A Uniting Force Constant

Chapter 11

Someone asked me recently, "which electrogravitational equation is the best equation to describe the total electrogravitational force action?" After some consideration I was forced to say that this was like asking which of the Earth's magnetic poles was the correct pole. All of the equations arrive at the correct force magnitude and each provide a way to arrive at the same conclusion.

However, the equations presented in *this* chapter involve a force constant as a connecting term between the separate involved system (**A**) vectors and I must admit that this form most satisfies my sense of the correct mechanics of electrogravitation.

The force constant is related to the least quantum power constant of chapter 5. The power constant was demonstrated by equations (187), p 94; (192), p. 96; and by the total electrogravitational result in equation (193), p. 96 also. Equation (193) is of the form of two weber/meter (**A**) terms connected by a force term (F_{qk}) derived from the power constant Sck divided by the velocity of light (c) in free space. It is this preferred equational form that will be further developed in this chapter.

The least quantum power constant and force values are stated below as well as the quantum acceleration frequency (f_{at}) from equation (61), p. 25. Also frequency f_{C1rn1} of equation (142), p. 67. They may be related to each other in a very profound way.

$ScK := 8.886962025439721 \cdot 10^{-09} \cdot watt$ $\quad f_{C1rn1} := 2.569222069780951 \cdot 10^{08} \cdot Hz$

$f_{at} := 3.520758889564392 \cdot 10^{10} \cdot Hz$ $\quad c := 2.997924580 \cdot 10^{08} \cdot m \cdot sec^{-1}$

First, we will derive the quantum force constant F_{qk} below in equation (315).

(315) $$F_{qk} := \frac{ScK}{c}$$ or, $$F_{qk} = 2.964371447076138 \cdot 10^{-17} \cdot newton$$

Utilizing the force constant Fqk, the power constant ScK, and the electrogravitational wavelength λ_{LM}, we can derive a frequency f_{at} below. First, we must state the value for λ_{LM} as:

$$\lambda_{LM} := 8.514995416 \cdot 10^{-03} \cdot m$$ (Bottom of chapter 1, p. 25.) Then,

(316) $$f_{at} := \frac{ScK}{F_{qk} \cdot \lambda_{LM}}$$ or, $$f_{at} = 3.520758888920581 \cdot 10^{10} \cdot Hz$$

This result is exactly equal to equation (61), p. 25 as mentioned above and therefore must relate all of the above parameters in a very important way. Further, if we multiply the frequency f_{at} by the fine structure constant we obtain the exact results of equation (142), p. 67 of: f_{Crn1} = 2.569222069780951 * 10^08 Hz ! This absolutely removes any question concerning whether the quantum power constant ScK, the quantum force constant f_{qk}, the frequencies f_{at} and f_{C1rn1} are related to each other.

Utilizing the concept of the vector magnetic potential **A** coupled to another vector magnetic potential **A** through a quantum power constant Fqk, we will eventually make a very important connection to the quantum potential (Q) as proposed by David Bohm whose work inspired the famous Aharonov-Bohm experiment. This experiment proved that the vector magnetic potential can affect an electrons wave function in the absence of the magnetic field that created the **A** vector. *This concept will quite possibly reshape contemporary thinking as to the nature of force-fields.*

Let the following constants be established for those using the active Mathcad form of this book:

$m_e := 9.109389700 \cdot 10^{-31} \cdot kg$	Electron rest mass.
$q_o := 1.602177330 \cdot 10^{-19} \cdot coul$	Electron quantum charge.
$\mu_o := 1.256637061 \cdot 10^{-06} \cdot henry \cdot m^{-1}$	Magnetic permeability.
$\varepsilon_o := 8.854187817 \cdot 10^{-12} \cdot farad \cdot m^{-1}$	Dielectric permittivity.
$r_c := 3.861593255 \cdot 10^{-13} \cdot m$	Compton electron radius.
$l_q := 2.817940920 \cdot 10^{-15} \cdot m$	Classic electron radius.
$c := 2.997924580 \cdot 10^{08} \cdot m \cdot sec^{-1}$	Speed of light in vacuum.
$\alpha := 7.297353080 \cdot 10^{-03}$	Fine structure constant.
$G := 6.672590000 \cdot 10^{-11} \cdot newton \cdot m^2 \cdot kg^{-2}$	Accepted gravitational constant.
$R_{n1} := 5.291772490 \cdot 10^{-11} \cdot m$	Bohr radius of Hydrogen.
$h := 6.626075500 \cdot 10^{-34} \cdot joule \cdot sec$	Plank constant.

These are the currently accepted values. The below constants are related directly to the theory of electrogravitation proposed by this author.

