Ionization Levels in the Reciprocal System

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It is stated in the texts how to calculate atomic mass from atomic number $A_L = 2.Z + G$ where G represents gravitational charge and can be represented by

$$G = \frac{9I(Z+k)^2}{1408}$$

where the inter-regional ratio 156.4 = 1408/9 and where **k = 0** according to Dewey Larson. One would suppose that given any two variables out of $\mathbf{A_L}$, **Z** & **I** one could ascertain the remaining one from the equation.

If one looks at the atomic mass table one would hope for agreement in most cases, using **Z** & **I**, and since this does not happen often enough, I have solved for the unknown **I**, using the atomic masses of this era, as illustrated in the following tables.

Theory says that we should expect **I = 1**, since it must be an integer.

The equation leads to unexpected values for I, both positive and negative, which this writer can only have rough guesses about, but also the variations from expected results are such, that "**k**" can be 2 more often than zero to find agreement with the actual atomic masses.

The concept of Ionization Level is not explicit in the postulates and therefore is claimed by Larson as consequential from the postulates, although this is not clearly shown, so by accepting it in good faith, it can then be put to the test, and although there is a suggestion of being on the right track, there still remains a lot to be clarified.

Larson looks upon the change from one ionization level to another as analogous to a transition of a solid to a liquid, or a liquid to a gas, yet if one reads the texts one can look upon it as a result of a gradual build up of isotopes by the acquisition of neutrinos over millions of years, in which case there is no reason to expect integer values nor is there an apparent reason to believe that all elements will be at identical levels at the same time, since there are factors which come to play, such as abundance of the individual elements as well as their very individualistic make up of compounded vibrations/rotations. So it seems impossible to aver that the elements must all be exactly at the same ionization level, and the following tables attest to that. (See at end of paper)

To explain the 12 columns:

1) This is clearly Z = Atomic Number

2) This is clearly A = Atomic Mass (Actual)

3-4) These two columns assume that the Atomic Mass is exactly as calculated by Larson's equation and agrees with the currently published tables of Atomic masses, therefore we have to solve for I = Ionization level, and column 3 has **k = 0** as does Larson, and column 4 has **k = 2** as suggested by me, for comparison. So the values printed in columns 3 & 4 are the Ionization Levels obtained from the equation, which should all be close to unity, but are not so.

5-12) These columns give a chance of comparing k-values ranging from -3 up to 4 and, using Larson's equation, including my **k**-variable, we can calculate the theoretical atomic mass, $\mathbf{A_L}$, and compare it with the actual known atomic mass, **A**, as a percentage.

Column 8 is where **k = 0** and is therefore most relevant to Larson while the other 7 allow one to look for a better value for "**k**" if it were to exist.

Now to my analysis of the following columns.

Out of 103 elements with stated atomic masses, we should subtract two groups of them, in order to find proper meaning for worthwhile deductions, since these ones are extreme examples.

The first group contains those elements, only known to have an integral atomic mass, despite their many unstable isotopes, and could hardly be expected to conform to a general formula.(=15)

These are: 84, 85, 86, 87, 89, 94, 95, 96, 97, 98, 99, 100, 101, 102 & 103, (and probably the rest of them from 104 to 117).

The second group contains those elements, whose non-conformity with Larson's equation is so obvious, that explanation for this exceptionality will need to be sought.

These are:1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 15, 16, 18, 19, 20 & 28 (=17)

RESULTS

Where the percentage figure in the columns is close to 100, they fall into two main groups.

k = 0 : 13, 17, 21, 26, 27, 29, 30, 41, 45, 47, 59, 61, 63, 69, 71, 73, 74, 75, 77, 78, 79, 80, 81, 82, 83, 88, 90, 91, 92, 93.

Total = 30

k = 2 : 9, 11, 22, 23, 24, 25, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 46, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 62, 64, 65, 66, 67, 68, 70, 72, 76

Total = 41

So, as you can see, this analysis finds that **k = 2** is the hot favorite in the ratio 41:30 i.e. 57.75% of the considered selection, which represents 36.67% more elements favor **k = 2**.

We see that **k = 0** goes well for atomic numbers in the 70s & 80s while **k = 2** goes well in the 30s, 40s, 50s & 60s. The worst drop-outs are the first 20.

