Exploration

The Life Circuits for Universal Life in an Evolving Cosmology (Part 2)

Anthony P. Bermanseder*

Abstract

The beginning of life is encoded in the DNA and the RNA and cellular evolution in mitosis as the self-replication of cells from their DNA encodings in left-handed 20 amino acids and the right-handed sugars. The biological origins for life can be modeled on the emergence of cellular reproduction from chemical and physical precursors or protocells related to a manifested form of radioactivity of the weak nuclear interaction mirroring the chiral distinction of non-parity or asymmetry between matter and antimatter. The induction of the 'life force' assumes the character of a Maxwellian displacement current which manifests a multidimensional equivalence of mass and a magnetic monopolar electricity, defining the life-current as a frequency based naturally impressed monopolar current. The source frequency for this monopolar current is traced to the creation event to couple to a time evolution for the cosmology and particularizes a DNA-frequency in its bifurcation into an electro-capacitative and a magneto-inductive part to then emerge as a double-stranded helix in an applied quantum geometry.

Part 2 of this three-part article includes: 3. The Differential Equations for the Monopolar Life-Circuits; & 4. The Universal RCL Life-circuits in the Unified Field.

Keywords: DNA, amino acid, cellular evolution, life circuit, universal life, evolving cosmology.

3. The Differential Equations for the Monopolar Life-Circuits

For a linear first-order {DE} $[dy/dx] + P(x)y = Q(x)$ as $(P(x)y - Q(x))dx + 1.dy = 0$
$= M(x,y) + N(x,y)dy = 0$

For exactness $\partial M/\partial y = \partial N/\partial x = 0$ for $P(x) = 0$, so for $P(x) \neq 0$ and Integration Factor IF(x)

$IF(x).M(x,y).dx + IF(x).dy = 0$ as a separable DE $IF(x).P(x) = IF'(x)$ as $IF'(x)/IF(x) = P(x)$
for $\ln|IF(x)| = \int P(x).dx$

$IF(x) = \exp^{\int P(x).dx}$ for $IF(x)\{D\} = y.P(x).\exp^{\int P(x).dx} + [dy/dx].\exp^{\int P(x).dx} = Q(x).\exp^{\int P(x).dx}$
for $[d(y.\exp^{\int P(x).dx})/dx] = Q(x).\exp^{\int P(x).dx}$ for the integral equation
$y.\exp^{\int P(x).dx} = \int Q(x).\exp^{\int P(x).dx} dx$ + constant for a solution for
$$\mathbf{y = \exp^{-\int P(x).dx} \int Q(x).\, e^{\int P(x).dx} + constant.\exp^{-\int P(x).dx}}$$

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A second order differential circuit equation $V = L.d^2q/dt^2 + R.dq/dt + q/C$ for voltage V, magnetic inductance L, capacitance C and resistance R reduces to first order differential equation {DE} in the awareness differential and where the quantized charge counter 'Ne' becomes a constant coefficient in the mathematical expressions for current I = 2ef with Voltage V = IR and for the current I = ef a Magnetic Flux $\phi = LI = h/2e$ for $L = h/2e^2f$ in $V_{ps} = hf_{ps}/e = Lef/t = hf_{ps}/2e$

For 2e 'free charges' in a dielectric medium of two capacitor plates separated by a displacement d; Gauss' law for displacement vector **D** as the closed surface integral $\oiint$ **D**.d**A** = Ne for a surface charge density $\rho_{Ne} = Ne/A$ with dielectric permittivity $\varepsilon = \varepsilon_r.\varepsilon_o$ introduces a polarization **P** = **E**(ε-ε_o) = **D** - ε_o**E** for the electric displacement **D** = ε**E**. The voltage difference between the capacitor plates $V = |\mathbf{E}|d = |\mathbf{D}|d/\varepsilon = Ned/\varepsilon A$ and for zero polarization **D** = ε_o**E** for an infinitesimal displacement d as the Compton radius r_{com} or the de Broglie wave-matter wavelength $\lambda_{dB} = 2\pi r_{ps}$

$$\text{Capacitance } C_{ap} = \int Idt/V = Ne/V = Ne/|\mathbf{E}|d = \varepsilon_o d = |\mathbf{D}|d/|\mathbf{E}| = 2Ne^2/hf_{ps} \text{ in units } [Cm/m^2][V/m] = [C/V] = [C^2/J] = [F]$$

$$V = -d\phi/dt = 1/C_{ap}.\int I\,dt = \{hf_{ps}/2Ne^2\}.\int I\,dt = Ne/C_{ap} = Nehf_{ps}/2Ne^2 = hf_{ps}/2e = E_{ps}/I_{ps} = \phi f_{ps}$$

$$\text{for } V_{ps}/e = (E_{ps}/2e)/e = hf_{ps}/2e^2 = N/C_{ap} \text{ in units } [J/C^2]* \text{ and } I.dt = C_{ap}.dV$$

The magnetic flux quantum (Φ = **B.A$_S$** as Magnetic field B times Loop area A_S) is quantized in superconductors as the von Klitzing constant $\Phi_o = R_K = h/2e$ and the Josephson constant $1/\Phi_o = 2e/h$ of the Josephson effect utilizes Cooper pairs 2e for the electron charge quantum e to account for the two quantum spin orientations as right-handed or left-handed spins $\frac{1}{2}h/2\pi$ for the Cooper paired electron enabling such pairs to display Bosonic properties such as for quasi-particles not restricted by the Pauli exclusion principle for fermions in Fermi half-spin statistics.

For the Cooper electrons the Conductance quantum $G_o = 2e^2/h = 7.742074x10^{-5}$ [$1/\Omega$=A/V=AC/J]* defines a quantum Hall Resistance in $R_{Hall} = h/e^2 = 25{,}832.872$ Ohm* from the Law of Action in the unified field as ee*= h as Action = Charge^2 .

The source energy quantum is defined in the Cooper electron pair 2e in a coupling to the magneto charge e* as $E_{ps} = hf_{ps} = k_BT_{ps} = m_{ps}c^2 = 1/e^* = \{m_{electron}/m_{planck}\}/2e\sqrt{\alpha}$ for $2e/e^* = 2eE_{ps} = 2ef_{ps}h = hI_{ps} = m_{electron}/\sqrt{\alpha}m_{planck}$

A universal 'free space' resistance to the flow of natural current is defined as: Z_o = |Electric Field Strength **E**|/|Magnetic Field Strength **H**| = $\sqrt{(\mu_o/\varepsilon_o)} = \sqrt{(120\pi/c)(120\pi c)} = 120\pi$ Ohm* with an Electric Flux Density **D** in [C/m^2] and a Magnetic Flux Density **B** in [J/Am^2]=[T].

$$\text{Electric Permittivity } |\mathbf{D}/\mathbf{E}| \text{ for } \varepsilon_o = 1/\mu_o c^2 = 1/120\pi c \text{ in units Farad/metre } [F/m]=[C^2/Jm]=[C/Vm]$$

Magnetic Permeability |**B/H**|for $\mu_o=1/\varepsilon_o c^2=120\pi/c$ in Henry/m
$[H/m]=[Js^2/mC^2]=[J/mA^2]=[Vs^2/mC]$
σ = Conductivity = |Current Density **J**/Electric Field Strength **E**| in Siemens/m
$[S/m]=[1/\rho]=[CA/Jm]$
ρ = Resistivity = |Electric Field Strength **E**/Current Density **J**| in units Ohm.metre $[\Omega m]=[Jm/CA]$

From the classical Bohr atom for a single electron circular current
$I_B = ef$, a voltage $V_B = E_B/e = hf_B/e = k_e e/r$
for $k_e/r = hf_B/e^2$ and $V_B/I_B = R_B = k_e e/ref_B = k_e/rf_B = h/e^2$
as quantization in the Hall resistance $R_{Hall} = R_B/n$

$V_o = 2eL.df/dt + 2eRf + Ne/C_{ap}$ as $df/dt + P(t)f - Q(t) = 0$ becomes $df/dt + Rf/L + N/2LC_{ap} – V_o/2eL = 0$ with a natural resonance frequency $r_{resonance} = 1/\sqrt{(C_{ap}L)}$ in units of $\sqrt{(df/dt)} = f_{resonance}$ in Hz*
$P(t) = R/L$ with $Q(t) = N/2LC_{ap} – V_o/2eL$ for Integration Factor $\exp^{\int R/L\, dt} = \exp^{Rt/L}$
$[d(f.\exp^{Rt/L})/dt] = \int \exp^{Rt/L}\{V_o/2eL – N/2C_{ap}L\}$ + constant for $f(t) = V_o/2eR – N/2C_{ap}R$ + constant. $\exp^{-Rt/L}$

$f(t) = f_o$ for t=0 for constant $= f_o + N/2C_{ap}R – V_o/2eR$ and for solutions

$$f(t) = f_o.\exp^{(-Rt/L)} + (\exp^{(-Rt/L)} - 1)\left(\frac{N}{2RC_{ap}} - \frac{V_o}{2eR}\right)$$

$$V_o(t) = \frac{Ne}{C_{ap}} + \frac{2eR(f - f_o.\exp^{-Rt/L})}{1 - \exp(-Rt/L)} \quad \textbf{for constant Voltage } V_o$$

This solution reduces to $f(t) = f_o.\exp[-Rt/L]$ for N = 2 with $N/2RC_{ap} - V_o/2eR = ½f_{ps} - ½f_{ps} = 0$ by the definitions for $R_{ps} = h/2e^2$ with $L_{ps} = h/4e^2f_{ps}$ and with $C_{ps} = 4e^2/hf_{ps}$ and $V_{ps} = 2e/C_{ap} = E_{ps}/2e = hf_{ps}/2e$.

Using a Laplace transform $\{\mathcal{L}\} = \lim[0\text{-}t\text{-}\infty=B]\{\int I \exp(-st)dt\}$ for the improper integral with $B \to \infty$ to transfer the time domain for current $I(t) = dQ/dt = 2ef$ into a frequency domain {s} and noting that the function f(t) = 1/t as frequency has no Laplace transform in the neighbourhood of the origin of convergence.

$\mathcal{L}\{LdI(t)/dt\} + \mathcal{L}\{RI(t)\} + \mathcal{L}\{\int I\, dt/C_{ap}\} = \mathcal{L}\{E_o(t)\}$
for $\mathcal{L}\{dI(t)/dt\} + \mathcal{L}\{R(dI(t)/dt)/L\} + \mathcal{L}\{\int I\, dt/LC_{ap}\} = \mathcal{L}\{V_o(t)/L\}$
$\mathcal{L}\{dI(t)/dt\} = s\mathcal{L}\{I(t)\} – I_o$,
$\mathcal{L}\{R(dI(t)/dt)/L\} = (R/L)\mathcal{L}\{I(t)\}$
$\mathcal{L}\{\int I\, dt/LC_{ap}\} = (1/sLC_{ap})\,\mathcal{L}\{\int I(t)\}$
$\mathcal{L}\{E_o(t)/L\} = V_o(t)/sL$

$$\mathcal{L}\{I(t)\}(s^2 + sR/L + 1/LC_{ap}) - sI_o - E_o(t)/L = 0$$
$$\text{for } \mathcal{L}\{I(t)\} = \{sI_o + V_o(t)/L)\}/(s^2 + s(R/L) + 1/LC_{ap}) = F(s) = \mathcal{L}^{-1}\{s\}$$

By partial fractions and setting a attenuation frequency α =R/2L with a natural resonance frequency $\omega_o = 1/\sqrt{(LC)}$

By differentiation for a particular integral for a Cooper charge of $2e = V_{ps}C_{ps} = \{hf_{ps}/e\}\{2e^2/hf_{ps}]$ to charge the capacitor in $V_{Lps} + V_{Rps} + Q/C_{ps} - 2e/C_{ps} = 0$ by Kirchhoff's law for voltage summation and charge conservation

$$\mathcal{L}\{Ld^2Q/dt^2\} + \mathcal{L}\{RdQ/dt\} + \mathcal{L}\{Q/C_{ap}\} = 0 \text{ for } \mathcal{L}\{d^2Q/dt^2\} + \mathcal{L}\{R(dQ/dt)/L\} + \mathcal{L}\{Q/LC_{ap}\} = 0$$
$$\mathcal{L}\{d^2Q/dt^2\} = s^2\mathcal{L}\{Q(t)\} - sQ_o - d(Q_o)/dt,$$
$$\mathcal{L}\{R(dQ/dt)/L\} = (sR/L)\mathcal{L}\{Q(t)\} - RQ_o/L$$
$$\mathcal{L}\{Q/LC_{ap}\} = (1/LC_{ap})\mathcal{L}\{Q(t)\}$$

$$\mathcal{L}\{Q(t)\}(s^2 + sR/L + 1/LC_{ap}) - sQ_o - RQ_o/L = 0$$
$$\text{for } \mathcal{L}\{Q(t)\} = (sQ_o + RQ_o/L)/(s^2 + s(R/L) + 1/LC_{ap}) = F(s) = \mathcal{L}^{-1}\{s\}$$

By partial fractions and setting a attenuation frequency α =R/2L with a natural resonance frequency $\omega_o = 1/\sqrt{(LC)}$

$$A/(s+\alpha+\sqrt{[\alpha^2-\omega_o^2]}) + B/(s+\alpha-\sqrt{[\alpha^2-\omega_o^2]}) = \{A(s+\alpha-\sqrt{[\alpha^2-\omega_o^2]}) + B(s+\alpha+\sqrt{[\alpha^2-\omega_o^2]})\}/(s^2 - 2\alpha + \omega_o^2)$$

$$\{(s(A+B) + \alpha(A+B) + \sqrt{[\alpha^2-\omega_o^2][B-A]}\}/(s^2 - 2\alpha + \omega_o^2) = \{sI_o + E_o/L\}/\{s^2 - 2\alpha + \omega_o^2\} \text{ for}$$
$$V_o/L=(h\omega_o/2e)(4e^2\omega_o/h)=2e\omega_o^2= I_o\omega_o$$
$$A + B = I_o \text{ with } I_o\omega_o = \sqrt{[\alpha^2-\omega_o^2][B - A]} + \alpha I_o \text{ for } 2A = I_o\{1 - (\omega_o - \alpha)/\sqrt{[\alpha^2-\omega_o^2]}\} = I_o\{1 + \sqrt{([\alpha-\omega_o]/[\alpha+\omega_o])}\}$$

$$\mathcal{L}^{-1}\{s\} = \tfrac{1}{2}I_o\{1 + \sqrt{([\alpha-\omega_o]/[\alpha+\omega_o])}\}/(s+\alpha+\sqrt{[\alpha^2-\omega_o^2]}) + I_o(1 - \tfrac{1}{2}[1+\sqrt{([\alpha-\omega_o]/[\alpha+\omega_o])})/(s+\alpha-\sqrt{[\alpha^2-\omega_o^2]})$$

$\mathcal{L}^{-1}\{s\} = \tfrac{1}{2}I_o.e^{-\alpha t} + \tfrac{1}{2}I_o.e^{-\alpha t} = I_o.e^{-\alpha t} = 2e\omega_o = I_{ps} = 2ef_{ps}$ for the critical damping condition $\omega_o = \alpha = f_{ps}$

For the critical resonance situation $\alpha=\omega_o$ and the duplicated roots of the equation are identical for a summed exponential solution for charge Q(t) of the form of $Q(t) = A^*\exp[-\alpha t] + B^*t.\exp[-\alpha t] + 2e$ with Q(0) = 0 for $A^* = -2e$ and a solution for the current I(t) = dQ/dt of the form of $I(t) = -\alpha A^*.\exp[-\alpha t] + B^*.\exp[-\alpha t](1-\alpha t)$ with I(0) = 0 for $2e\alpha = -B^*$ and $B^* = -2ea$

$d^2i/dt^2 = 2\alpha di/dt + \alpha^2 i = 0 = d\{di/dt + \alpha i\}/dt + \alpha\{di/dt + \alpha i\} = du/dt + \alpha u$ for $u = di/dt + \alpha i$ and $\int du/u = -\alpha \int dt$ for $\ln|u| = -\alpha t + \text{constant}$ for $u = e^{-\alpha t+\text{constant}} = Ae^{-\alpha t} = di/dt + \alpha i = d\{ie^{\alpha t}\}/dt$ for constant $A = e^{\alpha t}(di/dt + \alpha i) = d\{ie^{\alpha t}\}/dt$ for $\int Adt + \text{constant } B = \int d\{ie^{\alpha t}\}$ and the current solution

$$i(t) = e^{-\alpha t}\{At + B\}$$

$$\{A(s+\alpha) + B(s+\alpha)\} = \{s(A+B) + \alpha(A+B)\} = (sQ_o + 2\alpha Q_o)/(s^2 + 2\alpha s + \alpha^2)$$
for $A+B = A^* = -2e$ and $\alpha tA^* = B^*t$

$$F(s) = \mathcal{L}^{-1}\{A^*/(s+\alpha) + B^*t/(s+\alpha)\} = Q(t) = -2e.\exp[-\alpha t] - 2e\alpha t.\exp[-\alpha t] + 2e = -2e.e^{-\alpha t}\{1 + \alpha t\} + 2e$$
for its derivative for current I(t) being

$$\mathbf{dQ(t)/dt = I(t) = 2e\alpha.\ e^{-\alpha t}\{1+\alpha t-1\} = 2e\alpha^2 te^{-\alpha t} = I_o.(\alpha t)\ e^{-\alpha t} = 2ef_{ps}(\alpha t)\ e^{-\alpha t} = 2ef_{ps}.e^{-1}}$$
$$\mathbf{for\ \alpha = f_{ps}\ and\ t = t_{ps} = 1/f_{ps} = f_{ss}}$$

$$d^2Q(t)/dt^2 = dI(t/dt) = I'(t) = 2e\alpha^2\ e^{-\alpha t}\{1-\alpha t\} = 2e\alpha.\alpha\ e^{-\alpha t}\{1-\alpha t\} = I_{o.}\alpha\ e^{-\alpha t}\{1-\alpha t\}$$
If an initial current $I_o = 2ef_{ps}$ with Cooper charge 2e is impressed into the circuit $LdI(t)/dt + RI(t) + I(t)/C_{ap} = 0$; then this forced current I_o replaces dI(t)/dt as the current's derivative for a forced voltage
$$d^3Q(t)/dt^3 = dI^2(t)/dt^2 = I''(t) = 2e\alpha^3\ e^{-\alpha t}\{\alpha t-2) = I_o\alpha^2\ e^{-\alpha t}\{\alpha t-2)$$

$$d^4Q(t)/dt^4 = dI^3(t)/dt^3 = I'''(t) = 2e\alpha^4\ e^{-\alpha t}\{3-\alpha t) = I_o\alpha^3\ e^{-\alpha t}\{3-\alpha t)$$
…
$$d^nQ(t)/dt^n = dI^{n-1}(t)/dt^{n-1} = I^{n-1}(t) = 2e\alpha^n\ e^{-\alpha t}\{\alpha t-n+1) = I_o\alpha^{n-1}\ e^{-\alpha t}\{\alpha t-n+1)$$
for an odd order for the charge derivative for the source current and even order for the current derivative

$$d^{n+1}Q(t)/dt^{n+1} = dI^n(t)/dt^n = I^n(t) = 2e\alpha^{n+1}e^{-\alpha t}\{n-\alpha t) = I_o\alpha^n\ e^{-\alpha t}\{n-\alpha t)$$
for an even order for the charge derivative for the source current and odd order for the current derivative

The time quantization for the attenuation intervals can then be expressed as a unit step function

u(t-a) = {1 for t≥a and 0 for t<a for the purpose of scaling the minimum time intervals $t_{ps} = 1/f_{ps} = f_{ss}$

Applying an impulse defined by the Dirac delta function $\delta(t-t_o)$ to the unit step function for two attenuations to synchronize the natural responses for both the impressed voltages and the impressed currents then enables a normalization of the source-sink frequencies in the unified field.
$$\delta(t-t_o) = \{0 \text{ for } t\neq t_o \text{ and } \infty \text{ for } t=t_o \text{ for } \lim[-\infty \text{ to } \infty] \int\delta(t-t_o)\ dt = 1$$

The initial source-sink frequency attenuation $I(t=1/\alpha) = 2ef_{ps} = I_{ps}.(\alpha t)e^{-1} = I_{ps}(1)e^{-1}$ for $t = t_{ps} = 1/f_{ps} = f_{ss}$ reduces the source frequency by a factor of $e^{-1} = 0.36788$ for $(\alpha t) = f_{ps}.t_{ps} = 1$

The second source-sink frequency attenuation $I(t=2/\alpha) = I_{ps}.(2) = I_{ps}.e^{-2}$ for $t = 2t_{ps}$ then reduces the source frequency by a factor of $(e^{-1})^2 = e^{-2} = 0.13533$ for $(2\alpha t_{ps}) = 2f_{ps}.t_{ps} = 2$.

The source-sink currents in the unified field are expressions of monopolar electromagnetism in the form of Electromagnetic Monopolar Radiation or EMMR. The source-sink and sink-source frequencies for the source-sink current $I_{ps} = 2ef_{ps}$ and the sink-source current $I_{ss} = 2ef_{ss}$ are attenuated for the emergence of the Restmass Photon RMP as the agency for the dark matter agency and the eventual introduction of Radiation Mass as the tertiary colour triplet of the unified field in the utility of Quantum Chromodynamics or QCD.

The RMP is defined in the magneto charge e* as the quantum of physicalized consciousness and in the spacetime awareness df/dt as a radius independent angular acceleration acting upon a spacetime volumar defined in its limit as the diameter of the classical electron of Quantum Electrodynamics $R_e = k_e e^2/m_e c^2 = h\alpha/2\pi m_e c = \alpha R_{com}$.

$$2R_e c^2 = (\text{Electron diameter})(\text{Lightpath/Time})^2 = (\text{Volumar})(\text{Awareness})_{max}$$
$$= V_{RMP}.df/dt|_{max} = e^* = 1/E_{ps} = 1/hf_{ps}.$$

Because $df/dt|_{max} = \lim[t=f_{ss}=t_{ps}]\{(f_{ps} - f_{ss})/t_{ps}\} = f_{ps}^2 - 1 = (9x10^{60} -1)$ frequency permutation self-states, the volume of a RMP then calculates from its Compton radius as $2R_e c^2/f_{ps}^2 = 2\pi^2 R_{RMP}^3$ and $R_{RMP} = \sqrt[3]{\{R_e\lambda_{ps}^2/\pi^2\}}$ and as $1.41189x10^{-20}$ m* for an boson energy of $E_{RMP} = hc/\lambda_{RMP} = hc/2\pi R_{RMP} = 2.254495x10^{-6}$ J* or 14.034 TeV* as self-energy from the Higgs Boson mass/inertia induction.

This energy is a characteristic maximized energy of the Large Hadron Collider or LHC at Geneva, Switzerland. The frequency of the RMP is $E_{RMP}/h = 3.3817x10^{27}$ Hz* for a time of manifestation of $2.9571x10^{-28}$ s* from the QBBS.

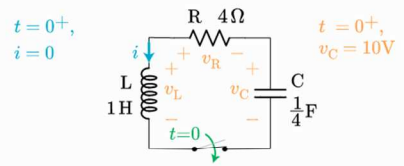
For $L_{ps} = h/4e^2f_{ps}$ and $C_{ps} = 4e^2/hf_{ps}$ and $R_{ps} = h/2e^2$. The maximum voltage for the capacitative circuit impression $\omega_C = \sqrt{\{(2L-CR^2)/2CL^2\}} = f_{ps}\sqrt{(1-2)} = +if_{ps}$. The maximum voltage for the inductive circuit impression $\omega_L = 1/\sqrt{\{LC-\frac{1}{2}C^2R^2\}} = f_{ps}/\sqrt{(1-2)} = f_{ps}/i = -if_{ps}$

For the damped response the attenuation frequency $\alpha < \omega_o = f_{ps}$ as the resonance frequency for the roots of the characteristic equation obtained from $s^2 - 2\alpha + \omega_o^2 = 0 = (s-\alpha+\sqrt{[\alpha-\omega_o]})(s-\alpha-\sqrt{[\alpha-\omega_o]})$. The limit of the $df/dt|_{max}$ permutation states is $\lim[t_{ps}=f_{ss}]\{(f_{ps}-f_{ss})/t_{ps}] = f_{ps}^2 - 1 = (f_{ps}+1)(f_{ps}-1) = f_{ps}^2$ for high frequency

$$f_{ps}.f_{ps}/(f_{ps}+1) = f_{ps}-1 \text{ for } \sqrt{[\alpha^2 - \omega_o^2)} = \sqrt{\{[\alpha-\omega_o)(\alpha+\omega_o)\}} = \sqrt{\{\omega_o - \omega_o^2\}} = \sqrt{\omega_o}\sqrt{\{1 - \omega_o] = \pm i\omega_o \text{ for } \alpha = \sqrt{\omega_o}}$$
$$\sqrt{\omega_o} = \sqrt{f_{ps}} = \sqrt{\{f_{iL}.f_{iC}\}} = f_\alpha$$

The attenuation of the source frequencies defines the time interval from the time instanton at $t_{ps} = f_{ss} = 3.333x10^{-31}$ s* to the time of the emergence of the RMP at $t_{RMP} = 2.9571x10^{-28}$ s* in the cosmogenesis.

LQ"(t) + RQ'(t) +Q(t)/C = 0 = Q"(t) + 2αQ'(t) + Q(t)/ω²
α = R/2L= 2 for I(t) = 10t.exp[-2t]



V(0) = V_C(0) = 10V with V_R(0) = V_L(0) = 0

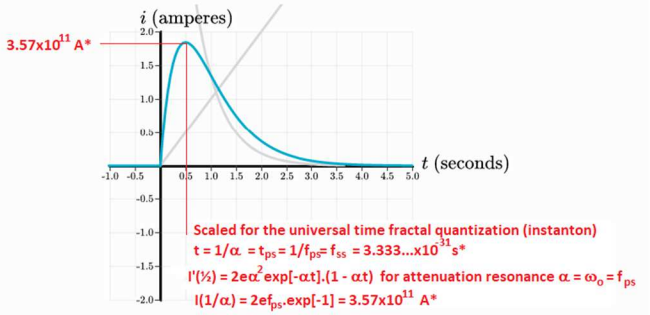
I(t) = {V_o t/L} exp[-αt] with dI(0)/dt = V_o/L

I(t) = {V_o t/L} exp[-αt] and I(0) = 0
with dI(t)/dt = {V_o /L}exp[-αt](1-αt)

Maximum at t = ½ for d(I(½)/dt = 0

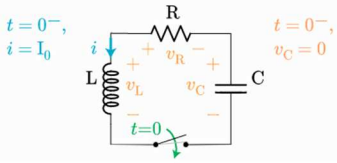
The current starts and ends at I(t) = 0 and surges to a maximum value of 5(0.37) = 1.84 A for t=½ s when the switch closes before attenuating with a damping frequency of α = 2 Hz back to 0.
When there is an initial voltage, the damped response attenuates, but never becomes negative.

A critically damped natural response with an initial impressed/forced voltage



Critically damped series RLC with an initial voltage. $\mathrm{R} = 4$ ohms, $\mathrm{L} = 1$ henry, $\mathrm{C} = 1/4$ farad, with an initial 10 volts on the capacitor. The curved gray line is $i = 10\,e^{-2t}$. The slanted straight gray line is $i = t$. The blue result is the product of the two gray lines, $i = 10\,t\,e^{-2t}$.

LQ"(t) + RQ'(t) + Q(t)/C = 0 = Q"(t) + 2αQ'(t) + Q(t)/ω_o^2
α = R/2L = 2 for I(t) = 1.75(1-2t).exp[-2t]



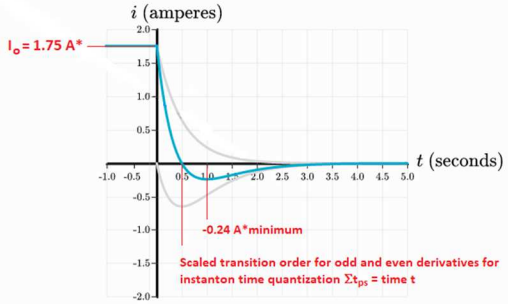
V(0) = V_C(0) = 0 with V_R(0) = V_L(0) = -I_oR
V_L(0) = LdI(0)/dt with dI(2/α=1)/dt = 0

dI(0)/dt = V_o(0)/L = -I_oR/L = -2αI_o
I(t) = $I_o$exp[-αt](1-αt) with
dI(t)/dt = I_oα²exp[-αt](αt-2)

Minimum at t=1 for dI(1)/dt = 0

The current begins at t=0 at a maximum with I (0) = 1.75 A and becomes negative at t=½ s, before decaying asymptotically to 0 from the negative direction.
When there is an initial current the current changes direction from positive to negative in its path of attenuation.
The minimum current at t=1 s is 1.75(0.135)(-1) = -0.24 A

A critically damped natural response with an initial impressed/forced current



Critically damped series RLC with an initial current. The gray lines are the two terms in the solution. The upper gray line is $I_0\,e^{-\alpha t}$. The lower gray line is $-\alpha I_0\,t\,e^{-\alpha t}$. Add them together to get the blue result.

For t=0 as the time instanton t=t_{ps}, the exponent Rt/L = (ht/2e^2)(2e.ef/h) = $f_{ps}t_{ps}$ = 1
for a magnetic flux ϕ = LI = h/2e = E_{ps}/I_{ps} = hf_{ps}/2ef_{ps} with $f_{ps}.t_{ps} = f_{ps}.f_{ss}$ = 1

The attenuation for t=t_{ps} becomes $f_{ps}|_{att} = f_{ps}e^{-1} = f_{ps}.(0.367879) = 1.103638x10^{30}$ Hz*

For f(t_{RMP}), the exponent Rt/L = $f_{RMP}t_{RMP}$ = 1

$f(t_{RMP}) = f_{RMP}.e^{-1} - \{1 - e^{-1}\}\{f_{RMP} - f_{RMP}\} = f_{RMP}.e^{-1}$ for N = $f_{RMP}.t_{RMP}$ = 1

The attenuation for t=t_{RMP} becomes $f_{RMP}|_{att} = f_{RMP}.(0.367879) = 1.24406x10^{27}$ Hz*

The ratio $F|_{att} = f_{ps}|_{att}/f_{RMP}|_{att} = 8.8713x10^2 = 887.126$ then defines the scaling factor for the unit impulse applied to the double utilization of the unit step function to synchronize the $f_{ps}^2 = df/dt|_{max}$ frequency permutation count with the source-sink natural frequency eigenstate of energy resonance as a harmonic oscillator $E_{ps}^o = ½hf_{ps} = ½ht_{ss}$.

The unit time fractal as the t_{ps} time quantum for the monopolar source currents so scales the time unitization $1/f_{ps} = t_{ps}$ seconds* in 1/887.126 seconds* or a time fractal of 1.127 milliseconds*applied to the unit step function.

At the instanton the two sources E_{ps} and E_{ss} are together in self- and mutual inductance and begin to move apart with the expansion of the universe in a time evolution as to event horizons given by the two Hubble nodes in a maximum frequency $f_{ps} = 1/f_{ss}$ at the even node count 0,2,4,6,… and a minimum frequency given by the odd nodal Hubble frequency $H_o = c/R_{Hubble}$.

These two extremal frequencies are coupled by lightspeed in cycle number $n = H_ot$ with its derivative $dn/dt = H_o = c/R_{Hubble} = cn_{ps}/\lambda_{ps} = n_{ps}f_{ps}$ with the QBBS Weyl wormhole radius $r_{ps} = \lambda_{ps}/2\pi = R_{Hubble}n_{ps}/2\pi$.

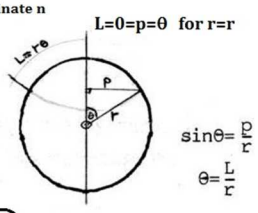
The changing magnetic field is therefore decreasing and causes the mutual inductances to oppose this change in the magnetic flux by Lenz's law with I_{ps} inducing I_{ss} and I_{ss} inducing I_{ps}.

The source frequencies are constant voltages with the V_{ss} producing a constant monopolar mass sink-source current $I_{ss} = 2ef_{ss}$, which as a inducted source-sink current I_ps produces an electromotive force $V_{ss} = E_{ss}/e = 1.38x10^{-45}$ V*

The attenuation of the source-sink frequency continues as a function of time as the inverse time for the time evolution of the cosmology. Its maximum value so would attain its minimum value for a time of $3x10^{30}$ seconds* or $9.507x10^{22}$ 'civil years' as 95.1 billion trillion such years. As the protoverse as the Planck-Einstein Black Body Radiator universe is designed to quantum tunnel into the multiverse after 234 17- billion year cycles for an age of the universe of so four trillion years, the minimum sink-source frequency becomes superseded in the parameters of the multiverse.

Radius of Curvature r(n) with Salefactor 1/a=1+1/n in dS as a function of cycletime coordinate n

$$r(n) = r_{max}\left(\frac{n}{n+1}\right) m^* \quad \text{and} \quad n = H_o t$$



The volume of the 4-D spacetime can however be found by integrating the surface area S.A. via arclength L, with L being an intrinsic paramater of the 3-D surface. dL=r.dθ

$$V_{Universe} = \int_0^{r\pi} 4\pi p^2 \, dL = 2\pi^2 r(n)^3 \quad \text{for a local spheroidicity}$$

$$4\pi\int_0^{\pi} r^3\sin^2\theta \, d\theta = 4\pi r^3\int_0^{\pi} \tfrac{1}{2}\{1-\cos 2\theta\}d\theta = 2\pi^2 r(n)^3 \quad \text{for the asymptotic 4/10D dS 'flatness' cosmology within the nodal Hubble 5/11D AdS Universe}$$

This classical macrovolumar is quantized in the microvolumar quantum of the Unified Field in 8π radians or 840°-(-600°)=1440°

$$\tfrac{1}{4}\pi\int_{-600°}^{840°}\{\sin(\tfrac{1}{2}[3x])-\cos(\tfrac{1}{4}[3x])\}^2 dx = \tfrac{1}{4}\pi\int_{-10\pi/3}^{14\pi/3}\{\sin^2(3x/2)+\cos^2(3x/4)-2\sin(3x/2)\cos(3x/4)\} dx$$

$$= \tfrac{1}{4}\pi\int_{-600°}^{840°}\{\tfrac{1}{2}(1-\cos[3x])+\tfrac{1}{2}(1+\cos\tfrac{1}{2}[3x] - \sin\tfrac{1}{2}[9x] - \sin\tfrac{1}{4}[3x]\} dx$$

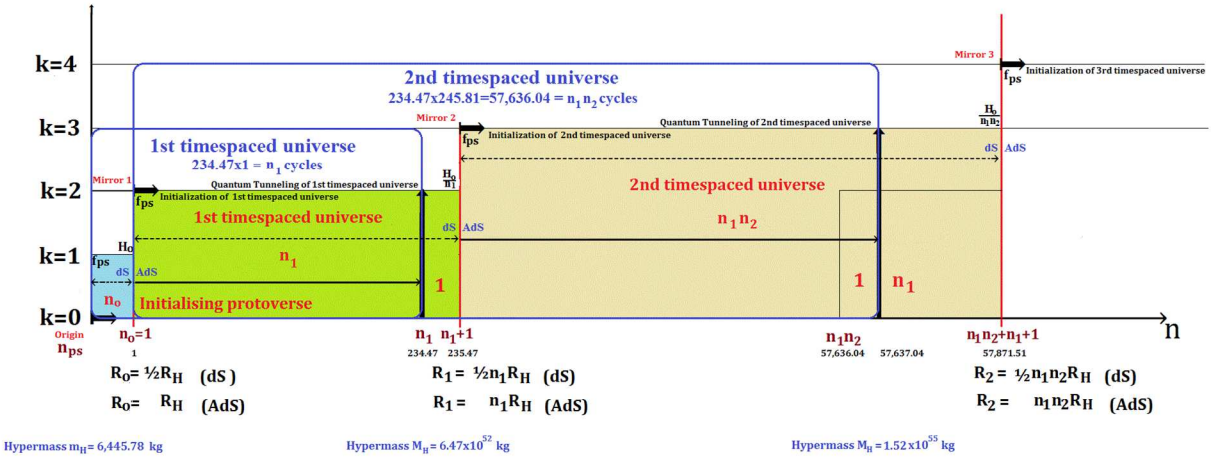
$$= \tfrac{1}{4}\pi\left[\theta - \sin[3x]/6 + \sin\tfrac{1}{2}[3x]/3 - 2\cos\tfrac{1}{2}[9x]/9 - 2\cos\tfrac{1}{2}[3x]/3\right]_{-10\pi/3}^{14\pi/3} = \tfrac{1}{4}\pi(8\pi) = 2\pi^2$$

$$\left\{\text{by classical volumar of revolution (vor)}\quad V_{vor}=\int\pi y^2\,dx \quad \text{for } y=r\right\}$$

The amplitude for the universal wavefunction becomes proportional to the quantum count of the space occupancy of a single spacetime quantum and as source energy (VPE or Vortex Potential Energy) quantum and as a consequence of the preinflationary supersymmetry of the F(x)=sinx +sin(-x) = 0 wavefunction defining this singularity (symbolised as the symbol for infinity).

A higher dimensional surface is Moebian connected to differentiate the quantum mechanical 'boundary' for the quantum tunneling of the macrocosmos as a magnified holofractal of the well understood microquantumization.

It then is the experienced and measured relativity of time itself, which becomes the quantum wall, with the 'reducing thickness' of the quantum boundary correlating with the evolution of the multiversal structure in the phase shifted time intervals defining the individual universes.



The mass-eigen frequency f_{ss} so becomes a constant monopolar mass-eigen-current I_{ss} for the sink-source induced EMF into the V_{ps} circuitry and serves as a substitute for the matter-antimatter asymmetry as the outcome for the suppression of anti-radiation in lieu fo the emergence of the Higgs Boson HB inducing the mass quantization in conjunction with the RMP.

The scalar (0 spin) HB neutralizes the left-handed spin of the RMP(-1) with the right-handed spin of the supressed gauge agent BGR(+1) for the weak nuclear interaction WNI. The reason for the weak nuclear interaction manifesting as a left-handed spin for matter and a right-handed spin

for antimatter then is found in the suppression of sink-sourced anti-radiation $E_{ss}=hf_{ss}$ allowing matter to manifest from a one-sided Möbian self-interaction of the source-sink radiation $E_{ps}=hf_{ps}$ in the quantum geometry of the Quantum Chromodynamics QCD.

This nonparity of the WNI of coupling massive weak interaction Weakon bosons from their previous massless Goldstone state only to left-handed fermions and subatomic quark conglomerations so manifested the second breaking of a spin-symmetry in the unified field. Radioactivity underpins the manifestation of the WNI in a mathematical formulation relating the amount of a substance to its half-life $t_{½} = \ln 2/k$ in $R(t) = R_o e^{-kt}$ from $dN/N = -kdt$ with $½R_o = R_o e^{-kt}$ for $-kt_{½} = \ln|½|$

The third asymmetry became the introduction of biological life from its predecessor as the biochemistry of nonorganic chemistry and solid state physicality.

4. The Universal RCL Life-circuits in the Unified Field

The source-sink frequency f_{ps} with the sink-source modular dual frequency $f_{ss} = 1/f_{ps} = t_{ps}$ defines the squared frequency self-state as $9x10^{60}$ frequency permutation states of maximized awareness $df/dt|_{max}$. In a full universal life-circuit this frequency eigen-state is partitioned as a critical frequency $f_{reso}^2 = f_L f_C$

The generalized voltage-current differential equation $V_o = 2eL.df/dt + 2eRf + Ne/C_{ap}$ becomes restructured in individuations of biological lifeforms in a critical resonance regime characterized by a separation and graduation of electro-capacitative and magneto-inductive properties subject to a natural superconductivity of free space impedance coupled to the source-sink Hall resistance in the formulations for the magnetic flux quantum.

$$\phi_m = E_{ps}/I_{ps} = hf_{ps}/2ef_{ps} = h/2e = LI = (h/4e^2f_{ps})(2ef_{ps}) = \lambda_{ps}.m_{ps}c^2/2ec = \mu_o MR_{ps}/Z_o = \mu_o MR_{ps}/120\pi$$

For the damped response the attenuation frequency $\alpha < \omega_o=f_{ps}$ as the resonance frequency for the roots of the characteristic equation obtained from $s^2 - 2\alpha + \omega_o^2 = 0 = (s-\alpha+\sqrt{[\alpha-\omega_o]})(s-\alpha-\sqrt{[\alpha-\omega_o]})$

The relationship between the attenuation frequency alpha α and the resonance frequency $\omega_o=f_{ps}$ is now reconfigured in a frequency partition.

Transforming the source-sink frequency f_{ps} in a partitioning of $f_{ps} = f_{Li}f_{Ci}$ would define $\sqrt{f_{ps}} = \sqrt{(f_{Li}f_{Ci})} = \sqrt{3x10^{30}}$ Hz* as a frequency transduction agency for the transforming of two Lightpath frequencies in the geometric mean of the source-sink frequency. This geometric mean becomes the product of a minimum and a maximum transduction for the

Lightpath frequencies in the 4th of the fundamental physical constant set from the timespace of creation preceding the QBBS.

$$f_{Li} = 1/L_o = 6x10^{15} = f_{ps}/f_{Ci} \text{ for } f_{Ci} = 5x10^{14} \text{ Hz*}$$

The frequency range $[5x10^{14} - 1.72x10^{15} - 6x10^{15}]$Hz* for a wavelength range [600 -173.2 - 50]nm* for a Compton energy range [2.1 - 7.2 – 24.9]eV* so specifies the transduction spectrum for life-circuit induction coupled to the metamorphosis of the biological matter form in sink-source current Iss into the Light-body or wave-matter form of the Radiation mass in the RMP.

The lower bound of 600 nanometres* is in the optical orange colour part of the electromagnetic spectrum and is associated with the left-handed parts of the DNA-RNA double-helix of protein manufacture by amino acids and the upper bound of 50 nanometres* is in the far high ultraviolet ionization part of the EMR spectrum and relates to the right-handed part of the DNA-RNA in a coupling to the sugars and carbohydrate bases.

This fourth constant is also known as a luminosity transduction constant and defines a lower frequency bound as the colour of orange light, the first of six colour obtained by the QCD of the RMP mixing with the E_{ps} gauge photon of the Electromagnetic Interaction to create the 12-colour rainbow spectrum of a new covenant between above and below: $Y^2C^2M^2(-1)$ + RGB(+1) = {Red-Orange-Yellow-Lime-Green-Turquoise-Cyan-Aqua-Blue-Indigo-Magenta-Purple-Red}.

The ratio $f_{Li}/f_{Ci} = (f_{Li}/\sqrt{f_{ps}})/(f_{Ci}/\sqrt{f_{ps}}) = 6x10^{15}/5x10^{14} = 12$ to indicate the limit for the number of dimensions as given by the SEps algorithm from the timespace era.

The ratio $F|_{att} = f_{ps}|_{att}/f_{RMP}|_{att} = 8.8713x10^2 = 887.126$ then is applied to the magneto-inductive upper frequency bound f_{Li} and the lower electro-capacitative frequency bound f_{Ci} mean valued by the square root of $f_{ps} = 1/f_{ss}$ to define the life currents.

Two iterations of the unit step function in 887.126 ms* as an attenuated frequency then synchronize the unity of the squared frequency $f_{ps}.f_{ss} = 1$ from $\sqrt{f_{ps}}$ in $F|_{att}^2 = (f_{ps}|_{att}/f_{RMP}|_{att})^2 = (887.126)^2 = 786{,}992.54$ to then form upper and lower bounds in biological time quanta for the ionizing UV radiation and the EMR from the optical part of the spectrum.

For the Geometric Electro-Capacitative Mean $\sqrt{\{f_{ps}\}} = \sqrt{\{t_{ss}\}} = \sqrt{\{3x10^{30}\}} = \sqrt{3}x10^{15} = \sqrt{\{f_{Ci}.f_{Li}\}}$ and the Terran Capacitative Interval $\sqrt{\{f_{ps}\}} = \sqrt{\{(5x10^{14})(6x10^{15})\}} = 1.732x10^{15}$

$f_{Li}/(887.126)^2 = 7.62396x10^9$ Hz* and $\sqrt{(f_{ps})}/(887.126)^2 = 2.2008x10^9$ Hz* as a higher range with a lower range from $\sqrt{(f_{ps})}/(887.126)^2 = 2.2008x10^9$ Hz* to $f_{Ci}/(887.126)^2 = 6.3533x10^8$ Hz* to then form corresponding time scales for biological lifeforms in a magneto-inductive range from $(2.201 – 7.624)x10^9$ s* or (69.75 – 241.59) ‘civil years’ and a electro-capacitative range from $(0.6353 – 2.201)x10^9$ s* or (20.133 – 69.75) ‘civil years’.

The universal time quantized in the t_{ps} time fractal so defines the frequency range for the electro-capacitative range as the age of the physicalized spacetime universe as a lower bound of $5x10^{14}$ seconds* or 15.884 million years to $1.732x10^{15}$ seconds* or 54.886 million years adjoined to the age of the universe in the magneto-inductive interval to its upper bound of $6x10^{15}$ seconds* or 190.132 million years.

For the Geometric Magneto-Inductive Mean $\sqrt{\{144f_{ps}\}} = \sqrt{432x10^{15}} = \sqrt{\{f_{Li}.12f_{Li}\}}$ and the Terran Inductive Interval $\sqrt{\{144f_{ps}\}} = \sqrt{\{(6x10^{15})(72x10^{15})\}} = 2.0785x10^{16}$

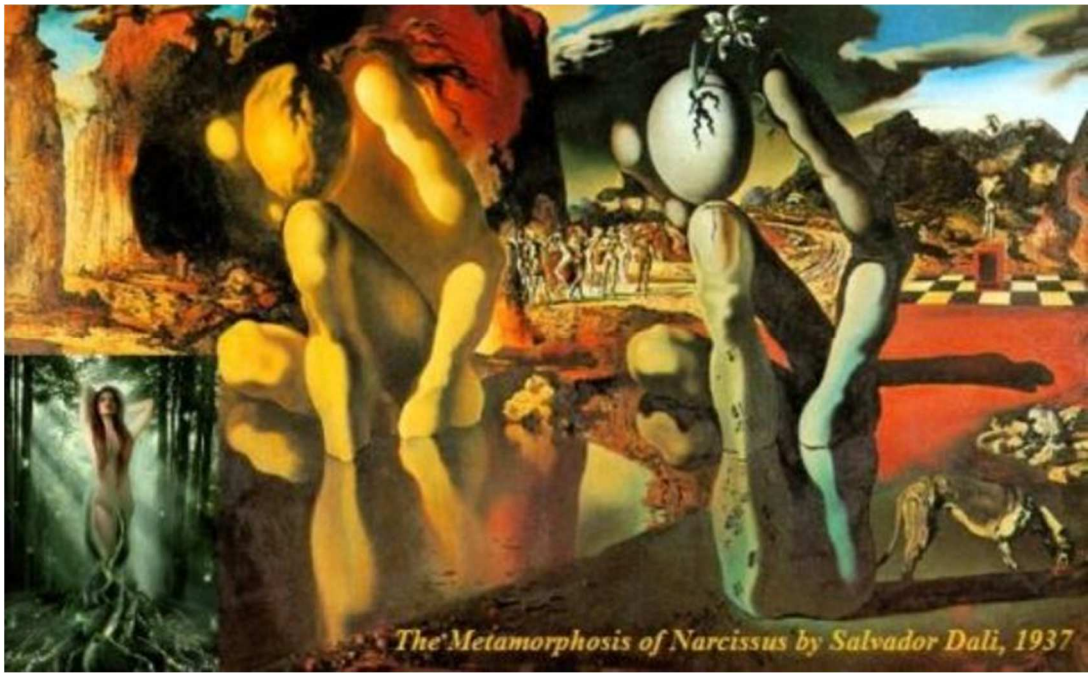
$12f_{Li}/(887.126)^2 = 9.14875x10^{10}$ Hz* and $\sqrt{(144f_{ps})}/(887.126)^2 = 2.64102x10^{10}$ Hz* as a higher range with a lower range from $\sqrt{(144f_{ps})}/(887.126)^2 = 2.64102x10^{10}$ Hz* to $f_{Li}/(887.126)^2 = 7.62396x10^{9}$ Hz* to then form corresponding time scales for biological lifeforms in a mirrored capacitative magneto-inductive range from $(2.64102 – 9.14875)x10^{10}$ s* or (836.91 – 2899.12) 'civil years' and a mirrored magneto-inductive range from $(0.76240 – 2.64102)x10^{10}$ s* or (241.59 – 836.91) 'civil years'.

The universal time quantized in the t_{ps} time fractal then defines the frequency range for the continuing magneto-inductive range as the age of the physicalized spacetime universe from $6x10^{15}$ seconds* or 190.132 million years to $2.0785x10^{16}$ seconds* or 658.650 million years continuing to the age of the universe in the mirrored electro-capacitative interval to its upper bound of $12x10^{15}$ seconds* or 380.264 million years.

The corresponding sink-source frequencies as time-frequency modular T-duality inversions for the source-sink frequencies describe weak interaction decay rates and half-lives for elementary particle interactions.

$(1.389x10^{-17} - 4.811x10^{-17} - 1.667x10^{-16} - 5.774x10^{-16} - 2x10^{-15})$ for the sink-source frequencies $(1.093x10^{-11} - 3.786x10^{-11} - 1.312x10^{-10} - 4.544x10^{-10} - 1.574x10^{-9})$ for attenuated sink-source times

Weak-Interaction Decay as upper boundary for electromagnetic gamma ray decay (uncharged pions) and as lower boundary for mesonic self-states (charged pions) and reduces in shortening half-lives for elementary unstable particles and quark configurations (hyperons, positronium) and nanosecond radioactive isotopes (Li-12).



Modular membrane T-(target space) duality stipulates the inversion property for the source-sink frequency to be identical to the sink-source time fractal and vice versa to mirror the 12 equal time periods of $5x10^{14}$ Hz* from the lower- and upper frequency bounds f_{iC} and f_{iL} in a supermembrane mirror space.

The inverse proportionality between frequency and time becomes manifested in spacetime in the doubling of the unit-step function and so in a 5-impulse form of the Dirac delta function.

The age of the universe in seconds* identifies the spacetime coordinate as a source-sink frequency identical to the coupled local sink-source time coordinate.

$5x10^{14}$---(2√3)---$1.732x10^{15}$---(2√3)---$6x10^{15}$—(2√3)---$2.078x10^{16}$---(2√3)---$7.2x10^{16}$ in units [Hz}*

Capacitative f_{iC}-----$\sqrt{f_{ps}}=\sqrt{t_{ss}}$-----Inductive $1/f_{iL}=t_{ss}$=Inductive f_{iL}-----$1/\sqrt{f_{ss}}=1/\sqrt{t_{ps}}$----Capacitative $1/f_{iC}$

The 12x12 = 144 universal monopolar current nexus spacetime coordinates:

Magnification	**Source-Sink Frequency f_{ps} with $\omega_{ps}= 2\pi f_{ps}$**	**Sink-Source Frequency f_{ss} with $\omega_{ss} = 2\pi f_{ss}$**	**Age of Universe**	**Age of Bioform Identification**
F_{iC} Ground state	$5x10^{14}$ with $3.142x10^{15}$	$2x10^{-15}$ with $1.257x10^{-14}$	15.884 My 99.802 My	20.133 y 126.499 y
2√3 Magnification	$1.732x10^{15}$ with $1.088x10^{16}$	$5.774x10^{-16}$ with $3,628x10^{-15}$	54.886 My 344.859 My	69.741 y 438.196 y
$(2\sqrt{3})^2=12$ Magnification	$6x10^{15}$ with $3.770x10^{16}$	$1.667x10^{-16}$ with $1.047x10^{-15}$	190.132 My 1.195 By	241.588 y 1517.942 y

$(2\sqrt{3})^3=24\sqrt{3}$ Magnification	$2.078x10^{16}$ with $1.306x10^{17}$	$4.811x10^{-17}$ with $3.023x10^{-16}$	658.492 My 4.137 By	836.887 y 5258.306 y
$(2\sqrt{3})^4=144$ Magnification	$7.2x10^{16}$ with $4.524x10^{17}$	$1.389x10^{-17}$ with $8.727x10^{-17}$	2.282 By 14.336 By	2899.061 y 18,215.339 y

#	Frequency	# Time fractals in units $5x10^{14}$	Universal cellular evolution status
1	**$1f_{iC}$**	**$5x10^{14}$ = $5x10^{14}$ with $3.142x10^{15}$**	**15.884 My with 99.802 My**
2	$2f_{iC}$	$10x10^{14}$ = $1x10^{15}$ with $6.283x10^{15}$	31.689 My with 199.108 My
Lower Geometric Image Mean Mirrored from Extra-terrestrial Induction Interval: $14f_{iC}$ --- $8f_{iC}$---$2f_{iC}$			
3	$3f_{iC}$	$15x10^{14}$ = $1.5x10^{15}$ with $9.245x10^{15}$	47.533 My with 298.659 My
Geometric Electro-Capacitative Mean $\sqrt{\{f_{ps}\}} = \sqrt{\{t_{ss}\}} = \sqrt{\{3x10^{30}\}} = \sqrt{3}x10^{15} = \sqrt{\{f_{Ci}.f_{Li}\}}$ and the Capacitative Interval $\sqrt{\{f_{ps}\}} = \sqrt{\{(5x10^{14})(6x10^{15})\}} = 1.732x10^{15}$ with $1.088x10^{16}$ for 54.886 My and 344.859 My			
4	$4f_{iC}$	$20x10^{14}$ = $2x10^{15}$ with $1.257x10^{16}$	63.377 My with 398.209 My
5	$5f_{iC}$	$25x10^{14}$ = $2.5x10^{15}$ with $1.571x10^{16}$	79.222 My with 497.767 My
6	$6f_{iC}$	$30x10^{14}$ = $3x10^{15}$ with $1.885x10^{16}$	95.066 My with 597.317 My
7	$7f_{iC}=f_{iL}-5f_{iC}$	$35x10^{14}$ = $3.5x10^{15}$ with $2.199x10^{16}$	110.911 My with 696.874 My
Upper Geometric Image Mean Mirrored from Extra-terrestrial Induction Interval: $14f_{iC}$ --- $8f_{iC}$---$2f_{iC}$			
8	$8f_{iC}=1f_{iL}-4f_{iC}$	$40x10^{14}$ = $4x10^{15}$ with $2.513x10^{16}$	126.755 My with 796.425 My
9	$9f_{iC}=1f_{iL}-3f_{iC}$	$45x10^{14}$ = $4.5x10^{15}$ with $2.827x10^{16}$	142.599 My with 895.976 My
$\frac{1}{3}f_{DNA} = 4.666x10^{15}$ Hz* for a codon length of 10.023 nm* in the 1 to 2 ratio of the 24+4=28 f_{iC} tabulation			
10	$10f_{iC}=1f_{iL}-2f_{iC}$	$50x10^{14}$ = $5x10^{15}$ with $3.142x10^{16}$	158.443 My with 995.527 My
11	$11f_{iC}=1f_{iL}-1f_{iC}$	$55x10^{14}$ = $5.5x10^{15}$ with $3.456x10^{16}$	174.288 My with 1.09508 By
12	$12f_{iC}=1f_{iL}$	**$60x10^{14}$ = $6x10^{15}$ with $3.770x10^{16}$**	**190.132 My with 1.19464 By**
Arithmetic Means $\frac{1}{2}\{f_{iC}+2f_{iL}\}$ & $\frac{1}{2}\{f_{iC}+12f_{iL}\}$ for $1.25x10^{15}$ & $3.625x10^{16}$ Geometric Means $\sqrt{\{2f_{Li}.f_{Ci}\}}$ & $\sqrt{\{12f_{iL}.f_{iC}\}}$ for $\sqrt{6}x10^{15}$ & $6x10^{15}$			
13 {12}	**$13f_{iC}=f_{iL}+1f_{iC}$ $1f_{iL}$**	**$65x10^{14}$ with $4.084x10^{16}$ & $2.566x10^{17}$ $6x10^{15}$ with**	**205.977 My & 1.29419 By & 8.13133 By**

		$3.7699x10^{16}$	**190.13243 My and 1.194637 By**
14 {11}	$14f_{iC}=1f_{iL}+2f_{iC}$ $2f_{iL}$	$70x10^{14}$ with $4.398x10^{16}$ & $2.763x10^{17}$ $12x10^{15}$ with $7.5398x10^{16}$	221.821 My & 1.39374 By & 8.75670 By 380.26486 My and 2.38927 By
15 {10}	$15f_{iC}=1f_{iL}+3f_{iC}$ $3f_{iL}$	$75x10^{14}$ with $4.712x10^{16}$ & $2.961x10^{17}$ $18x10^{15}$ with $1.1310x10^{17}$	237.666 My & 1.49330 By & 9.38268 By 570.39729 My and 3.58391 By
Geometric Magneto-Inductive Mean $\sqrt{\{144f_{ps}\}} = \sqrt{432x10^{15}} = \sqrt{\{f_{Li}.12f_{Li}\}}$ and the Terran Inductive Interval $\sqrt{\{144f_{ps}\}} = \sqrt{\{(6x10^{15})(72x10^{15})\}} = 2.0785x10^{16}$ with $1.3059x10^{17}$ for 658.638 My with 4.1383 By			
16 {9}	$16f_{iC}=1f_{iL}+4f_{iC}$ $4f_{iL}$	$80x10^{14}$ with $5.027x10^{16}$ & $3.158x10^{17}$ $24x10^{15}$ with $1.5080x10^{17}$	253.510 My & 1.59285 By &10.00817 By 760.52972 My with 4.77855 By
17 {8}	$17f_{iC}=1f_{iL}+5f_{iC}$ $5f_{iL}$	$85x10^{14}$ with $5.341x10^{16}$ & $3.356x10^{17}$ $30x10^{15}$ with $1.8850x10^{17}$	269.354 My & 1.69240 By & 10.63368 By 950.662 My and 5.97319 By
18 {7}	$18f_{iC}=1f_{iL}+6f_{iC}$ $6f_{iL}$	$90x10^{14}$ with $5.655x10^{16}$ & $3.553x10^{17}$ $36x10^{15}$ with $2.2620x10^{17}$	285.199 My & 1.79196 By & 11.25919 By 1.14079 By and 7.16782 By
19 {6}	$19f_{iC}=2f_{iL}-5f_{iC}$ $7f_{iL}$	$95x10^{14}$ with $5.969x10^{16}$ & $3.750x10^{17}$ in $42x10^{15}$ with $2.6389x10^{17}$	301.043 My & 1.89151 By & 11.88470 By 1.33093 By and 8.36246 By
20 {5}	$20f_{iC}=2f_{iL}-4f_{iC}$ $8f_{iL}$	$100x10^{14}$ with $6.283x10^{16}$ & $3.948x10^{17}$ $48x10^{15}$ with $3.0159x10^{17}$	316.887 My & 1.99106 By & 12.51021 By 1.52106 By and 9.55710 By
21 {4}	$21f_{iC}=2f_{iL}-3f_{iC}$ $9f_{iL}$	$105x10^{14}$ with $6.597x10^{16}$ & $4.145x10^{17}$ $54x10^{15}$ with $3.3929x10^{17}$	332.732 My & 2.09062 By & 13.13572 By 1.71119 By and 10.75174 By
22 {3}	$22f_{iC}=2f_{iL}-2f_{iC}$ $10f_{iL}$	$110x10^{14}$ with $6.912x10^{16}$ & $4.343x10^{17}$ $60x10^{15}$ with $3.7699x10^{17}$	348.576 My & 2.19033 By & 13.7612 By 1.90132 By and 11.94637 By
23 {2}	$23f_{iC}=2f_{iL}-1f_{iC}$ $11f_{iL}$	$115x10^{14}$ with $7.226x10^{16}$ & $4.540x10^{17}$ $66x10^{15}$ with $4.1469x10^{17}$	364.420 My & 2.28983 & 14.38674 By 2.09146 By and 13.14101 By
24 {1}	**$24f_{iC}=2f_{iL}$ $28f_{iC}=f_{DNA}$ $12_{iL}=144f_{iC}$ $148f_{iC}=f_{DNA}+4f_{iC}$**	**$120x10^{14}$ with $7.540x10^{16}$ & $4.737x10^{17}$ $140x10^{14}$ with $8.796x10^{16}$ & $5.527x10^{17}$ $72x10^{15}$ with $4.5239x10^{17}$ $74x10^{15}$ with $4.6496x10^{17}$**	380.265 My & 2.38933 By & 15.01226 By 443.642 My 2.78749 By & 17.51430 By 2.28159 By and 14.33565 By 2.34497 By and 14.73386 By
Age of Universe from Hubble Node reflection-refraction			**16.89 ± 2.24 By -** 14.673 + 2.24 = 16.876

$4\{2x\sqrt{3}\} = 4\{3.464\} \sim 4\{3½\} = 2x7 = 14$ with $\{2\sqrt{3}\}^4 = 16x9 = 144 = 12x12$

f_{DNA} = 1.4x10^{16} Hz* = (7/3)f_{iL} = c/λ_{DNA} for λ_{DNA} = 2πr_{DNA} = 21.4286 nm* and r_{DNA} = 3.41046 nm* as one nucleotide base segment multiplied in 3 segment codons in 4x4x4 = 64 permutations for four coupled nucleotide base pairings Adenine-Thymine(DNA)/Uracil(RNA) and Guanine-Cytosine. The codon frequency therefore is ⅓f_{DNA} = 4.666x10^{15} Hz* for a codon length of 10.023 nm* in the 1 to 2 ratio of the 24+4 = 28 f_{iC} tabulation.

Psalm 90:10 - KJV

The days of our years are threescore years and ten; and if by reason of strength they be fourscore years, yet is their strength labour and sorrow; for it is soon cut off, and we fly away.

Gen 6:3 – KJV

And the LORD said, My spirit shall not always strive with man, for that he also is flesh: yet his days shall be an hundred and twenty years..

Acts 1:15 - KJV

And in those days Peter stood up in the midst of the disciples, and said, (the number of names together were about an hundred and twenty,)

Rev 4.4 with 12.14 with 14.3 - KJV

4 And round about the throne were four and twenty seats: and upon the seats I saw four and twenty elders sitting, clothed in white raiment; and they had on their heads crowns of gold.

14 And to the woman were given two wings of a great eagle, that she might fly into the wilderness, into her place, where she is nourished for a time, and times, and half a time, from the face of the serpent.

3 And they sung as it were a new song before the throne, and before the four beasts, and the elders: and no man could learn that song but the hundred and forty and four thousand, which were redeemed from the earth.

Dan 12:7 - KJV

And I heard the man clothed in linen, which was upon the waters of the river, when he held up his right hand and his left hand unto heaven, and sware by him that liveth for ever that it shall be for a time, times, and an half; and when he shall have accomplished to scatter the power of the holy people, all these things shall be finished.

The biological lifeform boundary of 70 'civil years' as a frequency of 2.20 GHz* attenuated in the application of two successive unit step functions therefore emerges from the square root of the source-sink frequency f_{ps} and as the intersection frequency between the electro-capacitative and the magneto-inductive frequencies f_{Li} and f_{Ci}.

It is this intersection between the upper bounded magneto-inductive frequencies and the lower bounded electro-capacitative frequencies, which differentiate between a 'higher' extra-terrestrial life force current and a 'lower' intra-terrestrial life force current.

An intersection frequency interval can so be used to indicate a human hominid potential to evolve from a purely electro-capacitative not-human (animalia, flora and fauna) form towards a purely magneto-inductive post-human form. The Terran hominid frequency interval so intersects the non-human monopolar electro-capacitative life-form from its lower bound of $1.732x10^{15}$ Hz* and superposes itself from its upper bound of $2.078x10^{16}$ Hz* onto the monopolar magneto-inductive extra-terrestrial life-form.

$\phi_m = E_{ps}/I_{ps} = hf_{ps}/2ef_{ps} = h/2e = LI = (h/4e^2f_{ps})(2ef_{ps}) = \lambda_{ps}.m_{ps}c^2/2ec = \mu_o MR_{ps}/Z_o = \mu_o MR_{ps}/120\pi$

The monopolar current $i_{DNA}* = 2ef_{DNA} = M = [ec]$ then defines the life-current frequency f_{DNA} in the critical universal 24-tiered frequency interval for the time period from 15.884 million years to 380.265 million years from the creation event.

$i_{DNA}* = 2ef_{fil} = [ec]$ as a monopolar mass equivalent of $4.818x10^{-11}$ kg* magnetically inducts this monopolar life-current as a Maxwell displacement current into any biological form defined in the characteristic DNA wavelength of $c/2f_{il} = c/1.2x10^{16} = 25$ nm* with a DNA fractal radius of $25/2\pi$ or 3.97 nanometres* as a base length of a nucleotide, modified by ⅓ of the F_{iC} interval in $2x10^{15}$ Hz* added to $2f_{iL}=12x10^{15}$ Hz* as $14x10^{15}$ Hz*.

The lower and upper geometric image means are mirrored from the extra-terrestrial induction interval $\{14f_{iC}$ ---$8f_{iC}$---$2f_{iC}\}$ centred on $8f_{iC} = 4x10^{15}$ Hz* as ⅔ of $12f_{iC} = f_{iL}$.

$f_{DNA} = 1.4x10^{16}$ Hz* = (7/3)f_{iL} = c/λ_{DNA} for $\lambda_{DNA} = 2\pi r_{DNA} = 21.4286$ nm* and $r_{DNA} = 3.41046$ nm* as one nucleotide base segment multiplied in 3 segment codons in 4x4x4 = 64 permutations for four coupled nucleotide base pairings Adenine-Thymine(DNA)/Uracil(RNA) and Guanine-Cytosine. The codon frequency therefore is ⅓$f_{DNA} = 4.666x10^{15}$ Hz* for a codon length of 10.023 nm* in the 1 to 2 ratio of the 24+4 = 28 f_{iC} tabulation.

The underdamped response for $1/LC=1/CL=\omega_o^2=(f_{iC})(784f_{iC})=(f_{DNA}/28)(28f_{DNA})=f_{DNA}^2$
The natural response of an underdamped circuit with an initial impressed life-force current for the electro-capacitative non-human terrestrial interval $\omega_o=f_{DNA}$ with $\alpha=\omega_b$ from to f_{iC} to f_{iL}

For the characteristic quadratic $(s - \alpha + \sqrt{[\alpha^2-\omega_o^2]})(s - \alpha - \sqrt{[\alpha^2-\omega_o^2]}) = 0$ with roots $s_1 < s_2$

$$Q''(t) + RQ'(t)/L + Q(t)/LC = 2e/LC \text{ with } Q_o = V_sC = (hf_{ps}/2e)(4e^2/hf_{ps}) = 2e;$$
$$s_1 = f_{iC} = f_{DNA}/28 \ \& \ s_2 = 784f_{iC} = 28f_{DNA}$$

$$Q(t) = A_1e^{s_1t} + B_1e^{s_2t} + 2e = A_1e^{-\alpha t}e^{i\sqrt{D}t} + B_1e^{-\alpha t}e^{-i\sqrt{D}t} + 2e = e^{-\alpha t}\{(\cos\sqrt{D}(A_1+B_1) + i\sin\sqrt{D}(A_1-B_1]\} + 2e$$

$$\text{for } e^{i\sqrt{D}t} = \cos\sqrt{D}.t + i.\sin\sqrt{D}.t \text{ and } e^{-i\sqrt{D}t} = \cos\sqrt{D}.t - i.\sin\sqrt{D}.t \text{ with } \sqrt{D} = \sqrt{[\omega_o^2-\alpha^2]} = \omega_d = \omega_{damped/attenuation}$$

$$Q(t) = e^{-\alpha t}\{A\cos\omega_d t + B\sin\omega_d t\} + 2e \text{ for } A = (A_1+B_1) \text{ and } B = i(A_1-B_1) \text{ with } Q(0) = -2e = A \text{ for}$$
$$s_1 + s_2 = 785f_{DNA}/784 = 2\alpha \text{ for } \alpha = 785f_{DNA}/1568 \text{ with } \sqrt{[\alpha^2-\omega_o^2]} = i\omega_d = \sqrt{\{(785^2/1568^2 - 1\}f_{DNA}}$$

$$\omega_d = \sqrt{\{(1 - 785^2/1568^2\}f_{DNA}} = \sqrt{0.749362}.f_{DNA} = 0.865657.f_{DNA} = 1.21192x10^{16} \text{ Hz*}$$

$$Q'(t) = e^{-\alpha t}\{\cos\omega_d t(B\omega_d - \alpha A) - \sin\omega_d t(A\omega_d + \alpha B)\}; Q'(0) = B\omega_d - \alpha A = 0 \text{ for } A = -2e \text{ and } B = -2e\alpha/\omega_d$$

$$Q''(t) = s_1^2Ae^{s_1t} + s_2Be^{s_2t}\{2+s_2t\} = 2e.e^{-\alpha t}(\omega_o^2/\omega_d)\{\omega_d\cos\omega_d t - \alpha\sin\omega_d t\}$$

$$Q(t) = 2e\{1 + e^{-\alpha t}\{ 0 + (\omega_o/\omega_d)\sin\omega_d t\} = 2e\{1 + e^{-\alpha t}\{(\omega_d+\alpha^2/\omega_d)\sin\omega_d t\} \text{ with } V_o = V_s = Q_oC_{ps} = 2eC_{ps}$$

$$Q'(t) = 2e.e^{-\alpha t}(\omega_o^2/\omega_d)\sin\omega_d t = 2e.(\omega_o^2/\omega_d)e^{-785fDNAt/1568}(\sin\omega_d t)$$

The critical response for $1/LC=1/CL=\omega_o^2=(7f_{iL}/3)(7f_{iL}/3)=(f_{DNA})(f_{DNA})$

The natural response of a critically damped circuit with an initial impressed life-force current I_o for the combination and intersection of the electro-capacitative non-human terrestrial interval and the magneto-inductive extra-terrestrial intervals $\omega_o=f_{DNA}$ with $\alpha=\omega_o$ from to $\sqrt{\{3f_{ps}\}}$ to $\sqrt{\{432f_{ps}\}}$

For the characteristic quadratic $(s - \alpha + \sqrt{[\alpha^2-\omega_o^2]})(s - \alpha - \sqrt{[\alpha^2-\omega_o^2]}) = 0$ with roots $s_1=\alpha_1=s_2=\alpha_2$

$$Q''(t) + RQ'(t)/L + Q(t)/LC = 2e/LC \text{ with } Q_o = V_sC = (hf_{ps}/2e)(4e^2/hf_{ps}) = 2e;$$
$$s_1 = -7f_{iL}/3 = -f_{DNA} \text{ \& } s_2 = -7f_{iL}/3 = -f_{DNA}$$

$$Q(t) = Ae^{s_1t} + Bte^{s_2t} + 2e; \quad Q'(t) = s_1Ae^{s_1t} + Be^{s_2t}\{1+s_2t\}; \quad Q''(t) = s_1^2Ae^{s_1t} + s_2Be^{s_2t}\{2+s_2t\}$$
$$\text{with } I_o(t=0) = 2ef_{DNA} \text{ (monopolar) for initialization } Q(0) = I(0) = 0$$
$$A = -2e = -B/s_1 \text{ for } B = 2es_1 \text{ and } Q(t) = 2e\{1 - e^{-fDNAt}(1 + f_{DNA}t)\} = 2e\{1 - e^{-fDNAt} - f_{DNA}te^{-fDNAt}\}$$
$$\text{for } s_1 + s_2 = -2f_{DNA} = 2\alpha \text{ for } \alpha = -f_{DNA} \text{ with } \sqrt{[\alpha^2-\omega_o^2]} = 0$$

$Q(t) = 2e\{1 - e^{-fDNAt}(1 + f_{DNA}t)\}$ and **$Q'(t) = 2ef_{DNA}^2te^{-fDNAt} = I_o.f_{DNA}te^{-fDNAt}$** and where I_o is the induction monopolar current of conception

The overdamped response for $1/LC=1/CL=\omega_o^2=(12f_{iL})(49f_{iL}/108) = (36f_{DNA}/7)(7f_{DNA}/36) = f_{DNA}^2$
The natural and total step response of an overdamped circuit with an initial impressed life-force current for the magneto-inductive extra-terrestrial interval $\omega_o = f_{DNA}$ with $\omega_d = \sqrt{(\alpha^2-\omega_o^2)}$ from $(7/3)f_{iL}$ to $12f_{iL}$.

The natural response is underdamped and critical for the interval $f_{iL} \leq (7/3)f_{iL}=f_{DNA}$ $dI(0)/dt = V_o/L = (hf_{DNA}/2e)(4e^2f_{DNA}/h) = 2ef_{DNA}^2$ and $f_{iL} = (3f_{DNA}/7)$; $s_1=|-36f_{DNA}/7|$ & $s_2=|-7f_{DNA}/36|$

For the characteristic quadratic $(s - \alpha + \sqrt{[\alpha^2-\omega_o^2]})(s - \alpha - \sqrt{[\alpha^2-\omega_o^2]}) = 0$ with roots $|s_1| > |s_2|$

$$Q''(t) + RQ'(t)/L + Q(t)/LC = 2e/LC \text{ with } Q_o = V_sC = (hf_{ps}/2e)(4e^2/hf_{ps}) = 2e;$$
$$s_1 = -12f_{iL} = -36f_{DNA}/7 \;\&\; s_2 = -49f_{iL}/108 = -7f_{DNA}/36$$

$$Q(t) = Ae^{s_1 t} + Be^{s_2 t} + 2e; \quad Q'(t) = s_1Ae^{s_1 t} + s_2Be^{s_2 t}; \quad Q''(t) = V_o/L = s_1^2Ae^{s_1 t} + s_2^2Be^{s_2 t}$$
with $I_o(t=0) = 2ef_{DNA}$ the induction monopolar current of conception and $f_{iL} = (3f_{DNA}/7)$
$A = -2e - B = -s_2B/s_1$ for $B = 2es_1/(s_2 - s_1) = -2e(1296/1247)$ and $A = 2e + s_2/(s_1 - s_2) = 2e(49/1247)$

for $s_1 + s_2 = -1345f_{DNA}/252 = 2\alpha$ for $\alpha = -1345f_{DNA}/504$ with $\sqrt{[\alpha^2-\omega_o^2]} = (1247/504)f_{DNA}$

$$\mathbf{Q(t) = 2e\{1 + (49/1247)\, e^{-[36/7]]fDNAt} - (1296/1247)e^{-[7/36]fDNAt}\} \text{ with } V_o = V_s = Q_oC_{ps} = 2eC_{ps}}$$

$$\mathbf{I(t) = Q'(t) = 2ef_{DNA}(252/1247)\{e^{-[36/7]]fDNAt} - e^{-[7/36]fDNAt}\}}$$

$$I'(0) = Q''(0) = 2ef_{DNA}^2\{(36^2/49)(49/1247 - (49/36^2)(-1296/1247)\} = 2ef_{DNA}^2$$

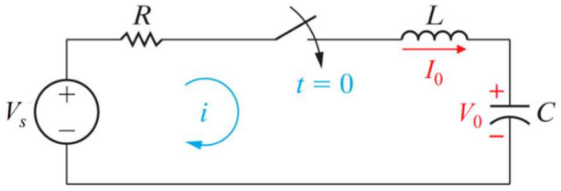
Applying the time-frequency coupling for the supermembrane T-duality, the exponential values for the four-tiered life-circuits in the two-to-one ratio between the electro-capacitative- and the magneto-inductive frequency realm aligns with a four-step attenuation for the currents in f(t)t assuming values between e^{-1} and e^{-2} for the time intervals projected unto the Hubble event horizons of the cosmology as the boundaries for the expansion of the thermodynamic universe.

Protocells are the precursors for the prokaryotes (before kernel or core) as geometrical structures exhibiting a membrane of enclosure or surface area, into which a life-current can be inducted to supplement the mass-eigen sink-source current $I_{ss}=2ef_{ss}$.

A biochemical structure of atoms and molecules of a volume V so carries a base-frequency f_{base} = c/Lightpath-R and a wave-matter frequency f_{db} = c/Lightpath-2πR with the respective spacetime awareness values as the squared frequency states. Those frequencies are induced by the source-sink current as a function for the age of the universe and for the critical time n=1 and when the universe became 'self-reflective' in the Hubble node 16.9 billion years after the QBBS.

All extra-terrestrial intelligences observing the earth could from that time onwards associate their L-factor based life-circuits with the C-factor based nonhuman life-circuits of the microbial lifeforms beginning their evolutionary journeys towards the present time.

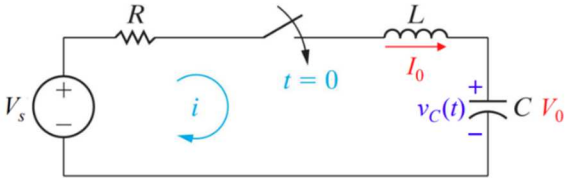
ODEs of step response



- By KVL: $Ri + L\frac{di}{dt} + \left[V_0 + \frac{1}{C}\int_0^t i(t')dt'\right] = V_s.$
- The homogeneous and inhomogeneous ODEs of $i(t)$ and $v_C(t)$ are:

$$\frac{d^2i}{dt^2} + \frac{R}{L}\frac{di}{dt} + \frac{i}{LC} = 0, \text{ and } \frac{d^2v_C}{dt^2} + \frac{R}{L}\frac{dv_C}{dt} + \frac{v_C}{LC} = \frac{V_s}{LC}.$$

The two initial conditions (ICs)



- The capacitor voltage cannot change abruptly,

$$\Rightarrow v_C(0^+) = V_0 \cdots (1)$$

- The inductor current cannot change abruptly,

$$\Rightarrow i_L(0^+) = I_0 = i_C(0^+),$$
$$\because i_C(0^+) = C\left.\frac{dv_C}{dt}\right|_{t=0^+}, \Rightarrow v_C'(0^+) = \frac{I_0}{C} \cdots (2)$$

General solution

- Substitute $i(t) = Ae^{st}$ into the ODE, we got a different characteristic equation of s:

$$s^2 + \frac{R}{L}s + \frac{1}{LC} = 0. \Rightarrow s_{1,2} = -\alpha \pm \sqrt{\alpha^2 - \omega_0^2}.$$

- The form of $s_{1,2}$ determines the form of general solution:

$$i(t) = \begin{cases} A_1e^{s_1t} + A_2e^{s_2t}, & \text{if } \alpha > \omega_0 \\ e^{-\alpha t}\left(B_1\cos\omega_d t + B_2\sin\omega_d t\right), & \text{if } \alpha < \omega_0 \\ e^{-\alpha t}\left(D_1t + D_2\right), & \text{if } \alpha = \omega_0 \end{cases}$$

where $\alpha = \frac{R}{2L}$, $\omega_0 = \frac{1}{\sqrt{LC}}$, $\omega_d = \sqrt{\omega_0^2 - \alpha^2}$.

$(2RC)^{-1}$ in parallel RLC

General solution

- The solution is the sum of final voltage $V_f = V_s$ and the nature response $v_{C,nature}(t)$:

$$v_C(t) = V_f + v_{C,nature}(t),$$

where the three types of nature responses were elucidated in Section 8.4. https://www.ee.nthu.edu.tw/sdyang/Courses/Circuits/Ch08_Std.pdf

$$v_C(t) = \begin{cases} V_f + A_1'e^{s_1t} + A_2'e^{s_2t}, \text{if } \alpha > \omega_0, \\ V_f + e^{-\alpha t}\left(B_1'\cos\omega_d t + B_2'\sin\omega_d t\right), \text{if } \alpha < \omega_0, \\ V_f + e^{-\alpha t}\left(D_1't + D_2'\right), \text{if } \alpha = \omega_0. \end{cases}$$

Awareness$_{Universe}$ = 3.52x10^{-36}{8.93x10^{-38}} + Integration... and for a base frequency $f_{base} = H_o$ = 1.88x10^{-18} Hz* and a wave-matter frequency f_{db} = 2.99x10^{-19} Hz* with a Lightpath to the Hubble event horizon $R_{Hubble} = c/H_o$

The attenuation base-frequency $f_{universe} = H_oe^{-1}$ = 6.92x10^{-19} Hz* and attenuated for the purpose to enable universal subsystems to manifest their own tertiary power source $V_{tertiary} = hf_i/2e$ to supplement the inducted universal base-frequency in individuated life-circuits.

Multiplying an individuated life-circuit within a suitable geometrical membrane structure by the magneto charge quantum e* as the inverse source-sink energy quantum of creation would subsequently define such an individualization energy source as an electro-magnetopolar voltage and life-circuit per source-energy quantum $V_{tertiary}.e^* = hf_ie^*/2e = f_i/2ef_{ps}$.

Following a sufficient evolution of the circuit elements in the life-circuit would then allow a resonance graduation status between the self-frequency f_i and f_{ps} for the radiation mass transformation of the original matter based life-circuit and the mass quantization current due to the nature of the magneto charge as the originator for the RMP as the dark matter agent for the

physical nature of consciousness and its equivalent unitary structure to the gravitational parameter GM as the product of a spacetime volumar and the awareness differential df/dt.

The transformation process requires the quantum geometry of the genetic encoding facilitated by the double-helix of the DNA-RNA

The source-sink frequency f_{ps} with the sink-source modular dual frequency $f_{ss} = 1/f_{ps} = t_{ps}$ defines the squared frequency self-state as $9x10^{60}$ frequency permutation states of maximized awareness $df/dt|_{max}$.

In a full human-starhuman life-circuit this frequency eigen-state is partitioned as a critical frequency $f_{reso}^2 = f_L f_C$

$V_o = 2eL.df/dt + 2eRf + Ne/C_{ap}$ as $df/dt + P(t)f - Q(t) = 0$ becomes $df/dt + Rf/L + N/2LC_{ap} – V_o/2eL = 0$ with a damped natural critical resonance frequency $r_{resonance} = 1/\sqrt{(C_{ap}L)}$ in units of $1/\sqrt{(dt/df)} = f_{resonance}$ in Hz*

Transforming the source-sink frequency f_{ps} in a partitioning of $f_{ps} = f_{Li}f_{Ci}$ would define $\sqrt{f_{ps}} = \sqrt{(f_{Li}f_{Ci})} = \sqrt{3x10^{30}}$ Hz* as a frequency transduction agency for the transforming of two Lightpath frequencies in the geometric mean of the source-sink frequency. This geometric mean becomes the product of a minimum and a maximum transduction for the Lightpath frequencies in the 4th of the fundamental physical constant set from the timespace of creation preceding the QBBS.

$$f_{Li} = 1/L_o = 6x10^{15} = f_{ps}/f_{Ci} \text{ for } f_{Ci} = 5x10^{14} \text{ Hz*}$$

The frequency range $[5x10^{14} - 1.72x10^{15} - 6x10^{15}]$Hz* for a wavelength range [600 -173.2 - 50]nm* for a Compton energy range [2.1 - 7.2 – 24.9]eV* so specifies the transduction spectrum for the life-circuit induction coupled to the metamorphosis of the biological matter form in sink-source current Iss into the Light-body or wave-matter form of the Radiation mass in the RMP.

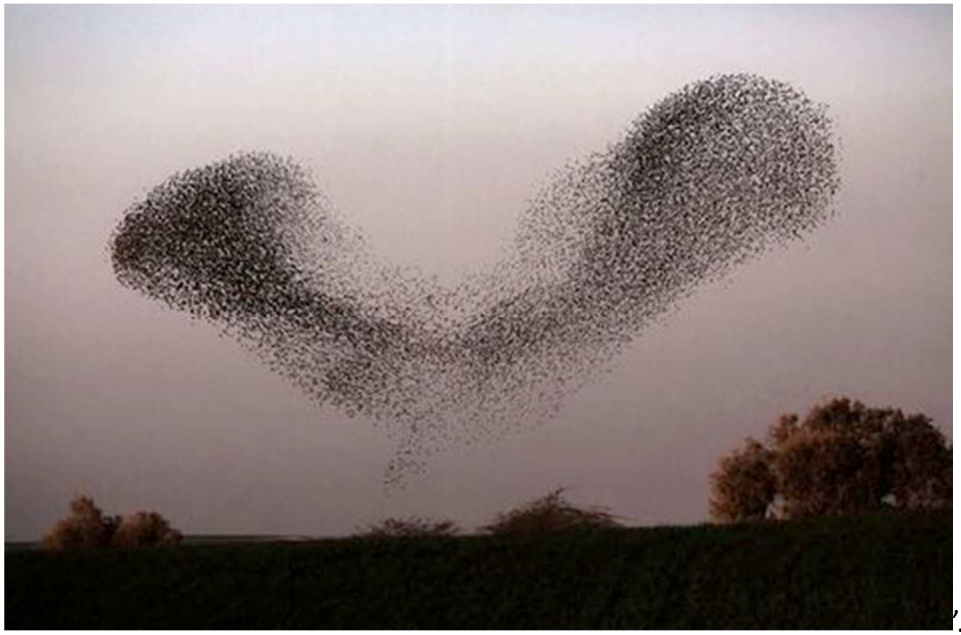
The frequency range $[6x10^{15} - 1.2x10^{16} - 1.4x10^{16}]$Hz* then extends the biophoton emission energies for a wavelength range [50 - 25 - 21.4]nm* for a Compton energy range [24.9 – 49.8 – 58.1]eV*.

Biophotons from ionizing electromagnetic radiation from high ultraviolet into optical spectra have been addressed by Alexander Gurwitsch (Moscow University; September 26th, 1874 - July 27th, 1954) and Fritz Albert Popp (University of Marburg, Germany; May 11th, 1938 – August 4th, 2018) in the research into biophysics and coherent electromagnetic systems.

Gurwitsch introduced the labelling of Mitogenetic Radiation and the concept of a Morphogenetic Field for the emission of a ‘life force’ in the context of cellular reproduction and mitosis and the inductive interference interacting with biological matter in phenomenal ‘emergence’. Rupert Sheldrake (University of Cambridge; June 28th, 1942) represents a contemporary researcher into the morphogenetic field theory, extending the concept to that of

Morphogenetic Resonance. This theory proposes memory to be an inherent property of nature, exemplified in the '100th monkey syndrome and the phenomenon of Murmuration, the 'flocking' of individuated biological identities, such as birds, moving as a unity. Magnetic field induction into the orientation regions of the brain are a proposed explanation for the effect.

Other historical explanations for the 'life-force' engage concepts of Chi in the Chinese history and similar labelling's of this 'force' as the Mesmerism or 'Lebensmagnetismus' of Franz Mesmer (University of Vienna; May 23rd, 1734 – March 5th, 1815) and the Orgone of Wilhelm Reich (University of Oslo, Norway; March 24th, 1897 – November 3rd, 1957) in European culture.



'.

The lower bound of 600 nanometres* is in the optical orange colour part of the electromagnetic spectrum and is associated with the left-handed parts of the DNA-RNA double-helix of protein manufacture by amino acids and the upper bound of 50 nanometres* is in the far high ultraviolet ionization part of the EMR spectrum and relates to the right-handed part of the DNA-RNA in a coupling to the sugars and carbohydrate bases.

As Capacitance $C=C_{ap}$ is defined as the ratio of charge over voltage, a general time evolution of capacitative microbial pathogen evolution (virus-exosome-cellular toxicity excretion) can be superposed onto the source-sink resistance R_{ps} as $C(t) = 2e^2t/h$. As time proceeds, the life circuits require higher and higher capacitative function to manifest in parallel with a similarly time evolving immune system for a complex multicellular biological organism defined by its genomatrix. All matter is capacitative in its ability to store electric and magnetic monopolar charge in a C-factor, but only organic biomatter is inductive with a L-factor.

Biotic clay crystals formed quantum geometric precursors for the membraned protocell transforming into prokaryotes without nucleus and endosymbiotic partnerships between the

bacterial ancestry for all life led then to the eukaryotic cell, carrying genetic information concentrated in a nucleus. In higher organisms, the conversion of genetic information of DNA via RNA into protein-enzyme-energy structures proceeds by programming or coding of precursor RNA, consisting of coded and uncoded introns acting as stop signals and which regularly and systematically split genes to splice out messenger RNA or mRNA.

Information units of short genes become joined by mRNA to yield longer units as a function of their length or number of nucleotides. The 'stop protein synthesis' signal drops off at about 600 nucleotides with a characteristic length of 600x3.4 = 2040 nm* length of genetic base pairs. The first Bohr radius for the hydrogen atom is $R_e/\alpha^2 = 5.22x10^{-11}$ m* or 522 nanometres* as a minimum atomic scale. A geometric model for the pathogens describes spheres of so 34 nm* across as a basic minimum scale for a biological definition for a living microorganism such as the 'cold virus - influenza' pathogen.

This indicates that split genetic configurations are more ancient with precursor RNA evolving into mRNA joined by introns in the encoding of the nucleated cell. Messenger RNA then copies itself yielding strands for cellular program preservation or amplification and enzyme activity. Coupling mRNA amplification to the unified field with a switching of On and Off of the mutually inductive intron source currents then affects environmental adaptation for a variable protein- and energy storage and production.

An onset of parasitic pathogens or bacteria can then become a function for an organism to allow its continued genetic and immunological evolution via capacitance factor C. Many forms of cancer and cellular disease can so be associated with an induced imbalance between mRNA production and utilization.

An inducted frequency energy field then can amplifies unused mRNA, which subsequently reverses its production process in an attempt of reconverting itself into precursor RNA in a form of anti-splicing. Intron free bacteria without DNA therefore cannot absorb anti-splicing and is restricted to the C-factor for its evolutionary pathology.

Both high frequency and low frequency currents for a constant Hall resistance utilize a pentagonal purine quantum geometry in the multi-dimensional hyperspace of the unified field for the propagation of source energy, however.

Low frequency current implies low energy in the mass induced sink-source current $I_{ss} = 2ef_{ss} = 2eE_{ss}/h$ as a monopolar magnetically induced sink-source current , which is constant for all masses M as mass-eigen quantum $m_{ss} = hf_{ss}/c^2$.

For the DNA the two strands of the double helix from source node to receiver node differ in the frequencies f_{Ci} and f_{Li} C-factor and L-factor in a life circuit with monopolar voltage source $V_i = hf_i/e = I_{i.}h/2e^2$ respectively.

The mass-eigen current flows opposite the native self-current $I_i = 2ef_i$ with transformation resonance potentials for frequencies f_{Ci}=5x10^{14} Hz* and f_{Li} = 6x10^{15} Hz*.

(*Continued on Part 3*)