Electrogravitational Dynamics

Chapter 4

The below constants are stated for the equations that are in the following chapter.

$\mu_o := 1.256637061 \cdot 10^{-6} \cdot \frac{newton}{amp^2}$

$q_o := 1.602177330 \cdot 10^{-19} \cdot coul$

$V_{LM} := .08542454612 \cdot m \cdot sec^{-1}$

$t_{LM} := 9.967855609 \cdot 10^{-2} \cdot sec$

$l_q := 2.817940920 \cdot 10^{-15} \cdot m$

$m_e := \frac{\mu_o}{4 \cdot \pi} \cdot \frac{q_o^2}{l_q}$

$r_{n1} := 5.291772490 \cdot 10^{-11} \cdot m$

$I_{LM} := q_o \cdot t_{LM}^{-1}$

$\lambda_{LM} := V_{LM} \cdot t_{LM}$

$G := 6.672590000 \cdot 10^{-11} \cdot m^3 \cdot kg^{-1} \cdot sec^{-2}$

$Fg_{classic} := G \cdot \frac{m_e^2}{r_{n1}^2}$ or, $Fg_{classic} = 1.977291383868968 \cdot 10^{-50} \cdot newton$

For the centripetal force expression, where the fine structure constant times the free space velocity of light will yield the Bohr n1 orbital velocity;

$\alpha := 7.297353080 \cdot 10^{-3}$ $c := 2.99792458 \cdot 10^{08} \cdot \frac{m}{sec}$ $V_{n1} := \alpha \cdot c$

$V_{n1} = 2.187691416747071 \cdot 10^{6} \cdot m \cdot sec^{-1}$ = standard value.

Also let: $\theta := \frac{\pi}{2}$ and, $\varepsilon_o := 8.854187817 \cdot 10^{-12} \cdot \frac{farad}{m}$

Let the three forces centripetal 1 & 2, magnetic, and coulomb be defined as:

(107)

$$F1cent := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{2}}{l_q\cdot r_{n1}}\cdot(V_{n1})\cdot V_{LM} \qquad F1cent = 3.217042954200647\cdot10^{-15}\cdot newton$$

(108)

$$F1cn := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{2}}{l_q\cdot r_{n1}}\cdot V_{n1}^{2} \qquad F1cn = 8.238729472820284\cdot10^{-8}\cdot newton$$

(109)

$$F1mag := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{2}}{l_q\cdot r_{n1}}\cdot(V_{n1} - V_{LM})\cdot V_{LM}$$

(Vectored with centripetal force.)

$$F1mag = 3.217042828582184\cdot10^{-15}\cdot newton$$

(110)

$$F1coul := \frac{1}{4\cdot\pi\cdot\varepsilon_o}\cdot\frac{q_o^{2}}{r_{n1}^{2}}$$

or:

$$F1coul = 8.238729466021871\cdot10^{-8}\cdot newton$$

Therefore, the magnetic force at r_{n1} for system 1 is given as;

(111)

$$F1sys := (\cos(\theta)\cdot(F1cn - F1coul)) + i\cdot\sin(\theta)\cdot(F1cent - F1mag)$$

or,

$$F1sys = 4.162690177641084\cdot10^{-33} + 1.25618463377314\cdot10^{-22}i\cdot newton$$

Assuming a second identical system below, F2sys is defined as;

$$F2cn := F1cn \qquad F2cent := F1cent \qquad F2mag := F1mag \qquad F2coul := F1coul$$

Then the magnetic force for system 2 is given by equation 112 on the next page as;

(112)

$$F2sys := \cos(\theta)\cdot(F2cn - F2coul) + i\cdot\sin(\theta)\cdot(F2cent - F2mag)$$

or,

$$F2sys = \left(4.162690177641084\cdot10^{-33} + 1.25618463377314\cdot10^{-22}i\right)\cdot newton$$

There will be two components to the centripetal force, one of which is normal and balances the coulomb electric force and the other will be a vectored action (as above) with the magnetic force so that the resultant sum of differences is complex. The total electrogravitational force expression is shown below.

(113) $$Ftot := F1sys\cdot\mu_o\cdot F2sys$$

or for the total system complex expression;

$$Ftot = \left(-1.982973073816794\cdot10^{-50} + 1.314218040083849\cdot10^{-60}i\right)\cdot m^{-1}\cdot henry\cdot newton^2$$

The above serves to illustrate that due to the complex number nature of each force system expression the resulting total electrogravitational force is negative (one of attraction) by the accepted definition of force. This is by reason of the (i) squared term being equal to (-1). The +(i) term on the right occurs as a result of Mathcad not resolving the cosine of 90 deg. with enough precision to yield exactly zero.

The difference of the magnetic and centripetal forces in one system should then yield a constant force at 90 degrees reactive and that force should be very nearly equal to the expected electrogravitational force for that system.

Thus the total local one-system force (electrogravitational) is the interplay sum of the double component centripetal force which tends to be balanced against the nearly equal but lesser coulomb and magnetic forces respectively. The resultant difference of the forces interplayed will yield the electrogravitational force graviton that will react with another like system to produce the total electrogravitational action-reaction force.

It follows that the number of minor systems expressed as the ratio of the total mass of the composite local system to the mass of an electron will yield a pure number that will yield the total one-system force that can be multiplied by the permeability of free space and another macroscopic system to yield the total electrogravitational force.

Therefore, let the following be established:

$Mass1 := m_e \quad Mass2 := m_e \quad Ratio1 := Mass1 \cdot m_e^{-1} \quad Ratio2 := Mass2 \cdot m_e^{-1}$

At r_{n1};

(114) $$Ftotal := ((Ratio1) \cdot F1sys) \cdot \mu_o \cdot ((Ratio2) \cdot F2sys)$$

or,

$$Ftotal = -1.982973073816794 \cdot 10^{-50} + 1.314218040083849 \cdot 10^{-60} i \cdot m^{-1} \cdot henry \cdot newton^2$$

Now let the equations be solved for a velocity that will yield the proper value of force for one system at the Bohr radius. The following solution assumes the most primary case where all angles = 90 degrees. (It is the case is for the centripetal force Fcn nearly balancing the magnetic force where the magnetic force related velocity is slightly different enough to generate the required electrogravitational *one* system force Ftotal above.) The solution will term F1sys (simplified) as Fm1.

For that purpose let the following constants be established:

$h := 6.6260755 \cdot 10^{-34} \cdot joule \cdot sec \qquad m_e = 9.109389688253175 \cdot 10^{-31} \cdot kg$

$r_c := \dfrac{h}{2 \cdot \pi \cdot m_e \cdot c} \qquad r_c = 3.861593259656345 \cdot 10^{-13} \cdot m$

(115)

$$F_{m1} := \frac{\mu_o \cdot \left(q_o^2\right) \cdot V_{LM}^2}{4 \cdot \pi \cdot l_q \cdot r_{n1}} \qquad \text{or,} \qquad F_{m1} = 1.256184634210259 \cdot 10^{-22} \cdot \text{newton}$$

The result for Fm1 above squared times μo will yield the gravitational force.

(116) $$F1g := F_{m1}^2 \cdot \mu_o$$

or, $$F1g = 1.982973075196837 \cdot 10^{-50} \cdot m^{-1} \cdot \text{henry} \cdot \text{newton}^2$$

Compare this with the classical expression remembering that only the 1 / r_{n1} terms are variable.

