



Science of Freedom

because freedom is the first condition of growth



Nature's Wheelwork Revealed

Axiomatic Derivations From $1+1=2$ to Particle States and Beyond

Prologue: Mankind's Path to Flourishing and Doorway to Freedom

<https://grow.scienceoffreedom.life/pages/mankindharmonization>

<https://grow.scienceoffreedom.life/pages/doorwaytofreedom>

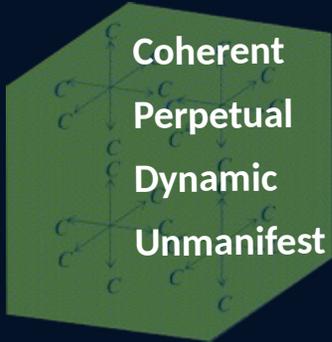
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Start With The Answer – Universal “Holodeck”



Free Space is a “Holodeck” of perpetually oscillating 3-D “voxels.”

One scale-invariant, self-similar universal law of interaction consisting of tri-modal stresses: compression, rebounding shuttle, expansion.



So-Called “Modern” Physics	Sankhya Physics
Luminiferous Ether Dirac Sea or Quantum Foam Quantum Vacuum Plasma	Substratum energetic foundation of all manifestation (coherent, dynamic, perpetual, unmanifest)
Zero Point Energy	Perpetual Harmonic Oscillator
Singularity Black hole	Purusha (Kx) ground state largest coherent unit of cyclic time-period maximum inertia or mass
Cosmological Constant String Infinitesimal, Elemental Quantum (of length, time or instant, inertia, charge) Photon Rest Mass	Moolaprakriti (Mly) root oscillatory coherent state fundamental unit of interaction or unit count elemental unit-period (quantum) of activity ‘real’ point in space or elemental cubic measure minimum standing wave ½ cycle displacement elemental perpetual quantum oscillator elemental holographic unit of activity elemental length, interval, inertia, charge

Start With The Answer – Blackhole and Quark Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2 - 2}{10^2} \right) \left(\frac{10^{1/x}}{2^3 - 1} \right) \right] \right] \left[\left(\frac{2^3 - 1}{10^{x^3}} \right) \right] \left[\left(\frac{10^{x^3}}{2^3 - 1} \right) \right] = 0.91498794 = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\left[\frac{7}{C^1} \right] \right] \left[\frac{C^1}{7} \right]$$

= Purusha Mass Kx
= Quantum or Singularity

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2 - 2}{10^2} \right) \left(\frac{10^{1/x}}{2^3 - 1} \right) \right] \right] \left[\left(\frac{2^3 - 1}{10^{x^3}} \right) \right] \left[\left(\frac{10^2}{10^2 - 2} \right) \right] = 2.20369445 \times 10^{-8} = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\left[\frac{7}{C^1} \right] \right] \left[\frac{RS}{1} \right]$$

= Mahad Coherent Mass Mps
= Planck Mass or Quark domain

Start With The Answer – Hadronic Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left(\frac{1}{10^{x^3}} \right)^3 \right] \left[\frac{1}{\left(\frac{10\sqrt{3}}{2\pi} \right)^3} \right] = 1.67442318 \times 10^{-27} = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\frac{1}{C^3} \right] \left[\frac{1}{Px} \right]$$

= Mahad-Prakriti PM

= Nuclear Quantum Oscillator or Coherent mass of nucleus new to Physics

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left(\frac{1}{10^{x^3}} \right)^3 \right] \left[\left(\frac{1}{\left(\frac{10\sqrt{3}}{2\pi} \right)^3} \right) \right] \left[\frac{(2)+7+\frac{1}{7}}{\left(7+\frac{1}{7} \right) \left(1+\left(\frac{2^{1/3}-1}{7} \right)^2 \right) + (2)} \right] = 1.6726231 \times 10^{-27}$$

= Prakriti -Vikriti Pm

= Expanding Hadron or Proton mass in Physics

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left(\frac{1}{10^{x^3}} \right)^3 \right] \left[\left(\frac{1}{\left(\frac{10\sqrt{3}}{2\pi} \right)^3} \right) \right] \left[\frac{\left[(2)+7+\frac{1}{7} \right] \left[\left(1+\left(\frac{2^{1/3}-1}{7} \right)^2 \right) \right]}{\left(7+\frac{1}{7} \right) \left(1+\left(\frac{2^{1/3}-1}{7} \right)^2 \right) + (2)} \right] = 1.6749286 \times 10^{-27}$$

= Mahad-Prakriti Pn

= Compressive Hadron or Neutron mass in Physics

Start With The Answer – Leptonic Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left[\left(\frac{1}{(10^{x^3})^3} \right) \left(\frac{1}{\left(\frac{10\sqrt{3}}{2\pi} \right)^3} \right) \right] \right] \left[\left(\frac{2^3-1}{7} \right) \left(\frac{2\pi}{10} \right)^2 \right] = 9.11405802 \times 10^{-31}$$

= Mahad Prakriti - Vikriti Mep

= Compressive Lepton mass & harmonic counterpart to Pn new to Physics

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left[\frac{1}{(10^{x^3})^6} \right] \right] \left[\left(\frac{1 - \frac{2}{\sqrt{5}}}{1} \right) \frac{\left(\left((10^{x^3})^{1-x} \right)^7 \right)}{7} \right] = 9.11023372 \times 10^{-31}$$

= Prakriti - Vikriti Me

= Coherent Lepton mass & harmonic counterpart to PM new to Physics

$$Me - \left(\left[Mep - Me \right] \left[\frac{2^{2/3}}{7} \right] \left[\frac{10^2-2}{10^2} \right] \right) = 9.10938382 \times 10^{-31}$$

= Vikriti-Vriti Mee

= Expansive Lepton or Electron mass in Physics

Start With The Answer – Electromagnetic Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\frac{2^3-1}{(10^{x^3})^6} \right] \left[\left(\frac{2\pi 10^{x^3}}{7} \right)^2 \right] \right] = 6.67011384 \times 10^{-34} = \left[\left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\frac{7}{C^6} \right] \left[\left(\frac{2\pi C}{7} \right)^2 \right] \right]$$

= Vriti-Vicaro 7Ne

= Radiating transmigrating quanta or Photon or Planck's Constant h if C => CL

$$\left[\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\frac{1}{(10^{x^3})^6} \right] \left[\left(\frac{2\pi 10^{x^3}}{7} \right)^2 \right] \right] = 9.52873405 \times 10^{-35} = \left[\left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\frac{1}{C^6} \right] \left[\left(\frac{2\pi C}{7} \right)^2 \right] \right]$$

