

Natural Nuclides Table

*Dr. M. Ragheb
1-Jan*

Mass Number	Atomic Number	Neutron Number	Chemical Name	Natural Abundance	Mass Excess (MeV)	Atomic Mass (amu)	Spin Parity
A	Z	N	Symbol	(percent)	M-A	M	Spin/Par
1	1	0	H	99.985	7.289	1.007825	1/2+
2	1	1	H	0.015	13.1357	2.014102	1+
3	2	1	He	0.00014	14.9312	3.016029	1/2+
4	2	2	He	99.99986	2.4249	4.002603	0+
6	3	3	Li	7.5	14.0863	6.015122	1+
7	3	4	Li	92.5	14.9077	7.016004	3/2-
9	4	5	Be	100	11.3477	9.012182	3/2-
10	5	5	B	20	12.0508	10.012937	3+
11	5	6	B	80	8.668	11.009305	3/2-
12	6	6	C	98.89	0	12	0+
13	6	7	C	1.11	3.125	13.003355	1/2-
14	7	7	N	99.63	2.8634	14.003074	1+
15	7	8	N	0.37	0.1015	15.000109	1/2-
16	8	8	O	99.758	-4.737	15.994915	0+
17	8	9	O	0.038	-0.809	16.999132	5/2+
18	8	10	O	0.204	-0.7821	17.99916	0+
19	9	10	F	100	-1.4874	18.998403	1/2+
20	10	10	Ne	90.51	-7.0419	19.99244	0+
21	10	11	Ne	0.27	-5.7317	20.993847	3/2+
22	10	12	Ne	9.22	-8.0244	21.991386	0+
23	11	12	Na	100	-9.5295	22.98977	3/2+
24	12	12	Mg	78.99	-13.9334	23.985042	0+
25	12	13	Mg	10	-13.1927	24.985837	5/2+
26	12	14	Mg	11.01	-16.2145	25.982593	0+
27	13	14	Al	100	-17.1969	26.981539	5/2+
28	14	14	Si	92.23	-21.4928	27.976927	0+
29	14	15	Si	4.67	-21.8951	28.976495	1/2+
30	14	16	Si	3.1	-24.4329	29.97377	0+
31	15	16	P	100	-24.441	30.973762	1/2+
32	16	16	S	95.02	-26.0159	31.972071	0+
33	16	17	S	0.75	-26.5862	32.971459	3/2+
34	16	18	S	4.21	-29.9318	33.967867	0+
35	17	18	Cl	75.77	-29.0135	34.968853	3/2+
36	16	20	S	0.017	-30.664	35.967081	0+
36	18	18	Ar	0.337	-30.2305	35.967546	0+
37	17	20	Cl	24.23	-31.7615	36.965903	3/2+
38	18	20	Ar	0.063	-34.7148	37.962732	0+
39	19	20	K	93.26	-33.8068	38.963707	3/2+

40	19	21	K	0.012	-33.535	39.963999	4-
40	20	20	Ca	96.94	-34.8461	39.962591	0+
40	18	22	Ar	99.6	-35.0399	39.962383	0+
41	19	22	K	6.73	-35.5589	40.961826	3/2+
42	20	22	Ca	0.647	-38.5468	41.958619	0+
43	20	23	Ca	0.135	-38.4084	42.958767	7/2-
44	20	24	Ca	2.09	-41.4691	43.955481	0+
45	21	24	Sc	100	-41.0694	44.955911	7/2-
46	20	26	Ca	0.0035	-43.135	45.953693	0+
46	22	24	Ti	8.25	-44.1254	45.95263	0+
47	22	25	Ti	7.45	-44.9318	46.951764	5/2-
48	20	28	Ca	0.187	-44.2148	47.952534	0+
48	22	26	Ti	73.7	-48.487	47.947947	0+
49	22	27	Ti	5.4	-48.5581	48.947871	7/2-
50	23	27	V	0.25	-49.2177	49.947163	6+
50	24	26	Cr	4.35	-50.2546	49.94605	0+
50	22	28	Ti	5.2	-51.4259	49.944792	0+
51	23	28	V	99.75	-52.1976	50.943964	7/2-