Since we have a cyclic system where matter enters this sector from the cosmic sector, and as it enters it has to undergo boundary changes, which include the taking on of gravitational charge (s), may it not be that the above equation $\mathbf{A_L = 2.Z + G}$ should be amended to $\mathbf{A_L = 2.Z + m.G}$ where "**m**" varies from zero to greater than 1 according to some suggestion, yet to be formulated? Then you can see that **m = 0** satisfies the first 19 elements after hydrogen fairly well!

ATOMIC NUMBER	ATOMIC MASS	APPARENT IONIZATION LEVEL ASSUMING $A_L = A$ $A_L = 2Z + \frac{9I(Z+k)^2}{1408}$		PERCENTAGE ACCURACY OF LARSON ATOMIC MASS (A_L) COMPARED WITH ACTUAL ATOMIC MASS (A) $\frac{100\,A_L}{A}$ ASSUMING ALL IONIZATION AT LEVEL $A_L = 2Z + \frac{9(Z+k)^2}{1408}$							
1	2	3	4	5	6	7	00	9	10	11	12
Z	A	I k = 0	I k = 2	k= -3	k= -2	k= -1	k= 0	k= 1	k= 2	k= 3	k= 4
1: Hydrogen	1.00794	-155.19	-17.24	200.95	199.04	198.41	199.04	200.95	204.12	208.55	214.26
2: Helium	4.00260	0.1017	0.0254	100.09	99.94	100.09	100.57	101.37	102.49	103.93	105.68
3: Lithium	6.941	16.357	5.8886	86.44	86.53	86.81	87.27	87.91	88.75	89.75	90.96
4: Beryllium	9.01218	8.9248	4.4110	88.81	89.02	89.37	89.87	90.51	91.29	92.21	93.27
5: Boron	10.81	5.0688	2.5861	92.74	93.04	93.45	93.98	94.63	95.40	96.29	97.30
6: Carbon	12.0111	0.0482	0.0271	100.39	100.76	101.24	101.82	102.52	103.31	104.22	105.23
7: Nitrogen	14.0067	0.0214	0.0164	100.68	101.09	101.59	102.19	102.87	103.64	104.52	105.47
8: Oxygen	15.9994	•0.0014	-0.00094	101.00	101.44	101.96	102.56	103.24	104.00	104.84	105.76
9: Fluorine	18.998403	1.9283	1.2909	95.96	96.39	96.90	97.47	98.11	98.81	99.59	100.43
10: Neon	20.179	0.2847	0.1977	100.65	101.12	101.66	102.26	102.93	103.66	104.45	105.31
11: Sodium	22.98977	1.2797	0.9163	97.47	97.95	98.47	99.06	99.70	100.39	101.14	101.95
12: Magnesium	24.305	0.3390	0.2490	100.85	101.35	101.90	102.50	103.16	103.87	104.63	105.45
13: Aluminum	26.98154	0.9072	0.6814	98.74	99.23	99.77	100.37	101.01	101.70	102.43	103.21
14: Silicon	28.0855	0.0686	0.0526	102.45	102.97	103.54	104.15	104.81	105.52	106.27	107.07
15: Phosphorus	30.97376	0.6771	0.5271	99.83	100.34	100.90	101.50	102.14	102.82	103.54	104.31
16: Sulphur	32.06	0.0391	0.0309	103.17	103.71	104.29	104.90	105.56	106.26	107.00	107.77
17: Chlorine	35.453	0.8353	0.6687	99.43	99.96	100.52	101.11	101.74	102.41	103.11	103.a5
18: Argon	39.948	1.9063	1.5441	93.72	94.21	94.74	95.30	95.89	96.51	97.17	97.86
19: Potassium	39.0983	0.4767	0.3902	101.37	101.91	102.48	103.09	103.72	104.40	105.10	105.83
20: Calcium	40.08	0.0313	0.0259	102.56	103.11	103.90	104.31	104.95	105.62	106.33	107.06
21: Scandium	44.9559	1.0486	0.8742	98.03	98.56	99.11	99.70	100.31	100.95	101.61	102.31
22: Titanium	47.88	1.2606	1.0593	96.68	97.20	97.74	98.32	98.92	99.54	100.20	100.89