= Vriti - Moolaprakriti Ne

= Radiating transmigrating mass or Neutrino

$$\left[\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\frac{1}{(10^{x^3})^6} \right] \right] = 1.34462022 \times 10^{-51} = \left[\left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\frac{1}{C^6} \right] \right]$$

= Moolaprakriti mass Mly

= Field Quantum Oscillator

Start With The Answer - System of Units Updates

- 1) Moolaprakriti (Mly or my) = root unit = 1 dimensionless smallest interaction cycle count
- 2) The "Second" must change by increasing to account for spectral shift for light on earth

$$\text{Spectral Shift Observer} = Sf = \frac{2}{x^3} + \frac{R_s}{R_o} \dots C_{lightobserver} = 10^{Sf}$$

where R_s = radius light source boundary ... and ... R_o = radius from source to observer

For Earth, R_s for sun = $6.92943E+08$ and R_o for Earth = $1.479086E+11$

$$Sf_{earth} = 8.472136 + \frac{6.92943E+08}{1.479086E+11} = 8.472136 + \frac{1}{213.45}$$

$$\text{So second must change from 1.0 to } 1.010845 = \frac{C_{lightnearth}}{C_{sankhya}} = Fc$$

Physics (name)	Sankhya State	Particle	FCP Fractional Counts per Cycle	CPS Counts of Interaction per Cycle	Sankhya Mass kgs	Sankhya GEV
None	Purusha	Kx	9.149879388E-01	6.804805713E+50	9.149879388E-01	5.114623721E+26
None		Mp	6.535628134E+00	4.860575509E+51	6.535628134E+00	3.653302658E+27
Planck mass	Mahad Prakrithi	Mps	2.203694454E-08	1.638897298E+43	2.203694454E-08	1.231826940E+19
Metric Elasticity of Space	Stress Density of Space	St	5.201318683E-16	3.868243677E+35		0.000000000E+00
Neutron		Pn	1.674927646E-27	1.245651088E+24	1.674927646E-27	9.362554744E-01
None	Prakrithi Saptha	PM	1.674423179E-27	1.245275914E+24	1.674423179E-27	9.359734863E-01
Proton		Pm	1.672621512E-27	1.243936006E+24	1.672621512E-27	9.349663857E-01
None		Mep	9.114058024E-31	6.778165207E+20	9.114058024E-31	5.094600200E-04
None	Mahad Vikrithi	Me	9.110233722E-31	6.775321056E+20	9.110233722E-31	5.092462482E-04
Electron		Mee	9.109383824E-31	6.774688983E+20	9.109383824E-31	5.091987403E-04
Planck constant h	Vikaro	7*NE	6.670113838E-34	4.960593121E+17	6.670113838E-34	3.728477831E-07
Planck const hs sankhya		7*NE/bf	6.626485869E-34	4.928146808E+17	6.626485869E-34	3.704090554E-07
Neutrino	Vikrithi Saptha	NE	9.528734054E-35	7.086561602E+16	9.528734054E-35	5.326396901E-08
Planck Time		Tp	5.696886333E-44	4.236799527E+07	5.696886333E-44	3.184460553E-17
Cosmological Constant	Moolaprakriti	Mly	1.344620225E-51	1.000000000E+00	1.344620225E-51	7.516193608E-25

Start With The Answer - New Universal Constants

$$x = \text{golden mean} = \frac{\sqrt{1^2+2^2}-1}{2}$$

$$k = \text{linear increment to double volume} = \sqrt[3]{2}$$

$$10 = \text{interaction counts per standard cycle} = 1+2+3+4 = \frac{n(n+1)}{2} \text{ for } n=4=2 \times 2=2+2$$

$$Kx = \text{Purusha} = \frac{10^{\frac{1}{x}}}{k^8} \sum_1^{\infty} \left(\frac{1}{2^3}\right)^n \frac{2^3-1}{\sum_1^{\infty} \left(\frac{1}{2^3}\right)^n + (2^3-1)} = \left(\frac{10^{1+x}}{2^3}\right) (\sqrt[3]{2}/2^3-1) \left(\frac{10^2-2}{10^2}\right) = 0.91498793882$$

$$KV = \text{ratio first volume change} = \frac{1}{(k-1)^3} = 56.94762837$$

$$Px = \text{coherent to synchronous interface} = \left(\frac{10\sqrt{(3)}}{2\pi}\right)^3 = 20.947986098$$

$$Bt = \text{ratio volumetric over geometric state} = \frac{KV}{Px} = 2.7185252132$$

$$Rs = \text{decay in infinite time} = \frac{Gm}{7} = \frac{(7+\frac{1}{7})}{7} = \frac{10^2}{(10^2-2)} = \sum_{n=0}^{\infty} \left(\frac{2}{10^2}\right)^n = 1.0204081633$$

$$Cs = \text{substratum axiomatic interactions counts per cycle} = 10^{\frac{2}{x^3}} = 2.965759669219230E+08$$

$$Mly = \text{root oscillatory state} = \text{unit fractional count} = \frac{Kx}{Cs^6} = 1.3446202249E-51$$

Start With The Answer - New Universal Constants (cont'd)

$$Ah = \text{Purusha core acceleration} = \frac{[(1+1)^3-1]}{Mly} = \frac{7}{Mly} = 5.2059309169E+51$$

$$Gm = \text{gyromagnetic volumetric coherent to resonant state} = [(\frac{2^3}{7})-1]+7 = 7.1428571429$$

$$Gmr = \frac{\text{simultaneous cycle}}{\text{sequential cycle}} = \frac{Gm}{2} = \frac{10\ 10}{[7-(-7)]+[7-(-7)]} = 3.5714285714$$

$$Ge = \text{coherent to expansive states} = \frac{7^2}{KxRs\ 2(2\pi)^2} = 0.66478976082$$

$$Tr = \text{coherent to resonant state count ratio over 7 volumes} = [\frac{(2\pi)^3}{2\pi}][\frac{1}{7}] = 5.6397739435$$

$$Tc = \text{sequential transmigration trigger ratio over 2 volumes} = [\frac{(2\pi)^3}{2\pi}][\frac{1}{k-1}] = 151.88618860$$

$$Vc = \text{resonant volumetric compression ratio} = \frac{1}{k-1} = \frac{1}{2^{1/3}-1} = 3.8473221019$$

$$Ve = \text{resonant volumetric expansion ratio} = 2^3-1 = 7$$

$$Tce = \text{volumetric compression-expansion cyclic time} = Vc \times Ve = \frac{7}{k-1} = 26.931254713$$

$$Ke = \text{incremental displacement per volumetric expansion} = \frac{k-1}{7} = 3.7131578556E-02$$