(117) $$Fg_{classic} := \frac{G \cdot m_e^2}{r_{n1}^2} \qquad Fg_{classic} = 1.977291383868968 \cdot 10^{-50} \cdot \text{newton}$$

Finally, the Vnx variable is solved for that would yield the proper value for the electrogravitational force as outlined above;

where, $V_{n1} = 2.187691416747071 \cdot 10^6 \cdot m \cdot sec^{-1}$

and, $V_{nx} := V_{n1} - V_{LM}$

or: $V_{nx} = 2.187691331322525 \cdot 10^6 \cdot m \cdot sec^{-1}$

compare to: $V_{n1} = 2.187691416747071 \cdot 10^6 \cdot m \cdot sec^{-1}$

where: $V_{n1} - V_{nx} = 0.085424546152353 \cdot m \cdot sec^{-1}$ difference. (Check)

therefore,

(118) $$F'_{m1} := \frac{\mu_o}{4 \cdot \pi} \cdot \left[\frac{q_o^2}{l_q \cdot r_{n1}} \cdot \left(V_{n1} - V_{nx}\right)^2 \right]$$

or; $F'_{m1} = 1.256184635161782 \cdot 10^{-22} \cdot \text{newton}$

comparing F_{m1} to F'_{m1} above; $F_{m1} = 1.256184634210259 \cdot 10^{-22} \cdot \text{newton}$

The above solutions for F'_{m1} assumes that the normal V_{n1} velocity is used for the centripetal force while V_{LM} is used in the magnetic force equation.
The system mechanics above for the n1 orbital illustrate that a velocity just slightly below the V_{n1} velocity (= V_{nx}) will create a differential velocity V_{LM} that will generate the electrogravitational force. In contrast it may be noted that the differential of the kinetic energy in each orbital in an atom will be found by taking the electron mass times the lower velocity squared and then subtracting that from the electron mass times the velocity squared of the higher velocity orbital.

or; the Bohr energy differential n1-n2 is;

Let: $V_{n2} := \frac{V_{n1}}{2}$ and (119) $E_{nx} := \left(\frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{\,2}}{l_q}\right)\cdot\left(V_{n1}^{\,2} - V_{n2}^{\,2}\right)$

and thus; or, $E_{nx} = 3.269811148261693\cdot10^{-18}\cdot\text{joule}$

(120) $freq_{rad} := \frac{E_{nx}}{h}$ or $freq_{rad} = 4.934762889830781\cdot10^{15}\cdot\text{Hz}$

The case for generation of the electrograviton however does not depend on the orbital energy difference but on the very slight difference between the expected normal velocity V_{n1} and the slightly lower actual velocity of V_{nx} in the same orbital. This lower velocity would cause the electron to precess in an attempt to close the required distance λ_n and also the orbital would have just the slightest amount of lesser energy that the expected normal energy level. We may call this a negative energy that when added to the normal quantum energy level will produce the energy level that requires orbital precession as well as just a very slightly greater energy to raise an electron to a higher energy level than might be predicted by the normal math. This negative energy may also yield an action mechanism that would increase the entropy of the atomic system and in fact all atomic systems.

This could be extended to any system even into the nuclear realm of quarks and gluons. Any such energy deprived system would have reverse interaction momentum since the energy interaction involves a negative energy mechanism. That further, the very slight negative energy in the orbital is likened to a negative energy particle that has a quantum radius equal to r_{LM} and thus extends far away from the atom. The basic electrogravitational mechanism is embodied in the very slight momentum differential that yields V_{nx} which suggests that the second law of thermodynamics applies even in a quantum sense to what would otherwise be considered a stable atomic orbit. It suggests that even the proton and electron are slowly yielding to the requirement that they also must give up their stability in the form of gravitational energy derived from the very slight energy loss that causes and promotes the electrogravitational force. Thus *gravity* is the result of entropy. Entropy that converts stability to less stability and less of a well defined energy. All matter would thus be affected in a like manner. Electrogravitation is one of the final results.

Again, the electrogravitational force is derived from the slight difference between the expected orbital velocity and the slightly lower actual velocity which is expressed below as;

(121) $V_{LM} := (V_{n1} - V_{nx})$ or; $V_{LM} = 0.085424546152353 \cdot m \cdot sec^{-1}$

Note that it is apparent that the V_{LM} velocity is directly related to a differential in momentum within one orbital while the differential in V_n orbital jump velocity is most closely related to energy differential as far as normal radiation of form-loss is considered. The quantum frequency related to the momentum differential is:

(122) $$E_{LM} := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^2}{l_q}\cdot V_{LM}^2 \qquad \text{or,} \qquad E_{LM} = 6.647443294709804\cdot 10^{-33}\cdot\text{joule}$$

and,

(123) $$f_{LM} := \frac{E_{LM}}{h} \qquad \text{or,} \qquad f_{LM} = 10.03224803989904\cdot\text{Hz}$$

which of course is the fundamental electrogravitational interaction momentum differential related frequency as posited previously. Also please note that the expression for mass is given above as:

(124) $$m_e := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^2}{l_q} \qquad \text{where} \qquad m_e = 9.109389688253175\cdot 10^{-31}\cdot\text{kg}$$

Which is the mass of the electron to a very exact and extreme precision. Note then that the expression defines the electron mass as the product of charge squared and the **magnetic permeability** of free space divided by 4 times π and the classical radius of the electron. It is postulated here that the classic electron radius is directly connected to all other electrons throughout the universe by that same distance in hyperspace where all distances become the same distance and further that all same type particles share this feature of a unique same distance to each other through that hyperspace which is a connection path realm connected to all space. The momentum differential result of the orbital velocity is expressed in (125) next.

(125) momentum $$P_{LM} := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{\,2}}{l_q}\cdot\left(V_{n1} - V_{nx}\right)$$

or, $$P_{LM} = 7.781654798439545\cdot10^{-32}\cdot kg\cdot m\cdot sec^{-1}$$

and,

(126) $$\lambda_{LM} := \frac{h}{P_{LM}}$$ or, $$\lambda_{LM} = 8.514995424017943\cdot10^{-3}\cdot m$$

which is then capable of reaching out much further than the atomic orbitals that generate that wavelength. This is also the fundamental electrogravitational wavelength that is of interest when designing superconducting interaction surfaces that would either absorb or radiate gravitational energy in the most controllable and efficient manner.

On a large scale the entropy associated with the electrogravitational mechanism would cause a energy loss to all electromagnetic phenomena and when considering interactions to the radiation on a line normal or perpendicular to the direction of propagation on a local scale the action inline to the propagation would cause an apparent upshift when viewed head on in the gravitational field locally and a downshift when viewed from behind, if that were possible. However, on the overall large scale, the energy would be less when it was observed on the local scale and therefore could erroneously be taken as redshift due to the universe expanding and then be given a constant of expansion velocity proportional to distance, in this case called the Hubbell constant. It therefore is postulated herein that the universe may not be expanding as the data is being interpreted but simply cooling off due to entropy acting on all energy to cause all radiated energy to be at a slightly less energy level per unit time than our math would predict and the difference is so small per unit energy that on a local scale and small time interval of measurement Hubbell redshift is not taken for what it really is. It is further postulated that this energy loss accumulates as a converted energy to matter material that can be termed *cold dark matter,* a term coined in the recent past by scientists for unseen matter that could explain a very large gravitational attraction in spiral galaxies that is much greater than can be accounted for by the calculated and/or observed matter density of the space region in question. The conservation of energy/mass must be conserved so the energy/mass converted from radiation/matter by entropy leading to the electrogravitational action mechanism is therefore postulated to be converted to a mass-field that has the form of the equation below.

(127) $$m_{field} := \frac{\mu_o}{4\cdot\pi}\cdot\left(\frac{q_o^{\,2}}{r_c}\right) \qquad m_{field} = 6.647443226850642\cdot 10^{-33}\cdot kg$$

where the above mass-field is simply the mass of the electron multiplied by the fine structure constant and applies equally well to the proton or any case where the field around a quantum mass at a quantum distance may be derived.

or;

(128) $$m'_{field} := \alpha\cdot\left(\frac{\mu_o}{4\cdot\pi}\right)\cdot\left(\frac{q_o^{\,2}}{l_q}\right) \qquad m'_{field} = 6.647443289849455\cdot 10^{-33}\cdot kg$$

The quantum coulomb electric field energy at the near surface of the electron is derived by taking the mass-energy of the electron times the fine structure constant squared which is similar to the above process for finding the mass-field above.

