The Physics of Anti-Gravity Systems

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Abstract:

A geometric version of gravity is submitted that can unify the natural dynamics of large and small scale systems. The relationship between the Gaussian gravitational constant, Planck's constant, and the speed of light is given as a unified field equation that can be tested with numerous predictions. A solution for dark matter is deduced and empirical evidence is provided. Anti-gravity is shown to be possible and a perplexing discovery is made in the conclusion.

INTRODUCTION

Newton's law of gravity is:

$$(1)\quad F = \mathrm{G}\,\frac{(\mathrm{m}_1 \mathrm{m}_2)}{r^2},$$

where F is the force of interaction between a primary mass particle m_1 and a secondary mass particle m_2, G is Newton's constant, and r is the distance between the center of masses.

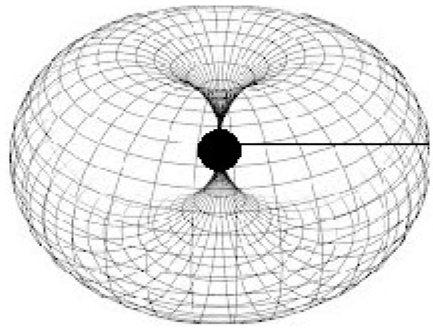
We know from the standard model of cosmology that the Gaussian gravitational constant[1] $k = \sqrt{\mathrm{G}}$. The constant k is equivalent to,

$$(2)\quad k = \frac{2\pi}{\mathrm{T}}\sqrt{\frac{a^3}{(\mathrm{m}_1 + \mathrm{m}_2)}},$$

where a is a secondary's arithmetic mean distance (the semi-major axis of an elliptical orbit) and T is its orbital period.

A GEOMETRIC VERSION OF GRAVITY

Let us assume a circular secondary orbit where $a = r$ (the focus will shift to elliptical orbits in a later section). Merging $k = \sqrt{G}$ with Newton's law of gravity,

(3) $U = -Fr = -\left(\frac{2\pi r}{T}\right)^2 \mu = -\Lambda \mu r = -S\mu f^2 =$  r,

where U is the gravitational potential energy, μ is the system's reduced mass, Λ is the secondary's centripetal acceleration, S is the surface area of a horn torus relative to the secondary's position r, and f is the secondary's orbital frequency.

On large scales, we tend to refer to time with the term period T. On small scales, we tend to refer to time with the term frequency f. Since T and f are inversely proportional to each other, T » f relative to cosmological scales and f » T relative to atomic scales. The key difference between Newton's law of gravity and Eq. (3) is the inclusion of the space-time geometry Sf^2, which has been dormant within the Gaussian constant $k = \sqrt{G}$. The smaller the value of the product $\Delta S\mu$, the greater the square value of a secondary's orbital frequency Δf^2, and vice versa.

A UNIFIED FIELD EQUATION

Louis de Broglie's matter-wave relation[2] is,

(4) $\lambda = \frac{h}{p}$,

where λ is a particle's wavelength, h is Planck's constant, and p is a particle's momentum. Eq. (4) can be used to deduce a momentum-frequency relation,

(5) $p = \frac{h}{\lambda} = \frac{hf}{v} = h\tilde{n}$,

where $\tilde{n} = (1/\lambda)$ is the particle's spatial frequency (wavenumber) and v is its speed. Expanding Planck's constant h with Eqs. (3) & (5),

$$(6)\quad h = p\lambda = \frac{m_2 v^2}{f} = -\frac{\Lambda r m_2}{f} = \frac{U m_2}{\mu f}\,.$$

The constants k & h can then be unified with Eqs. (2), (3) & (6),

$$(7)\quad -k^2\frac{(m_1 m_2)}{r} = U = -\frac{\mu h f}{m_2}\,.$$

From the Planck-Einstein relation and Bohr's frequency condition $\Delta E_{PEB} = hf$,

$$(8)\quad \frac{\Delta U}{\mu_o} = -\frac{\Delta E_{PEB}}{m_{o2}} = -\Delta\Lambda\Delta r = \gamma c^2\,,$$

