.5	$7/2^+$#	95		β^-=100	
^{185}W	−43388.4	2.8			75.1	d	0.3	$3/2^-$	95		β^-=100	
^{185}W^m	−43191.0	2.8	197.43	0.05	1.597	m	0.004	$11/2^+$	95	94It.A T	IT=100	
^{185}Re	−43821.4	2.8			STABLE			$5/2^+$	95		IS=37.40 2	
^{185}Os	−42808.6	2.8			93.6	d	0.5	$1/2^-$	95		ϵ=100	
^{185}Ir	−40440#	200#			14.4	h	0.1	$5/2^-$	95		β^+=100	
^{185}Pt	−36560	210			70.9	m	2.4	$(9/2^+)$	95		$\beta^+\approx$100; α=0.0050 20	*
^{185}Pt^m	−36460	210	103.4	0.2	33.0	m	0.8	$(1/2^-)$	95		β^+=?; IT<2	
^{185}Au	−31850	210			4.25	m	0.06	$5/2^-$	95		$\beta^+\approx$100; α=0.26 6	
^{185}Au^m	non existent			RN	6.8	m	0.3	$11/2^-$#	95	77Bo.A I	β^+<100; IT ?	
^{185}Hg	−26100#	280#			49.1	s	1.0	$1/2^-$	95		β^+=94 1; α=6 1	
^{185}Hg^m	−26000#	280#	103.8	1.0	21.6	s	1.5	$13/2^+$	95	87Ki.A E	IT=54 10; β^+=46 10; $\alpha\approx$0.03	*
^{185}Tl	−19470#	400#			19.5	s	0.5	$1/2^+$#	95		β^+=?; α ?	
^{185}Tl^m	−19020#	400#	452.8	2.0	1.83	s	0.12	$9/2^-$#	95	77Sc03 E	IT$\approx$100; α=0.10 3; β^+ ?	
^{185}Pb	−11570#	310#			* 4.1	s	0.3	$1/2^-$#	95		$\alpha\approx$100; β^+ ?	
^{185}Pb^m	−11510#	310#	60#	40#	* 6.1	s	1.1	$13/2^+$#		80Sc09 T	$\alpha\approx$100; β^+ ?	
^{185}Bi	−2140#	230#			* 2#	ms		$9/2^-$#		96Da06 J	p ?; α ?	*
^{185}Bi^m	−2040#	200#	100#	100#	* 44	μs	16	$(1/2^+)$		96Da06 TJD	p=?; α ?	

*^{185}Pt D : if the 4444(10) keV α line is from ground-state; otherwise α=0.0010(4)% from isomer **
*^{185}Hg^m E : ENSDF gives 99.3(0.5) plus "8-keV uncertainty", but missed 87Ki.A work **
*^{185}Bi T : estimated from $9/2^-$ isomers in odd Bi and Tl isotopes **

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{186}Hf	−36400#	300#						0^+			β^- ?	
^{186}Ta	−38610	60			10.39	m	0.03	2,3	89	94It.A T	β^-=100	
^{186}W	−42511.3	2.9			STABLE		>590Py	0^+	89	95Da.3 T	IS=28.426 37; 2β^- ?; α ?	*
^{186}Re	−41929.8	2.8			3.7183	d	0.0011	$1^{(-)}$	89	94Sc39 T	β^-=93.1 2; ϵ=6.9 2	
^{186}Re^m	−41780	40	150	40	200	ky	50	(8^+)	89		IT=?; β^-<10	
^{186}Os	−42999.3	2.9			2.0	Py	1.1	0^+	89		IS=1.58 10; α=100	
^{186}Ir	−39168	20			*16.64	h	0.03	5^+	89		β^+=100	
^{186}Ir^m	−39167	20	0.8	0.4	* 1.92	h	0.05	2^-	89	91Be25 ET	$\beta^+\approx$100; IT ?	*
^{186}Pt	−37790	30			2.08	h	0.05	0^+	89	91Be25 T	β^+=100; $\alpha\approx$1.4e−4	*
^{186}Au	−31670	140			10.7	m	0.5	3^-	89	95Bi01 D	β^+=100; α=0.0008 2	
^{186}Au^m	non existent			RN	< 2	m				83Po10 I		
^{186}Hg	−28450	200			1.38	m	0.10	0^+	89		$\beta^+\approx$100; α=0.016 5	
^{186}Tl	−19980#	370#			* > 20	s		(2^-)	89	77Ij01 TD	β^+ ?; α=0.006 2	*
^{186}Tl^m	−19880#	370#	100#	50#	* 27.5	s	1.0	7^+	89		β^+=100	
^{186}Tl^n	−19510#	370#	470#	50#	2.9	s	0.2	10^-		91Va04 T	IT=100	*
^{186}Pb	−14620#	470#			4.82	s	0.03	0^+	89	94Wa23T	α=?; β^+=44#	*
^{186}Bi	−3280#	450#			* 3#	ms		3^+#			α ?; β^+ ?	*
^{186}Bi^m	−3030#	430#	250#	250#	* 10	ms	4	10^-		84Sc.A TD	α=?; β^+ ?	*

*^{186}W T : lower limit is for 2β^- decay **
*^{186}Ir^m T : average 91Be25=1.90(0.05) 70Fi.A=2.0(0.1) **
*^{186}Pt T : average 91Be25=2.10(0.05) 72Fi12=2.0(0.1) **
*^{186}Tl J : from 91Va04 **
*^{186}Tl^n E : 373.9(0.5) keV above ^{186}Tl^m, from 91Va04 **
*^{186}Pb T : average 94Wa23=4.83(0.03) 80Sc09=4.79(0.05) **
*^{186}Pb D : β^+ intensity is estimated by 96Ak.A; post-cut-off date 97An.1 α=50(25)% **
*^{186}Bi T : 15.0(1.7) ms for α decay in post cut-off date 97Ba21 **
*^{186}Bi^m T : 9.8(1.3) ms for α decay in post cut-off date 97Ba21 **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{187}Ta	−36880#	300#								$7/2^+$#			β^- ?	
^{187}W	−39906.7	2.9					23.72	h	0.06	$3/2^-$	92		β^-=100	
^{187}Re	−41217.9	2.8					43.5	Gy	1.3	$5/2^+$	91		IS=62.60 2; β^-=100; α<0.0001	
^{187}Os	−41220.5	2.8					STABLE			$1/2^-$	92		IS=1.6 1	
^{187}Ir	−39718	7					10.5	h	0.3	$3/2^+$	91		β^+=100	
^{187}Ir^m	−39532	7	186.15	0.04			30.3	ms	0.6	$9/2^-$	91		IT=100	
^{187}Pt	−36740#	180#					2.35	h	0.03	$3/2^-$	91		β^+=100	
^{187}Au	−33010#	150#					8.4	m	0.3	$1/2^+$	91		$\beta^+\approx$100; α=0.003#	
^{187}Au^m	−32890#	150#	120.51	0.16			2.3	s	0.1	$9/2^-$	91		IT=100	
^{187}Hg	−28150#	240#				*&	1.9	m	0.3	$3/2^-$	91		β^+=100; α>1.2e-4	
^{187}Hg^m	−28050#	230#	100#	70#		*&	2.4	m	0.3	$13/2^+$	91		β^+=100; α>2.5e-4	
^{187}Tl	−22200#	400#					51	s		$(1/2^+)$	91		β^+<100; α ?	
^{187}Tl^m	−21870#	400#	332	4	AD		15.60	s	0.12	$(9/2^-)$	91		IT=?; α=?; β^+ ?	
^{187}Pb	−14880#	300#				*&	15.2	s	0.3	$(3/2^-)$	91	95La10 J	β^+=?; α=?	
^{187}Pb^m	−14820#	300#	60#	40#		*&	18.3	s	0.3	$(13/2^+)$	91		β^+=98.0; α=2.0	
^{187}Bi	−6090#	380#				*	35	ms	4	$9/2^-$#	94		α>50; β^+ ?	
^{187}Bi^m	−5940#	390#	150#	100#		*	0.8	ms	0.6	$1/2^+$#			α>50; β^+ ?	

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{188}Ta	−33800#	300#											β^- ?	
^{188}W	−38669	4					69.4	d	0.5	0^+	90		β^-=100	
^{188}Re	−39018.1	2.8					16.98	h	0.02	1^-	90		β^-=100	
^{188}Re^m	−38846.0	2.8	172.069	0.009			18.6	m	0.1	$(6)^-$	90		IT=100	
^{188}Os	−41138.5	2.8					STABLE			0^+	90		IS=13.3 2	
^{188}Ir	−38329	7					41.5	h	0.5	1^-	90		β^+=100	
^{188}Ir^m	−37360	30	970	30			4.2	ms	0.2	7^+#	90	ABBW E	IT$\approx$100; β^+ ?	*
^{188}Pt	−37823	6					10.2	d	0.3	0^+	90		ϵ=100; α=2.6e-5 3	
^{188}Au	−32520#	100#					8.84	m	0.06	$1^{(-)}$	96		β^+=100	
^{188}Hg	−30220#	180#					3.25	m	0.15	0^+	96		β^+=100; α=3.7e-5 8	
^{188}Tl	−22430#	220#				*	71	s	2	(2^-)	90		β^+=100	
^{188}Tl^m	−22330#	230#	100#	50#		*	71	s	1	(7^+)	90		β^+=100	
^{188}Tl^n	−22060#	230#	370#	50#			41	ms	4	(9^-)	90		IT$\approx$100; β^+ ?	*
^{188}Pb	−17640#	200#					25.5	s	0.1	0^+	96	92Wa14T	β^+=?; α=8.5 13	*
^{188}Bi	−7290#	300#				*&	44	ms	3	3^+#	90		α=?; β^+ ?	
^{188}Bi^m	−7100#	330#	190#	150#		*&	210	ms	90	(10^-)	90		α=?; β^+ ?	

*^{188}Ir^m E : less than 100 keV above 923.5 level, from ENSDF **
*^{188}Tl^n E : 268.8(0.5) keV above ^{188}Tl^m, from 91Va04 **
*^{188}Pb D : α intensity is from 96Bi17 **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{189}W	−35480	200					11.5	m	0.3	$(3/2^-)$	91		β^-=100	*
^{189}Re	−37979	9					24.3	h	0.4	$5/2^+$	91		β^-=100	
^{189}Os	−38987.8	2.8					STABLE			$3/2^-$	91		IS=16.1 3	
^{189}Os^m	−38957.0	2.8	30.814	0.018			5.8	h	0.1	$9/2^-$	91		IT=100	
^{189}Ir	−38455	13					13.2	d	0.1	$3/2^+$	91		ϵ=100	
^{189}Ir^m	−38083	13	372.18	0.04			13.3	ms	0.3	$11/2^-$	91		IT=100	
^{189}Ir^n	−36122	13	2333.3	0.4			3.7	ms	0.2	$(25/2)^+$	91		IT=100	
^{189}Pt	−36485	11					10.87	h	0.12	$3/2^-$	92		β^+=100	
^{189}Au	−33640#	200#					28.7	m	0.3	$1/2^+$	92		β^+=100; α<3e-5	
^{189}Au^m	−33390#	200#	247.23	0.17			4.59	m	0.11	$11/2^-$	92		$\beta^+\approx$100; IT=?	
^{189}Hg	−29690#	280#				*	7.6	m	0.1	$3/2^-$	96		β^+=100; α<3e-5	
^{189}Hg^m	−29570#	290#	120#	80#		*	8.6	m	0.1	$13/2^+$	96		β^+=100; α<3e-5	
^{189}Tl	−24510#	350#					2.3	m	0.2	$(1/2^+)$	91		β^+=100	
^{189}Tl^m	−24230#	350#	283	6	AD		1.4	m	0.1	$9/2^{(-)}$	91	85Bo46 J	$\beta^+\approx$100; IT<4	
^{189}Pb	−17810#	270#				*&				$3/2^-$#			β^+ ?	
^{189}Pb^m	−17720#	280#	90#	60#		*&	51	s	3	$13/2^+$	91	ABBW J	β^+>99; $\alpha\approx$0.4	*
^{189}Bi	−9780#	400#					680	ms	30	$(9/2^-)$	91	95Ba75 J	α>50; β^+<50	
^{189}Bi^m	−9560#	400#	217	25	AD		7.0	ms	0.2	$(1/2^+)$	91	95Ba75 TJ	α>50; β^+<50	*

*^{189}W T : 11.7(0.5) m in post cut-off date 97Ya.1 **
*^{189}Pb^m J : from α decay to ^{185}Hg^m **
*^{189}Bi^m T : post cut-off date 97An.1=4.8(0.5) ms **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{190}W	−34300	220				30.0	m	1.5	0^+	90		β^-=100	
^{190}Re	−35570	210				3.1	m	0.3	$(2)^-$	90		β^-=100	
^{190}Re^m	−35360	220	210	50		3.2	h	0.2	(6^-)	90	95Au04 E	β^-=54.4 20; IT=45.6 20	
^{190}Os	−38708.0	2.8				STABLE			0^+	90		IS=26.4 4	
^{190}Os^m	−37002.6	2.8	1705.4	0.2		9.9	m	0.1	$(10)^-$	90		IT=100	
^{190}Ir	−36710	200				11.78	d	0.10	(4^-)	96	96Ga30 J	β^+=100	
^{190}Ir^m	−36680	200	26.1	0.1		1.120	h	0.003	(1^-)	96	96Ga30 ETJ	IT=100	
^{190}Ir^n	−36330	200	376.4	0.1		3.087	h	0.012	$(11)^-$	96	96Ga30 ETD	β^+=91.4 2; IT=8.6 2	
^{190}Pt	−37325	6				650	Gy	30	0^+	96		IS=0.01 1; α=100; 2β^+ ?	
^{190}Au	−32883	16			*	42.8	m	1.0	1^-	90		β^+=100; α<1e−6	
^{190}Au^m	−32680#	150#	200#	150#	*	125	ms	20	(11^-)	90		IT≈100; β^+ ?	
^{190}Hg	−31410#	150#				20.0	m	0.5	0^+	96		β^+=100; α<5e−5	
^{190}Tl	−24410#	430#			*	2.6	m	0.3	$(2)^-$	90		β^+=100	
^{190}Tl^m	−24240#	340#	170	500	BD*	3.7	m	0.3	(7^+)	90		β^+=100	
^{190}Pb	−20330	200				1.183	m	0.017	0^+	90	96Ri12 T	β^+=99.1 2; α=0.9 2	*
^{190}Bi	−10700#	370#				6.3	s	0.1	(3^+)	90	91Va04 DJ	α=77 21; β^+=?	*
^{190}Bi^m	−10490#	370#	210#	50#		6.2	s	0.1	(10^-)	90	91Va04 DJ	α=70 9; β^+=30 9	
^{190}Po	−4560#	470#				1.7	ms	0.8	0^+		96Ba35 T	α≈100; β^+=0.1#	*

*^{190}Pb D : see also 92Wa14 α=0.40(0.04)% **
*^{190}Bi D : symmetrized from α=90(+10−30)% **
*^{190}Po T : symmetrized from 2.0(+0.5−1.0) D : β^+ intensity is estimated by 96Ak.A **
*^{190}Po T : and post cut-off date 97An.1=1.9(+0.6−0.4) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{191}Re	−34350	11				9.8	m	0.5	$(3/2^+,1/2^+)$	95		β^-=100	
^{191}Os	−36395.4	2.8				15.4	d	0.1	$9/2^-$	95		β^-=100	
^{191}Os^m	−36321.0	2.8	74.382	0.003		13.10	h	0.05	$3/2^-$	95		IT=100	
^{191}Ir	−36709.1	2.9				STABLE			$3/2^+$	95		IS=37.3 5	
^{191}Ir^m	−36537.8	2.9	171.24	0.05		4.94	s	0.03	$11/2^-$	95		IT=100	
^{191}Ir^n	−34590	40	2120	40		5.5	s	0.7		95	ABBW E	IT=100	*
^{191}Pt	−35691	5				2.802	d	0.025	$3/2^-$	96		ϵ=100	
^{191}Au	−33860	50				3.18	h	0.08	$3/2^+$	95		β^+=100	
^{191}Au^m	−33590	50	266.2	0.5		920	ms	110	$(11/2^-)$	95		IT=100	
^{191}Hg	−30680	90				49	m	10	$3/2^{(-)}$	95	86Ul02 J	β^+=100	
^{191}Hg^m	−30540#	100#	140#	50#		50.8	m	1.5	$13/2^+$	95		β^+=100	
^{191}Tl	−26190#	220#							$(1/2^+)$	95		β^+ ?	
^{191}Tl^m	−25890#	220#	297	7	BD	5.22	m	0.16	$9/2^{(-)}$	95		β^+=100	
^{191}Pb	−20310#	210#			*	1.33	m	0.08	$(3/2^-)$	95		β^+≈100; α=0.013 5	
^{191}Pb^m	−20220#	220#	90#	60#	*	2.18	m	0.08	$13/2^{(+)}$	95	88Me.A J	β^+≈100; α≈0.02	
^{191}Bi	−12990#	400#				12	s	1	$(9/2^-)$	95		α=60 20; β^+=40 20	
^{191}Bi^m	−12750#	400#	242	7	AD	150	ms	15	$(1/2^+)$	95		α=75 25; β^+≈25	
^{191}Po	−4980#	300#				17	ms	5	$3/2^-$#	95		α≈100; β^+ ?	*