(129) $$E_{field} := \alpha \cdot \left[\left(\frac{\mu_o}{4 \cdot \pi} \right) \cdot \left(\frac{q_o^2}{l_q} \right) \cdot c^2 \right]$$ or, $$E_{field} = 5.974424082111506 \cdot 10^{-16} \cdot joule$$

And;

(130) $$E'_{field} := \frac{1}{4 \cdot \pi \cdot \varepsilon_o} \cdot \left(\frac{q_o^2}{r_c} \right)$$ or, $$E'_{field} = 5.97442402798209 \cdot 10^{-16} \cdot joule$$

Thus the quantum electric coulomb field energy divided by the velocity of light in free space squared will yield the quantum magnetic field energy where the electric field energy is derived from the mass-energy times the fine structure constant in the first case and the magnetic field energy is derived from the product of the mass times the fine structure constant in the second case. Ergo; mass is the case for locked-in field energy in the form of a standing wave and the mass of the electron is the least quantum energy state that has a prime number in frequency not divisible by any other number except one. That guarantees a stable state. The same can be said of the proton but it may not be quite as stable as the electron. It may decay due to the fact that its prime is not as prime as the electron in relation to long periods of time. The case for the other particles in the particle realm suggests that they all may be more unstable in time by a factor related directly to the size of their prime divided by their Compton frequency.

The macroscopic form for the electrogravitational expression may be stated where mass total for each system may be expressed as a multiple of the quantum mass of the electron in a simplified form below. This will be stated for a one kilogram mass on the surface of the Earth at mean sea level.

First, let the following constants be stated:

$m1_{total} := 1 \cdot kg$ $\quad m2_{total} := 5.98 \cdot 10^{24} \cdot kg$ $\quad r_X := 6.37 \cdot 10^6 \cdot m$

$n1 := \frac{m1_{total}}{m_e}$ $\quad n2 := \frac{m2_{total}}{m_e}$ $\quad Acc_{earth} := 9.80665 \cdot m \cdot sec^{-2}$

$n1 = 1.097768384296403 \cdot 10^{30}$ $\quad n2 = 6.564654938092488 \cdot 10^{54}$ (Pure ratios)

then, (where the only variable concerning distance of system separation is r_x):

(131)

$$Fg := \left[n1 \cdot \left[\frac{\mu_o}{4 \cdot \pi} \cdot \frac{q_o^2}{l_q \cdot r_X} \cdot \left[\left(V_{n1} - V_{nx} \right)^2 \right] \right] \right] \cdot \mu_o \cdot \left[n2 \cdot \left[\frac{\mu_o}{4 \cdot \pi} \cdot \frac{q_o^2}{l_q \cdot r_X} \cdot \left[\left(V_{n1} - V_{nx} \right)^2 \right] \right] \right]$$

or, $\quad Fg = 9.861952438899696 \cdot m^{-1} \cdot henry \cdot newton \cdot (newton)$

and;

(132) $Fg' := m1_{total} \cdot Acc_{earth}$ or, $Fg' = 9.806649999999999 \cdot newton$ (classical)

and compare this with the standard or classical gravitational expression below.

(133) $$Fg'_{classic} := \frac{G \cdot \left(m1_{total} \cdot m2_{total} \right)}{r_X^2}$$

or, $\quad Fg'_{classic} = 9.833695575561464 \cdot newton$

The units show that for the electrogravitational form, only one Newton expression is variable and depends on the $1/r_X$ squared term which insures that the mechanics for changing distance between systems are equal.

The above macroscopic electrogravitational expression is rather straightforward owing to the fact that the electron mass has been shown to be identical to the quantum magnetic field mass-energy at the classical electron radius. They can be taken to be the same quantum pea in a quantum pod.

(134) $$m_e = \frac{\mu_o}{4 \cdot \pi} \cdot \frac{{q_o}^2}{l_q}$$ where, $$\frac{m_e}{\frac{\mu_o}{4 \cdot \pi} \cdot \frac{{q_o}^2}{l_q}} = 1$$

Let us now return to the case for the n1 orbital where we can expand on the total orbital system mechanics that may yield the total electrogravitational expression in terms of the centripetal, magnetic, and electrostatic forces all combining to provide the total electrogravitational force.

Let $\theta := \frac{\pi}{2}$ $\phi := \frac{\pi}{2}$ orbital # $n := 1$

Demonstrating the simplified form of the electrogravitational atomic n1 action below;

(135) $$F_{M1} := (\sin(\theta) \cdot \sin(\phi)) \cdot \left[\left(\frac{\mu_o}{4 \cdot \pi} \cdot \frac{{q_o}^2}{l_q \cdot r_{n1}} \right) \cdot \left(\frac{V_{n1}}{n} - V_{LM} \right) \right] \cdot V_{LM}$$

or, $F_{M1} = 3.217042829800592 \cdot 10^{-15} \cdot newton$

(136) $$F_{C1} := \frac{\mu_o}{4 \cdot \pi} \cdot \frac{{q_o}^2}{l_q \cdot r_{n1}} \cdot \left(\frac{V_{n1}}{n} \right) \cdot V_{LM}$$

or, $F_{C1} = 3.217042955419055 \cdot 10^{-15} \cdot newton$

(137) $$F1_{tot} := i \cdot (F_{C1} - F_{M1})$$

or, $F1_{tot} = 1.25618463377314 \cdot 10^{-22} i \cdot newton$

Check:

(138) $$F1_{tot}^{2}\cdot\mu_{o} = -1.982973073816794\cdot10^{-50}\cdot m^{-1}\cdot henry\cdot newton^{2}$$

and, $$Fg_{classic} = 1.977291383868968\cdot10^{-50}\cdot kg\cdot m\cdot sec^{-2}$$

where the classic force is assumed to be negative since the force is one of attraction. In $F1_{tot}$ no assumption need be made as the sign is correct.

And note that; $$\left(V_{n1}\cdot V_{LM} - V_{nx}\cdot V_{LM}\right) = 7.297353091416881\cdot10^{-3}\cdot m^{2}\cdot sec^{-2}$$

which is the fine structure constant times one meter-squared per second-squared.

The force differential between the centripetal and magnetic forces has also an energy differential to be examined for the two related quantum electrogravitational standing wave frequencies that when taken as a differential will yield the basic quantum electrogravitational frequency f_{LM}.

or,

(139) $$F_{M1}\cdot r_{n1} = 1.702385874589052\cdot10^{-25}\cdot joule$$

(140) $$F_{C1}\cdot r_{n1} = 1.702385941063485\cdot10^{-25}\cdot joule$$

And;

(141) $$f_{M1rn1} := \frac{F_{M1}\cdot r_{n1}}{h} \qquad f_{M1rn1} = 2.569221969458471\cdot10^{8}\cdot Hz$$

(142) $$f_{C1rn1} := \frac{F_{C1}\cdot r_{n1}}{h} \qquad f_{C1rn1} = 2.569222069780951\cdot10^{8}\cdot Hz$$

the differential freq. is;

(143) $$f_{diff} := f_{C1rn1} - f_{M1rn1} \qquad \text{or,} \qquad f_{diff} = 10.03224802017212\cdot Hz$$

This is the quantum electrogravitational frequency that is a result of the frequency difference in the quantum frequency structure of atomic matter of all forms. It is to be expected to be found in all matter-energy signatures and is displayed at very low order magnitude.

The related electromagnetic wavelength differential is;

(144) $$\lambda_{diff} := c \cdot \left(\frac{1}{f_{M1rn1}} - \frac{1}{f_{C1rn1}} \right) \qquad \lambda_{diff} = 4.556335470344859 \cdot 10^{-8} \cdot m$$

and;

(145) $$f_{diff} := \frac{c}{\lambda_{diff}} \quad \text{or,} \quad f_{diff} = 6.579683606512612 \cdot 10^{15} \cdot Hz$$

where also the equivalent frequency in the n1 orbital is;

(146) $$\frac{m_e \cdot \left(\frac{V_{n1}}{n} \right)^2}{h} = 6.579683853107708 \cdot 10^{15} \cdot Hz$$

The two frequencies above, f_{C1rn1} and f_{M1rn1}, may be taken to be intregally related to the generation of the electrograviton in the case above and the differential between the two represented as a flipping from one to the other forming an energy pump that is supplied by a source directly related to the energy that keeps the electron pulsing from hyperspace as has been postulated in the previous chapters. The energy "radiated" carries negative momentum to everything that it interacts with.

