1.0 Abstract

In “The Aether Found, Discrete Calculations of Charge and Gravity with Planck Spinning Spheres and Kaluza Spinning Spheres” (1), it was shown that spinning spheres can unite the gravitational and electromagnetic force with spinning spheres. The equation 4, developed in “The Aether Found, Discrete Calculations of Charge and Gravity with Planck Spinning Spheres and Kaluza Spinning Spheres” can be used to predict a value of the fine-structure constant constant. This constant is found to depend only on pi and the dimensionless relations of the rest masses of the electron, neutron, and proton. The following paper shows a predicted fine-structure constant using the Codata values for the fundamental physical constants at each publication since 1969. The fine-structure constant found is accurate to the measured fine-structure constant within less than one sigma. As the data for the fundamental physical constants has become more accurate, the prediction for the fine-structure constant has been trending for a precise number difference. Some, like John D. Barrow, Richard Feynman, and Sir Arthur Eddington knew that the fine-structures existence is embarrassingly elusive to grasp. Is its value to be found in string theory or quantum foam? Is pi a value incorporated in the fine-structure constant? John D. Barrow wrote;“If the deep logic of what determines the value of the fine-structure constant also played a significant role in our understanding of all the physical processes in which the fine-structure constant enters, then we would be stymied. Fortunately, we do not need to know everything before we can know something.” — John D. Barrow, New Theories of Everything(4) Why does, this Equation 2.2, below predict a value for the fine-structure constant within the limits of the Quantum Hall method of measuring the fine-structure constant? We do not know, but we also touch a forever that we do not yet understand, yet are allowed to exist in the “ moment an instant lasted forever and be destined for the leading edge of Eternity.

Background

The fine-structure constant α is of dimension 1 (i.e., it is simply a number) and very nearly equal to 1/137. It is the "coupling constant" or measure of the strength of the electromagnetic force that governs how electrically charged elementary particles (e.g., electron, muon) and light (photons) interact. Currently, the value of α having the smallest uncertainty comes from the comparison of the theoretical expression a_e(theor) and experimental value a_e(expt) of the anomalous magnetic moment of the electron a_e. Starting in the 1980's, a new and wholly different measurement approach using the quantum Hall effect (QHE) has caused excitement because the value of α obtained from it independently corroborates the value of α from the electron magnetic moment anomaly. The QHE value of α does not have as small an uncertainty as the electron magnetic moment value, but it does provide a significant independent confirmation of that value.(7)

The calculations, below, show a new method for calculating the fine-structure constant, that is calculated from a more basic group of dimensionless numbers. The ratios of the masses of the elementary particles are like the ratios of gears. These gears, and how they work together, can be shown, empirically to give the fine-structure constant. In fact, as one looks at the years of the Codata data for the ratios of masses and the fine-structure constant, the ratios of the masses lead ahead to a

more accurate calculation of the fine-structure constant. It also hints that the mass ratios of the elementary particles are related to the Lorentz factor.

2.0 The Equation for Charge

$$(1)\quad q^2 = T\pi^3 hc\varepsilon \frac{Me}{2Mn} \qquad [1]$$

Where q=elementary charge, h=Planck's constant, Ɛ=dielectric permittivity, c=speed of light, q is elementary charge, Me=Mass of the Electron, Mp=Mass of Proton, and Mn=Mass of Neutron, and T is defined below.

$$T^2 = \frac{1}{\sqrt{1-(2^{0.5}\frac{\pi Me}{3*3Mn})^2}}[(\frac{Mp-Me}{Mn})^2+(\frac{Mn}{Mn})^2+(\frac{Mn}{Mn})^2]\ (1) \qquad [2]$$

Equation 4.0 (1) $$\left[(e^2)*\frac{1}{h*c*2*\varepsilon}\right]/\left[T*(\pi^3)*\frac{Me}{4*M}\right]=1 \qquad [3]$$

We will be using Equation 4 for approximating the fine-structure constant with the Codata constants since 1969.