*^{191}Ir^n E : estimated less than 150 keV above 2047.1 level, from ENSDF **
*^{191}Po T : symmetrized from 15.5(+6−3.5) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{192}Re	−31710# 200#		16 s 1		91		β^-=100	
^{192}Os	−35882 3		Stable >9.8Ty	0^+	91		IS=41.0 3; $2\beta^-$?; α ?	*
^{192}Os^m	−33867 3	2015.39 0.10	5.9 s 0.1	(10^-)	91		IT>87; β^-<13	
^{192}Ir	−34835.8 2.9		73.831 d 0.008	$4^{(+)}$	91		β^-=95.24 4; ϵ=4.76 4	
^{192}Ir^m	−34779.1 2.9	56.74 0.09	1.45 m 0.05	$1^{(-)}$	91		IT≈100; β^-=0.0175	
^{192}Ir^n	−34680.6 2.9	155.16 0.12	241 y 9	(9^+)	91	91KeZZ J	IT=100	
^{192}Pt	−36296 3		Stable	0^+	91		IS=0.79 6	
^{192}Au	−32779 16		4.94 h 0.09	1^-	91		β^+=100	
^{192}Au^m	−32644 16	135.4 0.3	29 ms	$(5)^+$	91		IT=100	
^{192}Au^n	−32347 16	431.6 0.5	160 ms 20	(11^-)	91		IT=100	
^{192}Hg	−32070# 280#		4.85 h 0.20	0^+	96		ϵ=100; α<4e−6	
^{192}Tl	−25950# 200#		9.6 m 0.4	(2^-)	96		β^+=100	
^{192}Tl^m	−25790# 210#	160 50	10.8 m 0.2	(7^+)	96	91Va04 E	β^+=100	
^{192}Pb	−22580# 180#		3.5 m 0.1	0^+	96	92Wa14 D	β^+≈100; α=0.0061 5	*
^{192}Bi	−13630# 220#		34.6 s 0.9	$(2^+,3^+)$	91	91Va04 T	β^+=82 9; α=18 9	
^{192}Bi^m	−13420# 230#	210# 50#	39.6 s 0.4	(10^-)	91		β^+=90.8 20; α=9.2 20	
^{192}Po	−7900# 200#		33.3 ms 1.3	0^+	91	96Bi17 TD	α=?; β^+=1#	*

*^{192}Os T : lower limit is for 0ν-$2\beta^-$ decay **
*^{192}Pb D : α: average 92Wa14=0.0062(6)% 79To06=0.0057(10)% **
*^{192}Po T : average 96Bi17=33.2(1.4) 81Le23=34(3) **

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{193}Os	−33396 4		30.5 h 0.4	$3/2^-$	97		β^-=100	
^{193}Ir	−34536.3 2.9		Stable	$3/2^+$	97		IS=62.7 5	
^{193}Ir^m	−34456.1 2.9	80.22 0.02	10.53 d 0.04	$11/2^-$	97		IT=100	
^{193}Pt	−34479.7 2.9		50 y 9	$1/2^-$	97		ϵ=100	
^{193}Pt^m	−34329.9 2.9	149.78 0.03	4.33 d 0.03	$13/2^+$	97		IT=100	
^{193}Au	−33411 9		17.65 h 0.15	$3/2^+$	97		β^+=100; α<1e−5	
^{193}Au^m	−33121 9	290.17 0.04	3.9 s 0.3	$11/2^-$	97		IT≈100; β^+≈0.03	
^{193}Hg	−31071 19		3.80 h 0.15	$3/2^-$	97		β^+=100	
^{193}Hg^m	−30930 19	140.76 0.05	11.8 h 0.2	$13/2^+$	97		β^+=92.9 9; IT=7.1 9	
^{193}Tl	−27430# 250#		21.6 m 0.8	$1/2^{(+)}$	97		β^+=100	
^{193}Tl^m	−27060# 250#	369 4	2.11 m 0.15	$9/2^{(-)}$	97	87Bo44 J	IT=75; β^+=25	*
^{193}Pb	−22280# 190#			$3/2^-$#	97		β^+ ?	*
^{193}Pb^m	−22150# 200#	130# 80#	5.8 m 0.2	$13/2^{(+)}$	97	88Me.A J	β^+=100	
^{193}Bi	−15780# 350#		67 s 3	$(9/2^-)$	97		β^+=95 3; α=5 3	
^{193}Bi^m	−15470# 350#	308 7 AD	3.2 s 0.7	$(1/2^+)$	97		α=90 20; β^+≈10	
^{193}Po	−8290# 280#	*	360 ms 50	$3/2^-$#	97		α≈100; β^+ ?	
^{193}Po^m	−8150# 280#	140# 80# AD *	260 ms 20	$(13/2^+)$	97	ABBW J	α≈100; β^+ ?	*
^{193}At	180# 400#		40 ms	$9/2^-$#		95Le.A TD	α=100	

*^{193}Tl^m E : less than 13 keV above 362.5 level, from Ensdf **
*^{193}Pb T : T=4.0 m reported in Karlsruhe charts 1981 and 1995. Not traceable **
*^{193}Po^m J : from α decay to ^{189}Pb^m **

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{194}Os	−32435	4					6.0	y	0.2	0^+	96		β^-=100	
^{194}Ir	−32531.9	2.9					19.28	h	0.13	1^-	96		β^-=100	
^{194}Ir^m	−32405	9	147.078	0.005			31.85	ms	0.24	(4^+)	96		IT=100	
^{194}Ir^n	−32180	70	350	70	BD		171	d	11	$(10,11)^{(-\#)}$	96		β^-=100	
^{194}Pt	−34778.6	2.9					Stable			0^+	96		IS=32.9 6	
^{194}Au	−32287	12					38.02	h	0.10	1^-	96		β^+=100	
^{194}Au^m	−32180	12	107.4	0.5			600	ms	8	(5^+)	96		IT=100	
^{194}Au^n	−31811	12	475.8	0.6			420	ms	10	(11^-)	96		IT=100	
^{194}Hg	−32247	23					440	y	80	0^+	96		ϵ=100	
^{194}Tl	−26960#	210#				*	33.0	m	0.5	2^-	96		β^+=100; α<1e−7	
^{194}Tl^m	−26660#	290#	300#	200#		*	32.8	m	0.2	(7^+)	96		β^+=100	
^{194}Pb	−24250#	150#					12.0	m	0.5	0^+	96		β^+=100; α=7.3e−6 29	
^{194}Bi	−16070#	430#				*	95	s	3	(3^+)	96		$\beta^+\approx$100; α=0.46 25	
^{194}Bi^m	−15970#	440#	100#	70#		*	125	s	2	$(6^+,7^+)$	96		$\beta^+\approx$100; α ?	
^{194}Bi^n	−15800#	340#	270	500	AD	*	115	s	4	(10^-)	96		$\beta^+\approx$100; α=0.20 7	
^{194}Po	−10910	200					392	ms	4	0^+	96		$\alpha\approx$100; β^+ ?	
^{194}At	−960#	400#				*	40	ms		3^+#	96		$\alpha\approx$100; β^+ ?	
^{194}At^m	−710#	370#	250#	150#		*	250	ms		10^-#	96		$\alpha\approx$100; IT ?	

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{195}Os	−29690	500					6.5	m		$3/2^-$#	94		β^-=100	
^{195}Ir	−31692.4	2.9					2.5	h	0.2	$3/2^+$	94		β^-=100	
^{195}Ir^m	−31582	20	110	20	BD		3.8	h	0.2	$11/2^-$	94		β^-=95 5; IT=5 5	
^{195}Pt	−32812.4	2.9					Stable			$1/2^-$	94		IS=33.8 6	
^{195}Pt^m	−32553.1	2.9	259.30	0.08			4.02	d	0.01	$13/2^+$	94		IT=100	
^{195}Au	−32586	3					186.10	d	0.05	$3/2^+$	94		ϵ=100	
^{195}Au^m	−32267	3	318.58	0.04			30.5	s	0.2	$11/2^-$	94		IT=100	
^{195}Hg	−31080	50					9.9	h	0.5	$1/2^-$	94		β^+=100	
^{195}Hg^m	−30900	50	176.07	0.04			41.6	h	0.8	$13/2^+$	94		IT=54.2 20; β^+=45.8 20	
^{195}Tl	−28270#	130#					1.16	h	0.05	$1/2^+$	96		β^+=100	
^{195}Tl^m	−27790#	130#	482.63	0.17			3.6	s	0.4	$9/2^-$	96		IT=100	
^{195}Pb	−23780#	410#					15	m		$3/2^-$	96		β^+=100	
^{195}Pb^m	−23580#	410#	202.9	0.7			15.0	m	1.2	$13/2^+$	96	91Gr12 E	β^+=100	
^{195}Bi	−17930#	220#					183	s	4	$(9/2^-)$	96		$\beta^+\approx$100; α=0.03 2	
^{195}Bi^m	−17530#	220#	399	6	AD		87	s	1	$(1/2^+)$	96		β^+=67 17; α=33 17	
^{195}Po	−11140#	220#					4.64	s	0.09	$(3/2^-)$	94		α=75 15; β^+=25 15	
^{195}Po^m	−10950#	220#	190#	80#			1.92	s	0.02	$(13/2^+)$	94		$\alpha\approx$90; $\beta^+\approx$10; IT<0.01	
^{195}At	−3210#	400#				*	140	ms	30	$9/2^-$#	94	95Le.A TD	α=?; β^+<25#	
^{195}At^m	−3230#	400#	−20	60	AD	*	420	ms	80	$(1/2^+)$		95En.A TJD	$\alpha\approx$100; β^+ ?	*

*^{195}At^m T : 95En.A=390(+100−60) supersedes 95Le.A=630(+320−160) from same group **

Nuclide	Mass excess (keV)		Excitation energy(keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{196}Os	−28300	40					34.9	m	0.2	0^+	95		β^-=100	
^{196}Ir	−29450	40					52	s	1	(0^-)	95		β^-=100	
^{196}Ir^m	−29030	100	420	110	BD		1.40	h	0.02	$(10,11^-)$	95		$\beta^-\approx$100; IT<0.3	
^{196}Pt	−32662.9	2.9					Stable			0^+	96		IS=25.3 6	
^{196}Au	−31157	4					6.183	d	0.010	2^-	95		β^+=93.05 10; β^-=6.95 10	
^{196}Au^m	−31072	4	84.660	0.020			8.1	s	0.2	5^+	95		IT=100	
^{196}Au^n	−30561	4	595.66	0.04			9.6	h	0.1	12^-	95		IT=100	
^{196}Hg	−31843	4					Stable		>2.5Ey	0^+	95	90Bu28 T	IS=0.15 1; 2β^+ ?	
^{196}Tl	−27470#	140#					1.84	h	0.03	2^-	95		β^+=100	
^{196}Tl^m	−27080#	140#	394.2	0.5			1.41	h	0.02	(7^+)	95		β^+=95.5; IT=4.5	
^{196}Pb	−25420#	140#					37	m	3	0^+	95		β^+=100; $\alpha\leq$3e−5	
^{196}Bi	−18060#	210#					5.1	m	0.2	(3^+)	97		$\beta^+\approx$100; α=0.00115 34	
^{196}Bi^m	−17900#	210#	167	3	AD		0.6	s	0.5	(7^+)	97		IT=?; β^+ ?	
^{196}Bi^n	−17790#	210#	270	4	AD		4.00	m	0.05	(10^-)	97		β^+=74.2 25; IT=25.8 25; ...	*
^{196}Po	−13500#	180#					5.8	s	0.2	0^+	95	93Wa04D	α=94 5; β^+=6 5	*
^{196}At	−4000#	230#				*	300	ms	100	3^+#	95		α=?; β^+=4#	*
^{196}At^m	−3800#	270#	200#	150#		*				10^-#			IT ?	
^{196}Rn	2150#	200#					4.1	ms	2.4	0^+		95No.A TD	$\alpha\approx$100; β^+ ?	*

*^{196}Bi^n D : ...; α=0.00038 10 **

*^{196}Po T : and 5.5(0.1) s in post cut-off date 97Pu01 **

*^{196}At T : 253(9) ms in post cut-off date 97Pu01 **

*^{196}Rn T : symmetrized from 3.1(+3.1−1.6); updated 3(+7−2) in post cut-off 97Pu01 **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{197}Ir	−28283	20				5.8	m	0.5	$3/2^+$	96		β^-=100	
^{197}Ir^m	−28168	21	115	5		8.9	m	0.3	$11/2^-$	96		$\beta^-\approx$100; IT=0.25 10	
^{197}Pt	−30438.1	2.9				19.8915	h	0.0019	$1/2^-$	96		β^-=100	
^{197}Pt^m	−30038.5	2.9	399.59	0.20		95.41	m	0.18	$13/2^+$	96		IT=96.7 4; β^-=3.3 4	
^{197}Au	−31157.0	2.9				STABLE			$3/2^+$	96		IS=100.	
^{197}Au^m	−30747.8	2.9	409.15	0.08		7.73	s	0.06	$11/2^-$	96		IT=100	
^{197}Hg	−30557	4				64.14	h	0.05	$1/2^-$	96		ϵ=100	
^{197}Hg^m	−30258	4	298.93	0.08		23.8	h	0.1	$13/2^+$	96		IT=91.4 7; ϵ=8.6 7	
^{197}Tl	−28380	30				2.84	h	0.04	$1/2^+$	96		β^+=100	
^{197}Tl^m	−27770	30	608.22	0.08		540	ms	10	$9/2^-$	96		IT=100	
^{197}Pb	−24800#	100#				8	m	2	$3/2^-$	96		β^+=100	
^{197}Pb^m	−24480#	100#	319.31	0.11		43	m	1	$13/2^+$	96		β^+=81 2; IT=19 2; α<3e-4	
^{197}Bi	−19620	240				9.3	m	0.5	$(9/2^-)$	96		β^+=100; α=1e-4#	
^{197}Bi^m	−19110#	250#	510#	50#		5.04	m	0.16	$(1/2^+)$	96		α=55 40; β^+=45 40; IT<0.3	
^{197}Po	−13450#	190#				53.6	s	1.0	$(3/2^-)$	96		β^+ ?; α=44 7	
^{197}Po^m	−13210#	200#	230#	90#		25.8	s	0.1	$(13/2^+)$	96		α=84 9; β^+ ?; IT=0.01#	
^{197}At	−6250#	350#			*	350	ms	40	$(9/2^-)$	96		α=96 4; β^+=4 4	
^{197}At^m	−6200#	350#	50	70	AD*	3.7	s	2.5	$(1/2^+)$	96		$\alpha\approx$100; β^+ ?; IT<0.004	
^{197}Rn	1550#	280#				66	ms	16	$3/2^-$#		96En02T	$\alpha\approx$100; β^+ ?	*
^{197}Rn^m	1790#	280#	240#	90#	AD	21	ms	5	$13/2^+$#		96En02T	$\alpha\approx$100; β^+ ?	*

