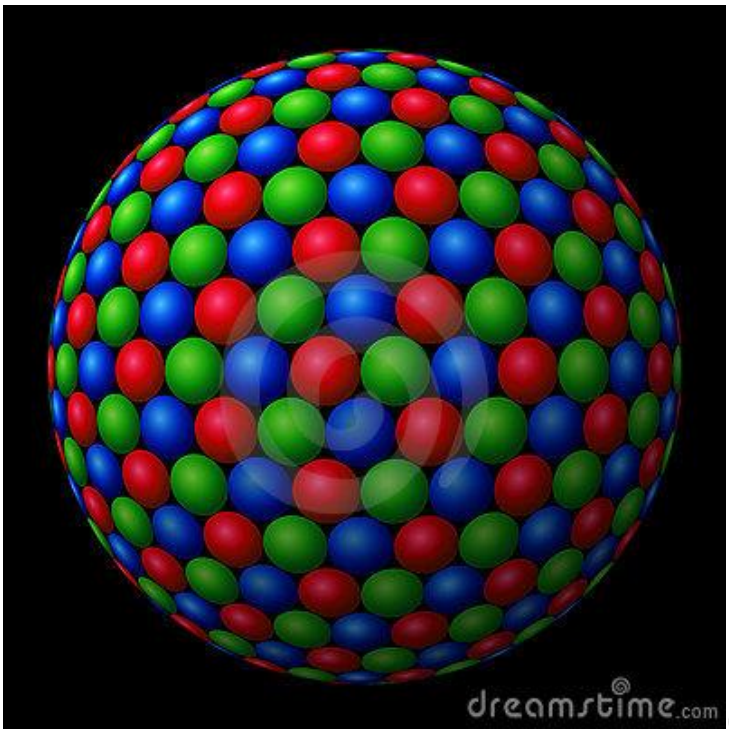
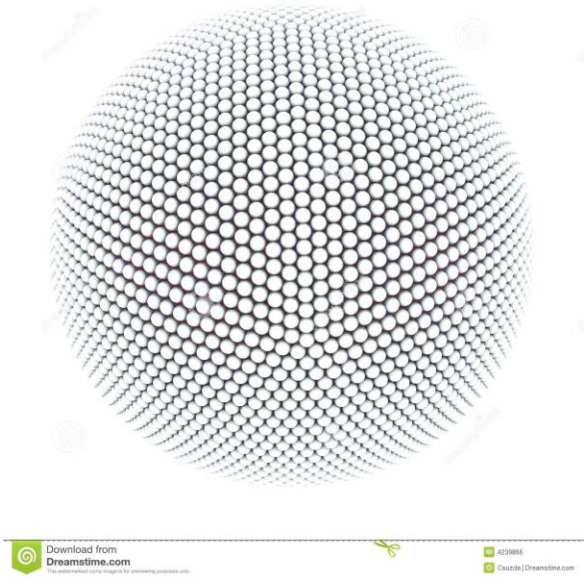
I Abstract

This paper shows that the force of charge and gravity can be modeled from a sphere, indicating granulated spacetime or granular spacetime. ***Planck Spinning Spheres,*** (**Planck)** packed in a cuboctahedron structure, where many spheres are combined to produce the fabric of space. The Planck would be made of smaller Spheres called ***Kaluza Spinning Spheres (Kaluza)***. See images below for an example of a sphere made of spheres.



(17)



The calculations, herein, imply discrete spacetime. **Virtual Angular Momentum** is transferred to the ***Continuous Discrete Spacetime*** that is activated by the appropriate environment. This discrete Virtual Angular Momentum is modeled by equations developed herein. The modeling equations between charge and gravity use the same spherical model. This model: proposes a new definition of the fine structure constant in section IV; proposes a proton charge radius in section V; gives meaning to some Planck dimensions in section VI; predictions can be made about approximate values for the age of the universe and or the size of the ***Hubble Sphere Universe*** (**Hubble)** in section VII; Proposes ideas that may be used to help prove the idea of "Discrete Calculations of Charge and Gravity with Planck and Kaluza and a cuboctahedron, vector equilibrium, sub-structure of the universe and relate to wrapped up dimensions in section VIII; The equations will explore the mystery of the constants of nature as did John D. Barrow.(5) Due to these predictions, that may be validated and/or refined in the future, this model may deserve further investigation. These calculations bring back the Dirac's large number hypothesis (15) and relationships similar to the Koide formula. (16) Below are summarized the simplified equations modeling the Planck for charge and gravity constructed in section II and III.