52	24	28	Cr	83.79	-55.4131	51.940512	0+
53	24	29	Cr	9.5	-55.281	52.940654	3/2-
54	24	30	Cr	2.36	-56.9287	53.938885	0+
54	26	28	Fe	5.8	-56.2485	53.939615	0+
55	25	30	Mn	100	-57.7067	54.93805	5/2-
56	26	30	Fe	91.8	-60.6013	55.934942	0+
57	26	31	Fe	2.1	-60.176	56.935399	1/2-
58	26	32	Fe	0.3	-62.1492	57.933281	0+
58	28	30	Ni	68.3	-60.2233	57.935348	0+
59	27	32	Co	100	-62.2239	58.9332	7/2-
60	28	32	Ni	26.1	-64.4684	59.930791	0+
61	28	33	Ni	1.1	-64.2171	60.931061	3/2-
62	28	34	Ni	3.6	-66.743	61.928349	0+
63	29	34	Cu	69.2	-65.5765	62.929601	3/2-
64	28	36	Ni	0.9	-67.0962	63.92797	0+
64	30	34	Zn	48.6	-66	63.929147	0+
65	29	36	Cu	30.8	-67.2596	64.927794	3/2-
66	30	36	Zn	27.9	-68.8966	65.926037	0+
67	30	37	Zn	4.1	-67.8774	66.927131	5/2-
68	30	38	Zn	18.8	-70.0043	67.924848	0+
69	31	38	Ga	60.1	-69.3212	68.925581	3/2-
70	30	40	Zn	0.62	-69.5597	69.925325	0+
70	32	38	Ge	20.5	-70.5607	69.924251	0+
71	31	40	Ga	39.9	-70.1346	70.924708	3/2-
72	32	40	Ge	27.4	-72.5854	71.922077	0+
73	32	41	Ge	7.8	-71.297	72.92346	9/2+
74	34	40	Se	0.9	-72.2125	73.922477	0+
74	32	42	Ge	36.5	-73.4219	73.921179	0+
75	33	42	As	100	-73.0323	74.921597	3/2-
76	32	44	Ge	7.8	-73.2127	75.921404	0+
76	34	42	Se	9	-75.2514	75.919215	0+
77	34	43	Se	7.6	-74.5989	76.919915	1/2-
78	36	42	Kr	0.35	-74.1582	77.920389	0+

78	34	44	Se	23.5	-77.0255	77.91731	0+
79	35	44	Br	50.69	-76.0678	78.918339	3/2-
80	36	44	Kr	2.25	-77.8929	79.916379	0+
80	34	46	Se	49.8	-77.7592	79.916523	0+
81	35	46	Br	49.31	-77.974	80.916292	3/2-
82	34	48	Se	9.2	-77.5932	81.916701	0+
82	36	46	Kr	11.6	-80.5882	81.913486	0+
83	36	47	Kr	11.5	-79.9806	82.914138	9/2+
84	38	46	Sr	0.56	-80.6427	83.913427	0+
84	36	48	Kr	57	-82.4297	83.911509	0+
85	37	48	Rb	72.17	-82.1648	84.911793	5/2-
86	38	48	Sr	9.84	-84.5194	85.909265	0+
86	36	50	Kr	17.3	-83.2615	85.910616	0+
87	38	49	Sr	7	-84.8762	86.908882	9/2+
87	37	50	Rb	27.83	-84.5929	86.909187	3/2-
88	38	50	Sr	82.6	-87.9175	87.905617	0+
89	39	50	Y	100	-87.7015	88.905849	1/2-
90	40	50	Zr	51.5	-88.7693	89.904703	0+
91	40	51	Zr	11.2	-87.8926	90.905644	5/2+
92	42	50	Mo	14.8	-86.8064	91.90681	0+
92	40	52	Zr	17.1	-88.456	91.905039	0+
93	41	52	Nb	100	-87.21	92.906377	9/2+
94	42	52	Mo	9.3	-88.4112	93.905087	0+
94	40	54	Zr	17.4	-87.2676	93.906315	0+
95	42	53	Mo	15.9	-87.7089	94.905841	5/2+
96	40	56	Zr	2.8	-85.4415	95.908276	0+
96	44	52	Ru	5.5	-86.0667	95.907604	0+
96	42	54	Mo	16.7	-88.7919	95.904679	0+