Fine-structure constant= $$\sigma = T\pi^3 \frac{Me}{4Mn} \qquad [4]$$

The model that I am using for these equations is that of the universe(a sphere) is made of spheres, which again are made of spheres, made of spheres. Please see the colored sphere down a couple pages for an image. There is two main, competing phenomena. Perfect packing of spheres, and packing of spheres, layer after layer of a spherical shell. It is not likely that science will ever have the ability to see a sphere that is, on the order, of 10^-35 meters. It will probably be a combination of matching theoretical physics and empirical data to figure out the structure of the universe.
Equation 2.3, above, has two components, the first is very similar to a Lorentz transformation, the second is the sum of three perpendicular vectors. The Lorentz component, Equation 5 below,

$$\frac{1}{\sqrt{1-(2^{0.5}\frac{\pi Me}{3*3Mn})^2}} \qquad [5]$$

Seems to imply that the ratio of the electrons mass to the neutrons mass is proportional to a velocity.

3.0 Calculation of Fine-structure Constant

Using Equations, 2 and 4, the fine structure constant is calculated in the following table, and compared to the Codata value for that year. Then the values are compared to each other by calculating their separation in value by a quantity of sigma's different using the uncertainty from Codata for the respective year.

Codata year	Inverse Fine Structure Constant Equation 4	Inverse Fine Structure Constant Codata(2)
1969	1.3703280E+02	1.3703608(20) .E+02
1973	1.3703593.E+02	1.3703612(15)E+02
1986	1.370359971.E+02	1.370359895(61)E+02
1998	1.3703599866.E+02	1.3703599976(50)E+02
2002	1.3703599900.E+02	1.3703599911(46)E+02
2006	1.37035999077.E+02	1.37035999679(94)E+02
2010	1.37035999071.E+02	1.37035999074(44)E+02
2014	1.37035999146.E+02	1.37035999139(31)E+02

Table 4.0 Fine-structure constant table.

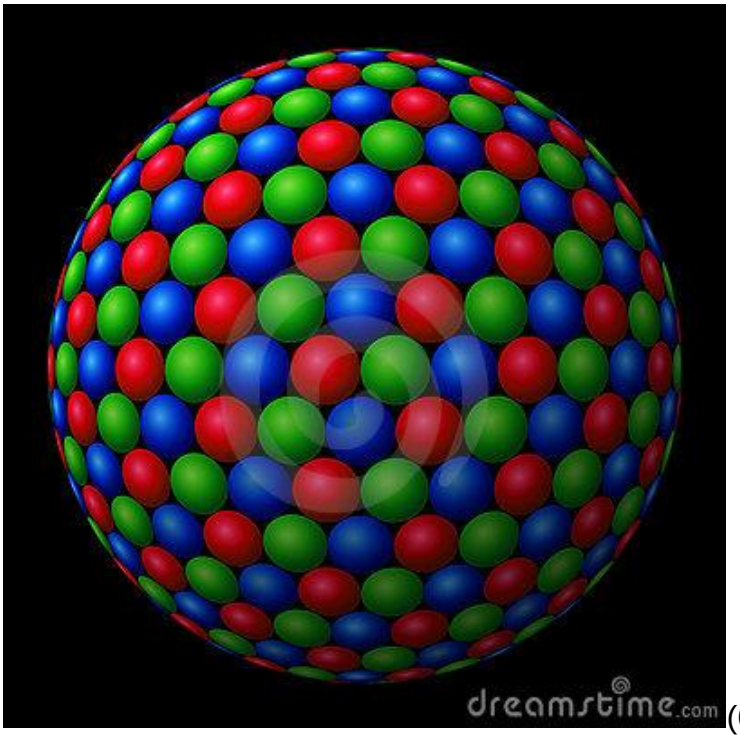
Note☺ All values calculated above for Fine-structure Constant Equation 4 are taken from (2) Codata.