Since the two standing wave frequencies above are considered as a primary step to the formation of the graviton then it may be also inferred that they play a direct role in the receptor interaction with the incoming electrograviton. Therefore if the two frequencies are interfered with by a strong enough electromagnetic wave (at the just the right wavelength) the process can be made either stronger in the attractive action or made to oppose or reverse the momentum action altogether. The average of the sum of the two frequencies is calculated below.

(147) $f_{CMavg} := \frac{f_{C1rn1} + f_{M1rn1}}{2}$ or; $f_{CMavg} = 2.569222019619711 \cdot 10^{8} \cdot Hz$

and the average electromagnetic wavelength is:

(148) $\lambda_{CMavg} := \frac{c}{f_{CMavg}}$ or, $\lambda_{CMavg} = 1.166860846243154 \cdot m$

and the diameter related to that wavelength is:

(149) $D_{\lambda CM} := \frac{\lambda_{CMavg}}{\pi}$ or, $D_{\lambda CM} = 0.37142334315998 \cdot m$

where also; $D_{\lambda CM} = 14.62296626614094 \cdot in$

Change the orbital # n back on page eight to see how the average frequency will change but the frequency differential remains the same. The wavelength differential will grow larger as an integer increase of orbital # n will demonstrate. This suggests that a particular atomic orbital could be selected for probing by the appropriate frequency that would force the quantum energy level into only one level instead of alternating between the higher and lower energy level that defines the energy difference that generates the quantum electrogravitational frequency f_{LM}. The lower energy level would act as a gravitational energy vacuum as long as it was in that energy level and if the higher energy level were forced to exist by changing the probe input frequency accordingly, the orbital would act as a gravitational generator. By changing the phase of the probe, the polarity of either energy case could be changed at will. Making the process coherent by using a well organized atomic target, the effect could be focused and magnified.

It is postulated that since a charge may build a non terminated field indefinitely and an atom containing charges can replenish energy lost through the matter wave radiation at a given rate as long as it is within the differential limits set above. Energy would thus flow from hyperspace instead of out and then back. A photon has not the same ability to replenish its energy lost to negative matter wave interaction since it does not build an external field like an electron or proton does. Therefore photons in space over a period of time lose energy and redshift as a result while atomic matter is much more stable.

It is possible to expand the Ftot equation (113) using the formulae (!07-112) and (131-132) to yield a formula that combines features of both quantum expressions so that an equation will be arrived at that will apply to macroscopic world size parameters and still retain the quantum expression constants.

First, let us insert the expressions for input variables from page seven previous as primed variables where a 1 kg mass is assumed at the surface of the Earth;

$m1'_{total} := 1 \cdot kg$ $\quad m2'_{total} := 5.98 \cdot 10^{24} \cdot kg$ $\quad r'_{x} := 6.37 \cdot 10^{6} \cdot m$

$n1' := \frac{m1'_{total}}{m_{e}}$ $\quad n2' := \frac{m2'_{total}}{m_{e}}$ $\quad Acc_{earth} := 9.80665 \cdot m \cdot sec^{-2}$

$n1' = 1.097768384296403 \cdot 10^{30}$ $\quad n2' = 6.564654938092488 \cdot 10^{54}$ (Pure ratios)

Next the (107-110) quantum force expressions are repeated below:

$Fcent := \frac{\mu_{o}}{4 \cdot \pi} \cdot \frac{q_{o}^{2}}{l_{q} \cdot r'_{x}} \cdot (V_{n1}) \cdot V_{LM}$ $\quad Fcn := \frac{\mu_{o}}{4 \cdot \pi} \cdot \frac{q_{o}^{2}}{l_{q} \cdot r'_{x}} \cdot V_{n1}^{2}$

$Fcent = 2.672505401983493 \cdot 10^{-32} \cdot newton$ $\quad Fcn = 6.844188693378739 \cdot 10^{-25} \cdot newton$

$$Fmag := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{2}}{l_q\cdot r'_x}\cdot\left(V_{n1} - V_{LM}\right)\cdot V_{LM}$$ (Vectored with centripetal force.)

$$Fmag = 2.672505297628025\cdot10^{-32}\cdot newton$$

$$Fcoul := \frac{1}{4\cdot\pi\cdot\varepsilon_o}\cdot\frac{q_o^{2}}{r'_x{}^{2}}$$

$$Fcoul = 5.685696925291126\cdot10^{-42}\cdot newton$$

Then Fgtot is stated as;

(150)

$$Fgtot := \mu_o\cdot n1'\cdot n2'\cdot\left(\left(\cos(\theta)\cdot(Fcn - Fcoul)\right) + i\cdot\sin(\theta)\cdot(Fcent - Fmag)\right)^{2}$$

or;

$$Fgtot = -9.846048356804058 + 0.792074767145431i\cdot m^{-1}\cdot henry\cdot newton^{2}$$

It can be shown that for an interaction distance less than the Bohr radius r_{n1} the electrogravitational force reverses sign and begins to grow in magnitude as a force of repulsion. This has a very interesting consequence since it means that the collapse of matter would have a limit and while "black holes" may still be possible, they would not collapse indefinitely to a zero diameter.

Let us assemble the variables for input again but this time assign a range variable to r_x around the r_{n1} diameter and also set the interaction masses to paired electrons.

$m1'_{total} := m_e$ $\quad$ $m2'_{total} := m_e$ $\quad$ $r_{var} := 1\cdot10^{-12}\cdot m, 1.1\cdot10^{-12}\cdot m .. 1\cdot10^{-11}\cdot m$

$n1' := \frac{m1'_{total}}{m_e}$ $\quad$ $n2' := \frac{m2'_{total}}{m_e}$ $\quad$ $Acc_{earth} := 9.80665\cdot m\cdot sec^{-2}$

$n1' = 1$ $\quad$ $n2' = 1$ $\quad$ (Pure ratios)

Next, the formulae (107-110) involving the quantum force expressions;

$$Fcent(r_{var}) := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^2}{l_q\cdot r_{var}}\cdot(V_{n1})\cdot V_{LM} \qquad Fcn(r_{var}) := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^2}{l_q\cdot r_{var}}\cdot V_{n1}^2$$

$$Fmag(r_{var}) := \frac{\mu_o}{4\cdot\pi}\cdot\frac{(q_o)^2}{l_q\cdot r_{var}}\cdot(V_{n1} - V_{LM})\cdot V_{LM}$$

(Vectored with centripetal force.)

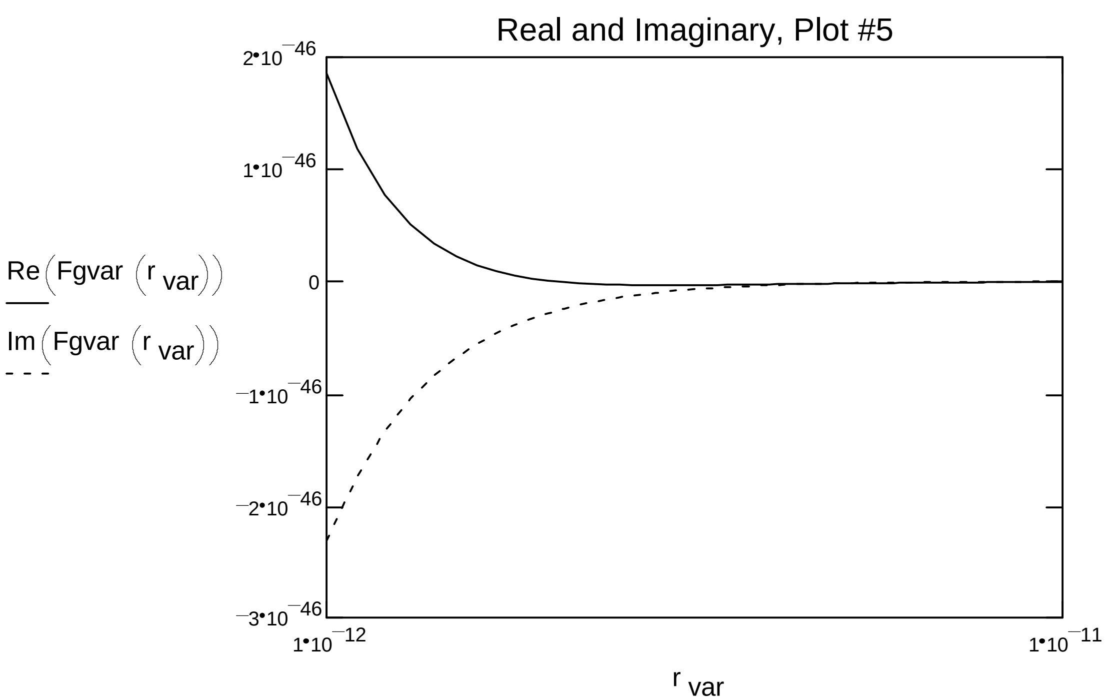
$$Fcoul(r_{var}) := \frac{1}{4\cdot\pi\cdot\varepsilon_o}\cdot\frac{q_o^2}{r_{var}^2}$$

Then Fgvar is stated as;

(151)

$$Fgvar(r_{var}) := \mu_o\cdot n1'\cdot n2'\cdot\left[\begin{array}{l}\cos(\theta)\cdot(Fcn(r_{var}) - Fcoul(r_{var}))\ ...\\ + i\cdot\sin(\theta)\cdot(Fcent(r_{var}) - Fmag(r_{var}))\end{array}\right]^2$$

The plot of the real and imaginary resultant forces is given below in plot #5.