Charge

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

Gravity

$$N = 2\pi^3 hc / G(Mn)^2 \qquad [3]$$

II Discrete calculation of elementary charge

In this section we develop a potential discrete method for calculating elementary charge from Planck's constant and the masses of the proton, neutron, and electron. The equation developed is the following.

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

where

Sum Angular Momentum Vector

$$T^2 = (\frac{Mp-Me}{Mn})^2 + (\frac{Mn}{Mn})^2 + (\frac{Mn}{Mn})^2 \qquad [2.1]$$

Compton Radius of Neutron

$$r = \frac{h}{cMn} \qquad [2.2]$$

Compton Frequency of Neutron

$$f = \frac{Mnc^2}{h} \qquad [2.3]$$

where q is elementary charge
where pi or π is pi or π
where h is plancks constant
where c is speed of light
where Me is the mass of the electron
where Mn is the mass of the neutron
where Mp is the mass of the proton
and T is defined as above

where ε is dielectric permittivity

To start we use the traditional equation of force between two charges.

$$Fe = \frac{q^2}{4\pi\varepsilon r^2} \quad [2.4]$$

Let us propose that charge can be calculated by summing the combined vector of the sum of forces Fx, Fy, and Fz, for a hollow spinning sphere rotating on 3 perpendicular axes. This leads to the following equation.

$$\sum F_x + F_y + F_z = \frac{q^2}{4\pi\varepsilon r^2} \quad [2.5]$$

We currently do not know what the forces are in each direction, but this section builds a case for the approximate forces, or rather it is broken down into a sum angular momentum multiplied by a frequency, in each x, y, and z direction. To reduce complexity, the force will be simplified by using the following equation which will be calculated at a later point. This equation is basically a proposal that most of the force from elementary charge is a result of 3 perpendicular forces that are related to the masses of the proton, electron, and neutron. Since the electron, proton, and neutron all contain elementary charge within the quarks or electron, and these charges are all 1/3 or 2/3 or 3/3 of elementary charge within the quarks or electron, it is not unlikely that some relationship of this sort is possible. It should be noted that, in this situation, force can be modeled as a rate of angular momentum since there are two frequencies in the equation for force. One could be the rate of spinning, the other the rate of emission of angular momentum carriers.

Sum Angular Momentum Vector

$$T^2 = (\frac{Mp - Me}{Mn})^2 + (\frac{Mn}{Mn})^2 + (\frac{Mn}{Mn})^2] \quad [2.1]$$

This relationship is an unexplained natural relationship, similar to the Koide relationship. (16)

The equation then becomes;

$$TF = \frac{q^2}{4\pi\varepsilon r^2} \quad [2.6]$$

It is known that F=ma, substituting yields;

$$Tma = \frac{q^2}{4\pi\varepsilon r^2} \quad [2.7]$$

What is the acceleration of, A square, a circle, a sphere, a spherical shell? A spherical shell works for both force of charge and force of gravity. When attempts to pack spheres concentrically around other spheres a certain amount of defect space is made in relation to perfect packing. It can be shown that this amount of defect space is equal to the outer layer of spheres. So this is justification for using a hollow sphere when the actual geometry is not an actual hollow sphere. So the equation for acceleration of a spherical shell is as follows.