*^{197}Rn T : average 96En02=65(+25−14) 95Mo14=51(+35−15) **
*^{197}Rn^m T : average 96En02=19(+8−4) 95Mo14=18(+9−5) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{198}Ir	−25820#	200#				8	s	1		95		β^-=100	
^{198}Pt	−29923	4				STABLE		>320Ty	0^+	95	52Fr23 T	IS=7.2 2; $2\beta^-$?; α ?	*
^{198}Au	−29598.0	2.9				2.69517	d	0.00021	2^-	95		β^-=100	
^{198}Au^m	−28786	3	811.7	1.5		2.27	d	0.02	(12^-)	95		IT=100	
^{198}Hg	−30970.5	2.9				STABLE			0^+	95		IS=9.97 8	
^{198}Tl	−27510	80				5.3	h	0.5	2^-	95		β^+=100	
^{198}Tl^m	−26970	80	543.5	0.4		1.87	h	0.03	7^+	95		β^+=54 2; IT=46 2	
^{198}Tl^n	−26770	80	742.3	0.4		32.1	ms	1.0	(10^-)	95		IT=100	
^{198}Pb	−26100#	90#				2.40	h	0.10	0^+	96		β^+=100	
^{198}Bi	−19540	180				10.3	m	0.3	$(2^+,3^+)$	95		β^+=100	
^{198}Bi^m	−19390#	190#	150#	50#		11.6	m	0.3	(7^+)	95		β^+=100	
^{198}Bi^n	−19150#	190#	390#	50#		7.7	s	0.5	(10^-)	95		IT=100	*
^{198}Po	−15520#	150#				1.76	m	0.03	0^+	96		α=57 2; β^+=43 2	
^{198}At	−6750#	430#			*	4.2	s	0.3	(3^+)	96	95Bi.A D	α>94; β^+ ?	
^{198}At^m	−6380#	340#	370	500	AD*	1.0	s	0.2	(10^-)	96	95Bi.A D	α>86; β^+ ?	
^{198}Rn	−1140	200				64	ms	2	0^+	96	95Bi17 T	α=?; β^+=1#	
^{198}Rn^m			non existent		EU	50	ms	9		95		α=?; β^+=?; IT=?	*

*^{198}Pt T : lower limit is for 0ν-$2\beta^-$ decay **
*^{198}Bi^n E : 248.5(0.5) keV above ^{198}Bi^m, from 92Hu04 **
*^{198}Rn^m I : α decay assigned to isomer by ENSDF, not accepted by NUBASE **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{199}Ir	−24420	40							$3/2^+$#			β^- ?	
^{199}Pt	−27408	4				30.80	m	0.21	$5/2^-$	94		β^-=100	
^{199}Pt^m	−26984	4	424	2		13.6	s	0.4	$(13/2)^+$	94		IT=100	
^{199}Au	−29111.0	2.9				3.139	d	0.007	$3/2^+$	94		β^-=100	
^{199}Hg	−29563.3	2.9				STABLE			$1/2^-$	94		IS=16.87 10	
^{199}Hg^m	−29030.8	2.9	532.48	0.10		42.6	m	0.2	$13/2^+$	94		IT=100	
^{199}Tl	−28120	100				7.42	h	0.08	$1/2^+$	94		β^+=100	
^{199}Tl^m	−27370	100	749.7	0.3		28.4	ms	0.2	$9/2^-$	94		IT=100	
^{199}Pb	−25230	70				90	m	10	$3/2^-$	94		β^+=100	
^{199}Pb^m	−24800	70	429.5	2.7		12.2	m	0.3	$13/2^+$	94	ABBWE	IT=93; β^+=7	*
^{199}Bi	−20890	120				27	m	1	$9/2^-$	94		β^+=100	
^{199}Bi^m	−20250#	130#	640#	50#		24.70	m	0.15	$(1/2^+)$	94		β^+=?; IT<2; $\alpha\approx$0.01	
^{199}Po	−15280#	410#				5.48	m	0.16	$(3/2^-)$	94		β^+=92.5 3; α=7.5 3	
^{199}Po^m	−14970#	410#	311.9	2.8	AD	4.17	m	0.04	$13/2^+$	94		β^+=73.5 10; α=24 1; IT=2.5	
^{199}At	−8730#	220#				7.2	s	0.5	$(9/2^-)$	94		α=89 6; β^+ ?	*
^{199}Rn	−1580#	230#				620	ms	30	$(3/2^-)$	94		α=?; β^+=6#	
^{199}Rn^m	−1320#	230#	250#	110#		320	ms	20	$(13/2^+)$	94		α=?; β^+=3#	

*^{199}Pb^m E : 424.83 γ to level lower than 9.3 keV, from ENSDF **
*^{199}At D : symmetrized from α=92(+3−8)% **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{200}Pt	−26618	20					12.5	h	0.3	0^+	95		β^-=100	
^{200}Au	−27280	50					48.4	m	0.3	$1^{(-)}$	95		β^-=100	
^{200}Au^m	−26320	50	960	70	BD		18.7	h	0.5	12^-	95		β^-=82 2; IT=18 2	
^{200}Hg	−29520.2	2.9					STABLE			0^+	95		IS=23.10 16	
^{200}Tl	−27064	6					26.1	h	0.1	2^-	95		β^+=100	
^{200}Tl^m	−26310	6	753.6	0.2			34.3	ms	1.0	7^+	95		IT=100	
^{200}Pb	−26254	13					21.5	h	0.4	0^+	95		ϵ=100	
^{200}Bi	−20360	90					36.4	m	0.5	7^+	95		β^+=100	
^{200}Bi^m	−20260#	110#	100#	70#			31	m	2	(2^+)	95		ϵ>90; IT<10	
^{200}Bi^n	−19930	90	428.20	0.10			400	ms	50	(10^-)	95		IT=100	
^{200}Po	−17010#	140#					11.5	m	0.1	0^+	95		β^+=88.9 3; α=11.1 3	
^{200}At	−9040#	210#					43.2	s	0.9	(3^+)	95	96Ta18 T	α=57 6; β^+=43 6	*
^{200}At^m	−8930#	210#	113	3	AD		47	s	1	(7^+)	95		α=43 7; β^+=?; IT ?	
^{200}At^n	−8700#	210#	344	3	AD		3.5	s	0.2	(10^-)	95		IT≈84; α≈10.5; ϵ≈4.5	*
^{200}Rn	−4030#	180#					1.03	s	0.05	0^+	95	96Ta18 T	α≈98; β^+≈2	*
^{200}Fr	6050#	240#				*	24	ms	10	3^+#		96En01 TD	α=100	*
^{200}Fr^m	6250#	280#	200#	150#		*	650	ms	210	10^-#		95Mo14 TD	α≈100; IT ?	*

*^{200}At T : average 96Ta18=44(2) 92Hu04=43(1) **
*^{200}At^n E : 230.9(0.2) keV above ^{200}At^m, from ENSDF **
*^{200}Rn T : average 96Ta18=0.96(0.03) 84Ca32=1.06(0.02) **
*^{200}Fr T : symmetrized from 19(+13−6) **
*^{200}Fr^m T : symmetrized from 570(+270−140) **

Nuclide	Mass excess (keV)		Excitation energy (keV)				Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{201}Pt	−23760	50					2.5	m	0.1	$(5/2^-)$	94		β^-=100	
^{201}Au	−26416	4					26	m	1	$3/2^+$	94		β^-=100	
^{201}Hg	−27679.1	2.9					STABLE			$3/2^-$	94		IS=13.18 8	
^{201}Tl	−27196	15					72.912	h	0.017	$1/2^+$	94		ϵ=100	
^{201}Tl^m	−26277	15	919.50	0.09			2.035	ms	0.007	$(9/2^-)$	94		IT=100	
^{201}Pb	−25290	30					9.33	h	0.03	$5/2^-$	94		β^+=100	
^{201}Pb^m	−24660	30	629.14	0.17			61	s	2	$13/2^+$	94		IT>99; β^+<1	
^{201}Bi	−21450	30					108	m	3	$9/2^-$	94		β^+=100; α<1e−4	
^{201}Bi^m	−20600	30	846.34	0.21			59.1	m	0.6	$1/2^+$	94		ϵ=92.9#; IT<6.8; α=?	*
^{201}Po	−16570#	100#					15.3	m	0.2	$3/2^-$	94		β^+=98.4 3; α=1.6 3	
^{201}Po^m	−16150#	100#	424.2	2.5	AD		8.9	m	0.2	$13/2^+$	94		IT=56 14; ϵ=41 10; α≈2.9	
^{201}At	−10720	240					85	s	3	$(9/2^-)$	94	96Ta18 T	α=71 7; β^+=29 7	*
^{201}Rn	−4160#	200#					7.0	s	0.4	$(3/2^-)$	94	96Ta18 T	α=?; β^+=20#	*
^{201}Rn^m	−3880#	200#	280#	110#			3.8	s	0.1	$(13/2^+)$	94	96Ta18 T	α=?; β^+=10#; IT=0.01#	
^{201}Fr	3710#	350#					61	ms	12	$(9/2^-)$	94	96En01 T	α≈100; β^+<1	*

*^{201}Bi^m D : α decay is observed. Its branching ratio is estimated 0.3%# in ENSDF **
*^{201}At T : average 96Ta18=83(2) and two results in ENSDF=89(3) **
*^{201}Rn T : average 96Ta18=7.1(0.8) 71Ho01=7.0(0.4) **
*^{201}Fr T : average 96En01=69(+16−11) 80Ew03=48(15) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{202}Pt	−22600#	300#				44	h	15	0^+		92Sh12 T	β^-=100	
^{202}Au	−24420	170				28.8	s	1.9	(1^-)	87		β^-=100	
^{202}Hg	−27362.1	2.9				STABLE			0^+	87		IS=29.86 20	*
^{202}Tl	−25997	15				12.23	d	0.02	2^-	87		β^+=100	
^{202}Pb	−25948	10				52.5	ky	2.8	0^+	87		$\epsilon\approx$100; α<1#	
^{202}Pb^m	−23778	10	2169.84	0.09		3.53	h	0.01	9^-	87		IT=90.5 5; ϵ=9.5 5	*
^{202}Bi	−20800	50				1.72	h	0.05	5^+	87		β^+=100; α<1e−5	
^{202}Po	−17980#	90#				44.7	m	0.5	0^+	87		β^+=?; α=2.0 2	*
^{202}At	−10760	180			*	184	s	1	$(2^+,3^+)$	87	92Hu04TJ	β^+=?; α=12.0 8	*
^{202}At^m	−10710#	190#	50#	50#	*	182	s	2	(7^+)	87	92Hu04TD	IT ?; β^+ ?; α=8.7 15	
^{202}At^n	−10320#	190#	440#	50#		460	ms	50	(10^-)		92Hu04TJD	IT$\approx$100; β^+=0.25#; α=0.096 11	*
^{202}Rn	−6320#	150#				9.94	s	0.18	0^+	87	96Ta18 T	α=?; β^+=15#	*
^{202}Fr	3060#	430#			*	290	ms	30	(3^+)	87	96En01 T	α=?; β^+=3#	*
^{202}Fr^m	3430#	340#	360	500	AD*	340	ms	40	(10^-)	87	92Hu04J	α=?; β^+=3#	
^{202}Ra						2.6	ms	2.1	0^+		96Le09 TD	α=100	*

*^{202}Hg D : lower half-life limit for ^{24}Ne decay T>3.7 Zy, from 90Bu28 **
*^{202}Pb^{m}E : 2169.83(0.07) keV in post cut-off date ENSDF'97 **
*^{202}Po D : α=1.92(7)% in post cut-off date ENSDF'97 **
*^{202}At D : α=18(3)% in post cut-off date ENSDF'97 **
*^{202}At^n E : 391.7(0.5) keV above ^{202}At^m, from 92Hu04 **
*^{202}Rn T : average 96Ta18=10.3(0.4) 71Ho01=9.85(0.20) **
*^{202}Rn D : β^+=14(3)% in post cut-off date ENSDF'97 **
*^{202}Fr T : average 96En01=230(+80−40) 95Bi.A=300(40) J : from 92Hu04 **
*^{202}Ra T : symmetrized from 0.7(+3.3−0.3) **

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{203}Au	−23159	4				53	s	2	$3/2^+$	93		β^-=100	
^{203}Hg	−25283	3				46.612	d	0.018	$5/2^-$	93		β^-=100	
^{203}Tl	−25775.3	2.9				STABLE			$1/2^+$	93		IS=29.524 14	
^{203}Pb	−24801	7				51.873	h	0.009	$5/2^-$	93		ϵ=100	
^{203}Pb^m	−23976	7	825.20	0.09		6.3	s	0.2	$13/2^+$	93		IT=100	
^{203}Pb^n	−21852	7	2949.47	0.22		480	ms	20	$29/2^-$	93		IT=100	
^{203}Bi	−21547	21				11.76	h	0.05	$9/2^-$	93		β^+=100; $\alpha\approx$1e−5	
^{203}Bi^m	−20449	21	1098.14	0.07		303	ms	5	$1/2^+$	93		IT=100	
^{203}Po	−17310	70				36.7	m	0.5	$5/2^-$	93		$\beta^+\approx$100; α=0.11 2	
^{203}Po^m	−16670	70	641.49	0.17		45	s	2	$13/2^+$	93		IT$\approx$100; α=0.04#	
^{203}At	−12250	120				7.4	m	0.2	$9/2^-$	93		β^+=69 3; α=31 3	
^{203}Rn	−6230#	410#				43.5	s	2.1	$(3/2,5/2)^-$	93	96Ta18 T	α=66 9; β^+=34 9	*
^{203}Rn^m	−5860#	410#	363	4	AD	26.7	s	0.5	$13/2^{(+)}$	93	87Bo29 J	α=?; β^+=20#	*
^{203}Fr	980#	230#				550	ms	20	$(9/2^-)$	93		$\alpha\approx$95; $\beta^+\approx$5	
^{203}Ra	8580#	230#				4	ms	3	$(3/2^-)$		96Le09 TJD	$\alpha\approx$100; β^+ ?	*
^{203}Ra^m	8870#	230#	290#	120#		41	ms	17	$(13/2^+)$		96Le09 TJD	$\alpha\approx$100; β^+ ?	*

*^{203}Rn T : average 96Ta18=42(3) 71Ho01=45(3) **
*^{203}Rn^{m}T : from 96Ta18 **
*^{203}Ra T : symmetrized from 1.1(+5.0−0.5) **
*^{203}Ra^{m}T : symmetrized from 33(+22−10) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{204}Au	−20770#	200#				39.8	s	0.9	(2^-)	94		β^-=100	
^{204}Hg	−24707	3				STABLE			0^+	94		IS=6.87 4; $2\beta^-$?	
^{204}Tl	−24359.8	2.9				3.78	y	0.02	2^-	94		β^-=97.10 12; ϵ=2.90 12	
^{204}Pb	−25123.5	2.9				STABLE		>140Py	0^+	94		IS=1.4 1	
^{204}Pb^m	−22937.7	2.9	2185.79	0.05		67.2	m	0.3	9^-	94		IT=100	
^{204}Bi	−20674	26				11.22	h	0.10	6^+	94		β^+=100	
^{204}Bi^m	−19869	26	805.5	0.3		13.0	ms	0.1	10^-	94		IT=100	
^{204}Bi^n	−17841	26	2833.4	1.1		1.07	ms	0.03	(17^+)	94		IT=100	
^{204}Po	−18344	13				3.53	h	0.02	0^+	94		β^+=99.34 1; α=0.66 1	
^{204}At	−11870	90				9.2	m	0.2	7^+	94		β^+=96.2 2; α=3.8 2	
^{204}At^m	−11280	90	587.30	0.20		108	ms	10	(10^-)	94		IT=100	
^{204}Rn	−8040#	140#				1.24	m	0.03	0^+	95		α=73 1; β^+ ?	
^{204}Fr	550#	210#				1.7	s	0.3	(3^+)	94	95Bi.A D	α=96 2; β^+ ?	
^{204}Fr^m	610#	210#	54	6	AD	2.6	s	0.3	(7^+)	94	95Bi.A D	α=90 2; β^+ ?	
^{204}Fr^n	880#	210#	330	6	AD	1.7	s	0.6	(10^-)	94	94Le05 T	α=74 8; IT=26 8	*
^{204}Ra	6030#	180#				60	ms	11	0^+		95Le04 T	$\alpha\approx$100; β^+=0.3#	*