It is immediately apparent that as the radius of interaction decreases, the force of repulsion in the real sense increases.

For those who are in the active Mathcad mode, the X-Y plot above has the capability of being read by crosshairs if you click inside the graph to enclose the entire graph region with a blue box and then click on the pull down menu item X-Y plot and then on crosshair. Below are some copied data points from the graph above where the Compton radius was chosen as a point of interest.

$$x := 2.43493 \cdot 10^{-12} \qquad y := 1.55727 \cdot 10^{-62}$$

Notice that the y value is slightly positive marking the beginning of a positive force of repulsion. This is where the zero "y" point on the left of the graph is right on the X-Y crosshair line.

The Fcoul force is responsible for the repulsion action described above since it is of the order of $1/r^2$ while the other terms are on the order of 1/r in each force-sum before squaring of the two force-sums to find the total force Fgvar. Above the Bohr radius the Fcoul force has little effect on the total force outcome. If we allow the radius to approach the Plank length which is accepted as the radius of the beginning of the universe or the smallest possible quantum radius, the electrogravitational force exceeds the coulomb force as a force of repulsion overcoming the coulomb force of attraction and therefore the expansion phase during the big bang is accounted for as well as placing the above equation Fgvar as able to unify the gravitational force with the coulomb force at the beginning of the universe. The strong and weak forces have already been proposed to be unified at the same distance according to some popular contemporary works on the subject. The Plank length is arrived at in the following equation;

(152) $$d_{plank} := \sqrt{G \cdot \frac{h}{2 \cdot \pi \cdot c^3}} \qquad d_{plank} = 1.616048615934886 \cdot 10^{-35} \cdot m$$

Substituting this into the electrogravitational force equation for the radius of interaction instead of r_{VAR} will yield an extremely large force of repulsion. Let the new radius Ro be equal to the Plank distance from above for the following:

$m1'_{total} := m_e \qquad m2'_{total} := m_e \qquad Ro := d_{plank}$

$n1' := \frac{m1'_{total}}{m_e} \qquad n2' := \frac{m2'_{total}}{m_e} \qquad Acc_{earth} := 9.80665 \cdot m \cdot sec^{-2}$

$n1' = 1 \qquad n2' = 1$ (Pure ratios)

next the formulae (107-110) involving the quantum force expressions;

$Fcent_{Ro} := \frac{\mu_o}{4 \cdot \pi} \cdot \frac{q_o^2}{l_q \cdot Ro} \cdot (V_{n1}) \cdot V_{LM} \qquad Fcn_{Ro} := \frac{\mu_o}{4 \cdot \pi} \cdot \frac{q_o^2}{l_q \cdot Ro} \cdot V_{n1}^2$

$Fmag_{Ro} := \frac{\mu_o}{4 \cdot \pi} \cdot \frac{(q_o)^2}{l_q \cdot Ro} \cdot (V_{n1} - V_{LM}) \cdot V_{LM}$ (Vectored with centripetal force.)

$Fcoul_{Ro} := \frac{-1}{4 \cdot \pi \cdot \varepsilon_o} \cdot \frac{q_o^2}{Ro^2}$ (Negative signed to stipulate a force of attraction.)

Then Fg_{ro} is stated as;

(153) $$Fg_{Ro} := \mu_o \cdot n1' \cdot n2' \cdot \begin{bmatrix} \cos(\theta) \cdot (Fcn_{Ro} - Fcoul_{Ro}) \ldots \\ + i \cdot \sin(\theta) \cdot (Fcent_{Ro} - Fmag_{Ro}) \end{bmatrix}^2$$

Then the force at the Plank distance taken as the beginning radius of the universe is;

$$Fg_{Ro} = 3.67663353658978 \cdot 10^{45} + 5.591911902223744 \cdot 10^{22} i \cdot m^{-1} \cdot henry \cdot newton^2$$

And the coulomb force at the same radius is;

$$Fcoul_{Ro} = -8.833925400368829 \cdot 10^{41} \cdot newton$$

It is immediately apparent that the electrogravitational force of repulsion is greater than the coulomb force and here we define the coulomb force as one of attraction. Thus there could be no prevalent electrical binding force until the electric force of attraction could overcome the electrogravitational force of repulsion at some larger radius of charge interaction. Let it further be stipulated that the two types of forces (centripetal), along with the coulomb, and the magnetic forces should still be active constituents in the beginning where also the major centripetal and coulomb forces are capable of switching their identities in alternate fashion so that they would all appear to be individual forces at a point in future time.

If we now assign an increasing range variable to the basic Plank radius and plot the forces electromagnetic and coulomb for the increasing force interaction radius we may be able to examine the two in a better light.

$I := 1, 2 .. 10$ $\quad m1'_{total} := m_e$ $\quad m2'_{total} := m_e$ $\quad R(I) := 1\cdot 10^{-33}\cdot I\cdot m$

$n1' := \dfrac{m1'_{total}}{m_e}$ $\quad n2' := \dfrac{m2'_{total}}{m_e}$ $\quad Acc_{earth} := 9.80665\cdot m\cdot sec^{-2}$

$n1' = 1$ $\quad n2' = 1$ $\quad$ (Pure ratios)

$$Fcent'(I) := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{\,2}}{l_q\cdot R(I)}\cdot\left(V_{n1}\right)\cdot V_{LM} \qquad Fcn'(I) := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{\,2}}{l_q\cdot R(I)}\cdot V_{n1}^{\,2}$$

$$Fmag'(I) := \frac{\mu_o}{4\cdot\pi}\cdot\frac{\left(q_o\right)^2}{l_q\cdot R(I)}\cdot\left(V_{n1} - V_{LM}\right)\cdot V_{LM}$$ (Vectored with centripetal force.)

$$Fcoul'(I) := \frac{-1}{4\cdot\pi\cdot\varepsilon_o}\cdot\frac{q_o^{\,2}}{R(I)^2}$$

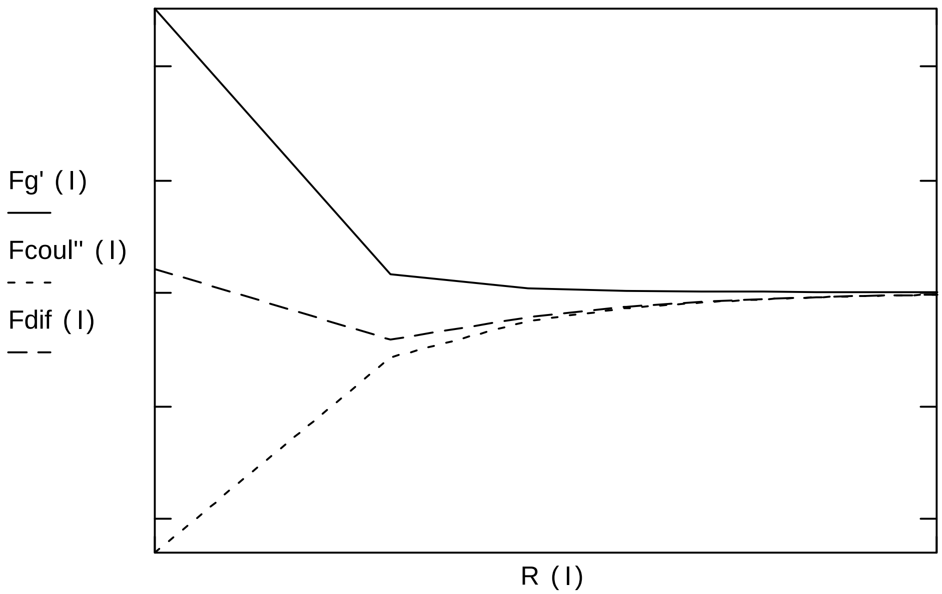
Then Fg`(I) is stated as;

