THEORY OF GRAVITY "ENERGY-WAVE": THE ORIGIN

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Abstract

In this paper I derive an equation relating the gravitational acceleration with the gravitational wavelength corresponding to the "gravitational energy" density at a point in space and with the speed of light, without using the gravitational constant of Newton (G), derive an equation of the Energy-Momentum of Einstein suppressing this constant, and further I set the foundations for new theory of gravity "Energy-Wave".

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1. INTRODUCTION

The mathematical physicist Sir Isaac Newton in 1687 published his book "Philosophiae Naturalis Principia Mathematica" where he presented the law of universal gravitation empirically derived to describe and calculate quantitatively the mutual attraction of each particle and massive objects in the universe. In that document, Newton concluded that the attraction together two bodies is proportional to product of their masses and inversely proportional to the square of the distance that separates them.

However, these must be adjusted proportionalities by introducing a constant called Universal Gravitation (G) with an approximate value of 6.674×10^{-11} Nm^2 kg^{-2} units in the International System. Without the introduction of this constant, the equation, lose their rationality and is impractical to calculate the force of gravity without it.

For Newton, gravity is considered a force exerted on a remote Instant. Moreover, when the gravity force is exerted by two or more bodies extremely mass, Newton's law has serious limitations and then must resort to the Theory of Relativity General stated by Albert Einstein in 1915, who says that gravity is not a force exerted to distance but a contraction of Space-Time produced by the presence of Energy-Matter (1).

However in the final formulation of the equations of the universe, to make it compatible with the law of conservation of energy and principles of general covariance, Einstein included geometric concepts such as the Ricci Tensor and scalar, but mainly the Energy-momentum tensor, but fails to integrate into said Energy-Momentum Tensor the constant Universal Gravitation Newton (G), as this is finally out of tensor ($T_{\mu\nu}$) in the second member of the equation.

While Einstein equation establishes the relationship between gravity, energy and geometry distortions space-time, it does not define the origin of the relationship.

In this regard, in 1995 Jacobson achieved considerable progress in linking the laws of thermodynamics to the Einstein equation and the equation of state correlates entropy with the area of energy flow (2).

Erik Verlinde published on January 6, 2010, his work "On the Origin of Gravity and the Laws of Newton" (3), which proposed that gravity is a reality entropic force emerging space. In its formulation, includes reduced Planck's constant, N as a Screen of information bits of space, adds a new constant called G, which ultimately found to be equivalent to the Universal Gravitational Constant. On that basis, Verlinde forecast to gravity as a fundamental force.

In March 2010, Jae-Weon Lee, Hyeong-Chan Kim and Lee Jungjai published a paper in which suggest that the Einstein equation can be derived from the Landauer's principle on the Elimination of information causal horizons, and conclude that gravity has its origin in quantum information (4). From then such work is also supported by Jacobson linking between thermodynamics and the equation Einstein, as well as on the work of Verlinde entropic force.

Thus, today we already have a strong linkage between energy, heat, temperature, laws of thermodynamics, general theory of relativity, perturbation of the geometry of space-time, entropy and quantum information, but somehow linking gravity and electrostatic force has failed in all these works that eventually drift to the Einstein equation and repeatedly use the constant of universal gravitation Newton (G).

Derive a gravity equation that eliminates the universal gravitational constant and link the gravitational acceleration with electrostatic acceleration requires first that the equation derived from the principal component of gravity, energy (E) and secondly its corresponding relationship with the invariance of Planck area, and the two tension vectors emerging from this area and generate electrostatic and gravitational waves as seen in the present work.

Newton's equation establishes the relationship between mass and gravity, while the equation Einstein relates the Energy-Momentum Tensor with the modification or distortion of space:

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{c^4}GT_{\mu\nu}$$

For particles at absolute rest, Einstein's equation has only one active component (T^{00}) of the Energy-Momentum Tensor ($T_{\mu\nu}$), dimensionally same as is defined by the equation:

$$T^{00} = \Upsilon^2 c^2 \text{p} \tag{1.1}$$

Where Υ is the Lorentz factor, c the speed of light and p the energy density, so if you divide T^{00} between c^2 we simply obtain the energy density, that is, in real terms the Einstein equation defines the energy density is the curving space.

The problem of the Einstein equation is that the energy density in order to be equivalent to the curvature of space, requires the tensor ($T_{\mu\nu}$) is multiplied by the constant of universal gravitation Newton (G) and their corresponding dimensions.