Axiomatically Derived Universal Constants

$$L_p = \text{Planck Length} = \frac{\left[\left(\frac{K_x}{Mly}\right)^{\frac{1}{3}}\right]}{Ah} = 1.6895595727E-35$$

$$T_p = \text{Planck Time} = \frac{Mly Cs}{7} = \frac{L_p}{Cs} = 5.6968863333E-44$$

$$M_p = \text{maximum fractional interactive count} = K_x G_m = 6.5356281344$$

$$M_{ps} = \text{maximum coherent stress density as mass} = M_p / Cs = 2.2036944538E-08$$

$$\text{Planck Mass due to hidden simultaneous state constant } P_x = M_{ps} / \left[1 + \frac{k-1}{P_x}\right] = 2.1766862926E-08$$

$$D_p = \text{Planck Density} = \frac{M_{ps}}{L_p^3} = \left[(Cs^{1+x})k\right]^7 = 4.5691019728E+96$$

$$St = \text{Metric Elasticity of Space} = \text{stress intensity ratio of Space} = \frac{M_{ps}}{T_p} = 3.8682436772E+35$$

$$M_{xe} = \text{max energy per cycle (power)} = \frac{kx}{Mly(Rs-1)} Rs = \frac{M_{ps} Cs^2}{T_p} = St Cs^2 = 3.4024028566E+52$$

$$G_{Sankhya} = \text{density}_{anystate} \times T_{cycleperiodanystate}^2 = \frac{1}{G_{Newton} FC} = 1.4828798346E+10$$

$$G_{Sankhya} = \frac{St}{Cs^3} = \frac{(Cs^x)^2}{k^3} = \frac{M_{ps}}{L_p^2 \times \frac{7}{Mly}} = 1.4828798346E+10$$

$$G_{Sankhya} = \frac{M_{ps}}{T_p Cs^3} = \frac{M_{ps}}{L_p Cs^2} = \frac{M_{ps} T_p^2}{L_p^3} = D_p T_p^2 = 1.4828798346E+10$$

Axiomatically Derived Universal Constants (cont'd)

$$h = \text{Planck's Constant} = TpTc(k-1)Cs = 7Ne = 6.6701138380E-34$$

$$h_{sankhya} = \text{Planck's Constant Sankhya} = Tp(Tc-1)(k-1)Cs = MlyC^2(2\pi)^2/7 = 6.62619863 \times 10^{-34}$$

$$\alpha = \frac{1}{\text{Fine Structure Constant}} = \frac{Cs}{Cs^x} \frac{1}{2\pi} \frac{1}{2} = \frac{Cs^{1-x}}{2\pi+2\pi} = 137.04339643$$

$$\text{Lambshift} = \frac{Gmr Cs}{\left[1 + \frac{1}{(10^2 + Si Rs)}\right]} = 1.05701926 E 9$$

$$\text{Boltzman's Constant} = \frac{\text{change in energy}}{\text{change in volume}} = \text{temperature rise} = \left[\left[\left[\frac{2\pi}{6} + \left[\frac{7}{k-1}\right]^{2-1} + 1\right]2\right]^3\right] = 1.3806580000E-23$$

$$Tk = \text{Centigrade Temperature Scale} = \left([2^3-1]^3 + \left[k + \frac{k}{7^2}\right]\right) \times \frac{1}{k} = 273.25968858$$

$$\text{Compton Wavelength of a PM Proton state} = \frac{(k-1)^2}{Cs^{1+x}} = 1.3227536624E-15$$

$$Si = \text{impedance to stress transmigration in space} = \left[\frac{10^2}{k-1}\right] \left[\frac{10^2-2}{10^2}\right] = \left[\frac{10^2}{k-1}\right] \left[\frac{1}{Rs}\right] = 377.03756598$$

$$Cc = \text{Cs compressive phase due to Si} = CsSi = 1.1182028070E+11$$

$$Ce = \text{Cs expansive phase due to Si} = \frac{Cs}{Si} = 7.8659527241E+05$$

$$e0 = \text{Electric Field Permittivity of Free Space} = \frac{1}{Cc} \frac{1}{Fc} = \frac{1}{Cc} \frac{Cs}{C_{lightearth}} = 8.8469724203E-12$$

$$u0 = \text{Permeability of Free Space} = \frac{1}{Ce} \frac{1}{Fc} = \frac{1}{Ce} \frac{Cs}{C_{lightearth}} = 1.2576619439E-06$$

Axiomatically Derived Universal Constants (cont'd)

$$Crs = \text{change ratios compressive, resonant and expansive states} = \left[\frac{10}{Kv} \right] \left[\sqrt{\frac{2^3}{1 - \left(\frac{2}{\sqrt{5}}\right)}} \right] [k^7] = 7.7036516434$$

$$Rp = \text{PM radial boundary} = \frac{k-1}{C^{1+x}} = 5.0890594006E-15$$

$$MU = \text{Mass of the Universe} = \left[\frac{Rp}{Lp} \right]^3 \left[\frac{Mps}{Crs} \right] = 7.8171199318E+52$$

$$RU = \text{radial count of space} = \left[\frac{Rp^3}{Lp^2} \right] Crs = 5.9933233779E+25$$

$$DD = \text{critical vol density interactive stresses in space} = \left[\frac{Rp}{Rp^3} \right] \left[\frac{Mps}{RU} Crs \right] = \left[\frac{MU}{RU^3} \right] = 3.6311154546E-25$$

$$TT = \text{time cycle of space} = \sqrt{\frac{Gs}{DD}} = \frac{Ru}{Cs} = 2.0208391935E+17 \text{ sec} = 6.40E+09 \text{ yrs}$$

$$ec = \text{Electric Charge} = Fc \left[\frac{1}{2\pi 10^{18}} \right] = Fc \left[\frac{PM P_x}{Mps 10} \right] = Fc \left[\frac{1}{Cs^2 Gm} \right] = \frac{1}{Gs Cs \sqrt{2}} = 1.6088104559E-19$$

$$St = \text{Space stress intensity ratio} = \text{metric elasticity of space} = Gs Cs^3 = 3.8682436772E+35$$

$$St = \text{Maximum sequential mass to maximum expansion time} = \frac{MU}{TT} = 3.8682436772E+35$$

$$St = \text{Energy equivalent of 7 volumes of hidden dark mass} = \frac{Mps}{PMP_x} Cs^2 7 = 3.8682436772E+35$$



Science of Freedom

because freedom is the first condition of growth



Any Questions?

... for example

'What is this Universe? ... From what does it arise? ... Into what does it go?'