(154) $$Fg'(I) := \mu_o \cdot n1' \cdot n2' \cdot \left[\cos(\theta)\cdot\left(Fcn'(I) - Fcoul'(I)\right) \ldots + i\cdot\sin(\theta)\cdot\left(Fcent'(I) - Fmag'(I)\right)\right]^2$$

Assigning compatible units to Fcoul: $Fcoul''(I) := Fcoul'(I)\cdot m^{-1}\cdot henry\cdot newton$

and; $Fdif(I) := Fg'(I) + Fcoul''(I)$

Plot #6



The plot above shows that the green line plotting the differential between the coulomb force and the electrogravitational force reaches a balance at the below radius where the X-Y plot feature is again used to find the value on the graph.

Or, $Ro_{null} := 1.26602\cdot 10^{-33}\cdot m$

and; $$\frac{Ro_{null}}{d_{plank}} = 78.34046497837605$$

The R_o interaction distance above can be shown to have some interesting features as related to deriving the mass of the proton from the electron in the below equation;

(155) $$m_{p'} := 2 \cdot m_e \cdot \left(\frac{Ro_{null}}{\sqrt{\alpha \cdot d_{plank}}} \right)$$

where;

$$m_{p'} = 1.67079336385379 \cdot 10^{-27} \cdot kg$$

and the actual mass of the proton is given by present measurements to be;

$$m_p := 1.672623100 \cdot 10^{-27} \cdot kg$$

The exact Ro can be calculated if we assume that the present proton mass is an accurate representation of what it was at the beginning of the universe, or;

(156) $$Ro_{actual} := \frac{m_p}{2 \cdot m_e} \cdot \sqrt{\alpha \cdot d_{plank}}$$

or; $$Ro_{actual} = 1.267406456641462 \cdot 10^{-33} \cdot m$$

This would be the interaction distance for the electrogravitational force to equal the coulomb force where the gravitational force would begin to become one of attraction instead of repulsion. Also, please note that the equation suggests that there may be two electrons for every proton and/or that two electrons paired motion may form a mechanism related to one proton in general. The first atomic orbital for example has the capability of holding two electrons and also it is suggested by popular theory that electrons prefer to form spin pairs in a superconducting copper-oxide lattice. The distance that they are separated while this occurs may have a direct bearing on the balance of forces magnetic to centripetal as they rotate about a common center creating both forces simultaneously and generating a counter emf that isolates the pair from the atomic lattice. Calculating a frequency differential related to the paired electron radius of separation, as in equations (139-147) previous, would allow for the possibility of inducing high temperature superconductivity in ordinary crystalline conductors by forcing electrons to oscillate around a common radius set by the external pump frequency differential that is constantly alternating between a higher to lower frequency to produce the needed differential frequency and thus wavelength differential. This may induce the so called d-wave that is theorized to be linked to superconductive action. It is suggested that instead of creating a mechanical arrangement of the right kinds of atoms in a lattice spaced just at the right wavelength one may be able to create superconductivity by impinging upon a conducting electron group a frequency-differential created wavelength as described above and the conditions would be set by the wave rather than a lattice for high temperature superconductivity. The condition may be satisfied when the centripetal force F_{C1} exactly balances the magnetic force F_{M1} in equations (139-142) previous. The slight difference allowed would be related to the least quantum electrogravitational energy derived from $E_{LM} = hf_{LM}$. Therefore, superconductivity may be related directly to electrogravitation.

It is of interest that the λ_{diff} result in (144) previous has a unique wavelength that is related fundamentally to the Compton wavelength of the electron by the square of the fine structure constant which is in itself the ratio of the coulomb field energy to the rest mass energy at the Compton radius of the electron.

(156)

$$\frac{2\cdot\pi\cdot r_c}{\alpha} = 3.324918743191261\cdot 10^{-10}\cdot m \quad \text{and} \quad \frac{2\cdot\pi\cdot r_c}{\alpha^2} = 4.556335299581339\cdot 10^{-8}\cdot m$$

where;

$2\cdot\pi\cdot r_{n1} = 3.324918715810513\cdot10^{-10}\cdot m$ and $\lambda_{diff} = 4.556335470344859\cdot10^{-8}\cdot m$

It is postulated by this author that the wavelength calculated to be λ_{diff} above and in equation (144) previous is possibly not only a wavelength that may be fundamental to the spin coupling of electrons in the superconducting mechanism but also fundamental to the electrogravitational mechanism as well. By a careful adjustment to the phase of the receptor wavelength mechanism, a force of anti-electrogravitation may be achieved, as well as superconductivity at the same time. The enhancement of the electrogravitational force may also be possible which would cause the absorption of radiated electromagnetic energy of all types. In equation (135) previous, an equation involving the total magnetic force expression was presented where a double sine product of angles was presented as F_{M1}. This is a standard form equation available in engineering and college textbooks with quantum distances, charges, and velocities instead if current and macroscopic distance terms. It is a combination of the law of magnetic induction and the Biot-Savart law where the details are to be presented later in this paper for the purpose of clarification. Let us bring forward this F_{M1} equation and examine it in terms of causing the total electrogravitational interaction to be one of repulsion.

Let $\theta' := \frac{\pi}{2}$ $\phi' := \frac{\pi}{2}$ $\Phi' := \frac{\pi}{2}$

Then;

(157) $$F'_{M1} := (\sin(\theta')\cdot\sin(\phi'))\cdot\left[\left(\frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^{\,2}}{l_q\cdot r_{n1}}\right)\cdot\left(\frac{V_{n1}}{n} - V_{LM}\right)\right]\cdot V_{LM}$$

and let;

(158) $$F'_{C1} := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^2}{l_q\cdot r_{n1}}\cdot\left(\frac{V_{n1}}{n}\right)\cdot V_{LM}$$

where,

(159) $F1'_{tot} := i\cdot\left(F'_{C1} - F'_{M1}\right)$ and, $F1'_{tot} = 1.25618463377314\cdot 10^{-22}\, i\cdot newton$

and for F`M2; where, $Epump := 1.00000005$

(159) $$F'_{M2} := (\sin(\theta')\cdot\sin(\Phi'))\cdot\left[\left(\frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^2}{l_q\cdot r_{n1}}\right)\cdot\left(\frac{V_{n1}}{n} - V_{LM}\right)\right]\cdot Epump\cdot V_{LM}$$

where V_{LM} has been increased by the pump frequency energy very little by the input multiple factor Epump. The result is electrogravitational repulsion that increases in force exponentially as the pump factor is increased in small linear increments.