23: Vanadium	50.9415	1.4612	1.2368	95.32	95.83	96.37	96.94	97.52	98.14	98.78	99.45
24: Chromium	51.996	1.0853	0.9248	97.74	98.26	98.82	99.40	100.00	100.63	101.28	101.95
25: Manganese	54.9380	1.2360	1.0597	96.64	97.17	97.71	98.28	98.88	99.49	100.13	100.80
26: Iron	55.847	0.8903	0.7677	99.17	99.70	100.27	100.85	101.46	102.08	102.74	103.41
27: Cobalt	58.9332	1.0587	0.9177	97.88	98.41	98.96	99.53	100.13	100.75	101.39	102.05
28: Nickel	58.69	0.5408	0.4711	102.19	102.74	103.32	103.92	104.54	105.IB	105.55	106.53
29: Copper	63.546	1.0315	0.9027	98.07	98.61	99.16	99.73	100.33	100.94	101.57	102.23
30: Zinc	68.38	0.9352	0.8219	98.90	99.44	99.99	100.57	101.17	101.78	102.42	103.07
31: Gallium	69.72	1.2568	1.1090	96.11	96.64	97.18	97.74	98.32	98.91	99.53	100.16
32: Germanium	72.59	1.3124	1.1625	95.57	96.09	96.63	97.18	97.75	98.35	98.95	99.58
33: Arsenic	74.9216	1.2817	1.1394	93.77	96.29	96.83	97.38	97.95	98.54	99.14	99.77
34: Selenium	78.96	1.4832	1.3230	95.90	94.41	94.94	95.48	96.04	96.61	97.20	97.81
35: Bromine	79.904	1.2647	1.1317	95.80	96.32	96.85	97.41	97.97	98.55	99.16	99.77
36: Krypton	83.80	1.4244	1.2784	94.23	94.74	95.26	95.80	96.36	96.93	97.52	98.12
37: Rubidium	85.4678	1.3103	1.1794	95.23	95.75	96.28	96.82	97.38	97.96	98.55	99.16
38: Strontium	87.62	1.2589	1.1362	95.67	96.19	96.73	97.27	97.83	98.41	99.00	99.61
39: Yttrium	88.9059	1.1216	1.0149	97.05	97.57	98.12	98.67	99.24	99.82	100.42	101.03
40: Zirconium	91.22	1.0971	0.9951	97.29	97.82	98.36	98.91	99.47	100.06	100.66	101.27
41: Niobium	92.9064	1.0150	0.9228	98.20	98.73	99.27	99.82	100.40	100.98	101.58	102.19
42: Molybdenum	95.94	1.0589	0.9648	97.69	98.21	98.75	98.31	99.31	100.48	101.04	101.65
43: Technetium	98	1.0999	1.0043	97.20	97.72	98.26	98.81	99.37	99.94	100.53	101.13
44: Ruthenium	101.07	1.0586	0.9685	97.67	98.20	98.73	99.28	99.84	100.42	101.01	101.61
45: Rhodium	102.9055	0.9971	0.9140	98.42	98.94	99.48	100.04	100.60	101.18	101.77	102.37
46: Palladium	106.42	1.0647	0.9778	97.57	98.10	98.63	99.18	99.73	100.30	100.89	101.49
47: Silver	107.8682	0.9823	0.9037	98.61	99.14	99.68	100.23	100.79	101.37	101.96	102.55
48: Cadmium	112.41	1.1136	1.0263	96.93	97.44	97.97	98.51	99.06	99.62	100.20	100.78
49: Indium	114.82	1.0960	1.0117	97.13	97.65	98.18	98.72	99.27	99.83	100.40	100.99
50: Tin	118.69	1.1696	1.0813	96. I5	96.66	97.18	97.72	98.26	98.82	99.38	99.96
51: Antimony	121.75	1.1879	1.1000	95.87	96.38	96.90	97.43	97.97	98.52	99.08	99.66
52: Tellurium	127.60	1.3654	1.2661	93.53	94.03	94.53	95.05	95.57	96.11	96.66	97.21
53: Iodine	126.9045	1.1642	1.0811	96.12	96.63	97.15	97.67	98.22	98.76	99.32	99.89
54: Xenon	131.29	1.2501	1.1624	94.92	95.42	95.93	96.45	96.98	97.52	98.07	98.63
55: Cesium	132.9054	1.1846	1.1030	95.77	96.27	96.79	97.31	97.85	98.39	98.94	99.51