How do we 'know' things, any 'thing'? ... What is a 'knowledge system'?

What is 'thinking'? ... What is 'man'? ... What is 'man-kind'?

What is 'space'? ... What is 'real'? ... Any-where is there 'no-thing'?

What is Nature's 'wheel-work'? ... What is Nature's 'power-house'?

What is 'energy'? ... 'activity'? ... 'cycle'? ... 'time'? ... 'mass'? ... 'charge'?

What are the characteristics of an ideal theory of 'Nature's Wheelwork'?

What is 'Sanatana'? ... 'Dharma'? ... What does 'right' look like?

What is 'Sankhya'? ... 'Ve-da'? ... 'Yo-ga'? ... What is the "Secret of Sankhya"?

Outline – Nature’s Wheelwork Revealed

Motivation, Background and Purpose

Thinking Naturally, Logically and Axiomatically

Substratum (aka Aether, vacuum of space, Dirac Sea, ZPE) Essential Properties

Speed of Light

Nuclear Manifestation (polarized Substratum potential)

Universal Substratum Interactions (triple stresses, self-similar, scale-invariance, gravity)

Perpetual Harmonic Oscillator, Dark Energy and Dark Matter

Spherical Stacking, Black Body Energy Densities

Planetary Orbital Dynamics

System of Units Updates

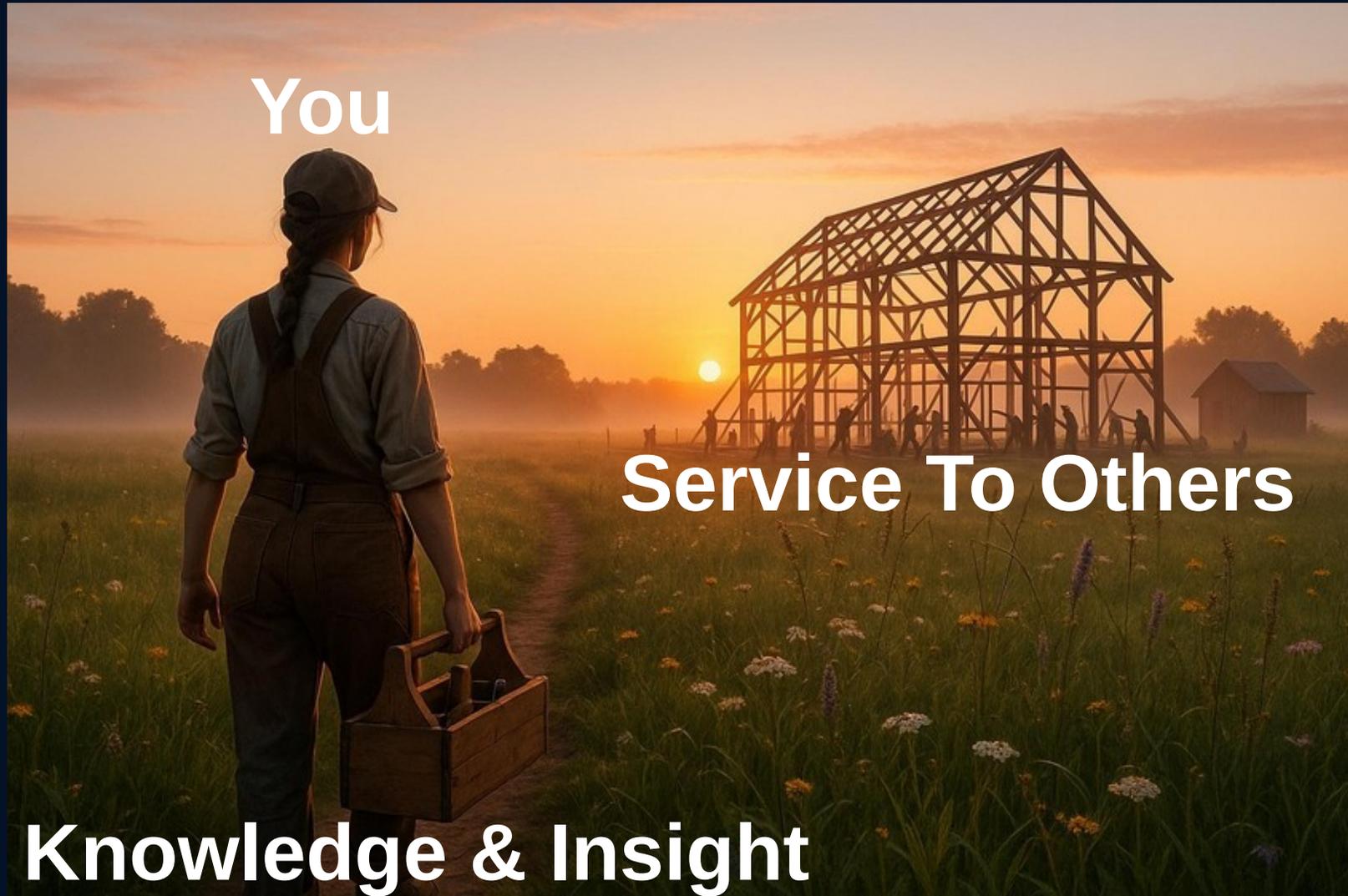
Iron Atom Fe and Magnetism

Impedance, Permittivity and Permeability of Free Space and Frequency-Reactance Nomograph

Salvatore Pais Patents: Superforce and Pais Effect

Power Generation and Propulsion Inventions

Why Is This Important?



You

Service To Others

Knowledge & Insight

(Revealing Nature's Wheelwork)

What We Mean By “Nature’s Wheelwork”



Space (3D cubic volumes)
 Dynamism (cyclic activity)
 Energy (3D cycles)
 Field (3D cycle densities)
 Force
 Acceleration
 Gravity
 Electromagnetism
 Mass
 Charge
 Matter
 Radiation
 Light
 Life
 Consciousness
 Thinking
 Mankind

What Is At Stake For Mankind?

“The question arises as to what are the advantages of making a paradigmatic change on a vital aspect of Physics. The answer is that exposing two thirds of phenomena hidden from human understanding can give a tremendous motivation to humanity to correct its focus and thereby gain the maximum advantage that the substantial continuum of space can offer, especially in the realm of extracting over-unity energy from the limitless dynamic source. The secrets of developing technology using levitation and anti gravity principles, is hidden in the benign sea humanity calls space. The nascent change in the potential state has more to offer man in the way of fundamental knowledge in ESP, genetics, astrology, event forecasting and teleportation than intense radiation or explosion. It opens the doors to infinite freedom and unlimited exploration of the cosmic scene.”