The distribution of these discontinuities can be summed to be a spherical shell. This is shown in the paper "The Holographic Principle and How can the Particles and Universe be Modeled as a Hollow Sphere"(18)

.

$$a = \frac{2}{3} R(2\pi)^2 f^2 \qquad [2.8]$$

Substituting for "a" yields;

$$Tm\frac{2}{3} r(2\pi)^2 f^2 = \frac{q^2}{4\pi\varepsilon r^2} \qquad [2.9]$$

Propose that the mass on the left hand side of the equation "m" is the mass of the electron "Me"

$$TMe\frac{2}{3} r(2\pi)^2 f^2 = \frac{q^2}{4\pi\varepsilon r^2} \qquad [2.10]$$

Propose that all masses and charges are divided by 3. Thus the equation becomes

$$TMe2r(2\pi)^2 f^2 = \frac{q^2}{4\pi\varepsilon r^2} \quad . \qquad [2.11]$$

Propose that radii are different, depending which force they are experiencing. The rational for this is explained later in the discussion. It has to do with how the discontinuities are more concentrated at the center and the concentration of defects decreases inversely proportional to the radius. A radius of 10 would have approximately 20 percent defects, but a radius of 20 has only about 10 percent defects. To compensate for a large sphere the radii "r" are each divided by 4. Thus the equation becomes;

$$\frac{T}{2} Mer\pi^2 f^2 = \frac{q^2}{4\pi\varepsilon r^2} \qquad [2.12]$$

.

Which simplifies to

$$q^2 = T\pi^3 hc\varepsilon \frac{Me}{2Mn}$$

If we multiply the equation by the following Lorentz relativity correction factor as follows we obtain

$$\beta = \frac{1}{\sqrt{1-(\frac{\pi Me}{3*3Mn})^2}} \qquad [2.13]$$

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

Substituting the values from the appendix

$$\boldsymbol{q = 1.602176622 * 10^{-19} coulombs.}$$

This number for *q* is within .999999999 of the 2014 Codata value of
1.602 176 6208(98) x 10⁻¹⁹ C.

The Lorentz correction factor, equation 2.13 is an empirical adjustment that the author developed, while realizing that mass and velocity are related to a mass ratio of a particle to the mass of the neutron related to a ratio of the velocity squared to the speed of light squared and dimensional factors of a likely geometrically packed cuboctahedron space.

Section III Modeling Elementary Gravity

In this section we work on developing the following equation.

$$N = 2\pi^3 hc / G(Mn)^2 \qquad [3]$$

Compton Radius of Neutron $$r = \frac{h}{cMn} \qquad [3.1]$$

Compton Frequency of Neutron $$f = \frac{Mnc^2}{h} \qquad [3.2]$$

where pi or π is pi or π
where h is plancks constant
where c is speed of light
where Me is the mass of the electron
where Mn is the mass of the neutron
where Mp is the mass of the proton
and G is the gravitational constant

"N" is a number of Kaluza discontinuities within a Planck**.** It is proposed that mass, forces, charge etc., comes from imperfect packing of spheres. If one has a basket of spheres normally if they were perfectly packed it could result in a cuboctahedron structure. However if there was a force that pulled all of these spheres toward a center then the spheres would also try to pack in concentric shells. It can be shown mathematically that the amount of defects that would occur would be equal to the amount of spheres on the final layer of packing and the effective radius for calculating momentum is 0.25r. So a sphere with radius 100 spheres would have total defects of 4*pi*100^2. Therefore, if the universe or a particle or deeper dimension yet, is actually a packing of spheres there would be two opposing packing techniques. One to pack everything perfectly in a cuboctahedron structure, the other to pack spheres concentrically in shells. These two different opposing packing techniques would give rise to forces, mass etc. This paper intends to show how an equation could be formed to model gravity and charge using the mass of the neutron, planck's constant, gravitational constant, and the speed of light. This section works on gravity.

We start with the traditional equation for the force of gravity and then modify it to obtain an elementary gravity.

$$F = \frac{GM1M2}{r^2} \qquad [3.3]$$

A number of questions arise.

1. Is not F=ma? Is there some mass times acceleration that is equal to the gravitational force? If one breaks down gravity into one tiny object that carries force is there a point at which that mass times acceleration, or more accurately quantum gravitational

momentum (graviton) times rate of graviton emission, that is equal to the traditional equation for gravitational force. Is the graviton a virtual momentum or virtual force?