To resolve this problem in the Einstein equation, this paper begins from the energy (E) component and distribution or displacement in the area occupied promptly in space under the principle that energy is always a wave packet with a pilot waveform that is proportional to the acceleration of gravity occurs in the space.

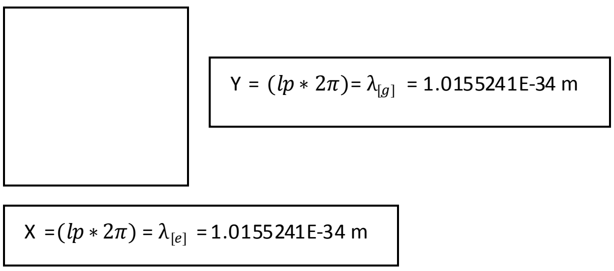
This will allow us to the end of this study derive an Einstein equation with Energy-Momentum Tensor that eliminate *G* while promptly defines the relationship between wavelength and space contraction gravitational acceleration.

2. GRAVITATIONAL ENERGY DERIVED FROM PLANCK AREA

To derive the gravity equation, I need to hypothesize a priori that the particles at absolute rest, energy it's distributed in a specific area of space and that this area has two main components from which emerge two tension vectors on the space with different action and different time.

The first tension vector is considered by Einstein and in principle only generates the electrostatic force and the related electromagnetic phenomena, as the second tension vector becomes the cause of the gravitational interaction. However, the immediate question is where did emerge the second tension vector?

To explain the above and get the answer, consider a priori a hypothetical particle whose Plank energy distribution in space is the area of a perfect square:



$$l_{\mathrm{p}}^{2} = (\, lp{:}\, x\,)(lp{:}\, y) = Ap$$

$$\lambda_{\mathrm{p}}^{2} = (\, \lambda_{[e]}\,)(\lambda_{[g]}) = 1{,}03128928\text{E-}68\ \mathrm{m}^{2}$$

Both the axis (X) and the axis (Y) corresponding to the Planck length (lp), if we multiply it by 2π then we get the Planck Pilot wavelength ($\lambda_{[p]}$). Then immediately notice that the Planck energy density has not one (1) but two (2) waves associated interaction.

Both sides of the square shafts or exert pressure on space, or in terms of Einstein, produce a Tension Vector. In the case of Axis (X) the Vector of Tension is exactly the same as Einstein, but in the case of axis (Y), a hypothetical still correspond Second Tension Vector.

However, in the case of the hypothetical particle of Planck, because either axes or sides of the same length, and in the case of (Y) the Vector Pressure is orthogonal and contractive (from infinity to the X axis), then the two Tension Vectors cancel each other. In terms of the de Broglie wavelength to be exactly equal in length and width but opposite to each other, they cancel each other, so that an external observer cannot feel the presence of the particle of Planck on electrostatic terms or in gravity terms. It is then a particle "Null" or space "Empty".

However, when the axis (X) corresponding to the first Tension Vector (Wavelength De Broglie) extends beyond the Planck length (lp), then proportionally the axis (Y) which corresponds to the Second Tension Vector is shortened (gravitational wave length). But also at the time, in which the wavelengths (X) and (Y) are different, they cease to cancel each other and so the electrostatic and gravitational effects are "visible" to outside observers.

In other words, and under these arguments Planck Area or $(\lambda_{[e]})(\lambda_{[g]})$ is always invariant to perform the respective calculations considered here.

For example, let's see here graphically proportional representation of an electron according to Planck area:

Y = $(lp * 2\pi) = \lambda_{[g]}$ = 4.2504295E-57 m

X = $(lp * 2\pi) = \lambda_{[e]}$ = 2.4263178E-12 m

$$\lambda_p^2 = (2.4263178E - 12\ m)(4.2504295E - 57\ m)$$

$$= 1{,}03128928E\text{-}68\ m^2$$

Note: The graph of the rectangle is not exactly proportional to the scalar quantities for obvious reasons.

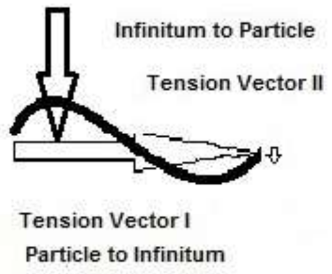
As can be observed in the electron because (X) is extended too much relative to the Planck length, then (Y) is shortened proportionately then being a wavelength excessively small but sufficient to generate the gravitational effects of the electron.

In the case of the electron, the De Broglie wavelength is about 2.4263170 E-12 meters, while the gravitational wave length is approximately 4.2504295 E-57 meters.

