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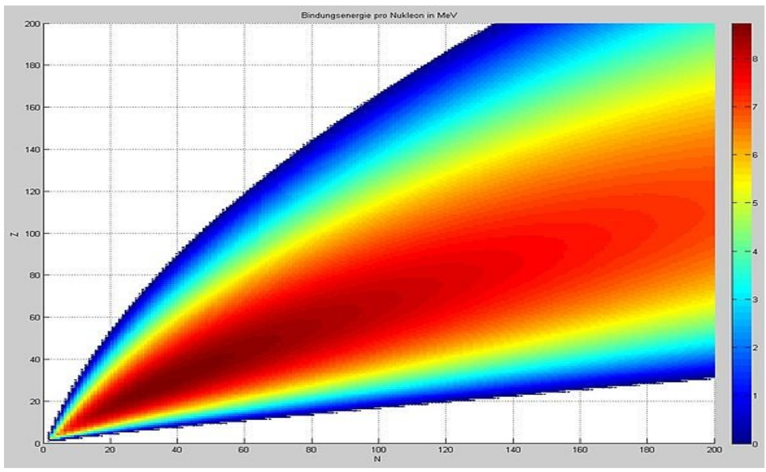
Magic Numbers

in the Periodic Table

and the SEMF



by Miles Mathis

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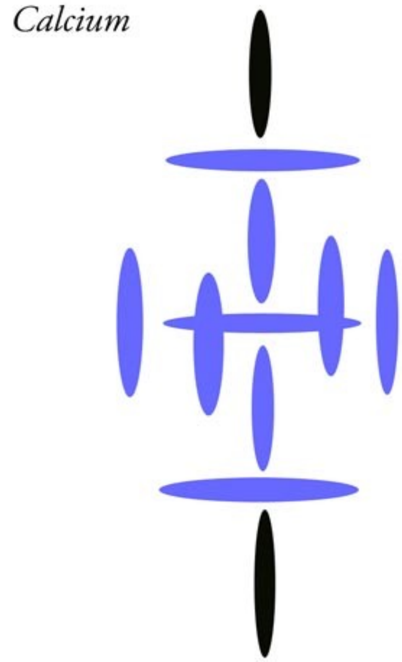
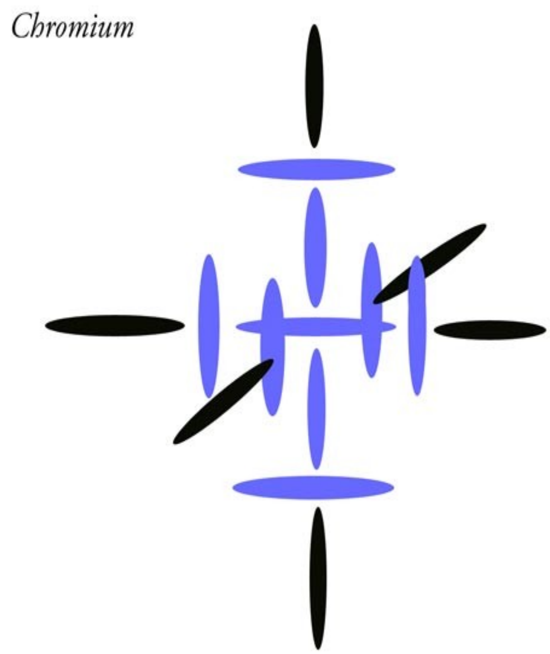
I have recently written a slew of papers on the Periodic Table, where I diagram the nuclei of many elements. In this paper I will look at what have been called magic numbers in the Periodic Table. Here is the Wikipedia opening paragraph, to get us started.

In nuclear physics, a **magic number** is a number of nucleons (either protons or neutrons) such that they are arranged into complete shells within the atomic nucleus. The seven most widely recognized magic numbers as of 2007 are 2, 8, 20, 28, 50, 82, 126.