2. Is there some elementary mass, just like there is an elementary charge where, at some discrete point, M1 and M2 would have a smallest value and are directly related to distance "r". Therefore the equation became modified to the following. In this model, the mass of the neutron, is proposed to be the mass "M".

$$ma = \frac{GMM}{r^2} \qquad [3.4]$$

One wonders if the particles we experience are made of much smaller particles. One sees evidence of this possibility with Planck length. In this model this smaller mass is evaluated as the mass of the neutron "M" over some number "N".

$$\frac{M}{N}a = \frac{GMM}{r^2} \qquad [3.5]$$

.

What is the acceleration of, A square, a circle, a sphere, a spherical shell? A spherical shell works for both force of charge and force of gravity. When attempts to pack spheres concentrically around other spheres a certain amount of defect space is made in relation to perfect packing. It can be shown that this amount of defect space is equal to the outer layer of spheres. So this is justification for using a hollow sphere when the actual geometry is not an actual hollow sphere. So the equation for acceleration of a spherical shell is as follows.

The distribution of these discontinuities can be summed to be a spherical shell. This is shown in the paper "The Holographic Principle and How can the Particles and Universe be Modeled as a Hollow Sphere"(18)

$$a = \frac{2}{3}r(2\pi)^2 f^2. \qquad [3.6]$$

Then the equation evolved more to

$$\frac{M}{N}\frac{2}{3}r(2\pi)^2 f^2 = \frac{GMM}{r^2} \qquad [3.7]$$

where r is a radius and f is frequency.

Then the equation evolved more to

$$\frac{M}{N}\frac{2}{3}r(2\pi)^2 f^2 = \frac{GMM}{4\pi r^2} \qquad [3.8]$$

Propose that all masses and charges are divided by 3. Thus the equation becomes;

$$\frac{M}{N}2r(2\pi)^2 f^2 = \frac{GMM}{4\pi r^2} \qquad [3.9]$$

Propose that radii are different, depending which force they are experiencing. The rational for this is explained later in the discussion. It has to do with how the discontinuities are more concentrated at the center and the concentration of defects decreases inversely proportional to the radius. A radius of 10 would have approximately 20 percent defects, but a radius of 20 has only about 20 percent defects. To compensate for a large sphere the radii "r" are each divided by 4. Thus the equation becomes;

$$\frac{M}{N}2r(\pi)^2 f^2 = \frac{GMM}{\pi r^2} \qquad [3.10]$$

This simplifies

$$N = 2\pi^3 hc / G(Mn)^2 \qquad [3]$$

Where substituting values from the appendix gives a value of N.

$$\boldsymbol{N = 6.57920\,(31) * 10^{40}}$$

It is proposed that the sphere described, the Planck, is composed of Kaluza. The number N would then be the number of Kaluza on the outside layer of the Planck. In section V and VI it is shown that the Planck and Kaluza give meaning to some of the Planck dimensions. Where N is the number of Kaluza within the Planck. This number "N" is clearly reminiscent of the Dirac's large number hypothesis. (15)

IV Fine structure constant

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!(2,6)

The equation can be set equal to 1 and separated into the fine-structure constant and the remaining variables the following equation is made. The variables for, f and r, are also substituted**.**

$$\frac{\dfrac{e^2}{hc2\grave{o}}}{T\pi^3\dfrac{Me}{4Mn}} = 1 \qquad [4]$$

Fine-structure constant= $\sigma = \beta T\pi^3 \dfrac{Me}{4Mn}$ where [4.1]

Where

$$\beta = \frac{1}{\sqrt{1-(\frac{\pi Me}{3*3Mn})^2}} \qquad [2.13]$$

and

$$T^2 = (\frac{Mp-Me}{Mn})^2 + (\frac{Mn}{Mn})^2 + (\frac{Mn}{Mn})^2 \qquad [2.1]$$

The Lorentz correction factor, equation 2.13 is an empirical adjustment that the author developed, while realizing that mass and velocity are related to a mass ratio of a particle to the mass of the neutron related to a ratio of the velocity squared to the speed of light squared and dimensional factors of a likely geometrically packed cuboctahedron space.

The values of the inverse fine structure constant for each codata publications year.

Codata year difference	Inverse Fine Structure Constant Equation 4	Inverse Fine Structure Constant Codata(2)	Number of sigma to Codata value
1969	137.03280 (127)	137.03608(20)	16.55
1973	137.03593(99)	137.03612(15)	1.27
1986	1.370359971(31)	137.0359895(61)	1.25
1998	1.3703599866(31)	137.03599976(50)	2.2
2002	1.3703599900(10)	137.03599911(46)	0.24
2006	1.37035999077(84)	137.035999679(94)	6.4
2010	1.37035999071(81)	137.035999074(44)	0.07
2014	1.37035999146(69)	137.035999139(31)	0.23

The 1969 codata year was 16.55 sigma off, which was the direct result of the ratios of the mass of the electron to the neutron not being known well enough.

The 2006 codata year was off by 6.4 sigma, which was due to a calculation error of an important parameter in the calculation of the fine structure.

It is remarkable that equation 4.1 does such a good job of predicting the fine structure constant over so many years and when it didn't it indicated an error in the data.

V Proton Charge Radius

It is proposed that the Proton Charge Radius is 2/3 the Compton Neutron Radius which is: r = 0.8797272708*10^{-15} m is compared to the measured proton charge radius of: R_p = 0.8775(51)*10^{-15} m. The proposed reason for the difference between the Compton neutron radius and the charge radius is that elementary charge could actually be the sum of many momenta from the Kaluza Spinning Sphere dislocations within the Planck Sphere in a similar way to the way the force of gravity extends all the way to the edge of the universe.

VI Calculation of Planck Dimensions

The spinning sphere model can be used to calculate various Planck Dimensions. Planck Area and Planck Mass are specifically discussed here.

$$\underline{\boldsymbol{\pi}} l_{\mathrm{P}}^2 = \frac{\hbar G}{c^3}$$

$$\textbf{Planck Area} = \mathbf{2.61210 * 10^{-70} m^2}$$

As was calculated in section III the Planck Spinning Sphere has a radius of $1.319590906 * 10^{-15}$ meters. The Plancksphere was proposed to be covered with $N = 6.57943 * 10^{40}$ Kaluza spheres. It is here proposed, that the surface area of the Kaluza sphere is the Planck area with dimensional factors.

$$\frac{\boldsymbol{4\pi^2\left(1.319590906 * 10^{-15}\right)^2}}{\boldsymbol{4(6.57943 * 10^{40})}} = \boldsymbol{2.61210 * 10^{-70} m^2}$$

It is seen that the two values match exactly.

Calculation of Planck Mass

Planck mass is defined as follows

$$m_{\mathrm{P}} = \sqrt{\frac{\hbar c}{G}}$$

Non-reduced Planck Mass = $5.4557 * 10^{-8}$ Kg

which is using Planck's constant instead of Planck's constant divided by 2pi. The following section uses "N", calculated in section III to exactly calculate the non-reduced Planck Mass ($5.4557 * 10^{-8}$ Kg) from the Planck.

In section III the Planck was calculated to have $6.57943 * 10^{40}$ Kaluza on the surface and this was equivalent to the mass of the neutron. The equation below just calculates how much mass a solid Planck, made of Kaluza would have rather than just the discontinuities.

$$\left(4 * \frac{\pi}{3}\right)\left(\left(\left(\frac{N}{4*\pi}\right)^{\frac{1}{2}}\right)\right)^{3} * \frac{M}{N} = 4.039838 * 10^{-8} Kg \text{ or } 1.58692 * 10^{60} \textit{ Kaluza Spheres}$$

$$\left(\frac{3}{\pi}\right) * 2^{0.5} * 4.039838 * 10^{-8} = 5.4557 * 10^{-8} \text{ kg exactly}$$

Please note that the value of $\left(\frac{3}{\pi}\right) * 2^{0.5}$ is simply a dimensional number.

Planck Time and Planck Pressure

Planck Time and Planck Pressure and some other Planck Units can be calculated with the same type of calculation as shown above and with the same exactness.

VII Compton Wavelength of Kaluza Spinning Sphere, Age of Universe and mass and size of Hubble Sphere Universe

As stated previously, the Kaluza would be the spheres that form the Planck . A

graviton, which is the momentum carrier of gravity, would then be the action of dislocation of angular momentum of one Kaluza, within the Planck, as shown in equation 3. Using the following equation to calculate the equivalent mass of one graviton virtual mass we obtain

Compton Wavelength=$\frac{h}{\frac{cM*2/3}{N}} = 1.302323 * 10^{26}$ meters=13.7659 billion light years.

