Particle Field Energy Down-Scaling Via A
New Complex Fine Structure Constant

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The familiar fine structure constant (α) in real number terms is equal to 7.297353080 x 10^{-3} dimensionless units. In this paper, it is presented that the mass of the electron is located near it's own classic radius equal to l_q which is α times r_c, where r_c is the Compton radius. Now if we move the radius of l_q out to the Compton radius r_c, the mass associated with m_e is reduced by a factor of α. (This by reason of the Heisenberg expression where $\Delta m \cdot c \cdot 2\pi \Delta r = h$). However, a mass smaller than the mass of the electron (which has the same spin and charge) is apparently not allowed in nature. Thus, what happens is that the mass temporarily moves to a value equal to the electron rest mass times the fine structure constant but now a kinetic form of the mass arises such that the resulting field energy is set equal to the rest mass times α times c squared. Then the first velocity reduction from the velocity of light is equal to the new kinetic field energy divided by the rest mass of the electron, all of which is taken under the square root radical. **Then the first reduction velocity is equal to c times the square root of α.**

Thus, 'point' rest mass converts to dynamic field mass as we move from the classic electron radius to it's Compton radius and the resulting converted mass is set by the conversion constant α.. Instead of being a unitless constant, α (gravitational) now has the units of (meter/second)^2. In other words, a very small amount of rest mass is converted into field mass at the Compton radius and further that the field mass is what is *eventually* associated with what I have termed the least quantum electrogravitational energy. What I mean by "eventually" is that calculations have shown that it requires 10 events of reduction of field energy by α to arrive at the required energy level related to the least quantum electrogravitational momentum, energy and wavelength. Finally, the square root of the Golden Ratio, which is equal to $4/\pi$, also comes into play at that required electrogravitational energy level.

V_{LM} is then the velocity associated with the least allowed quantum electrogravitational energy level which is expressed as the square root of α which results in meter/second units.

What do I mean by 10 events of reduction of field energy by α? I like to think of the process as similar to the escapement of a clock mechanism wherein each action of mass reduction of m_e by α and the return to normal mass causes yet another reduction of the field energy by α, etc. The result is a crescendo of energy levels, all stepping down to lower levels <u>at the same time</u> while each level has less energy than the preceding level by a factor of α.

The mainspring energy driving the process comes from what I have termed in previous work as energy space. Energy space provides a pulse of energy that is a constant power function. It is very similar to the Dirac delta function but is actually more likened to what is used in electrical engineering, the *weighted* impulse function.

The energy dynamics of the electron's conversion of 'rest mass' to field energy is somewhat like striking the same note on 10 octaves of a piano only each octave is separated by the fine structure constant, α. I suspect that the fine structure constant is an irrational number so that each energy level does not resonate with another level and thus cause a collapse of the standing waves. Each pulse of the electron is restored by a constant energy pulse from energy space.

<u>Developing A New Complex Fine Structure Constant</u>

Starting with a perfect square where all sides are numerically equal to one, we then add to the unit length of 1 an unknown (x) length such that the horizontal rectangle formed has an arbitrary ratio of the long side $(1 + x)$ horizontal to 1 vertical. Further, that this ratio is equal to 1 divided by the unknown value x, which is formed by a new smaller and immediately adjacent vertical rectangle, we have the below expression where x is solved for in quadratic equation form.

$$\left(\frac{1+x}{1}\right) = \left(\frac{1}{x}\right) \qquad \text{yields} \qquad \left(x^2 + x - 1\right) = (0) \text{ In the quadratic form.} \qquad\qquad 1)$$

The solutions for x are:
$$\begin{bmatrix} \dfrac{-1}{2} + \dfrac{1}{2}\cdot\sqrt{5} \\[2mm] \dfrac{-1}{2} - \dfrac{1}{2}\cdot\sqrt{5} \end{bmatrix}$$

(We are deriving the roots of the golden ratio, Φ.)

where, $\dfrac{-1}{2} + \dfrac{1}{2}\cdot\sqrt{5} = 0.61803398875$ 2)

and $\dfrac{-1}{2} - \dfrac{1}{2}\cdot\sqrt{5} = -1.61803398875$ 3)

One solution yields a negative number of -1.618033988750 and the square root of which will yield an imaginary number very close in real magnitude to $4/\pi$.

Or: $\Phi1_{imag} := \sqrt{-1.61803398875}$ then: $\Phi1_{imag} = 1.272019649514i$ 4)

When n = 360, to create the natural spiral based on e, a full revolution is the result which $= 2\pi$.

Let: $n := 0, 1 .. 360$ $\theta(n) := 2\cdot\pi\cdot\dfrac{n}{360}$ $e = 2.718281828459$

$$R_{enat}(n) := (e)^{\left(i\cdot\theta(n) + \frac{\theta(n)}{2\cdot\pi}\right)} \quad \begin{array}{c}(A)\\ \underline{CCW}\end{array} \qquad R1_{enat}(n) := \left(e^{\left(-i\cdot\theta(n) + \frac{\theta(n)}{2\cdot\pi}\right)}\right) \quad \begin{array}{c}(B)\\ \underline{CW}\end{array} \qquad 5)$$

The first exponent term in the spiral formula (5A) above creates a ccw rotation through the Argand diagram below. The negative first term in the exponent in the second formula (5B) creates a clockwise rotation in the same diagram. The second exponent term in both equations above is the spiral growth exponent which results in a number equal to the natural number (e) at 360 degrees.

Let: $\theta1 := 90$ (degrees)   (Result close to -4/pi.)   6)

The minus and plus imaginary terms of

$R1_{enat}(\theta1) = 7.862128418726\cdot10^{-17} - 1.284025416688i$

$R1_{enat}(\theta1)$ and $\Phi1_{imag}$ are added to obtain a difference result below.   7)

$diff_{imag} := R1_{enat}(\theta1) + \Phi1_{imag}$ $diff_{imag} = 7.862128418726\cdot10^{-17} - 0.012005767174i$ 8)

Note that the imaginary result for 90 degrees is close to the magnitude of $\Phi1_{imag}$ in eq. 4 above but is negative in sign.

Figure 1: Argand Diagram
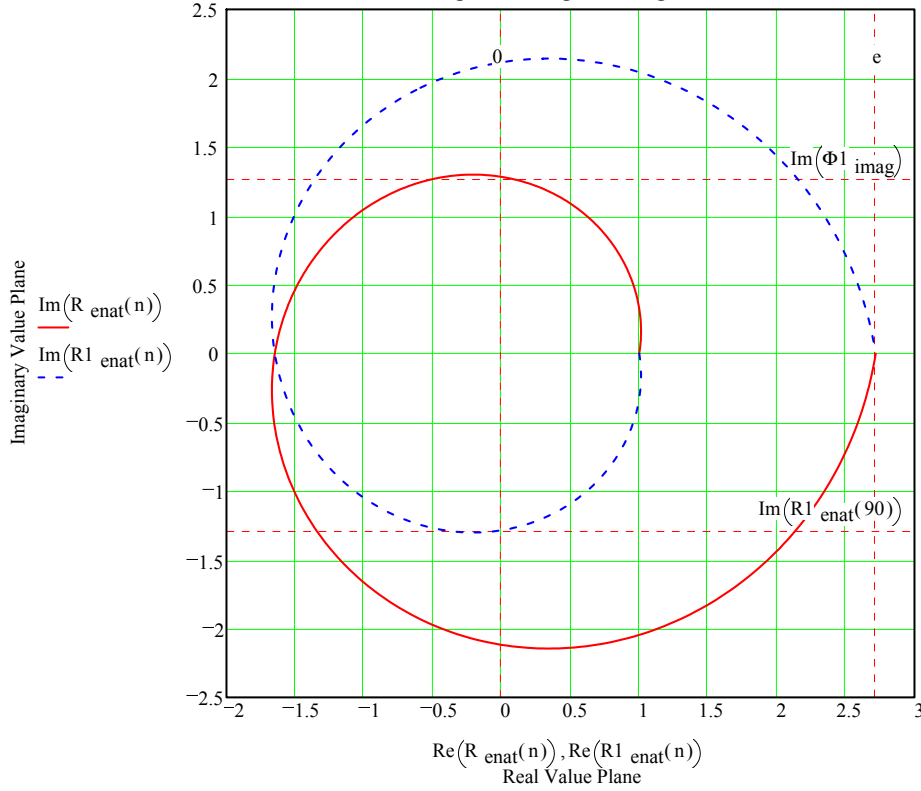
It is possible to demonstrate mathematically a scaling of energy and mass by application of a power series of the fine structure constant. Further, it is suggested that a summation of the power series of the fine structure constant results in a constant slightly larger than the fine structure constant itself. Let the sum of the fine structure constant plus the square of the fine structure constant plus the cube of the fine structure constant etc., be expressed as:

$$\alpha := 7.297353080 \cdot 10^{-03} \quad \alpha = 7.29735308 \cdot 10^{-3} \qquad m1 := 1, 2 .. 10$$

$$\alpha 1 := \sum_{m1} \alpha^{m1} \qquad\qquad \alpha 1 = 7.350995892517 \cdot 10^{-3} \tag{9}$$

It is further suggested that the above equation (8) expresses a difference in the imaginary plane that is greater in magnitude than the fine structure constant and that this difference may be exploited for energy extraction without destroying the stability of the Bohr Hydrogen-1 atom n1 energy level. For example: Adding the adjusted fine structure constant in eq. (9) (as an imaginary value) to the negative imaginary result in equation (8) yields the difference shown below.

$$\tag{10}$$

$$\alpha 1_{diff} := \left(R1_{enat}(\theta 1) + \Phi 1_{imag} \right) + i \cdot \alpha 1 \quad \alpha 1_{diff} = 7.862128418726 \cdot 10^{-17} - 4.654771281114 \cdot 10^{-3} i$$

The difference in equation (10) above can represent leftover standing wave energy above the fine structure constant level to establish stability of the n1 energy level of the Bohr Hydrogen-1 atom. The sum of the real number fine structure constant + 90 degrees + the result of eq. 10 yields an angle very close to one radian.

$$\arg\left(\alpha1 + \alpha1_{\,diff}\right) + 90\cdot deg = 57.657337821033 \cdot deg \tag{11}$$

Where: $\dfrac{360\cdot deg}{2\cdot\pi} = 57.295779513082 \cdot deg$ which is one radian in degrees. $\tag{12}$

Let us now establish an approximate positive real fine structure number for diff1$_{imag}$ as shown below:

Let new angle θ2 be established as: $\theta2 := 89.6264769$ degrees. Then:

$$R1_{\,enat}(\theta2) = 8.36208867574\cdot10^{-3} - 1.282666591645i \qquad \textbf{(Real value close to } \boldsymbol{\alpha} \textbf{.)}$$

$$diff1_{\,imag} := R1_{\,enat}(\theta2) + \Phi1_{\,imag} \qquad diff1_{\,imag} = 8.36208867574\cdot10^{-3} - 0.010646942131i \tag{13}$$

Where: $\arg\left(diff1_{\,imag}\right) = -51.85397441201 \cdot deg$ $\tag{14}$

NOTE: $\operatorname{atan}\left(\dfrac{4}{\pi}\right) = 51.853974012777 \cdot deg$ However, now let: $\theta3 := 89.6643867$

And let: $\Phi2_{\,imag} := \dfrac{i\cdot4}{\pi}$ or: $\Phi2_{\,imag} = 1.273239544735i$ and $\alpha = 7.29735308\cdot10^{-3}$

$$\textbf{(Real value very is now much closer to } \boldsymbol{\alpha} \textbf{.)} \tag{15}$$

$$diff2_{\,imag} := R1_{\,enat}(\theta3) + \left(\Phi2_{\,imag}\right) \text{then:}\quad diff2_{\,imag} = 7.514200735124\cdot10^{-3} - 9.567377799271\cdot10^{-3}i$$

Where: $\arg\left(diff2_{\,imag}\right) = -51.853974816351 \cdot deg$ $\underline{\text{Very close to}}$ $\operatorname{atan}\left(\dfrac{4}{\pi}\right) = 51.853974012777 \cdot deg$ $\tag{16}$

It is therefore established that when the ratio of $i(4/\pi)$ is used in eq. (15), the result is a real number very close to the fine structure constant whereas the actual Golden Ratio quadratic solution of $\Phi1_{imag}$ derived in equation (4) results in a real number in equation (13) that is not quite as close to the actual fine structure constant $\alpha1$ in equation (9) above. Lastly, the geneses of the fine structure constant is also demonstrated as intimately connected to the natural number e.

Thus the ratio of $i4/\pi$ is likely more fundamentally related to the fine structure constant as shown above in final results of equations (15) and (16). Equation (16) result demonstrates a negative angle which is capacitive reactance. Matching this angle in the positive or inductive reactance sense would be a conjugate match which would allow for maximum power transfer to a load.. Energy space would supply the necessary recovery energy to keep the n1 energy level stable. Energy space is thus a *dynamic* and necessary interface to our normal local space.

Now let an angle be found which will yield an <u>exact</u> value in the real plane equal to the accepted fine structure constant <u>as well as an imaginary value</u> so that the new angle = -atan(4/p).

Let: $\theta 4 := 89.67408083857$ and $\alpha = 7.29735308 \cdot 10^{-3}$ (Exact alpha = 89.67408083857deg)   17)

And: $\Phi 3_{imag} := i \cdot \dfrac{4}{\pi \cdot .9997550971168653}$ $\alpha = 7.29735308 \cdot 10^{-3}$ 18)

Diff3$_{imag}$ (below) is the new <u>complex alpha</u> ratio.   19)

Then: $diff3_{imag} := R1_{enat}(\theta 4) + \Phi 3_{imag}$ $diff3_{imag} = 7.297353079709 \cdot 10^{-3} - 9.29127851298 \cdot 10^{-3} i$

where: $arg(diff3_{imag}) = -51.853974012777 \cdot deg$ where, $atan\left(\dfrac{4}{\pi}\right) = 51.853974012777 \cdot deg$ 20)

Let: $p := 0, 1 .. 10$ Then: $\alpha(p) := (diff3_{imag})^p$ and: $angle(p) := arg(\alpha(p)) \cdot \dfrac{360}{2 \cdot \pi}$ 21)

$\alpha(p)$	$angle(p)$	p
1	0	0
$7.297353079709 \cdot 10^{-3} - 9.29127851298i \cdot 10^{-3}$	- 51.853974012778	1
$- 3.307649443583 \cdot 10^{-5} - 1.356034797423i \cdot 10^{-4}$	- 103.707948025555	2
$- 1.501300556152 \cdot 10^{-6} - 6.8222354848i \cdot 10^{-7}$	- 155.561922038333	3
$- 1.729424923404 \cdot 10^{-8} + 8.970575486348i \cdot 10^{-9}$	152.58410394889	4
$- 4.285412764393 \cdot 10^{-11} + 2.261471429585i \cdot 10^{-10}$	100.730129936112	5
$1.788474389801 \cdot 10^{-12} + 2.048445185506i \cdot 10^{-12}$	48.876155923335	6
$3.20838038335 \cdot 10^{-14} - 1.668985885909i \cdot 10^{-15}$	- 2.977818089443	7
$2.18619832013 \cdot 10^{-16} - 3.102787364674i \cdot 10^{-16}$	- 54.83179210222	8
$- 1.287540052749 \cdot 10^{-18} - 4.295471240822i \cdot 10^{-18}$	- 106.685766114998	9
$- 4.930605401216 \cdot 10^{-20} - 1.938267706131i \cdot 10^{-20}$	- 158.539740127775	10

Each increase in power p increases the angle by the exact same basic angle at p =1.

Note that a(p) is the new complex form of the fine structure constant which normally is regarded only as a real positive number by contemporary physics.

The animated graphics of an expanding horn-shaped three dimensional spiral in space, which is located on the first page of my web site at **http://www.electrogravity.com**, illustrates my conceptual view of how an electron pulsates in size as described above. It is one of the many "horns" that are controlled by the reduction factor of $\alpha(p)$ so that many more are synchronized to the first pulse driven event. I like to think of the pulsating electron as being like a quantum heart, beating in synchronization with the energy restoring pulse from energy space as described above. In that sense, it is 'alive' with energy. The center of the electron is connected to all other electrons instantaneously through non-local space (energy space) while the external fields are connected via local space. Thus the internal action is non-local and the external field reaction is local and relativistic.

Let the following constants be stated for the purpose of determining the dynamic and complex mass-energy of the electron and then the actual cascade of field energies related to the dynamic and complex valued fine structure constant $\alpha(p)$ in eq. (21) above.

$$m_e := 9.109389700 \cdot 10^{-31} \cdot kg \qquad c_{vel} := 2.997924580 \cdot 10^{08} \cdot \frac{m}{sec} \qquad \left(\frac{4}{\pi}\right)^2 = 1.621138938277$$

Where the rest mass of the electron is:

$$E_e := m_e \cdot c_{vel}^2 \qquad or, \qquad E_e = 8.187111168007 \cdot 10^{-14} \cdot joule \qquad \text{22)}$$

Then the energy cascade levels based on powers of $\alpha(p)$ above are: $\qquad E_e(p) := E_e \cdot \alpha(p) \qquad$ 23)

$Re\left(E_e(p)\right)$	$Im\left(E_e(p)\right)$	p
$8.187111168007 \cdot 10^{-14} \cdot kg \cdot m^2 \cdot sec^{-2}$	$0 \cdot kg \cdot m^2 \cdot sec^{-2}$	0
$5.974424089577 \cdot 10^{-16} \cdot kg \cdot m^2 \cdot sec^{-2}$	$-7.606873007868 \cdot 10^{-16} \cdot kg \cdot m^2 \cdot sec^{-2}$	1
$-2.708009369941 \cdot 10^{-18} \cdot kg \cdot m^2 \cdot sec^{-2}$	$-1.110200763418 \cdot 10^{-17} \cdot kg \cdot m^2 \cdot sec^{-2}$	2
$-1.229131454981 \cdot 10^{-19} \cdot kg \cdot m^2 \cdot sec^{-2}$	$-5.585440032838 \cdot 10^{-20} \cdot kg \cdot m^2 \cdot sec^{-2}$	3
$-1.415899410463 \cdot 10^{-21} \cdot kg \cdot m^2 \cdot sec^{-2}$	$7.344309874773 \cdot 10^{-22} \cdot kg \cdot m^2 \cdot sec^{-2}$	4
$-3.508515070288 \cdot 10^{-24} \cdot kg \cdot m^2 \cdot sec^{-2}$	$1.851491799728 \cdot 10^{-23} \cdot kg \cdot m^2 \cdot sec^{-2}$	5
$1.464243865044 \cdot 10^{-25} \cdot kg \cdot m^2 \cdot sec^{-2}$	$1.677084845531 \cdot 10^{-25} \cdot kg \cdot m^2 \cdot sec^{-2}$	6
$2.626736686774 \cdot 10^{-27} \cdot kg \cdot m^2 \cdot sec^{-2}$	$-1.366417298577 \cdot 10^{-28} \cdot kg \cdot m^2 \cdot sec^{-2}$	7
$1.789864868221 \cdot 10^{-29} \cdot kg \cdot m^2 \cdot sec^{-2}$	$-2.540286508528 \cdot 10^{-29} \cdot kg \cdot m^2 \cdot sec^{-2}$	8
$-1.054123354512 \cdot 10^{-31} \cdot kg \cdot m^2 \cdot sec^{-2}$	$-3.516750056759 \cdot 10^{-31} \cdot kg \cdot m^2 \cdot sec^{-2}$	9
$-4.036741454533 \cdot 10^{-33} \cdot kg \cdot m^2 \cdot sec^{-2}$	$-1.586881318345 \cdot 10^{-33} \cdot kg \cdot m^2 \cdot sec^{-2}$	10

It is of <u>extreme interest</u> the the tenth power of the complex expression of alpha, or $\alpha(p)$, yields a negative **real** energy that is almost exactly equal to $(\pi/4)^2$ of the energy required in my original previous solutions) of a quantum system's least electrogravitational energy.

Let: $\quad h := 6.626075500 \cdot 10^{-34} \cdot joule \cdot sec \quad$ and: $\quad f_{LM} := 1.003224805 \cdot 10^{01} \cdot Hz \qquad$ 24)

$$E_{LM} := h \cdot f_{LM} \qquad E_{LM} = 6.647443301403 \cdot 10^{-33} \cdot joule \quad = \text{Least Quantum EG energy.} \qquad \text{25)}$$

$$\frac{E_{LM}}{Re\left(E_e(10)\right)} = -1.646734965882 \quad and \quad \left(\frac{4}{\pi}\right)^2 = 1.621138938277 \qquad \text{26)}$$

$angle(10) = -158.539740127775 \quad$ degrees = electrogravitational angle at $E_e(10)$ above. $\qquad$ 27)

$angle(1) = -51.853974012778 \qquad$ 28)

A ratio of the previous to the next energy related to the power (p) of alpha that yields field energy E_e is:

$$p := 0, 1 \; .. \; 10 \qquad \text{atan}\left(\frac{4}{\pi}\right) = 51.853974012777 \cdot \text{deg} \qquad \Phi1_{imag}^{2} = -1.61803398875 \qquad \text{29)}$$

$\text{arg}\left(\dfrac{E_e(p)}{E_e(p+1)}\right) \cdot \dfrac{360}{2 \cdot \pi}$	$\dfrac{\left\| \dfrac{E_e(p)}{E_e(p+1)} \right\|^{\alpha^{-1}}}{}$	$\left\| E_e(p+1) \right\| \cdot \left[\left\| E_e(p) \right\| \cdot \left(\dfrac{i \cdot 4}{\pi}\right)^{2} \right]^{-1}$
51.853974012778	1.618993186542	$-7.28769424838 \cdot 10^{-3}$
51.853974012778	1.618993186542	$-7.28769424838 \cdot 10^{-3}$
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51.853974012778	1.618993186542	$-7.28769424838 \cdot 10^{-3}$
51.853974012777	1.618993186542	$-7.28769424838 \cdot 10^{-3}$
51.853974012777	1.618993186542	$-7.28769424838 \cdot 10^{-3}$

Notice that the ratio of the next reduction to the previous energy level is controlled by the (i4/π) squared term where i4/π is the complex form of the golden ratio number.
The separation is set by the fine structure constant.

$\alpha = 7.29735308 \cdot 10^{-3}$

$$\left\| E_e(10) \right\| = 4.337450159858 \cdot 10^{-33} \cdot \text{joule} \quad \text{and} \quad \frac{E_{LM}}{\left\| E_e(10) \right\|} = 1.532569379799 \qquad \text{30)}$$

$$\text{atan}\left(\frac{E_{LM}}{\left\| E_e(10) \right\|}\right) = 56.875591741061 \cdot \text{deg} \quad \text{and} \quad 2 \cdot \pi \cdot \text{atan}\left(\frac{E_{LM}}{\left\| E_e(10) \right\|}\right) = 357.35988236458 \cdot \text{deg} \qquad \text{31)}$$

$$360 \cdot \text{deg} - 2 \cdot \pi \cdot \text{atan}\left(\frac{E_{LM}}{\left\| E_e(10) \right\|}\right) = 2.64011763542 \cdot \text{deg} \qquad \text{32)}$$

Eqs. 30 through 34 simply establish that even at the electrogravitational energy level, a full 360 degrees is not completed in the rotation cycle.

$$\frac{360 \cdot \text{deg} - 2 \cdot \pi \cdot \text{atan}\left(\dfrac{E_{LM}}{\left\| E_e(10) \right\|}\right)}{360 \cdot \text{deg}} = 7.33366009839 \cdot 10^{-3} \qquad \text{where,} \qquad \alpha = 7.29735308 \cdot 10^{-3} \qquad \text{33)}$$

$$\frac{360 \cdot \text{deg} - 2 \cdot \pi \cdot \text{atan}\left(\dfrac{E_{LM}}{\left\| E_e(10) \right\|}\right)}{360 \cdot \text{deg}} - (\alpha) = 3.630701838998 \cdot 10^{-5} \qquad \text{34)}$$

Not completing the full rotation cycle suggests energy leakage which increases the entropy of the system.

The complex quantum velocities related to the above electron down-scaled energies are:

$$v0 := \sqrt{\frac{E_e(0)}{m_e}} \qquad v0 = 2.99792458 \cdot 10^8 \ \cdot m \cdot sec^{-1} \tag{35}$$

Velocity below related to construct of proton mass??

$$v1 := \sqrt{\frac{E_e(1)}{m_e}} \qquad v1 = 2.930593414607 \cdot 10^7 - 1.424725900052 \cdot 10^7 i \quad \cdot m \cdot sec^{-1} \tag{36}$$

Note: (mp/me) / ((Re(v1) / Vn1) / a) = 1.000241023   (See below.)

$$v2 := \sqrt{\frac{E_e(2)}{m_e}} \qquad v2 = 2.18769141666 \cdot 10^6 - 2.785455223369 \cdot 10^6 i \quad \cdot m \cdot sec^{-1} \tag{37}$$

Imaginary divided by real = 4/π in the above n1 level velocity.

$$v3 := \sqrt{\frac{E_e(3)}{m_e}} \qquad v3 = 8.148049737416 \cdot 10^4 - 3.762568755791 \cdot 10^5 i \quad \cdot m \cdot sec^{-1} \tag{38}$$

$$v4 := \sqrt{\frac{E_e(4)}{m_e}} \qquad v4 = 9.916083568941 \cdot 10^3 + 4.065290050528 \cdot 10^4 i \quad \cdot m \cdot sec^{-1} \tag{39}$$

$$v5 := \sqrt{\frac{E_e(5)}{m_e}} \qquad v5 = 2.901315464979 \cdot 10^3 + 3.502737264248 \cdot 10^3 i \quad \cdot m \cdot sec^{-1} \tag{40}$$

Let the following constants be stated for the purpose of evaluating a possible connection to the derivation of the proton mass from the complex alpha approach above.:

$$m_e := 9.109389700 \cdot 10^{-31} \cdot kg = \text{mass of electron} \qquad m_p := 1.672623100 \cdot 10^{-27} \cdot kg = \text{mass of proton} \tag{41}$$

Then: $\quad V_{n1} := \alpha \cdot c_{vel} \quad$ or, $\quad V_{n1} = 2.187691416747 \cdot 10^6 \ \cdot m \cdot sec^{-1}$ Eq. 43 result is very Important!! $\tag{42}$

$$\frac{m_p}{m_e} = 1.836152755656 \cdot 10^3 \quad \text{and} \quad \frac{(v1)}{V_{n1} \cdot \alpha} = 1.835710307674 \cdot 10^3 - 892.4417785783225i \tag{43}$$

where, $\quad \dfrac{(v1)}{\alpha} = 4.015967683733 \cdot 10^9 - 1.952387234704 \cdot 10^9 i \quad \cdot m \cdot sec^{-1}$ Exceeds velocity of light, c.

Also, $\quad \left(\dfrac{Re(v1)}{V_{n1}} \right) = 13.395826267695$ **which can be taken as a multiplier of m_e which = m'_e.** $\tag{44}$

The significance of eq. (43) result is <u>immense</u>. It derives the necessary mass ratio related to the proton field mass divided by electron field mass solely from electron's complex field velocity considerations along with the new complex fine structure constant.

and where: $\quad E_{proton} := m_p \cdot c_{vel}^2 \quad$ or, $\quad E_{proton} = 1.5032786732 \cdot 10^{-10} \cdot joule \qquad$ 45)

Then: $\quad m'_e := m_e \cdot \left(\dfrac{Re(v1)}{V_{n1}}\right) \quad$ or, $\quad m'_e = 1.220278018259 \cdot 10^{-29} \cdot kg \quad$ Quasi-electron mass. $\qquad$ 46)

$E'_{proton} := \left(m'_e\right) \cdot \left[\dfrac{(v1)}{\alpha}\right]^2 \quad$ or, $\quad E'_{proton} = 1.502916436059 \cdot 10^{-10} - 1.913572638822 \cdot 10^{-10} i \quad \cdot joul$ 47)

Note: $\quad arg\left(E'_{proton}\right) = -51.853974012777 \cdot deg \quad$ where, $\quad atan\left(\dfrac{4}{\pi}\right) = 51.853974012777 \cdot deg \qquad$ 48)

Which exactly interfaces with v2, the n1 electron energy level velocity at the same angle.

or, $\qquad arg(v2) = -51.853974012777 \cdot deg \qquad$ 49)

The complete table of downscaled <u>electron</u> related field velocities are: $\qquad ve(p) := \sqrt{\dfrac{E_e(p)}{m_e}} \qquad$ 50)

$Re\big(ve(p)\big)$	$Im\big(ve(p)\big)$	p
$2.99792458 \cdot 10^8 \cdot m \cdot sec^{-1}$	$0 \cdot m \cdot sec^{-1}$	0
$2.930593414607 \cdot 10^7 \cdot m \cdot sec^{-1}$	$-1.424725900052 \cdot 10^7 \cdot m \cdot sec^{-1}$	1
$2.18769141666 \cdot 10^6 \cdot m \cdot sec^{-1}$	$-2.785455223369 \cdot 10^6 \cdot m \cdot sec^{-1}$	2
$8.148049737416 \cdot 10^4 \cdot m \cdot sec^{-1}$	$-3.762568755791 \cdot 10^5 \cdot m \cdot sec^{-1}$	3
$9.916083568941 \cdot 10^3 \cdot m \cdot sec^{-1}$	$4.065290050528 \cdot 10^4 \cdot m \cdot sec^{-1}$	4
$2.901315464979 \cdot 10^3 \cdot m \cdot sec^{-1}$	$3.502737264248 \cdot 10^3 \cdot m \cdot sec^{-1}$	5
$450.078583925531 \cdot m \cdot sec^{-1}$	$204.52547450431 \cdot m \cdot sec^{-1}$	6
$53.716830823498 \cdot m \cdot sec^{-1}$	$-1.396219476469 \cdot m \cdot sec^{-1}$	7
$5.184685487139 \cdot m \cdot sec^{-1}$	$-2.689310874727 \cdot m \cdot sec^{-1}$	8
$0.379018016821 \cdot m \cdot sec^{-1}$	$-0.509286742512 \cdot m \cdot sec^{-1}$	9
$0.012847344262 \cdot m \cdot sec^{-1}$	$-0.067797207857 \cdot m \cdot sec^{-1}$	10

$\qquad \left| ve(10) \right| \cdot \dfrac{i \cdot 4}{\pi} = 0.087858286017 i \cdot m \cdot sec^{-1} \quad$ where, $\quad \sqrt{\alpha} = 0.085424546121 \qquad$ 51)

Then the absolute value of the square root of the 10th field energy reduction in eq. 19 above of diff3_{imag} (divided by the electron rest mass) above when multiplied by i4/π yields the least quantum velocity related directly to the least quantum energy of electrogravitational action.

For the proton:

$$E'_{proton}(p) := \left(\frac{m'_e}{\alpha}\right)\cdot ve(p)^2 \qquad\qquad vp(p) := \sqrt{\frac{E'_{proton}(p)}{m_p}} \qquad\qquad 52)$$

$Re\left(E'_{proton}(p)\right)$
$1.502916436119\cdot10^{-10}\cdot kg\cdot m^2\cdot sec^{-2}$
$1.096731188366\cdot10^{-12}\cdot kg\cdot m^2\cdot sec^{-2}$
$-4.97112071368\cdot10^{-15}\cdot kg\cdot m^2\cdot sec^{-2}$
$-2.256329281395\cdot10^{-16}\cdot kg\cdot m^2\cdot sec^{-2}$
$-2.599181142418\cdot10^{-18}\cdot kg\cdot m^2\cdot sec^{-2}$
$-6.440617279159\cdot10^{-21}\cdot kg\cdot m^2\cdot sec^{-2}$
$2.687927556009\cdot10^{-22}\cdot kg\cdot m^2\cdot sec^{-2}$
$4.821927611458\cdot10^{-24}\cdot kg\cdot m^2\cdot sec^{-2}$
$3.285673387938\cdot10^{-26}\cdot kg\cdot m^2\cdot sec^{-2}$
$-1.935065107438\cdot10^{-28}\cdot kg\cdot m^2\cdot sec^{-2}$
$-7.410287897502\cdot10^{-30}\cdot kg\cdot m^2\cdot sec^{-2}$

$Re(vp(p))$
$2.997563361253\cdot10^{8}\cdot m\cdot sec^{-1}$
$2.930240308566\cdot10^{7}\cdot m\cdot sec^{-1}$
$2.187427822586\cdot10^{6}\cdot m\cdot sec^{-1}$
$8.147067982126\cdot10^{4}\cdot m\cdot sec^{-1}$
$9.914888783954\cdot10^{3}\cdot m\cdot sec^{-1}$
$2.900965886627\cdot10^{3}\cdot m\cdot sec^{-1}$
$450.02435413498\cdot m\cdot sec^{-1}$
$53.7103585038\cdot m\cdot sec^{-1}$
$5.184060786435\cdot m\cdot sec^{-1}$
$0.37897234909\cdot m\cdot sec^{-1}$
$0.01284579629\cdot m\cdot sec^{-1}$

$Im(vp(p))$
$0\cdot m\cdot sec^{-1}$
$-1.424554235392\cdot10^{7}\cdot m\cdot sec^{-1}$
$-2.785119604971\cdot10^{6}\cdot m\cdot sec^{-1}$
$-3.76211540537\cdot10^{5}\cdot m\cdot sec^{-1}$
$4.064800225338\cdot10^{4}\cdot m\cdot sec^{-1}$
$3.502315220821\cdot10^{3}\cdot m\cdot sec^{-1}$
$204.500831310786\cdot m\cdot sec^{-1}$
$-1.396051246537\cdot m\cdot sec^{-1}$
$-2.688986840723\cdot m\cdot sec^{-1}$
$-0.509225378754\cdot m\cdot sec^{-1}$
$-0.067789038998\cdot m\cdot sec^{-1}$

$$p_{mass}(p) := \frac{Re\left(E'_{proton}(p)\right)}{c_{vel}^2} \qquad e_{mass}(p) := \frac{Re\left(E_e(p)\right)}{c_{vel}^2} \qquad Ratio(p) := \frac{p_{mass}(p)}{e_{mass}(p)} \qquad 53)$$

$p_{mass}(p)$
$1.672220056891\cdot10^{-27}\cdot kg$
$1.220278018211\cdot10^{-29}\cdot kg$
$-5.531117740725\cdot10^{-32}\cdot kg$
$-2.510504901419\cdot10^{-33}\cdot kg$
$-2.891979043805\cdot10^{-35}\cdot kg$
$-7.166153176677\cdot10^{-38}\cdot kg$
$2.990722745862\cdot10^{-39}\cdot kg$
$5.365118027175\cdot10^{-41}\cdot kg$
$3.655804679263\cdot10^{-43}\cdot kg$
$-2.153050300258\cdot10^{-45}\cdot kg$
$-8.245057244529\cdot10^{-47}\cdot kg$

$e_{mass}(p)$
$9.1093897\cdot10^{-31}\cdot kg$
$6.647443298156\cdot10^{-33}\cdot kg$
$-3.013066777259\cdot10^{-35}\cdot kg$
$-1.367593182281\cdot10^{-36}\cdot kg$
$-1.575400558418\cdot10^{-38}\cdot kg$
$-3.903749489621\cdot10^{-41}\cdot kg$
$1.629191018517\cdot10^{-42}\cdot kg$
$2.922638721777\cdot10^{-44}\cdot kg$
$1.991493245955\cdot10^{-46}\cdot kg$
$-1.172870409485\cdot10^{-48}\cdot kg$
$-4.49148060566\cdot10^{-50}\cdot kg$

$Ratio(p)$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$
$1.835710307674\cdot10^{3}$

$$\arg\left(\mathrm{E'}_{proton}(p)\right)\cdot\frac{360}{2\cdot\pi} \qquad \arg\left(\mathrm{E}_e(p)\right)\cdot\frac{360}{2\cdot\pi}$$

54)

$\arg\left(\mathrm{E'}_{proton}(p)\right)\cdot\frac{360}{2\cdot\pi}$	$\arg\left(\mathrm{E}_e(p)\right)\cdot\frac{360}{2\cdot\pi}$
0	0
- 51.853974012778	- 51.853974012777
- 103.707948025555	- 103.707948025555
- 155.561922038333	- 155.561922038333
152.58410394889	152.58410394889
100.730129936113	100.730129936112
48.876155923335	48.876155923335
- 2.977818089443	- 2.977818089443
- 54.83179210222	- 54.83179210222
- 106.685766114998	- 106.685766114998
- 158.539740127775	- 158.539740127775

The phasing of the complex fields are in agreement at all energy reduction levels of (p) for both the proton and the electron. Also, the proton and electron field velocities match at the same reduction power level of (p) as the tables show above.

The quantum wavelengths related to the <u>electron field reduction</u> of velocity by $\alpha(p)$ is shown next.

Let: $h := 6.626075500\cdot10^{-34}\cdot joule\cdot sec \qquad \lambda(p) := \dfrac{h}{m_e\cdot ve(p)}$

55)

$\mathrm{Re}\left(\lambda(p)\right)$	$\mathrm{Im}\left(\lambda(p)\right)$	p
$2.426310600009\cdot10^{-12}\cdot m$	$0\cdot m$	0
$2.007570849549\cdot10^{-11}\cdot m$	$9.759928386125\cdot10^{-12}\cdot m$	1
$1.268501524464\cdot10^{-10}\cdot m$	$1.615106303504\cdot10^{-10}\cdot m$	2
$3.99897068949\cdot10^{-10}\cdot m$	$1.84662620584\cdot10^{-9}\cdot m$	3
$4.11930877295\cdot10^{-9}\cdot m$	$- 1.688790221795\cdot10^{-8}\cdot m$	4
$1.020161055913\cdot10^{-7}\cdot m$	$- 1.23163309513\cdot10^{-7}\cdot m$	5
$1.339527873442\cdot10^{-6}\cdot m$	$- 6.087105312543\cdot10^{-7}\cdot m$	6
$1.353204420803\cdot10^{-5}\cdot m$	$3.51727817707\cdot10^{-7}\cdot m$	7
$1.105516072654\cdot10^{-4}\cdot m$	$5.73434281356\cdot10^{-5}\cdot m$	8
$6.840567275861\cdot10^{-4}\cdot m$	$9.191674459385\cdot10^{-4}\cdot m$	9
$1.962615590172\cdot10^{-3}\cdot m$	$0.010356993196\cdot m$	10

Notice that at p = 2 the wavelength is smaller than the standard n1 Bohr Hydrogen-1 atomic wavelength of 3.324918739*10⁻¹⁰ m by a factor of being divided by the square of the golden ratio Φ. This suggests a hidden energy content in the complex realm.

The below result is very close to my previously derived least quantum electrogravitational wavelength.

Finally: $\dfrac{h}{m_e\cdot\left[\left|ve(10)\right|\cdot\left(\frac{i\cdot4}{\pi}\right)\right]} = -8.2791237073\cdot10^{-3}i\cdot m$ and $\lambda_{LM} := 8.514995416\cdot10^{-03}\cdot m$

Related complex alpha electron field reduction quantum frequencies are:

$$fe(p) := \frac{E_e(p)}{h} \qquad 56)$$

$Re(fe(p))$	$Im(fe(p))$	p
$1.235589779804 \cdot 10^{20} \cdot sec^{-1}$	$0 \cdot sec^{-1}$	0
$9.016534884906 \cdot 10^{17} \cdot sec^{-1}$	$-1.148020877195 \cdot 10^{18} \cdot sec^{-1}$	1
$-4.086897847664 \cdot 10^{15} \cdot sec^{-1}$	$-1.675502736753 \cdot 10^{16} \cdot sec^{-1}$	2
$-1.854991623595 \cdot 10^{14} \cdot sec^{-1}$	$-8.429484440432 \cdot 10^{13} \cdot sec^{-1}$	3
$-2.136859760296 \cdot 10^{12} \cdot sec^{-1}$	$1.108395138989 \cdot 10^{12} \cdot sec^{-1}$	4
$-5.295012213924 \cdot 10^{9} \cdot sec^{-1}$	$2.794250985713 \cdot 10^{10} \cdot sec^{-1}$	5
$2.209820677479 \cdot 10^{8} \cdot sec^{-1}$	$2.531037935699 \cdot 10^{8} \cdot sec^{-1}$	6
$3.96424201139 \cdot 10^{6} \cdot sec^{-1}$	$-2.062181903265 \cdot 10^{5} \cdot sec^{-1}$	7
$2.701244300976 \cdot 10^{4} \cdot sec^{-1}$	$-3.833772356695 \cdot 10^{4} \cdot sec^{-1}$	8
$-159.087133026464 \cdot sec^{-1}$	$-530.744036460035 \cdot sec^{-1}$	9
$-6.092205641986 \cdot sec^{-1}$	$-2.394903768218 \cdot sec^{-1}$	10

Notice that only the first (+) value of frequency as well as the real (+) second value is familiar insofar as the electron Compton rest mass frequency is concerned. Note also that the first two results are positive with respect to time. All of the following results are sub-multiples of the complex fine structure constant and include both negative and positive frequency results. The very last result concerns the electrogravitational energy related frequency. Note that at p = 2, the resulting frequency is 1/Φ of the expected frequency at the n1 level of H-1.

$$fe(10) \cdot \left(\frac{i \cdot 4}{\pi}\right)^2 = 9.876311786217 + 3.882471752086i \quad \cdot Hz \qquad \text{\color{red}Real part is close to } f_{LM}. \qquad 57)$$

$$fe(10) \cdot (-1.646734965928) = 10.032248050283 + 3.943771775158i \quad \cdot Hz \qquad \text{Using correction factor of } -1.646734965928. \qquad 58)$$

Imaginary part times 2 is close to Shumann frequency of 7.83 Hz.

$$\frac{E_e(10) \cdot \left(\frac{i \cdot 4}{\pi}\right)^2}{h} = 9.876311786217 + 3.882471752086i \quad \cdot Hz \qquad 59)$$

The real part of the frequency above is close to pi squared and is also close to the main electrogravitational frequency which is stated as $f_{LM} = 1.003224805 \times 10^1$ Hz.

I propose that the intervening energy reduction levels 2 through 9 above may be energy dimensions that are life-form energy levels. For example, energy level 3 may be the spiritual energy of human beings. It is of interest also that there are 10 levels of energy and that they represent powers of the complex alpha fine structure constant and as such are dimensions. It is theorized in contemporary physics that local space-time is composed of 10 dimensions also. (The first result above is in a zero dimension and is connected directly to energy space.) Level 1 is the first complex reduction by alpha and represents the field energy at the surface of the electron at the Compton radius.

The Great Pyramid at Giza has a resonant acoustic frequency in the Grand Gallery and the King's Chamber very close to 438 Hz as measured by an acoustic frequency meter. It is of interest that a frequency close to twice the frequency of 438 Hz will yield 2π Hz in the real and exactly 8.0 Hz in the Imaginary. This is obtained as a complex result when multiplied by the first reduction of the complex form of the fine structure constant $\alpha(1)$ in eq. (21) above. The 438 Hz is multiplied by nearly 2 which is an adjustment to arrive at the 2π - 8.00i Hz result for $f\Delta\alpha(1)$ in eq. (61) below.

$$f\Delta := 438\cdot(1.9658048305335)\cdot Hz \quad f\Delta = 861.022515773673\cdot sec^{-1} \quad \frac{f\Delta}{2} = 430.511257886837\cdot sec^{-1} \quad 60)$$

$$f\Delta\cdot\alpha(1) = 6.28318530718 - 8i\ \cdot sec^{-1} \quad \text{where:} \quad 2\cdot\pi = 6.28318530718 \quad\quad 61)$$

The above frequency is slightly less than twice 438.2 Hz and may represent the actual active 'loaded' or running frequency of the oscillator mechanism frequency

It should be noted that <u>an acoustic frequency is a quantum level frequency</u> since the realm of particles in motion is what comprises quantum action. The absolute value of the above complex result will yield a frequency close to my predicted electrogravitational frequency of f_{LM} which is equal to 10.03224805 Hz. The absolute value of the above complex result is shown for comparison below.

$$\left|f\Delta\cdot\alpha(1)\right| = 10.172434202508\cdot Hz \quad \text{Complete tables for the powers of } f\Delta\alpha(p) \text{ are:} \quad 62)$$

$Re(f\Delta\cdot\alpha(p))$	$Im(f\Delta\cdot\alpha(p))$	$\left|f\Delta\cdot\alpha(p)\right|$	$arg(f\Delta\cdot\alpha(p))\cdot\frac{360}{2\cdot\pi}$
$861.022515773673\cdot sec^{-1}$	$0\cdot sec^{-1}$	$861.022515773673\cdot sec^{-1}$	0
$6.28318530718\cdot sec^{-1}$	$-8\cdot sec^{-1}$	$10.172434202508\cdot sec^{-1}$	51.853974012778
$-0.028479606452\cdot sec^{-1}$	$-0.116757649275\cdot sec^{-1}$	$0.120180849756\cdot sec^{-1}$	103.707948025555
$-1.29265358179\cdot10^{-3}\cdot sec^{-1}$	$-5.874098360323\cdot10^{-4}\cdot sec^{-1}$	$1.419860414964\cdot10^{-3}\cdot sec^{-1}$	155.561922038333
$-1.489073798391\cdot10^{-5}\cdot sec^{-1}$	$7.723867473193\cdot10^{-6}\cdot sec^{-1}$	$1.677474907261\cdot10^{-5}\cdot sec^{-1}$	152.58410394889
$-3.689836879527\cdot10^{-8}\cdot sec^{-1}$	$1.947177819651\cdot10^{-7}\cdot sec^{-1}$	$1.981830069233\cdot10^{-7}\cdot sec^{-1}$	100.730129936112
$1.539916718503\cdot10^{-9}\cdot sec^{-1}$	$1.763757427049\cdot10^{-9}\cdot sec^{-1}$	$2.341406364003\cdot10^{-9}\cdot sec^{-1}$	48.876155923335
$2.762487749231\cdot10^{-11}\cdot sec^{-1}$	$-1.437034426276\cdot10^{-12}\cdot sec^{-1}$	$2.76622292017\cdot10^{-11}\cdot sec^{-1}$	-2.977818089443
$1.882365977578\cdot10^{-13}\cdot sec^{-1}$	$-2.671569782643\cdot10^{-13}\cdot sec^{-1}$	$3.268116701875\cdot10^{-13}\cdot sec^{-1}$	-54.83179210222
$-1.108600975377\cdot10^{-15}\cdot sec^{-1}$	$-3.698497454206\cdot10^{-15}\cdot sec^{-1}$	$3.861072330503\cdot10^{-15}\cdot sec^{-1}$	106.685766114998
$-4.245362266842\cdot10^{-17}\cdot sec^{-1}$	$1.668892136575\cdot10^{-17}\cdot sec^{-1}$	$4.561611748083\cdot10^{-17}\cdot sec^{-1}$	158.539740127775

If we use an adjusted value for the imaginary frequency result for the first complex reduction by $\alpha(1)$ of twice the Grand gallery frequency above, (such that the absolute result is f_{LM}), we arrive at the commonly measured Schumann atmospheric frequency near 7.83 Hz as shown below.

$$f\Delta_{LM} := (2 \cdot \pi - i \cdot 7.820970742) \cdot Hz \qquad \text{or,} \qquad \left| f\Delta_{LM} \right| = 10.03224805074 \cdot sec^{-1} \qquad \text{63)}$$

$$\arg\left(f\Delta_{LM}\right) = -51.222417590384 \cdot deg \qquad \text{which is very close to } 4/\pi \text{ of the Great pyramid.} \qquad \text{64)}$$

The reduction to 7.83 Hz from 8.00 Hz may correspond to the difference in the medium of propagation. That is, the 7.83 Hz may be loaded by the medium so that it is lower than for a more tightly coupled action such as for close inter-particle direct quantum coupled action. Then, in general, the 7.83 Hz is probably more realistic than the idealized 8.00 Hz as calculated above.

The result of the above analysis is that the Great Pyramid may indeed have been used to resonate with the electrogravitational frequency f_{LM} which is ubiquitous to all matter everywhere, not just to the Earth. For the Pyramid, horizontal is the real valued 2π frequency, vertical is the imaginary 7.83 Hz frequency and finally the hypotenuse is the absolute electrogravitational frequency of 10.03224805 Hz. For the Great Pyramid this would correspond to the Apothem. Further, the angle related to f_{LM} is shown above which is capactive. Therefore, an inductive mechanism inside of the Great Pyramid which interfaced as the conjugate of the above angle would couple maximum power to sustain oscillation inside of the pyramid of whatever mechanism is capable of resonance at the above pyramid frequency near 438 Hz.

Maxwell proved that the electric permittivity ε_o and magnetic permeability μ_o of free space was intimately related to the electromagnetic wave since it was proven that the inverse of the square root of ε_o and μ_o was exactly equal to the speed of light c in free space. In my theory of electrogravitation, these two constants can be utilized to prove that the magnetic field can be expressed directly in terms of the rest mass of the electron. The below are all established S.I. units. The classic electron radius was obtained directly from a table of constants as were the others. First, the field energy at the surface of an electron will be used to establish the fact that at the classic electron radius, the field energy is equal to the electron rest mass.

$$\varepsilon_o := 8.854187817 \cdot 10^{-12} \cdot \frac{farad}{m} \qquad \text{Electric permeability of free space.}$$

$$\mu_o := 1.256637061 \cdot 10^{-06} \cdot \frac{henry}{m} \qquad \text{Magnetic permeability of free space.}$$

$$l_q := 2.817940920 \cdot 10^{-15} \cdot m \qquad \text{Classic electron radius.}$$

$$q_o := 1.602177330 \cdot 10^{-19} \cdot coul \qquad \text{Electric charge of the electron.}$$

$$E_{lq} := \frac{q_o^2}{4 \cdot \pi \cdot \varepsilon_o \cdot l_q} \qquad E_{lq} = 8.187111160863 \cdot 10^{-14} \cdot joule \qquad 65)$$

$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad 66)$$
$$E_{me} := m_e \cdot c_{vel}^2 \qquad E_{me} = 8.187111168007 \cdot 10^{-14} \cdot joule$$

We can therefore establish a statement for mass that is more subtle than simply dividing the rest mass energy by the square of the speed of light and at the same time show that mass is intimately related to the magnetic term μ_o which means it is a fundamental property of magnetism.

$$mass_e := \left(\frac{q_o^2}{4 \cdot \pi \cdot \varepsilon_o \cdot l_q} \right) \cdot \left(\varepsilon_o \cdot \mu_o \right) \qquad or, \qquad mass_e = 9.109389688253 \cdot 10^{-31} \cdot kg \qquad 67)$$

Note that the previously defined
mass above in standard S.I. units is: $\qquad m_e = 9.1093897 \cdot 10^{-31} \cdot kg$

Thus Maxwell's reasoning is extended such that mass also can be intimately related to a field and in this case the magnetic field reduced from the electric field by the indirect use of the square of light parameter. Therefore the term electrogravitation is proper in that gravity really can be connected to a particular form of the electro*magnetic* field. In my theory it is the (**A**) vector, also known as the vector magnetic potential. Then, since the ε_o terms cancel, the simplified mass equation is:

$$mass_e := \frac{\mu_o \cdot q_o^2}{4 \cdot \pi \cdot l_q} \qquad or, \qquad mass_e = 9.109389688253 \cdot 10^{-31} \cdot kg \qquad 68)$$

I have previously stated in my theory that the mass is a standing wave composed of two standing waves 90 degrees to each other that form a torus. The standing waves are quantum standing waves also known as De Broglie matter waves. Standing waves do not radiate as in the case for ordinary electromagnetic waves. They can however participate in what is termed nowadays as entanglement wherein particles can transport information about themselves to other particles instantly through any intervening space. The (**A**) vector appears to also traverse space without being affected by shielding and therefore may be connected to a form of entanglement and thus electrogravitational action.

The (**A**) vector is inline to particle motion and is thus parallel in the same sense. It can act on other particles without being diminished by interfering shielding placed between the particles. The net result causes particles to line up with each other and a common power industry device known as a current transformer demonstrates this action quite well.

What I am leading up to is the following statement:
A parallel resonance involving a freely moving quantum particle motion along with a parallel electric current motion may be utilized to generate large amounts of power since the basic electrogravitational energy field can be used to build the field over time if the proper dimensions of the resonant chamber is utilized near ground level. The acoustic and electric motions are linked by the (A) vector.

I am suggesting something like a Helmholtz resonator wherein a vertical metal pipe filled with air (Hydrogen is preferred) having a larger enclosure at the bottom is allowed to resonate at a certain acoustic frequency. That frequency is equal to the frequency $f\Delta/2$ in eq. 60 above. From the top of the open pipe, an inverted V antenna is constructed where the angle between the wires is approximately equal to 51 degrees and each leg of the V is insulated near the top and bottom. A current transformer is enclosing the bottom of the vertical resonating pipe and the wavelengths of the acoustic wave and the electric wave on the pipe are exact whole number multiples of each other. Having the electrical 1/4 the wavelength of the acoustic would be preferred as will be developed below.

It was mentioned above that an acoustic resonance of the great pyramid was near 438 Hz. I further developed that the complex fine structure constant $\alpha(1)$ times a frequency $f\Delta$ yielded a complex frequency that contained a real frequency and and imaginary frequency as shown below.

$$\alpha(1)\cdot f\Delta = 6.28318530718 - 8i \cdot Hz \quad \text{where,} \quad \frac{\alpha(1)\cdot f\Delta}{2} = 3.14159265359 - 4i \cdot Hz \qquad 69)$$

Note that: $\quad \dfrac{f\Delta}{2} = 430.511257886837 \cdot Hz$ Which can be considered as a 'loaded' 438 Hz.

The real part of the complex frequency above related to $\alpha(1)f\Delta$ is equal exactly to 2π Hz and the imaginary part is equal to -8.00i Hz exactly. Let us use a 'loaded' value of the complex result as shown below so as to correspond to the 'loaded' value of 430 Hz instead of 438 Hz.

$$\text{Or:} \quad f\Delta_{LM} := (2\cdot\pi - i \cdot 7.820970742)\cdot Hz \quad \left| f\Delta_{LM} \right| = 10.03224805074 \cdot Hz \qquad 70)$$

Now the fundamental electrogravitational frequency as predicted by my theory is linked intimately to the 'loaded' acoustic frequency as shown above. Note that the imaginary value is also equal to the Schumann Earth cavity resonance frequency of 7.83 Hz as measured by Bob Beck (an engineering scientist) or 8.00 Hz by Andrija Puharich (a medical doctor and well known researcher).

Therefore the energy is there and it may be utilized as an initiator energy to build on the Hydrogen power level via the acoustic frequency related by the complex fine structure constant, $\alpha(p)$.

The book "The Giza Powerplant" [1] presents the concept of the Great Pyramid at Giza being a carefully tuned acoustical amplifier which is used to drive a Hydrogen maser. The output frequency of the maser is **1,420,405,751.786 Hz**. [2] The author makes a very strong case for his argument and the book is well worth the reading from an engineering standpoint. The contemporary belief that the Great Pyramid was built as a tomb for Pharoah Kufu may be a monumental mistake. (Pun intended.) In fact, the Great Pyramid may be the first pyramid built and the others were copies or were built to receive power and not to be used as generators and transmitters of power. The Great Pyramid is absolutely unique. There are no paintings on the walls nor was a body found entombed inside of the Kings Chamber. The sarcophagus was empty and showed sign of severe heating. The kings chamber also has signs of heating and of a huge explosion having occurred in the distant past. It has also been suggested that the Great Pyramid may be more than 12,000 years old. Some have suggested it is much older than that. Further, I suspect the pyramids on Mars in the Cydonia region may have been built by the same race of people who built the Great Pyramid.

The author of ref. 1 also suggests that there may have been 27 banks of Helmholtz resonators located in the Grand Gallery leading to the King's chamber resonator room which served to amplify the natural low frequency signals of the Earth.[3] It is my suggestion that the Great Pyramid as a whole, housing the resonator banks as well as the King and Queen's chambers, may have served as one Giant Helmholtz resonator. Also, the massive five layers of redundant granite slabs [4] above the King's chamber may have acted as finely tuned resonators which then served as artificial openings or loads to certain frequencies corresponding to the opening on an ordinary Helmholtz resonator. The author suggests that the airshafts from the North and the South faces of the Pyramid that enter the King's Chamber were actually microwave waveguides and further that the Sarcophagus housed a large crystal that amplified the hyperfine hydrogen frequency previously mentioned above. [5]

$$c := 2.997924580 \cdot 10^{08} \, \frac{m}{sec} \qquad f_{hyd} := 1.4204 \cdot 10^{09} \quad Hz \qquad f\Delta := 861.0225 \quad Hz$$

Thus: $\quad \lambda_{hyd} := \dfrac{c}{f_{hyd}} \qquad \lambda_{hyd} = 0.211061995213 \quad m \quad$ = 8.309527362 inches. $\qquad$ Electric wavelength. $\qquad$ 71)

Required $\quad v_{air} := f\Delta \cdot \left[2 \cdot \left(\lambda_{hyd} \right) \right] \qquad v_{air} = 363.45825354591 \quad \dfrac{m}{sec} \quad$ = 1192.448338 ft./sec. $\qquad$ 72)

The formula [6] to find the required air temperature for the above velocity in air is:

$$V = 20.06 \cdot \sqrt{273 \cdot deg \cdot C + Tx \cdot deg \cdot C} \quad \text{Rearranging to find the required temperature of the air:} \qquad 73)$$

Celsius: $\qquad Tx_C := \left(\dfrac{v_{air}}{20.06} \right)^2 - 273 \quad$ or, $\qquad Tx_C = 55.282107989697 \quad$ deg C.

$\qquad$ 74)

Fahrenheit $\qquad Tx_F := Tx_C \cdot \dfrac{9}{5} + 32 \quad$ or, $\qquad Tx_F = 131.507794381454 \quad$ deg F.

$\qquad$ 75)

The required calculated air temperature of 131.51 degrees Fahrenheit is not out of line considering the enclosed airspace and the power levels being generated.

Let us now use half of the f'Δ frequency which yields a frequency close to the unloaded resonant frequency of the Grand Gallery and the King's Chamber as well as the Sarcophagus of 438 Hz.

$$\dfrac{f\Delta}{2} = 430.51125 \quad Hz.$$

Acoustic Wavelength.

$$\lambda_{air} := \dfrac{v_{air}}{\left(\dfrac{f\Delta}{2} \right)} \quad \text{or,} \quad \lambda_{air} = 0.84424798085 \quad \text{meter which} = 33.23810945 \text{ inches.} \qquad 76)$$
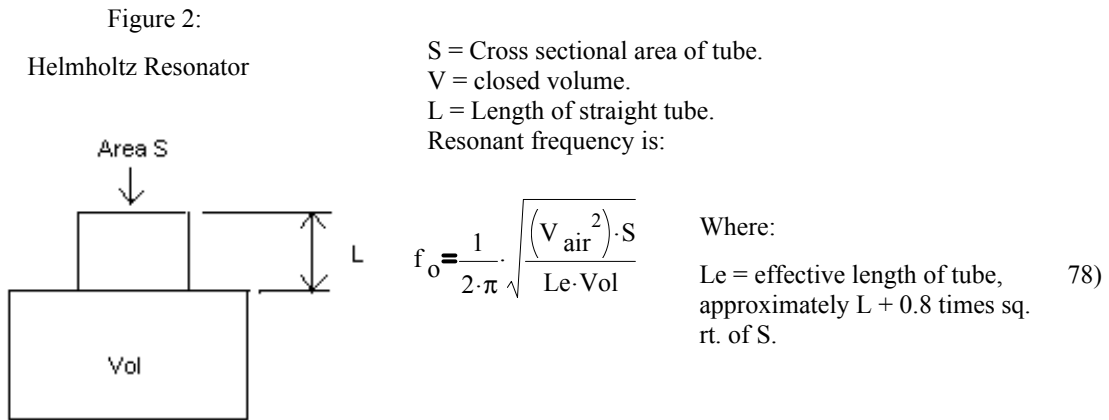
Then the ratio of the acoustic wavelength to the electric wavelength is:

$$\text{Ratio}_{EA} := \frac{\lambda_{air}}{\lambda_{hyd}} \qquad \text{Ratio}_{EA} = 4 \quad \text{which is a whole number exactly.} \qquad 77)$$

Then the acoustic frequency will interact strongly with the electric frequency since the wavelengths are in synchronization by reason of the fact that the ratios are even whole numbers. Remember that particles in motion manifest quantum realm characteristics of entanglement. In this case the entanglement is the Hydrogen-1 gas electrons and protons 51 degree electrogravitational first reduction phase angle interacting with electrons in the adjacent metal walls of a Helmholtz resonator pipe.

It is of related interest that UFO's internal layouts often include a vertical pipe that extends from the floor of the crew compartment to the overhead and that this pipe is a integral part of the operational mechanics of the craft. I cite as reference the Testor's Area 51, (sub area S4) UFO, model # 576.[7] The kit drawings indicate that the pipe transported microwave energy. However I suggest it is additionally an acoustic resonator coupling to that microwave energy as I outlined above for the previous Helmholtz resonator discussion. Also there is a drawing of a Caduceus coil [7] wherein the vertical pipe in the middle of the two upwardly spiraling coils carries a resonating column of boiling ionized mercury gas and the wings symbolize flight. This too I suggest is a special form of a Helmholtz resonator acting in the manner I described above.

Below is a drawing of a Helmholtz resonator with the applicable formula. [8]

Figure 2:

Helmholtz Resonator

S = Cross sectional area of tube.
V = closed volume.
L = Length of straight tube.
Resonant frequency is:

$$f_o = \frac{1}{2\cdot\pi} \cdot \sqrt{\frac{\left(V_{air}^2\right)\cdot S}{Le\cdot Vol}}$$

Where:

Le = effective length of tube, approximately L + 0.8 times sq. rt. of S.   78)

In the above drawing, the small rectangle represents the vertical tube. The large rectangle is a bottom resonator chamber, much like the King's Chamber in the Great Pyramid or the base of the Caduceus coil or the base of the S4 UFO vertical pipe.

The following calculations apply specifically to building a Helmholtz acoustic powered electric generator.

$$f_o = \frac{1}{2\cdot\pi}\cdot\sqrt{\frac{\left(V_{air}^2\right)\cdot S}{\left(L+0.8\cdot\sqrt{S}\right)\cdot Vol}} \qquad \text{where the desired} \qquad f_o := 430.51125\cdot Hz \qquad \qquad 79)$$

$\lambda_{air} := 0.84424798085\cdot m$ let $L := \lambda_{air}$ Assume a a 5.08 cm tube diameter.

$D_{tube} := 5.08\cdot10^{-02}\cdot m$ Then: $S := D_{tube}\cdot L$ or, $S = 0.042887797427\cdot m^2$ Cross-sectional area.

$V_{air} := 363.45825354591\cdot\frac{m}{sec}$ Assume: $Vol := .001\cdot m^3$ or, $Vol^{\frac{1}{3}} = 0.1\cdot m$

The calculated sample has a resonant frequency of:

$$f_o := \frac{1}{2\cdot\pi}\cdot\sqrt{\frac{\left(V_{air}^2\right)\cdot S}{\left(L+0.8\cdot\sqrt{S}\right)\cdot Vol}} \qquad f_o = 376.961868171325\cdot Hz \qquad \qquad 80)$$

As a check, we now solve for the volume (Vol) necessary to resonate at f_o above.

$$f_o = \frac{1}{2\cdot\pi}\cdot\sqrt{\frac{\left(V_{air}^2\right)\cdot S}{\left(L+0.8\cdot\sqrt{S}\right)\cdot Vol}} \qquad f_o^2\cdot4\cdot\pi^2 = \frac{\left(V_{air}^2\right)\cdot S}{\left(L+0.8\cdot\sqrt{S}\right)\cdot Vol} \qquad 81)$$

Then: $\qquad Vol := \dfrac{\left(V_{air}^2\right)\cdot S}{\left(L+0.8\cdot\sqrt{S}\right)\cdot f_o^2\cdot4\cdot\pi^2}$ or, $\qquad Vol = 1\cdot10^{-3}\cdot m^3 \qquad \qquad 82)$

Result checks so formula can be used to find the volume for the correct frequency where $f_o = f\Delta/2$.

$f_o := \dfrac{f\Delta}{2}$ Then: $Vol := \dfrac{\left(V_{air}^2\right)\cdot S}{\left(L+0.8\cdot\sqrt{S}\right)\cdot f_o^2\cdot4\cdot\pi^2}$ $\qquad Vol = 7.667006238744\cdot10^{-4}\cdot m^3 \qquad 83)$

Where: $f_o = 430.511257886837\cdot Hz$ $\qquad\qquad (Vol)^{\frac{1}{3}} = 0.091525463918\cdot m \qquad\qquad 84)$

The required volume can be a box exactly 9.152546 cm on a side.

Check: <u>19</u>

$$f_o := \frac{1}{2 \cdot \pi} \cdot \sqrt{\frac{\left(V_{air}^{\ 2}\right) \cdot S}{\left(L + 0.8 \cdot \sqrt{S}\right) \cdot Vol}} \qquad \text{or,} \qquad f_o = 430.511257886837 \cdot Hz$$

85)

The above design calculations will allow for one wavelength of acoustic resonance while having an associated four wavelengths of electrical wavelength.

During my amateur radio days I remember that something happened while erecting an inverted-"v" type of antenna that at the time was quite startling and perhaps even dangerous to my life. I was standing on a flat asphalt covered roof on a one story dwelling and was lifting a three section mast above my head in preparation to putting the bottom over the side of the roof to the ground. Each section of the mast was of thin galvanized steel pipe about 2 inches in diameter and close to 8 feet in length. The mast was aligned North-South with the base towards the North. The 12 gauge hard drawn copper antenna wires were attached at the top which was behind me to the South by 1 inch PVC pipe insulators about 8 inches in length for each element. Each wire was about 5 meters long so as to represent a quarter wavelength in each wire in the 20 meter Ham band. The bottom of each wire was also connected to 8 inch PVC 1/2 inch plastic pipe insulators to eyebolts at the corners of the roof. The angle between the antenna wires was close to 90 degrees apart and I was aiming for a rise of each wire slope to be about 45 degrees.

When the mast was within a few inches of the edge of the roof in front of me, I suddenly heard a crackling sound and simultaneously observed a bright white flame of electrical energy between the mast bottom and the aluminum flashing around the roof. The mast was about 8 feet above the roof at the top end behind me. I was centered at the middle of the mast and wearing rubber gloves which may have helped to keep me from becoming electrocuted. There were no power lines anywhere near me but the amount of electrical energy I witnessed passing between the bottom of the mast and the roof flashing was very substantial. Anyway, realizing I should do something to stop the arcing, I set the mast bottom directly on the flashing and slid the mast over the side as quickly as possible. The arcing stopped as soon as the mast bottom physically contacted the flashing. I later determined that the flashing was grounded to Earth ground.

When I first started my career in electronics I remember reading bulletins about persons being killed by electrocution while erecting antenna masts. Most of the cases involved contact with powerlines. However there were a few reports of people being electrocuted and yet there were no adjacent power lines nor were there any thunder storms nearby. In light of what I have presented above concerning tapping into energy associated with the energy reduction by the complex fine structure constant and its association to the golden ratio, I am forced to conclude that I may have inadvertently tuned into just the right geometry to induce power into the hollow cavity of the mast by creating a form of Helmholtz resonator/electrical generator as described above. The inverted "v" antenna may have acted as a top-loading effect to help build the field between the top of the mast and ground at the aluminum flashing. The North-South orientation alignment of the mast as described above matches the fact that the Grand Gallery of the Great Pyramid at Giza also is aligned North-South. The inverted "v" resembles a pyramid but having only one face.

I also remember that some of the fellow amateur radio operators reported that the signal from my transmitter was very much stronger than expected at their location since The transmitter was only 50 watts and not using a beam or high forward gain type of antenna. This was factoring in the distance from me to them and based on their experience over the years from reception from my area. Perhaps the inverted V type of antenna actually amplified the power in the antenna in the manner described above.

It is of interest if the above antenna mast has the necessary dimensional parameters to act as a Helmholtz resonator. The below calculations are presented for that purpose.

$$\lambda_{hyd} := 0.211061995213 \cdot m \quad or, \quad \lambda_{hyd} = 8.309527370591 \cdot in \quad and \quad \lambda_{air} = 33.238109482283 \cdot in \qquad 86)$$

In the below calculation, $L = \lambda_{air}$. We provide for 6 acoustic wavelengths minus the distance of 1/4 the electrical wavelength so as to build a quarter-wavelength standing wave of voltage at the top (or bottom) end. L_{mast} is about equal to two 8-foot sections of thin-wall antenna mast pipe. These form the upper two sections of the three section mast.

$$\text{Let} \quad L_{mast} := 6 \cdot L - \frac{\lambda_{hyd}}{4} \qquad L_{mast} = 16.445939587588 \cdot ft \qquad D_{tube} = 2 \cdot in \qquad 87)$$

$$S_{mast} := D_{tube} \cdot L_{mast} \qquad S_{mast} = 0.254646297224 \cdot m^2 \qquad f_o = 430.511257886837 \cdot Hz \qquad 88)$$

$$Vol_{base} := \frac{\left(V_{air}^2\right) \cdot S_{mast}}{\left(L_{mast} + 0.8 \cdot \sqrt{S_{mast}}\right) \cdot f_o^2 \cdot 4 \cdot \pi^2} \qquad Vol_{base} = 8.487995794681 \cdot 10^{-4} \cdot m^3 \qquad 89)$$

$$L_{base} := \frac{Vol_{base}}{\pi \cdot \left(\frac{D_{tube} + .25 \cdot in}{2}\right)^2} \qquad \text{Required} \quad L_{base} = 1.085595019579 \cdot ft \qquad 90)$$

It is of relevance that the top two sections of mast fit together with a tapered joint so that they both were of the same 2 inch diameter. The bottom base pipe was slightly larger by 1/4 inch in diameter and the upper section fit down into the bottom pipe with about a 1/8 inch gap around the edge and a little over a foot down from the top of the base pipe I had put a bolt through the pipe to keep the upper section of smaller diameter pipe from sliding down into the base pipe. This effectively created a short or acoustic interruption which quite possibly limited the cavity in the base pipe to a little over a foot long near the top of the pipe. Then this was very close to the required base volume calculated above and was quite by accident. If the parameters would have been exactly right, I may not be typing this now. Apparently others may have not been as fortunate as I concerning the amount of energy that could build in a perfectly designed acoustic/electric Helmholtz generator.

The author of reference 1, Christopher Dunn, proposed that there were 27 banks of Helmholtz resonators in the 1836 inch length of the Grand Gallery of the Great Pyramid and that each bank had seven resonators. Further, the design accuracy of the builders suggest that the dimensions were probably close to perfect and therefore the total energy output (in a saturated Hydrogen gas environment) from these resonators to the top of the Gallery must have been astronomical. The total energy output from the Pyramid may have been enough to power the energy needs of a planet or perhaps even an armada of space vehicles.

Grand gallery calculations related to the Schumann Earth cavity resonate frequency.

$$V_{air} = 363.45825354591 \cdot m \cdot sec^{-1} \qquad\qquad V_{air} = 1.192448338405 \cdot 10^3 \cdot \frac{ft}{sec} \qquad 91)$$

$$L_{gallery} := 1844.5 \cdot in \quad \text{(Ref. 9.)} \qquad L_{gallery} = 153.708333333333 \cdot ft \quad \text{Ceiling length.} \qquad 92)$$

$$f_{gallery} := \frac{V_{air}}{L_{gallery}} \qquad\qquad f_{gallery} = 7.757863952758 \cdot Hz \qquad 93)$$

The frequency is very close to the Schumann frequency of 7.83 Hz of eq. 70 above. It is also of interest that there are 28 open intervals relative to the resonator banks, counting the open intervals at each end and the 26 intervals between the resonator banks.

$$fl_{gallery} := (28) \cdot 7.83 \cdot Hz \quad \text{Times 2 we get:} \qquad fl_{gallery} \cdot (2) = 438.48 \cdot Hz \qquad 94)$$

Then each bank of resonators may have been adding energy up the length of the gallery starting with the Schumann electric field's Earth cavity resonance frequency of 7.83 Hz. Remember eq. 60 and 61 where $f\Delta/2$ loaded was equal to 431 Hz which when multiplied by the complex fine structure constant of the first reduction level yields a real value frequency equal to 2π Hz and an imaginary frequency value equal to -8 Hz. This is a frequency derived from the first reduction of the electron energy level and thus relates to the excess energy in the field for that atomic energy level since it relates also to the proton energy level. Then this explains the use of Hydrogen gas as proposed by Christopher Dunn. The Great Pyramid mechanism was extracting the excess refresh energy related to the first reduction level of the proton and electron's complex energy reduction level. This is pure clean energy and amounts to a considerable amount when taken enmass with the total number of Hydrogen atoms being used. Therefore, the use of Hydrogen gas in a Helmholtz resonator/generator will likely boost the energy output considerably. Especially when aligned North-South.

In his book, (Ref. 1), Christopher Dunn proposes that the Hydrogen-1 hyperfine frequency of 1420 MHz was utilized in the maser located inside of the Sarcophagus in the King's Chamber to generate a microwave energy that was then focused into the input of the Southern air shaft which he also suggested was actually a waveguide before the metal was leached out of it. The hyperfine interaction for the Hydrogen-1 atom is due to the magnetic dipole moment of the proton nucleus interacting with the spin of its electron as well as the electrons orbital motion. The hyperfine frequency represents a definite energy which I propose can be a radiative energy, especially if the Hydrogen-1 atom is accelerated as in a vibrational action caused by an strong acoustic wave physically accelerating the Hydrogen atom back and forth at a key frequency. The "key frequency" is the above calculated f_o frequency of 431 Hz. More fundamentally, causing the hyperfine frequency of H-1 to radiate will also cause induction of a corresponding amount of energy from what I call energy space so as to keep the net energy in the n1 energy level relatively constant. I propose that energy must be 'inducted' to replace that which has been extracted by radiation or the hydrogen-1 atom could not continue to exist as a stable atom.

The f_o acoustic frequency is related to the proton and electron key interaction velocity v1 as shown below.

$$f_{hyd} := 1.420405751786 \cdot 10^{09} \cdot Hz \quad \text{and from eq. 44 above:} \quad \frac{Re(v1)}{V_{n1}} = 13.395826267695 \qquad 95)$$

or, $\quad \dfrac{Re(v1)}{Re(v2)} = 13.39582626823 \quad$ This is the <u>key ratio</u> linking proton to electron field velocities. $\qquad$ 96)

Let a Hydrogen-1 hyperfine correction factor be set at: $\qquad H1_{CF} := 0.9894863517 \qquad$ 97)

Then f_{hyd} is related to the acoustic f_o frequency by the following equation:

$$\frac{f_{hyd} \cdot \left(\frac{Re(v2)}{v0}\right)^2}{\left(\frac{Re(v1) \cdot H1_{CF}}{V_{n1}}\right)^2} = 430.511257866449 \cdot Hz \qquad \text{where,} \qquad f_o = 430.511257886837 \cdot Hz \qquad 98)$$

The squared velocity terms arise by reason that energy is mass times velocity squared and energy is directly proportional to frequency by E=hf. Note that the hyperfine action related to the 1420 MHz is from a magnetic interaction and it is the vector *magnetic* potential, the (A) vector, which I attribute the ability to cause electrogravitational action since it also connects to non-local energy space.

The book, *Molecular Quantum Mechanics*,[10] presents the description of an electron experiencing what is called a **Fermi contact interaction**. An electron in the s-orbital can be near the nucleus as a result a non-zero magnetic field developed involving a vector magnetic potential form of equation:

Eq. (62), p.428 of ref. 10: $\qquad A_{nuc} = \left(\frac{\mu_o}{4 \cdot \pi \cdot r^3}\right) \cdot m \times r \qquad$ leading to the Hamiltonian: $\qquad$ 99)

Eq. (91), p. 439 of ref. 10: $\qquad H_{hf} = -\frac{2}{3} \cdot g_e \cdot \gamma_e \cdot \gamma_N \cdot \mu_o \cdot \delta(r_N) \cdot s \cdot I \qquad$ 100)

The important point here is that the $\delta(rN)$ is the δ-function which is what I call the impulse function. Another term is the Dirac delta function. It has a non-zero value at time = zero and is zero for all other time. The net result is the following equation:

Eq. (94), p. 440 of ref. 10: $\qquad E^{(1)} = \left(\frac{2}{3 \cdot \pi \cdot a_o^3}\right) \cdot g_e \cdot g_N \cdot \mu_B \cdot \mu_N \cdot \mu_o \cdot m_s \cdot m_I \qquad$ 101)

The result of the above equation is the numerical eigenvalue which correspond to the 1420 MHz frequency mentioned above. That is, the electromagnetic radiation exists apart from any external application of stimulation. It is generated by the electron-nucleus coupling due to their Fermi contact interaction which causes a non-zero magnetic interaction field to arise which splits the electron energy levels enough to create the hyperfine frequency of 1420 MHz. Let the H-1 in-situ atomic parameters be stated for the purpose of computing the energy output of eq. 101.

$a_o := 5.291772490 \cdot 10^{-11} \cdot m$ Bohr n-1 radius.

$g_e := 2.002319314$ g-factor of the electron.

$g_N := 5.5857$ g-factor of the nucleus.

$\mu_B := 9.274015400 \cdot 10^{-24} \cdot joule \cdot tesla^{-1}$ Bohr magneton.

$\mu_N := 5.050786600 \cdot 10^{-27} \cdot joule \cdot tesla^{-1}$ Nuclear magneton.

$\mu_o := 1.256637061 \cdot 10^{-06} \cdot henry \cdot m^{-1}$ Magnetic permeability of free space.

The product of m_s and m_l is equal to 1 in this case.   Then the output of eq. 101 above is:

$$E_{msl} := \left(\frac{2}{3 \cdot \pi \cdot a_o^3} \right) \cdot g_e \cdot g_N \cdot \mu_B \cdot \mu_N \cdot \mu_o \qquad E_{msl} = 9.427640532782 \cdot 10^{-25} \cdot joule \qquad \text{102)}$$

The quantum frequency is: $f_{msl} := \dfrac{E_{msl}}{h}$ $f_{msl} = 1.422809102127 \cdot 10^9 \cdot Hz$ 103)

The result in eqs. 102 &103 above is very close to the actual measured value of f_{hvd} above. The energy radiated by the hyperfine interaction of H-1 is spontaneous and is not reliant on external stimulation. However, external stimulation to force coherency will greatly increase the total sum output of an aggregate assembly of hydrogen atoms in a tuned cavity. This will result in maser action.

Eq. 102 parameters are relative to the boundary volume of the H-1 atom. There are no external parameters stated, such as for an external magnetic field or external thermal stimulation. Therefore, the frequency radiated represents energy expended from the H-1 atom via the internal mechanics of the fine structure field. However, the unperturbed H-1 atom energy does not change over an extended time. Thus, I propose that the energy is replaced via the impulse function d(rN), see (Eq. 100 above), which allows for time gated energy from energy space to be input to the electron-proton connection related to eq. 36, parameter v1 above. A method of tapping into energy space is suggested by the above analysis. For this purpose, the weighted impulse function $\delta(r_{NW})$ is used which is a form of the Dirac delta function but allows for a form of energy to be gated from energy space to local space via the impulse time width that sets the amount of energy proportional to the length of time the gate is open.

I therefore suspect Christopher Dunn's suggestion *that the purpose of the design of the Great Pyramid and the Grand Gallery was to provide acoustical energy for driving a maser cavity amplifier in the form of the King's Chamber granite sarcophagus* is correct. For my own part, I propose that energy related to $f\Delta/2$ in eq. 60 above was tapped into and amplified in the Grand Gallery utilizing resonators tuned to the natural quantum and acoustic frequencies as I developed above.

Professionals in the mainstream of physics view this thinking as fringe science. I would like to point out that it is the fringe, or edge of the mainstream that determines the direction that the stream will flow. Put another way, it is the banks of the river that sets the direction of the flow. Without flow and direction, it is a placid pool which becomes stagnate over time.

Returning to the subject of discussion, if the time gate were to be forced open wider, the energy output would rise accordingly. This may be the purpose of acoustically exciting the Hydrogen gas at the frequency of 431 Hz as calculated above. Remember that eq. 98 above connected f_{hvd} to the common nucleus and electron velocity v1 as well as the n1 velocity v2. Eq. 69 connects 431 Hz to the Schumann frequency as well as my calculated least quantum electrogravitational frequency. It was further established by eq. 5 through 19 that a very small adjustment downwards from 90 degrees generated the complex fine structure constant and from the constant fine structure constant a cascade of energy levels down from the rest mass energy were generated via powers of that complex fine structure constant. All of the complex energies increased by 51 degrees the rotation around the complex Argand diagram with each energy reduction until the last energy reduction yielded the energy level where the least quantum electrogravitational frequency was established by eqs. 57 through 59. Therefore, an acoustic resonance through Hydrogen gas at 431 Hz would affect all of the atomic H-1 cascaded energy levels simultaneously as well as the hyperfine energy emission via the key v1 and v2 velocities.

The Great Pyramid's height to half baseline length ratio is equal to $4/\pi$ and the atan of that ratio is 51.85397401 degrees which is extremely close to all of the energy reduction angles above as well as the key proton-electron interaction angles in eq. 48 and 49 above.

For those who would argue that the free emission of energy from the H-1 atom via the hyperfine mechanism, (without external stimulation of some kind) is impossible, I present again eq. 101 above which is an existing equation referenced to a textbook **10** in quantum physics that speaks otherwise.

I do not see our universe as a closed system wherein there was just one Big Bang of energy and after that nothing more. Further, I extrapolate that concept of a dynamic energy input to the quantum realm by allowing for energy to enter through a quantum particle's center of existence and I propose that the refresh pulse is equivalent to $\delta(r_{NW})$. Thus all matter everywhere is connected through non-local energy space which has no distance and is not time-like. All action electrogravitationally speaking occurs through this energy space effectively instantaneously and the reaction occurs in local space which is time-like and thus subject to relativistic laws of observation and measurement. It should be noted that while it is true that in a closed system energy cannot be created nor destroyed, there is not anything in reality that can be said to be a perfectly closed system just as there is no such thing as a truly static field.

I have presented the case for the geometry of the Hydrogen atom to be tied to a very slight difference between the complex value of the natural number e and the corresponding conjugate value of the square root of the golden ratio at angles of - and + 90 degrees respectively. (See fig. 1 above.) It is my postulate that it is this small difference that sets the geometry concerning the distance and field energies of the Hydrogen to be what they are as well as the proton energy in relation to the electron energy via v1, the common complex velocity below the velocity of light. I have also related the geometry of the Great Pyramid of Giza to the new complex fine structure constant a(p) as a result.

Finally, in eqs. 65 through 68 I proved the case for the mass of the electron to be stated in terms of the permeability of free space times the charge of the electron squared divided by 4π times its classic radius. Thus, the electron mass is a field which I further propose to be a composed of two standing waves linked into a torus such that each standing wave is <u>almost</u> degrees to each other. The small difference from 90 degrees may be set equal to the small difference of 90 degrees minus the angle θ4 in eq. 17 above.

----- Author -----
Jerry E. Bayles

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Hydrogen As A Free Energy Source
Defines A New Universe

Jerry E. Bayles

The contemporary picture of the universe is one of accelerated expansion. This is arrived at by reason of the nonlinear Doppler downshift in frequency with respect to the increase of linear distance from us to light emitted by certain standard quasars which are thought to have a standard unit of brilliance. Further, the cosmic background radiation (CBR) is thought to be the remnants of the Big Bang creation event and represents energy that is near 2.73 degrees Kelvin. This corresponds to a frequency that has a peak of emission very near 3×10^{11} Hz.

I propose that the cosmic background radiation is linked directly to free energy radiated from the Hydrogen-1 atom, specifically from free energy radiated from the proton mass, which is then refreshed from energy space. This is very similar to the case for the field establishment for the electron as I proposed in the main paper above. I further propose that the CBR is intimately linked to the 1420 MHz emission related to the standard equation 101 above which establishes the CBR as an inherent part of the hydrogen atom's dynamic structure, and further, that the 1420 MHZ radiation was also in the beginning of the universe since the fundamental Hydrogen atom structure is invariant or it could not exist.

It is well established that absolute zero degrees Kelvin cannot be achieved and one of the explanations is that the energy extraction allows for some heat to leak back into the medium that is being cooled. I propose that due to free energy as posited above, even if it were possible to perfectly isolate matter at near zero degrees Kelvin, it would not stay at that temperature. Rather, it would begin to heat up again. I propose that there is no such thing in our universe as a truly closed system nor is there such a thing as a truly static energy field which can be totally isolated from surrounding matter. Infinity and zero are useful mathematical concepts but do not occur in observable nature.

I further propose that the redshift is not solely due to expansion of the universe. Rather, I propose that electrogravitation is accomplished via the lowest quantum state of free energy which amounts to a quantum frequency near $\Delta 10$ Hz. (Thus electrogravitational action is entropic to all matter.) This $\Delta 10$ Hz quantum frequency may not be a radiated frequency but more of a quantum rate of energy reduction. Over long periods of time the accumulated subtraction of energy from light in transit from stars to us simply causes light to lose energy at a rate proportional to the distance traveled. This could even apply to the Pioneer probes which are presently known to be losing outward bound velocity faster than can be accounted for by Newtonian gravitational calculations. The electrogravitational interaction with light and matter in general would be occurring from all sides in deep space.

Therefore, the universe may not be expanding as posited by contemporary physics. Rather, it has tiny quantum leaks in its energy fabric which is constantly being refreshed from energy space. These tiny leaks are caused by the radiation of free energy, primarily from the hydrogen proton. Thus, energy is filling all of space and has been doing so since the dawn of the universe. This may be the so-called dark matter which adds hidden field mass to cause galaxies to spin stars around their outer disks much faster than can be accounted for by Newtonian gravity.

From eq. 52, p. 9 above: $\quad E'_{proton}(p) := \left(\dfrac{m'_e}{\alpha}\right) \cdot ve(p)^2 \quad$ and $\quad f_{H1} := 1.420405751 \cdot 10^{09} \cdot Hz$

The below formulea will find the differential correction related to the second reduction by a(p) that will yield the real frequency for f_{H1}. CF is found by trial and error to arrive at eq. 108 value for Hyperfine freq.

Let: $\quad CF := 1.0000000001893275 \quad$ Also let: $\quad \Delta\alpha := \alpha \cdot CF \quad$ (A small adjustment!) $\hspace{3em}$ 104)

And: $\quad \Delta m_p := m_p \cdot (\Delta\alpha - \alpha) \quad$ Thus: $\quad \Delta m_p = 2.31087815685 \cdot 10^{-39} \cdot kg \hspace{3em}$ 105)

Then: $\quad \Delta fm_p := \Delta m_p \cdot c_{vel}^2 \cdot h^{-1} \quad$ Or: $\quad \Delta fm_p = 3.134455245641 \cdot 10^{11} \cdot Hz \quad$ **= CBR freq.!!** $\hspace{2em}$ 106)

$E'_{protdiffcorr}(p) := \left(\dfrac{m'_e}{\alpha \cdot h}\right) \cdot ve(2)^2 - \left(\dfrac{m'_e}{\Delta\alpha \cdot h}\right) \cdot \left(ve(2) \cdot CF\right)^2 \qquad$ Second (p = 2) reduction which = n1 shell of the Bohr H-1 atom $\hspace{2em}$ 107)

$E'_{protdiffcorr}(2) = 1.42040576 \cdot 10^9 + 5.823209472 \cdot 10^9 i \quad \cdot Hz$ H-1 hyperfine cmplx. frequency. $\hspace{2em}$ 108)

Then the total reduction is:

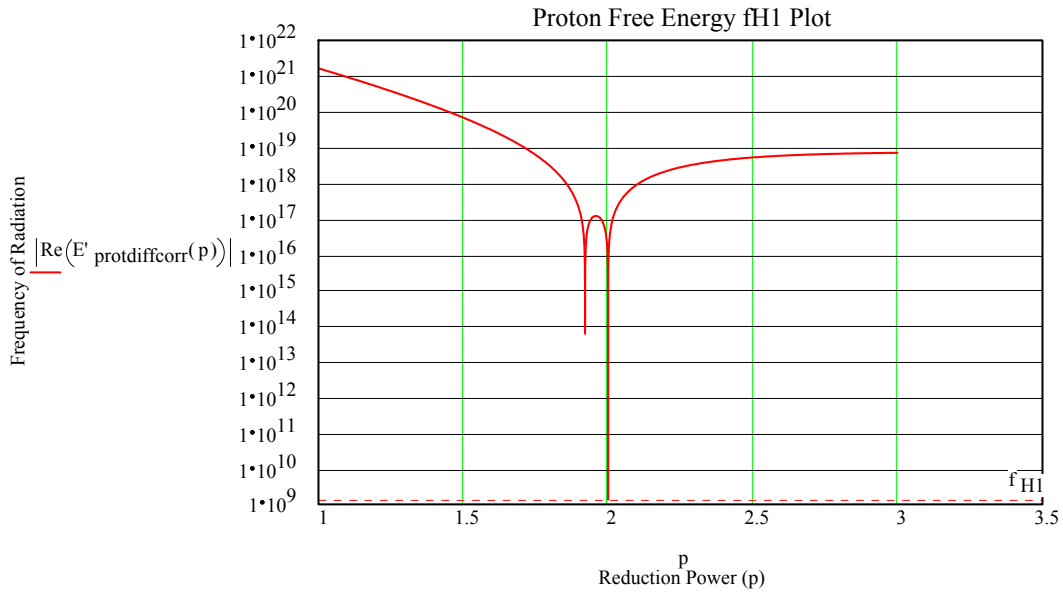$E'_{protdiffcorr}(p) := \left(\dfrac{m'_e}{\alpha \cdot h}\right) \cdot ve(p)^2 - \dfrac{m'_e}{\Delta\alpha \cdot h} \cdot \left[\left(ve(2) \cdot CF\right)^2\right] \qquad$ If proton mass is used, <u>the frequency without the CF correction factor</u> is shown directly below as: $\hspace{2em}$ 109)

$Re\left(E'_{protdiffcorr}(p)\right)$	$Re\left(\sqrt{\dfrac{E'_{protdiffcorr}(p)}{m_p} \cdot h}\right)$	$Re\left(\dfrac{m_p \cdot ve(p)^2}{h}\right)$
$2.268259918448 \cdot 10^{23} \cdot sec^{-1}$	$2.997612942177 \cdot 10^8 \cdot m \cdot sec^{-1}$	$2.268731579047 \cdot 10^{23} \cdot sec^{-1}$
$1.66267696328 \cdot 10^{21} \cdot sec^{-1}$	$2.926203373812 \cdot 10^7 \cdot m \cdot sec^{-1}$	$1.655573537539 \cdot 10^{21} \cdot sec^{-1}$
$1.42040576 \cdot 10^9 \cdot sec^{-1}$	$38.322212537329 \cdot m \cdot sec^{-1}$	$-7.504168745074 \cdot 10^{18} \cdot sec^{-1}$
$7.161837782382 \cdot 10^{18} \cdot sec^{-1}$	$2.764770212232 \cdot 10^6 \cdot m \cdot sec^{-1}$	$-3.406047981382 \cdot 10^{17} \cdot sec^{-1}$
$7.498437851302 \cdot 10^{18} \cdot sec^{-1}$	$2.785017363292 \cdot 10^6 \cdot m \cdot sec^{-1}$	$-3.923600937318 \cdot 10^{15} \cdot sec^{-1}$
$7.502350786682 \cdot 10^{18} \cdot sec^{-1}$	$2.785120949728 \cdot 10^6 \cdot m \cdot sec^{-1}$	$-9.72245126783 \cdot 10^{12} \cdot sec^{-1}$
$7.502360912449 \cdot 10^{18} \cdot sec^{-1}$	$2.785119639129 \cdot 10^6 \cdot m \cdot sec^{-1}$	$4.057568326458 \cdot 10^{11} \cdot sec^{-1}$
$7.502360514067 \cdot 10^{18} \cdot sec^{-1}$	$2.785119605541 \cdot 10^6 \cdot m \cdot sec^{-1}$	$7.278953893301 \cdot 10^9 \cdot sec^{-1}$
$7.50236050684 \cdot 10^{18} \cdot sec^{-1}$	$2.785119605234 \cdot 10^6 \cdot m \cdot sec^{-1}$	$4.959897166938 \cdot 10^7 \cdot sec^{-1}$
$7.50236050679 \cdot 10^{18} \cdot sec^{-1}$	$2.785119605234 \cdot 10^6 \cdot m \cdot sec^{-1}$	$-2.92108277696 \cdot 10^5 \cdot sec^{-1}$
$7.50236050679 \cdot 10^{18} \cdot sec^{-1}$	$2.785119605234 \cdot 10^6 \cdot m \cdot sec^{-1}$	$-1.118622017756 \cdot 10^4 \cdot sec^{-1}$

A very sharp dip at the second reduction by (p = 2) produces the major dip in figure 3 below corresponds to the hyperfine 1420 MHz radiation of f_{H1}. Note: <u>A negative correction factor will bottom out the center velocity table above at the n1 velocity of the H-1 atom</u>

$p := 1, 1.00002 .. 3$

Figure 3.

Proton Free Energy fH1 Plot

Frequency of Radiation

$\left| Re\left(E'_{protdiffcorr}(p) \right) \right|$

f_{H1}

p
Reduction Power (p)

$p := 1.9100, 1.9100002 .. 1.93$

Figure 4.

Expanded CBR Frequency Dip Plot

$\left| Re\left(E'_{protdiffcorr}(p) \right) \right|$

Δfm_p

p
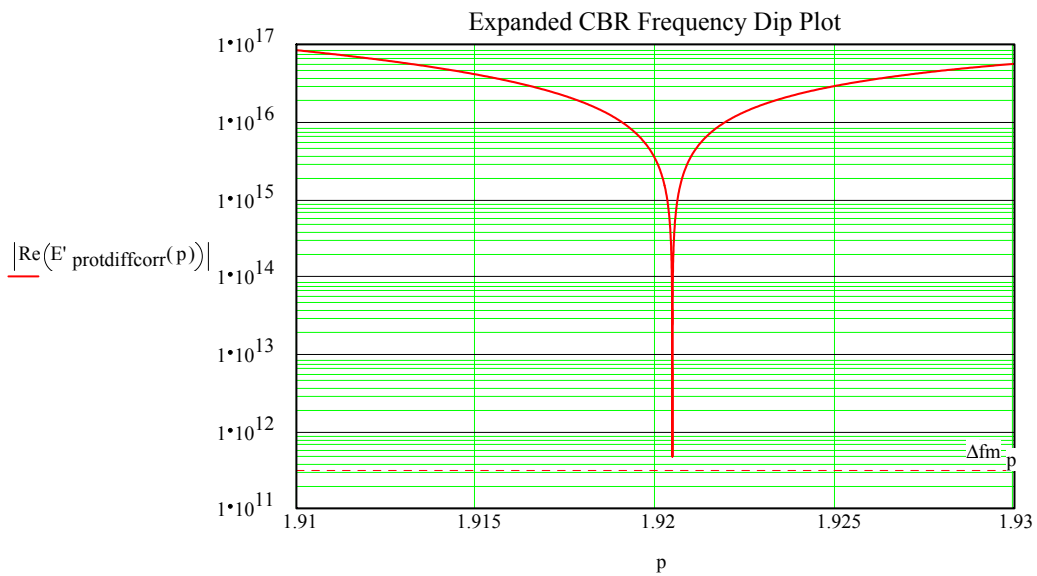
The above plot is an expanded view of the minor dip in figure 3 which is the CBR dip.

The above plots in figures 3 and 4 show very sharp dips in the frequency which correspond to quantum energy radiation action. The dips are exactly coincidental to the Hydrogen H-1 hyperfine frequency of 1420 MHz and the CBR frequency of 3.13×10^{11} Hz. Thus the CBR is tied directly to the hydrogen hyperfine frequency which means it is a direct function of the radiation that is attributed to the dynamic free energy associated with the Hydrogen atom as explained above. This means that the CBR electromagnetic radiation is not due to the energy left over from the big bang but is ongoing and was of the same character as when hydrogen atoms first came into existence soon after the big bang occurrence.

I agree that the universe may indeed have been created by an original creation event but it is undergoing continuous proton and electron temporary energy reduction steps via the entropy due to electrogravitational action as well as particle field creation from mass. The temporary energy reduction steps are being replenished via the energy space refresh input pulse to keep the affected protons and electrons at the same average 'rest' mass energy. The difference is radiated as electromagnetic energy and as such is **free energy**. Thus the universe is not a closed system. It is dynamic and in a sense, alive with renewing energy and old matter that continues to grow in magnitude with the passage of time.

It is of interest that the so-called proton rest mass energy is very close to being greater than the established constant known as the Atomic Mass Unit by a factor very close to the fine structure constant.

Where: $\quad u_m := 1.660540200 \cdot 10^{-27} \cdot kg \qquad Ratio_{mup} := \dfrac{m_p}{u_m}$ $\hspace{3cm}$ 110)

And: $\quad Ratio_{mup} - 1 = 7.276487494853 \cdot 1 \text{ where,} \qquad \alpha = 7.29735308 \cdot 10^{-3}$ $\hspace{1.5cm}$ 111)

Thus, it is implied that there is energy available within the structure of the standing wave energy of the proton that is available for the creation of field energy via the same basic mechanism as for the electron which was explained in the beginning of the main body of this paper. In fact, it was established in the beginning of the main body of this paper that the fine structure constant was derived as being based on the difference of the magnitude at 90 degrees of the natural spiral and the complex value of the square root of the golden ratio. (See eqs. 17-21 above.) Therefore the construct of the proton may be based on the same type of structure.

I propose that the proton field creation interfaces to the electron field creation dynamics for the atomic case of hydrogen as follows: When the electron radius becomes larger by a factor of 1/a, the proton radius becomes smaller by the product of a. Concurrently, the mass of the electron temporarily becomes smaller by a factor of the product of a, while the proton mass temporarily becomes larger by 1/a. Then when the mass of the electron becomes normal, the generated field mass velocity is reduced below the velocity of light by the product of a while the wavelength remains larger by 1/a. Concurrently, the proton mass returns to normal while the generated field mass wavelength remains smaller by the product of (a) insofar as the field is concerned but the field mass velocity increases above the velocity of light by the factor of 1/a. Considering the proton and the electron in regards to the Argand diagram, the proton field is a phase wave in the imaginary axis, the electron field is a group wave along the real axis. Since the proton field velocity is in the imaginary axis, the square of the velocity results in a negative energy.

Hydrogen gas may be 'light' due to proton electromagnetic radiation of energy as outlined above. The release of electromagnetic radiation may repel other like Hydrogen atoms so that the do not 'bounce' off of each other like billiard balls while in a container. Instead, they experience a cushioned deflection due to repulsive field interaction between the atoms. It is reasonable to expect that the neutral Hydrogen atom should allow relatively close proximity to another neutral Hydrogen atom due to the close-up proton to electron electrostatic fields being tied together in a close knot. This is not the case and in fact the space between atoms is what makes Hydrogen gas so light. The same process may be occurring for Helium. However, as we consider atoms with more electrons, I propose that the radiated proton electromagnetic energy becomes shielded by the increasing number of electrons surrounding the nucleus. Thus atoms become more tightly packed and begin to form molecules since they can get close enough to each other.

This suggests that the radiated energy from the Hydrogen nucleus may be harnessed on a large scale to create a repulsion field that can be directed towards other mass and create what is popularly called antigravity. The energy may also be directly harnessed by means of resonating the atom in coherent fashion with many other atoms in a suitable container, such as a specially designed acoustic-electric Hydrogen maser.

I cannot help but wonder if the cold fusion claim is not cold fusion but actually the resonant dance of the H-2 Deuterium atom with its neighbors and the electromagnetic energy output prom the protons began to rise when the protons are forced into a wild gyration that causes larger proton electromagnetic radiation than normal. I would like very much to make a measurement of a cold fusion experiment around the two frequencies related to 1.420×10^{09} and 3.13×10^{11} Hz. This would explain the absence of neutrons during such experiments since it is not really fusion. It is possibly the form of electromagnetic proton radiation as described above.

Electromagnetic radiation can create pressure. Quote: <u>An electromagnetic wave whose Poynting vector has the magnitude **S** loses the momentum **S**/c per unit area per unit time when it is absorbed by a surface, and so the force it exerts upon the wall is **S**/c per unit area. Since pressure is force per unit area, the pressure p of the wave is p = **S**/c.</u> Unquote.[11]

Note: The vector **S** has the units of energy per unit time per meter squared. This amounts to power per meter squared.

$$\text{Savg}=\frac{\text{Energy}}{\text{time}}\cdot\frac{1}{\text{area}}\cdot\frac{1}{2} \qquad \text{and the momentum per unit time and unit area is given as:} \qquad \text{112)}$$

$$\text{Pavg}=\frac{\text{Energy}}{\text{time}\cdot\text{velocity}}\cdot\frac{1}{\text{area}}\cdot\frac{1}{2} \quad \text{yields} \quad \text{Pavg}=\left(\frac{m\cdot v}{t}\right)\cdot\left(\frac{v}{v}\right)\cdot\left(\frac{1}{2\cdot r^2}\right) \quad \begin{array}{l}\text{which can be expressed as}\\ \text{pressure since pressure is force}\\ \text{per unit area.}\end{array} \qquad \text{113)}$$

Then the average pressure is given as: $\qquad \text{Press}=\dfrac{\text{force}}{2\cdot\text{area}} \qquad\qquad \text{114)}$

Let us examine the lowest energy level of the H-1 Hydrogen atom for the amount of force on the electron in that level exerted by the energy radiated by the proton's radiation at 1420 MHz. The equation in 115 below is the result of equations 112, 113 and 114 above. First the radius of the n1 energy level must be stated.

$$R_{n1} := 5.291772490 \cdot 10^{-11} \cdot m = \text{Bohr radius.} \qquad \text{and} \qquad f_{H1} = 1.420405751 \cdot 10^{9} \cdot Hz$$

Then the pressure at the n1 energy level is calculated by the following equation where we do not assume the surface area of a sphere, $(A = 4\pi r^2)$, but only the area of a plane surface defined by the square of the Bohr n1 radius.

$$\text{Press}_{n1} := \frac{h \cdot f_{H1}^2}{\left(R_{n1}^2\right) \cdot c_{vel}} \qquad\qquad \text{Press}_{n1} = 1.592422087395 \cdot 10^{-3} \cdot Pa \qquad\qquad 115)$$

where, $\qquad 1 \cdot \dfrac{newton}{m^2} = 1 \cdot Pa \qquad$ The Pa unit is the Pascal in newton/meter^2 units.

The pressure above is throughout the n1 surface defined by R_{n1} squared. Therefore, the actual *force* on the much smaller electron Compton radius area can be found by multiplying the above pressure by the square of the product of the fine structure and the unit meter.

$$\text{Then:} \qquad F_{en1} := \text{Press}_{n1} \cdot (\alpha \cdot m)^2 \qquad \text{or,} \quad F_{en1} = 8.479864499158 \cdot 10^{-8} \cdot newton \qquad\qquad 116)$$

Next we calculate the electric field force due to the interaction of the field of the electron with the field of the proton at the n1 Bohr radius.

$$F_{En1} := \frac{q_o^2}{4 \cdot \pi \cdot \varepsilon_o \cdot R_{n1}^2} \qquad\qquad F_{En1} = 8.238729466022 \cdot 10^{-8} \cdot newton \qquad\qquad 117)$$

The pressure on the electron due to the energy of the radiating hyperfine electromagnetic frequency is a little more than necessary to counterbalance the coulomb electric field force. This is an alternative explanation as to why the electron cannot be pulled into the proton by the force of the electrostatic field and further, it establishes why it is that the first shell is located at the n1 radius. It is located where the outward electromagnetic wave from the proton balances the inward electric field force.

Therefore, the "orbital" picture of the electron totally gives way to the probability wave of where the electron is in the energy shell which agrees with the expected quantum result. The electron can be effectively sitting still and yet not be able to go any further towards the proton than allowed by the force balance point which holds the electron in the bottom of the energy valley very close to zero joules. It is thus desirable to consider the pressure wave from the proton to be energy that cancels the positive electric field energy of the electron with the proton pressure wave's negative energy. Or, put another way, the proton's negative field energy cancels the electrons positive field energy and the proton pressure wave cancels the electrostatic force field between the proton and the electron with some energy left over which is the Hyperfine and CBR radiation.

I am going to ask the reader to fasten their mental seatbelts. The next result is astounding. At least it is to me.

The difference in the (-) energy pressure-wave force and the (+) energy electric field force at the Bohr radius on the electron divided into the energy of the n1 shell derives a distance ΔR_{n1} as:

$$\Delta R_{n1} := \frac{m_e \cdot \left(c_{vel} \cdot \alpha\right)^2}{2 \cdot \left(F_{en1} - F_{En1}\right)} \qquad \Delta R_{n1} = 9.040055579244 \cdot 10^{-10} \cdot m \qquad \text{118)}$$

Then if we find the ratio of the ΔR_{n1} to the quantum De Broglie wavelength of the n1 shell, we arrive at a very interesting number.

$$\frac{\Delta R_{n1}}{2 \cdot \pi \cdot R_{n1}} = 2.718880174802 \qquad \text{where,} \qquad \frac{\Delta R_{n1}}{2 \cdot \pi \cdot R_{n1} \cdot (e)} = 1.000220119318 \qquad \text{119)}$$

And where also: $\qquad e = 2.718281828459 \qquad$ **which is the natural number e.**

This is a eureka moment! The natural number e is ubiquitous throughout physics as related to the growth and decay of many types of natural processes. In this case, a distance ΔR_{n1} divided by the natural number e yields the wavelength of the n1 (lowest energy level) of the Bohr 'orbital' of Hydrogen-1. Therefore, the proton pressure wave works to 'fix' the n1 foundation wavelength through the decay of ΔR_{n1} to R_{n1} which is controlled by e. The energy can be stated as a negative energy by reversing the order of the forces in the denominator above. This is shown below in the solution for energy based on equations 118 and 119 above.

$$\Delta E_{diff} := (e) \cdot \left(2 \cdot \pi \cdot R_{n1}\right) \cdot \left(F_{En1} - F_{en1}\right) \qquad \Delta E_{diff} = -2.179394374848 \cdot 10^{-18} \cdot joule \qquad \text{120)}$$

The result is negative energy which is what I propose is coming from the proton as a pressure wave. It is this negative energy that may be used by UFO's to interact with the gravitational field of the Earth. It has been reported by numerous persons that electrical devices fail to work close to the presence of UFO energy fields. Negative field energy would cause just this sort of effect on positive energy devices that are electrically and/or magnetically operated. If we could isolate a lot of protons, we could build a source of negative energy. The trick is to keep electrons from getting close to cancel the negative energy field. Negative energy implies negative time and clocks have been known to lose time in ambient energy fields of the UFO's.

Seat belt still fastened? The below equation (121) is based on the sum of the kinetic energy of the n1 shell of the Bohr H-1 atom and the negative energy of equation (120) above and delivers a frequency very near the Cosmic Background Radiation frequency when divided by twice Plank's constant. This correlates very strongly the 1420 MHz fine structure 'pressure wave' and the CBR to the energy output of the proton in the Hydrogen atom.

$$CBR_{freq} := \frac{\frac{m_e \cdot V_{n1}^2}{2} + \Delta E_{diff}}{2 \cdot h} \qquad CBR_{freq} = 3.619991982968 \cdot 10^{11} \cdot Hz \qquad \text{121)}$$

Note that: $\qquad \frac{m_e \cdot V_{n1}^2}{2 \cdot q_o} = 13.605698076206 \cdot volt \qquad$ which is the electron volt energy of the n1 level of Hydrogen. $\qquad$ 122)

And $\qquad \frac{\Delta E_{diff}}{q_o} = -13.602703858307 \cdot volt \qquad$ Results in the required negative binding energy of the n1 shell. $\qquad$ 123)

Other interesting relationships related to f_{H1} are: $\qquad \{ f_{H1} = 1.420405751 \cdot 10^3 \cdot MHz \}$

$$\frac{f_{H1}}{\alpha} \cdot \left(\frac{4}{\pi}\right)^2 = 3.155493568497 \cdot 10^{11} \cdot Hz \qquad \textbf{Very close to CBR frequency.} \qquad \text{124)}$$

Note also that f_{H1} is the 1420 MHz hyperfine frequency of Hydrogen and $(4/\pi)^2$ is the golden ratio number related to the Great Pyramid as discussed in the main body of this paper. It seems that the ancients knew much more than contemporary science knows now about the actual structure of the Hydrogen atom. Also of interest are the following geometric relationships to f_{H1}:

$$\frac{f_{H1}}{2 \cdot \pi^2} = 71.958595971852 \cdot MHz \qquad \text{and} \qquad \frac{f_{H1} \cdot \sqrt[4]{\alpha}}{\left(\frac{4}{\pi}\right)} = 326.057086356505 \cdot MHz \qquad \text{125)}$$

The first frequency is very close to my calculated mass motional vibration rate forming a De Broglie matter wave and as such may also be related to negative energy radiation. It is a frequency used by radio astronomy studies and is allocated by the FCC for that purpose both in the USA and Canada. The first frequency was calculated as $A'_{dbf} = 7.3405234414 \times 10^{07}$ Hz by eq. 29 of my previous paper, "*A Testable Dual Frequency Solution For The Electrogravitational Action Mechanism*".[12] The second frequency is very close to the empirical value of the Deuterium hyperfine frequency of 327 MHz. Also of importance in relation to Reference 12 above are the derived constants:

$A'_{dbf} := 7.34052344414 \cdot 10^{07} \cdot Hz \qquad$ Master EG mass motional interaction frequency.

$\lambda'_{fc} := 3.1478935252 \cdot 10^{-06} \cdot m \qquad$ Equations 23 & 30 of ref. 12. This is the interaction wavelength common to the EG **A** vector and the associated force constant F_{QK} as shown below.

$f_{FQK} := 3.8094358097 \cdot 10^{14} \cdot Hz \qquad$ EG Force Constant Frequency. (Eq. 5 of ref. 12.)

$A_f := 1.5157263456 \cdot 10^{13} \cdot Hz \qquad$ EG A vector frequency constant. (Eq. 3 of ref. 12.)

$A_{egf} := 9.5235895041 \cdot 10^{13} \cdot Hz$ **Main EG Interaction Frequency. (Eqs 14, 15 & 23 of ref. 12.)**

The above frequency should interact with the force constant as well as the EG **A** vector.

The relationship between the hyperfine pressure wave frequency of Hydrogen and the 73.404 MHz A'_{dbf} frequency is shown below. It can be related by the square of the natural number e and the square of the golden ratio where the golden ratio is $(4/\pi)$ squared.

$$\frac{f_{H1}}{A'_{dbf}(e^2) \cdot \left(\frac{4}{\pi}\right)^4} = 0.996451014434 \qquad \text{The result is very close to unity.} \qquad 126)$$

Where also: $\dfrac{f_{FQK}}{A_{egf}} = 4.000000008463$ $\dfrac{A_{egf}}{A_f} = 6.283185306996 = 2\pi.$ 127)

The ratio of frequencies $f_{FOK} / A_f = 8\pi$ which is the perimeter of the Great Pyramid if the height is set equal to 4 numerically. Thus the geometry of the Great Pyramid corresponds to the ratio of the frequency constants of my electrogravitational equation. Specifically they are the force constant frequency f_{FOK} and the **A** vector constant frequency A_f of my electrogravitational equation shown on the cover page of ref. 12.

Note that in ref. 12 above, λ'_{fc} was derived by eq. 23 as:

$$\lambda'_{fc} := \frac{c_{vel}}{A_{egf}} \qquad \text{or,} \qquad \lambda'_{fc} = 3.147893531855 \cdot 10^{-6} \cdot m \qquad 128)$$

And eq.29 of ref. 12 derived A'_{dbf} as:

$$A'_{dbf} := \frac{h}{\lambda'_{fc}{}^2 \cdot m_e} \qquad \text{or,} \qquad A'_{dbf} = 7.340523410369 \cdot 10^7 \cdot Hz \qquad 129)$$

Then the above frequencies involving the electrogravitational frequencies of ref. 12 are intimately related to the hyperfine hydrogen frequency f_{H1} as well as the Cosmic Background radiation frequency by eq. 126 and 127 above utilizing the square of the natural number (e) times the square of the Golden Ratio. The important electrogravitational connection to (e) was also brought forth by eq. 119 above as well as the genesis of the fine structure constant and the square root of the Golden Ratio in the beginning of this paper. Finally, ref. 12 derived the fundamental **A** force in ref. 12 eq. 10 by taking the derivative with respect to time related to $1/A_{egf}$. The ratio of non-local space force constant F_{OK} to the **A** vector force constant was found to be almost exactly equal to the square root of the Golden Ratio, or $4/\pi$.

Let the constants from ref. 12 be stated as:

$$F_{QK} := 2.9643714476 \cdot 10^{-17} \cdot \text{newton} \qquad \text{Ref. 12, eq. 4.}$$

$$t_{Aegf} := \frac{1}{A_{egf}} \qquad \text{Then:}$$

$$\frac{F_{QK}}{\frac{d}{dt_{Aegf}}\left[\left(\frac{\mu_o}{4 \cdot \pi}\right) \cdot \frac{q_o^2}{t_{Aegf}}\right]} = -1.273239553094 \qquad \text{where:} \qquad \frac{4}{\pi} = 1.273239544735 \qquad 130)$$

The correspondence is obvious and it states that a change in the electrogravitational **A** vector momentum with respect to the **A** vector time associated with the **A** vector frequency 'constant' is the least quantum electrogravitational force related to the **A** vector and further, the ratio of the non-local force constant F_{QK} to the **A** vector force is very close to being exactly equal to the square root of the Golden Ratio = $4/\pi$.

I suggest that the phase angle between the magnetic flux and the **A** vector related to electrogravitation is equal to the atan of $4/\pi$ which is 51.85397401 degrees. This is also the angle of rise of the side of the Great Pyramid. This corresponds to eqs. 63 and 64 above which is repeated below.

$$f\Delta_{LM} := (2 \cdot \pi - i \cdot 7.820970742) \cdot Hz \qquad \text{or,} \qquad \left| f\Delta_{LM} \right| = 10.03224805074 \cdot \text{sec}^{-1} \qquad 131)$$

$$\arg\left(f\Delta_{LM}\right) = -51.222417590384 \cdot \text{deg} \qquad \text{which is very close to } 4/\pi \text{ of the Great pyramid.} \qquad 132)$$

Therefore, I make the following postulate: The Schumann frequency of 7.83 Hz (as measured by various groups of scientists) is caused by the electrogravitational phase shift between the magnetic flux and the **A** vector directly attributable to electrogravitation. The generated electromagnetic (Schumann) frequency is most likely caused by the electrogravitational force action on charged particles enmass in our Earth atmosphere which then causes electromagnetic radiation at the same base electrogravitational frequency. Higher frequencies associated with the base frequency are separated by roughly 6 Hz which may correspond to the loaded value of 2π Hz as shown above.

Regarding the electrogravitational energy induction, the **A** vector may rotate an angle around the magnetic flux **B** per unit flux length. Then for every arbitrary unit in length of the **B** flux, the **A** vector would rotate a number of degrees required so that the distance rotated divided by the distance along the **B** flux path was equal to multiples along the path that ended at the atan $4/\pi$ degrees. This would apply directly to the Helmholtz resonator discussed in the main body of this paper. This may introduce non- linearity in the required length of the pipe and the effect would increase with the length to circumference ratio increase.

The main part of the solar spectrum is represented by the color yellow. This is also the center of the most sensitive response of the human eye. We can examine the calculated wavelength ΔRn1 of eq. 118 above in terms of Heisenberg's uncertainty principle as shown below.

$$\Delta V_{n1} := \frac{h}{m_e \cdot \Delta R_{n1}} \qquad \Delta V_{n1} = 8.046295869222 \cdot 10^5 \ \cdot m \cdot sec^{-1} \qquad \text{133)}$$

$$\Delta f_{n1} := \frac{m_e \cdot \Delta V_{n1}^2}{2 \cdot h} \qquad \Delta f_{n1} = 4.450357521969 \cdot 10^{14} \ \cdot Hz \qquad \text{134)}$$

The above frequency is at the lower edge of yellow light. Then the free energy associated with the proton negative energy wave may also help to generate the yellow spectrum of the sun. It may also do so for other atoms of larger nuclei

Experimental Evidence Exists On The Internet That May Support The Concept Of A Proton's Positive Pressure Wave.

I made the point above (p. 32, below eq. 120) that if we could isolate the proton, perhaps we could utilize the negative free energy to create a force field to allow for a craft to act against the electrogravitational field of the Earth.

There are experiments on the Internet that demonstrate that metallic objects charged to high positive voltages on one end and negative on the smaller end seem to lift when the positive end is facing upwards away from the Earth. Other experiments have demonstrated a motional effect for objects allowed to rotate around a circular path when suspended at the end of a balance beam which is free to turn at its center of balance. Original credit for this work has been attributed to a Mr. T. T. Brown.

This effect is said to work in a vacuum and even if the metal is enclosed in a dielectric insulating material, the force still seems to exist. That is, the apparatus tends to move in the line of negative to positive charge where again, the positive end may be physically larger than the negative end. Negative energy associated with the free field of the positive end represents an energy void. It is thus a 'pull' on the apparatus from the negative energy. The apparatus tends to seek the lowest energy level and is somewhat like dangling a carrot in front of a horse to keep it moving. In this case it is the dynamic free energy of the proton's negative energy wave as described above which allows for the motion to continue.

Negative Energy May Cancel The Gravitational Field Energy Of The Earth.

When building a fixed device to generate very large amounts of power utilizing the Poynting vector negative energy wave, we would want to tap into a very large amount of the negative energy wave in a coherent (and resonate) manner. Thus we might have to have a structure heavy enough so that the active internal mechanism would stay on the ground. The total weight of the stones making up the Great Pyramid is estimated to be close to 5,273,834 tons! A lot of it is hard granite and granite is composed of a large percent of Silicon Dioxide particulate, better known as quartz.

I mentioned that there are tests on the Internet that support my proposal that there is a negative energy wave coming from the proton. A very good site is presented by Jean-Louis Naudin. A device that demonstrates the negative energy proton wave is the lifter. The lifter presented on his page is typical of several on the Internet. The upper part is charged highly positive, 20 to 30 kV or more, and the bottom is negative. The device lifts in the opposite direction than expected if ion wind were the cause. [13]

Also on the above site is a cold fusion demonstration that is well done. I mentioned above that the concept of a negative energy wave could explain the excess energy released for some cold fusion experiments and also explains the lack of neutron emission since it is not really fusion. It could be the negative energy wave related to my theory above. [14]

Of related interest is Moller's Atomic Hydrogen Generator which is also presented on Jean-Louis's Internet site. The test demonstrates energy extracted in excess of energy supplied and can also be explained by my negative energy wave from the hydrogen atom proton. [15]

Another Internet site that demonstrates the forward pull of the proton negative energy wave belongs to Miklos Borbas. He insulates thin wire emitters with ping pong balls and mounts them on opposite ends of a central support bar so that the support and ping pong balls are free to rotate in the horizontal plane. The emitters are of course pointing in opposite directions. The thin wires are then supplied with a voltage in excess of 30 kV and the device moves in the direction that the positively charged emitters are pointing even while being totally insulated from the outside environment by the surrounding ping pong ball shells. When he removed the ping pong ball shells, the device rotated in the opposite direction due to the ion wind from the thin wire emitters. This test also tends to point to my theory of negative energy wave being supplied by the proton, which of course has a positive charge and thus positive charge fields must be associated with the field of a proton. [16]

I postulate that positive charge polarity field of the proton has the same character as the positron particle wherein the external field is negative energy and moving backwards in time since the field arises from the nature of negative mass. Further, opening the angle between the **A** vector and the magnetic **B** flux to greater than 51 degrees will generate greater output from the proton. (Output = tan(A vector/B vector angle).

Also, on the bottom of page 29 above I postulated on the negative character of the energy from a proton arising from its mass field velocity being along the imaginary axis and therefore the square of the velocity amounting to negative field energy. The action of mass pulsation is so fast that it is like the particles that make up the Fermi sea of energy but in this case actual pondermotive field arises at the output.

There is no place here for false humility. I consider the above theory of the proton having an available free energy to be extremely important, not just for physics but for solving the energy needs of humanity. Therefore I strongly encourage all research along the lines of the references above.

-- Jerry E. Bayles --

Negatve Energy And Positive Pressure

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The established Heisenberg quantum expression for angular momentum in the (n) atomic shell is:

$$(\Delta momentum)(\Delta radius) = inh/2\pi.$$
139) 135)

Thus Planks constant (h) is stated as having a connection to the imaginary domain of the Argand diagram. Therefore let the Plank energy related to the hyperfine frequency f_{H1} of the hydrogen-1 atom be stated in terms of imaginary parameters as in eq. 136 below.

Negative Energy ImagEner$_{n1}$:

$$ImagEner_{n1} := (i \cdot h) \cdot (i \cdot f_{H1}) \qquad ImagEner_{n1} = -9.41171574676 \cdot 10^{-25} \cdot joule$$
136)

A kinetic energy related velocity $v1_{H1}$ is derived below (in eq. 137) which is equated to energy equal to the f_{H1} photon energy.

$$v1_{H1} := \sqrt{\frac{ImagEner_{n1}}{m_e}} \qquad v1_{H1} = 1.01645875349 \cdot 10^3 i \cdot m \cdot sec^{-1} \qquad \textbf{Imaginary } f_{H1} \textbf{ velocity.}$$
137)

Next a check is made to ensure that the kinetic energy based on $v1_{H1}$ velocity equals the negative field energy related to f_{H1} above.

$$E_{kH1} := m_e \cdot (v1_{H1})^2 \qquad E_{kH1} = -9.41171574676 \cdot 10^{-25} \cdot joule \qquad \text{Equals ImagEner}_{n1} \text{ above?: (\textbf{Yes})}$$
138)

Equation 115 above is now repeated below to illustrate how a positive pressure arises from the proton's negative energy field.

Positive Poynting Pressure, PressPos$_{n1}$:   Where in eq. 115: $Press_{n1} = 1.592422087395 \cdot 10^{-3} \cdot Pa$

$$PressPos_{n1} := \frac{(i \cdot h) \cdot (i \cdot f_{H1})^2}{(i \cdot R_{n1})^2 \cdot (i \cdot c_{vel})} \qquad PressPos_{n1} = 1.592422087395 \cdot 10^{-3} \cdot Pa$$

* Note that the result is not dependant on f_{H1} energy sign.

139)

Thus a positive pressure can result from an <u>expanding</u> (And thus growing) negative or positive energy field. The momentum related to the pressure is:

$$ImagMom_{n1} := \frac{E_{kH1}}{(i \cdot c_{vel})} \quad or, \quad ImagMom_{n1} = 3.13941044733 \cdot 10^{-33} i \cdot kg \cdot m \cdot sec^{-1}$$
140)

Next, the velocity related to the momentum in eq. 140 above is found in equation 141 below.

*The proton and the electron both have a positive pressure wave as a result of pressure being independant of energy sign.

then: $v2_{H1} := \dfrac{ImagMom_{n1}}{m_e}$ $v2_{H1} = 3.446345529965 \cdot 10^{-3} i \cdot m \cdot sec^{-1}$ Equals $v1_{H1}$ in eq. 137 above?: (NO)   141)

Check: Angular momentum = h?

$AngMom_{n1} := ImagMom_{n1} \cdot \lambda_{hyd}$ $AngMom_{n1} = 6.626102328061 \cdot 10^{-34} i \cdot joule \cdot sec$ (O.K.)   142)

where; $i \cdot h = 6.6260755 \cdot 10^{-34} i \cdot joule \cdot sec$

The pressure acting outwards from the proton on the electron <u>and vis-versa</u> is <u>always positive</u> as was shown in eq. 139 above and can be scaled for the actual cross sectional area related to force as was shown in eq. 116 above and further in eq. 143 below.

$ForcePos_{n1} := PressPos_{n1} \cdot (\alpha \cdot m)^2$ $ForcePos_{n1} = 8.479864499158 \cdot 10^{-8} \cdot newton$ 143)

where also in eq. 116: $F_{en1} = 8.479864499158 \cdot 10^{-8} \cdot newton$

Where the argand <u>corrected electrostatic inwards force</u> of the electron towards the proton is given as:

$F_{En1Imag} := \dfrac{(i \cdot q_o) \cdot [i \cdot (-q_o)]}{4 \cdot \pi \cdot \varepsilon_o \cdot (i \cdot R_{n1})^2}$ $F_{En1Imag} = -8.238729466022 \cdot 10^{-8} \cdot newton$ 144)

where in eq. 117: $F_{En1} = 8.238729466022 \cdot 10^{-8} \cdot newton$

The result of eq. 144 above is the standing wave approach to charge and follows from the concept that mass is the result of standing wave fields of energy. The imaginary operator results from considering the standing wave fields to be almost totally reactive insofar as inductive or capacitive reactance in the argand diagram is concerned. The force derived is for a negative and positive reactive charge field. Therefore, time, frequency, charge, mass, wavelength, velocity and even Planks constant are also associated with the imaginary operator starting with equation 135 above.

<u>The imaginary operator (i) is ubiquitous in electrical and electronic engineering as well as vector field analysis in general. It is equal to the square root of a negative 1. Therefore, electrogravitational fields must also take the imaginary operator into consideration when expressing parameters in terms of vectors. Further, the vectors are also considered to have rotational aspects so as to account for spin of the proton and electron fields. Thus angular momentum is implied by the use of the imaginary operator as is shown in eq. 135 above.</u>

Equations 137 and 141 derived substantially different velocities related to field energy and momentum, respectively. The cross product of $v1_{H1}$ and $v2_{H1}$ will yeild a third vector velocity as shown below. The cross-product develops a third vector 90 degrees to the first two.

$$VX := \begin{bmatrix} v1_{H1} \\ 0 \cdot \dfrac{m}{sec} \\ 0 \cdot \dfrac{m}{sec} \end{bmatrix} \qquad \text{where,} \qquad VX = \begin{bmatrix} 1.01645875349 \cdot 10^3 \, i \\ 0 \\ 0 \end{bmatrix} \cdot m \cdot sec^{-1}$$ 145)

Both eqs. 145 and 146
are associated with the
imaginary argand axis.

$$VY := \begin{bmatrix} 0 \cdot \dfrac{m}{sec} \\ v2_{H1} \\ 0 \cdot \dfrac{m}{sec} \end{bmatrix} \qquad \text{where,} \qquad VY = \begin{bmatrix} 0 \\ 3.446345529965 \cdot 10^{-3} \, i \\ 0 \end{bmatrix} \cdot m \cdot sec^{-1}$$ 146)

The cross product of $v1_{H1}$ and $v2_{H2}$ is derived below as:

$$VZ := VX \times VY \qquad VZ = \begin{pmatrix} 0 \\ 0 \\ -3.503068081482 \end{pmatrix} \cdot m^2 \cdot sec^{-2}$$ 147)

The result is negative and if
multiplied by mass will result
in a negative energy.

The square root of the reult in eq. 147 yields a third vector velocity $v3_{H1}$ as shown below:

$$v3_{H1} := \sqrt{VZ_2} \qquad \text{where,} \qquad v3_{H1} = 1.871648493036i \cdot m \cdot sec^{-1}$$ 148)

Dividing energy by momentum yields velocity. In my foundation work, I have previously presented the fundamental electrogravitational frequency as f_{LM}. Dividing the plank energy related to the electrogravitational frequency f_{LM} by momentum is given by equation 150 below.

$$E_{LM} := (i \cdot f_{LM}) \cdot (i \cdot h) \qquad E_{LM} = -6.647443301403 \cdot 10^{-33} \cdot joule$$ 149)

Notice the electrogravitational energy result above is negative and real. Therefore:

$$v_{ELMmom} := \dfrac{E_{LM}}{ImagMom_{n1}} \qquad \text{or,} \qquad v_{ELMmom} = 2.117417716774i \cdot m \cdot sec^{-1}$$ 150)

$$\left(\dfrac{v_{ELMmom}}{v3_{H1}} \right)^2 = 1.279866015453 \quad \text{where,} \quad \dfrac{4}{\pi} = 1.273239544735$$ 151)

The low field related velocities in eq. 148 and 150 above suggest that the fields related to the H1 hyperfine frequency $v1_{H1}$ in eq. 137 above have a slow component in local space that limit their rate of travel and further that they are related to the electrogravitational energy field by $4/\pi$ which is equal to the square root of the golden ratio Φ.

Summary:

Our reality can be considered to be sandwiched between a positive and negative energy space and the energy that supports our existance is that which flows between the two energy spaces. Thus, there is no such thing as a static field in normal local space but either an active standing wave field or a positive pressure wave involving a positive or negative energy field flow. The standing waves define particles with mass while pressure waves define fields. A combination of standing wave and pressure waves define photons since photons can be considered as alternatively negative and positive energy fields and yet exert pressure when impacting standing wave fields.

Thus, our existance is a small thin line between positive and negative infinity.

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