In the case of the earth, being an object (particle) with a large mass, the proportion is reversed; the De Broglie wavelength is about 3.7009 E-67 meters, while the gravitational wave length is about 0.027866232 meters, according to calculations using the equations, described later.

In other words, the particles and the mass objects have a spatial configuration with respect to the wave packet associated like strings or threads vibrating whose length in the X axis is much longer or shorter with respect to the Planck length but a width or thickness (Y axis) is proportional to the axis X excessively longer or shorter, but enough to be the sources of the gravitational effects..

To understand this, let's draw a conceptually wave example:



The physical interpretation of the Tension Vector I, not a major problem, because it is the product of the tangential acceleration of energy distributed in the wave curve along the wavelength (X axis) with the corresponding pressure on space.

While the physical interpretation of tension Vector II corresponds to the component of normal acceleration (gravitational acceleration) occurring Wave inward, towards the center of mass-energy. In this regard there are three possible interpretations:

I) The energy density distributed in the Wave, has a "thickness or wide" quantum limit set by the Planck Area (yarn thickness wave). In this case, the quantum energy density pressure inside the particle itself.

II) A second possible interpretation is that the wave to advance, the vector has a torque space that causes progress turning on itself elliptical. Therefore the rotation or tension energy density causes a second acceleration towards the center of the elliptical rotation, then this acceleration corresponding to the gravitational acceleration.

III) In a third interpretation, a second tension vector actually corresponds to the wave amplitude (A) that is not symmetrical with respect to the wavelength, then said amplitude wave then generates a second acceleration whose second component (normal acceleration) is orthogonal to with respect to X (wavelength) axis.

Whatever the correct physical interpretation of Tension Vector II, in the end, this also generates a second emission wavelength with a corresponding length.

Moreover to calculate both wavelengths: De Broglie wave length (Tension Vector I), and wave length Gravitational (Tension Vector II), then we have to set the "Energy" which is the source of both.

If we make this definition from the Planck hypothetical particle that transforms into another particle conserving Planck area, then we need to be the axis (X) or Tension Vector I, which corresponds to the energy at absolute rest and which also corresponds to the extension or horizontal length, then we have to multiply the Energy Plank, quantified for this energy density at absolute rest. While the axis (Y) or Tension Vector II corresponds to the "gravitational energy", which in turn corresponds to the width or orthogonal extension, then we also divided quantified according to the following equation:

$$\mathrm{E}_{\mathrm{p}}^{2} = (\,EpN\,)\left(\frac{Ep}{N}\right) \qquad (2.1)$$

Ep = 1.9560852E+09 Joules

$\mathrm{E}_{\mathrm{p}}^{2}$ = 3.82627E+18 Joules ^{2}

Where *Ep is* Planck's energy and N is a quantum number that corresponds to the ratio of the rest energy of any particle or object mass and the Planck energy given by the equation

$$N = \frac{\mathrm{E}}{\mathrm{Ep}} \qquad (2.2)$$

Substituting N into Equation (2.1) then the energy distribution in an area Planck is given by:

$$(\mathrm{E})\left(\frac{\mathrm{E}_{\mathrm{p}}^{2}}{E}\right) - \mathrm{E}_{\mathrm{p}}^{2} = 0 \qquad (2.3)$$

In this case *(E)* corresponds to the rest energy of any known particle or massive object, while $\frac{\mathrm{E}_{\mathrm{p}}^{2}}{E}$ is the "Gravitational Energy".

However, here I must clarify that the "gravitational energy", which is excessive and inexplicable in the case of the electron and the proton, does not correspond to an existing energy within the particle, because if so would violate the very principles of Plank, but which is the sum of quanta energies of all “Plank particles” which are displaced towards the axis (X) by the contraction of (Y).

By then calculating said sum of displaced quanta energies of Planck (Y) to the axis (X) occupies the following equation:

$$\mathrm{E}_{[g]} = \left(\frac{\mathrm{E}_{\mathrm{p}}^{2}}{E}\right) \qquad (2.4)$$

Should clarify here, first, that the boundaries of physics established by the laws of Planck, not defined in linear terms of length or Planck energy, (lp, Ep) because then we would have a universe whose total contained energy not would be greater than Ep.

In that sense, the limits of Planck must actually correspond to the Planck Area (Ap) and about the limits of energy; the multiplication of the energy corresponding to the Tension Vector I (E) for the energy corresponding to the Tension Vector II ($E_{[g]}$), and whose both product becomes Planck energy squared (E_p^2) as defined by equation 2.1 and 2.3.