The graviton virtual mass would then have the Compton Wavelength of the size of the Hubble. Notice that the same 2/3 that is multiplied for the average moment of inertia for a hollow sphere is reintroduced to calculate a radius for the Hubble Sphere Universe.

When one uses this Compton Wavelength of $1.302323 * 10^{26}$ meters=13.7659 billion light years and calculates the mass necessary for the Schwarzchild radius, which is the radius cannot overcome gravity of a black hole, of the above Compton wavelength it yields a mass of m=8.76906*10^52 Kg where m would be the calculated mass of the Hubble Sphere Universe.

Schwarzchild radius of $r = \frac{2Gm}{c^2}$

The mass $m = 8.76906*10^{(52)} Kg$ and radius $1.302323 * 10^{26}$ meters can easily be back calculated to satisfy the exact required critical density of the universe. (13)

VIII Discussion

This theory is describing three spheres. The three spheres are the Hubble, the Planck that is on the order of the size of protons and neutrons, and the Kaluza that is the size of Planck dimensions. From section II, we find that charge can be modeled from a structure of Planck. The value of "T", that is proposed in section II, shown below;

Sum Angular Momentum

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

may have other factors affecting the forces in the x, y, and z dimension. The neutrinos mass appears to be so small, that if there is a neutrino were incorporated into the mass of the proton or neutron it might affect the mass in the 10^{th}, or 11^{th} digit. This in turn may have some affect on the calculated sum angular momentum. This may be useful, at some point, for estimating masses of neutrinos.

From section II and III we see that charge and gravity force are directly the mass of the neutron and the neutrons compton wavelength and frequency. We see that charge is related to sum angular momentum on 3 axes where gravity is a momentum in

only one direction. That the sum angular momentum is the sum of three perpendicular vectors indicates that an underlying structure should have perpendicular packing, of spheres. This is true of a cube packing and cuboctahedron packing. The most efficient packing is that of cuboctahedron which packs at $\frac{\pi}{\sqrt{18}}$. Indeed it is shown in Underlying Cuboctahedron Packing of Planck Spinning Spheres Structure of the Hubble Universe (14) that there may be a cuboctahedron packing.

It is clear, from Section II and III, when calculating charge and gravity, that the forces of charge and gravity, must be in the form of a hollow sphere. If it had some totally uniform dispersion of the dislocations/discontinuities of the Kaluza spheres the moments of inertia would have included some division of a multiple of 5 since a solid sphere has a moment of inertia of;

$$I = \frac{2mr^2}{5}$$

Indeed for some particles the angular momentum does have factors of 5.(12) And therefor the particles must be acting with uniform dispersion.

From section IV we see a possible meaning to the fine structure constant. The fine structure constant appears to be a relationship between the electron, proton, and neutron. And, therefore, it follows that the electron, proton, and neutron mass is involved in every charged particle or charged quark.

This alternative for the fine structure constant is within is within 0.999999992 of the measured fine structure constant. More accurate measurements for the rest masses of the electron, proton, and neutron, could help confirm this theory.

From section V we see an estimate for the Proton Charge Radius. Which is 2/3 the Compton Neutron Radius which is: $r = 0.8797272708*10^{-15}$ m is compared to the measured proton charge radius of: $R_p = 0.8775(51)*10^{-15}$ m. The proposed reason for the difference between the Compton neutron radius and the charge radius is that elementary charge could actually be the sum of many momenta from the Kaluza dislocations within the Planck in a similar way to the way the force of gravity extends all the way to the edge of the universe. A more accurate, measured proton charge radius, could, in the future, be used to confirm the "Discrete Calculations of Charge and Gravity with Planck Spinning Spheres and Kaluza Spinning Spheres" hypothesis.