$V_{LM} := 8.542454612 \cdot 10^{-02} \cdot m \cdot sec^{-1}$	Least quantum velocity.
$f_{LM} := 1.003224805 \cdot 10^{1} \cdot Hz$	Least quantum frequency.
$L_Q := 2.5729832158 \cdot 10^{3} \cdot henry$	Least quantum inductance.
$C_Q := 3.861593281 \cdot 10^{-6} \cdot farad$	Least quantum capacitance.

$i_{LM} := q_o \cdot f_{LM}$ or, $i_{LM} = 1.607344039464671 \cdot 10^{-18} \cdot amp$

(= Least quantum amp.)

The quantum vector magnetic potential at the Bohr radius of Hydrogen is given below in equation (317) below.

(317) $$A_{LM} := \frac{\mu_o \cdot i_{LM} \cdot \lambda_{LM}}{4 \cdot \pi \cdot R_{n1}} \qquad \text{Or,} \quad A_{LM} = 2.586378599815588 \cdot 10^{-17} \cdot \frac{weber}{m}$$

Adding the appropriate terms to generate a quantum magnetic force expression we arrive at the equation in (318) below.

(318) $$F_{LM} := \underbrace{\left(\frac{\mu_o \cdot i_{LM} \cdot \lambda_{LM}}{4 \cdot \pi \cdot R_{n1}}\right)}_{(\mathbf{A})} \cdot \underbrace{\left(\frac{i_{LM} \cdot \lambda_{LM}}{l_q}\right)}_{(amp)} = \text{Quantum Magnetic Force.}$$

or, $$F_{LM} = 1.256184635325646 \cdot 10^{-22} \cdot newton$$

Since the electrogravitational equation is composed in its basic form as $F_G = F_{LM} * \mu o * F_{LM}$, then:

(A) variable weber/meter; F_{QK} |----------constant newton----------| (amp) (amp); (A) variable weber/meter

(319) $$F_{EG} := \left(\frac{\mu_o \cdot i_{LM} \cdot \lambda_{LM}}{4 \cdot \pi \cdot R_{n1}}\right) \cdot \left[\left(\frac{i_{LM} \cdot \lambda_{LM}}{l_q}\right) \cdot \mu_o \cdot \left(\frac{i_{LM} \cdot \lambda_{LM}}{l_q}\right)\right] \cdot \left(\frac{\mu_o \cdot i_{LM} \cdot \lambda_{LM}}{4 \cdot \pi \cdot R_{n1}}\right)$$

or, $$F_{EG} = 1.982973078718267 \cdot 10^{-50} \cdot \frac{weber}{m} \cdot newton \cdot \frac{weber}{m}$$

Note that the above result can also be expressed as:

$$F_{EG} = 1.982973078718267 \cdot 10^{-50} \cdot newton \cdot \frac{henry}{m} \cdot newton$$

which is the same as the previous electrogravitational results for the force at the n1 radius of Hydrogen between two electrons.

Equation (319) above expresses a form that is at the heart of this chapter since it can readily be adapted to the the form of the vector magnetic potential as expressed by David Bohm. It is a total electrogravitational expression involving two separate vector magnetic potential systems coupled through a quantum force constant (F_{QK}) where that quantum force constant can be expressed by equation (320) below.

(320) $$F_{QK} := \left(\frac{i_{LM} \cdot \lambda_{LM}}{l_q}\right) \cdot \mu_o \cdot \left(\frac{i_{LM} \cdot \lambda_{LM}}{l_q}\right)$$

or, $$F_{QK} = 2.964371449283503 \cdot 10^{-17} \cdot newton$$

which is very nearly exact to the value of equation (315) previous. This value is herein defined as a universal force constant that is at the heart of the electrogravitational action. The **A** vector is a variable term since R_{n1} can be any value. R_{n1} is used only for the sake of convenience while working in the microscopic realm.

The simplified form of the electrogravitational expression may thus be stated below in equation (321) as:

(321) $$F'_{EG} := A_{LM} \cdot F_{QK} \cdot A_{LM}$$

or, $$F'_{EG} = 1.982973078718267 \cdot 10^{-50} \cdot \left(\frac{weber}{m}\right) \cdot newton \cdot \left(\frac{weber}{m}\right)$$

Notice how the units expression is of the form of the two system interaction and the weber/meter expressions are symmetrical about the constant newton expression. Thus even in the units, the two system interaction is symmetrical.