Moreover, to calculate the "gravitational energy" of an electron, a proton, a neutron or other particle those are located in the "absolute vacuum" we get a magnitude of such "gravitational energy" which apparently violates the limit of Planck (Ep) but not the limit in equation 2.1 or 2.3.

I should also clarify that Tension Vector I corresponding to the energy at absolute rest (E) has a direction from the particle to infinity, so that almost all the energy is contained within the particle itself.

Meanwhile, the Tension Vector II ($E_{[g]}$) corresponding to the "gravitational energy" has an orthogonal inverse direction from infinity to the particle, so that the majority of the "gravitational energy" is outside of the particle.

Thus "gravitational energy" is the sum of quanta energies of Planck that is moved from infinity to the Tension Vector I (axis X) by the contraction of Tension Vector II (Y) at a rate defined by equation 2.4.

Both the rest energy (E) as the "gravitational energy" (Eg) is "moving" or "distributed" along the corresponding axis (X, Y), and thus generate their own wave packet with pilot wave associated to the front.

The two Pilot waves have a corresponding wavelength according to the principles of Broglie known equation given by:

$$\lambda = \frac{hc}{E}$$

That in the case of "gravitational energy" or Tension vector II, its wavelength can be obtained directly from the following equation:

$$\lambda_{[g]} = \left(\frac{hcE}{E_p^2}\right) \tag{2.5}$$

Where (E) corresponds to the energy at rest.

The product of two wave lengths, corresponding to the wavelength squared Planck. As Planck Area, the product of both wavelengths is invariant in all of the particles:

$$\lambda_p^2 = \left(\frac{hc}{E}\right)\left(\frac{hcE}{E_p^2}\right) = \lambda_{[e]}\lambda_{[g]} \tag{2.6}$$

Where h is Planck's constant and c is the speed of light and where $\lambda_{[e]}$ the wavelength of Broglie (Tension Vector I) is and $\lambda_{[g]}$ is the gravitational wave length (Tension Vector II).

3. GRAVITATIONAL COUPLING

Because the two wavelengths are extremely different in most massive particles or objects, as these originate practically in a "simultaneous", the gravitational wave length $\lambda_{[g]}$ to be coupled to the length of wave energy $\lambda_{[e]}$, which generates a coupling factor for the gravitational force given by:

$$\alpha_g = \frac{\lambda_{[g]}}{\lambda_{[e]}} \tag{3.1}$$

Where α_g is the factor of gravitational value coupling.

For the electrostatic force, value coupling is considered constant (Fine Structure) about 7.297352568E-03.

In the case of gravity, said coupling depends on the ratio of both wavelengths as shown in the equation 3.1.

Defining the gravitational engagement is critical to the development of a theory of gravity on the equivalence to approach the electrostatic force and to calculate the force of gravity, but such coupling is not necessary to calculate the gravitational acceleration on the arguments presented here and as it will show at the end of this paper.

4. THE EQUATION OF GRAVITY FORCE WITHOUT CONSTANT GRAVITATION

In short, the "gravitational energy" (E_g) "moves" or "distributed" from infinity to the center of the distribution of particle energy, generating a curvature or contraction of space defined by the length "gravitational wave" ($\lambda_{[g]}$), in turn generating component of normal acceleration towards the center of the particle which we interpret as gravitational acceleration.

Because of this, we then multiply the "gravitational energy" corresponding gravitational wave length:

$$E_g\ \lambda_{[g]}$$

But because of the wide differential between rest energy and "energy gravitational" or the wide differential between De Broglie wavelength and gravitational wave length, then we have to include in the equation the gravitational coupling factor obtained from equation 3.1:

$$E_g\ \lambda_{[g]}\ \alpha_g$$

And then for the gravitational attraction between two identical particles or massive objects or with the same amount of mass only remains for us to divide the radius separating the two particles:

$$F = \left(\frac{E_g\ \lambda_{[g]}\ \alpha_g}{2\pi d^2}\right) \tag{4.1}$$

Where E_g is the "gravitational energy" (equation 2.4), $\lambda_{[g]}$ is the length of gravitational wave (equation 2.5), α_g is the gravitational coupling (equation 3.1) and (*d)* is the radius between the two particles interacting or massive objects.

