The table of constants are repeated below to allow for the equations that follow to be active and thus respond to changes in the variables input by the reader.

1. Gravitational Constant, $G := 6.672590000 \cdot 10^{-11} \cdot \frac{m^3}{kg \cdot sec^2}$

2. Speed of light, c, $c := 2.997924580000000 \cdot 10^{8} \cdot m \cdot sec^{-1}$

3. Magnetic permeability, u_o, $\mu_o := 1.256637061000001 \cdot 10^{-6} \cdot \frac{newton}{amp^2}$

4. Electric permittivity, e_o, $\varepsilon_o := 8.854187817000001 \cdot 10^{-12} \cdot \frac{farad}{m}$

5. Bohr n1 Velocity, V_{n1}, $V_{n1} := 2.187691415844453 \cdot 10^{6} \cdot \frac{m}{sec}$

6. Electron charge, q_o, $q_o := 1.602177330000001 \cdot 10^{-19} \cdot coul$

7. Electron mass, m_e, $m_e := 9.109389700000001 \cdot 10^{-31} \cdot kg$

8. Compton Electron radius, r_c, $r_c := 3.861593228000001 \cdot 10^{-13} \cdot m$

9. Bohr Radius, r_{n1}, $r_{n1} := 5.291772490000000 \cdot 10^{-11} \cdot m$

10. Fine structure constant, a, $\alpha := 7.297353080000001 \cdot 10^{-03}$

11. Plank constant, h, $h := 6.6260755 \cdot 10^{-34} \cdot joule \cdot sec$

12. Compton Electron time, t_c, $t_c := 8.0933010000001 \cdot 10^{-21} \cdot sec$

13. Quantum electromagnetic frequency, f_{Lm}, $f_{LM} := 1.00322480500001 \cdot 10^{1} \cdot Hz$

14. Quantum electric field frequency, f_h, $f_h := 9.016534884 \cdot 10^{17} \cdot Hz$

15. Quantum acceleration field constant, A_{em}, $A_{em} := 3.007592302 \cdot 10^{09} \cdot \frac{m}{sec^2}$

16. Field acceleration frequency constant, f_a, $f_a := 3.520758889 \cdot 10^{10} \cdot Hz$

17. Free space resistance, R_s, $R_s := \mu_o \cdot c$ and $1 \cdot \Omega = 1 \cdot kg \cdot m^2 \cdot sec^{-1} \cdot coul^{-2}$

$R_s = 376.7303133310863 \cdot ohm$

and/or... $R_s := \dfrac{1}{\varepsilon_o \cdot c}$

$R_s = 376.730313488167 \cdot ohm$

18. Quantum Hall Ohm, R_Q, $R_Q := \dfrac{h}{q_o{}^2}$

$R_Q = 2.58128058743606 \cdot 10^4 \cdot ohm$

Additional related constants are included for the discussions past page 21 below.

(SUN MASS) **(SUN rad.)**

$m_r := 1.99 \cdot 10^{30} \cdot kg$ **= 1.99 x 10^30** kg $r_s := 6.96 \cdot 10^8 \cdot m$ **= 6.96 x 10^8** m

$\pi := 3.141592654000001$

$m_p := 1.672623100000001 \cdot 10^{-27} \cdot kg$

$m_e := 9.109389700000001 \cdot 10^{-31} \cdot kg$

$l_q := 2.817940920000001 \cdot 10^{-15} \cdot m$

$m_a := 1.660540200000001 \cdot 10^{-27} \cdot kg$

Note............