It was Feynman who wrote,

“There is a most profound and beautiful question associated with the observed coupling constant, e - the amplitude for a real electron to emit or absorb a real photon. It is a simple number that has been experimentally determined to be close to 0.08542455. (My physicist friends won't recognize this number, because they like to remember it as the inverse of its square: about 137.03597 with about an uncertainty of about 2 in the last decimal place. It has been a mystery ever since it was discovered more than fifty years ago, and all good theoretical physicists put this number up on their wall and worry about it.) Immediately you would like to know where this number for a coupling comes from: is it related to pi or perhaps to the base of natural logarithms? Nobody knows. It's one of the greatest damn mysteries of physics: a magic number that comes to us with no understanding by man. You might say the "hand of God" wrote that number, and "we don't know how He pushed his pencil." We know what kind of a dance to do experimentally to measure this number very accurately, but we don't know what kind of dance to do on the computer to make this number come out, without putting it in secretly!”

— Richard Feynman, *QED: The Strange Theory of Light and Matter (5)*

We see that the fine-structure constant being related to pi, but also we see that it could be related to pi in wrapped up dimensions predicted in string theory, as the value, pi, is cubed. When we look at the “The Aether Found, Discrete Calculations of Charge and Gravity with Planck Spinning Spheres and Kaluza Spinning Spheres” (1), we find that there are hidden dimensions, but they are spheres within spheres at dimensions that are like Planck length and Planck time. It is like a quantum foam, but it is a uniform quantum foam, with irregularity within the hidden spheres, not on the surface of the hidden spheres. Please see image below for a polysphere nested within a sphere.



(6)

4.0 Calculation of Fine-structure Constant

5.0 Discussion

The predicted values of Fine-structure are close to the limits of the Codata value. The close proximity of Equation 4 to the actual Codata value is remarkable in light of the combined variance of Equation 4 that is about 3 times higher than the variance of the Codata values. Although this does not prove that equation 4 is correct, the values predicted leave open the possibility that the equation could be correct.

Note that as time goes on the prediction of equation 4 becomes more precise.

The calculated values are within the values measured using the Quantum hall affect. This a new and different method of derived and empirical calculation for the fine-structure constant. It does not have the appearance of random number manipulation like numerology. The calculations are part of a new derivation to unite the forces of gravity and electromagnetic force through a polynested spinning sphere that has the appearance of both string theory and quantum foam theory. It is also not unexpected that pi should be part of the equation for the fine-structure constant, nor that it should have aspects that hint at wrapped up dimension of String Theory, nor is in unexpected that there should be undulations proposed by Quantum Foam theory. These

undulations rather appear to be patterns of differences in rotation like Calabi Yau, rather than a physical differences in structure.

If one looks at the values of the fine-structure constant predicted with Equation 4, for year 1969, one sees that they are not within 3 sigma of the Codata value for 1969. It is now known the the electron/neutron mass ratio for 1969 was pretty far off, and this explains why Equation 4 gave a bad prediction.

The 2006 Fine-Structure constant is 1.37035999679(94)E+02, Equation 4 predicted 1.37035999077.E+02. It is now known that the 2006 Codata value was in error, whereas Equation 4 was more accurate.

"It is not the possession of truth, but the success which attends the seeking after it, that enriches the seeker and brings happiness to him."

"Science advances one funeral at a time."
– Max Planck

6.0 References

1 http://vixra.org/pdf/1507.0128v1.pdf
2 http://physics.nist.gov/cuu/Constants/index.html
3 http://vixra.org/pdf/1502.0193v2.pdf
4 John D. Barrow, *New Theories of Everything*
5 — Richard Feynman, *QED: The Strange Theory of Light and Matter*
6 DreamsTime.com
7. http://physics.nist.gov/cuu/Constants/alpha.html
8. http://vixra.org/pdf/1508.0144v2.pdf