And for the case of two different particles or objects mass:

$$F = \left(\frac{\sqrt{(E_{g1}\ \lambda_{[g1]}\alpha_{g1})\ (E_{g2}\ \lambda_{[g2]}\alpha_{g2})}}{2\pi d^2}\right) \tag{4.2}$$

Then comes to be an equation for calculating the gravitational interaction without the use of the gravitational constant of Newton and use the length of de Broglie wave, for particle or massive objects at rest.

But due to the existence of a constant in this equation, it is possible to reduce it further.

$$\hbar = E\lambda = 1.986451698\text{E-}25 \text{ joules per meter} \tag{4.3}$$

Due to this constant, we can use in the equation 4.2, only the values of "gravitational energy" and gravitational wave length of the particle or object with higher energy (or mass) and then the equation is abbreviated :

$$F = \left(\frac{E_g\ \lambda_{[g]}\sqrt{\ \alpha_{g1}\ \alpha_{g2}}}{2\pi d^2}\right) \tag{4.4}$$

$$F = \left(\frac{\hbar\sqrt{\ \alpha_{g1}\ \alpha_{g2}}}{2\pi d^2}\right) \tag{4.5}$$

Keeping 2π in the equation is to finally remind us that the ratio between two particles or massive objects is not straight but curved.

Moreover, also in the case of the gravitational interaction between a massive object and a smaller, we can eliminate the two gravitational couplings of equation 4.4 by exchanging the component of the gravitational energy ($E_{[g]}$) for the energy in rest (*E*) of the massive object while retaining the gravitational wave length :

$$F = \left(\frac{E\ \lambda_{[g]}}{2\pi d^2}\right) \tag{4.6}$$

Where (*F)* is the force of gravitational interaction, (*E*) the rest energy of the massive object, and ($\lambda_{[g]}$) the length of pilot gravitational wave associated with the gravitational energy gained by the equation 2.5**.**

5. DERIVATION OF THE EQUATION OF GRAVITATIONAL ACCELERATION

Then we can use Equation 4.6 to derive a new equation for calculating the gravitational acceleration of a massive body like the earth.

According to Newton, force (F) is equal to mass (m) by acceleration (a):

$$F = ma$$

We make the Newton equation equal to equation 4.6:

$$\left(\frac{E\ \lambda_{[g]}}{2\pi d^2}\right) = ma \qquad (5.1)$$

Convert (E) to the Einstein equation:

$$\left(\frac{mc^2\ \lambda_{[g]}}{2\pi d^2}\right) = ma \qquad (5.2)$$

Spent the terms:

$$\left(mc^2\ \lambda_{[g]}\right) = ma2\pi d^2 \qquad (5.3)$$

Then we exchanged the term corresponding to the mass to remove it from the equation:

$$\left(\frac{mc^2\ \lambda_{[g]}}{m}\right) = a2\pi d^2$$

Eliminates m:

$$\left(c^2\ \lambda_{[g]}\right) = a2\pi d^2 \qquad (5.5)$$

We returned the radius

And Eureka:

$$\boldsymbol{a = \left(\frac{c^2\ \lambda_{[g]}}{2\pi d^2}\right)} \qquad \mathbf{(5.6)}$$

That is, the gravitational acceleration is equal to the length gravitational wave of the mass object (eg earth) by the speed of light squared divided radius squared.

As we can see in equation 5.6, noticeably disappear two components: force (F) and mass (m). The immediate interpretation of this is that the energy density and the corresponding wavelength do not exert a force on objects that attracts, but this force is exerted actually about the same surrounding space which is accelerated in an orthogonal contraction towards the center of Energy density in proportion to the length of dominant gravitational wave.

Ensure equation in the Earth:

Mass: 5.9722 E +24 Kg

Energy:

mc^2 = 5.3675E+41 kg $m^2/\ s^2$

Gravitational energy of the Earth: $E_{[g]}$ =

$$\left(\frac{E_p^2}{E}\right) = \left(\frac{3.82627E+18}{5.3675E+41}\right) = \mathbf{7.12853E\text{-}24}\ \text{Kg}\ m^2/\ s^2$$

Wavelength Gravitational of the Earth:

$$\lambda = \frac{hc}{E}$$

$$= \frac{6.626089633E-34 * 299792458}{7.12853E-24}$$

$$= \mathbf{0.027866232\ m}$$

Squared radius of the Earth: **4.05896E+13** m

Substituting the values for the gravitational acceleration of the earth:

$$a = \left(\frac{89875500000000000 * 0.027866232}{2 * 3.1416 * 4.05896E+13}\right)$$

$$a = (\mathbf{9.820272866\ m/s2})$$

Which is the same result obtained with Newton's equation.

6. DERIVATION UNIVERSAL GRAVITATIONAL CONSTANT (G)

Conventionally the gravitational acceleration is calculated with:

$$g = \left(\frac{GM}{r^2}\right)$$

We then said equation equivalent to equation 5.6:

$$\left(\frac{c^2\,\lambda_{[g]}}{2\pi d^2}\right) = \left(\frac{GM}{r^2}\right) \qquad (6.1)$$

Eliminated radius from the two equations:

$$\left(c^2\,\lambda_{[g]}\right) = (GM2\pi) \qquad (6.2)$$

And finally solve for G:

$$(\boldsymbol{G}) = \left(\frac{\boldsymbol{c^2\,\lambda_{[g]}}}{\boldsymbol{M(2\pi)}}\right) \qquad (6.3)$$

We can convert the units of Planck equation and result is the same:

$$(G) = \left(\frac{c^2\,\lambda_{[p]}}{\mathrm{M}_{[p]^{(2\pi)}}}\right) \qquad (6.4)$$

Where ($\lambda_{[p]}$) is the Planck wave length defined in 2 and $\mathrm{M}_{[p]}$ is equivalent to the mass Planck of 2.1764383 E-08 kg.

If we calculate with different measures of mass or energy using equation 6.3, then we obtain an integer value of G, ie a purely quantum value:

$$(\boldsymbol{G}) = (\mathbf{6.674280\ E-11\ N\ m2\ Kg-2})$$

7. DERIVATION OF EQUATION CALCULATING ELECTROSTATIC INTERACTION

Over the original arguments, calculating the electrostatic interaction between two particles is even simpler because the constant of electrostatic coupling or fine structure. In this case leads us to a broad general constant that shall term Universal Electrostatic Constant:

$\hbar_e = E\,\lambda_{[e]}\alpha_{e} =$ 1.4495849660E-27 joules per meter (7.1)

No matter how much rest energy of the particle, the electrostatic force is always the same and only varies depending on the distance. In this case, this energy corresponds to the Tension vector I (X axis of Planck area)

That is, the calculation of the electrostatic interaction between two identical or different particles is given by the general equation:

$$F = \left(\frac{E\,\lambda_{[e]}\alpha_e}{2\pi\,d^2}\right) = \left(\frac{\hbar\,\alpha_e}{2\pi d^2}\right) \qquad (7.2)$$

Where E is the energy at rest; $\lambda_{[e]}$ the wavelength of de Broglie; α_e coupling constant or Fine structure; d is the radius between the two particles. This equation is equivalent to:

$$F = \left(k\,\frac{q_{[1]}q_{[1]}}{d^2}\right)$$

Thus Coulomb's law for electrostatic interaction between only two particles (electron-electron; proton-electron; proton-proton). we have the following equivalence:

$$F = \left(k\,\frac{q_{[1]}q_{[1]}}{d^2}\right) = \left(\frac{E\,\lambda_{[e]}\alpha_e}{2\pi\,d^2}\right)$$

4. DERIVATION OF EQUATION OF ELECTROSTATIC ACCELERATION

Following the same reasoning as in 5, then we have:

$$\left(\frac{E\,\lambda_{[e]}\alpha_e}{2\pi d^2}\right) = ma \qquad (8.1)$$

$$\left(\frac{mc^2\,\lambda_{[e]}\alpha_e}{2\pi\,d^2}\right) = ma \qquad (8.2)$$

$$\left(mc^2\,\lambda_{[e]}\,\alpha_e\right) = ma2\pi\,d^2 \qquad (8.3)$$

$$\left(\frac{mc^2\,\lambda_{[e]}\alpha_e}{m}\right) = a2\pi d^2 \qquad (8.4)$$

$$\left(c^2\,\lambda_{[e]}\alpha_e\right) = a2\pi d^2 \qquad (8.5)$$

Y Eureka:

$$\boldsymbol{a} = \left(\frac{\boldsymbol{c^2\,\lambda_{[e]}\alpha_e}}{\boldsymbol{2\pi d^2}}\right) \qquad (8.6)$$

That is, the electrostatic acceleration equals the de Broglie wavelength of the particle by the speed of light between the squared distances between the interacting particles.

Since equations can be observed 8.6 and 5.6, are virtually identical, with the slight difference that in the case of the electrostatic acceleration have to stop for the time the fine structure constant.