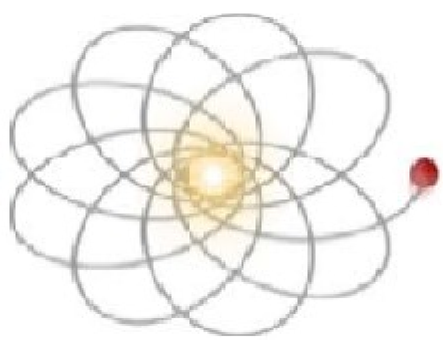
where c is the speed of light in a vacuum and γ is the Lorentz factor.

ANTI-GRAVITY

Cyclic variations are measured in Newton's gravitational constant G that are contemporaneous with the solar cycle[3]. If G is not constant, anti-gravity would hypothetically be possible since the value of G could be manipulated. The fact that the Gaussian gravitational constant $k = \sqrt{G}$ was abandoned as a constant in 2012 by the IAU[4] indicates anti-gravity is possible.

It can be deduced from Eqs. (3) & (5) that,

$$(9)\quad -G(m_1 m_1) = Ur = -S\mu r f v \tilde{n} = -S\mu r(v\tilde{n})^2 =$$



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Elliptical orbits and apsidal precession result when the wavenumber $\tilde{n} > 1 < 2$. In the special case of circular orbits $\tilde{n} = 1$.

According to geological evidence[5] the Sun's wavenumber $\tilde{n} \approx 4.5$ cycles per revolution. Since a body's mass is a conserved quantity, it is hypothetically possible that the value of $\Delta G(m_1 m_2)$ scales proportionately with $\Delta S\mu r\Delta(v\tilde{n})^2$.

It is hypothesized that G varies during the solar cycle[3] due to torque induced by the Sun's oscillating magnetic field. The magnetic flux quantum[6] Φ is,

$$(10)\quad \Phi = \frac{h}{2e} = \frac{p\lambda}{2e} ,$$

where e is the elementary charge unit. Since e is constant, it can be deduced from Eqs. (6) & (10) that,

$$(11)\quad e = \frac{p\lambda}{2\Phi} = \frac{\mathrm{U}}{m_\mu \Phi f} = -\frac{\mathrm{K}}{\Phi f} = \text{constant} ,$$

where the inertial factor $m_\mu = 2\mu / m_2$. We can see from Eq. (11) that a bound state particle's charge is equivalent to the constant ratio between its kinetic energy K and its flux-frequency Φf. The inertial factor m_μ could explain the factor of ≈ 2 for an electron's anomalous magnetic moment[7].

Merging Ohm's law[8] and Faraday's law of induction[9] with Eq. (11),

$$(12)\quad \Delta f_{m\Phi} = -m_\mu \Delta\Phi\Delta f = \frac{\Delta \mathrm{U}}{q} = -m_\mu \frac{\Delta\Phi}{\Delta t} = m_\mu \Delta \mathrm{V} = -m_\mu \frac{\Delta \mathrm{I}}{\Delta \mho} = -m_\mu \frac{q}{\Delta t \Delta \mho} ,$$

where the inertial flux-frequency $f_{m\Phi}$ is measured in kilograms webers hertz, the sign is governed by Lenz's law[9], the period t is in seconds, the charge q is in coulombs, the voltage V is in volts, the current I is in amperes (coulombs per second), and the conductance ℧ is in siemens (the delta symbol is due to the negative resistance of nonlinear electronic components).

We can see from Eq. (12) that $q = \Delta\mho\Delta\Phi$ for macroscopic systems, where

$$(13)\quad \Delta\mho = \sigma \frac{\Delta \mathrm{A}}{\Delta \ell} ,$$

with σ being a body's conductivity, A is its cross sectional area, and ℓ is its length.

