

Nuclear isotope database

This is a verbatim copy of the nuclear isotope database used by EasySpin.

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% EasySpin nuclear isotope database
% Version 2.05 (13-Aug-2012)
=====
% Contains all naturally occurring nuclei plus selected
% radioactive ones, which are marked by * in column 3.
% Line syntax:
% Column 1: #protons
% Column 2: #nucleons
% Column 3: radioactive *, stable -
% Column 4: symbol
% Column 5: name
% Column 6: spin quantum number
% Column 7: gn (gyromagnetic ratio divided by nuclear magneton)
% Column 8: natural abundance in percent
% Column 9: electric quadrupole moment in barn
%           NaN indicates 'not measured'
%
% Nuclear magnetic moments are taken from Stone, Table of Nuclear
% Magnetic Dipole and Electric Quadrupole Moments, Atomic Data
% and Nuclear Data Tables 90, 75-176 (2005).
%
% Nuclear quadrupole moments are taken from P.Pyykkö, Mol.Phys.
% 99, 1617-1629 (2001) and the 2002 edition of the CRC Handbook
% of Physics and Chemistry (which took it from Pyykkö and others).
% Pyykkö typo for S-33.
%-----
% first period
%-----
1  1 - H  hydrogen      0.5 +5.5856912  99.9885  0
1  2 - H  hydrogen      1.0 +0.8574376  0.0115  +0.002860
1  3 * H  hydrogen      0.5 +5.957920   0.0      0
2  3 - He helium       0.5 -4.255248   0.000137 0
2  4 - He helium       0.0  0.0         99.999863 0
%-----
% second period
%-----
3  6 - Li lithium      1.0 +0.8220514   7.59    -0.000808
3  7 - Li lithium      1.5 +2.170961   92.41    -0.0401
4  9 - Be beryllium    1.5 -0.7850     100.0    +0.05288
5  10 - B boron        3.0 +0.600216   19.9     +0.08459
5  11 - B boron        1.5 +1.792424   80.1     +0.04059
6  12 - C carbon       0.0  0.0         98.93    0
6  13 - C carbon       0.5 +1.40482    1.07     0
6  14 * C carbon       3.0  0.273      0.0      NaN
7  14 - N nitrogen     1.0 +0.4037607   99.632   +0.02044
7  15 - N nitrogen     0.5 -0.5663784   0.368    0
8  16 - O oxygen       0.0  0.0         99.757    0
8  17 - O oxygen       2.5 -0.757516   0.038    -0.02558
8  18 * O oxygen       0.0  0.0         0.205    0
9  19 - F fluorine     0.5 +5.257732   100.0    0
10 20 - Ne neon        0.0  0.0         90.48    0
10 21 - Ne neon        1.5 -0.441197   0.27     +0.10155
10 22 - Ne neon        0.0  0.0         9.25     0
%-----
% third period
%-----
11 22 * Na sodium      3.0 +0.5820     0.0      NaN
11 23 - Na sodium      1.5 +1.478391   100.0    +0.104
12 24 - Mg magnesium   0.0  0.0         78.99    0
12 25 - Mg magnesium   2.5 -0.34218    10.00    +0.1994
12 26 - Mg magnesium   0.0  0.0         11.01    0
13 27 - Al aluminium   2.5 +1.456601   100.0    +0.1466
14 28 - Si silicon     0.0  0.0         92.2297  0
14 29 - Si silicon     0.5 -1.1106     4.6832  0
14 30 - Si silicon     0.0  0.0         3.0872  0
15 31 - P phosphorus   0.5 +2.26320    100.0    0
16 32 - S sulfur       0.0  0.0         94.93    0
16 33 - S sulfur       1.5 +0.42911    0.76     -0.0678
16 34 - S sulfur       0.0  0.0         4.29     0
16 36 - S sulfur       0.0  0.0         0.02     0
17 35 - Cl chlorine    1.5 +0.5479157   75.78    -0.08165
17 36 * Cl chlorine    2.0 +0.642735   0.0      -0.0180
17 37 - Cl chlorine    1.5 +0.4560820   24.22    -0.06435
18 36 - Ar argon       0.0  0.0         0.3365   0
18 38 - Ar argon       0.0  0.0         0.0632   0
18 39 * Ar argon       3.5 -0.37      0.0      -0.12
18 40 - Ar argon       0.0  0.0         99.6003  0