The **A** vector is inline with the motion of a standard (+) charge and therefore it is closely tied to a charged particles momentum. Momentum is then closely connected to a particles wave function which can be used to solve Schrodinger's wave equation. This will be examined shortly in light of Bohm's interpretation of the wave function controlling the energy potential of a particle.

First, it is interesting that we may derive a basic quantum frequency related directly to the least quantum electrogravitational force constant in equation (322) below.

(322) $$f_{QK} := \frac{F_{QK} \cdot l_q}{h} \qquad \text{or,} \qquad f_{QK} = 126.0689469809949 \cdot Hz$$

and, $$\frac{f_{QK}}{4 \cdot \pi} = 10.0322480412077 \cdot Hz = f_{LM}$$

This frequency (f_{QK}) may be worth looking for in the noise of the cosmic background radiation.

Perhaps the concept of non-local action and energy being gated into the electron (that causes it to move instantaneously to a new location in space) is contrary to some and just unfamiliar action to others. Quantum mechanics *is* counterintuitive to most people who see space-time as a continuum and find any other situation unacceptable. Quantum mechanics is however capable of demonstrating action at a distance, wave-particle duality, and other things that seem impossible until they are observed to have happened in spite of our common sense objections.

The concept of energy being supplied by the fine structure of the electron has also been theorized to exist by the late David Bohm, Emeritus Professor of Physics at

Birbeck College, University of London, England. Professor Bohm passed away in 1992. His work suggested that it is the wavefunction that guides and controls the electron and not the other way around. From his work, the Aharonov-Bohm experiment was initiated to prove that the vector magnetic potential (**A**) could affect an electron in a magnetic field-free volume of space. To be more exact, the wave-function was affected which then changed the position of the electron in space.

The following quotes are from the book by David Bohm and Basil J. Hiley titled, "The Undivided Universe", Routledge, Chapman & Hall, Nov. 1993.

On page 37 the following is quoted from the above mentioned book as, "The fact that the particle is moving under its own energy, but being guided by the information in the quantum field, suggests that an electron or any other elementary particle has a complex and subtle inner structure." (This means that the energy that moves the particle suddenly from one point to another comes from the particle itself, and that energy is controlled by the form of the quantum wavefunction.)

The concept of "active information" is also brought forth wherein this active information tells the particle not only how to move, but where it is in relation to all the other particles in the universe.

I find this concept attractive since it fits so well with my own concept of all of the particles being tied together through their classic quantum radii by a singular point in imaginary energy-space. This singular point would be the energy source for the electrons motion in Bohm & Hiley's interpretation of quantum motion.

This same imaginary energy space helps supply the energy to displace the electron in virtual space which forms the "field" itself. (Every point is connected and is thus aware of all the other parts.)

Therefore, the analogy on page 38 of their book that a relatively weak radio wave controls what happens inside the complex structure of a radio serves to illustrate the active information process very well.

On page 57 of their book, Bohm & Hiley remark that, "two particles can also be strongly coupled at long distances." Further, "that the behavior of each particle may depend nonlocally on the configuration of all the others, no matter how far away they may be." This interpretation fits so well with my previous presentation of how all of the particles are connected to each other through their least quantum classic radii and imaginary energy space.

At the beginning of chapter three of their book, Bohm & Hiley present the equations that relate how the quantum potential is developed and applied to the motion of the electron. First, equation (3.1) of chapter 3 is presented which is Schrodinger's wave equation for a one body system:

(323) $$\frac{ih}{2\cdot\pi}\cdot\frac{\partial\cdot\psi}{\partial\cdot t}=-\frac{h^2}{8\cdot\pi^2\cdot m}\cdot\nabla^2\cdot\psi+V\cdot\psi$$ (Note: Eq. 323 thru 329 are not active Mathcad equations.)

where V is the classic energy potential. (Potentials usually are expressed in energy units.) They then solve the above equation for the case of ψ = R exp (iS / (h / 2*π)). R is the amplitude potential $|\psi|$ of the wavefunction and S is the phase of the wavefunction expressed as S = m * v * r. Then equations (3.2) and (3.3) are the repeated solutions as shown below:

(324) $$\frac{\partial\cdot S}{\partial\cdot t}+\frac{(\nabla\cdot S)^2}{2\cdot m}+V-\frac{h^2}{8\cdot\pi^2\cdot m}\cdot\frac{\nabla^2\cdot R}{R}=0$$ (eq. 3.2)

and also;

(325) $$\frac{\partial \cdot R^2}{\partial \cdot t} + \nabla \cdot \left(R^2 \cdot \frac{\nabla \cdot S}{m} \right) = 0$$ (eq. 3.3)

From the above in a few more steps they define the quantum potential as:

(326) $$Q = -\left(\frac{h^2}{8 \cdot \pi^2 \cdot m} \cdot \frac{\nabla^2 \cdot R}{R} \right)$$ (eq. 3.6)

The above quantum potential may possibly be related to the quantum force potential F_{QK} that I presented in (320) previously.