Even though the Earth's net "charge" is neutral, it has conductance ℧ and magnetic flux Φ. The change in the the value of G due to torque induced by the Sun's magnetic field during the solar cycle can be deduced from Eqs. (11) & (12),

$$(14)\quad -\Delta \mathrm{G}(m_1 m_2) = \Delta \mathrm{U} \Delta r = \Delta r \times -m_\mu \Delta \mathrm{K} .$$

Eq. (14) indicates that the increase in a particle's relativistic mass (inertia) from Einstein's special theory of relativity[10] is analogous to an increase in ΔG.

From the power law P = ΔIΔV = constant, a spacecraft's orbital power J can be defined in siemens (webers hertz)^2 as,

$$(15)\quad J = -\Delta\mho(\Delta f\Delta\Phi)^2 = \text{constant.}$$

This definition is amusing since it spells “UFO” ;-). Coincidentally, a disk shaped craft would have a high cross sectional area relative to its length (its height if rotated by 90°), which would be an efficient shape for its conductivity ℧.

Eq. (15) indicates the orbital power of a spacecraft would be dependent upon the polarity and square of its flux-frequency. The pulse width and slope of the waveform is also a factor, and a harmonic frequency of cosmic microwave background (CMB) radiation would be efficient for deep space exploration (harmonic frequencies of the Schumann resonance would be efficient for Earth based orbits). A superconductive piezomagnetic housing for the craft would be efficient since ultrasonic sound waves could be used to oscillate the spatial dimensions of Δ℧ and augment the square value of ($\Delta f\Delta\Phi$), assuming the polarity of ΔΦ remains constant. Abrupt staccato direct current pulses could also be used to augment the value of ($\Delta f\Delta\Phi$) without alternating the polarity of ΔΦ. Contact the author for further information regarding anti-gravitic technology.

CONCLUSION

The scalar form of Coulomb's law[9] is,

$$(16)\quad F_q = k_q \frac{(q_1 q_2)}{r^2} = \frac{\mu_o c^2}{4\pi}\,\frac{(q_1 q_2)}{r^2}\,,$$

where q_1 and q_2 are the signed magnitude of the charges, k_e is Coulomb's constant, and μ_o is the magnetic constant (not to be confused with the reduced mass of a system μ).

As discussed in Eq. (11), a particle's charge is equivalent to the constant ratio between its kinetic energy and flux-frequency. A magnetic version of Coulomb's law can be given with this relation as,

$$(17)\quad F(\theta) = \blacktriangle c\,\frac{(\Delta K\Delta t)_1(\Delta K\Delta t)_2}{\Delta\Phi_1\Delta\Phi_2} = \blacktriangle c\,(\Delta\pm\mho\Delta\Phi)_1(\Delta\pm\mho\Delta\Phi)_2\,,$$

where a positively charged body has positive conductance (+℧) relative to an electron's charge, a negatively charged body has negative conductance (-℧), and the flux factor ▲ in henry hertz and the spherical meter reduced to a square is,

$$(18)\quad \blacktriangle = \frac{\mu_o c}{4\pi r^2} = 29.9792458 \text{ H Hz m}^{-2};$$

Since c = 299, 792, 458 m Hz, the decimal place of ▲can be shifted relative to the distance unit of measurement. Replacing the meter with a light second results in $c \times 10^{-7}$ H Hz m^{-2}.

The dark delta symbol ▲was chosen since the latitudinal position of the Great Pyramid of Giza =▲ to 3 significant figures (29.97916° N)[11]. Considering that this coordinate is relative to the Earth's equator and there would be a slight shift in the position due to axial precession this is remarkable. How an ancient civilization could have accidentally positioned such a monument at the value of ▲ is beyond my comprehension. Since c is constant, any civilization can deduce the value of ▲ from what they define as one second IF they know the speed of light in a vacuum. I leave it up to you to interpret this discovery how you wish. Maybe we should beam a ▲ signal at the Great Pyramid relative to the square meter of its missing apex so we can activate the stargate ;-) haha.

DEDICATION

This paper is dedicated to Cynthia Cashman Lett, without whom it would not have been published.

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