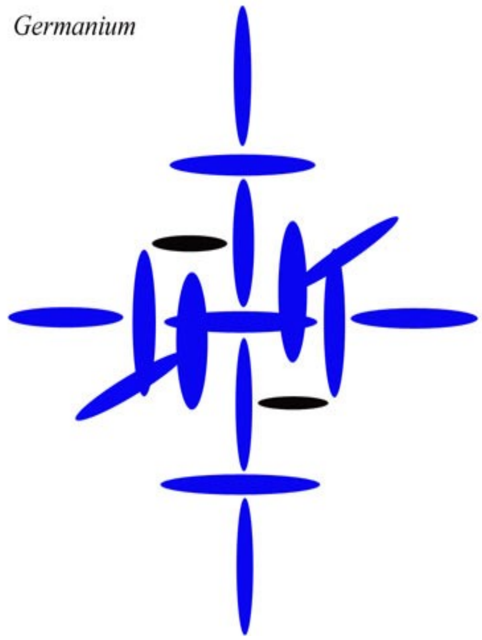
Already we can see that these magic numbers rely on the current orbital math, which I have shown is wrong. We have seen in previous papers that *many* nuclei fill shells completely, including all the noble gasses, group six elements, and many others. And there is nothing magic about number 20 Calcium by this standard.



That is the nuclear configuration of Calcium. The outer level isn't filled as they tell you. If it were, the four carousel level disks would be filled. In that sense, Chromium is more magical than Calcium.

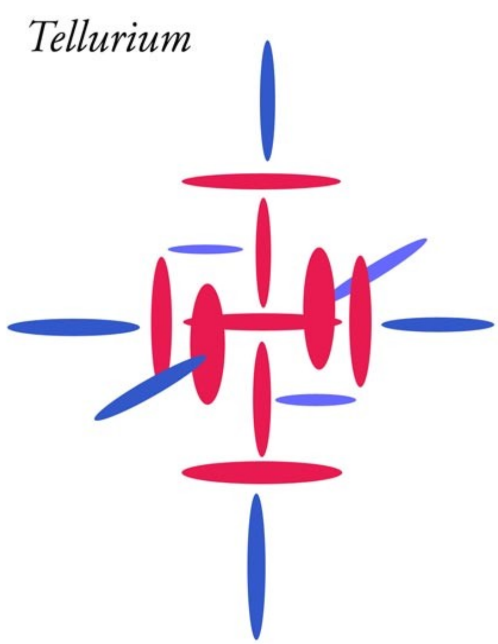


And in Period 4, Germanium may be the most “magical,” since its diagram is all blue in the outer levels:

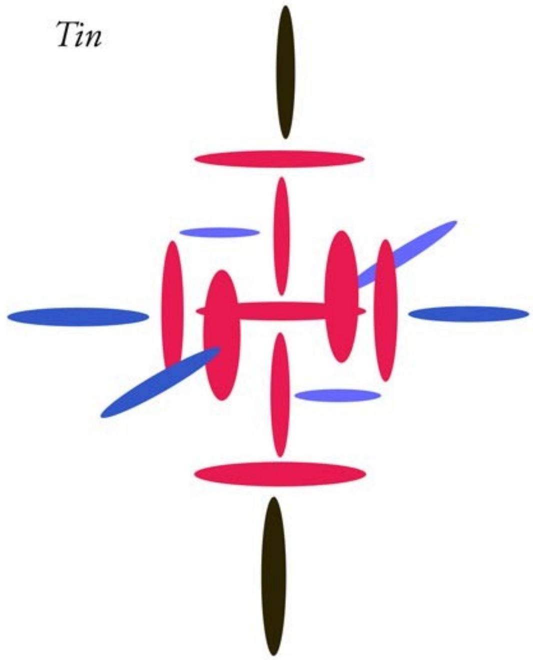


It fills all the levels evenly.

Although number 50 Tin is special in some ways, it isn't special in the way indicated here. The outer level isn't full. It is Tellurium that fills the 4th level in period 5:



Tin is almost as special, and has a beautiful balance regardless, but it doesn't match the definitions given, as you see:



So what is this magic number stuff really about?

Atomic nuclei consisting of such a magic number of nucleons have a higher average binding energy per nucleon than one would expect based upon predictions such as the semi-empirical mass formula [SEMF] and are hence more stable against nuclear decay.

The "semi-empirical mass formula." Doesn't sound promising, just from the title. How can anything be semi-empirical? That is like being semi-pregnant. Well, the SEMF was proposed in 1935 by Carl Weizsacker, following the liquid drop method of George Gamow, and it is still in the same form now as then. This shows us once again the real state of quantum mechanics, which hasn't progressed in 75 years.

The liquid drop method is an admittedly crude method whereby the nucleus is taken to be a drop of incompressible fluid.

