

Potential Quantum Gravitational Constant Discovery Leading To Reformulation Of Planck Related Equations

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Abstract

The purpose of the present paper is to present my following potential discoveries:

A set of equations pertaining to my potential discovery of an equation that yields a quantum gravitational constant (denoted as G_K).

The said discovered quantum gravitational constant (G_K) is equivalent to Newton's gravitational constant (G) in the quantum realm.

The said discovered equation and value of the quantum gravitational constant (G_K) are as follows:

$$G_K = e^2 / (m_{\text{proton}} \times m_e \ 4\pi\epsilon_0) \ [N \cdot kg^{-2} \cdot m^2] \ \text{or} \ [kg^{-1} \cdot m^3 \cdot s^{-2}] \ (=d1)$$

$$G_K = (k \ e^2) / (m_{\text{proton}} \times m_e) \ [N \cdot kg^{-2} \cdot m^2] \ \text{or} \ [kg^{-1} \cdot m^3 \cdot s^{-2}] \ (=d2)$$

$$G_K = 1.5141727058066559828611192827127e+29 \ [N \cdot kg^{-2} \cdot m^2] \\ \text{or} \ [kg^{-1} \cdot m^3 \cdot s^{-2}]$$

where

e is the electric charge constant

m_e is the rest mass of an electron

m_{proton} is rest the mass of a proton

ϵ_0 is the permittivity of free space or the distributed capacitance of the vacuum (aka electric constant)

k is the Coulomb constant ($k = 1/4\pi\epsilon_0$)

The said discovered quantum gravitational constant (G_K) has allowed me to

Discover that some nucleus-related equations can be reformulated with the discovered quantum gravitational constant (G_K) as the core thereof, such as the equations of the reduced Planck constant (\hbar)

Here is the list of the said additional discovered equations:

The new discovered equation of the electron's classical radius (r_e) as:

$$\mathbf{r_e} = \mathbf{G_K m_{proton} / c^2} \quad [\mathbf{m}]$$

instead of the historically-known equation:

$$\mathbf{r_e} = \mathbf{e^2 / [m_e c^2 4\pi\epsilon_0]} \quad [\mathbf{m}]$$

The new equation of the electron's Bohr radius (a_0) as:

$$\mathbf{a_0} = (\mathbf{G_K m_{proton} / c^2}) \times (\mathbf{\alpha^{-1}})^2 \quad [\mathbf{m}]$$

instead of the historically-known equation:

$$\mathbf{a_0} = \mathbf{r_e} \times (\mathbf{\alpha^{-1}})^2 \quad [\mathbf{m}]$$

The newly discovered equation of electron's reduced Compton wavelength (λ_e) as:

$$\mathbf{\lambda_e} = [\mathbf{G_K m_{proton} / c^2}] \times \mathbf{\alpha^{-1}} \quad [\mathbf{m}]$$

instead of the historically-known equation:

$$\mathbf{\lambda_e} = \mathbf{r_e} \times \mathbf{\alpha^{-1}} \quad [\mathbf{m}]$$

The new discovered equations of the reduced Planck constant (\hbar) as:

$$\mathbf{\hbar} = [\mathbf{G_K m_{proton} \times m_e / c}] \times \mathbf{\alpha^{-1}} \quad [\mathbf{N \cdot m \cdot s}]$$

$$\mathbf{\hbar c} = [\mathbf{G_K m_{proton} \times m_e}] \times \mathbf{\alpha^{-1}} \quad [\mathbf{N \cdot m^2}]$$

$$\mathbf{\hbar/c} = [\mathbf{G_K m_{proton} \times m_e / c^2}] \times \mathbf{\alpha^{-1}} \quad [\mathbf{N \cdot s^2}] \text{ or } [\mathbf{kg \cdot m}]$$

$$\mathbf{\hbar} = (\mathbf{G m p^2 / c}) \quad [\mathbf{j \cdot s}] \text{ or } [\mathbf{j \cdot hz^{-1}}] \text{ or } [\mathbf{N \cdot m \cdot s}] \text{ or } [\mathbf{kg \cdot m^2 \cdot s^{-1}}]$$