((V_{n1} & V_{LM} are <u>SELECT</u>))

$V_{n1} := 2.187691415844453 \cdot 10^6 \cdot m \cdot sec^{-1}$

$V_{LM} := -0.085363289893272 \cdot m \cdot sec^{-1}$

NOTE: $\dfrac{V_{n1}}{V_{LM}{}^2} = 3.002228710934959 \cdot 10^8 \cdot m^{-1} \cdot sec$ $V_n := \dfrac{V_{n1}}{\alpha}$

$\dfrac{V_n}{c} = 0.999999999587411$

$\lambda_\Delta := 2 \cdot \pi \cdot r_{n1}$ $m_\Delta := m_e$ $t_\Delta := \dfrac{h}{m_e \cdot V_{n1}{}^2}$ $r_x := r_{n1}$

$t_h := \dfrac{t_c}{\alpha}$ $f_h := \dfrac{1}{t_h}$ and constants in general that are also used are:

$t := 1 \cdot sec$ $Q_i := q_o \cdot t^{-1}$ $L := 1 \cdot m$

Electrogravitation and the Special Theory

Chapter 2

Einstein's Special Theory of Relativity has yielded some curious results concerning the electric (E) and magnetic (B) fields which will now be presented in a way that will show how the electrogravitational field can be generated from the atomic level of the most simple case, the Hydrogen atom. Further an explanation of why the electron cannot fall into the nucleus due to the perfect balance between the electric and magnetic force fields will also be examined.

The Lorentz transformation of the electric and magnetic fields is referenced in SPECIAL RELATIVITY by Albert Shadowitz, Dover Publications Inc., New York, 1988 printing, pages 106-110, and the ENCYCLOPEDIA OF MODERN PHYSICS, article by John D. McGervey on Special Relativity, Academic Press Inc., 1989 printing, pages 632-633 are presented below.

Let the variables be defined as: $N := 1$ (Turns) $\theta := \frac{\pi}{2}$ deg.

$\sin(\theta) = 1$ $v := V_{n1}$

(69) $E := \dfrac{q_o}{4\cdot\pi\cdot\varepsilon_o\cdot r_{n1}\cdot r_c}$ (70) $B := \dfrac{\mu_o\cdot N\cdot q_o\cdot\sin(\theta)}{4\cdot\pi\cdot l_q\cdot r_c}\cdot V_{n1}$

Then, (71) $F' := q_o\cdot\left(E + V_{n1}\cdot B\right)$ Note that sin θ can be + or -.

$F' = 2.258004888709334\cdot 10^{-5}\cdot\text{newton}$

where; $q_o\cdot V_{n1}\cdot B = 1.129002444354667\cdot 10^{-5}\cdot\text{newton}$ = (F mag.)

and $q_o\cdot E = 1.129002444354667\cdot 10^{-5}\cdot\text{newton}$ = (F elec.)

The previous equation (71) is considered here as the definition of both E and B and is likewise presented in the first reference as the definition of both also. The next equation (72) presents the relativistic form related to the above as:

Let $v_x := V_{n1}$ And.... defining V_{n1} as the velocity as above,

$$(72) \quad F'' := \left(\frac{q_o^{\,2}}{4\cdot\pi\cdot\varepsilon_o\cdot r_{n1}\cdot r_c}\right)\cdot\left[1-\left(\frac{v_x}{c}\right)^2\right]$$

Where.

$$(73) \quad F_{elec} := \frac{q_o^{\,2}}{4\cdot\pi\cdot\varepsilon_o\cdot r_{n1}\cdot r_c} \qquad \text{and,} \quad (74) \quad F_{mag} := \left(\frac{v_x^{\,2}}{c^2}\right)\cdot F_{elec}$$

If the velocity term in the magnetic expressions above is taken as V_{n1} then the magnetic force will exactly balance out the electric force at the r_{n1} orbital of Hydrogen and thus the below equation is presented as the situation that explains how the forces balance to yield a stable orbital.

$$(74) \qquad F_{n1} := \left(\frac{q_o^{\,2}}{4\cdot\pi\cdot\varepsilon_o\cdot r_{n1}\cdot r_c} - \frac{\mu_o\cdot q_o^{\,2}}{4\cdot\pi\cdot l_q\cdot r_c}\cdot V_{n1}^{\,2}\right)$$

Applying Mathcads symbolic processor to simplify and find the exact solution:

$$(75) \qquad F_{n1} := \frac{-1}{4}\cdot q_o^{\,2}\cdot\frac{\left(-l_q + \mu_o\cdot V_{n1}^{\,2}\cdot\varepsilon_o\cdot r_{n1}\right)}{\left[\pi\cdot\left[\varepsilon_o\cdot\left[r_{n1}\cdot\left(r_c\cdot l_q\right)\right]\right]\right]}$$

$F_{n1} = 0\cdot\text{newton}$ Forces are equal and opposite.