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% fourth period, first row transition metals								

%								
19	39	-	K	potassium	1.5	+0.2609909	93.2581	+0.0585
19	40	-	K	potassium	4.0	-0.32453	0.0117	-0.073
19	41	-	K	potassium	1.5	+0.1432542	6.7302	+0.0711
20	40	-	Ca	calcium	0.0	0.0	96.941	0
20	41	*	Ca	calcium	3.5	-0.4556514	0.0	-0.0665
20	42	-	Ca	calcium	0.0	0.0	0.647	0
20	43	-	Ca	calcium	3.5	-0.376414	0.135	-0.0408
20	44	-	Ca	calcium	0.0	0.0	2.086	0
20	46	-	Ca	calcium	0.0	0.0	0.004	0
20	48	-	Ca	calcium	0.0	0.0	0.187	0
21	45	-	Sc	scandium	3.5	+1.35906	100.0	-0.220
22	46	-	Ti	titanium	0.0	0.0	8.25	0
22	47	-	Ti	titanium	2.5	-0.31539	7.44	+0.302
22	48	-	Ti	titanium	0.0	0.0	73.72	0
22	49	-	Ti	titanium	3.5	-0.315477	5.41	+0.247
22	50	-	Ti	titanium	0.0	0.0	5.18	0
23	50	-	V	vanadium	6.0	+0.556593	0.25	+0.210
23	51	-	V	vanadium	3.5	+1.46836	99.75	-0.052
24	50	-	Cr	chromium	0.0	0.0	4.345	0
24	52	-	Cr	chromium	0.0	0.0	83.789	0
24	53	-	Cr	chromium	1.5	-0.3147	9.501	-0.150
24	54	-	Cr	chromium	0.0	0.0	2.365	0
25	53	*	Mn	manganese	3.5	+1.435	0.0	NaN
25	55	-	Mn	manganese	2.5	+1.3819	100.0	+0.330
26	54	-	Fe	iron	0.0	0.0	5.845	0
26	56	-	Fe	iron	0.0	0.0	91.754	0
26	57	-	Fe	iron	0.5	+0.1806	2.119	0
26	58	-	Fe	iron	0.0	0.0	0.282	0
27	59	-	Co	cobalt	3.5	+1.318	100.0	+0.420
27	60	*	Co	cobalt	5.0	+0.7589	0.0	+0.44
28	58	-	Ni	nickel	0.0	0.0	68.0769	0
28	60	-	Ni	nickel	0.0	0.0	26.2231	0
28	61	-	Ni	nickel	1.5	-0.50001	1.1399	+0.162
28	62	-	Ni	nickel	0.0	0.0	3.6345	0
28	64	-	Ni	nickel	0.0	0.0	0.9256	0
29	63	-	Cu	copper	1.5	+1.484	69.17	-0.220
29	65	-	Cu	copper	1.5	+1.588	30.83	-0.204
30	64	-	Zn	zinc	0.0	0.0	48.63	0
30	66	-	Zn	zinc	0.0	0.0	27.90	0
30	67	-	Zn	zinc	2.5	+0.350312	4.10	+0.150
30	68	-	Zn	zinc	0.0	0.0	18.75	0
30	70	-	Zn	zinc	0.0	0.0	0.62	0
31	69	-	Ga	gallium	1.5	+1.34439	60.108	+0.171
31	71	-	Ga	gallium	1.5	+1.70818	39.892	+0.107
32	70	-	Ge	germanium	0.0	0.0	20.84	0
32	72	-	Ge	germanium	0.0	0.0	27.54	0
32	73	-	Ge	germanium	4.5	-0.1954371	7.73	-0.196
32	74	-	Ge	germanium	0.0	0.0	36.28	0
32	76	-	Ge	germanium	0.0	0.0	7.61	0
33	75	-	As	arsenic	1.5	+0.959647	100.0	+0.314
34	74	-	Se	selenium	0.0	0.0	0.89	0
34	76	-	Se	selenium	0.0	0.0	9.37	0
34	77	-	Se	selenium	0.5	+1.0693	7.63	0
34	78	-	Se	selenium	0.0	0.0	23.77	0
34	79	*	Se	selenium	3.5	-0.2908	0.0	+0.8
34	80	-	Se	selenium	0.0	0.0	49.61	0
34	82	-	Se	selenium	0.0	0.0	8.73	0
35	79	-	Br	bromine	1.5	+1.404266	50.69	+0.313
35	81	-	Br	bromine	1.5	+1.513706	49.31	+0.262
36	78	-	Kr	krypton	0.0	0.0	0.35	0
36	80	-	Kr	krypton	0.0	0.0	2.28	0
36	82	-	Kr	krypton	0.0	0.0	11.58	0
36	83	-	Kr	krypton	4.5	-0.215704	11.49	+0.259
36	84	-	Kr	krypton	0.0	0.0	57.00	0
36	85	*	Kr	krypton	4.5	+0.2233	0.0	+0.44
36	86	-	Kr	krypton	0.0	0.0	17.30	0