G. Srinivasan, Secret of Sankhya: Acme of Scientific Unification

Civilization “Advancement Engine”

***Ingenuity
Mindset***

10

5

Knowledge
System

Energy Abundance
increases with size
of source and
efficiency of
delivery

***Energy
Abundance***

***Applied
Intelligence***

Ingenious having two meanings:

- cleverly inventive or resourceful
- originally “of free birth, noble in character; open, frank, candid”

**Civilization Advancement Power =
Energy x Intelligence x Ingenuity**

Intelligence sits at the intersection of knowledge, insight and purpose. Applied Intelligence - the ability to exercise intelligence to achieve one’s purposes - increases with greater knowledge, keener intelligence or more focused initiative.

Mankind thrives when we adopt an ingenuity mindset to maximize energy abundance and applied intelligence

The Opportunity and Solution

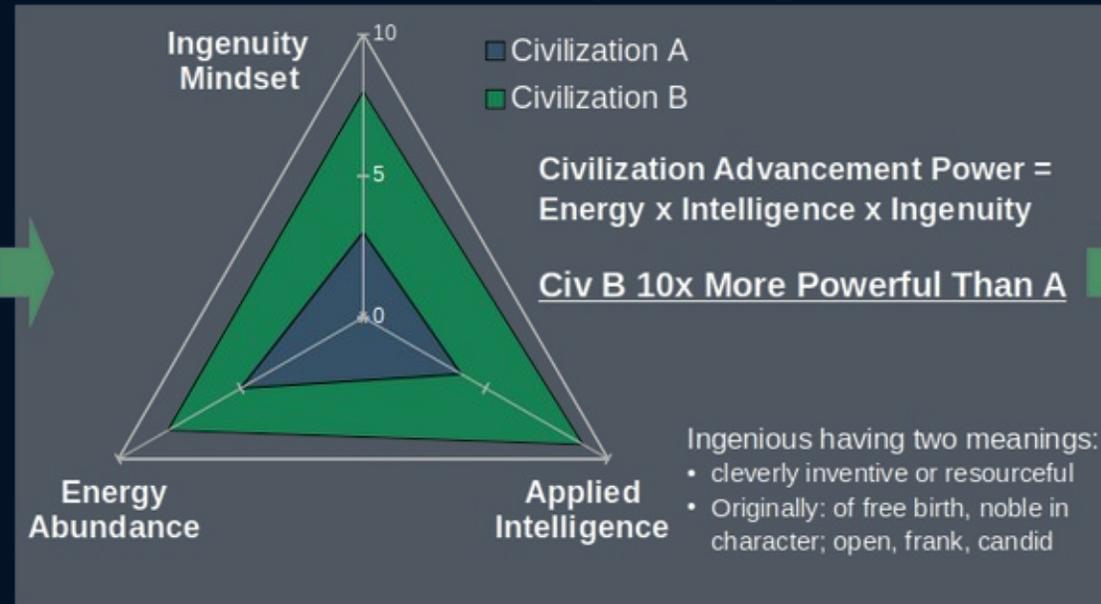
When mankind gains mainstream root access to Nature's Wheelwork*, who will become the pathfinders and stewards guiding transformation?

Emerging Opportunity



"Nature's Wheelwork Root Access" Fuels Golden Age Growth

Civilization's "3-Cylinder Engine"



Responsible Solution



"Discipline & Harmony, Then All the Talents" Is the Responsible Path

* "Root Access to Nature's Wheelwork" = Science of Sankhya, a rediscovered, 32,000-year-old unified field theory that offers complete and verifiable mathematical derivations for the fundamental physics of nature.

"Liberty first of all; then discipline and harmony and then development of all the talents"