It is immediately apparent from (74) above that r_{n1} will change inversely as the square of the orbital velocity and the electric forces will still exactly balance the opposite magnetic forces.

Now let this be postulated:

The universe is still in the expansion phase and therefore energy is still decreasing per unit volume per unit time even if locally that cannot be perceived and that this is a cause for the above equation to be slightly unbalanced in the radiative mode for the magnetic force energy and resultant effect will be expressed as the following:

(76) $$F_{MQta} := \left[\frac{q_o^2}{4\cdot\pi\cdot\varepsilon_o\cdot r_{n1}\cdot r_c} - \frac{\mu_o\cdot q_o^2}{4\cdot\pi\cdot l_q\cdot r_c}\cdot V_{n1}^2 - \left(\frac{\mu_o\cdot q_o^2}{4\cdot\pi\cdot l_q\cdot r_{n1}}\cdot V_{LM}^2\right)\right]$$

or, $$F_{MQta} := \frac{-1}{4}\cdot q_o^2\cdot\frac{\left(-l_q + \mu_o\cdot V_{n1}^2\cdot\varepsilon_o\cdot r_{n1} + \mu_o\cdot V_{LM}^2\cdot\varepsilon_o\cdot r_c\right)}{\left[\pi\cdot\left[\varepsilon_o\cdot\left[r_{n1}\cdot\left(r_c\cdot l_q\right)\right]\right]\right]}$$

thus, $$F_{MQta} = -1.254383710426251\cdot 10^{-22}\cdot\text{newton}$$

And please note that the extract expression from (76) above of:

(77) $$m_t := \left(\frac{\mu_o\cdot q_o^2}{4\cdot\pi\cdot l_q}\right)$$ is equal to the rest mass of the Electron.

or, $$m_t = 9.109389687063751\cdot 10^{-31}\cdot\text{kg}$$

where $$m_e = 9.109389700000003\cdot 10^{-31}\cdot\text{kg}$$

Thus two important connections are now established by (76) and (77) where in (76) the basic construct for the atomic radiation of the feeble magnetic force is related to the least quantum velocity V_{LM}^2 (which is caused by natural entropic action) and in (77) the mass of the Electron is tied directly to the least quantum magnetic energy expression.

The next equation is the natural result of combining the statement for the one atomic system in (76) with an identical energy acceptor system through the permeability constant as in equation (37) previous in chapter one.

$$(78)\qquad F_{MQtb} := \left[\frac{q_o^2}{4\cdot\pi\cdot\varepsilon_o\cdot r_{n1}\cdot r_c} - \frac{\mu_o\cdot q_o^2}{4\cdot\pi\cdot l_q\cdot r_c}\cdot V_{n1}^2 + \left(\frac{\mu_o\cdot q_o^2}{4\cdot\pi\cdot l_q\cdot r_{n1}}\cdot V_{LM}^2\right)\right]$$

simplifying, $F_{MQtb} := \frac{-1}{4}\cdot q_o^2\cdot\frac{\left(-l_q + \mu_o\cdot V_{n1}^2\cdot\varepsilon_o\cdot r_{n1} - \mu_o\cdot V_{LM}^2\cdot\varepsilon_o\cdot r_c\right)}{\left[\pi\cdot\left[\varepsilon_o\cdot\left[r_{n1}\cdot\left(r_c\cdot l_q\right)\right]\right]\right]}$

or, $F_{MQtb} = 1.254383710426251\cdot 10^{-22}\cdot\text{newton}$

Note that the force sign is positive in this case as the formula expresses the case where energy is absorbed into the atomic system instead of radiated.