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1	**2**	**3**	**4**	**5**	**6**	**7**	**00**	**9**	**10**	**11**	**12**
Z	**A**	**I k = 0**	**I k = 2**	**k= -3**	**k= -2**	**k= -1**	**k= 0**	**k= 1**	**k= 2**	**k= 3**	**k= 4**
56: Barium	137.33	1.2641	1.1784	94.62	95.12	95.63	96.14	96.67	97.20	97.75	98.30
57: Lanthanum	138.9055	1.1995	1.1195	95.49	95.99	96.50	97.02	97.55	98.09	98.63	99.19
53: Cerium	140.12	1.1217	1.0482	96.59	97.09	97.61	98.13	98.67	99.21	99.76	100.32
59: Praseodymium	140.9077	1.0296	0.9632	97.97	98.48	99.00	99.53	100.07	100.62	101.18	101.75
60: Neodymium	144.24	1.0534	0.9865	97.59	98.10	98.62	99.14	99.68	100.23	100.78	101.34
61: Promethium	145	0.9670	0.9066	98.97	99.48	100.01	101.54	101.03	101.63	102.19	102.76
62: Samarium	150.36	1.0724	1.0064	97.27	97.78	98.29	98.82	99.35	99.89	100.44	100.99
63: Europium	151.96	1.0233	0.9613	98.06	98.57	99.09	99.61	100.15	100.69	101.24	101.80
64: Gadolinium	157.25	1.1162	1.0496	96.52	97.02	97.53	98.05	98.57	99.10	99.65	100.20
65: Terbium	158.9254	1.0709	1.0079	97.26	97.77	98.28	98.80	99.32	99.86	100.40	100.95
66: Dysprosium	162.50	1.0954	1.0319	96.84	97.34	97.85	98.36	98.88	99.40	99.95	100.50
67: Holmium	164.9304	1.0779	1.0163	97.12	97.62	98.13	98.64	99.17	99.70	100.24	100.78
63: Erbium	167.26	1.0576	0.9980	97.46	97.96	98.47	98.98	99.51	100.04	100.57	101.12
69: Thulium	168.9342	1.0165	0.9600	98.17	98.67	99.18	99.70	100.22	100.76	101.30	101.85
70: Ytterbium	173.04	1.0549	0.9971	97.49	97.99	98.49	99.00	99.55	100.O5	100.59	101.13
71: Lutetium	174.967	1.0232	0.9679	98.05	98.55	99.06	99.57	100.10	100.62	101.16	101.71
72: Hafnium	178.49	1.0409	0.9853	97.73	98.22	98.73	99.24	99.76	100.29	100.82	101.36
73: Tantalum	180.9479	1.0260	0.9720	98.00	98.49	99.00	99.51	100.03	100.56	101.09	101.63
74: Tungsten	183.85	1.0242	0.9710	98.03	98.52	99.03	99.54	100.06	100.58	101.11	101.65
75: Rhenium	186.207	1.0068	0.9552	98.35	98.85	99.36	99.86	100.38	100.91	101.44	101.98
76: Osmium	190.20	1.0347	0.9823	97.83	98.32	98.82	99.33	99.84	100.36	100.89	101.42
77: Iridium	192.2	1.0085	0.9581	98.33	98.82	99.32	99.83	100.35	100.87	101.40	101.93
73: Platinum	195.08	1.0051	0.9555	98.39	98.89	99.39	99.90	100.41	100.93	101.46	101.99
79: Gold	196.9665	0.9768	0.9292	98.96	99.48	99.96	100.47	100.99	101.51	102.04	102.57
80: Mercury	200.59	0.9922	0.9444	98.66	99.15	99.65	100.16	100.67	101.19	101.72	102.25
81: Thallium	204.383	1.0108	0.9626	98.29	98.78	99.28	99.78	100.29	100.80	101.33	101.86
82: Lead	207.2	1.0049	0.9576	98.41	98.90	99.40	99.90	100.41	100.92	101.44	101.97
33: Bismuth	208.9804	0.9760	0.9307	98.41	98.90	99.40	99.90	100.41	100.92	101.44	101.97
84: Polonium	209	0.9312	0.8884	99.97	100.47	100.97	101.48	101.99	102.51	103.04	103.57
85: Astatine	210	0.8661	0.8268	101.42	101.92	102.42	102.94	103.46	103.99	104.52	105.06
86: Radon	222	1.0576	1.0101	97.31	97.79	98.28	98.77	99.27	99.77	100.28	100.80
87: Francium	223	1.0128	0.9678	98.25	98.74	99.23	99.72	100.22	100.73	101.24	101.76
88: Radium	226.0254	1.0106	0.9662	98.30	98.78	99.27	99.77	100.27	100.77	101.29	101.80
89: Actinium	227.0278	0.9678	0.9257	99.20	99.70	100.22	100.72	101.22	101.73	102.24	102.76
90: Thorium	232.0381	1.0051	0.9618	98.42	98.91	99.39	99.89	100.39	100.89	101.40	101.91