From section VI we see that the Planck mass, Planck area, and other Planck dimensions, can be calculated as directly and specifically related to the Kaluza and the Planck. A hypothesis could be made that the Universe may be spinning as well and might have some structure in it similar to, but perhaps in an undeveloped stage of a KalabiYau manifold, as the universe does seem to have a web of sorts, in the orientation of the galaxies as they are pulled from large scale gravity forces over long time periods.

From section VII we see the size of the Kaluza Spinning Sphere is intimately connected to the mass, critical density, Schwarzchild radius, and size of the Hubble

Sphere Radius of 13.7659 billion light years. This seems to indicate that the Universe actually is the Hubble and that some kind of manifold, caused by the forces of gravity over a long period of time, may be distorting what we see as the size of the Universe being larger than the Hubble.

The Kaluza defines a particle proposed by scientists seeking a 4^{th} dimension in the year 1919. (In 1919, close on the heels of Einstein's theory of general relativity, the Polish mathematician Theodor Kaluza recognized this possibility in Einstein's theory and boldly proposed a fourth spatial dimension, a new unseen dimension of space. Einstein wanted to know what this dimension was. Where was it and why was it different? How far did it extend? These are obvious questions to ask. They might be some of the questions bothering us to this day. No one responded to Einstein until 1926, when the Swedish Mathematician Oskar Klein addressed his question. Klein proposed that the extra dimension would be curled up in the form of a circle, and that it would be extremely small, just 10^{-33} cm. This tiny rolled up dimension would be everywhere.(1,7)

The proposal that the Kaluza, Planck, and the universe are spheres, and the universe is filled with spheres called the Planck Spinning Spheres suggests that there may be smaller spheres than the Kaluza. It also suggests that our Universe may be just one sphere in much larger Universe. This is not the first proposal of multiple universes etc. Some theories that have some parallels are Loop Space (8) by Yang & Mills and Geometrodynamics theory(9) by John Wheeler.

How much momentum is thrown off from gravity and charge? The sum total for all directions would result in so many momentum carriers that it appears continuous. It is not proposed that gravitons and the momentum carriers for charge would not be moving, but would be like an angular momentum transferred by adjacent structures. Obviously, these momentum, are not experienced like the momentum of photons. In the case of charge and magnetism it is an incredible amount of momentum. The amount of momentum that is necessary for charge seems inconceivable, but looking at Planck density, the universe could be much more powerful than can be imagined.

For the purpose of visualizing what this hypothesis might lead to, is proposing that the universe is filled with spheres of uniform size that are almost perfectly packed. The cuboctahedron, defined by Buckminster Fuller to be vector equilibrium, is useful in showing a packing of spheres. Note that the cuboctahedron has 3 planes at 90 degree angles. Note that every sphere is surrounded by 12 spheres. Cuboctahedron packing would extend for a certain distance, and then, similar to crystal packing, grain type boundaries would occur.

It is assumed that gravity and charge can be united as coming from the same physical structure but it is necessary to find the shape and motion of the interaction of spheres and dislocations. The discontinuities could be analogous to Schottky and Frenkel defects in material science. A Schottky defect being a missing segment in packing, a Frenkel defect being an inclusion defect. A Schottky defect could be antimatter, a Frenkel defect could be matter. If the Planckspheres rotate on 3 axes there would be a positive x and negative x rotation. The y and z directions would also have positive and negative rotations. Matter would depend on the combination of x, y,

and z, Planck rotations, when combined with Schottky or Frenkel type defects. Different rotations and different defects would result in different particles, some stable and some unstable. Particle colliders could create a Frenkel and Schottky defect pairs, thus creating unstable particles. Groups of these particles could aggregate temporarily or for long term just like the elements do for ordinary matter.

The information herein does not tell us what matter is made of. The proposed relationships between the fundamental constants shown in sections II and III are hypothesis and are not proven. All we see is that there could be a space fabric made up of Planckspheres packed in an cubooctahedron structure. The same type of forces probably hold the Plancks 1.58692 * 10^60 Kaluzaspheres together in a sphere. And then in another dimension yet the Kaluzaspheres are held together. "How deep is the rabbit hole."(10) All these levels would be held together with force carriers created by defects, and, in a sense, are their own black holes.