New discovered equation of the electric charge constant (e):

$$\mathbf{e^2} = \mathbf{4\pi\epsilon_0 [G_K m_{proton} \times m_e]} \quad [\mathbf{C^2}] \quad (=g10)$$

which is same as:

$$\mathbf{e^2} = [\mathbf{G_K m_{proton} \times m_e / k}] \quad [\mathbf{C^2}] \quad (=g10)$$

where:

k is the Coulomb constant

Gravitational force potential (E_{GFPE}) of a proton-electron pair, materialized by the equation:

$$\mathbf{E_{GFPE}} = [\mathbf{G_K m_{proton} \times m_e}] \quad [\mathbf{N \cdot m^2}] \quad (=d4)$$

$$E_{GFPE} = 2.30707754909231777175556e-28 \text{ [N}\cdot\text{m}^2] \quad (=d5)$$

Gravitational energy potential quanta (E_{GEPE}) of a proton-electron pair, materialized by the equation:

$$E_{GEPE} = [G_K m_{\text{proton}} \times m_e / c] \quad [\text{N}\cdot\text{m}\cdot\text{s}] \quad (=d6)$$

$$E_{GEPE} = 7.6955823521494919387050354199998e-37 \quad (=d7) \\ [\text{N}\cdot\text{m}\cdot\text{s}]$$

Gravito-kinetic energy potential quanta (E_{GKPE}) of a proton-electron pair, materialized by the equation:

$$E_{GKPE} = [G_K m_{\text{proton}} \times m_e / c^2] \quad [\text{N}\cdot\text{s}^2] \text{ or } [\text{kg}\cdot\text{m}] \quad (=d10)$$

$$E_{GKPE} = 2.56696996431761199899e-45 \text{ [N}\cdot\text{s}^2] \text{ or } [\text{kg}\cdot\text{m}] \quad (=d11)$$

The equivalency between the gravitational force potential of a proton-electron pair and its electric field energy potential, materialized by the equation:

$$E_{GFPE} = [G_K m_{\text{proton}} \times m_e] = [k e^2] \quad (=d12)$$

Correlation Of Ratio Of Gravitational Constants (G_K/G) And Ratio Of Gravitational-Electrostatic Forces (F_e/F_g)

Based on my calculation, we have,

The value ratio between the quantum gravitational constant (G_K) and Newton's classical gravitational constant (G) becomes:

$$G_K/G = 1.5141727058066559828611192827127e+29 \quad \rightarrow \\ [\text{N}\cdot\text{kg}^{-2}\cdot\text{m}^2] / 6.6743e-11 \text{ [N}\cdot\text{kg}^{-2}\cdot\text{m}^2]$$

$$G_K/G = 2.268661441359627201146366334616e+39$$

The ratio between the said electrostatic force (F_e) and the gravitational force (F_g) as:

$$[F_e/F_g] = e^2 / [4\pi\epsilon_0 \times G \times m_{\text{proton}} m_e] = 2.27e+39$$

Origin Of My Discovery Of Quantum Gravitational Constant (G_K)

My discovery process appears to show that

The hidden quantum gravitational constant (G_K) reveals itself finally via the quantum-classical gravitational paradigm connection between the “so-called” electron's classical radius (r_e) and the classical gravitational energy quanta (GM/c²).

and

The said quantum-classical gravitational paradigm connection between the electron's classical radius (r_e) and the classical gravitational energy quanta (GM/c²) becomes relevant if we assume that the classical gravitational energy quanta (GM/c²) must have a counterpart in quantum gravity: some kind of quantum gravitational energy quanta (denoted as G_KM/c²).

Furthermore,

The so far hidden quantum gravitational constant (G_K) appears to reveal that there exists

The quantum gravitational hooking mechanism between an electron and a proton to form a bound proton-electron pair inside every atom.

In the quantum world, i.e. atoms,

The quantum gravitational hooking mechanism allows a proton and an electron to hook to each other at a discrete distance to form a bound proton-electron pair inside every atom.

The quantum gravitational hooking mechanism prevents the electron from getting sucked by a proton then getting annihilated by it, due to their opposite charge-originated attraction.

Based on my previous potential findings,

The quantum gravitational hooking mechanism appears to also manifest itself in the classical world.

In the classical world, i.e. celestial objects,

The quantum hooking mechanism appears to allow a captor (i.e. a star) and a captive (i.e. planet) to hook to each other at a discrete distance to form a bound captor-captive celestial object pair inside

every cosmic system, i.e. star-planet, planet-moon, and so on.

The quantum gravitational hooking mechanism prevents captives from getting sucked then annihilated by a proton into the nucleus, due to their opposite charge-originated attraction.