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1	**2A**	**2B**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Z	**A**	**A_L k=0**	**I k=0**	**I k=2, -2**	**k=-3**	**k=-2**	**k=-1**	**k=0**	**k=1**	**k=2**	**k=3**	**k=4**
91: Protactinium	231.0359	234.93	0.9264	0.8870 0.9685	100.20	100.69	101.18	101.68	102.19	102.70	103.22	103.74
92: Uranium	238.0289	238.10	0.9986	0.9568 1.043S	98.57	99.05	99.53	100.03	100.52	101.02	101.S3	102.05
93: Neptunium	237.0482	241.28	0.9234	0.8849 0.9644	100.31	100.79	101.29	101.79	102.29	102.80	103.32	103.84
94: Plutonium	244	244.48	0.9915	0.9506 1.0351	98.74	99.22	99.71	100.20	100.69	101.19	101.70	102.20
95: Americium	243	247.69	0.9187	0.8812 0.9587	100.4S	100.94	101.43	101.92	102.43	102.93	103.45	103.97
96: Curium	247	250.91	0.9336	0.89S9 0.9738	100.12	100.60	101.09	101.50	102.08	102.58	103.10	103.61
97: Berkelium	247	2S4.14	0.8812	0.8460 0.9187	101.41	101.90	102.39	102.89	103.39	103.90	104.42	104.92
98: Californium	252	257.39	0.9122	0.8604 0.9506	101.07	101.56	102.05	102.SS	103.05	103.55	104.07	104.58
99: Einsteinium	254	260.65	0.8939	0.8588 0.9311	101.14	101.63	102.12	102.62	103.12	103.62	104.13	104.6S
100: Fermium	257	263.92	0.8917	0.8571 0.9285	101.22	101.71	102.20	102.69	103.19	103.69	104.21	104.72
101: Mendelevium	258	267.21	0.8588	0.7963 0.8939	102.88	103.38	103.88	104.38	104.88	105.40	105.91	106.43
102: Nobelium	2S9	270.50	0.8270	0.7232 0.8604	104.98	10S.48	105.98	106.50	107.01	107.53	108.06	108.59
103: Lawrencium	260	273.81	0.7963	0.7237 0.8282	105.03	10S.52	106.03	106.54	107.05	107.57	108.10	108.63
104: Rutherfordium	261	277.14	0.7666	0.7379 0.7970								
105: Dubnium	262	280.47	0.7379	0.7105 0.7668								
106: Seaborgium	263	283.82	0.7101	0.6840 0.7377								
107: Bohrium	262	287.18	0.6559	0.6320 0.6811								
108: Hassium	265	290.56										
109: Meitnerium	266	293.94	0.6320	0.6095 0.6559								
110: Darmstadtium	269	297.34										
111: Roentgenium	272	300.76										
112: Copernicium	277	304.18										
113:		307.62										
114: Flerovium		311.07										
115:		314.53										
116: Livermorium		318.01										
117: Larsonium		321.50										