% fifth period, second row transition metals								

%								
37	85	-	Rb	rubidium	2.5	+0.541253	72.17	+0.276
37	87	-	Rb	rubidium	1.5	+1.83427	27.83	+0.1335
38	84	-	Sr	strontium	0.0	0.0	0.56	0
38	86	-	Sr	strontium	0.0	0.0	9.86	0
38	87	-	Sr	strontium	4.5	-0.24291	7.00	+0.335
38	88	-	Sr	strontium	0.0	0.0	82.58	0
39	89	-	Y	yttrium	0.5	-0.2748361	100.0	0
40	90	-	Zr	zirconium	0.0	0.0	51.45	0
40	91	-	Zr	zirconium	2.5	-0.521448	11.22	-0.176
40	92	-	Zr	zirconium	0.0	0.0	17.15	0
40	94	-	Zr	zirconium	0.0	0.0	17.38	0
40	96	-	Zr	zirconium	0.0	0.0	2.80	0
41	93	-	Nb	niobium	4.5	+1.3712	100.0	-0.320
42	92	-	Mo	molybdenum	0.0	0.0	14.84	0

42	94	-	Mo	molybdenum	0.0	0.0	9.25	0
42	95	-	Mo	molybdenum	2.5	-0.3656	15.92	-0.022
42	96	-	Mo	molybdenum	0.0	0.0	16.68	0
42	97	-	Mo	molybdenum	2.5	-0.3734	9.55	+0.255
42	98	-	Mo	molybdenum	0.0	0.0	24.13	0
42	100	-	Mo	molybdenum	0.0	0.0	9.63	0
43	99	*	Tc	technetium	4.5	+1.2632	0.0	-0.129
44	96	-	Ru	ruthenium	0.0	0.0	5.54	0
44	98	-	Ru	ruthenium	0.0	0.0	1.87	0
44	99	-	Ru	ruthenium	2.5	-0.249	12.76	+0.079
44	100	-	Ru	ruthenium	0.0	0.0	12.60	0
44	101	-	Ru	ruthenium	2.5	-0.279	17.06	+0.457
44	102	-	Ru	ruthenium	0.0	0.0	31.55	0
44	104	-	Ru	ruthenium	0.0	0.0	18.62	0
45	102	*	Rh	rhodium	6.0	+0.685	0.0	NaN
45	103	-	Rh	rhodium	0.5	-0.1768	100.0	0
46	102	-	Pd	palladium	0.0	0.0	1.02	0
46	104	-	Pd	palladium	0.0	0.0	11.14	0
46	105	-	Pd	palladium	2.5	-0.256	22.33	+0.660
46	106	-	Pd	palladium	0.0	0.0	27.33	0
46	108	-	Pd	palladium	0.0	0.0	26.46	0
46	110	-	Pd	palladium	0.0	0.0	11.72	0
47	107	-	Ag	silver	0.5	-0.227249	51.839	0
47	109	-	Ag	silver	0.5	-0.261743	48.161	0
48	106	-	Cd	cadmium	0.0	0.0	1.25	0
48	108	-	Cd	cadmium	0.0	0.0	0.89	0
48	110	-	Cd	cadmium	0.0	0.0	12.49	0
48	111	-	Cd	cadmium	0.5	-1.19043	12.80	0
48	112	-	Cd	cadmium	0.0	0.0	24.13	0
48	113	-	Cd	cadmium	0.5	-1.2454	12.22	0
48	114	-	Cd	cadmium	0.0	0.0	28.73	0
48	116	-	Cd	cadmium	0.0	0.0	7.49	0
49	113	-	In	indium	4.5	+1.22864	4.29	+0.799
49	115	-	In	indium	4.5	+1.23129	95.71	+0.810
50	112	-	Sn	tin	0.0	0.0	0.97	0
50	114	-	Sn	tin	0.0	0.0	0.66	0
50	115	-	Sn	tin	0.5	-1.83766	0.34	0
50	116	-	Sn	tin	0.0	0.0	14.54	0
50	117	-	Sn	tin	0.5	-2.00208	7.68	0
50	118	-	Sn	tin	0.0	0.0	24.22	0
50	119	-	Sn	tin	0.5	-2.09456	8.59	0
50	120	-	Sn	tin	0.0	0.0	32.58	0
50	122	-	Sn	tin	0.0	0.0	4.63	0
50	124	-	Sn	tin	0.0	0.0	5.79	0
51	121	-	Sb	antimony	2.5	+1.3455	57.21	-0.360
51	123	-	Sb	antimony	3.5	+0.72876	42.79	-0.490
51	125	*	Sb	antimony	3.5	+0.7514	0.0	NaN
52	120	-	Te	tellurium	0.0	0.0	0.09	0
52	122	-	Te	tellurium	0.0	0.0	2.55	0
52	123	-	Te	tellurium	0.5	-1.4736	0.89	0
52	124	-	Te	tellurium	0.0	0.0	4.74	0
52	125	-	Te	tellurium	0.5	-1.7766	7.07	0
52	126	-	Te	tellurium	0.0	0.0	18.84	0
52	128	-	Te	tellurium	0.0	0.0	31.74	0
52	130	-	Te	tellurium	0.0	0.0	34.08	0
53	127	-	I	iodine	2.5	+1.12530	100.0	-0.710
53	129	*	I	iodine	3.5	+0.74886	0.0	-0.482
54	124	-	Xe	xenon	0.0	0.0	0.09	0
54	126	-	Xe	xenon	0.0	0.0	0.09	0
54	128	-	Xe	xenon	0.0	0.0	1.92	0
54	129	-	Xe	xenon	0.5	-1.55595	26.44	0
54	130	-	Xe	xenon	0.0	0.0	4.08	0
54	131	-	Xe	xenon	1.5	+0.461240	21.18	-0.114
54	132	-	Xe	xenon	0.0	0.0	26.89	0
54	134	-	Xe	xenon	0.0	0.0	10.44	0
54	136	-	Xe	xenon	0.0	0.0	8.87	0