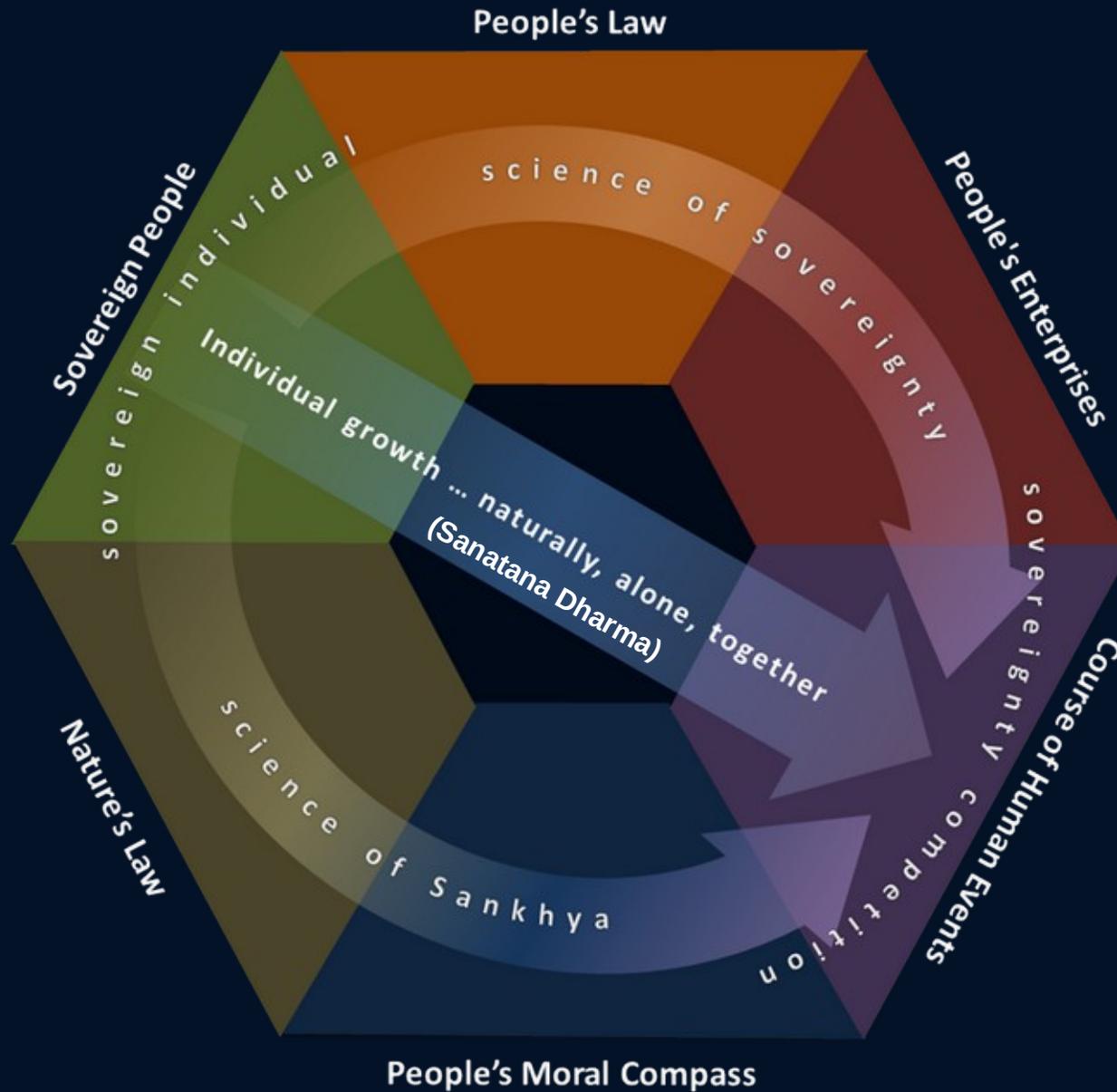
Science of Freedom Operational Model

Six Core Facets of Freedom-Empowered Living

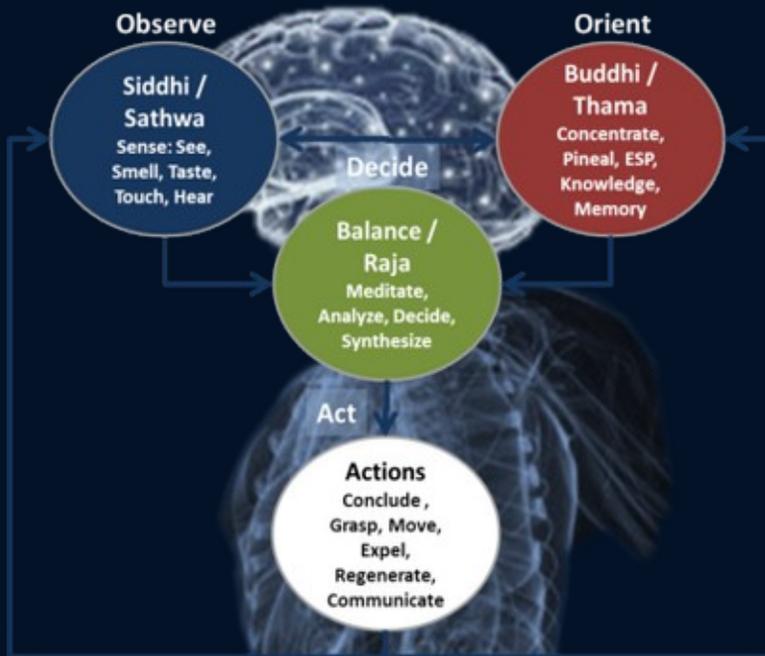


"Naturally, Alone, Together"

Balanced Interactions With Nature and Mankind



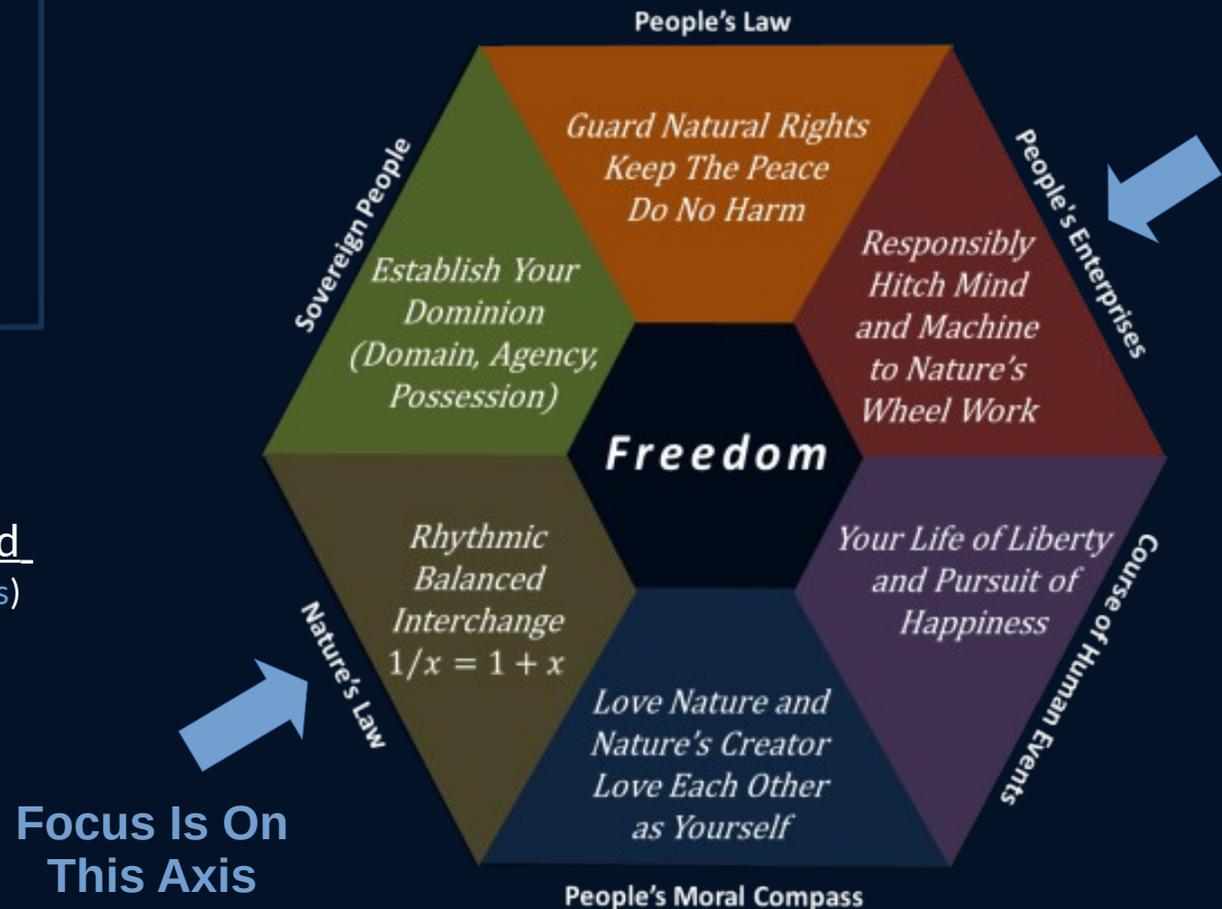
Focus On Truth, Empowerment, Life, Growth



Jagadguru's 5 Elements of Happiness That Drive Mankind
(Sanatana Dharma = pursuit of happiness)