*^{204}Fr^n T : symmetrized from 1.4(+8−4) **
*^{204}Fr^n E : 276.1 keV above ^{204}Fr^m, from 95Bi.A D : α intensity is from 95Bi.A **
*^{204}Ra T : average 95Le04=45(+55−21) 96Le09=59(+12−9) **
*^{204}Ra D : β^+ intensity is estimated by 96Ak.A **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{205}Au	−18990#	300#				31	s	2	$3/2^+$		94We02T	β^-=100	
^{205}Hg	−22304	5				5.2	m	0.1	$1/2^-$	93		β^-=100	
^{205}Hg^m	−20747	5	1556.53	0.24		1.10	ms	0.04	$(13/2^+)$	93		IT=100	
^{205}Tl	−23834.8	3.0				STABLE			$1/2^+$	93		IS=70.476 14	
^{205}Pb	−23783.7	2.9				15.3	My	0.7	$5/2^-$	93		ϵ=100	
^{205}Pb^m	−22769.9	2.9	1013.839	0.013		5.54	ms	0.10	$13/2^+$	93		IT=100	
^{205}Bi	−21075	8				15.31	d	0.04	$9/2^-$	93		β^+=100	
^{205}Po	−17544	29				1.66	h	0.02	$5/2^-$	93		$\beta^+\approx$100; α=0.04 1	
^{205}Po^m	−16083	29	1461.20	0.21		58	ms	1	$19/2^-$	93		IT=100	
^{205}At	−13010	30				26.2	m	0.5	$9/2^-$	93		β^+=90 2; α=10 2	
^{205}Rn	−7760#	110#				2.8	m	0.1	$5/2^-$	93		β^+=77 4; α=23 4	
^{205}Fr	−1240	240				3.85	s	0.10	$(9/2^-)$	93		$\alpha\approx$100; β^+<1	
^{205}Ra	5760#	210#				220	ms	40	$(3/2^-)$	93	96Le09 TJ	α=?; β^+ ?	*
^{205}Ra^m	6050#	200#	290#	120#		180	ms	50	$(13/2^+)$		96Le09 TJD	α=?; IT ?	*

*^{205}Ra T : average 96Le09=210(+60−40) 87He10=220(60) **
*^{205}Ra^m T : symmetrized from 170(+60−40) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{206}Hg	−20960	21				8.15	m	0.10	0^+	90		β^-=100	
^{206}Tl	−22267.1	3.0				4.199	m	0.015	0^-	90		β^-=100	
^{206}Tl^m	−19624	3	2643.11	0.19		3.74	m	0.03	(12^-)	90		IT=100	
^{206}Pb	−23800.6	2.9				STABLE			0^+	90		IS=24.1 1	
^{206}Bi	−20043	8				6.243	d	0.003	$6^{(+)}$	90		β^+=100	
^{206}Po	−18197	10				8.8	d	0.1	0^+	90		β^+=94.55 5; α=5.45 5	
^{206}At	−12480	50				30.0	m	0.6	$(5)^+$	90		β^+=99.11 8; α=0.89 8	
^{206}Rn	−9170#	90#				5.67	m	0.17	0^+	90		α=62 3; β^+=38 3	
^{206}Fr	−1410	180				* 15.9	s	0.2	$(2^+,3^+)$	90	92Hu04 JD	β^+=?; α=42 24	*
^{206}Fr^m	−1360#	190#	50#	50#		* 15.9	s	0.3	(7^+)		92Hu04 TD	α=42 24; β^+ ?; IT ?	
^{206}Fr^n	−830#	190#	580#	50#		700	ms	100	(10^-)	90	92Hu04 J	IT$\approx$100; α=0.3 1	*
^{206}Ra	3520#	150#				240	ms	20	0^+	90		α=100	
^{206}Ac						* 26	ms	10	(3^+)		96Uu.A TJD	α=100	*
^{206}Ac^m			330#	200#		* 38	ms	14	(10^-)		96Uu.A TJD	α=100	*

*^{206}Fr D : α=84(2)% for mixture of ^{206}Fr and ^{206}Fr^m, in 92Hu04. Value replaced by **
*^{206}Fr D : uniform distribution 0%-84% for each isomer **
*^{206}Fr^n E : 531 keV above ^{206}Fr^m, from ENSDF **
*^{206}Ac T : symmetrized from 22(+13−6) **
*^{206}Ac^m T : symmetrized from 32(+19−9) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{207}Hg	−16230	150				2.9	m	0.2	$(9/2^+)$	94		β^-=100	
^{207}Tl	−21044	6				4.77	m	0.02	$1/2^+$	94		β^-=100	
^{207}Tl^m	−19696	6	1348.1	0.3		1.33	s	0.11	$11/2^-$	94		IT≈100; β^- <0.1#	
^{207}Pb	−22467.1	2.9				STABLE			$1/2^-$	94		IS=22.1 1	
^{207}Pb^m	−20833.7	2.9	1633.368	0.005		806	ms	6	$13/2^+$	94		IT=100	
^{207}Bi	−20069	4				31.55	y	0.05	$9/2^-$	94		β^+=100	
^{207}Po	−17160	7				5.80	h	0.02	$5/2^-$	94		β^+≈100; α=0.021 2	
^{207}Po^m	−15777	7	1383.15	0.06		2.79	s	0.08	$19/2^-$	94		IT=100	
^{207}At	−13250	21				1.80	h	0.04	$9/2^-$	94		β^+=91.4 10; α=8.6 10	
^{207}Rn	−8640	70				9.25	m	0.17	$5/2^-$	94		β^+=79 3; α=21 3	
^{207}Fr	−2930	120				14.8	s	0.1	$9/2^-$	94		α=95 2; β^+=5 2	
^{207}Ra	3470#	420#				1.3	s	0.2	$(5/2^-,3/2^-)$	94		α≈90; β^+≈10	
^{207}Ra^m	4030#	410#	560	50	AD	57	ms	8	$(13/2^+)$	94	96Le09 T	IT=85#; α=?; β^+=0.55#	*
^{207}Ac	11270#	230#				42	ms	27	$9/2^-$#		94Le05 TD	α=100	*

*^{207}Ra^{m}T : average 96Le09=63(16) 87He10=55(10) **

*^{207}Ac T : symmetrized from 22(+40−9) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{208}Hg	−13100#	300#				49	m	18	0^+		94Zh02 TD	β^-=100	*
^{208}Tl	−16762.6	2.9				3.053	m	0.004	$5^{(+)}$	86		β^-=100	
^{208}Pb	−21763.6	2.9				STABLE			0^+	96		IS=52.4 1	
^{208}Bi	−18884	4				368	ky	4	$(5)^+$	86		β^+=100	
^{208}Bi^m	−17313	4	1571.1	0.4		2.58	ms	0.04	$(10)^-$	86		IT=100	
^{208}Po	−17483	3				2.898	y	0.002	0^+	86		α≈100; β^+=0.00223 23	
^{208}At	−12498	26				1.63	h	0.03	6^+	86		β^+=99.45 6; α=0.55 6	
^{208}Rn	−9658	13				24.35	m	0.14	0^+	86		α=62 7; β^+=38 7	
^{208}Fr	−2670	80				59.1	s	0.3	7^+	86		α=90 4; β^+=10 4	
^{208}Ra	1650#	140#				1.3	s	0.2	0^+	86		α=?; β^+=5#	
^{208}Ac	10700#	210#				100	ms	20	(3^+)	96		α=?; β^+=1#	*
^{208}Ac^m	11210#	210#	510	22	AD	28	ms	7	(10^-)	96		α=?; IT<10#; β^+=1#	*

*^{208}Hg T : symmetrized from 42(+23−12) **

*^{208}Ac T : symmetrized from 95(+24−16) **

*^{208}Ac^{m}E : if α decay is to (7^+) ^{204}Fr^m instead of (10^-) as assumed in AME'95, **

*^{208}Ac^{m}E : then E=234(22) keV T : symmetrized from 25(+9−5) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{209}Tl	−13647	10				2.161	m	0.007	$(1/2^+)$	91	94Ar23 T	β^-=100	
^{209}Pb	−17629	3				3.253	h	0.014	$9/2^+$	91		β^-=100	
^{209}Bi	−18272.9	3.0				STABLE			$9/2^-$	91		IS=100.	
^{209}Po	−16380	3				102	y	5	$1/2^-$	91		α≈100; β^+=0.48 4	
^{209}At	−12893	8				5.41	h	0.05	$9/2^-$	91		β^+=95.9 5; α=4.1 5	
^{209}Rn	−8964	29				28.5	m	1.0	$5/2^-$	91		β^+=83 2; α=17 2	
^{209}Fr	−3800	30				50.0	s	0.3	$9/2^-$	91		α=89 3; β^+=11 3	
^{209}Ra	1810#	130#				4.6	s	0.2	$5/2^-$	91		α≈90; β^+≈10	
^{209}Ac	8910	240				95	ms	18	$(9/2^-)$	91	94Le05 T	α=?; β^+=1#	*
^{209}Th						7	ms	5	$5/2^-$#		96Ik01 TD	α=?; β^+ ?	*

*^{209}Ac T : symmetrized from 91(+21−14) **

*^{209}Th T : symmetrized from 3.8(+6.9−1.5) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{210}Tl	−9254	11				1.30	m	0.03	(5^+)	92		β^-=100; β^-n=0.009 6	*
^{210}Pb	−14743	3				22.3	y	0.2	0^+	92		β^-=100; α=1.9e−6 4	
^{210}Bi	−14806.1	3.0				5.013	d	0.005	1^-	92		β^-=100; α=13.2e−5 10	
^{210}Bi^m	−14535	3	271.31	0.11		3.04	My	0.06	9^-	92		α=100	
^{210}Po	−15968.2	2.9				138.376	d	0.002	0^+	92		α=100	
^{210}At	−11987	8				8.1	h	0.4	$(5)^+$	92		β^+≈100; α=0.175 20	
^{210}Rn	−9613	10				2.4	h	0.1	0^+	92		α=96 1; β^+=4 1	
^{210}Fr	−3355	22				3.18	m	0.06	6^+	92		α=60 30; β^+=40 30	
^{210}Ra	420#	90#				3.7	s	0.2	0^+	92		α≈96; β^+≈4	
^{210}Ac	8620	190				350	ms	50		92		α≈96; β^+≈4	
^{210}Th	14000#	150#				17	ms	11	0^+		95Un01T	α=?; β^+ ?	*

*^{210}Tl D : symmetrized from β^-n=0.007(+7−4)% **

*^{210}Th T : symmetrized from 9(+17−4) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{211}Pb	−10496.6	3.0				36.1	m	0.2	$9/2^+$	91		$\beta^-=100$	
^{211}Bi	−11869	6				2.14	m	0.02	$9/2^-$	91		$\alpha\approx100$; $\beta^-=0.276$ 4	
^{211}Po	−12447.7	3.0				516	ms	3	$9/2^+$	91		$\alpha=100$	
^{211}Po^m	−10985	6	1462	5	AD	25.2	s	0.6	$(25/2^+)$	91		$\alpha\approx100$; IT=0.016 4	
^{211}At	−11662	4				7.214	h	0.007	$9/2^-$	96		$\epsilon=58.20$ 8; $\alpha=41.80$ 8	
^{211}Rn	−8770	7				14.6	h	0.2	$1/2^-$	96		$\beta^+=72.6$ 17; $\alpha=27.4$ 17	
^{211}Fr	−4164	21				3.10	m	0.02	$9/2^-$	91		$\alpha>80$; $\beta^+<20$	
^{211}Ra	830	70				13	s	2	$5/2^{(-)}$	91		$\alpha>93$; $\beta^+<7$	
^{211}Ac	7120	130				250	ms	50	$9/2^-$#	91		$\alpha\approx100$; $\beta^+<0.2$	
^{211}Th	13840#	420#				48	ms	20	$5/2^-$#		95Un01 T	$\alpha=?$; β^+ ?	*

*^{211}Th T : symmetrized from 37(+28−11) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{212}Pb	−7556.7	2.7				10.64	h	0.01	0^+	92		$\beta^-=100$	
^{212}Bi	−8130.5	2.9				60.55	m	0.06	$1^{(-)}$	92	89Ha.1 D	$\beta^-=64.06$ 6; $\alpha=35.94$ 6; $\beta^-\alpha=0.014$	
^{212}Bi^m	−7880	30	250	30	AD	25.0	m	0.2	(9^-)	92		$\alpha=67$ 1; $\beta^-=33$ 1; $\beta^-\alpha=30$ 1	
^{212}Bi^n	−5930#	200#	2200#	200#		7.0	m	0.3	>16	92		$\beta^-\approx100$; IT ?	*
^{212}Po	−10384.5	2.9				299	ns	2	0^+	92		$\alpha=100$	
^{212}Po^m	−7474	13	2911	12	AD	45.1	s	0.6	(18^+)	92		$\alpha\approx100$; IT=0.07 2	
^{212}At	−8631	4				314	ms	2	(1^-)	92		$\alpha\approx100$; $\beta^+<0.03$; $\beta^-<$2e−6	
^{212}At^m	−8409	8	222	7	AD	119	ms	3	(9^-)	92		$\alpha>99$; IT<1	
^{212}Rn	−8673	4				23.9	m	1.2	0^+	92		$\alpha=100$; $2\beta^+$?	
^{212}Fr	−3544	26				20.0	m	0.6	5^+	92		$\beta^+=57$ 2; $\alpha=43$ 2	
^{212}Ra	−202	14				13.0	s	0.2	0^+	92		$\alpha=?$; $\beta^+=15$#	
^{212}Ac	7280	90				930	ms	50	6^+#	92		$\alpha=?$; $\beta^+=3$#	*
^{212}Th	12030#	140#				36	ms	15	0^+	92		$\alpha\approx100$; $\beta^+=0.3$#	*

*^{212}Bi^n E : 1910 keV, if 100% β^- decay goes to 2922 level in ^{212}Po, and if logft for **
*^{212}Bi^n E : this transition is 5.1 (see ENSDF), or higher **
*^{212}Ac J : ENSDF would assign 7^+, if the observed α feeds the ^{208}Fr 7^+ ground-state **
*^{212}Th T : symmetrized from 30(+20−10) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{213}Pb	−3260#	100#				10.2	m	0.3	$(9/2^+)$	92		$\beta^-=100$	
^{213}Bi	−5240	8				45.59	m	0.06	$9/2^-$	92		$\beta^-=97.91$ 3; $\alpha=2.09$ 3	
^{213}Po	−6667	4				4.2	μs	0.8	$9/2^+$	92		$\alpha=100$	
^{213}At	−6594	6				125	ns	6	$9/2^-$	92		$\alpha=100$	
^{213}Rn	−5712	7				25.0	ms	0.2	$(9/2^+)$	92		$\alpha=100$	
^{213}Fr	−3563	8				34.6	s	0.3	$9/2^-$	92		$\alpha=99.45$ 3; $\beta^+=0.55$ 3	
^{213}Ra	322	30				2.74	m	0.06	$1/2^-$	92		$\alpha=80$ 5; β^+ ?	
^{213}Ra^m	2090	30	1768	6	AD	2.1	ms	0.1	$17/2^-$#	92		IT$\approx$99; $\alpha\approx1$	*
^{213}Ac	6120	60				800	ms	50	$9/2^-$#	92		$\alpha=?$; β^+ ?	
^{213}Th	12070#	130#				140	ms	25	$5/2^-$#	92		$\alpha=?$; β^+ ?	
^{213}Pa	19730	250				7	ms	3	$9/2^-$#		95Ni05 TD	$\alpha=100$	*

*^{213}Ra^{m}E : derived from difference in α decay energy; from AME'95 evaluation. **
*^{213}Ra^{m}E : ENSDF evaluation: less than 10 keV above 1769.7 level, thus 1775(3) keV **
*^{213}Ra^{m}E : Next AME should make use of both pieces of information. **
*^{213}Pa T : symmetrized from 5.3(+4.0−1.6) **