% sixth period, third row transition metals, rare earths								

55	133	-	Cs	caesium	3.5	+0.7378377	100.0	-0.00343
55	134	*	Cs	caesium	4.0	+0.74842	0.0	+0.389
55	135	*	Cs	caesium	3.5	+0.78069	0.0	+0.050
55	137	*	Cs	caesium	3.5	+0.81180	0.0	+0.051
56	130	-	Ba	barium	0.0	0.0	0.106	0
56	132	-	Ba	barium	0.0	0.0	0.101	0
56	133	*	Ba	barium	0.5	-1.54	0.0	0
56	134	-	Ba	barium	0.0	0.0	2.417	0
56	135	-	Ba	barium	1.5	+0.55884	6.592	+0.160
56	136	-	Ba	barium	0.0	0.0	7.854	0
56	137	-	Ba	barium	1.5	+0.62515	11.232	+0.245
56	138	-	Ba	barium	0.0	0.0	71.698	0
57	137	*	La	lanthanum	3.5	+0.7700	0.0	+0.26
57	138	-	La	lanthanum	5.0	+0.74278	0.090	+0.450
57	139	-	La	lanthanum	3.5	+0.79520	99.910	+0.200
58	136	-	Ce	cerium	0.0	0.0	0.185	0
58	138	-	Ce	cerium	0.0	0.0	0.251	0

