Title - A New Foundation for Physics
Short title – A New Foundation for Physics

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Abstract

Modern physics describes the mechanics of the Universe. We have discovered a new foundation for physics, which explains the components of the Universe with precision and depth. We quantify the existence of Aether, subatomic particles, and the force laws. Some aspects of the theory derive from the Standard Model, but much is unique.

A key discovery from this new foundation is a mathematically correct Unified Force Theory. Other fundamental discoveries follow, including the origin of the fine structure constant and subatomic particle g-factors, a slight correction of neutron magnetic moment, a geometrical structure for charge, the quantification of electromagnetic charge as separate from electrostatic charge, a more precise meaning of spin, the quantification of space-resonance in five dimensions, and a new system of quantum units.

The Aether quantifies as a fabric of quantum rotating magnetic fields with electromagnetic, electrostatic, and gravitational dipole structures. Subatomic particles quantify as angular momentum encapsulated in a quantum, rotating magnetic field. All quantum, atomic, and molecular processes can be precisely modeled, leading to discrete physics with new understandings and insights.

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1. Summary

The Aether Physics Model (APM) is an improved quantum physics paradigm, which is based upon

a. a clearer definition of dimensions,
b. a different structure of units based upon distributed charge dimensions,
c. a new system of units based on electron values,
d. the structure of non-material existence (Aether),
e. a new system of geometrical evaluation,
f. new fundamental constants in addition to the established fundamental constants,
g. the quantification of a previously unknown type of charge,
h. and the quantification of matter as angular momentum

We can postulate that the Universe composes from force, matter, and environment. Space-time is a subset of "environment," which is quantified as Aether. The ontology of the APM assumes quantum matter exists within a quantum environment, and that the quantum environment constructs from primary force acting on quantum dimensional measurements. Let us assume the force as primary, and demonstrate that it factors from Coulomb's constant and Newton's gravitational constant. We name the primary force "Gforce" and assume it is constant, and thus the Universe is a closed system. In this paper, we do not present Gforce as a derived constant from constants that are more fundamental.

The Aether Physics Model (APM) is mathematical and based upon empirical quantum data. Whereas modern physics focuses on what the Universe *does*, we quantify what the Universe *is*.

2. A Quick History of the Aether

The concept of Aether is not new. Historically, the Aether was the prevailing theory in what later became modern physics. Ancient Greek philosophers discussed Aether, and the theory continued in acceptance through millennia. In 1644, Rene Descartes put forth a philosophy of an all-pervading Aether with mechanical properties. "Descartes assumed that the Aether particles are continually in motion. As however there was no empty space for moving particles to move into, he inferred that they move by taking the places vacated by other Aether particles, which are themselves in motion. Thus, the movement of a single particle of the Aether involved the motion of an entire closed chain of particles; and the motions of these closed chains constituted vortices, which performed important functions in his picture of the cosmos." [1] The Descartes concept of Aether compares to fish moving in a tank of water. In the Descartes model, the Aether acts as both a solid and a fluid.

Whitaker wrote, "All space, according to the young [John] Bernoulli, is permeated by a fluid Aether, containing an immense number of excessively small whirlpools. The elasticity which the Aether appears to possess, and in virtue of which it is able to transmit vibrations, is really due to the presence of these whirlpools; for, owing to centrifugal force, each whirlpool is continually striving to dilate, and so presses against the neighboring whirlpools."[2]

Fresnel's formula, as developed by Eisenlohr, suggests that Aether is denser in matter than in free space.[3] While Descartes saw the Aether as both a perfect solid and perfect fluid, Nikola

[1] Sir Edmund Whittaker, *A History of the Theories of Aether and Electricity; The Classical Theories* (London; New York, American Institute of Physics, 1987) p. 6
[2] Ibid pp. 95-96
[3] The Ether, *Science, Vol. 18, No. 447*. (Aug. 28, 1891), pp. 119-122.

Tesla deduced that the Aether had the qualities of a perfect gas.[4] The above hypotheses are born out in the Aether Physics Model. The quantum Aether units are able to fold and bind to each other where subatomic particles are present. The rotating magnetic field of the Aether, driven by the enormous Gforce, manifests as a perfect solid, fluid, and gas, simultaneously. As explained below, it is because the mass associated with the Aether is reciprocal mass that Gforce and Aether have these abilities.

When Michelson and Morley conducted an experiment to identify the particulate medium as absolute space-time, resulting from Aether drifting through Earth as Earth moved through space, they found no overwhelming evidence for the *magnitude* of Aether drift they expected. However, they *did* measure an Aether drift. Dayton Miller later conducted extensive tests that verified an Aether drift relative to the Earth at about ten thousand kilometers per second.[5] The results indicated that if Aether exists, it must drag relative to Earth[6], which Augustin Fresnel also posited.[7] Since the prevailing understanding of Aether did not easily accommodate Aether dragging along with the planet, many touted this as evidence against the existence of the Aether. This premature conclusion against a dragging Aether also caused many to proclaim the erroneous assumption that the Michelson-Morley experiments showed absolutely no Aether drift.

Further speculating on the structure of the Aether, Albert P. Carmen wrote, “We can think of the ether as having an indefinitely large number of infinitesimal "ether dipoles."[8]

Albert Einstein invented his own principle of a space-time/mass-energy tensor and attributed it to Ernst Mach. He essentially stated that space-time acts upon mass and mass acts upon space-time. However, Einstein’s view changed on this matter several times over several years, due to his inability to pinpoint a precise physics basis for his General Relativity Theory (GRT). As a result, aspects of Einstein’s earlier erroneous thoughts present as valid physics concepts today (Mach’s principle, cosmological constant), this despite that Einstein ended up disowning these ideas due to their conflicting nature with GRT.[9] [10]

Albert Einstein did not disprove, nor did he attempt to disprove, the existence of the Aether. On May 5, 1920 at the University of Leyden, Einstein gave a lecture[11] in which he defended the existence of Aether, albeit, to his own liking. Einstein’s theory depended heavily upon keeping any reference to an absolute space-time from entering the physics, so he had to stay on top of the Aether discussions of his time. In a review of Miller’s work by Robert Shankland, Einstein posthumously brought pressure to bear against Dayton Miller’s work and Shankland attempted to write off Miller’s measured Aether drift as temperature anomalies within the apparatus.[12]

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[4] Lawrence M. Cockaday, *New York Herald Tribune*, (Sept. 22, 1929), pp. 1, 29.
[5] Dayton C. Miller, *Science, New Series, Vol. 63, No. 1635* (Apr. 30, 1926), pp. 433-443
[6] “The outcome of the Michelson - Morley experiment would, therefore, suggest that the ether is dragged along with the earth, as far as the immediate neighborhood of the earth is concerned.” Peter Gabriel Bergmann, *Introduction to the Theory of Relativity* (New York, Prentice Hall Inc., 1947) p. 27
[7] Quoted from Abraham Pais, *Subtle Is the Lord: The Science and the Life of Albert Einstein* (Oxford: Oxford University Press, 1982) p. 113.
[8] Albert P. Carman, *Science, New Series, Vol. 71, No. 1834* (Feb. 21, 1930), pp. 214-215.
[9] Robert Matthews, *Science, New Series, Vol. 263, No. 5147*. (Feb. 4, 1994), pp. 612-613
[10] John D. Norton, *General Covariance and the Foundations of General Relativity: Eight Decades of Dispute*, Rep. Prog. Phys. 56 (1993) pp. 791-858 printed in UK.
[11] Michel Janssen et al, The *Collected Papers of Albert Einstein Vol. 7, The Berlin Years: Writings , 1918 – 1921* (Princeton University Press, 2002) pp. 305–309; 321
[12] Robert S. Shankland, *Science, New Series, Vol. 176, No. 4035* (May 12, 1972), pp. 652-653

The APM substantially quantifies the earlier concepts of Aether and provides a solid foundation for Einstein's GRT, although it does not support his Special Relativity Theory.

3. Goals and Objectives

The APM has the capacity to explain all aspects of physics. However, the theory is extensive and space is limited, so we will present some essential foundations in this paper. Some concepts may not seem comprehensive in presentation; however, our book, Secrets of the Aether[13], further develops the APM.

The Gforce quantifies as the cause of Aether. Aether in turn quantifies as the non-material environment in which matter exists. Understanding the quantum environment is essential for understanding how quantum matter moves and how the Gforce produces the electrostatic, electromagnetic, and gravitational forces. From this new understanding of Aether, the APM proposes a mathematically correct Unified Force Theory, and as such, succeeds in unifying all the forces with simple, mathematical laws.

4. Definitions - Dimensions

A dimension, as defined here, is a non-material, measurable quality relating to the foundation of existence and being. The definitions presented below are essential to the foundation of the Aether Physics Model. The definitions were determined by critically analyzing empirical data and the equations used to express the data. For details beyond those given below, see Secrets of the Aether[13].

a. Quantum Mass

The concepts of "mass to energy equivalence" and "rest mass"[14] have no meaning within the APM. Dimensions are components of units, but not equal to units. In this theory, mass as a dimension has a different order of reality[15] than energy as a unit. Let us define mass as a dimension, which when given a quantity, becomes a measurement of inertia. The primary quantity of mass in this theory is the mass of the electron (m_e) (as opposed to the kilogram or gram). If we need to use a mass quantity in analyzing the behavior of other than the electron, we simply reference it as m_p for the proton, m_n for the neutron, and m_a for the mass associated with the Aether. Mass cannot be directly observed, but attributes can be inferred from the arrangements of mass dimensions within units. Since mass usually appears as a single dimension in a unit, let us then assume the geometry of the mass dimension is linear in nature. Since we will deduce that the environment at the quantum level curves, the linear nature of mass would also curve. When the mass dimension multiplies the length dimension, it produces a quantum structure we call the ligamen circulatus (LC).[16] Think of the LC as a circular string of mass.

b. Quantum Charge

Let us define charge as a dimension, which when given a quantity, measures electricity. There are two manifestations of charge, electrostatic and electromagnetic. In previously established theory, the electromagnetic charge quantifies as a relativistic expression of electrostatic charge.

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[13] David W. Thomson and Jim D. Bourassa, *Secrets of the Aether; Second Edition* (Alma, IL, The Aenor Trust, 2005)
[14] Ibid *Secrets of the Aether*, p 97
[15] Ibid *Secrets of the Aether*, p 17
[16] Ibid *Secrets of the Aether*, p 38

In the APM, electromagnetic charge quantifies using simple Newtonian type expressions with dimensions of Coulomb squared.

From observation, we see that charge covers a surface, yet leaves no null spaces in between charges. Since charge exists over a distributed length (area), let us then assume that charge dimensions are also distributed. In the APM, the quantum electrostatic charge is the same value as the elementary charge in established theory, except its dimensions modifies to represent distributed charge. Therefore, we notate the quantum electrostatic charge as e^2. Charles Coulomb also proposed the distribution of charge. [17]

There is a second type of charge, named electromagnetic, or strong charge, which notates as $e_{emax}{}^2$ for the electron, $e_{pmax}{}^2$ for the proton, $e_{nmax}{}^2$ for the neutron, and $e_a{}^2$ for the Aether. The strong charge quantifies as the angular momentum of the subatomic particle times the conductance of the Aether and has a quantifiably different geometry than the electrostatic charge, as explained later in this paper. All charge is distributed, although there is no length associated with this geometry unless the distributed length dimensions specifically appear with charge dimensions in a unit (such as $\frac{m^2}{coul^2}$).

The dimension of charge is not the same as an electron or proton. Therefore, in the Aether Physics Model it cannot be said that a quantity of charges exist in a given volume of space. It would be correct to say that electrons and protons have distributed charge, and that electrons and protons exist in a given volume of space.

c. Quantum Length

Let us define length as a dimension, which when given a quantity, measures distance. By applying a technique unique to the APM called Quantum Measurement Analysis, we can determine that the Compton wavelength is the quantum length to which the whole Universe is constructed. We will take the specific case of Planck's constant; however, this technique applies to all the quantum constants. Planck's constant calculates to be:

$$h = 6.626 \times 10^{-34} \frac{kg \cdot m^2}{sec} \tag{4.1}$$

According to Max Planck, this constant is the "quantum of action." [18] Since there are only three subatomic particles that can "act" at the quantum level (electron, proton, and neutron), and the electron is the most mobile of the three, let us assume that the quantum of action refers directly to the electron. Therefore, we can deduce that the mass dimension represents by the mass of the electron. This leaves three remaining dimensions, two of which produce the unit of velocity. Let us assume that the quantum velocity is the speed of light. This leaves a remainder:

$$\frac{h}{m_e \cdot c} = 2.426 \times 10^{-12} m \tag{4.2}$$

which is equal to the Compton wavelength.

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[17] "Above all, Coulomb confirmed by very refined methods the fact already noticed by Gray, that electricity is only situated on the external surface of conductors; and he observed that this also is a consequence of the inverse square law, and can only be true if the latter holds exactly." Philipp Lenard, *Great Men of Science: A History of Scientific Progress, trans. H. Stafford Hatfield* (New York: The Macmillan Company, 1933) pp. 157-8.

[18] Max Planck, *Where Is Science Going?,* trans. James Murphy, 1st ed. (New York: Norton, 1932) 59.

$$\lambda_C = 2.426 \times 10^{-12} m \tag{4.3}$$

Therefore, let us define the quantum length as the Compton wavelength and notate it as λ_C .

d. Quantum Frequency

Let us define frequency as a dimension, which when given a quantity, measures duration. Normally we think in terms of time dimension. Nevertheless, all of our time-keeping devices measure directly as frequency. In the APM, frequency is the dimension normally expressed, as evidenced by time dimension appearing in the denominator of unit expressions. Once familiarity develops for cardinal and ordinal values of dimensions, frequency as the normal dimension makes more sense. Using the method of Quantum Measurement Analysis, we define the quantum frequency as the quotient of the speed of light divided by the quantum length and notates as F_q .

$$\frac{c}{\lambda_C} = F_q \tag{4.4}$$

e. Reciprocal Relationships

All dimensions have both an obverse and reciprocal characteristic. We can think of the obverse dimension as flat or linear and the reciprocal dimension as curved or cyclical. In general, the reciprocal dimension reads as obverse cycles per reciprocal unit. For example, time is an obverse dimension and has a linear characteristic, while its reciprocal, frequency is cycles per time. The same logic applies to the obverse dimension of length, which is linear, and its reciprocal of wave number, which is a cycle per length.

There is also a reciprocal aspect to mass. We can consider reciprocal mass as inertia that cycles positive and then negative. A reciprocating piston cycles inertia along the forward and backward length dimension. However, in the Aether and Gforce constants, the mass of the Aether cycles inertia along the forward and backward time dimensions (or frequency dimension). Although the Aether has a huge reciprocal mass associated with it, its net inertia appears as zero.

Reciprocal mass also manifests in gravity. In the APM, the mass of the electron cannot exist apart from its quantum of action, which is angular momentum. In the APM, we call this quantum of action *primary angular momentum* and view it as a particular form of existence.[19] In addition, primary angular momentum, which does not exist within the Aether, names dark matter (in the sense widely used in modern astrophysics). When dark matter is absorbed into a quantum Aether unit, the Aether imparts various qualities of charge to the primary angular momentum, and thus it becomes visible matter (and antimatter).

Let us assume that primary angular momentum can only spin in the forward direction of time, thus as the Aether inertia oscillates between forward and backward time, the primary angular momentum only sees half the cycle. Therefore, primary angular momentum has half-spin.[20, 21] It is assumed that when the Gforce acts upon the mass dimension within primary angular momentum, it can exert either a push or a pull, but not both. Whether the Gforce exerts a push or a pull on the mass dimension appears to depend on the spin parity of the subatomic particle. Thus, matter would attract to matter and antimatter would attract to antimatter, but matter would repel antimatter.

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[19] Ibid *Secrets of the Aether*, pp 15, 34, 36

[20] G. W. Ludwig, *Science*, *New Series, Vol. 135, No. 3507*. (Mar. 16, 1962), pp. 899-905.

Charge is a misunderstood dimension. Current is the only unit in widespread use where charge is obverse. In the unit of current, charge is a linear quantity. However, charge normally appears in the denominator of other unit expressions, and expresses in its reciprocal form. In the reciprocal form, we read cycles per charge. For example, potential is the unit of energy per charge. Magnetic flux is angular momentum per charge. Resistance is magnetic flux per charge, and so on.

In the SM, there is only one type of charge quanta, the elementary charge. In an attempt to quantify the strong force, the previous theory assumed the existence of gluons and pions and defined the charges in terms of color and flavor.[21] As such, the concept of angular momentum per charge sounds meaningless within the understanding of previous theory. However, in the APM, there are two types of quantum charge and the elementary charge is the less significant of the two. The electromagnetic charge is the charge referred to in all charge related units except magnetic moment. In the case of magnetic moment, the unit refers to both types of charge, as explained in section 11 of this paper. It is because the units generally refer to electromagnetic charge, and not electrostatic charge, and previous theory does not quantify the electromagnetic charge of each subatomic particle relative to the electrostatic charge, that previous theory is not capable of unifying the forces.

f. Cardinal – Ordinal Relationships

We postulate in the APM that the numerator in a physics expression tends mathematically to have a cardinal value (quantity), and the denominator tends mathematically to have an ordinal value (position). From a physics perspective, we could identify the numerator as an absolute dimension, and identify the denominator as a relative dimension. Multiplication takes place between cardinal-valued-absolute-dimensions and it takes place between ordinal-valued-relative-dimensions. However, cardinal-valued-absolute-dimensions divide by ordinal-valued-relative-dimensions and vice versa. The absolute quantity also equates to objectivity, while the relative position equates to subjectivity, or environment.

Mass is a cardinal valued dimension, and reciprocal mass is an ordinal valued dimension. The Gforce and Aether derive from reciprocal mass and thus are ordinal, or relative, in nature, as opposed to the physical manifestation of mass we are familiar with, which is cardinal, or absolute, in nature.

Charge is a reciprocal dimension in most cases. When it appears as an obverse dimension (as in the unit of current) then charge is an objective quantity. However, charge most often appears as an ordinal value, and thus applies to the subjective environment.

We can think of cardinal mass and charge as being associated with objective reality, while ordinal mass and charge is associated with environmental, or subjective, reality. The environment is non-material, but the quantification of the environment is as essential for understanding existence as the quantification of the matter that abides in it.

g. Explaining Gforce in Terms of Ordinal Mass

The value of Gforce derives in the APM to: [22]

$$Gforce = 1.210 \times 10^{44}\, newton \tag{4.5}$$

[21] Arthur L. Robinson, *Science, New Series, Vol. 217, No. 4565*. (Sep. 17, 1982), pp. 1127-1129.
[22] Ibid *Secrets of the Aether*, pp. 41-51

Consider two obverse masses equal in total value to the mass associated with the Aether. With G being the Newton gravitational constant, which has been determined to a reasonable degree of accuracy,[23] let these masses be one quantum length distant from each other. The resulting force between them will be

$$G\frac{m_a \cdot m_a}{{\lambda_C}^2} = Gforce \tag{4.6}$$

Transposing we see that Gforce is environmental, or subjective.

$$G\frac{m_a \cdot m_a}{{\lambda_C}^2 \cdot Gforce} = 1 \tag{4.7}$$

The value of the Aether unit derives in the APM to: [24]

$$A_u = 16\pi^2 \cdot k_C \tag{4.8}$$

A_u is the Aether electromagnetic constant and k_C is the Coulomb electrostatic constant. If we take two objective quantities of charge equal to the strong charge of the Aether (see Quantum Values below), and separate them by one quantum length:

$$A_u\frac{e_a \cdot e_a}{{\lambda_C}^2} = Gforce \tag{4.9}$$

Then environmental Gforce is also reciprocal to the objective quantity of strong charge:

$$A_u\frac{e_a \cdot e_a}{{\lambda_C}^2 \cdot Gforce} = 1 \tag{4.10}$$

(When distributed charges multiply, empirically only one dimension from each distributed charge is used.)

[23] Arthur L. Robinson, *Science, New Series, Vol. 222, No. 4630.* (Dec. 23, 1983), pp. 1316-1317.
[24] Ibid *Secrets of the Aether*, p. 62

h. Quantum Values

Quantum Measurements Table 1		
Name	Symbol	Value
Mass of electron	m_e	$9.109\times10^{-31} kg$ [25]
Mass of proton	m_p	$1.673\times10^{-27} kg$ [26]
Mass of neutron	m_n	$1.675\times10^{-27} kg$ [27]
Mass of Aether	m_a	$3.268\times10^{15} kg$ [28]
Electrostatic charge	e^2	$2.567\times10^{-38} coul^2$ [29]
Strong charge of electron	$e_{emax}{}^2$	$1.400\times10^{-37} coul^2$
Strong charge of proton	$e_{pmax}{}^2$	$2.570\times10^{-34} coul^2$
Strong charge of neutron	$e_{nmax}{}^2$	$2.573\times10^{-34} coul^2$
Strong charge of Aether	$e_a{}^2$	$5.021\times10^{8} coul^2$
Quantum Length	λ_C	$2.426\times10^{-12} m$ [30]
Quantum Frequency	F_q	$1.236\times10^{20} Hz$

i. Relationship of Dimensions to Form

Let us assume that the dimensions of length and frequency develop geometry, while the dimensions of mass and charge develop substance. The geometrical and substance dimensions relate to specific geometrical constants. Due to resonance in the Aether unit, the Aether has curved geometry, of which the curved geometry, itself, takes on the nature of dimension.

There is a progression of geometry within the Aether. Observing that mass appears as a single dimension throughout the units, we can assume that mass has a linear quality. Since a circle is a curved, linear structure, let us correlate the 2π geometrical constant with mass.

In addition, since the APM defines charge as distributed, we can assume that charge has a surface quality. The resonance within the Aether unit generates two spheres, which also observes to correlate with a type of static frequency we can call electrostatic charge. The value

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[25] NIST Reference on Constants, Units, and Uncertainty - http://physics.nist.gov/cgi-bin/cuu/Value?me|search_for=electron+mass
[26] NIST Reference on Constants, Units, and Uncertainty - http://physics.nist.gov/cgi-bin/cuu/Value?mp|search_for=proton+mass
[27] NIST Reference on Constants, Units, and Uncertainty - http://physics.nist.gov/cgi-bin/cuu/Value?mn|search_for=neutron+mass
[28] Ibid *Secrets of the Aether*, p. 50
[29] NIST Reference on Constants, Units, and Uncertainty - http://physics.nist.gov/cgi-bin/cuu/Value?e|search_for=elementary+charge
[30] NIST Reference on Constants, Units, and Uncertainty - http://physics.nist.gov/cgi-bin/cuu/Value?ecomwl|search_for=compton+wavelength

of this static frequency of electrostatic charge is the source of the elementary charge. Let us then assume that electrostatic charge is spherical and has the 4π geometrical constant.

We find in the APM that electromagnetic charge is equal to angular momentum times the conductance of the Aether.

$$e_{emax}{}^{2} = h \cdot Cd \tag{4.11}$$

We will find that the angular momentum models as a circular string of mass (LC) moving perpendicular in a greater circle. Since a toroid is a small circle scanning a larger circle, let us assume that electromagnetic charge correlates to a toroid and has the $4\pi^2$ geometrical constant.

The $16\pi^2$ constant is equal to the spherical constant squared. As seen in figure 1, the Aether unit hypothesizes to be two orthogonal spheres over which the double loxodrome[31] of the four forward time spin positions[32] exists. Each of the four spin positions will accommodate only one subatomic particle. Since the subatomic particle is equal to its angular momentum, and that primary angular momentum spinning within the Aether unit produces toroidal strong charge, then the four spin positions multiply the toroidal constant of $4\pi^2$ to produce the $16\pi^2$ Aether geometrical constant.

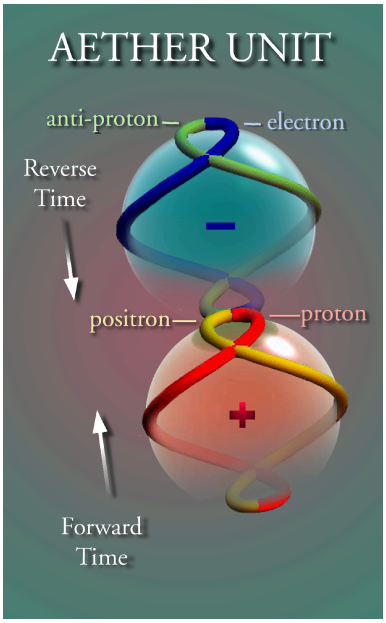

Figure 1

Thus, we can see the progression of the geometrical constants.

[31] Ibid *Secrets of the Aether*, p. 33
[32] Ibid *Secrets of the Aether*, p. 33

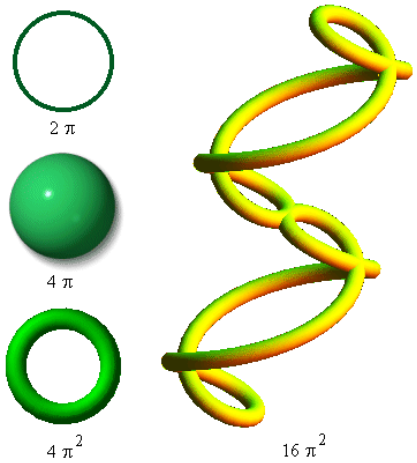

Figure 2

Empirically we find that the electromagnetic constant (A_u) pertains to a time-influenced toroidal, or more accurately, a cardioidal geometry,[33] and that the electrostatic constant (k_C) pertains to a spherical geometry.[34] From equation 4.8 we can hypothesize that Coulomb's constant demonstrates a solid angle of 1 and the Aether unit demonstrates a solid angle of $16\pi^2$.[35] This also reflects when viewing the electromagnetic and electrostatic constants within the cgs system of units:

$$k_C = 1 \tag{4.12}$$

$$A_u = 16\pi^2 \tag{4.13}$$

As seen in equation 4.14, the Aether is composed of three dimensions of length orthogonal to two dimensions of frequency.

$$A_u = \frac{m_a \cdot \lambda_C^{\,3} \cdot F_q^{\,2}}{e_a^{\,2}} \tag{4.14}$$

The three dimensions of length are the two dimensions of length coincident to the surface of the double loxodrome and the one dimension of length between Aether units. The two dimensions of frequency are coincident to the two spheres and produce the unit of resonance. Frequency squared, according to Classical physics, is equal to resonance.

$$F^2 = \frac{1}{4\pi^2 \cdot L \cdot C} \tag{4.15}$$

Classical physics chooses to view resonant frequency as the square root of resonance. However, we can predict that the direct measurement of resonance would eliminate the need for Fourier transforms, as the data would already be in the correct dimensional form.

Notice that there are five spatial-temporal dimensions to the Aether. There are the three dimensions of length appearing as a volume, and there are the two dimensions of frequency, appearing as resonance. Therefore, the Aether unit actually exists as five-dimensional space-resonance, as opposed to four-dimensional space-time.

Frequency is inherently a distributed dimension in that it constantly changes direction, thus producing a curve. Frequency squared, or resonance, is two orthogonal curves, which can

[33] Ibid *Secrets of the Aether*, p. 38
[34] Ibid *Secrets of the Aether*, pp. 103, 131
[35] Ibid *Secrets of the Aether*, pp. 130-132

resolve to a three dimensional curved surface. This three dimensional curved surface does not involve length dimensions, but it contributes to the curved structure of the double loxodrome. Put simply, resonance is the cause of curvature in space-time. The double sphere of resonance appears in the Aether in conjunction with its 2-spin nature.[36]

Remember, the mass associated with the Gforce is reciprocating inertia. The Gforce gives rise to both the double loxodrome structure and the resonance by acting upon the quantum dimensions of length squared per Aether strong charge.

$$A_u = Gforce \frac{\lambda_C^{\,2}}{e_a^{\,2}} \tag{4.16}$$

The resonance occurs to the direction of time. There is a forward and backward direction of time, with which the reciprocating inertia of the Gforce is oscillating.

The Aether unit is composed of four discrete spin positions. There are the two positive spin positions (positron and proton) and the two negative spin positions (electron and anti-proton). The electron and proton are both left hand spin and the positron and anti-proton are right hand spin. This agrees with violation of spin parity theory advanced by Tsung Dao Lee and Chen Ning Yang.[37] These Aether spin positions have no inherent physical matter in them, but provide the space-resonance in which subatomic particles can exist.

Summing up quantum frequency, there are three axes. The first axis of quantum frequency is that of forward and backward time. The second axis of quantum frequency is that of right and left hand spin. These first two axes of quantum frequency are dynamic. The third axis of quantum frequency is static, and is that of positive and negative electrostatic charge.

5. Geometry of Aether

Our perception of space-time arises from the quantum Aether unit, which is a quantum, rotating magnetic field. The Aether unit constructs from the Gforce acting on the dimensions of area per strong charge. The Gforce may have arisen from a more primary cause. The strong charge arose from a split in the singularity. However, neither the origin of the Gforce nor the mechanics behind the split in the singularity are suitable material for this paper. For now, we must establish the foundation of this new physics from the mechanics of physical existence.

The Gforce is Aether mass, which is accelerating, and decelerating. As the inertia of the Aether cycles toward positive and then toward negative, it speeds up and then slows down in each direction of resonance. The Gforce is equal to:

$$Gforce = m_a \cdot \lambda_C \cdot F_q^{\,2} = 1.210 \times 10^{44}\, newton \tag{5.1}$$

The Gforce gives rise to the Aether by acting on surface per strong charge, named the “stroke” of the Aether.

$$strk_a = \frac{\lambda_C^{\,2}}{e_a^{\,2}} = 1.172 \times 10^{-32}\, \frac{m^2}{coul^2} \tag{5.2}$$

As previously mentioned, the Universe constructs of three essential qualities: force, environment, and matter. The Aether unit is then equal in terms of *force* to:

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[36] Ibid *Secrets of the Aether*, p. 33

[37] C. N. Yang, *Science, New Series, Vol. 127, No. 3298,* (Mar. 14, 1958), pp. 565-569

$$A_u = Gforce \cdot strk_a = 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \tag{5.3}$$

The Aether unit is the *environment* in which matter exists and is also equal to Coulomb's constant times $16\pi^2$:

$$A_u = 16\pi^2 \cdot k_C \tag{5.4}$$

The Aether also expresses in terms of matter. We will give the specific case of the electron, but it also expresses in terms of the proton and neutron as well.

$$A_u = \frac{m_e \cdot {\lambda_C}^3 \cdot {F_q}^2}{{e_{emax}}^2} \tag{5.5}$$

Essentially, the Universe exists within a rotating magnetic field. To understand the quantum, macro, or cosmic levels of existence would seem to require a thorough understanding of the rotating magnetic field. As such, the APM strongly supports the Plasma Cosmology, first proposed by Hannes Alfvén.[38]

The Coulomb constant further constructs of four constants, the speed of light, the conductance of the Aether, the permeability of the Aether, and the permittivity of the Aether.

$$c = 2.998 \times 10^8 \frac{m}{sec} \tag{5.6}$$

$$\mu_0 = 1.257 \times 10^{-6} \frac{kg \cdot m}{coul^2} \tag{5.7}$$

$$\varepsilon_0 = 8.854 \times 10^{-12} \frac{\sec^2 \cdot coul^2}{kg \cdot m^3} \tag{5.8}$$

Let us, for now, define the important conductance constant of the Aether as:

$$Cd = 2.112 \times 10^{-4} siemens \tag{5.9}$$

The relationship of Coulomb's constant to the above constants is:

$$k_C = c \cdot Cd \frac{\mu_0}{\varepsilon_0} \tag{5.10}$$

a. Aether Dipoles

The angular momentum of the electron is Planck's constant (h). We can notate the angular momenta of the proton and neutron as h_p and h_n, respectively. Then let us assume the structure of the proton and neutron angular momentum follows the same structure as for the electron:

$$h = m_e \cdot {\lambda_C}^2 \cdot F_q \tag{5.11}$$

$$h_p = m_p \cdot {\lambda_C}^2 \cdot F_q \tag{5.12}$$

$$h_n = m_n \cdot {\lambda_C}^2 \cdot F_q \tag{5.13}$$

As Albert Carmen hypothesized,[8] the quantum Aether unit has a dipole structure. We can show that there are three dipoles: the electromagnetic, electrostatic, and gravitational. In figure 3 are three diagrams depicting the Aether unit and its dipoles.

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[38] Hannes Alfvén. *Worlds-Antiworlds: Antimatter in Cosmology* (W H Freeman & Co, 1966) ISBN: 0716703173

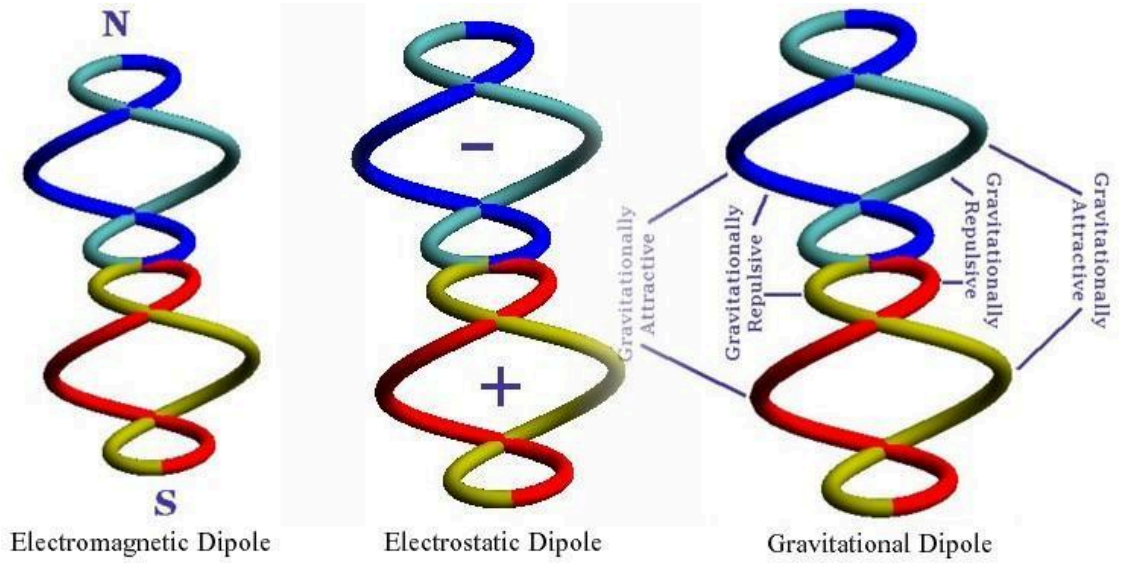

Figure 3 – Dipole Structures

The electromagnetic dipole applies to the electromagnetic (strong) charge. The strong charge value is equal to the conductance of the Aether times the angular momentum of the subatomic particle:

$$e_{emax}{}^2 = h \cdot Cd \tag{5.14}$$

$$e_{pmax}{}^2 = h_p \cdot Cd \tag{5.15}$$

$$e_{nmax}{}^2 = h_n \cdot Cd \tag{5.16}$$

The electrostatic dipole donates from the Aether's electrostatic quantum frequency dimension and is simply e^2 . The electrostatic charge arose from the split in the singularity, but for now, let us hypothesize that electrostatic charge is a fundamental, quantum frequency.

The gravitational dipoles are due to the spin parity of the subatomic particle angular momentum. Angular momenta with similar spin parity are gravitationally attractive and opposite spin parities are gravitationally repulsive. Therefore, matter is gravitationally repulsive to anti-matter.

6. Gravitational Repulsion

In the APM, the neutron quantifies as a bound electron and proton, resulting in a neutral electrostatic charge.[39] Nevertheless, when the neutron decays, we see that the electron and proton retained their electrostatic charges. Similarly, the angular momentum of the photon defines as the mass of an electron equally divided between the electron and positron spin positions within the Aether unit.[40] In the APM, the photon quantifies as the total angular momentum times the speed of light.

$$phtn = h \cdot c \tag{6.1}$$

Since the photon has the total mass equal to one electron, but the mass divides equally as matter and antimatter, the masses nullify each other gravitationally, therefore giving the appearance of a massless photon. Nevertheless, when an atom absorbs photons, the angular momenta of the photons can combine and produce individual electrons and positrons with net mass. These phenomena are recognized as the photoelectric effect, Compton effect, and pair production.

[39] Ibid *Secrets of the Aether*, pp. 164-168
[40] Ibid *Secrets of the Aether*, pp. 171-173

~~A device exists, which demonstrates how absorbed photons can emit electrons and positrons. We call the device a Crooke's radiometer. As photons are absorbed, electrons emit from the dark side of the vane and positrons release from the reflective side of the vane. Charge does not accumulate in the bulb due to the annihilation of matter and antimatter. Before the matter and antimatter annihilate, the emitted electrons and positrons impart force to the vanes. The annihilation of the electron and positron creates more photons. Some of the resulting photons return to the vanes to repeat the process.~~ [41] The standard explanation of the heated molecules does not substantiate with an increase in bulb temperature. Rapid heating and cooling of the air molecules adjacent to the vanes is implausible as an explanation for the rapid rotation achieved with bright sunlight.

Thus, the relationship of the photon acting on the surface of the vanes is equal to:

$$\frac{phtn}{\lambda_C{}^2} = forc \tag{6.2}$$

In equation 6.2, phtn and forc are quantum measurements units as defined by the Aether Physics Model. The unit of a true quantum photon is phtn and quantum measurement unit of force is forc. The unit of forc is equal to .034 newton.

The APM includes a complete new system of quantum measurement units. All of the quantum measurement units are expressed as a four letter abbreviation, except where quantum measurement units are already defined (*h* is the quantum measurement unit of angular momentum, and *c* is the quantum measurement unit of velocity).

7. Charges, Electromagnetic and Electrostatic Charges

As indicated in the definition of quantum charge, there are two distinct manifestations of charge. The empirical elementary charge defines the APM quantum of electrostatic charge.

The electromagnetic charge, also called the strong charge, as it mediates the strong force, is derived from the angular momentum of the subatomic particle times the conductance of the Aether. Based upon the quantum measurement analysis that the quantum of action of the electron, Planck's constant, is equal to:

$$h = m_e \cdot \lambda_C \cdot c \tag{7.1}$$

let us define the angular momenta of all the subatomic particles according to equations 5.11 through 5.13.

As equations 5.4 and 5.10 show, the structure of the Aether unit in terms of Coulomb's electrostatic constant, hypothesizes to construct from the speed of light, Aether conductance, Aether permeability, and Aether permittivity. We have assumed that equality 5.9 represents the conductance constant of the Aether.

Therefore, we can quantify electromagnetic charge as being equal to the angular momentum of the subatomic particle times the conductance constant of the Aether. Each subatomic particle

[41] The assertion of positron annihilation as a driving mechanism for the Crooke's radiometer was proven false in an experiment performed by Dr. Lester Hulett and David Thomson. Dr. Hulett tested both a Geiger-Mueler counter and a NaI(Tl) detector with a 22Na sample and then attempted to measure positron annihilation gamma rays from a radiometer using the detectors. There was no indication of positron annihilation even when the radiometer was powered by a high intensity light source.

then has a unique, but constant electromagnetic charge, which is directly proportional to the mass of the subatomic particle.

8. Matter

a. Quantification

Because mass is linear, it exists with just one dimension of length when associated with matter. Matter at the subatomic level exists as primary angular momentum. Primary angular momentum is equal to a circular line of mass (ligamen circulatus) spinning a velocity perpendicular to the circle. The angular momentum of the electron is the "quantum of action" also known as Planck's constant.[42]

$$h = (m_e \cdot \lambda_C) \cdot c \tag{8.1}$$

Since Planck's constant is the quantum of action, it is directly quantifying the electron. Planck's constant *is* the electron. Since the facts surrounding Planck's constant are clear, we should not arbitrarily dictate that subatomic particles could not be a unit of primary angular momentum.

Similar structures hold for the proton and neutron. Again, the mass of the subatomic particle is not separable from its angular momentum. Thus when the mass of a subatomic particle is given, we can assume its angular momentum, and likewise, when the angular momentum is given, we can assume its mass.

The electron, being a circle of mass moving a velocity, fits inside the Aether electron spin position. Angular momentum has the same construction for each subatomic particle, each filling a unique spin position. The concept of subatomic particles is somewhat different in the APM than in previous theory and so, at the suggestion of Henry Margenau, we name them *onn* (*onta* for plural).[43]

b. Dark Matter

Dark matter views as primary angular momentum, which exists outside the charge structure of the quantum Aether unit. Empirically, there is a vast sea of dark matter that does not interact with visible matter, except gravitationally. This is because primary angular momentum does not have inherent strong charge or electrostatic charge. The Aether unit imparts these two charge characteristics when primary angular momentum is absorbed.

Dark matter is absorbed into the Aether by the generation of photons via the Casimir effect.[44] The equation for calculating the attractive Casimir force between two plates of area A separated by a distance L is shown below. We choose the length and area to be the quantum distance for quantum measurement analysis purposes.

$$L = \lambda_C$$
$$A = \lambda_C{}^2$$

$$\frac{\pi \cdot h \cdot c}{480 \cdot L^4} A = 2.208 \times 10^{-4} newton \tag{8.2}$$

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[42] Max Planck, *Where Is Science Going?*, trans. James Murphy, 1st ed. (New York: Norton, 1932) p. 59.
[43] Henry Margenau, *Open Vistas Philosophical Perspectives of Modern Science* (New Haven, CT: Yale University Press, 1961) p. 118.
[44] Charles Seife, *Science, New Series, Vol. 275, No. 5297*. (Jan. 10, 1997), p. 158.

The Dutch physicist Hendrick Casimir developed the form of equation 8.2 in 1948. In 1996, Steven Lamoreaux conducted an experiment that verified the Casimir effect equation to within 5%[45].

Looking at equation 8.2, we see $h \cdot c$ in the numerator. In the Aether Physics Model, $h \cdot c$ is equal to the unit of the quantum photon. Let us modify the equation by replacing $h \cdot c$ with the phtn unit and express the force in units of forc from the APM.

$$\frac{\pi \cdot phtn \cdot A}{480 \cdot L^4} = 6.545 \times 10^{-3}\ forc \tag{8.3}$$

Because we chose the quantum distance for L and the quantum distance squared for A, the numerical terms produce an identity.

$$\frac{\pi}{480} = 6.545 \times 10^{-3} \tag{8.4}$$

The numerical π divided by 480 is too close to $1/16\pi^2$ (6.333×10^{-3}) to ignore. Could it be that the Casimir equation was calculated or inferred incorrectly? Perhaps it should be:

$$\frac{phtn \cdot A}{16\pi^2 \cdot L^4} = 6.333 \times 10^{-3}\ forc \tag{8.5}$$

A comparison of the numerical term in the original Casimir equation to the assumed $16\pi^2$ numerical term gives:

$$\frac{6.545}{6.333} = 1.033 \tag{8.6}$$

The Casimir value is just 3.3% greater than the $16\pi^2$ value. In 1996 Steven Lamoreaux empirically measured the Casimir Effect to within 5% of the Casimir equation. Therefore, the assumed $16\pi^2$ value could be correct. Of further interest is that phtn/$16\pi^2$ is equal to the strong charge of the electron times Coulomb's constant.

$$\frac{phtn}{16\pi^2} = k_C \cdot e_{emax}{}^2 \tag{8.7}$$

We see the so-called "virtual photons" created through the Casimir effect to be the result of the strong charge of the electron acted upon by the strong force. So the Casimir equation can transpose as:

$$k_C \frac{e_{emax}{}^2 \cdot A}{L^4} = 6.333 \times 10^{-3}\ forc \tag{8.8}$$

Therefore, it appears that the Casimir effect is the result of the electron strong charge of the atoms in the metal plates affecting each other through a form of Coulomb's law. However, Lamoreaux clearly states in his paper, "There was no evidence for a $\frac{1}{a^2}$ force in any of the data…."[44] Nevertheless, even though the force is not an inverse square force, it does increase rapidly with the closer distances, as he writes, "The Casimir force is nonlinear and increases

[45] Lamoreaux, Steven K., *Demonstration of the Casimir Force in the 0.6 to 6 mm Range* (Phys Rev Let, Vol 78, Num 1, 1996)

rapidly at distances less than 0.5 μm." This is entirely consistent with the strong force law as it increases according to the inverse square law, but at a rate $16\pi^2$ times sharper than the electrostatic force.

Taking the area and lengths to be the quantum length, the adjusted Casimir equation transposes and simplifies as the APM strong force equation for the electron:

$$A_u \frac{e_{emax} \cdot e_{emax}}{\lambda_C{}^2} = forc \tag{8.9}$$

Therefore, the success of the Casimir effect experiments is evidence of the existence of the strong charge of the electron, as well as the electron strong force law. It also provides evidence to support the assertion that the photon is equal to the angular momentum of the electron times the speed of light.

9. Interaction of Forces

Having quantified the electrostatic and strong charges, we can quantify the weak interaction.

The proportion of electrostatic charge to strong charge is equal to 8π times the fine structure of the onn.

$$\frac{e^2}{e_{emax}{}^2} = 8\pi\alpha \tag{9.1}$$

a. Fine Structure of the Proton and Neutron

The Standard Model of physics does not adequately recognize the unique fine structures of the proton and neutron. However, we can calculate the proton fine structure and neutron fine structure based on the assumption that all onta share a similar construction.

Based upon the structure of equation 9.1, we can calculate the fine structures of the proton and neutron.

$$\frac{e^2}{e_{pmax}{}^2 \cdot 8\pi} = 3.974 \times 10^{-6} \tag{9.2}$$

$$\frac{e^2}{e_{nmax}{}^2 \cdot 8\pi} = 3.969 \times 10^{-6} \tag{9.3}$$

Because each onn has its own strong charge, it will also have its own "weak interaction" constant. Designating *p* and *n* as the fine structure constants of the proton and neutron, respectively, we can write:

$$\frac{e^2}{e_{pmax}{}^2} = 8\pi p \tag{9.4}$$

$$\frac{e^2}{e_{nmax}{}^2} = 8\pi n \tag{9.5}$$

Equations 9.1, 9.4, and 9.5 represent the *unified charge equations* for each onn. Taken together these equations are the basis for the Unified Force Theory.

b. Charge Geometry

The unified charge equations dictate a general geometry for the onta. The concept of charge geometry is new, so we will explain how spherical electrostatic charge geometry converts to steradian, strong charge geometry.

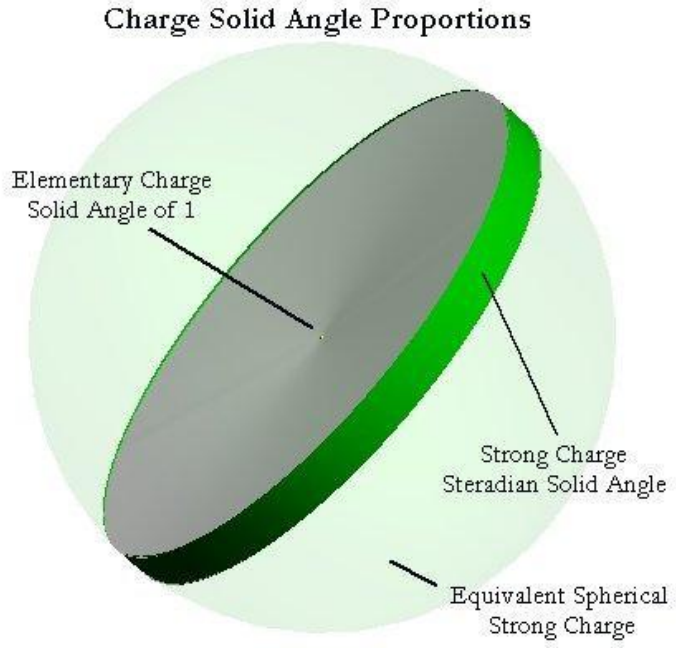

Figure 4

Figure 4 illustrates the two charges of the electron. Electrostatic charge has the solid angle of 1 (tiny yellow sphere in center of light green sphere) while the strong charge has the solid angle of a steradian (projected as the dark green band. The graphic is only for conceptualizing the solid angles; it does not represent the shape of an electron.

The strong charge has a solid angle equal to $\frac{1}{4\pi}$ of the spherical electrostatic charge. The electrostatic charge has 1-spin due to its geometrical relation to spherical Aether resonance. The strong charge has ½ spin, due to the ½ spin of the onn (subatomic particle) angular momentum. Therefore, multiplying ½ spin by 2 converts ½ spin to 1-spin. Multiplying the steradian solid angle of strong charge by 4π converts the strong charge steradian solid angle to a solid angle sphere. Therefore, the geometrical constant relating electrostatic charge to strong charge is equal to:

$$2 \cdot 4\pi = 8\pi \tag{9.6}$$

The electron shape follows the spin position shape of the quantum Aether unit.

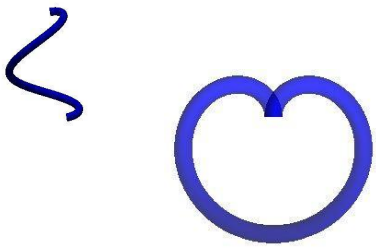

Figure 5 **Figure 6**

Due to Aether having five-dimensional space-resonance, the electron shape appears as in the loxodrome image in figure 5. However, since our human perception moves through linear time, the four-dimensional perspective of space-time applies. Hence, the electron appears to physically embodied humans, made from half spin matter, as a cardioid, as in figure 6.

10. Laws of Forces

There are three recognized forces, the gravitational, electrostatic, and strong force. The weak interaction is not a force at all, but merely a proportion of the electrostatic and strong forces. The gravitational force is directly proportional to the strong force by way of a universal mass to strong charge ratio.

$$\frac{m_e}{{e_{emax}}^2} = \frac{m_p}{{e_{pmax}}^2} = \frac{m_n}{{e_{nmax}}^2} = \frac{m_a}{{e_a}^2} = 6.508 \times 10^6 \frac{kg}{coul^2} \tag{10.1}$$

It is due to this universal proportionality of mass to strong charge that Albert Einstein incorrectly developed GR based upon gravity, when it should have based upon the relationship between electrostatic and strong charge. The electrostatic force, weak interaction, and strong force all work together. The electrostatic force law works for electrostatic charge at a relatively long distance, but not at a very close distance. In addition, the strong charge law works for electromagnetic charge at a very close distance, but not at a relatively long distance. The two forces actually trade off, depending on the distance between the charged bodies. GR should have developed around the unified charge equations. The example of the proton unified charge equation notates below with the generalized Einstein field equation:

$$e^2 = 8\pi \cdot (p \cdot {e_{pmax}}^2) \tag{10.2}$$

$$G = 8\pi \cdot T \tag{10.3}$$

a. Electrostatic Force Law (Coulomb's Law)

The Coulomb law is the law governing the force between electrostatic charges. Coulomb's experiments with the torsion balance involved spherical surfaces to maximize electrostatic potential. Coulomb claimed that the distance squared was inversely proportional to the amount of the electrostatic charges (although some scientists question whether he actually observed this[46]):

$$k_C \frac{e \cdot e}{L^2} = F \tag{10.4}$$

In expression 10.4, where k_C is Coulomb's electrostatic constant, e represents the electrostatic charge, L is the distance between the charges, and F is the resultant force. Coulomb observed that the above law does not hold when the charges become very close to each other.[47] This is because the strong charge begins to take over. However, the boundary between the electrostatic charge dominance and the electromagnetic charge dominance is gradual. We hypothesize that the balance between these two forces results in the weak interaction.

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[46] Steven Dickman, *Science, New Series, Vol. 262, No. 5133.* (Oct. 22, 1993), pp. 500-501

[47] Quoting the writings of Charles Coulomb. Morris H. Shamos, *Great Experiments in Physics: Firsthand Accounts from Galileo to Einstein* (Dover Publications Inc., New York, reprint 1987) p. 65

b. Gravitational Law

$$G\frac{M_1 \cdot M_2}{L^2} = F \tag{10.5}$$

Sir Isaac Newton developed the gravitational law as in expression 10.5. G is the Newton gravitational constant, M_1 and M_2 are two masses, L is the distance between the masses, and F is the force between the masses. Early in the study of gravity, Henry Cavendish made very accurate measurements of the value of G.[48] Information is widely available concerning the nature of the gravitational law, therefore it is not further elaborated here.

c. Strong Force Law

The strong force law was, before this paper, unknown to modern physics. According to established physics theory, the strong force is, "in physics, the force that holds particles together in the atomic nucleus and the force that holds quarks together in elementary particles."[49] There is no practical equation for calculating the strong force in previously established physics because the pi meson and gluon are not practical strong force carriers.

However, the strong force calculates in the Aether Physics Model using the electromagnetic charge, or strong charge. The strong force law is similar in structure to that of the electrostatic force law and the gravitational law. As in the case of the electrostatic law, the product of two strong charges calculates from a single dimension of each charge. Since the binding force causes the protons and neutrons to have large "small radii" and small "large radii," the onta appear spherical. Thus, the Coulomb constant is the force mediator instead of the Aether unit constant.

$$k_C \frac{e_{pmax} \cdot e_{pmax}}{L^2} = F \tag{10.6}$$

The strong force of the neutron is similarly calculated:

$$k_C \frac{e_{nmax} \cdot e_{nmax}}{L^2} = F \tag{10.7}$$

The strong force law for free protons and free neutrons likely begins by using the Aether unit constant, but graduates to using the Coulomb constant once the onta bind. This is because free protons and free neutrons are more toroidal in shape, while bound onta are spherical in shape.[50]

Since the Aether is always acting upon strong charge, whether or not there is another onn present, the strong force per onn is actually the strong force of a single onn. In other words, the Aether is acting on onta to produce force even when there is no other onn around to interact with the force. This must be so since the onta have no proximity system that can sense when another onn is nearby, and then react to it.

The total nuclear binding force is the sum of all force acting upon onta in an atomic nucleus. The total force acting upon a single neutron, even though there are no other neutrons or protons nearby is:

$$A_u \frac{e_{nmax}^{\ 2}}{\lambda_C^{\ 2}} = 1839\, forc \tag{10.8}$$

However, due to the changing of the onta radii during binding, the total strong force for an atomic nucleus of deuterium is:

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[48] "Gravitation ," *The Columbia Encyclopedia*, 6th ed.
[49] *The New Dictionary of Cultural Literacy, Third Edition* Edited by E.D. Hirsch, et al.
[50] Ibid *Secrets of the Aether*, p. 33

$$k_C \frac{{e_{pmax}}^2}{{\lambda_C}^2} + k_C \frac{{e_{nmax}}^2}{{\lambda_C}^2} = 3675\, forc = 124 newton \tag{10.9}$$

The nuclear strong force expression is then:

$$k_C \frac{Z \cdot {e_{pmax}}^2 + N \cdot {e_{nmax}}^2}{{\lambda_C}^2} = F \tag{10.10}$$

where Z is the number of protons and N is the number of neutrons in the nucleus. The nuclear strong force equation quantifies nuclear binding force. A nuclear binding energy equation that predicts the nuclear binding energy for all isotopes is within reach, although work on this equation is not complete.

d. Force Carrier Relative Strengths

In the Aether Physics Model, the force carriers are the electrostatic charge, electromagnetic charge, and mass. The so-called "weak force" is a proportion of electrostatic charge to electromagnetic charge. Since experiments express in the established systems of units, which determine the relative strengths of the forces as single-dimension charge, we will have to compare the square root of APM charges to the single-dimension charges in order to observe the relative strengths.

In terms of electrostatic charge, the proton and neutron strong charges are each nearly 100 times greater in magnitude. The electron strong charge is only 2.335 times stronger than the electrostatic charge. Established physics does not recognize the strong charge of the electron.

$$\sqrt{e^2} = 1e \tag{10.11}$$

$$\sqrt{{e_{p\max}}^2} = 100.058e \tag{10.12}$$

$$\sqrt{{e_{n\max}}^2} = 100.127e \tag{10.13}$$

$$\sqrt{{e_{emax}}^2} = 2.335e \tag{10.14}$$

Relative Strengths of the Force Carriers
Table 2

	Unified Force Theory Relative Charge Strengths	Established Relative Force Carrier Strengths
Elementary Charge	1	1
Strong Charge		
Proton	100.058	100
Neutron	100.127	100
Electron	2.335	(Strong nuclear force of electron not recognized)
Weak Interaction		
Proton	9.988×10^{-5}	10×10^{-5}
Neutron	9.975×10^{-5}	10×10^{-5}
Electron	0.183	(Weak interaction of electron not recognized)

The weak nuclear interaction calculates for the proton and neutron as:

$$8\pi p = 9.988\times10^{-5} \tag{10.15}$$

$$8\pi n = 9.975\times10^{-5} \tag{10.16}$$

Since both results are already ratios comparing the electrostatic charge to strong charge, they remain just as they are.

11. Other

There are many extensions of the Aether Physics Model presented in Secrets of the Aether[13]. Below is a sampling of the concepts developed. We also develop nuclear and electron binding force equations, a truly quantized photon, pair production, beta decay, eddy current, nuclear structure, Zero Point Energy, the quantification of why gross matter takes the forms it does, a possible quantification for the values of the proton and electron masses, consciousness, the science of complexity (closely related to taxonomy), and many other topics.

a. Quantification of Neutron

The neutron quantifies as a bound electron and proton. The Aether folds such that the electron and proton share the same spin position relative to each other.

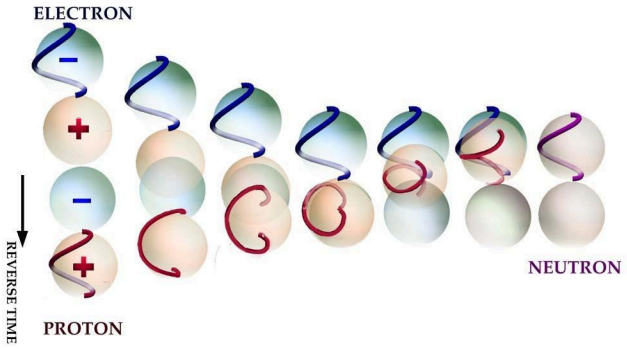

Figure 7

A cavity forms between the proton and electron that encapsulates dark matter existing between Aether units. This encapsulated dark matter becomes the neutrino. The cavity that the anti-neutrino confines to is electromagnetic in nature, due to the strong charge of the electron and proton binding. Therefore, the cavity must follow the spin position and geometry rules of strong charge, which, like all quantum geometry, describes in terms of unit radii.

The geometry of the neutrino must be toroidal ($4\pi^2$) if it exists within the Aether structure. Moreover, since the anti-neutrino couples to the electron it exists between half of the electron and proton Aether units minus half-spin $\left(\frac{4\pi^2}{2}-\frac{1}{2}\right)$. In addition, since the anti-neutrino exists between proton and electron strong charge binding, it must have steradian angle. This gives the anti-neutrino angular momentum, in terms of coupled electron angular momentum, as:

$$\frac{1}{4\pi}\left(\frac{4\pi^2}{2}-\frac{1}{2}\right)h = 1.531h \tag{11.1}$$

Simplified, we get:

$$\frac{4\pi^2-1}{8\pi}h = 1.531h \tag{11.2}$$

Equation 11.2 reflects the observed behavior of the neutrino when it releases during beta decay. In established physics, this neutrino labels as "anti-neutrino." However, the neutrino must share the same spin direction as the proton and electron, so we would correctly label it a neutrino. The anti-neutrino would exist between a bound positron and anti-proton.

Because the beta decay is due to the "weak interaction," the neutrino can violate conservation of parity. To understand this, we observe that spin from electrostatic binding is due to two onta and therefore mirrors. Spin from strong charge binding is due to two onta and mirrors. However, the spin due to the neutrino in a decay process involves only the neutrino and therefore there is only one spin parity. We also observe in equation 11.2 that 8π is the weak interaction constant.

b. Neutron Magnetic Moment

Magnetic moment is a unit that measures the influence of the Aether's electrostatic charge against the strong charge of the onn. The magnetic moment of the electron as defined by NIST[51] in SI units is:

$$\mu_e = \text{-928.476 362 x } 10^{-26}\ \text{J T}^{-1} \tag{11.3}$$

The NIST value of electron magnetic moment expresses in terms of quantum measurements as:

$$\mu_e = g_e \lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi \cdot e_{emax}{}^2} \tag{11.4}$$

where the g_e is the electron g-factor as measured in the Lamb Shift. In the electron unit of magnetic moment, the strong charge cancels out, since the electrons are acting on electrons. Nevertheless, the strong charge terms belong in the equation in order to show that electrons are acting against other onta in the other measured magnetic moment values.

The g-factor is an essential value related to the magnetic moment of the onta, as it corrects for the precession of the onn. The NIST value[50] for the proton magnetic moment in SI units is:

$$\mu_p = \text{ 1.410 606 633 x } 10^{-26}\ \text{J T}^{-1} \tag{11.5}$$

The NIST value of proton magnetic moment expresses in terms of quantum measurements as:

$$\mu_p = g_p \lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi \cdot e_{pmax}{}^2} \tag{11.6}$$

where the proton g-factor (g_p) is 5.58569 as listed on NIST. The NIST value[50] for the neutron magnetic moment notates in SI units as:

$$\mu_n = \text{-0.966 236 40 x } 10^{-26}\ \text{J T}^{-1} \tag{11.7}$$

and can be expressed in quantum measurements as:

$$\mu_n = g_{n-nist} \lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi e_{pmax}{}^2} \tag{11.8}$$

where g_{n-nist} , the g-factor of the neutron, is -3.82608545 as defined by NIST[50]. Notice that the equation balances by use of the strong charge of the proton instead of the neutron. This is highly unlikely. It appears that the magnetic moment data for the neutron was misread, or the value for

[51] National Institute of Standards and Technology, *The NIST Reference on Constants, Units, and Uncertainty,* (http://physics.nist.gov/cuu/Constants/index.html)

neutron g-factor was simply miscalculated. That the neutron magnetic moment depends on the proton strong charge, and hence on the proton mass, seems impossible.

The above analysis also shows rather conclusively that all charge should distribute, including the elementary charge. Based on Charles Coulomb's observation that all charge must distribute in order for the force laws to work, and for consistency with the Aether Physics Model, we transpose the magnetic moment electrostatic charge dimensions. The electron magnetic moment in the APM system is:

$$emag = g_e \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi \cdot e_{emax}{}^2} \tag{11.9}$$

The proton magnetic moment in the APM system is:

$$pmag = g_p \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi e_{pmax}{}^2} \tag{11.10}$$

And based on the NIST values for the neutron magnetic moment, the neutron magnetic moment would be:

$$nmag = g_{n-nist} \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi e_{pmax}{}^2} \tag{11.11}$$

However, it is highly unlikely that nature has given a magnetic moment to the neutron, due to the strong charge of the proton. So assuming the accuracy of the magnetic moment, correcting the quantum measurements changes the g-factor for the neutron:

$$nmag = g_n \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi e_{nmax}{}^2} \tag{11.12}$$

The g-factor for the neutron must be -3.831359 if the measurement is accurate. This compares to the NIST neutron g-factor of -3.826085.

From the expressions of magnetic moment in the Aether Physics Model, it appears that magnetic moment physically manifests by the interaction of the electrostatic and electromagnetic charges within each onn. It is further apparent that the electron plays a key role in causing magnetic moment for each of the onta.

c. g-factors

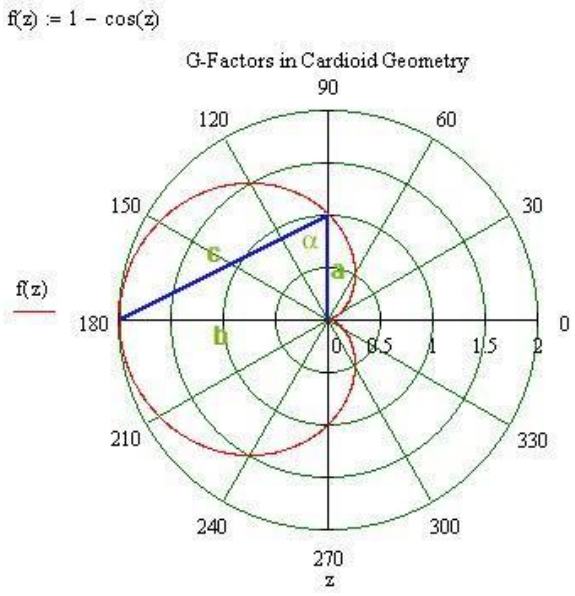

Figure 8

In figure 8, triangle side *b* is a unit length, equal to the radius of the sphere on which the cardioid path rests. As can be seen, side *a* is half the unit length and side c is the hypotenuse of right triangle $\triangle abc$. $\triangle abc$ is a special form of right triangle where side *b* is twice side *a*, which we can call a Phi triangle (it is not a Golden triangle).

The Phi triangle is so named because in a unit triangle where *b* = 1, then

$$c + a = Phi \tag{11.13}$$

and

$$c - a = phi \tag{11.14}$$

where Phi is the golden ratio and phi is its inverse. This is easily proved by substituting the Pythagorean expression for *c* and *a* in terms of unit length *b*:

$$\sqrt{b^2 + \left(\frac{b}{2}\right)^2} + \frac{b}{2} = Phi \tag{11.15}$$

Since *b* = 1, we get:

$$\sqrt{1 + \frac{1}{4}} + \frac{1}{2} = Phi \tag{11.16}$$

$$1.118 + .5 = 1.618 = Phi \tag{11.17}$$

The value for phi similarly reduces to:

$$1.118 - .5 = 0.618 = phi \tag{11.18}$$

Since subatomic particles are their angular momentum, the g-factor is equal to the spiraling LC (ligamen circulatus) spinning through the Aether unit and quantifies as:

$$g_e = \frac{2}{\sin(Phi)} \tag{11.19}$$

And the proton g-factor quantifies as:

$$g_p = \frac{2Phi}{\sin(phi)} \tag{11.20}$$

As shown in the quantification of the neutron, it is a composite particle consisting of an electron bound to a proton. A possible solution for the neutron g-factor is:

$$g_n = 2\sin(1)\frac{\sin(phi)}{\left[Phi\left(-\sin(Phi)+\sin\left(Phi\right)\cdot\cos\left(Phi\right)^2+\sin\left(1\right)-\sin\left(1\right)\cdot\cos\left(Phi\right)^2\right)\right]} = -3.837$$

(11.21)

This is in agreement with established physics measurements and observations.[52] Note, however, that the APM calculated electron and proton g-factors only agree with presently established electron and proton g-factors to the thousandths, while the established values presume accurate to a much greater magnitude. In addition, the electron g-factor quantifies with a negative value, supposedly attributed to the negative charge of the electron. However, the neutron g-factor also has a negative value. Could the same logic apply to both the electron and neutron, when the neutron has neutral charge? The logic does not support a negative electron g-factor. For this reason, the electron g-factor has a positive value in the APM.

12. Conclusion

The Aether Physics Model is mathematically viable and bases on the same empirical data as established physics. Although we present only a small portion of the APM here, there is a sufficient case for the scientific community to take a closer look and to verify or disprove the theory. The promise of a Unified Force Theory is motivation enough, but the model also proposes to answer many more unanswered questions about the nature of the Universe from the quantum level through the cosmic level.

The APM has the potential to unite all of science into one extensive theory, thus providing a true Theory of Everything. No other theory has ever come close to matching the scope and promise of the Aether Physics Model.

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[52] F. J. Belinfante, *Science, New Series, Vol. 118, No. 3067*. (Oct. 9, 1953), p. 397.