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{214}Pb	−188.0	2.5				26.8	m	0.9	0^+	95		$\beta^-=100$	
^{214}Bi	−1212	11				19.9	m	0.4	1^-	95	89Ha.1 D	$\beta^-\approx100$; $\alpha=0.021$ 1; $\beta^-\alpha=0.003$	
^{214}Po	−4484	3				164.3	μs	2.0	0^+	95		$\alpha=100$	
^{214}At	−3394	5				558	ns	10	1^-	95		$\alpha=100$	
^{214}Rn	−4335	10				270	ns	20	0^+	95		$\alpha=100$; $2\beta^+$?	
^{214}Fr	−974	9				5.0	ms	0.2	(1^-)	95		$\alpha=100$	
^{214}Fr^m	−850	9	123	6	AD	3.35	ms	0.05	(8^-)	95		$\alpha=100$	
^{214}Ra	85	11				2.46	s	0.03	0^+	95		$\alpha\approx100$; $\beta^+=0.059$ 4	
^{214}Ac	6420	50				8.2	s	0.2	5^+#	95		$\alpha\geq89$ 3; $\beta^+\leq11$ 3	
^{214}Th	10670#	90#				100	ms	25	0^+	95		$\alpha=100$	
^{214}Pa	19320	190				17	ms	3		95	95Ni05 D	$\alpha=100$	

Nuclide	Mass excess (keV)		Excitation energy(keV)			Half-life			J^π	Ens	Reference		Decay modes and intensities (%)	
^{215}Pb						36	s	1	5/2$^+$#		96Ry.B	T	β^-=100	
^{215}Bi	1710	100				7.6	m	0.2	9/2$^-$#	92			β^-=100	
^{215}Po	−545.3	2.9				1.781	ms	0.004	9/2$^+$	92			α=100; β^-=2.3e−4 2	
^{215}At	−1266	7				100	μs	20	9/2$^-$	92			α=100	
^{215}Rn	−1184	8				2.30	μs	0.10	9/2$^+$	92			α=100	
^{215}Fr	304	8				86	ns	5	9/2$^-$	92			α=100	
^{215}Ra	2519	8				1.59	ms	0.09	(9/2$^+$)	92			α=100	
^{215}Ac	6010	50				170	ms	10	9/2$^-$	92			$\alpha\approx$100; β^+=0.09 2	
^{215}Th	10920	70				1.2	s	0.2	(1/2$^-$)	92			α=100	
^{215}Pa	17790	140				15	ms	4	9/2$^-$#	92	96An21	T	α=100	
^{216}Bi	5780#	100#				2.17	m	0.05	1$^-$#		96Ry.B	T	β^-=100	*
^{216}Po	1774.7	2.7				145	ms	2	0$^+$	87			α=100; 2β^- ?	
^{216}At	2244	4				300	μs	30	1$^{(-)}$	87			$\alpha\approx$100; β^-<0.006; ϵ<3e−7	*
^{216}Rn	240	8				45	μs	5	0$^+$	87			α=100	
^{216}Fr	2969	13				700	ns	20	(1$^-$)	87			α=100; β^+<2e−7#	
^{216}Ra	3277	9				182	ns	10	0$^+$	87			α=100; ϵ<1e−8	
^{216}Ac	8124	27				330	μs	30	(1$^-$)	87			α=100; β^+=7e−5#	
^{216}Th	10294	16				28	ms	2	0$^+$	87			$\alpha\approx$100; β^+=0.006#	
^{216}Pa	17800	110				105	ms	12		87	96An21	T	α=?; β^+=20#	*
*^{216}Bi	T : also 90Ru02=3.6(0.4), outweighed													**
*^{216}At	J : 1$^-$ in post cut-off date ENSDF'97													**
*^{216}Pa	D : α=?; β^+=2%# in post cut-off date ENSDF'97													**
^{217}Bi						97	s	3	9/2$^-$#		96Ry.B	T	β^-=100	
^{217}Po	5830#	100#				1.47	s	0.05	5/2$^+$#	91	96Ry.B	T	α>95; β^-<5	
^{217}At	4387	8				32.3	ms	0.4	9/2$^-$	91			$\alpha\approx$100; β^-=0.012 4	
^{217}Rn	3646	5				540	μs	50	9/2$^+$	91			α=100	
^{217}Fr	4300	7				16.8	μs	1.9	9/2$^-$	94	90An19	T	α=100	*
^{217}Ra	5874	10				1.63	μs	0.17	(9/2$^+$)	91	90An19	T	α=100	*
^{217}Ac	8693	13				69	ns	4	9/2$^-$	91			α=?; $\beta^+\leq$2	
^{217}Th	12170	30				252	μs	7	(9/2$^+$)	91			α=100	
^{217}Pa	17040	80				3.4	ms	0.2	9/2$^-$#	91	96An21	T	α=100	
^{217}Pa^m	18900	80	1860	70	AD	1.5	ms	0.2	29/2$^+$#	91	96An21	T	$\alpha\approx$100; IT ?	
*^{217}Fr	T : average 90An19=16(2) 70Bo13=22(5)													**
*^{217}Ra	T : average 90An19=1.7(0.3) 70Bo13=1.6(0.2)													**
^{218}Po	8351.6	2.5				3.10	m	0.01	0$^+$	96			$\alpha\approx$100; β^-=0.020 2	
^{218}At	8087	12				1.5	s	0.3	1$^-$#	96			$\alpha\approx$100; β^-=0.1	
^{218}Rn	5204	3				35	ms	5	0$^+$	96			α=100	
^{218}Fr	7045	5				1.0	ms	0.6	1$^-$	96			α=100	
^{218}Fr^m	7131	7	86	5	AD	22.0	ms	0.5		96			$\alpha\approx$100; IT ?	
^{218}Ra	6636	11				25.6	μs	1.1	0$^+$	96			α=100; 2β^+ ?	
^{218}Ac	10830	50				1.08	μs	0.09	1$^-$#	96			α=100	
^{218}Th	12359	14				109	ns	13	0$^+$	96			α=100	
^{218}Pa	18640	70				116	μs	17		96	96An21	T	α=100	*
^{218}U	21880#	100#				6	ms	5	0$^+$	96			α=100	*
*^{218}Pa	T : average 96An21=110(20) 79Sc09=120(+40−20)													**
*^{218}U	T : symmetrized from 1.5(+7.3−0.7)													**
^{219}Po									7/2$^+$#				α ?; β^- ?	
^{219}At	10520	80				56	s	3	5/2$^-$#	92			$\alpha\approx$97; $\beta^-\approx$3	
^{219}Rn	8825.7	2.8				3.96	s	0.01	5/2$^+$	92			α=100	
^{219}Fr	8608	7				20	ms	2	9/2$^-$	92			α=100	
^{219}Ra	9379	9				10	ms	3	(7/2)$^+$	92			α=100	
^{219}Ac	11560	50				11.8	μs	1.5	9/2$^-$	92			α=100; β^+=1e−6#	
^{219}Th	14460	50				1.05	μs	0.03	9/2$^+$#	92			α=100; β^+=1e−7#	
^{219}Pa	18520	70				53	ns	10	9/2$^-$	92			α=100; β^+=5e−9#	
^{219}U	23210	80				55	μs	25	9/2$^+$#		93An07	T	α=100	*
*^{219}U	T : symmetrized from 42(+34−13)													**

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{220}At	14250#	110#			3.71	m	0.04	$3^{(-\#)}$		89Li04 TJ	β^-=92 2; α=8 2	*
^{220}Rn	10604.3	2.7			55.6	s	0.1	0^+	87		α=100; 2β^- ?	
^{220}Fr	11469	5			27.4	s	0.3	1^+	87		$\alpha\approx$100; β^-=0.35 5	
^{220}Ra	10260	10			17.8	ms	1.9	0^+	87	90An19 T	α=100	*
^{220}Ac	13740	50			26.36	ms	0.19	(3^-)	87	90An19 T	α=100; β^+=5e-4#	*
^{220}Th	14655	22			9.7	μs	0.6	0^+	87		α=100; ϵ=2e-7#	
^{220}Pa	20380	60			780	ns	160			87Fa.A TD	α=100	
^{220}U	23020#	200#						0^+			α ?; β^+ ?	
*^{220}At	D : α intensity is from 89Bu09											**
*^{220}Ra	T : average 90An19=17(2) 61Ru06=23(5)											**
*^{220}Ac	T : average 90An19=26.4(0.2) 70Bo13=26.1(0.5)									J : from 96Li05		**
^{221}At	16900#	300#			2.3	m	0.2	$3/2^-$#	90		β^-=100	
^{221}Rn	14400#	100#			25	m	2	$7/2^{(+)}$	90		β^-=78 1; α=22 1	
^{221}Fr	13270	8			4.9	m	0.2	$5/2^-$	90	94Bo28 D	$\alpha\approx$100; β^-<0.1; ^{14}C=8.8e-11 11	
^{221}Ra	12955	7			28	s	2	$5/2^+$	90	94Bo28 D	α=100; ^{14}C=1.2e-10 9	
^{221}Ac	14510	50			52	ms	2	$9/2^-$#	90		α=100	
^{221}Th	16927	10			1.68	ms	0.06	$(7/2^+)$	90		α=100	
^{221}Pa	20370	50			5.9	μs	1.7	$9/2^-$	90		α=100	
^{221}U	24550#	110#						$9/2^+$#			α ?; β^+ ?	
^{222}At	20800#	300#			54	s	10		96		β^-=100	
^{222}Rn	16366.8	2.5			3.8235	d	0.0003	0^+	96		α=100	
^{222}Fr	16342	21			14.2	m	0.3	2^-	96		β^-=100	
^{222}Ra	14309	5			38.0	s	0.5	0^+	96		α=100; ^{14}C=3.0e-8 10	
^{222}Ac	16607	6		*	5.0	s	0.5	1^-	96		α=99 1; β^+=1 1	
^{222}Ac^m	16810#	150#	200#	150# *	1.05	m	0.07	high	96		α=?; IT$\leq$10; β^+=1.4 4	*
^{222}Th	17190	13			2.8	ms	0.3	0^+	96		α=100; ϵ<1.3e-8#	
^{222}Pa	22100#	70#			3.2	ms	0.3		96	95Ni.A T	α=100	*
^{222}U	24280#	100#			1.4	μs	0.7	0^+	96		α=100; β^+<1e-6#	*
*^{222}Ac^m	D : derived from 0.7% < β^+ < 2%, in ENSDF											**
*^{222}Pa	T : average 95Ni.A=3.3(0.3) 79Sc09=2.9(+0.6-0.4)											**
*^{222}Pa	T : 70Bo13=5.7(0.5) at variance, not used											**
*^{222}U	T : symmetrized from 1.0(+1.0-0.4)											**
^{223}At	23600#	400#			50	s	7	$3/2^-$#	92		β^-=100	
^{223}Rn	20300#	300#			23.2	m	0.4	7/2	92		β^-=100	
^{223}Fr	18379.0	2.7			21.8	m	0.4	$3/2^{(-)}$	92		$\beta^-\approx$100; α=0.006	
^{223}Ra	17230.0	2.8			11.435	d	0.004	$3/2^+$	92		α=100; ^{14}C=6.4e-8 4	
^{223}Ac	17816	7			2.10	m	0.05	$(5/2^-)$	92		α=99; ϵ=1	
^{223}Th	19371	10			600	ms	20	$(5/2)^+$	92		α=100	
^{223}Pa	22320	70			5.8	ms	0.8	$9/2^-$#	92	95Ni.A T	α=100; β^+<0.001#	*
^{223}U	25820	70			21	μs	8	$7/2^+$#		91An10 T	α=100	*
*^{223}Pa	T : average 95Ni.A=5.0(1.0) 70Bo13=6.5(1.0)											**
*^{223}U	T : symmetrized from 18(+10-5)											**
^{224}Rn	22440#	300#			107	m	3	0^+	87		β^-=100	
^{224}Fr	21640	50			3.30	m	0.10	$1^{(-)}$	87		β^-=100	*
^{224}Ra	18818.0	2.7			3.66	d	0.04	0^+	96		α=100; ^{14}C=4.3e-9 16	*
^{224}Ac	20221	5			2.9	h	0.2	0^-	87		β^+=90.9 17; α=9.1 17; β^-<1.6#	
^{224}Th	19989	12			1.05	s	0.02	0^+	87		α=100; 2β^+ ?	
^{224}Pa	23860	50			844	ms	19	5^-#	87	96Li05 T	$\alpha\approx$100; β^+=0.1#	*
^{224}U	25700	25			950	μs	280	0^+		92To02 T	α=100	*
*^{224}Fr	J : 1^- and T=3.33 m in post cut-off date ENSDF'97											**
*^{224}Ra	D : ^{14}C (not ^{12}C), corrected in post cut-off date ENSDF'97											**
*^{224}Pa	T : average 96Li05=790(60) 96Wi.A=850(20)											**
*^{224}U	T : average 92To02=1000(400) 91An10=700(+500-200)											**

Nuclide	Mass excess (keV)		Excitation energy (keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{225}Rn	26490#	300#			4.5	m	0.3	$7/2^-$	90		β^-=100	*
^{225}Fr	23853	10			4.0	m	0.2	$3/2^-$	90		β^-=100	
^{225}Ra	21987	3			14.9	d	0.2	$1/2^+$	90		β^-=100	
^{225}Ac	21630	8			10.0	d	0.1	$(3/2^-)$	90	93Bo26 D	α=100; ^{14}C=6.0e–10 13	
^{225}Th	22301	7			8.72	m	0.04	$(3/2)^+$	90		$\alpha\approx$90; $\epsilon\approx$10	
^{225}Pa	24330	70			1.7	s	0.2	$5/2^-$#	90		α=100	
^{225}U	27370	50			94	ms	12	$5/2^+$#	90	94An02 T	α=100	*
^{225}Np	31580	70			> 2	μs		$9/2^-$#		94Ye08 TD	α=100	
*^{225}Rn	T : 4.66(0.04) m in post cut-off date 97Bu03											**
*^{225}U	T : average 94An02=68(+45–20) 92To02=95(15) 89He13=80(+40–10)											**
^{226}Rn	28770#	400#			7.4	m	0.1	0^+	96		β^-=100	
^{226}Fr	27330	90			49	s	1	1^-	96		β^-=100	
^{226}Ra	23662.3	2.5			1.600	ky	0.007	0^+	96	90We01 D	α=100; ^{14}C=2.6e–9 6; 2β^- ?	*
^{226}Ac	24303	4			29.37	h	0.12	$(1)^{(-\#)}$	96		β^-=83 3; ϵ=17 3; α=0.006 2	
^{226}Th	23186	5			30.57	m	0.10	0^+	96		α=100	
^{226}Pa	26019	12			1.8	m	0.2		96		α=74 5; β^+=26 5	
^{226}U	27330	19			150	ms	30	0^+	96	96Uu.B T	α=100	*
^{226}Np	32720#	90#			35	ms	10		96		α=100	
*^{226}Ra	D : ^{14}C: average 90We01=2.3(0.8)e–9 86Ba26=2.9(1.0)e–9 85Ho21=3.2(1.6)e–9											**
*^{226}U	T : average 96Uu.B=130(30) 90An22=200(50)											**
^{227}Rn	32980#	420#			22.5	s	0.7		92		β^-=100	
^{227}Fr	29650	100			2.47	m	0.03	$1/2^+$	92		β^-=100	
^{227}Ra	27172.3	2.5			42.2	m	0.5	$3/2^+$	92		β^-=100	
^{227}Ac	25846.1	2.7			21.773	y	0.003	$3/2^-$	92		β^-=98.62 36; α=1.38 36	
^{227}Th	25801.3	2.8			18.72	d	0.02	$(1/2^+)$	92		α=100	
^{227}Pa	26821	8			38.3	m	0.3	$(5/2^-)$	92		α=85 2; ϵ=15 2	
^{227}U	29007	17			1.1	m	0.1	$(3/2^+)$	92		α=100; β^+<0.001#	
^{227}Np	32560	70			510	ms	60	$5/2^-$#	92		$\alpha\approx$100; β^+=0.05#	
^{228}Rn	35480#	470#			65	s	2	0^+		89Bo11 TD	β^-=100	
^{228}Fr	33280#	200#			39	s	1	2^-	87		β^-=100	
^{228}Ra	28936.0	2.5			5.75	y	0.03	0^+	87		β^-=100	
^{228}Ac	28890.1	2.6			6.15	h	0.02	$3^{(+)}$	94		β^-=100; α=5.5e–6 22	*
^{228}Th	26763.1	2.7			1.9131	y	0.0009	0^+	87	93Bo20 D	α=100; ^{20}O=1.13e–11 22	*
^{228}Pa	28911	5			22	h	1	(3^+)	87		β^+=98.15 17; α=1.85 17	*
^{228}U	29218	16			9.1	m	0.2	0^+	87		α>95; ϵ<5	
^{228}Np	33700#	200#			61.4	s	1.4		87	94Kr13 TD	β^+=59 7; α=41 7; β^+SF=0.012 6	*
^{228}Pu	36070	30			> 2	μs		0^+		94An02 TD	$\alpha\approx$100; β^+=0.1#	
*^{228}Ac	D : post cut-off date ENSDF'97: α was misassigned, removed; J^π=3^+											**
*^{228}Th	T : 1.9116(0.0016) in post cut-off date ENSDF'97											**
*^{228}Pa	J : 3^+ and α=2.0(0.2)% in post cut-off date ENSDF'97											**
*^{228}Np	D : β^+SF=0.020(9)% defined by 94Kr13 relative to ϵ, thus 0.012(6)% of total											**
*^{228}Np	D : α=40(+8–6)% β^+=60(+6–8)% derived from β^+/α=1.5(4), in 94Kr13											**
*^{228}Np	J : 0^+ in ENSDF is a misprint. Corrected in post cut-off date ENSDF'97											**
^{229}Fr	35790#	360#			50.2	s	0.4	$1/2^+$#	90	92Bo05 T	β^-=100	
^{229}Ra	32430	60			4.0	m	0.2	$5/2^{(+)}$	90		β^-=100	
^{229}Ac	30670	50			62.7	m	0.5	$(3/2^+)$	90		β^-=100	
^{229}Th	29579.9	2.9			7.34	ky	0.16	$5/2^+$	90		α=100	
^{229}Th^m	29579.9	2.9	0.0035	0.0010	70	h	50	$3/2^+$		94He08 T	IT=100	
^{229}Pa	29890	9			1.50	d	0.05	$(5/2^+)$	90		$\epsilon\approx$100; α=0.48 5	
^{229}U	31201	8			58	m	3	$(3/2^+)$	90		$\beta^+\approx$80; $\alpha\approx$20	
^{229}Np	33760	90			4.0	m	0.2	$5/2^-$#	90		α>50; β^+<50	
^{229}Pu	37390	70			> 2	μs		$3/2^+$#		94An02 TD	α=100	