58	140	-	Ce	cerium	0.0	0.0	88.450	0
58	142	-	Ce	cerium	0.0	0.0	11.114	0
59	141	-	Pr	praesodymium	2.5	+1.6	100.0	-0.0589
60	142	-	Nd	neodymium	0.0	0.0	27.2	0
60	143	-	Nd	neodymium	3.5	-0.3076	12.2	-0.630
60	144	-	Nd	neodymium	0.0	0.0	23.8	0
60	145	-	Nd	neodymium	3.5	-0.190	8.3	-0.330
60	146	-	Nd	neodymium	0.0	0.0	17.2	0
60	148	-	Nd	neodymium	0.0	0.0	5.7	0
60	150	-	Nd	neodymium	0.0	0.0	5.6	0
61	147	*	Pm	promethium	3.5	+0.752	0.0	+0.740
62	144	-	Sm	samarium	0.0	0.0	3.07	0
62	147	-	Sm	samarium	3.5	-0.2322	14.99	-0.259
62	148	-	Sm	samarium	0.0	0.0	11.24	0
62	149	-	Sm	samarium	3.5	+0.1915	13.82	+0.074
62	150	-	Sm	samarium	0.0	0.0	7.38	0
62	151	*	Sm	samarium	2.5	+0.142	0.0	+0.67
62	152	-	Sm	samarium	0.0	0.0	26.75	0
62	154	-	Sm	samarium	0.0	0.0	22.75	0
63	151	-	Eu	europium	2.5	+1.389	47.81	+0.903
63	152	*	Eu	europium	3.0	+0.64713	0.0	+2.5
63	153	-	Eu	europium	2.5	+0.6134	52.19	+2.412
63	154	*	Eu	europium	3.0	+0.6683	0.0	+2.84
63	155	*	Eu	europium	2.5	+0.772	0.0	+2.3
64	152	-	Gd	gadolinium	0.0	0.0	0.20	0
64	154	-	Gd	gadolinium	0.0	0.0	2.18	0
64	155	-	Gd	gadolinium	1.5	-0.1723	14.80	+1.270
64	156	-	Gd	gadolinium	0.0	0.0	20.47	0
64	157	-	Gd	gadolinium	1.5	-0.2253	15.65	+1.350
64	158	-	Gd	gadolinium	0.0	0.0	24.84	0
64	160	-	Gd	gadolinium	0.0	0.0	21.86	0
65	157	*	Tb	terbium	1.5	+1.3	0.0	+1.4
65	159	-	Tb	terbium	1.5	+1.342	100.0	+1.432
65	160	*	Tb	terbium	3.0	+0.597	0.0	+3.85
66	156	-	Dy	dysprosium	0.0	0.0	0.06	0
66	158	-	Dy	dysprosium	0.0	0.0	0.10	0
66	160	-	Dy	dysprosium	0.0	0.0	2.34	0
66	161	-	Dy	dysprosium	2.5	-0.189	18.91	+2.507
66	162	-	Dy	dysprosium	0.0	0.0	25.51	0
66	163	-	Dy	dysprosium	2.5	+0.266	24.90	+2.648
66	164	-	Dy	dysprosium	0.0	0.0	28.18	0
67	165	-	Ho	holmium	3.5	+1.192	100.0	+3.580