This is a crude model that does not explain all the properties of the nucleus, but does explain the spherical shape of most nuclei. It also helps to predict the binding energy of the nucleus. [Wikipedia]

Of course this leads us to ask why nuclear models are so crude. Has no one thought to diagram the nucleus beyond "a spherical shape" in 75 years? It also leads us to ask for the evidence that the nucleus is spherical. Most elements have a hexagonal or other crystal structure, which should be taken as evidence that the nucleus is *not* just a round bag of marbles.

What the SEMF does is try to develop an equation from this crude model, with variables for the strong force, the E/M force, the surface energy, and a pairing term. I will not pull apart all the math, since we already see that it can't work without a lot of pushing. To start with, I have shown there is no strong force, so the equation is blown from the first line. The protons and neutrons are placed in structures that allow them to channel charge through the nucleus, so the strong force was never necessary. The E/M term can't be right, either, since I have shown that particle physicists have been misusing the Coulomb equation at the quantum level from the beginning. In short, the constant k is a scaling constant and isn't needed at the quantum level. It scales charge up to our level, and shouldn't be used as it is here. This alone blows the equation in the amount of about 10^{22}.

I will be told that the SEMF doesn't include k anywhere. Readers have gone to Wikipedia and told me that they have studied the Coulomb term of the SEMF, finding no trace of k. Well, that is because they don't know where to look. Here is where the junk is hidden:

The term $a_C[Z(Z-1)]/A^{1/3}$ is known as the *Coulomb* or *electrostatic term*. The basis for this term is the electrostatic repulsion between protons.

Well, k is hidden inside *Z,* since *Z* = Q/*e,* and *e* is calculated from k. Notice that Wiki admits that the basis for this term is the electrostatic repulsion between protons. That repulsion is currently found using k. Wiki misdirects readers who take the electrostatic repulsion link by linking them to the Lorentz force, and the Lorentz force equations don't explicitly include k, either. Contemporary physicists are adept at hiding their tracks, and they like to update old transparent math with newer more opaque math every few years. The Lorentz equation is

$$F = q[E + (v \times B)]$$

k is hiding behind *q*, because *q* is not calculated from this equation. It is a given. And its “given” value is calculated from k. The accepted value of *q* in the SEMF problem is *e,* which we have already seen is calculated using k. That is to say, the force between protons in the nucleus is still thought to be on the order of 10^{-8} N. I have shown that is catastrophically too large, by 10^{22}. That is precisely what causes the vacuum catastrophe and the cosmological constant problem, with a miss in prediction of 10^{120}.

This catastrophic miss with the Coulomb or electromagnetic term is what caused the need for the strong force to begin with. The volume (or strong force) term in the SEMF is there simply to push the mass formula back toward the data. But if we correct the Coulomb term, we don't need the strong force or the volume term *at all*. Instead, we need to insert a gravity term into the SEMF. This is because the miscalculation of E/M at the quantum level included a miscalculation of gravity. The early mistake in applying the Coulomb equation at the quantum level was not just a mistake in using k, it was also a mistake is assuming that the force F was all E/M. I have shown that Coulomb's equation is a Unified Field Equation, so the force F was always unified. It always included gravity.

This gravity term is not hard to develop, since I have already shown that the current constant ε_0 stands for gravity at the quantum level.

To develop the proper nuclear equation, you have to have a good model, and this spherical model was always a non-starter. Rather than admit that and try a bit harder to come up with a decent model, these mathematicians decided to go ahead and fake it, using fancy equations. That has been the problem for the past 80 years, at least: physics has lacked any good models because it lacked any physicists who could visualize. Physics was taken over by mathematicians who prided themselves on “purity.” They thought that visualizing anything or diagramming anything was beneath their dignity. Heisenberg and Bohr actually forbid physicists from trying to visualize or diagram, via the absurd Copenhagen interpretation of 1926. We can now see that the Copenhagen interpretation was the worst piece of advice ever handed down from the highest levels of physics. It has done more damage to physics than any other single idea.

The timeline here is no accident. This SEMF came just 8 years after the Copenhagen interpretation, and the CI has prevented serious work on the problem for 76 years! It took a professional artist to come in and solve the problem, because no one on the inside was allowed to try to make mechanical sense of it.

I have now done that, and you can see the nuclei diagrammed in my newest papers. Very soon I will be able to rewrite the quantum equations in full. I have already rewritten large parts of them, and only require a compilation.