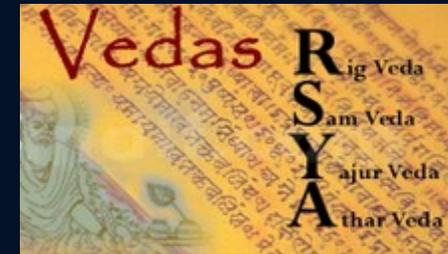
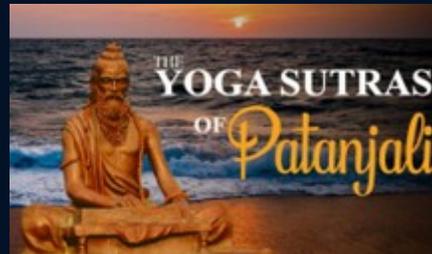
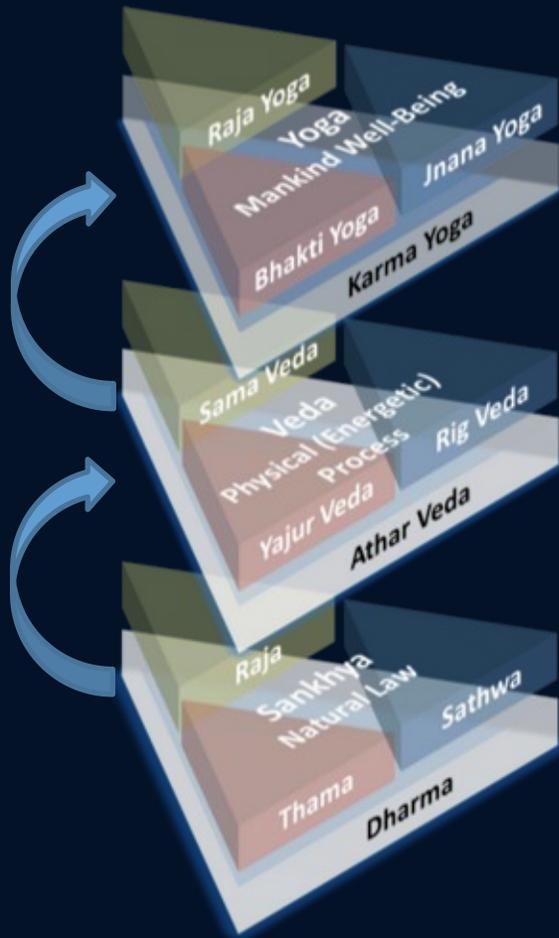
- 1) Immortality (desire to live)
- 2) Knowledge (curiosity)
- 3) Joy (freedom from pain)
- 4) Independence (liberty)
- 5) Suzerainty (sovereignty)

Mission: Seek higher truths and empower living men and woman to assume among the powers of the earth the separate and equal station to which the Laws of Nature and of Nature's God entitle them

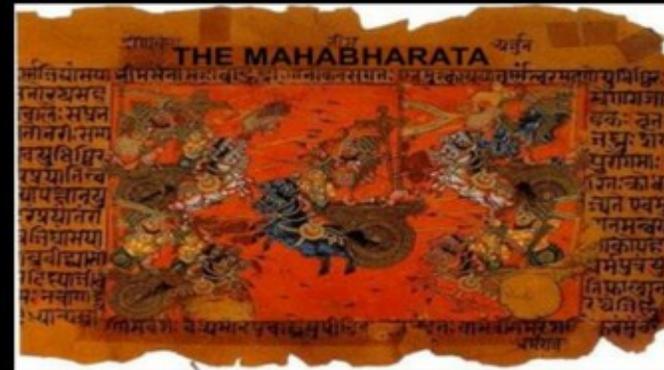


<https://grow.scienceoffreedom.life>

Sankhya Is Foundation of Vedic Science and of Mankind's Well-Being (Sanatana Dharma)



The *Bhagavad Gita* is a part of a larger text called the *Mahabharata*.



At 200,000 verses (1.8 million words), the *Mahabharata* is about ten times longer than Homer's *Illiad* and *Odyssey* combined, and three times the length of the Christian Bible.

A Strategy To Gain Knowledge and Insight

Ingenuity

Community



Knowledge

Insight

“Liberty first of all; then discipline and harmony and then development of all the talents”

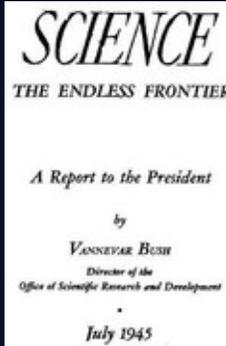
What Happened To “Science-The Endless Frontier” Vision?

<https://archive.org/details/in.ernet.dli.2015.212068>

SCIENCE—THE ENDLESS FRONTIER

“New frontiers of the mind are before us, and if they are pioneered with the same vision, boldness, and drive with which we have waged this war we can create a fuller and more fruitful employment and a fuller and more fruitful life.”—

FRANKLIN D. ROOSEVELT:
November 17, 1944.



SUMMARY OF THE REPORT

SCIENTIFIC PROGRESS IS ESSENTIAL

Progress in the war against disease depends upon a flow of new scientific knowledge. New products, new industries, and more jobs require continuous additions to knowledge of the laws of nature, and the application of that knowledge to practical purposes. Similarly, our defense against aggression demands new knowledge so that we can develop new and improved weapons. This essential, new knowledge can be obtained only through basic scientific research.

Science can be effective in the national welfare only as a member of a team, whether the conditions be peace or war. But without scientific progress no amount of achievement in other directions can insure our health, prosperity, and security as a nation in the modern world

<https://tinyurl.com/FallofVannevarBush>

And for the Public Welfare

One of our hopes is that after the war there will be full employment. To reach that goal the full creative and productive energies of the American people must be released. To create more jobs we must make new and better and cheaper products. We want plenty of new, vigorous enterprises. But new products and processes are not born full-grown. They are founded on new principles and new conceptions which in turn result from basic scientific research. Basic scientific research is scientific capital. Moreover, we cannot any longer depend upon Europe as a major source of this scientific capital. Clearly, more and better scientific research is one essential to the achievement of our goal of full employment.

WE MUST RENEW OUR SCIENTIFIC TALENT

The responsibility for the creation of new scientific knowledge—and for most of its application—rests on that small body of men and women who understand the fundamental laws of nature and are skilled in the techniques of scientific research. We shall have rapid or slow advance on any scientific frontier depending on the number of highly qualified and trained scientists exploring it.