68	162	-	Er	erbium	0.0	0.0	0.14	0
68	164	-	Er	erbium	0.0	0.0	1.61	0
68	166	-	Er	erbium	0.0	0.0	33.61	0
68	167	-	Er	erbium	3.5	-0.1618	22.93	+3.565
68	168	-	Er	erbium	0.0	0.0	26.78	0
68	170	-	Er	erbium	0.0	0.0	14.93	0
69	169	-	Tm	thulium	0.5	-0.466	100.0	0
69	171	*	Tm	thulium	0.5	-0.4606	0.0	0
70	168	-	Yb	ytterbium	0.0	0.0	0.13	0
70	170	-	Yb	ytterbium	0.0	0.0	3.04	0
70	171	-	Yb	ytterbium	0.5	+0.9885	14.28	0
70	172	-	Yb	ytterbium	0.0	0.0	21.83	0
70	173	-	Yb	ytterbium	2.5	-0.27195	16.13	+2.800
70	174	-	Yb	ytterbium	0.0	0.0	31.83	0
70	176	-	Yb	ytterbium	0.0	0.0	12.76	0
71	173	*	Lu	lutetium	3.5	+0.669	0.0	+3.56
71	174	*	Lu	lutetium	1.0	+1.94	0.0	NaN
71	175	-	Lu	lutetium	3.5	+0.63943	97.41	+3.490
71	176	-	Lu	lutetium	7.0	+0.452	2.59	+4.970
72	174	-	Hf	hafnium	0.0	0.0	0.16	0
72	176	-	Hf	hafnium	0.0	0.0	5.26	0
72	177	-	Hf	hafnium	3.5	+0.2267	18.60	+3.365
72	178	-	Hf	hafnium	0.0	0.0	27.28	0
72	179	-	Hf	hafnium	4.5	-0.1424	13.62	+3.793
72	180	-	Hf	hafnium	0.0	0.0	35.08	0
73	180	-	Ta	tantalum	0.0	0.0	0.012	0
73	181	-	Ta	tantalum	3.5	+0.67729	99.988	+3.170
74	180	-	W	tungsten	0.0	0.0	0.12	0
74	182	-	W	tungsten	0.0	0.0	26.50	0
74	183	-	W	tungsten	0.5	+0.2355694	14.31	0
74	184	-	W	tungsten	0.0	0.0	30.64	0
74	186	-	W	tungsten	0.0	0.0	28.43	0
75	185	-	Re	rhenium	2.5	+1.2748	37.40	+2.180
75	187	-	Re	rhenium	2.5	+1.2878	62.60	+2.070
76	184	-	Os	osmium	0.0	0.0	0.02	0
76	186	-	Os	osmium	0.0	0.0	1.59	0
76	187	-	Os	osmium	0.5	+0.1311	1.96	0
76	188	-	Os	osmium	0.0	0.0	13.24	0
76	189	-	Os	osmium	1.5	+0.488	16.15	+0.856
76	190	-	Os	osmium	0.0	0.0	26.26	0
76	192	-	Os	osmium	0.0	0.0	40.78	0
77	191	-	Ir	iridium	1.5	+0.097	37.3	+0.816
77	193	-	Ir	iridium	1.5	+0.107	62.7	+0.751
78	190	-	Pt	platinum	0.0	0.0	0.014	0