(160) $$F'_{C2} := \frac{\mu_o}{4\cdot\pi}\cdot\frac{q_o^2}{l_q\cdot r_{n1}}\cdot\frac{V_{n1}}{n}\cdot V_{LM}$$

or,

(161) $F2'_{tot} := i\cdot\left(F'_{C2} - F'_{M2}\right)$ and, $F2'_{tot} = -3.523367794876494\cdot 10^{-23}\, i\cdot newton$

then the total electrogravitational quantum force for the above example where the F2`tot receptor now has a negative interaction force is;

(162) $$Fg_{repel} := F1'_{tot}\cdot\mu_o\cdot F2'_{tot}$$

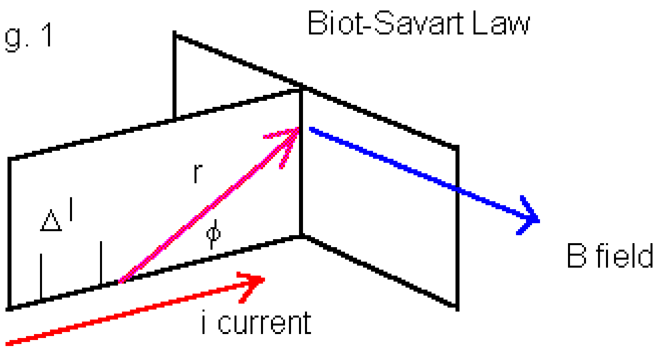
or, $Fg_{repel} = 5.561876239010821\cdot 10^{-51}\cdot m^{-1}\cdot henry\cdot newton^2$

The plus Fg_{repel} result is a force of repulsion by standard definition of the force sign of gravity. Note that only doubling Epump will increase the electrogravitational force of repulsion by approximately a power of eight. This is a very large output change for a very small input change which is likened to amplification where a small change in the control gate field has a substantial effect on the output energy. Conversely, changing the angle $\Phi`/2$ to $-\Phi`/2$ will increase the force of attraction by an approximate power of eight. This is a phase adjustment to the receptor mechanism that could be used to take energy in at a very large rate if need be to run the equipment needed to control and generate the wavelength differential supercon-ducting causing field that could be employed in the construction of a spacecraft that could easily travel to the stars. The energy absorption feature could provide a vast energy supply here on Earth, or for that matter, anywhere else for as long as needed. The phase change or energy pump are both initiated and controlled by the differential wavelength alternating force field described on page 68 previous. Imagine a craft alternately taking in energy in the upward and/or forward direction and then releasing that energy in a downward and/or the rear direction. The craft would work well if simply spherical or the like and would likely make itself a nuisance if too close to external electrically controlled devices.

The following information is for those who have little or no exposure to the right-hand rule or the Biot-Savart law as introduced in this book. These are the classic field equations adapted to the quantum electrogravitational concept as previously presented.

The Biot-Savart law for magnetic induction related to a current consisting of a moving positive charge per unit time through a given distance Δ l is shown in figure 1 on the next page and in the equation that follows. Any moving charge, whether by uniform motion or quantum displacement, constitutes a current and thus engenders a corresponding magnetic field.

Fig. 1



and the equation for the magnetic induction B_t is given by the special form of;

(163)

$$B_t := \frac{\mu_o}{4\cdot\pi}\cdot\frac{I_{LM}}{I_q\cdot r_{n1}}\cdot\lambda_{LM}\cdot\sin(\phi) \qquad \text{where,} \qquad B_t = 9.178257017370638\cdot10^{-3}\cdot\text{tesla}$$

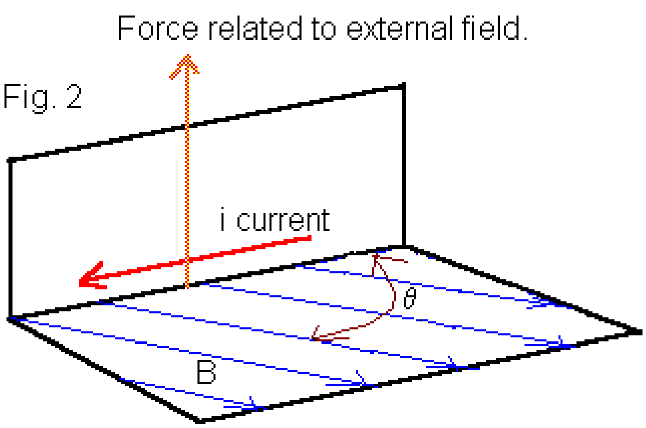
The usual expression has $1/r_{n1}^2$ instead of the electrogravitational mass-field form above of $1/I_q r_{n1}$ as the interaction distance but the result is still valid. The second figure and equation present the force arising from a current in reaction due to an external B field and in this case is the same field as above. Then;

(164)

$$F1_{field} := B_t\cdot\left(I_{LM}\cdot\lambda_{LM}\cdot\sin(\theta)\right) \quad \text{or,} \quad F1_{field} = 1.256184637790049\cdot10^{-22}\cdot\text{newton}$$

and figure 2 below is a pictorial to help clarify this result.

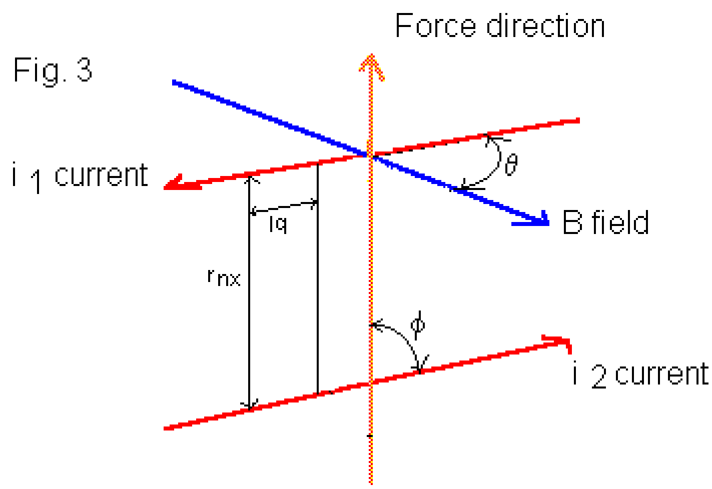
Fig. 2



The force on moving charges due to an external field.

The composite diagram of the two figures (1 & 2) is presented in figure 3 below and together they form one complete force-system that will be one part of the fundamental two-part total electrogravitational action expression that follows figure 3.

Fig. 3



lq is a quantum fixed distance of interaction in hyperspace and is one part of the product with r_{nx} in normal space which is a variable.

The total force representing a two-system electrogravitational interaction mechanism is represented in the below equation related directly to figure 3 above.

Let a system identical to system 1 be defined as;

$$F2_{field} := F1_{field}$$

then;

(165) $$Fgrav_{total} := F1_{field} \cdot \mu_o \cdot F2_{field}$$

or finally; $$Fgrav_{total} = 1.982973086498724 \cdot 10^{-50} \cdot m^{-1} \cdot henry \cdot newton^2$$

The above equation for $Fgrav_{total}$ is the fundamental expression for the mechanism that generates electrogravitation which is what is now called gravity. The macro-scopic form has been presented previously where charge interaction multiples were expressed as a ratio of system mass to the mass of the electron. Since this interaction is fulfilled in hyperspace the action is valid in the sense that our space exhibits mass in mass form rather than in multiples of electron charge that occur in hyperspace through the same-distance action distance l_q. Also it was shown that an expression exists that defines the mass of the electron in terms of charge^2, μ_o, and l_q, the fundamental hyperspace interaction distance with everything in normal space. This has some interesting implications as to all magnetic field interactions with ordinary matter in general and will be examined next.

Let us state again the equation for the electron mass defined in terms of charge squared times the permeability of free space and divided by the classic electron radius and 4 times pi;

(166) $$m_e := \frac{\mu_o \cdot q_o^{\,2}}{4\cdot\pi\cdot l_q} \quad \text{or;} \quad m_e = 9.109389688253174\cdot 10^{-31}\cdot \text{kg}$$

secondly let us state the quantum electrogravitational expression for magnetic induction (B) again;

(167) $$B''' := \left(\frac{\mu_o \cdot q_o}{4\cdot\pi\cdot l_q}\right)\cdot\frac{1}{r_{n1}}\cdot V_{LM}\cdot\sin(\phi) \quad \text{or,} \quad B''' = 9.178257007768977\cdot 10^{-3}\cdot\text{tesla}$$

where also; (Force = qo x V). Then:

(168) $$F'''_{M1} := q_o\cdot V_{LM}\cdot\sin(\theta)\cdot\overset{(B)}{\left[\left(\frac{\mu_o\cdot q_o}{4\cdot\pi\cdot l_q}\right)\cdot\frac{1}{r_{n1}}\cdot V_{LM}\cdot\sin(\phi)\right]}$$

or, $$F'''_{M1} = 1.256184635161782\cdot 10^{-22}\cdot\text{newton}$$

The natural result of the above force result is the combination of a charge product and velocity that will yield the below well known equation for centripetal force;

(169) $F'''_C := \frac{m_e \cdot V_{LM}^2}{r_{n1}}$ or, $F'''_C = 1.256184635161782 \cdot 10^{-22} \cdot newton$

which of course implies a direct rotational equivalence to the magnetic force result in $F```_{M1}$ above. Thus the force of gravity directly implies the mechanics of rotational forces. The next obvious result is that of the mass times acceleration force being equivalent to each other as in Einstein's General Theory of Relativity by first solving for acceleration;

(170) $a_{LM} := \frac{F'''_{M1}}{m_e}$ or, $a_{LM} = 1.378999777319515 \cdot 10^{8} \cdot m \cdot sec^{-2}$

and this particular acceleration is at the atomic r_{n1} quantum level.

note that; $V := a_{LM} \cdot t_{LM}$ or, $V = 1.374567066516408 \cdot 10^{7} \cdot m \cdot sec^{-1}$

and; $\frac{V}{V_{n1}} = 6.28318535234866$ (Very nearly equal to 2 pi),

Where; $2 \cdot \pi = 6.283185307179586$ (Actual).

