## 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 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. 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.*

## 2.0 Background

The fine-structure constant $\alpha$ 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 $\alpha$ 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 $\alpha$ obtained from it independently corroborates the value of $\alpha$ from the electron magnetic moment anomaly. The QHE value of $\alpha$ 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.

3.0 The Equation for Charge

Equation 2.0 (1) $q^2 = T\pi^3 hc\varepsilon(Me)/2Mn$

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

Equation 2.1 $T^2 = \frac{((Mp-Me)^2 + Mn^2 + Mn^2)}{Mn^2}$ (1)

Equation 2.0 can be rearranged to calculate two different methods for the fine structure constant. Equation 4.0 from "The Aether Found, Discrete Calculations of Charge and Gravity with Planck Spinning Spheres and Kaluza Spinning Spheres" (1), is shown below for the two methods for calculating the fine structure constant. Each portion of the equation in brackets gives the two methods for approximating the fine structure constant.

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

We will be using Equation 2.2 for approximating the fine structure constant with the Codata constants since 1969.

Equation 2.2 Fine structure constant= $\sigma = T\pi^3 \frac{Me}{4Mn}$

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

Equation 2.1

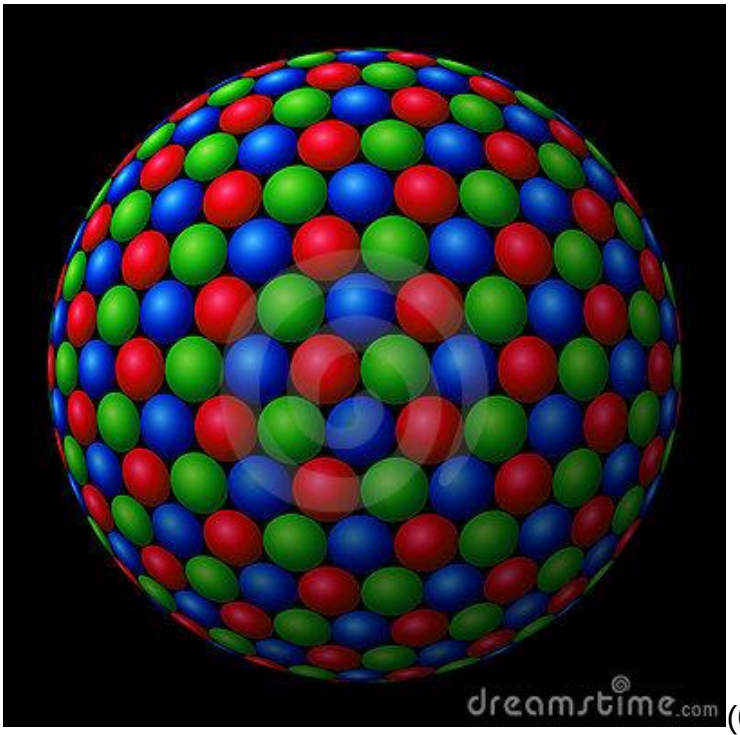
$$T^2 = \left(\frac{1}{\sqrt{1-\left(\frac{\pi Me}{3*3Mn}\right)^2}} \frac{Mp-Me}{Mn}\right)^2 + \left(\frac{1}{\sqrt{1-\left(\frac{\pi Me}{3*3Mn}\right)^2}} Mn/Mn\right)^2 + \left(\frac{1}{\sqrt{1-\left(\frac{\pi Me}{3*3Mn}\right)^2}} Mn/Mn\right)^2 \quad (1)$$

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

| Codata year | Inverse Fine Structure Constant Equation 2.2 | Inverse Fine Structure Constant Codata(2) | Ratio of Equation 2.2 to Codata value |
|---|---|---|---|
| 1969 | 1.37032769639E+02 | 1.3703608(20) .E+02 | 1.00002415744.E+00 |
| 1973 | 1.37035934850.E+02 | 1.3703612(15)E+02 | 1.00000135111.E+00 |
| 1986 | 1.37035997124.E+02 | 1.370359895(61)E+02 | 9.99999944367.E-01 |
| 1998 | 1.37035998658.E+02 | 1.3703599976(50)E+02 | 1.00000000804.E+00 |
| 2002 | 1.37035999000.E+02 | 1.3703599911(46)E+02 | 1.00000000080.E+00 |

| | | | |
|---|---|---|---|
| 2006 | 1.37035999077.E+02 | 1.37035999679(94)E+02 | 1.00000000439.E+00 |
| 2010 | 1.37035999071.E+02 | 1.37035999074(44)E+02 | 1.00000000002.E+00 |
| 2014 | 1.37035999146.E+02 | 1.37035999139(31)E+02 | 9.99999999941.E-01 |

Table 2.0 Fine Structure constant table.

Note☺ All values calculated above for Fine Structure Constant Equation 2.2 are taken from (2) Codata.

## 5.0 Discussion

The predicted values of Fine Structure are close to the limits of the Codata value. Although this does not prove that equation 2.2 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 2.2 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 (2.2), for years 1969 and 1973, one sees that they are not within 3 sigma of the Codata value for 1969 and 1973, but if one uses the masses for the proton, electron, and neutron for years 1986 and afterwards, we see that the correct Codata for 1969 an 1973. This shows that had the equation been known earlier, that it could have made better estimations for the mass of the electron, proton, and neutron back in the years of 1969 and 1973, and presumably, to 1986. It appears that the method used to calculate the mass of these particles, were not as accurate as thought. I would like that people evaluate this work.

## 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