97	42	55	Mo	9.6	-87.5417	96.906021	5/2+
98	44	54	Ru	1.9	-88.2246	97.905288	0+
98	42	56	Mo	24.1	-88.1129	97.905408	0+
99	44	55	Ru	12.7	-87.6177	98.905939	5/2+
100	42	58	Mo	9.6	-86.1851	99.907477	0+
100	44	56	Ru	12.6	-89.2195	99.90422	0+
101	44	57	Ru	17	-87.9503	100.905582	5/2+
102	46	56	Pd	1	-87.9264	101.905608	0+
102	44	58	Ru	31.6	-89.0985	101.90435	0+
103	45	58	Rh	100	-88.0229	102.905504	1/2-
104	46	58	Pd	11	-89.3916	103.904035	0+
104	44	60	Ru	18.7	-88.0918	103.90543	0+
105	46	59	Pd	22.2	-88.4143	104.905084	5/2+
106	48	58	Cd	1.3	-87.1338	105.906459	0+
106	46	60	Pd	27.3	-89.9045	105.903484	0+
107	47	60	Ag	51.83	-88.4052	106.905094	1/2-
108	48	60	Cd	0.89	-89.2529	107.904184	0+
108	46	62	Pd	26.7	-89.5214	107.903896	0+
109	47	62	Ag	48.17	-88.7193	108.904757	1/2-
110	46	64	Pd	11.8	-88.3497	109.905153	0+
110	48	62	Cd	12.5	-90.3493	109.903007	0+
111	48	63	Cd	12.8	-89.2538	110.904183	1/2+
112	50	62	Sn	1.01	-88.6579	111.904823	0+

112	48	64	Cd	24.1	-90.5806	111.902759	0+
113	49	64	In	4.3	-89.3654	112.904063	9/2+
113	48	65	Cd	12.2	-89.0495	112.904402	1/2+
114	50	64	Sn	0.67	-90.5571	113.902784	0+
114	48	66	Cd	28.7	-90.0209	113.903359	0+
115	50	65	Sn	0.38	-90.0314	114.903348	1/2+
115	49	66	In	95.7	-89.5361	114.90388	9/2+
116	48	68	Cd	7.5	-88.7194	115.904757	0+
116	50	66	Sn	14.7	-91.5235	115.901746	0+
117	50	67	Sn	7.7	-90.3967	116.902956	1/2+
118	50	68	Sn	24.3	-91.6517	117.901609	0+
119	50	69	Sn	8.6	-90.0656	118.903311	1/2+
120	52	68	Te	0.91	-89.3989	119.904027	0+
120	50	70	Sn	32.4	-91.1015	119.902199	0+
121	51	70	Sb	57.3	-89.589	120.903823	5/2+
122	52	70	Te	2.5	-90.3029	121.903057	0+
122	50	72	Sn	4.6	-89.944	121.903442	0+
123	52	71	Te	0.89	-89.1709	122.904272	1/2+
123	51	72	Sb	42.7	-89.2222	122.904217	7/2+
124	54	70	Xe	0.1	-87.6578	123.905896	0+
124	52	72	Te	4.62	-90.5237	123.90282	0+
124	50	74	Sn	5.6	-88.2362	123.905275	0+
125	52	73	Te	7	-89.0284	124.904425	1/2+
126	54	72	Xe	0.09	-89.1736	125.904269	0+
126	52	74	Te	18.7	-90.0709	125.903306	0+
127	53	74	I	100	-88.9877	126.904469	5/2+
128	54	74	Xe	1.91	-89.8607	127.903531	0+
128	52	76	Te	31.7	-88.9935	127.904462	0+
129	54	75	Xe	26.4	-88.697	128.904781	1/2+
130	56	74	Ba	0.11	-87.2708	129.906312	0+
130	54	76	Xe	4.1	-89.8809	129.90351	0+
130	52	78	Te	34.5	-87.3528	129.906224	0+
131	54	77	Xe	21.2	-88.4148	130.905084	3/2+
132	56	76	Ba	0.1	-88.4393	131.905057	0+
132	54	78	Xe	26.9	-89.2794	131.904155	0+
133	55	78	Cs	100	-88.0754	132.905448	7/2+
134	56	78	Ba	2.4	-88.9543	133.904504	0+
134	54	80	Xe	10.4	-88.1244	133.905395	0+
135	56	79	Ba	6.6	-87.8549	134.905685	3/2+
136	58	78	Ce	0.19	-86.4945	135.907145	0+
136	56	80	Ba	7.9	-88.8913	135.904572	0+
136	54	82	Xe	8.9	-86.4241	135.907221	0+
137	56	81	Ba	11.2	-87.7258	136.905823	3/2+
138	57	81	La	0.089	-86.5287	137.907108	5+
138	58	80	Ce	0.25	-87.5732	137.905987	0+
138	56	82	Ba	71.7	-88.2662	137.905243	0+
139	57	82	La	99.911	-87.2354	138.90635	7/2+
140	58	82	Ce	88.48	-88.0869	139.905436	0+
141	59	82	Pr	100	-86.0249	140.907649	5/2+
142	58	84	Ce	11.08	-84.5419	141.909241	0+
142	60	82	Nd	27.2	-85.9589	141.90772	0+

143	60	83	Nd	12.2	-84.0112	142.909811	7/2-
144	62	82	Sm	3.1	-81.9753	143.911997	0+
144	60	84	Nd	23.8	-83.7569	143.910084	0+
145	60	85	Nd	8.3	-81.441	144.91257	7/2-
146	60	86	Nd	17.2	-80.935	145.913113	0+
147	62	85	Sm	15.1	-79.2759	146.914895	7/2-
148	60	88	Nd	5.7	-77.4173	147.91689	0+
148	62	86	Sm	11.3	-79.3462	147.914819	0+
149	62	87	Sm	13.9	-77.1465	148.91718	7/2-
150	60	90	Nd	5.6	-73.6933	149.920888	0+
150	62	88	Sm	7.4	-77.0608	149.917272	0+
151	63	88	Eu	47.9	-74.6627	150.919847	5/2+
152	64	88	Gd	0.2	-74.7162	151.91979	0+
152	62	90	Sm	26.7	-74.7722	151.919729	0+
153	63	90	Eu	52.1	-73.377	152.921227	5/2+
154	64	90	Gd	2.1	-73.7162	153.920863	0+
154	62	92	Sm	22.6	-72.4648	153.922206	0+
155	64	91	Gd	14.8	-72.08	154.92262	3/2-
156	66	90	Dy	0.057	-70.5343	155.924279	0+
156	64	92	Gd	20.6	-72.5451	155.92212	0+
157	64	93	Gd	15.7	-70.8338	156.923957	3/2-
158	66	92	Dy	0.1	-70.4166	157.924405	0+
158	64	94	Gd	24.8	-70.6998	157.924101	0+
159	65	94	Tb	100	-69.5423	158.925344	3/2+
160	66	94	Dy	2.34	-69.6815	159.925194	0+
160	64	96	Gd	21.8	-67.9518	159.927051	0+
161	66	95	Dy	19	-68.0646	160.92693	5/2+
162	68	94	Er	0.14	-66.3455	161.928776	0+
162	66	96	Dy	25.5	-68.1902	161.926795	0+
163	66	97	Dy	24.9	-66.3898	162.928728	5/2-
164	68	96	Er	1.56	-65.9523	163.929198	0+
164	66	98	Dy	28.1	-65.9766	163.929172	0+
165	67	98	Ho	100	-64.9073	164.93032	7/2-
166	68	98	Er	33.4	-64.9341	165.930291	0+
167	68	99	Er	22.9	-63.2989	166.932046	7/2+
168	70	98	Yb	0.14	-61.5766	167.933895	0+
168	68	100	Er	27.1	-62.9987	167.932369	0+
169	69	100	Tm	100	-61.2817	168.934212	1/2+
170	70	100	Yb	3.16	-60.7717	169.934759	0+
170	68	102	Er	14.9	-60.118	169.935461	0+
171	70	101	Yb	14.4	-59.3151	170.936323	1/2-