Despite the existence of the fine structure constant in equation 8.6, we can also say that the electrostatic force is not exerted on the mass of the second particle interaction but on its surrounding space which is accelerated so repulsive or attractive depending of the signs of the charge of the particles in interaction.

4. GRAVITATIONAL ACCELERATION EQUIVALENT TO ELECTROSTATIC ACCELERATION.

The reason why the equations 5.6 and 8.6 are not fully equivalent has a very simple reason; 5.6 is a classic equation, while the second (8.6) is an equation within the framework of the Special Theory of Relativity.

In the equation 8.6, (α_e) (Fine Structure) actually corresponds to the Lorentz factor of relativistic velocities that cause the contraction of the wavelength, according to the Theory of Special Relativity.

According to Sommerfeld calculations, calculating the velocity of the electron in the first orbit is given by the equation:

$$v = \left(\frac{E\,\lambda_{[e]}\alpha_e}{h}\right) \qquad (9.1)$$

Where (h) is Planck's constant. Substituting the values:

$$v = \left(\frac{1.44958\ E-27}{6.62608\ E-34}\right) = 2187992\ m/s$$

We now apply the Lorentz factor in summary, because here we have obtained a speed within the framework of the theory of special relativity:

$$\Upsilon = \left(\frac{v}{c}\right) \qquad (9.2)$$

$$\Upsilon = \left(\frac{2187693\ m/s}{2997942\ m/s}\right) = .007297358$$

That becomes the Lorentz contraction factor for the wavelength of an electron the first Bohr orbit, and is constant value for successive orbits or energy levels of electrons in the atom. So in this case:

$$\Upsilon = (\alpha_e) \qquad (9.3)$$

In basing the above arguments then modify equation 8.6 for electrostatic acceleration:

$$\boldsymbol{a} = \left(\frac{c^2\lambda_{[e]}\Upsilon}{2\pi d^2}\right) \qquad (9.4)$$

Then the equation of the gravitational acceleration on the 5.6, also transform to the framework of the Special Theory of Relativity including the Lorentz contraction factor for gravitational wave length:

$$\boldsymbol{a} = \left(\frac{\boldsymbol{c^2\,\lambda_{[g]}}\Upsilon}{\boldsymbol{2\pi d^2}}\right) \qquad (9.5)$$

They can be also:

$$\boldsymbol{g} = \left(\frac{\boldsymbol{c^2\,\lambda_{[g]}}\Upsilon}{\boldsymbol{2\pi r^2}}\right) \qquad (9.6)$$

Here (g), is the traditional symbol of the gravitational acceleration.

And finally we have the equivalence:

$$\boldsymbol{a} = \left(\frac{c^2 \boldsymbol{\lambda}_{[e]}\Upsilon}{2\pi r^2}\right) \qquad \boldsymbol{g} = \left(\frac{c^2\, \boldsymbol{\lambda}_{[g]}\Upsilon}{2\pi r^2}\right)$$

Where ($\boldsymbol{a}$) is the electrostatic acceleration; ($\boldsymbol{g}$) is the gravitational acceleration and ($\boldsymbol{Y}$) is the Lorentz contraction factor, we find that the only noticeable difference between the two equations is the wavelength.

To derive the equality between the two types of acceleration, we only have to use N, the quantum number obtained in equation 2.2:

$$\left(\frac{c^2 \boldsymbol{\lambda}_{[e]}\Upsilon}{2\pi r^2}\right) \boldsymbol{N}^2 = \left(\frac{c^2\, \boldsymbol{\lambda}_{[g]}\Upsilon}{2\pi r^2}\right) \qquad (9.10)$$

7. DERIVATION OF EQUATION OF EINSTEIN TENSOR

Then only remains for us is to derive an equation of Einstein Tensor that integrates the arguments presented here and that otherwise removed from the equation the gravitational constant as posed in the introduction to this work.

We use the active component of the Einstein tensor in the case of particles at rest or in non-relativistic velocities:

$$T^{00} = \Upsilon^2 c^2\, \mathrm{p}$$

We took that component of the energy-momentum tensor:

$$R_{\mu v} - \frac{1}{2} R g_{\mu v} + \Lambda g_{\mu v} = \frac{8\pi}{c^4} G (\Upsilon^2 c^2\, \mathrm{p}) I_{\mu v} \quad (7.1)$$

$$G_{\mu v} = \frac{8\pi}{c^4} G (\Upsilon^2 c^2\, \mathrm{p}) I_{\mu v} \qquad (7.2)$$