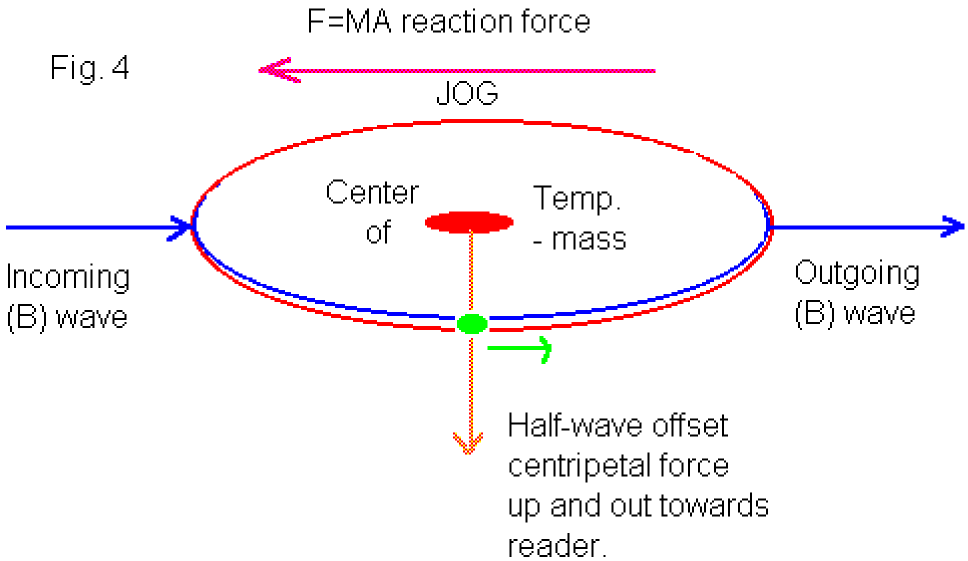
It is postulated that the incoming potential mass wave (graviton) downshifts the energy of the system and provides a tug of attractive force at that entrance point normal to the cross-sectional area of the target system and then rides around the center of negative mass created by that negative energy input and exits on the side opposite the entrance allowing the negative mass to disappear with the exit of the graviton and the mechanism just described is the so called gravitational force. The force causes a motion of closure between affected quantum mass in steps or jogs while on a macroscopic scale the motion would appear to be smooth. On a quantum scale there could be no such thing as zero motion as long as the gravitational mechanism was occurring and occur it must in normal systems.

Thus the incoming (B) wave fulfills its mass potential in the form of converting to negative mass-energy and then imparts the centripetal force through half of a cycle and then regains that negative energy and continues in the former line of motion as when it entered the affected system (or particle) imparting a force jog in the line of action opposite to its direction of motion and the system affected also is jogged in a direction normal to the direction of the through-line B wave by the temporary centripetal force. In a macroscopic sense the side motions would all cancel out except for the case where a coherent in-line motion of particles should occur then the particles would form a spiral about the common line of motion. The reader is thus prompted at this time to consider some of the commonly observed actions related to the above description such as dust devils, whirlwinds, waterspouts, water draining out of a bathtub, the motion of the planets, the rotation of the planets, stars, and galaxies themselves. All is in motion and most especially in rotational motion.

It is suggested by previous equations that the frequency differential related to the gravitational jog of any mass is related to the fundamental electrogravitational frequency f_{LM} or integer multiples thereof. All normal gravitational action may thus be interfered with by imposing the alternating frequency differential as previously suggested. The power is minute for control as compared to the resulting output but frequency stability and accuracy is most essential.

On the next page (Fig. 4) is a drawing of the system action as described above that is the gravitational action-reaction mechanism including the centripetal force vector.

Fig. 4



It is a rule in thermodynamics that a process may be considered as reversible. This may be extended to the electrodynamic realm where for instance many processes are indeed reversible. For example, a good receiving antenna can also be considered as a good transmitting antenna, a good generator of electricity can be made into a good motor that runs on that same electricity, a dissimilar metal junction will grow cooler or hotter depending on the polarity of the direct current through it and likewise that same junction can generate a voltage proportional to the temperature applied to that junction, to name but a few. Therefore let us now apply the principle of duality in the sense of what creates a whirlwind or vortex of spinning matter particles in general.

The following is postulated concerning the electrogravitational role of creating a tornado (or like) vortex:

1. Any group of mass particles moving in a direct line away from a mass-system will rotate about a common axis laying on that line of motion and if the particles form

certain distances corresponding to the natural electrogravitational wavelength λ_{LM} the vortex process will build in intensity until chaos stops the action by scattering the constituent particles.

2. The vortex mechanics may be reversed to create the in-line vertical motion artificially by causing an ordered motion of particles about a common center of rotation where the particle paths normal and in-line are separated by integer multiples of λ_{LM} where also the process is controlled by the frequency differential energy pump process outlined previously.

3. The use of charged particles in the vortex produced naturally or artificially will build or increase the forces in-line as well as centripetal and therefore the motion vertically when considering the rate of rise will increase with the amount of coherent (organized) charged matter that is being rotated.

It is interesting that some of the science fiction movies show a saucer shaped craft rotating or revolving about a center of rotation and usually some eerie sound will accompany the image suggesting that the whole thing is like an electric motor or generator action and also is highly a organized motion. This is likely the result of persons reporting this kind of motion when actual craft were observed close at hand. I have little doubt that these craft do exist in many shapes and sizes and further that their mode of operation is electrogravitational.

The forces described above have an associative connection to the well know Coriolis force which has been described as a pseudo-force but has very real effects as we observe objects traveling horizontally in the northern hemisphere are deflected to the right and in the southern hemisphere they are deflected to the left. The force causing system rotation of organized particles moving upwards or downwards is also a form of the Coriolis force and there are some interesting phenomena on the atomic scale that suggest the above two-frequency differential system on previous pages and a process termed the ***Coriolis Operator*** that is defined as "*an operator which gives a large contribution to the energy of an axially symmetric molecule arising from the interaction between vibration and rotation when two vibrations have equal or very nearly equal frequencies*",** are very closely related.

Another defined phenomena related to the **Coriolis operator** is also defined in the same reference** to be the **Coriolis resonance interactions** which are defined as, *"perturbation of two vibrations of a polyatomic molecule, having nearly equal frequencies, on each other, due to the energy contribution of the Coriolis operator."* (A polyatomic molecule is a chemical molecule with three or more atoms). Thus, it is suggested that these phenomena serve as a detection and proof of the electro-gravitational force mechanism related to the difference frequencies that result in the integer multiples of f_{LM} which is a very small frequency compared to the two difference frequencies that generate it.

It is again stressed that the two phenomena above may serve as a proof of the existence of the defined electrogravitational mechanism as outlined in the foregoing text and in this authors previous work titled "Electrogravitation as a Unified Field Theory." (Available on both America On Line and CompuServe as ALLFLD03.MCD and is recommended reading for clarification of this paper.) It is also a live Mathcad document that is public domain.

**--Above definition from "The McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition.