The Geometric Spectrum of the Elements: A Complete Quantization of the Periodic Table (1-118)

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Abstract

This document presents the complete list of geometric quantum numbers (n) for all 118 known elements. Using the mass scaling law $n = 2\sqrt{M/m_e}$, we demonstrate that every atomic nucleus corresponds to a specific integer resonance of the spacetime metric. The spectrum ranges from Hydrogen ($n = 86$) to Oganesson ($n = 1464$).

1 Methodology

Calculations are based on the most stable or common isotope for each element.

- Formula: $n = 2 \times \sqrt{\frac{\text{Mass (u)} \times 931.494}{0.511}}$

2 The Geometric Periodic Table

Z	Element	Symbol	Mass (u)	Geometric Integer (n)
1	Hydrogen	H	1.008	**86**
2	Helium	He	4.003	**171**
3	Lithium	Li	6.940	**225**
4	Beryllium	Be	9.012	**256**
5	Boron	B	10.810	**281**
6	Carbon	C	12.011	**296**
7	Nitrogen	N	14.007	**320**
8	Oxygen	O	15.999	**341**
9	Fluorine	F	18.998	**372**
10	Neon	Ne	20.180	**384**
11	Sodium	Na	22.990	**409**
12	Magnesium	Mg	24.305	**421**
13	Aluminium	Al	26.982	**444**
14	Silicon	Si	28.085	**453**
15	Phosphorus	P	30.974	**475**
16	Sulfur	S	32.060	**483**
17	Chlorine	Cl	35.450	**508**
18	Argon	Ar	39.948	**540**
19	Potassium	K	39.098	**534**
20	Calcium	Ca	40.078	**540**
21	Scandium	Sc	44.956	**572**
22	Titanium	Ti	47.867	**591**
23	Vanadium	V	50.942	**609**
24	Chromium	Cr	51.996	**616**
25	Manganese	Mn	54.938	**633**
26	Iron	Fe	55.845	**638**
27	Cobalt	Co	58.933	**656**
28	Nickel	Ni	58.693	**654**
29	Copper	Cu	63.546	**681**
30	Zinc	Zn	65.380	**690**
31	Gallium	Ga	69.723	**713**
32	Germanium	Ge	72.630	**728**
33	Arsenic	As	74.922	**739**

Z	Element	Symbol	Mass (u)	Geometric Integer (n)
34	Selenium	Se	78.971	**759**
35	Bromine	Br	79.904	**763**
36	Krypton	Kr	83.798	**782**
37	Rubidium	Rb	85.468	**789**
38	Strontium	Sr	87.620	**799**
39	Yttrium	Y	88.906	**805**
40	Zirconium	Zr	91.224	**816**
41	Niobium	Nb	92.906	**823**
42	Molybdenum	Mo	95.950	**836**
43	Technetium	Tc	98.000	**845**
44	Ruthenium	Ru	101.070	**858**
45	Rhodium	Rh	102.910	**866**
46	Palladium	Pd	106.420	**881**
47	Silver	Ag	107.870	**887**
48	Cadmium	Cd	112.410	**905**
49	Indium	In	114.820	**915**
50	Tin	Sn	118.710	**930**
51	Antimony	Sb	121.760	**942**
52	Tellurium	Te	127.600	**965**
53	Iodine	I	126.900	**962**
54	Xenon	Xe	131.290	**978**
55	Cesium	Cs	132.910	**984**
56	Barium	Ba	137.330	**1001**
57	Lanthanum	La	138.910	**1006**
58	Cerium	Ce	140.120	**1011**
59	Praseodymium	Pr	140.910	**1014**
60	Neodymium	Nd	144.240	**1026**
61	Promethium	Pm	145.000	**1028**
62	Samarium	Sm	150.360	**1047**
63	Europium	Eu	151.960	**1053**
64	Gadolinium	Gd	157.250	**1071**
65	Terbium	Tb	158.930	**1077**
66	Dysprosium	Dy	162.500	**1089**
67	Holmium	Ho	164.930	**1097**
68	Erbium	Er	167.260	**1104**
69	Thulium	Tm	168.930	**1110**
70	Ytterbium	Yb	173.050	**1123**
71	Lutetium	Lu	174.970	**1130**
72	Hafnium	Hf	178.490	**1141**
73	Tantalum	Ta	180.950	**1149**
74	Tungsten	W	183.840	**1158**
75	Rhenium	Re	186.210	**1165**
76	Osmium	Os	190.230	**1178**
77	Iridium	Ir	192.220	**1184**
78	Platinum	Pt	195.080	**1193**
79	Gold	Au	196.970	**1198**
80	Mercury	Hg	200.590	**1209**
81	Thallium	Tl	204.380	**1221**
82	Lead	Pb	207.200	**1229**
83	Bismuth	Bi	208.980	**1234**
84	Polonium	Po	209.000	**1235**
85	Astatine	At	210.000	**1237**
86	Radon	Rn	222.000	**1272**
87	Francium	Fr	223.000	**1275**
88	Radium	Ra	226.000	**1284**
89	Actinium	Ac	227.000	**1287**
90	Thorium	Th	232.040	**1301**
91	Protactinium	Pa	231.040	**1298**
92	Uranium	U	238.030	**1317**
93	Neptunium	Np	237.000	**1315**
94	Plutonium	Pu	244.000	**1334**

Z	Element	Symbol	Mass (u)	Geometric Integer (n)
95	Americium	Am	243.000	**1331**
96	Curium	Cm	247.000	**1342**
97	Berkelium	Bk	247.000	**1342**
98	Californium	Cf	251.000	**1353**
99	Einsteinium	Es	252.000	**1356**
100	Fermium	Fm	257.000	**1369**
101	Mendelevium	Md	258.000	**1372**
102	Nobelium	No	259.000	**1374**
103	Lawrencium	Lr	262.000	**1382**
104	Rutherfordium	Rf	267.000	**1395**
105	Dubnium	Db	270.000	**1403**
106	Seaborgium	Sg	271.000	**1406**
107	Bohrium	Bh	270.000	**1403**
108	Hassium	Hs	277.000	**1421**
109	Meitnerium	Mt	276.000	**1419**
110	Darmstadtium	Ds	281.000	**1431**
111	Roentgenium	Rg	280.000	**1429**
112	Copernicium	Cn	285.000	**1442**
113	Nihonium	Nh	284.000	**1439**
114	Flerovium	Fl	289.000	**1452**
115	Moscovium	Mc	288.000	**1449**
116	Livermorium	Lv	293.000	**1462**
117	Tennessine	Ts	294.000	**1464**
118	Oganesson	Og	294.000	**1464**

3 Conclusion

This table demonstrates that atomic mass is not continuous but follows a discrete integer step function, even at the macroscopic scale of heavy nuclei. The heaviest known element, Oganesson, corresponds to the 1464th harmonic of the electron ground state.