Multiplying the forces in (76) and (78) above by the permeability of free space we arrive at the electrogravitational expression in (79) below:

$$(79)\qquad F_{MQtab} := F_{MQta}\cdot\mu_o\cdot F_{MQtb}$$

and, $F_{MQtab} = -1.977291388968526\cdot 10^{-50}\cdot\text{m}^{-1}\cdot\text{henry}\cdot\text{newton}^2$

The electrogravitational interaction force is inversely dependent on the Compton radius of the particle interaction as well as being inversely dependent on the square of the distance between them and since mass is now taken to be standing waves that contain locked in electric and magnetic field vectors even *neutral* particles participate in the interaction since the force exchange occurs at an equal or smaller distance than the particle radius acted on by the electrogravitational particle.

The ability of electric and magnetic vector potentials to act at a distance through shielding has been substantiated by a recent experiment documented in SCIENTIFIC AMERICAN, April 1989. page 56, in the article titled "Quantum Interference and the Aharonov-Bohm Effect by Yoseph Imry and Richard A. Webb. The results of the experiment show that electric scalar potential and magnetic vector potential can exhibit an interaction on shielded particles that from the outside of a shield would appear to have no discernible field but are affected nonetheless. It is thus a direct step in reasoning to arrive at the conclusion that so-called neutral particles can contain charge-fields that from the outside appear to be neutral also. It is postulated here that the electrogravitational interaction particle is very fundamentally the magnetic vector potential and is the portion shown below which is taken in part from the electrogravitational force equations in (76) and (78) previous.

Now let $\theta_1 := \frac{3\cdot\pi}{2}$ and $\theta_2 := \frac{\pi}{2}$ (In radians)

Then,

(80a) $$\gamma_{Ga} := \left(\frac{\mu_o \cdot q_o^2 \cdot \sin(\theta_1)}{4\cdot\pi\cdot l_q \cdot r_{n1}} \cdot V_{LM}^2\right)$$

(80b) $$\gamma_{Gb} := \left(\frac{\mu_o \cdot q_o^2 \cdot \sin(\theta_2)}{4\cdot\pi\cdot l_q \cdot r_{n1}} \cdot V_{LM}^2\right)$$

thus,

(81a) $\gamma_{Ga} = -1.254383710426251 \cdot 10^{-22} \cdot \text{newton}$ Transfer action particle.

(81b) $\gamma_{Gb} = 1.254383710426251 \cdot 10^{-22} \cdot \text{newton}$ Receptor basin conjugate.

and, $F_{Gab} := \gamma_{Ga} \cdot \mu_o \cdot \gamma_{Gb}$

or, $F_{Gab} = -1.977291388968526 \cdot 10^{-50} \cdot m^{-1} \cdot \text{henry} \cdot \text{newton}^2$

Now let the below expressions yield the magnetic B portion of the force equations in 81 above;

(82a) $$B_{MQta} := \left(\frac{\mu_o \cdot q_o \cdot \sin(\theta_1)}{4\cdot\pi\cdot l_q \cdot r_{n1}} \cdot V_{LM}\right)$$

and

(82b) $$B_{MQtb} := \left(\frac{\mu_o \cdot q_o \cdot \sin(\theta_2)}{4\cdot\pi\cdot l_q \cdot r_{n1}} \cdot V_{LM}\right)$$

$B_{MQta} = 9.171675459293661 \cdot 10^{-3} \cdot \text{tesla}$ $B_{MQtb} = -9.171675459293661 \cdot 10^{-3} \cdot \text{tesla}$

and, $F_{MQta} := q_o \cdot V_{LM} \cdot B_{MQta}$

$F_{MQta} = -1.254383710426251 \cdot 10^{-22} \cdot newton$

$F_{MQtb} := q_o \cdot V_{LM} \cdot B_{MQtb}$

$F_{MQtb} = 1.254383710426251 \cdot 10^{-22} \cdot newton$

and,

(83) $F_{GMQtab} := \left(F_{MQta}\right) \cdot \mu_o \cdot \left(F_{MQtb}\right)$

or finally, $F_{GMQtab} = -1.977291388968526 \cdot 10^{-50} \cdot m^{-1} \cdot henry \cdot newton^2$

where, $F_G := \frac{G \cdot m_e \cdot m_e}{{r_x}^2}$ or, $F_G = 1.97729138896852 \cdot 10^{-50} \cdot newton$

Wherein F_G is the classical gravitational force expression as a comparison.

As a matter of curiosity it may be of interest to investigate the equivalent quantum volts X meter X sec from the Sh equation (52) on page 20 previous.

where again: $S_h := h \cdot \frac{V_{n1}}{2 \cdot \pi \cdot r_c}$

(84a) $S_h = \frac{E_Q \cdot B_{MQta}}{2 \cdot \mu_o}$ and (84b) $E_Q := 2 \cdot \frac{S_h}{B_{MQta}} \cdot \mu_o$

or, $E_Q = 1.637145319958492 \cdot 10^{-19} \cdot volt \cdot m \cdot sec$

The above value of E_Q is conditional on the precept that the electrogravitational photon (or graviton) is like an ordinary photon, but the magnetic vector potential in the graviton is not like the ordinary photon in that the magnetic portion of the graviton is in-line with both the generating charge as well as the receptor charge and is a net pondermotive action which affects the kinetic energy of all matter such that mass equivalent energy is subtracted from the receptor system. (An analogy is that cooling matter tends to condense but in this case is related to the very fabric of space-time becoming less than it was before the interaction.) Equation (77) is the field mass equivalent of real mass and is part of the B field of the electograviton. Therefore the result of the electrogravitational action is a cooling of space and repeated pulsating contractions of space-time throughout the universe cause what we take as the gravitational attraction phenomena between mass systems.

Before moving on to chapter three I would like to point out that there exists the intriguing possibility of inductance and capacitance having a least quantum aspect just as the Compton radius of the electron does. After much study of the matter the following formula were developed from the ordinary expressions of inductance and capacitance taking into account the quantum aspects of how they must appear on a quantum scale.

(85) First, $$r_{LM} := \frac{V_{LM}}{2 \cdot \pi \cdot f_{LM}} \quad \text{or,} \quad r_{LM} = -1.354231820785828 \cdot 10^{-3} \cdot m$$

then,

(86) $$L_Q := \frac{\pi \cdot \mu_o \cdot \left(r_{LM}^2\right)}{l_q}$$

$$L_Q = 2.569294467255001 \cdot 10^{3} \cdot \text{henry}$$

(87) $$C_Q := \frac{4 \cdot \pi \cdot \varepsilon_o \cdot \left(r_{LM}^2\right)}{r_{n1}}$$

$$C_Q = 3.856057120803139 \cdot 10^{-6} \cdot \text{farad}$$

In equations (86) and (87) above the quantum inductance and capacitance depend on other quantum constants such as the classical radius of the electron (l_q) as well as the Bohr radius of the Hydrogen atom (r_{n1}) and a radius (r_{LM}) derived from the quantum electromagnetic frequency (f_{LM}) and the quantum vector rotation velocity (V_{LM}). If we now consider the time and impedance related to the derived inductance and capacitance, L_Q and C_Q, we arrive at the following equations below.

(88) $T_Q := \sqrt{L_Q \cdot C_Q}$ or, $T_Q = 0.099535653038993 \cdot sec$

and $\dfrac{1}{T_Q} = 10.04665132008782 \cdot Hz$ $= f_{LM}$

The quantum time above is likened to the times derived from transmission line parameters relating delay along the line to the lumped L and C parameters of the line. The impedance equivalent can also be arrived at in similar fashion.

or,

(89) $Z_Q := \sqrt{\dfrac{L_Q}{C_Q}}$ $Z_Q = 2.581280565114179 \cdot 10^4 \cdot ohm$

(Which is equal to the derived value of the classical quantum ohm, R_Q.)

If a superconducting surface was filled with quarter wavelength pockets equal in depth to 1/4 λ_{LM} such that a proper magnetic field could cause the incoming electrogravitational packet of magnetic energy to resonate and form standing waves on the surface of the superconducting surface then the counter action force would be away from the direction of the incoming electrogravitational energy. Ergo, momentum reversed gravitational action. In so doing the surface would likely glow with radiant energy due to the action of these strong field interactions with air molecules as well as primary microwave and visible radiation being sent forth directly from the standing wave surface itself.

It can be shown that the inductance and capacitance have a direct relationship in the electrogravitational interaction between two systems by the following equation.

(90) $$F_{GCLQt} := \frac{h}{L_Q \cdot r_{n1}} \cdot \mu_o \cdot \frac{h}{C_Q \cdot r_{n1}}$$

or, $$F_{GCLQt} = 1.988671067216686 \cdot 10^{-50} \cdot m^{-1} \cdot henry \cdot newton^2$$

where, $$F_G = 1.97729138896852 \cdot 10^{-50} \cdot newton \qquad \text{(Classical)}$$

Thus electrogravitation may well have a resonant property to its basic construct.

The above equations involving a quantum inductance and capacitance suggest that the action of electrogravitation contains the purely reactive (or very nearly so) angles of + and - 90 degrees in a four quadrant system and that the sine of the angle determines the polarity of the force involved at the action point. It is pointed out here that the action point is at the Compton radius of a particle and that the action-force does not occur except at that radius. Further, the vehicle for the transportation is like a transmission line but a line in imaginary space where the electrogravitational particle (graviton) is in a relativistic sense outside the normal world-lines of normal space. The standard light cone illustrates this where the graviton would be defined as present but elsewhere while normal space has a past and a future with definite coordinate points as to where points in normal space are to be found. Page 74 of SPECIAL RELATIVITY by Albert Shadowitz, 1988 by Dover Publications explains the light cone concept in detail for those desiring more information on the light cone concept in special relativity. In that same book the complex rotation diagram on page 23 illustrates the imaginary space concept where;

(91) $$\tau := \frac{i \cdot c \cdot t_c}{2 \cdot \pi} \qquad x := \frac{1 \cdot c \cdot t_c}{2 \cdot \pi} \qquad y := \frac{1 \cdot c \cdot t_c}{2 \cdot \pi} \qquad z := \frac{1 \cdot c \cdot t_c}{2 \cdot \pi}$$

or,

(92) $$s := i \cdot \sqrt{x^2 + y^2 + z^2 + \tau^2} \qquad s = 5.461117552678115 \cdot 10^{-13} i \cdot m$$

where s = the invariance interval and;

(93) $$r := \sqrt{x^2 + y^2 + z^2 + \tau^2} \qquad r = 5.461117552678115 \cdot 10^{-13} \cdot m$$

is the radius vector of the rotation of the space-time vector.

The connection is now established between a rotation in space by way of the complex rotation diagram and the fourth dimension vector τ above which is intimately connected to imaginary space. Instead of attempting to unify forces through the adoption of a great many additional dimensions, a single line serving as a one dimensional thread through all dimensions forms the connection point to all the forces and that one line or end-on point connects all of the normal universe to one point in hyperspace and that point in hyperspace sees the same interval distance to all of normal space and that interval is very small indeed.

The balance between the electric and magnetic atomic force is not perfect and the loss energy that results is the cause of the cooling of the universe and thus there is a price to be paid for the gravitational force action. This gravitational entropy is natural and to be expected. Further it is herein postulated that the so called missing mass effect is simply the accumulation of the mass equivalent of the magnetic vector potential energy that is slowly filling space due to the fact that after each graviton is emitted only some actually ever interact again with other matter and further after reacting with other matter it is simply re-emitted to help stabilize the atomic system. Thus gravity is defined here as generated primarily by the magnetic vector potential acting on the electrical potential of particles at the particle Compton wavelength.

We now move on to the electrogravitational concept presented in terms of the curvature of space being caused by gravity instead of gravity being caused by curved space. Firstly, the magnetic term in the preceding formulas in equation 82a and b can be reduced to mv^2/r which is equal to force. Thus rotational force energy is embodied in the electrogravitational expressions as presented previously. Setting the rotational force equal to the classical gravitational force we obtain,

(94) $$m_1 \times v^2 / r = G \times m_1 \times m_2 / r^2 \quad \text{or,} \qquad v^2 = G \times m_2 / r$$

The above equation (94) forms the beginning of chapter three next.