Why does it, the variety of the universe, happen? From the power spinning spheres interacting, interacting with a defect? Would there not really be a beginning or an end? Would time always keep contracting or expanding and always look the same? The moment an instant lasted forever, we were destined for the leading edge of eternity.

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IX Conclusions

The calculations of this hypothesis show, that the topology of the universe spacetime, could be discrete, granulated, granular, rather than continuous. When we talk about Planck area, and the Planck Spinning Sphere made of Kaluza Spinning Spheres made of Klein Spinning spheres, heading towards the smallest dimension of approximately 10^-55 meters we realize that when the Creator said, make the universe smooth, the Creator meant Supreme smoothiness. We also see that the Planck dimensions describe the current universe and perhaps, not instants around the Big Bang.

The calculations show the forces could come from equivalent of a hollow sphere, but the momentum should come from the angular momentum of the whole sphere changing from the interaction of the perfect with imperfection, cuboctahedron slash vector equilibrium, and the absence of stability.

Appendix A

Fundamental Physical Constants (18)

1. c=2.99792458 * 10 Exp 8 m/s
2. h=**6.626 070 040(81) x 10^{-34} J s**6.626 06957(33) x 10^{-34} J s
3. Mass of Neutron = Mn= **1.674 927 471(21) x 10^{-27} kg**1.674 927 351(74) x 10^{-27} kg
4. Mass of Proton = Mp= **1.672 621 898(21) x 10^{-27} kg**1.672 621 777(74) x 10^{-27} kg
5. Mass of Electron = Me = **9.109 383 56(11) x 10^{-31} kg** 9.109 382 91(40) x 10^{-31} kg.
6. q = unit charge = **1.602 176 6208(98) x 10^{-19} C**1.602 176 565(35) x 10^{-19} C
7. ε = Dielectric Permittivity = 8.854187817 * 10 Exp –12
8. G= **6.674 08(31) x 10^{-11} m^3 kg^{-1} s^{-2}** 6.67384(80) x 10^{-11} m^3 kg^{-1} s^{-2}

Appendix B

Definitions

Compton Frequency of Neutron $f = \frac{Mnc^2}{h}$

Compton Radius of Neutron $r = \frac{h}{cMn}$

Continuous discrete space- In this paper, the continuous discrete space is a space that is packed mostly in a continuous cuboctahedron-vector equilibrium packing with rare discontinuities occurring from spherical packing of layer upon layer of concentric layers of spheres. Gravity forces spherical packing, while vector equilibrium forces cuboctahedron packing.

Current rate of aging of the Universe – In this model the rate of aging of the Universe is not presumed to be constant, rather it is open to the concept that as the Universe was more dense, the aging rate of the Universe would have operated under the laws of General Relativity where a higher gravitational field would have generated a slower passing of time resulting in a possibly infinitely aged universe using the current rate of aging.

Hubble Sphere Universe (Hubble) - This is the size of the Universe when traveling at the Speed of Light for the age of the Universe at the ***current rate of aging of the Universe***.

Kaluza Spinning Sphere (**Kaluza**)– ***Planck Spinning Sphere*** (**Planck**)- This model works with the idea that there are levels of spheres that make up the Universe, Multiverse, Planck Spinning Sphere. There may and probably are spheres besides these. The Kaluza Sphere would be made of the next smaller spheres called Kline Spinning Spheres (Kline). The spheres go in this order. Approximately 10^30 klein spheres make up a Kaluza sphere, approximately 10^60 Kaluza spheres make up the Planck Sphere, approximately 10^121 Planck Spheres make up the universe, and approximately 10^242 universes make up the multiverse. All spheres are essentially equal within their domain.

Sum Angular Momentum $T^2 = (\frac{Mp - Me}{Mn})^2 + (\frac{Mn}{Mn})^2 + (\frac{Mn}{Mn})^2$

The sum angular momentum is the sum of angular momenta on the Planck Spinning Sphere. In this case it is the sum scalar component of the momenta for charge.

Virtual Angular Momentum - Virtual Angular momentum is a real momentum, but it only is realized under certain circumstances that are not understood. This can be related to a neutrino that does not experience the strong force or charge. Wheareas the graviton mediates the gravitational force, imparting a perpendicular momentum toward the source of the graviton.

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