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{230}Fr	39600#450#		19.1 s 0.5		93		β^-=100	
^{230}Ra	34540 30		93 m 2	0^+	93		β^-=100	
^{230}Ac	33560 100		122 s 3	(1^+)	94		β^-=100	
^{230}Th	30857.2 2.0		75.38 ky 0.30	0^+	93		α=100; SF<5e-11; ^{24}Ne=5.6e-11 10	
^{230}Pa	32167 3		17.4 d 0.5	(2^-)	93		β^+=91.6 13; β^-=8.4 13; α=0.0032 1	
^{230}U	31603 5		20.8 d	0^+	93		α=100; SF<1.4e-10#; 2β^+ ?	
^{230}Np	35220 50		4.6 m 0.3		93		$\beta^+\leq$97; $\alpha\geq$3	
^{230}Pu	36930 24		> 200 ms	0^+	93	90An22 T	α=?; β^+ ?	
^{231}Fr	42300#520#		17.5 s 0.8	$1/2^+$#	94		β^-=100	
^{231}Ra	38400#300#		103 s 3	$1/2^+$#	94		β^-=100	
^{231}Ac	35910 100		7.5 m 0.1	$(1/2^+)$	94		β^-=100	
^{231}Th	33810.5 2.0		25.52 h 0.01	$5/2^+$	94		β^-=100; $\alpha\approx$1e-8	
^{231}Pa	33421.0 2.6		32.76 ky 0.11	$3/2^-$	94	92Pr05 D	α=100; SF$\leq$3e-10; ...	*
^{231}U	33803 4		4.2 d 0.1	$(5/2)^{(+\#)}$	94		$\epsilon\approx$100; $\alpha\approx$0.0055	
^{231}Np	35610 50		48.8 m 0.2	$(5/2)^{(+\#)}$	94		β^+=98 1; α=2 1	
^{231}Pu	38430#100#		2# m	$3/2^+$#			β^+ ?; α ?	
^{231}Am	42440#300#						β^+ ?; α ?	
*^{231}Pa	D : ...; ^{24}Ne=13.4e-10 17; ^{23}F=10.0e-13 +5.0-0.7							**
^{232}Fr	46250#640#		5 s 1			90Me13 T	β^-=100	
^{232}Ra	40700#360#		250 s 50	0^+	91		β^-=100	
^{232}Ac	39140 100		119 s 5	(1^+)	91		β^-=100	
^{232}Th	35443.7 2.0		14.05 Gy 0.06	0^+	91	95Bo18 D	IS=100.; α=100; SF=11e-10 3; ...	*
^{232}Pa	35939 8		1.31 d 0.02	(2^-)	91		$\beta^-\approx$100; ϵ=0.003 1	
^{232}U	34601.5 2.7		68.9 y 0.4	0^+	91	90Bo16 D	α=100; ^{24}Ne=8.9e-10 7; ...	*
^{232}Np	37350#100#		14.7 m 0.3	(4^+)	91		$\beta^+\approx$100; $\alpha\approx$0.003	
^{232}Pu	38358 19		34.1 m 0.7	0^+	91	ABBW D	ϵ=?; α=11#	*
^{232}Am	43400#300#		1.31 m 0.04		91		β^+=?; α=2#; β^+SF=0.069 10	
*^{232}Th	D : ...; ^{24}Ne+^{26}Ne<2.78e-10; 2β^- ?							**
*^{232}U	D : ...; ^{28}Mg<5e-12; SF<1e-12							**
*^{232}U	D : ^{24}Ne: average, as adopted by 91Bo20, of 2 results from their group							**
*^{232}Pu	D : derived from 1.6%# < α < 20%#, in ENSDF							**
^{233}Ra	44710#470#		30 s 5	$1/2^+$#		90Me13 T	β^-=100	
^{233}Ac	41500#300#		145 s 10	$(1/2^+)$	90		β^-=100	
^{233}Th	38728.6 2.0		22.3 m 0.1	$1/2^+$	90		β^-=100	
^{233}Pa	37483.5 2.3		26.967 d 0.002	$3/2^-$	90		β^-=100	
^{233}U	36913.4 2.8		159.2 ky 0.2	$5/2^+$	96	91Pr02 D	α=100; SF<6e-9; ^{24}Ne=7.2e-11 9; ...	*
^{233}Np	37940 50		36.2 m 0.1	$(5/2^+)$	90		β^+=100; $\alpha\leq$0.001	
^{233}Pu	40040 50		20.9 m 0.4	$5/2^+$#	90		$\beta^+\approx$100; α=0.12 5	
^{233}Am	43290#220#		2# m				β^+ ?; α ?	
^{233}Cm	47320#400#			$3/2^+$#			β^+ ?; α ?	
*^{233}U	D : ...; ^{28}Mg<1.3e-13							**
^{234}Ra	47090#540#		30 s 10	0^+	94		β^-=100	
^{234}Ac	45100#400#		44 s 7		94		β^-=100	
^{234}Th	40609 4		24.10 d 0.03	0^+	94		β^-=100	
^{234}Pa	40336 5		6.70 h 0.05	4^+	94	78Ga07 D	β^-=100; SF<3e-10	
^{234}Pa^m	40414 4	78.0 3.0	1.17 m 0.03	(0^-)	94	78Ga07 D	$\beta^-\approx$100; IT=0.16 4; SF<1e-10	
^{234}U	38140.6 2.0		245.5 ky 0.6	0^+	94		IS=0.0055 5; α=100; ...	*
^{234}Np	39950 9		4.4 d 0.1	(0^+)	94		β^+=100	
^{234}Pu	40338 7		8.8 h 0.1	0^+	94		$\epsilon\approx$94; $\alpha\approx$6	
^{234}Am	44520#210#		2.32 m 0.08		94	90Ha02 D	$\beta^+\approx$100; α=0.039 12; β^+SF=0.0066 18	
^{234}Cm	46800#300#			0^+			β^+ ?; α ?	
*^{234}U	D : ...; SF=1.73e-9 10; ^{28}Mg=1.4e-11 3; ^{24}Ne+^{26}Ne=9e-12 7							**

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{235}Ac	47600#420#			$1/2^+$#			β^- ?	
^{235}Th	44250 50		7.1 m 0.2	$(1/2^+)$	93		β^-=100	
^{235}Pa	42320 50		24.5 m 0.2	$(3/2^-)$	94		β^-=100	
^{235}U	40914.1 2.0		703.8 My 0.5	$7/2^-$	93		IS=0.720 1; α=100; SF=7e-9 2; ...	*
^{235}U^m	40914.2 2.0	0.0768 0.0005	25 m	$1/2^+$	93		IT=100	
^{235}Np	41037.8 2.1		396.1 d 1.2	$5/2^+$	94		$\epsilon\approx$100; α=0.00260 13	
^{235}Pu	42179 21		25.3 m 0.5	$(5/2^+)$	93		$\beta^+\approx$100; α=0.0027 5	
^{235}Am	44740#210#		15 m 5	$5/2^-$#	93	96Gu11 T	$\beta^+\approx$100; α ?	
^{235}Cm	48060#220#		5# m	$5/2^+$#	93		β^+ ?; α ?	
^{235}Bk	52700#400#						β^+ ?; α ?	
*^{235}U	D : ...; ^{24}Ne+^{25}Ne=8e-10 4							**
^{236}Ac	51400#500#						β^- ?	
^{236}Th	46310#300#		37.5 m 0.2	0^+	91		β^-=100	
^{236}Pa	45340 200		9.1 m 0.1	$1^{(-)}$	91		β^-=100; β^-SF=6e-8 4	*
^{236}U	42440.6 1.9		23.42 My 0.03	0^+	91		α=100; SF=9.6e-8 6	*
^{236}Np	43370 50		* 154 ky 6	(6^-)	91		ϵ=87.3 5; β^-=12.5 5; α=0.16 4	
^{236}Np^m	43430 7	60 50	* 22.5 h 0.4	1	91		ϵ=52 1; β^-=48 1	
^{236}Pu	42893.5 2.7		2.858 y 0.008	0^+	91	90Og01 D	α=100; SF=1.36e-7 4; ...	*
^{236}Am	46170#100#		10# m		91		β^+ ?; α ?	
^{236}Cm	47880#200#		30# m	0^+	91		β^+ ?; α ?	
^{236}Bk	53400#400#						β^+ ?; α ?	
*^{236}Pa	D : β^-SF decay questioned by 90Ha02							**
*^{236}U	D : and Ne+Mg < 4e-10%, from 89Mi.A							**
*^{236}Pu	D : ...; ^{28}Mg=2e-12; 2β^+ ?							**
^{237}Th	50200#360#		5.0 m 0.9	$5/2^+$#		93Yu03 TD	β^-=100	
^{237}Pa	47640 100		8.7 m 0.2	$(1/2^+)$	95		β^-=100	
^{237}U	45386.1 2.0		6.75 d 0.01	$1/2^+$	95		β^-=100	
^{237}Np	44867.5 2.0		2.144 My 0.007	$5/2^+$	95	89Pr.1 D	α=100; SF$\leq$2e-10; ^{30}Mg<4e-12	*
^{237}Pu	45087.8 2.3		45.2 d 0.1	$7/2^-$	95		$\epsilon\approx$100; α=0.0042 4	
^{237}Pu^m	45233.3 2.3	145.544 0.010	180 ms 20	$1/2^+$	95		IT=100	
^{237}Am	46550 50		73.0 m 1.0	$5/2^{(-)}$	95		$\beta^+\approx$100; α=0.025 3	
^{237}Cm	49270#210#		20# m	$5/2^+$#	95		β^+ ?; α ?	
^{237}Bk	53210#300#		20# s	$7/2^+$#			β^+ ?; α ?	
^{237}Cf	57820#500#		2.1 s 0.3	$5/2^+$#		95La09 TD	α ?; SF$\approx$10; β^+ ?	
*^{237}Np	D : and cluster (Z=10-14) < 1.8e-12%, from 92Mo03							**
^{238}Th	52390#360#			0^+			β^- ?	
^{238}Pa	50760 60		2.3 m 0.1	(3^-)	88	85Ba57 D	β^-=100; β^-SF<2.6e-6	
^{238}U	47303.7 2.0		4.468 Gy 0.003	0^+	88	86Lo.A D	IS=99.2745 15; α=100; ...	*
^{238}Np	47450.7 2.0		2.117 d 0.002	2^+	88		β^-=100	
^{238}Pu	46158.7 2.0		87.7 y 0.3	0^+	95	89Wa10D	α=100; SF=1.9e-7 1; ...	*
^{238}Am	48420 50		98 m 2	1^+	88		β^+=100; α=1.0e-4 4	
^{238}Cm	49380 40		2.4 h 0.1	0^+	88		$\epsilon\geq$90; $\alpha\leq$10	
^{238}Bk	54270#290#		2.4 m 0.1			92Kr.C TD	α ?; β^+ ?; β^+SF=0.048 2	
^{238}Cf	57200#400#		21 ms 2	0^+		95La09 TD	SF$\approx$100; α ?; β^+ ?	
*^{238}U	D : ...; SF=5.45e-5 7; 2β^-=2.2e-10 7							**
*^{238}U	D : 2β^-=2.2(7)e-10% derived from 2β^- half-life T=2.0(0.6) Zy, in 91Tu02							**
*^{238}Pu	D : ...; ^{32}Si$\approx$1.4e-14; ^{28}Mg+^{30}Mg$\approx$6e-15							**
^{239}Pa	53220#300#		106 m 30	$1/2^+$#		95Yu01 TD	β^-=100	
^{239}U	50568.7 2.0		23.45 m 0.02	$5/2^+$	92		β^-=100	
^{239}Np	49305.3 2.1		2.3565 d 0.0004	$5/2^+$	92		β^-=100	
^{239}Pu	48583.5 2.0		24.11 ky 0.03	$1/2^+$	92		α=100; SF=3.1e-10 6	
^{239}Am	49386.4 2.8		11.9 h 0.1	$(5/2)^-$	92		$\epsilon\approx$100; α=0.010 1	
^{239}Cm	51190#100#		2.9 h	$(7/2^-)$	92		$\beta^+\approx$100; α<0.1	
^{239}Bk	54360#290#		1# m	$(7/2^+)$	92		β^+ ?; α ?	
^{239}Cf	58290#230#		55 s 26	$5/2^+$#	92	81Mu12D	α=?; β^+ ?	*
*^{239}Cf	T : symmetrized from 39(+37-12)							**

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{240}Pa	56800# 300#						β^- ?	
^{240}U	52709 5		14.1 h 0.1	0^+	96		β^-=100; α<1e-10	
^{240}Np	52321 15		* 61.9 m 0.2	(5^+)	96		β^-=100	
^{240}Np^m	52341 21	20 15	* 7.22 m 0.02	$1^{(+)}$	96	81Hs02 E	β^-≈100; IT=0.11 3	
^{240}Pu	50121.3 1.9		6.564 ky 0.011	0^+	96	89Pr.1 D	α=100; SF=5.7e-6 2; ^{34}Si<1.3e-13	
^{240}Am	51500 14		50.8 h 0.3	(3^-)	96		β^+=100; α≈1.9e-4	
^{240}Cm	51715.7 2.7		27 d 1	0^+	96		α≈100; ϵ<0.5; SF=3.9e-6 8	
^{240}Bk	55660# 150#		4.8 m 0.8		96		β^+ ?; α=10#; β^+SF=0.0020 13	*
^{240}Cf	58030# 200#		1.06 m 0.15	0^+	96	95La09 D	α≈98; SF≈2; β^+ ?	
^{240}Es	64200# 400#						α ?; β^+ ?	
*^{240}Bk	D : symmetrized from β^+SF=0.0013(+18−7)%							**
^{241}U	56200# 300#			$7/2^+$#			β^- ?	
^{241}Np	54260 70		13.9 m 0.2	$(5/2^+)$	94		β^-=100	
^{241}Pu	52951.0 1.9		14.35 y 0.10	$5/2^+$	96		β^-≈100; α=0.00245 2; SF<2.4e−14	
^{241}Am	52930.2 2.0		432.2 y 0.7	$5/2^-$	94		α=100; SF=4.3e-10 18; ^{34}Si<7.4e-14	
^{241}Cm	53697.6 2.3		32.8 d 0.2	$1/2^+$	94		ϵ=99.0 1; α=1.0 1	
^{241}Bk	56100# 200#		3# m	$(7/2^+)$	94		α ?; β^+ ?	
^{241}Cf	59350# 260#		3.8 m 0.7	$7/2^-$#	94		β^+≈75; α≈25	
^{241}Es	63960# 300#		10 s 5	$(3/2^-)$		96Ni09 TJD	α=?; β^+ ?	*
*^{241}Es	T : symmetrized from 8(+6−4)							**
^{242}U	58610# 200#		16.8 m 0.5	0^+	85		β^-=100	
^{242}Np	57410# 210#		* 5.5 m 0.1	$(6)^{(+\#)}$	85		β^-=100	
^{242}Np^m	57410 200	0# 50#	* 2.2 m 0.2	(1^+)	85		β^-=100	
^{242}Pu	54713.0 2.0		373.3 ky 1.2	0^+	96	86Lo.A D	α=100; SF=5.49e-4 8	
^{242}Am	55464.0 2.0		16.02 h 0.02	1^-	96		β^-=82.7 3; ϵ=17.3 3	
^{242}Am^m	55512.6 2.0	48.63 0.05	141 y 2	5^-	96		IT≈100; α=0.459 12; SF=1.5e-8 6	
^{242}Am^n	57660 80	2200 80	14.0 ms 1.0	(2,3)	96	95Ba.A J	SF≈100; IT=?	
^{242}Cm	54799.2 2.0		162.8 d 0.2	0^+	96	86Lo.A D	α=100; SF=6.33e-6 13; 2β^+ ?	
^{242}Bk	57800# 200#		7.0 m 1.3	2^-#	85	80Ga07 D	β^+=100; β^+SF<3e-5	
^{242}Cf	59330 40		3.49 m 0.12	0^+	85	81Mu12D	α=80 20; β^+ ?; SF<0.014	*
^{242}Es	64920# 330#		23.9 s 2.8			96Ni09 TD	α=?; β^+=?; β^+SF=0.6	*
^{242}Fm	68400# 400#		800 μs 200	0^+	85		SF=?; α ?	
*^{242}Cf	D : SF < 0.014% from 95La09							**
*^{242}Es	T : average 96Sh.A=25(2) 96Ni09=16(+6−4)							**
*^{242}Es	D : β^+SF=0.6% assuming α and β^+ are equal, from 94Ke.B; α from 96Ni09							**
^{243}Np	59870# 30#		1.85 m 0.15	$(5/2^-)$	93		β^-=100	
^{243}Pu	57750 3		4.956 h 0.003	$7/2^+$	93		β^-=100	
^{243}Am	57168.3 2.2		7.37 ky 0.04	$5/2^-$	93		α=100; SF=3.7e-9 2	
^{243}Cm	57177.2 2.2		29.1 y 0.1	$5/2^+$	93		α≈100; ϵ=0.29 3; SF=5.3e-9 9	
^{243}Bk	58686 5		4.5 h 0.2	$(3/2^-)$	93		β^+≈100; α≈0.15	
^{243}Cf	60940# 140#		10.7 m 0.5	$(1/2^+)$	93		β^+≈86; α≈14	
^{243}Es	64860# 290#		21 s 2	$3/2^-$#	93		β^+≤70; α≥30	
^{243}Fm	69410# 240#		210 ms 60	$7/2^-$#	93	ABBW D	α=60 40; β^+ ?; SF=0.57#	*
*^{243}Fm	T : symmetrized from 180(+80−40)							**
*^{243}Fm	D : α=40(20)% if α branching of ^{239}Cf is 100%, see ENSDF							**
^{244}Np	63200# 300#		2.29 m 0.16	(7^-)		87Mo29 TJD	β^-=100	
^{244}Pu	59800 5		80.8 My 1.0	0^+	96	92Mo25 D	α≈100; SF=0.123 6; 2β^-<7.3e-9	*
^{244}Am	59875.9 2.1		10.1 h 0.1	(6^-)	96		β^-=100	
^{244}Am^m	59961.6 2.2	85.8 0.9 RQ	26 m	1^+	96		β^-≈100; ϵ=0.0361 13	
^{244}Cm	58447.8 1.9		18.10 y 0.02	0^+	96		α=100; SF=1.347e-4 8	
^{244}Cm^m	59488.0 1.9	1040.181 0.011	34 ms 2	6^+	96		IT=100	
^{244}Bk	60703 14		4.35 h 0.15	(1^-)	87		β^+≈100; α=0.006 2	
^{244}Cf	61470 3		19.4 m 0.6	0^+	87		α≈100; ϵ≈1	
^{244}Es	66110# 180#		37 s 4		87	80Ga07 D	β^+ ?; α=5 3; β^+SF=0.01	*
^{244}Fm	69000# 280#		3.3 ms 0.4	0^+	87		SF≈99; α≈1	
*^{244}Pu	T : and $T(2\beta^-) > 1.1$ Ey, from 92Mo25; thus $2\beta^- < 7.3$ e−9%							**
*^{244}Es	D : symmetrized from α=4(+3−2)%							**

Nuclide	Mass excess (keV)		Excitation energy (keV)			Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{245}Pu	63098	14				10.5	h	0.1	(9/2$^-$)	93		β^-=100	
^{245}Am	61893	4				2.05	h	0.01	(5/2)$^+$	93		β^-=100	
^{245}Cm	60999.4	2.7				8.5	ky	0.1	7/2$^+$	93		α=100; SF=6.1e−7 9	
^{245}Bk	61809.6	2.5				4.94	d	0.03	3/2$^-$	93		$\epsilon\approx$100; α=0.12 1	
^{245}Cf	63380#	100#				45.0	m	1.5	(5/2$^+$)	93		β^+=64 3; α=36 3	
^{245}Es	66430#	200#				1.1	m	0.1	(3/2$^-$)	93		β^+=60 10; α=40 10	
^{245}Fm	70210#	280#				4.2	s	1.3	1/2$^+$#	93		α=?; β^+=4.2#; SF=0.13#	
^{245}Md	75470#	380#				* 900	μs	250	1/2$^-$#		96Ni09 TJD	SF=?; α ?	
^{245}Md^m	75570#	360#	100#	100#		* 400	ms	200	(7/2$^+$)		96Ni09 TJD	α=?; β^+ ?	*
^{246}Pu	65389	15				10.84	d	0.02	0$^+$	90		β^-=100	
^{246}Am	64989	18				39	m	3	(7$^-$)	90		β^-=100	
^{246}Am^m	65019	15	30	10		25.0	m	0.2	2$^{(-)}$	90	84So03 E	$\beta^-\approx$100; IT<0.01	
^{246}Cm	62612.7	2.2				4.73	ky	0.10	0$^+$	90		$\alpha\approx$100; SF=0.02614 5	
^{246}Bk	63960	60				1.80	d	0.02	2$^{(-)}$	90		$\beta^+\approx$100; α<0.2	
^{246}Cf	64085.7	2.2				35.7	h	0.5	0$^+$	90		α=100; SF=2.0e−4 2; ϵ<5e−4	
^{246}Es	67970#	220#				7.7	m	0.5	4$^-$#	90		β^+=90.1 18; α=9.9 18; β^+SF=0.003	
^{246}Fm	70120	40				1.1	s	0.2	0$^+$	90	96Ni09 D	α=?; β^+>10; SF=4.5 13; β^+SF=10 5	
^{246}Md	76320#	390#				1.0	s	0.4			96Ni09 TD	α=?; β^+ ?	
^{246}Md^m	76530#	390#	210	70	EU	1.0	s	0.4			93Ho.ATD	α=?; β^+ ?	*
^{247}Pu	69000#	300#				2.27	d	0.23	1/2$^+$#	93		β^-=100	
^{247}Am	67150#	100#				23.0	m	1.3	5/2#	93		β^-=100	
^{247}Cm	65528	4				15.6	My	0.5	9/2$^-$	93		α=100	
^{247}Bk	65483	6				1.38	ky	0.25	(3/2$^-$)	93		$\alpha\approx$100; SF ?	
^{247}Cf	66129	8				3.11	h	0.03	7/2$^+$#	93		$\epsilon\approx$100; α=0.035 5	
^{247}Es	68600#	30#				4.55	m	0.26	7/2$^+$#	93		$\beta^+\approx$93; $\alpha\approx$7; SF$\approx$9e−5#	
^{247}Fm	71560#	150#				35	s	4	5/2$^+$#	93		$\alpha\geq$50; $\beta^+\leq$50	
^{247}Fm^m			non existent		EU	9.2	s	2.3		93	67Fl15 I	$\alpha\approx$100; IT ?	*
^{247}Md	76200#	370#				* 270	ms	160	1/2$^-$#	93	93Ho.ATD	SF=?; α ?	*
^{247}Md^m	76250#	350#	50#	100#	Nm	* 1.12	s	0.22	(7/2$^+$)		93Ho.ATD	α=100; SF=0.0001#	
^{248}Am	70560#	200#								90		β^-=100	
^{248}Cm	67386	5				340	ky	4	0$^+$	90		α=91.74 3; SF=8.26 3; 2β^- ?	
^{248}Bk	68070#	70#				* >9	y		(6$^+$)	90		α>70	
^{248}Bk^m	68103	21	30#	70#		* 23.7	h	0.2	1$^{(-)}$	90		β^-=70 5; ϵ=30 5; α=0.001	
^{248}Cf	67233	5				333.5	d	2.8	0$^+$	90		$\alpha\approx$100; SF=0.0029 3	
^{248}Es	70290#	50#				27	m	4	2$^-$#,0$^+$#	90		$\beta^+\approx$100; $\alpha\approx$0.25; β^+SF=3e−5	
^{248}Es^m			non existent		RN	41	m				89Ha27I		
^{248}Fm	71897	12				36	s	3	0$^+$	90		α=99 1; $\beta^+\approx$1; SF$\approx$0.05	
^{248}Md	77230#	240#				7	s	3		90		β^+=80 10; α=20 10; β^+SF<0.05	
^{249}Am	73100#	300#				100#	s					β^- ?	
^{249}Cm	70744	5				64.15	m	0.03	1/2$^{(+)}$	90		β^-=100	
^{249}Bk	69843	3				320	d	6	7/2$^+$	90		$\beta^-\approx$100; α=0.00145 8; SF=47e−9 2	
^{249}Cf	69719.4	2.8				351	y	2	9/2$^-$	90		α=100; SF=5.2e−7 2	
^{249}Es	71170#	30#				102.2	m	0.6	7/2$^{(+)}$	90		$\beta^+\approx$100; α=0.57 8	
^{249}Fm	73610#	140#				2.6	m	0.7	(7/2$^+$)	90		β^+=85#; α=?	
^{249}Md	77320#	220#				24	s	4	7/2#	90		α>60; β^+ ?	
^{249}No	81810#	340#							5/2$^+$#			β^+ ?; α ?	

*^{245}Md^m T : symmetrized from 350(+230−160) **

*^{246}Md^m I : No longer considered to exist. Kept for consistency with AME'95 **

*^{247}Fm^m I : existence of this isomer is discussed in ENSDF **

*^{247}Md T : symmetrized from 230(+190−120) **

Nuclide	Mass excess (keV)		Excitation energy(keV)		Half-life			J^π	Ens	Reference	Decay modes and intensities (%)	
^{250}Cm	72983	11			9#	ky		0^+	90		SF≈80; α≈11; β^-≈9	
^{250}Bk	72946	4			3.217	h	0.005	2^-	90		β^-=100	
^{250}Cf	71166.1	2.2			13.08	y	0.09	0^+	90		α≈100; SF=0.077 3	
^{250}Es	73270#	100#			* 8.6	h	0.1	(6^+)	90		β^+>97; α<3	
^{250}Es^m	73470#	180#	200#	150#	* 2.22	h	0.05	$1^{(-)}$	90		ε≥99; α≤1	
^{250}Fm	74068	12			30	m	3	0^+	90		α>90; ε<10; SF≈0.0006	
^{250}Fm^m	75570#	300#	1500#	300#	1.8	s	0.1	7,8#	90		IT>80	
^{250}Md	78700#	300#			52	s	6		90		β^+=93 3; α=7 3; β^+SF=0.02	
^{250}No	81500#	200#			250	μs	50	0^+	90		SF≈100; α=0.05#; β^+=0.00025#	
^{251}Cm	76641	23			16.8	m	0.2	$(1/2^+)$	90		β^-=100	
^{251}Bk	75221	11			55.6	m	1.1	$(3/2^-)$	90		β^-=100; α≈1e–5	
^{251}Cf	74128	5			900	y	40	$1/2^+$	90		α=100	
^{251}Es	74504	6			33	h	1	$(3/2^-)$	90		ε≈100; α=0.49 12	
^{251}Fm	75979	8			5.30	h	0.08	$(9/2^-)$	90		β^+=98.20 13; α=1.80 13	
^{251}Md	79100#	200#			4.0	m	0.5		90		β^+≥90; α≤10	
^{251}No	82870#	180#			800	ms	300	$7/2^+$#	90		α=?; SF<10#; β^+=1#	
^{251}Lr	87900#	300#									β^+ ?; α ?	
^{252}Cm	79060#	300#			< 2	d		0^+	90		β^-=100	
^{252}Bk	78530#	200#			1.8	m	0.5		90	92Kr.A TD	β^-=?; α ?	
^{252}Cf	76028	5			2.645	y	0.008	0^+	90		α=96.908 8; SF=3.092 8	
^{252}Es	77290	50			471.7	d	1.9	(5^-)	90		α=76 4; ε=24 2; β^-≈0.01	
^{252}Fm	76811	6			25.39	h	0.05	0^+	90		α≈100; SF=0.0023 2; 2β^+ ?	
^{252}Md	80700#	200#			2.3	m	0.8		90		β^+>50; α<50	
^{252}No	82871	13			2.30	s	0.22	0^+	90		α=73.1 19; SF=26.9 19; β^+<1	
^{252}Lr	88800#	300#			1#	s			90		α=90#; β^+=10#; SF<1#	
^{253}Bk	80930#	360#			10#	m				91Kr.A I	β^- ?	*
^{253}Cf	79295	6			17.81	d	0.08	$(7/2^+)$	90		β^-≈100; α=0.31 4	
^{253}Es	79007	3			20.47	d	0.03	$7/2^+$	90		α=100; SF=8.7e–6 3	
^{253}Fm	79341	5			3.00	d	0.12	$1/2^+$	90		ε=88 1; α=12 1	
^{253}Md	81300#	210#			6.9	m	0.9	$7/2^-$#	90	90Ka.A TD	β^+=?; α ?	*
^{253}No	84440#	250#			1.7	m	0.3	$(9/2^-)$	90		α=?; β^+=20#; SF=0.001#	
^{253}Lr	88730#	230#			1.5	s	0.5		90		α=90 10; SF ?; β^+=1#	*
^{253}Db	93780#	450#			13	ms	5	$(7/2)^{(+\#)}$	90	95Ho.B TJ	SF≈50; α≈50	*
*^{253}Bk	I : possible identification, in 91Kr.A. Needs confirmation											**
*^{253}Md	T : symmetrized from 6.4(+1.2–0.4)											**
*^{253}Lr	T : symmetrized from 1.3(+0.6–0.3)											**
*^{253}Db	T : symmetrized from 11(+6–3)											**
^{254}Bk	84390#	300#									β^- ?	
^{254}Cf	81335	12			60.5	d	0.2	0^+	90		SF≈100; α=0.31 2; 2β^- ?	
^{254}Es	81986	4			275.7	d	0.5	(7^+)	90		α=100; ε<1e–4#; β^-=1.74e–6; ...	*
^{254}Es^m	82070	4	83.8	2.5 AD	39.3	h	0.2	2^+	90		β^-=98 2; IT<3; α=0.33 1; ...	*
^{254}Fm	80898	3			3.240	h	0.002	0^+	90		α≈100; SF=0.0592 2	
^{254}Md	83580#	100#			* 10	m	3	(0^-)	90		β^+≈100; α ?	
^{254}Md^m	83630#	140#	50#	100#	* 28	m	8	(3^-)	90		β^+≈100; α ?	
^{254}No	84718	18			55	s	3	0^+	90		α=?; β^+=10 4; SF=0.31 16	*
^{254}No^m	85220#	100#	500#	100#	280	ms	40		90		IT>80; α ?	
^{254}Lr	89970#	340#			13	s	2		90		α=78 6; β^+=22 6; SF<0.1	
^{254}Db	93300#	290#			23	μs	3	0^+	90	95Ho.B T	SF≈100; α≈0.3	
*^{254}Es	D : ...; SF<3e–6											**
*^{254}Es^m	D : ...; ε=0.078 6; SF<0.045											**
*^{254}No	D : symmetrized from SF=0.25(+20–11)%											**