Now the stage is set for a very important equation of motion (3.8) presented in their book as equation (327) below:

(327) $$m \cdot \frac{d \cdot v}{d \cdot t} = -\nabla \cdot (V) - \nabla \cdot (Q)$$ (Note that del (∇) is equivalent to 1/r.)

Then V/r = force and Q/r = force also. In the above, there exists an irreducible quantum potential that can engender a quantum force potential. Note also that the force is (+) for the $-\nabla *(Q)$ expression since Q is (-) in (326) above. This could cause a force of repulsion according to our previous definition of force.

I propose that what I have termed the F_{QK} force in equation (320) previous and Bohm's quantum potential force ($-\nabla \cdot (Q)$) of (327) above very intimately related, if not one and the same under certain circumstances. My equation is a special case of the above and applies specifically to the electrogravitational action.

It is apparent that the Q value is dependent on the rate of change of the wavefunction ψ and therefore can become very large. Then the quantum potential depends only on the form and not the strength of the field. This is also brought out in their book. The quantum potential does not pull or push the particle directly according to their theory but instead controls the self-energy of the particle by an amount dependent on the information content in the particles co-joint wavefunction.

The Casimir effect is pointed to by Bohm & Hiley on page 38 of their book as a revealing source for the electron self motion. I prefer to call this energy-space, or virtual space, or even hyperspace, which feeds energy to the center of the particle.

For a excellent and relevant article on the Casimir effect the reader is referred to an article by Phillip Yam, "Exploiting Zero-Point Energy", *Scientific American*, December 1997:82-85.

The above presents the similarity between my equations of constant force potential F_{QK} and the equation of motion involving the Q potential of Bohm & Hiley. The end of chapter three of their book, (p.p. 50-54), presents the equation of motion involving the vector magnetic potential which also has a marked similarity to the F_{LM} equation (318) on page 180 previously presented in this chapter. Page 52 of their book has an additional Q term as stated before is the quantum potential. Their equation is:

(328) $$m \cdot \frac{d \cdot v}{d \cdot t} + m \cdot (v \cdot \nabla) \cdot v = \frac{e}{c} \cdot v \times (\nabla \times A) - \nabla \cdot Q$$ (Both sides = force)

Then even if there is no magnetic force, there still exists the quantum potential Q, which is also gauge invariant. If R is changing rapidly, the force will be large. This suggests that there is a rate of change of R that will be equal to my F_{QK} force constant of electrogravitation. I define F_{QK} as being a 'kernel' of force.

Equation (328) above may be expressed in the more familiar MKS units as:

$$(329)\qquad m\cdot\frac{d}{dt}v = q\cdot v\times(\nabla\times A) - \nabla\cdot Q$$

(B) (Note that del cross A = flux B.)

The above equation is the familiar equation of electromagnetic force on a moving charge of F = q*v X (B) sin θ where sin θ = 1 at 90 degrees with the additional parameter of minus del times Q.

Under ordinary circumstances, the above equation has a Q potential value of nearly insignificant magnitude until the wavefunction interacts with another particles wavefunction. Then the classic magnetic force qo*v X B is reduced to zero and the Q value assumes the value that the classic magnetic force represented.

The interaction can be classified as a wavefunction collapse where now the Q potential is the instantaneous action parameter that I originally termed the F_{QK} constant force system interconnect potential. The Q potential carries the same force magnitude as information that lines up the interaction to an inline action. This guarantees that in most cases the electrogravitational interaction will always be maximum and inline. This is related to the quantum whole integer nature of quantum energy states in general.

The magnetic field generates the quantum Q potential but the quantum Q potential can exist in the absence of that engendering magnetic field. Its magnitude is a product of the rate of change of the interaction of its related wavefunction with another wavefunction. It can carry information instantaneously from the locale of a black hole when ordinary photons cannot. This is by reason that ordinary photons need both a B field <u>and</u> E field to propagate. This limits the propagation velocity for photons to the velocity of light in free space. Then it is proposed that there is no way to shield this wavefunction from interacting with other particles wavefunctions under ordinary circumstances. This then becomes the electrogravitational action.

The F_{QK} force constant is equivalant to a power constant by multiplying the force constant by the speed of light c as shown below in equation (330).