Become the universal gravitational constant of Newton (G) and integrate the equation 6.3:

$$G_{\mu v} = \frac{8\pi}{c^4} \left(\frac{c^2\, \lambda_{[g]}}{\boldsymbol{M(2\pi)}}\right) (\Upsilon^2 c^2\, \mathrm{p}) I_{\mu v} \qquad (7.3)$$

$$G_{\mu v} = \frac{6\pi}{c^2} \left(\frac{\lambda_{[g]}}{\boldsymbol{M}}\right) (\Upsilon^2 c^2\, \mathrm{p}) I_{\mu v} \qquad (7.4)$$

$$G_{\mu v} = \frac{6\pi}{c^2} \left(\frac{\lambda_{[g]}}{\boldsymbol{M}}\right) (\Upsilon^2 c^2\, \frac{\mathrm{M}}{V}) I_{\mu v} \qquad (7.5)$$

$$G_{\mu v} = 6\pi \left(\frac{\lambda_{[g]}}{\boldsymbol{M}}\right) (\Upsilon^2 \frac{\mathrm{M}}{V}) I_{\mu v} \qquad (7.6)$$

$$G_{\mu v} = 6\pi (\lambda_{[g]}) \left(\frac{\Upsilon^2}{V}\right) I_{\mu v} \qquad (7.7)$$

$$G_{\mu v} = 6\pi \left(\frac{\lambda_{[g]}\Upsilon^2}{V}\right) I_{\mu v} \qquad (7.8)$$

Where ($\lambda_{[g]}$) is the gravitational wave length obtained in equation 2.5 and (Υ^2) is the Lorentz contraction factor for relativistic particles, and (V) is the volume occupied by the mass-energy in space.

But now it has been the equation in terms of the wavelength of the particle or massive object that contains all the information practically the same:

$$\boldsymbol{\lambda}_{\mu v} = \boldsymbol{6\pi} \left(\frac{\boldsymbol{\lambda}_{[g]}\Upsilon^2}{\boldsymbol{V}}\right) \boldsymbol{I}_{\mu v} \qquad (7.9)$$

And if we want to integrate the space-time coordinates:

$$\lambda_{\mu v} = 6\pi \left(\frac{\lambda_{[g]}\Upsilon^2}{A(ct)}\right) I_{\mu v} \qquad (7.10)$$

Where (A) is the area occupied by the particle, (c) the speed of light and (t) is the time.

Finally we have the modified equation of Energy-momentum Tensor of Einstein and gravitational constant of Newton deleted from it:

$$\boldsymbol{R}_{\mu v} - \frac{\boldsymbol{1}}{\boldsymbol{2}} \boldsymbol{R g}_{\mu v} + \Lambda \boldsymbol{g}_{\mu v} = \boldsymbol{\lambda}_{\mu v} \qquad (7.11)$$

8. CONCLUSION

Having derived clean and natural equation gravity and shape of the same equation gravitational acceleration without using the gravitational constant of Newton, with a different way to Newton and Einstein, using as components only terms of energy and wavelength; or speed of light and wavelength, the way for a new interpretation of gravity opens, even for a new theory of gravity "energy-wave":

1. That to derive the equations of gravity in terms electrostatic necessarily need to include the concept of "Gravitational Energy" and the concept of Second Tension Vector derived Planck Area and the limit defined by the Planck Energy Square.

2. That it is possible to derive equations for the electrostatic acceleration and gravitational acceleration on the basis of the same principles.

3. That in the case of the force equation Gravity, because the length of wave pilot of resting energy and "gravitational energy" wave pilot length, are vastly different and also originate nearly so "simultaneous”; "Gravitational” wave length should fit variable length electrostatic wave form, which had hitherto hindered its calculation electrostatically.

4. However, to derive the equation of gravitational acceleration (5.6), gravitational coupling factor disappears, generating a surprising equivalence of gravitational wave length and gravitational acceleration.

5. Energy density and its corresponding wavelength does not exert a gravitational force on objects that attracts, but this force is exerted on it actually surrounding space is so rapid orthogonal contraction towards the center of density of energy in proportion overriding the gravitational wave length.

6. The electrostatic force is not exerted on the mass of the second particle in interaction but surrounding space there on which is accelerated in a repulsive or contraction depending on the signs of the charge of the particles interact.

7. That the final equation in 8.6 here developed for the estimation of the gravitational acceleration, is actually an electrostatic acceleration equation where the fine structure constant is the Lorentz contraction factor for the wavelength in the context of the special theory Relativity of Einstein.

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