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{255}Cf	84800# 200#		85 m	9/2$^+$#	90		β^-=100; SF<0.001#; α=1e-5#	
^{255}Es	84083 11		39.8 d 1.2	7/2$^+$	90		β^-=92.0 4; α=8.0 4; SF=0.0041 2	
^{255}Fm	83793 5		20.07 h 0.07	7/2$^+$	90		α=100; SF=2.4e-5	
^{255}Md	84836 7		27 m 2	(7/2$^-$)	96		β^+=92 2; α=8 2; SF<0.15#	
^{255}No	86845 12		3.1 m 0.2	(1/2$^+$)	90		α=61.4 25; β^+=38.6 25	
^{255}Lr	90140# 210#		22 s 4		90		α=?; β^+<30#; SF<1#	
^{255}Db	94540# 210#		1.5 s 0.2	(9/2$^-$)	90		SF=52 7; α=48 7	
^{255}Jl	100040# 420#		1.7 s 0.5		90		$\alpha\approx$80; SF$\approx$20	*
*^{255}Jl	T : symmetrized from 1.6(+0.6−0.4)							**
^{256}Cf	87040# 300#		12.3 m 1.2	0$^+$	90		SF=100; β^-<1#; α=1e-6#; 2β^- ?	
^{256}Es	87180# 100#	*	25.4 m 2.4	(1$^+$)	90		β^-=100	
^{256}Es^m	87180# 140#	0# 100# *	7.6 h	(8$^+$)	90	89Ha10 D	$\beta^-\approx$100; β^-SF=0.002	
^{256}Fm	85480 7		157.6 m 1.3	0$^+$	90		SF=91.9 3; α=8.1 3	
^{256}Md	87610 50		78.1 m 1.8	(1$^-$)	90	93Mo18 TJD	β^+=89 3; α=11 3	
^{256}No	87817 8		2.91 s 0.05	0$^+$	90	90Ho03 TD	$\alpha\approx$100; SF=0.55 5; ϵ<0.01#	*
^{256}Lr	92000# 220#		28 s 3		90		α>80; β^+<20; SF<0.03	
^{256}Db	94248 27		6.7 ms 0.2	0$^+$	90		SF=?; α=6 5	*
^{256}Jl	100700# 360#		3.0 s 1.1		90		$\alpha\leq$90; SF$\leq$40; $\beta^+\approx$10	*
*^{256}No	D : symmetrized from SF=0.53(+6−3)%							**
*^{256}Db	D : symmetrized from α=2.2(+7.3−1.8)%							**
*^{256}Jl	T : symmetrized from 2.6(+1.4−0.8)							**
^{257}Es	89400# 410#		2# h		90		β^- ?; α ?	
^{257}Fm	88584 6		100.5 d 0.2	(9/2$^+$)	90		$\alpha\approx$100; SF=0.210 4	
^{257}Md	88990 3		5.52 h 0.05	(7/2$^-$)	96	93Mo18 TD	ϵ=84.8 26; α=15.2 26; SF<1	
^{257}No	90220 30		25 s 2	(7/2$^+$)	90		$\alpha\approx$100; β^+<1	
^{257}Lr	92780# 210#		646 ms 25	(9/2$^+$)	90		$\alpha\approx$100; β^+=0.01#; SF=0.001#	
^{257}Db	96010# 270#		4.7 s 0.3	(1/2$^+$)	90	95Au04 J	α=79.6 20; β^+=18 2; SF=2.4 3	
^{257}Jl	100470# 230#		1.4 s 0.4		90		α=82 11; SF=17 11; β^+=1#	*
*^{257}Jl	T : symmetrized from 1.3(+0.5−0.3)							**
^{258}Es					90		β^- ?; α ?	
^{258}Fm	90420# 200#		360 μs 20	0$^+$	90	89Hu.A T	SF=100	*
^{258}Md	91683 5	*	51.50 d 0.29	(8$^-$)	90	93Mo18 TD	$\alpha\approx$100; β^+<0.0015; β^-<0.0015	*
^{258}Md^m	91680# 200#	0# 200# *	57.0 m 0.9	(1$^-$)	90	93Mo18 TD	ϵ=?; SF<20; β^-<10#; α<1.2	*
^{258}No	91470# 200#		1.2 ms 0.2	0$^+$	90	89Hu09 T	SF=100; α=0.001#; 2β^+ ?	
^{258}Lr	94900# 100#		3.9 s 0.3		90	92Gr02 T	α>95; β^+<5	
^{258}Db	96470# 200#		12 ms 2	0$^+$	90		SF$\approx$87; $\alpha\approx$13	
^{258}Jl	101940# 340#	*	4.6 s 0.8		96		α=64 7; β^+=36 7; SF<1#	*
^{258}Jl^m	102000# 350#	60# 100# *	20 s 10		96		$\epsilon\approx$100; IT ?	
^{258}Rf	105400# 410#		3.3 ms 1.0	0$^+$		95Ho.B T	SF$\approx$100; α ?	*
*^{258}Fm	T : supersedes 86Hu05=370(43) from same group							**
*^{258}Md	D : derived from: "the sum of SF, ϵ and β^- decay branches <0.003%"in 93Mo18							**
*^{258}Md	D : and T(SF)>150000 y, from ENSDF, thus SF<1e-4%#							**
*^{258}Md^m	D : SF<20% derived from 93Mo18 "the sum of SF and β^- decay branches < 30%"							**
*^{258}Jl	T : symmetrized from 4.4(+0.9−0.6)							**
*^{258}Jl	D : symmetrized from α=67(+5−9)% and β^+=33(+9−5)%							**
*^{258}Rf	T : symmetrized from 2.9(+1.3−0.7)							**
^{259}Fm	93700# 280#		1.5 s 0.3	3/2$^+$#	90		SF=100	
^{259}Md	93620# 200#		1.60 h 0.06	(7/2$^-$)	90	93Mo18 TD	SF=?; α<1.3	
^{259}No	94100# 100#		58 m 5	(9/2$^+$)	90		α=75; ϵ=25; SF<10	
^{259}Lr	95940# 70#		6.3 s 0.4		90	92Gr02 T	$\alpha\approx$77; SF$\approx$23; β^+<0.5	
^{259}Db	98390# 70#		2.7 s 0.4	7/2$^+$#	90	94Gr08 T	α=93 4; SF=7 4; $\beta^+\approx$0.3	*
^{259}Jl	102210# 290#		1# s		90		α ?	
^{259}Rf	106800# 210#		580 ms 210	(1/2$^+$)	90		α=90 10; SF<20	*
*^{259}Db	T : average 94Gr08=1.7(+0.8−0.5) 81Be03=3.0(1.3) 73Dr10=3.2(0.8)							**
*^{259}Db	T : and 69Gh01=3.2(0.8)							**
*^{259}Rf	T : symmetrized from 480(+280−130)							**

Nuclide	Mass excess (keV)	Excitation energy(keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{260}Fm			1# ms	0^+	90		SF ?	*
^{260}Md	96550# 320#		27.8 d 0.8		90	92Lo.B TD	SF=?; α<5; ϵ<5; β^-<3.5	*
^{260}No	95610# 200#		106 ms 8	0^+	90		SF=100	
^{260}Lr	98340# 120#		3.0 m 0.5		90		α=75 10; β^+≈15; SF<10	
^{260}Db	99140# 200#		20.1 ms 0.7	0^+	90		SF≈98; α≈2	
^{260}Jl	103790# 230#		1.52 s 0.13		90		α≥90; SF≤9.6 6; β^+<2.5	
^{260}Rf	106600 40		3.8 ms 0.8	0^+	90		SF=60 30; α=40 30	*
^{260}Bh	113460# 620#				90		α=100	
*^{260}Fm	I : half-life ≈4 ms and SF=100 mode were reported in the 92Lo.B internal							**
*^{260}Fm	I : report. Not confirmed in subsequent experiment by same group (97Lo.A).							**
*^{260}Fm	I : Discovery of this isotope is considered unproven.							**
*^{260}Md	T : supersedes 86Hu01=31.8(0.5) of same group							**
*^{260}Rf	T : symmetrized from 3.6(+0.9−0.6)							**
*^{260}Rf	D : symmetrized from SF=50(+30−20)% and α=50(+20−30)%							**
^{261}Md							β^- ?	
^{261}No	98500# 300#			$3/2^+$#			β^- ?; α ?	
^{261}Lr	99620# 200#		39 m 12			87Lo.A TD	SF=?; α ?	
^{261}Db	101300# 110#		65 s 10	$9/2^+$#	90	90He.A D	α=?; β^+<14.0 1.4; SF<10	
^{261}Db^m	101300# 150#	0# 100#	5 s	$3/2^+$#		96Ho13 TD	α=?; β^+ ?	
^{261}Jl	104430# 230#		1.8 s 0.4		90		α>50; SF<50	
^{261}Rf	108240# 280#		230 ms 30	$7/2^+$#	90		α=95 5; SF<10	
^{261}Bh	113460# 240#		13 ms 4		90		α=95 5; SF<10	*
*^{261}Bh	T : symmetrized from 11.8(+5.3−2.8)							**
^{262}No	100150# 540#		5 ms 1	0^+		89Hu.A TD	SF=?; β^- ?	
^{262}Lr	102180# 300#		3.6 h 0.2			89Hu.A TD	β^+=?; α ?	
^{262}Db	102390# 280#		2.06 s 0.19	0^+	90	96La11 TD	SF=100; α<0.8	*
^{262}Db^m	102990# 490#	600# 400#	47 ms 5	high	90	96La11 I	SF=100	*
^{262}Jl	106330# 180#		34 s 4		90		SF=71 5; α=26 5; β^+=3#	
^{262}Rf	108500# 280#		10# ms	0^+	90		α ?; β^+ ?	
^{262}Bh	114580# 380#		102 ms 26		90		α≥80; SF≤20	
^{262}Bh^m	114900# 350#	320# 160#	8.0 ms 2.1		90		α≥70; SF≤30	
*^{262}Db	T : average 96La11=2.1(0.2) 94La22=1.2(+1.0−0.5)							**
*^{262}Db	D : SF=100 from 94La22; α intensity limit is from 96La11							**
*^{262}Db^m	I : assigned by 96La11 to K-isomeric state							**
^{263}Lr	103760# 360#						α ?	
^{263}Db	104830# 190#		10 m 2	$3/2^+$#		93Gr.C TD	SF=?; α=30	
^{263}Jl	107190# 170#		29 s 9		90	92Kr01 TD	SF=56 14; α=?; β^+=8	*
^{263}Rf	110210# 120#	*	800 ms 200	$9/2^+$#	90		SF≈70; α≈30	
^{263}Rf^m	110310# 100#	100# 70# Nm *	360 ms 120	$3/2^+$#		95Ho.A TJD	α=?; IT ?	*
^{263}Bh	114710# 420#		200# ms				α ?	
^{263}Hn	119890# 370#		1# ms	$7/2^+$#			α=100	
*^{263}Jl	T : symmetrized from 27(+10−7)							**
*^{263}Jl	D : SF symmetrized from SF=57(+13−15)%; β^+ intensity is from 93Gr.C							**
*^{263}Rf^m	T : symmetrized from 310(+160−80)							**
^{264}Db	106170# 450#			0^+			α ?	
^{264}Jl	109430# 230#						α ?	
^{264}Rf	110780# 280#		400# ms	0^+			α ?	
^{264}Bh	116190# 280#		700 ms 400			95Ho04 TD	α=?; β^+ ?	*
^{264}Hn	119610 50		540 μs 300	0^+	90	95Ho.B T	α=100	*
*^{264}Bh	T : symmetrized from 440(+600−160)							**
*^{264}Hn	T : 95Ho.B (2 events 76 μs and 825 μs) 87Mu15 (1 event 80 μs)							**
*^{264}Hn	T : average of the 3 events : 327(+448−120) μs. See 84Sc13							**

Nuclide	Mass excess (keV)	Excitation energy (keV)	Half-life	J^π	Ens	Reference	Decay modes and intensities (%)	
^{265}Jl	110530# 280#						α ?	
^{265}Rf	112770# 140#		16 s 9	$3/2^+$#		94La22 TD	$\alpha \geq 50$; SF ?	
^{265}Bh	116620# 380#						α ?	
^{265}Hn	121100# 300#		1.6 ms	$9/2^+$#	90	95Ho.B T	α=100	
^{265}Hn^m	121500# 290#	400# 100#	1.2 ms 0.6	$3/2^+$#		95Ho.B T	$\alpha \approx 100$; IT ?	
^{265}Mt	127210# 470#						α ?	
^{266}Rf	113580# 290#		20 s 7	0^+		94La22 TD	$\alpha \geq 50$; SF ?	
^{266}Bh	118310# 350#						α ?	
^{266}Hn	121130# 410#			0^+			α ?	
^{266}Mt	128490# 350#		6 ms 4		95	84Og03 D	α=?; SF<5.5	*
*^{266}Mt	T : symmetrized from 3.4(+6.1−1.3)							**
^{267}Bh	118990# 340#						α ?	
^{267}Hn	122750# 100#		50 ms 18	$3/2^+$#		95Ho.A TD	α=?; β^+ ?	*
^{267}Hn^m		non existent EU	200 ms			95Ho.A TDI	α=?; IT ?	*
^{267}Mt	128110# 580#						α ?	
^{267}Xa	134090# 380#		10 μs 8	$9/2^+$#		95Gh04 TD	α=?; β^+ ?	*
*^{267}Hn	T : average 95Ho.A=60 ms (9 events) 95La20=19 ms (3 events)							**
*^{267}Hn^m	I : tentative only							**
*^{267}Xa	T : lifetime 4 μs, thus T=2.8(+13.0−1.3). See 84Sc13							**
^{268}Hn	123100# 410#			0^+			α ?	
^{268}Mt	129310# 320#		110 ms 70			95Ho04 TD	α=?; β^+ ?	*
^{268}Xa	133700# 500#			0^+			α ?	
*^{268}Mt	T : symmetrized from 70(+100−30)							**
^{269}Hn	124930# 420#		13 s 6			96Ho13 TD	α=100	
^{269}Mt	129580# 550#						α ?	
^{269}Xa	135200# 290#		230 μs 110	$3/2^+$#		95Ho03 TD	α=?; β^+ ?	*
*^{269}Xa	T : symmetrized from 170(+160−60)							**
^{270}Mt	131080# 610#						α ?	
^{270}Xa	134720# 650#			0^+			α ?	
^{271}Mt	131550# 610#						α ?	
^{271}Xa	136070# 180#		1.2 ms 0.5	$11/2^-$#		95Ho.A TD	α=?; β^+ ?	*
^{271}Xa^m	136570# 350#	500# 300# AD	210 ms 170			95Ho.A TD	α=?; IT ?	*
*^{271}Xa	T : symmetrized from 1.1(+0.6−0.4)							**
*^{271}Xa^m	T : symmetrized from 56(+270−26)							**
^{272}Xa	136290# 650#			0^+			α ?	
^{272}Xb	142960# 330#		2.5 ms 1.3			95Ho04 TD	α=?; β^+ ?	*
*^{272}Xb	T : symmetrized from 1.5(+2.0−0.5)							**
^{273}Xa	139020# 440#		170 ms			96Ho13 TD	α=100	
^{273}Xa^m	139690# 670#	670# 510#	600 μs 400			96Ho13 TD	$\alpha \approx 100$; IT ?	*
^{273}Xb							α ?	
*^{273}Xa^m	T : estimated from 96La12=300(+1300−200) and 96Ho13=110							**
^{274}Xb							α ?	
^{275}Xb							α ?	
^{277}Xc			400 μs 300			96Ho13 TD	α=100	*
*^{277}Xc	T : symmetrized from 240(+430−90)							**