(330) $$ScK := F_{QK} \cdot c \qquad \text{or,} \qquad ScK = 8.886962032057239 \cdot 10^{-9} \cdot \text{watt}$$

The above power constant ScK is equal to the value obtained in chapter 5, pages 104 and 105 wherein equation (207) predicted a possible connection particle for the electrogravitational force as well as for dark matter. Equation (203) on page 104 arrived at the same power as equation (330) above by a slightly different expression which tends to lend weight to the idea that there may be an energy in electron-volts that may be probed by a particle beam of equivalent energy to see if the gravitational force might be altered for particles surrounding the target. Equation (331) below re-derives the equivalent mass of this connection particle.

(331) $$M_{ScK} := \frac{ScK}{f_{LM} \cdot c^2} \qquad \text{or,} \quad M_{ScK} = 9.856294176373425 \cdot 10^{-27} \cdot \text{kg}$$

The energy in electron volts to probe this equivalent mass is:

(332) $$eVp := \frac{ScK}{f_{LM} \cdot q_o} \qquad \text{or,} \quad eVp = 5.528973146916985 \cdot 10^{9} \cdot \text{volt}$$

This energy is well within the capabilities of present day accelerators. I therefore suggest that this energy realm may be investigated for this connection particle.

I propose that the least quantum force constant F_{QK} may be a major factor in the so called dark matter force that causes a force of attraction between stars in galaxies to be much greater than can be accounted for by normal gravitational computations based on the known amount of mass in the neighborhood of the stars.

Further, the apparent independent motion of galaxies of the cosmos may be a form of coherent action by the above F_{QK} constant force equation. The coherent wavefunction associated with the F_{QK} constant force kernels aligned in the same direction would cause all of the matter in a galaxy to be accelerated in just one direction.

Perhaps the ability to control the coherency of the wavefunction associated with Bohm's Q potential (which is closely associated with my F_{QK} potential) may allow for the construction of interstellar vehicles much like the UFO craft that have been observed in our own sky for thousands of years. A tap into a vast energy source may also be a possible benefit of such a science.

It was brought out previously that the rest mass of the electron could be derived from the least coulomb charge of the electron squared times the permeability of free space all divided by 4*π times the classic radius of the electron. This is repeated below in equation (333).

(333) $$m'_e := \frac{\mu_o \cdot q_o^2}{4 \cdot \pi \cdot l_q} \qquad \text{or,} \qquad m'_e = 9.109389688253174 \cdot 10^{-31} \cdot kg$$

The mass of the electron may also be derived from the next equation involving the expression of 2 times the quantum fluxoid times the least quantum current all divided by the square of the electrogravitational velocity.

First we define the least quantum flux as: $\Phi_o := 2.067834610 \cdot 10^{-15} \cdot \text{weber}$

(334) $$m''_e := \frac{2 \cdot \Phi_o \cdot i_{LM}}{V_{LM}^2} \qquad \text{or;} \qquad m''_e = 9.109389661243303 \cdot 10^{-31} \cdot \text{kg}$$

The accuracy ratios to the actual electron mass m_e are:

(335) $$\frac{m'_e}{m_e} = 0.99999999871047 \qquad \text{and,} \qquad \frac{m''_e}{m_e} = 0.999999995745412$$

Therefore, it is conclusive that the electron 'mass' is composed of a standing wave involving only the magnetic field energy. Then particle rest mass in general may exchange electrogravitational action energy or force by the F_{QK} force constant which is entirely magnetic, as in equation (320) on page 181 previous.

By now it has perhaps become apparent to some readers that if a wavefunction ψ can instantaneously move an electron from one location in space to another across arbitrary distances via the active information in that wavefunction, then a coherent macro wavefunction could en mass move many particles in like manner.

Another possibility that is suggested by the above equations is that of causing energy space to open up via gating the electron with a properly formed wavefunction and thus tap into the vast energy of energy space directly. This would indeed be a clean, reliable source of energy for all time.

There is even some evidence that the brain can interact on the quantum scale with its surroundings. There is an excellent article by Adam Frank, "Quantum Honeybees", *Discover*, November 1997: 80-87, in which it is conjectured in a serious manner that honeybees react with their surroundings in just such a fashion.

Even birds seem to have an uncanny way of navigating their surroundings that seems amazing even if we take into account the possibility of magnetite in their brains. (Even butterflies can do this magic.) Well, as the saying goes, "if the birds and the bees do it, then why can't we do it?" (I think that some people can do it.)

The field of theoretical quantum physics as applied to gravitation may have electrogravitation as a solution. The equations previously presented present a very strong case for the true nature of gravitation as being electrogravitational and also that research and experimentation along these lines will doubtless yield very large rewards for all of humanity.

The End

by

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