78	192	-	Pt	platinum	0.0	0.0	0.784	0
78	194	-	Pt	platinum	0.0	0.0	32.967	0
78	195	-	Pt	platinum	0.5	+1.2190	33.832	0
78	196	-	Pt	platinum	0.0	0.0	25.242	0
78	198	-	Pt	platinum	0.0	0.0	7.163	0
79	197	-	Au	gold	1.5	+0.097968	100.0	+0.547
80	196	-	Hg	mercury	0.0	0.0	0.15	0
80	198	-	Hg	mercury	0.0	0.0	9.97	0
80	199	-	Hg	mercury	0.5	+1.011770	16.87	0
80	200	-	Hg	mercury	0.0	0.0	23.10	0
80	201	-	Hg	mercury	1.5	-0.373483	13.18	+0.386
80	202	-	Hg	mercury	0.0	0.0	29.86	0
80	204	-	Hg	mercury	0.0	0.0	6.87	0
81	203	-	Tl	thallium	0.5	+3.244514	29.524	0
81	204	*	Tl	thallium	2.0	+0.0454	0.0	NaN
81	205	*	Tl	thallium	0.5	+3.2754	70.476	0
82	204	-	Pb	lead	0.0	0.0	1.4	0
82	206	-	Pb	lead	0.0	0.0	24.1	0
82	207	-	Pb	lead	0.5	+1.1748	22.1	0
82	208	-	Pb	lead	0.0	0.0	52.4	0
83	207	*	Bi	bismuth	4.5	+0.970	0.0	NaN
83	209	-	Bi	bismuth	4.5	+0.938	100.0	-0.516
84	209	*	Po	polonium	0.5	+1.5	0.0	0
85	0	*	At	astatine	-1.0	0.0	0.0	0
86	0	*	Rn	radon	-1.0	0.0	0.0	0

% seventh period, rare earths								

87	0	*	Fr	francium	-1.0	0.0	0.0	0
88	0	*	Ra	radium	-1.0	0.0	0.0	0
89	227	*	Ac	actinium	1.5	+0.73	0.0	+1.7
90	229	*	Th	thorium	2.5	+0.16	0.0	+4.3
90	232	-	Th	thorium	0.0	0.0	100.0	0
91	0	-	Pa	protactinium	-1.0	0.0	100.0	0
92	234	*	U	uranium	0.0	0.0	0.0055	0
92	235	*	U	uranium	3.5	-1.09	0.7200	+4.936
92	238	*	U	uranium	0.0	0.0	99.2745	0
93	0	*	Np	neptunium	-1.0	0.0	0.0	0
94	0	*	Pu	plutonium	-1.0	0.0	0.0	0
95	0	*	Am	americium	-1.0	0.0	0.0	0
96	0	*	Cm	curium	-1.0	0.0	0.0	0
97	0	*	Bk	berkelium	-1.0	0.0	0.0	0
98	0	*	Cf	californium	-1.0	0.0	0.0	0
99	0	*	Es	einsteinium	-1.0	0.0	0.0	0
100	0	*	Fm	fermium	-1.0	0.0	0.0	0
101	0	*	Md	mendelevium	-1.0	0.0	0.0	0
102	0	*	No	nobelium	-1.0	0.0	0.0	0
103	0	*	Lr	lawrencium	-1.0	0.0	0.0	0
104	0	*	Rf	rutherfordium	-1.0	0.0	0.0	0
105	0	*	Db	dubnium	-1.0	0.0	0.0	0
106	0	*	Sg	seaborgium	-1.0	0.0	0.0	0
107	0	*	Bh	bohrium	-1.0	0.0	0.0	0
108	0	*	Hs	hassium	-1.0	0.0	0.0	0
109	0	*	Mt	meitnerium	-1.0	0.0	0.0	0
110	0	*	Ds	darmstadtium	-1.0	0.0	0.0	0
111	0	*	Rg	roentgenium	-1.0	0.0	0.0	0
112	0	*	Cn	copernicium	-1.0	0.0	0.0	0
113	0	*	Uut	ununtrium	-1.0	0.0	0.0	0
114	0	*	Fl	flerovium	-1.0	0.0	0.0	0
115	0	*	Uup	ununpentium	-1.0	0.0	0.0	0
116	0	*	Lv	livermorium	-1.0	0.0	0.0	0
117	0	*	Uus	ununseptium	-1.0	0.0	0.0	0
118	0	*	Uuo	ununoctium	-1.0	0.0	0.0	0