172	70	102	Yb	21.9	-59.2635	171.936379	0+
173	70	103	Yb	16.2	-57.5598	172.938208	5/2-
174	72	102	Hf	0.16	-55.851	173.940042	0+
174	70	104	Yb	31.6	-56.9531	173.938859	0+
175	71	104	Lu	97.4	-55.1741	174.940769	7/2+
176	71	105	Lu	2.6	-53.3908	175.942683	7-
176	72	104	Hf	5.2	-54.5824	175.941404	0+
176	70	106	Yb	12.6	-53.4969	175.942569	0+
177	72	105	Hf	18.6	-52.8899	176.943221	7/2-
178	72	106	Hf	27.1	-52.4449	177.943699	0+

179	72	107	Hf	13.7	-50.4726	178.945816	9/2+
180	73	107	Ta	0.012	-48.9355	179.947466	9+
180	74	106	W	0.13	-49.6435	179.946706	0+
180	72	108	Hf	35.2	-49.7895	179.946549	0+
181	73	108	Ta	99.988	-48.4412	180.947997	7/2+
182	74	108	W	26.3	-48.2464	181.948206	0+
183	74	109	W	14.3	-46.3658	182.950225	1/2-
184	76	108	Os	0.018	-44.2548	183.952491	0+
184	74	110	W	30.67	-45.7062	183.950933	0+
185	75	110	Re	37.4	-43.8217	184.952956	5/2+
186	76	110	Os	1.58	-42.9995	185.953839	0+
186	74	112	W	28.6	-42.5116	185.954362	0+
187	76	111	Os	1.6	-41.2208	186.955748	1/2-
187	75	112	Re	62.6	-41.2182	186.955751	5/2+
188	76	112	Os	13.3	-41.1388	187.955836	0+
189	76	113	Os	16.1	-38.9881	188.958145	3/2-
190	78	112	Pt	0.01	-37.3252	189.95993	0+
190	76	114	Os	26.4	-38.7084	189.958445	0+
191	77	114	Ir	37.3	-36.7095	190.960591	3/2+
192	78	114	Pt	0.787	-36.2959	191.961035	0+
192	76	116	Os	41	-35.8824	191.961479	0+
193	77	116	Ir	62.7	-34.5368	192.962924	3/2+
194	78	116	Pt	32.9	-34.7792	193.962663	0+
195	78	117	Pt	33.8	-32.8129	194.964774	1/2-
196	80	116	Hg	0.15	-31.8436	195.965815	0+
196	78	118	Pt	25.3	-32.6635	195.964935	0+
197	79	118	Au	100	-31.1575	196.966551	3/2+
198	78	120	Pt	7.2	-29.9238	197.967876	0+
198	80	118	Hg	10	-30.9708	197.966752	0+
199	80	119	Hg	16.85	-29.5635	198.968263	1/2-
200	80	120	Hg	23.1	-29.5204	199.968309	0+
201	80	121	Hg	13.2	-27.6793	200.970285	3/2-
202	80	122	Hg	29.8	-27.3623	201.970626	0+
203	81	122	Tl	29.5	-25.7757	202.972329	1/2+
204	82	122	Pb	1.42	-25.1239	203.973029	0+
204	80	124	Hg	6.9	-24.7075	203.973476	0+
205	81	124	Tl	70.5	-23.8353	204.974412	1/2+
206	82	124	Pb	24.1	-23.8008	205.974449	0+
207	82	125	Pb	22.1	-22.4673	206.975881	1/2-
208	82	126	Pb	52.4	-21.7638	207.976636	0+
209	83	126	Bi	100	-18.2725	208.980384	9/2-
232	90	142	Th	100	35.4429	232.038049	0+
234	92	142	U	0.0054	38.1397	234.040944	0+
235	92	143	U	0.72	40.9132	235.043922	7/2-
238	92	146	U	99.2746	47.3045	238.050783	0+