The deficit of science and technology students who, but for the war, would have received bachelor's degrees is about 150,000. It is estimated that the deficit of those obtaining advanced degrees in these fields will amount in 1955 to about 17,000—for it takes at least 6 years from college entry to achieve a doctor's degree or its equivalent in science or engineering. The real ceiling on our productivity of new scientific knowledge and its application in the war against disease, and the development of new products and new industries, is the number of trained scientists available.

“New products, new industries, and more jobs require continuous additions to **knowledge of the laws of nature**, and the application of that knowledge to practical purposes.”

How Do We Explain These Statements?

"We already have the means to travel among the stars, but these technologies are locked up in black projects and it would take an act of God to ever get them out to benefit humanity... ..anything you can imagine we already know how to do."

– Ben Rich, Lockheed Skunkworks

“We now know how to travel to the stars. There is an error in the equations, and we have figured it out, and now know how to travel to the stars and it won’t take a lifetime to do it. It is time to end all the secrecy on this, as it no longer poses a national security threat, and make the technology available for use in the private sector. There are many in the intelligence community who would like to see this stay in the black and not see the light of day. We now have the technology to take ET home.”

- Ben Rich, Lockheed Skunkworks

Ancient Technologies Through Quantum Lens



Āchārya Charaka

Charaka Samhita (c. 400-200 BCE)

- ✦ Holistic medicine integrating physical, mental, spiritual aspects
- ✦ Preventive approach: "Prevention is better than cure"
- ✦ Anatomical precision: 360 bones, heart as controlling center
- ✦ Systematic pharmacology and medicinal herbs

Sankhyan Connection

The **tridosha** system (vata, pitta, kapha) directly corresponds to Srinivasan's three operational modes.



Āchārya Sushruta

Sushruta Samhita (c. 600 BCE)

- ✦ 300+ surgical procedures including rhinoplasty
- ✦ Detailed anatomy: 300+ bones, joints, ligaments, muscles
- ✦ 121 specialized surgical instruments
- ✦ Comprehensive post-operative care protocols

Consciousness-Guided Surgery

Success without modern anesthesia suggests consciousness-based pain management and field understanding.



Āchārya Pingala

Chandas Shastra (3rd century BCE)

- ✦ First known binary number system description
- ✦ Discovery of Fibonacci sequence in Sanskrit prosody
- ✦ Systematic combinatorial mathematics
- ✦ Early incorporation of śūnya (zero) concept

Mathematical Foundation

Binary system reflects the elemental axiom " $1 + 1 = 2$ " fundamental to all Sankhyan mathematics.



Āchārya Aryabhata

Revolutionary Astronomy (5th century CE)

- ✦ Earth's rotation concept
- ✦ Accurate planetary calculations
- ✦ Trigonometric functions
- ✦ Solar and lunar eclipse explanations



Āchārya Brahmagupta

Mathematical Astronomy (7th century CE)

- ✦ Advanced gravitational concepts
- ✦ Zero as number and placeholder
- ✦ Rules for mathematical operations
- ✦ Quadratic equation solutions



Āchārya Varahmihir

Astronomical Excellence (6th century CE)

- ✦ Comprehensive astronomical calculations
- ✦ Precise calendar systems
- ✦ Weather forecasting methods
- ✦ Integration of mathematics and astronomy

Ancient Technologies Through Quantum Lens

Energy-Based Weapons

The **Mahabharata** and **Ramayana** describe sophisticated weapons demonstrating understanding of advanced energy principles consistent with Srinivasan's interpretation of space-matter interactions.

Brahmastra

- ✦ **Immense Destructive Power:** "Blinding explosions" with light as bright as the sun
- ✦ **Thermal Effects:** Extreme heat evaporating water bodies
- ✦ **Radiation-like Aftermath:** Long-term environmental damage
- ✦ **Precision Targeting:** Specific annihilation while sparing surroundings
- ✦ **Mantra Activation:** Sound frequencies for control

Quantum Analysis

Aligns with stress transmission at 10^{18} m/s and energy extraction from space-matter interactions enabling "abundant free energy" systems.

Narayanastra

- ✦ **Escalating Response:** Power increases based on resistance
- ✦ **Multi-projectile System:** Countless simultaneous missiles
- ✦ **Intelligent Targeting:** Spares those who surrender
- ✦ **Self-regulating:** Ceases when conditions are met

Quantum Analysis

Demonstrates adaptive behavior through holographic field interactions and the self-similarity principle where "all laws derive from within the system."

Pushpak Vimana

- ✦ **Thought-Controlled Navigation:** Movement "at the speed of thought"
- ✦ **Expandable Capacity:** Dynamic structural adjustment
- ✦ **Self-Propelled Operation:** Independent energy generation
- ✦ **Multi-dimensional Travel:** Aerial, terrestrial, interdimensional capabilities

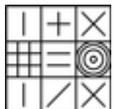
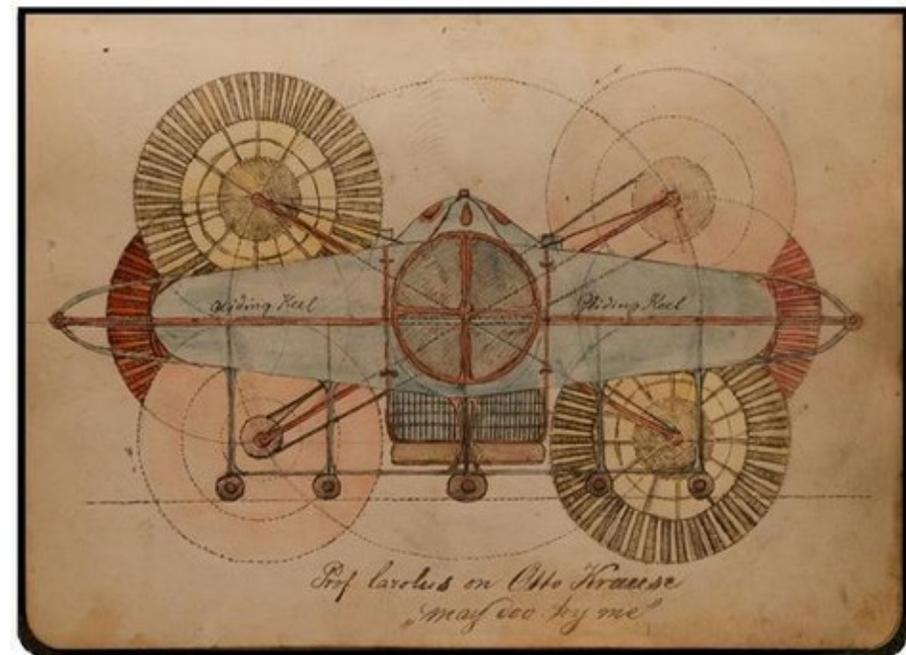
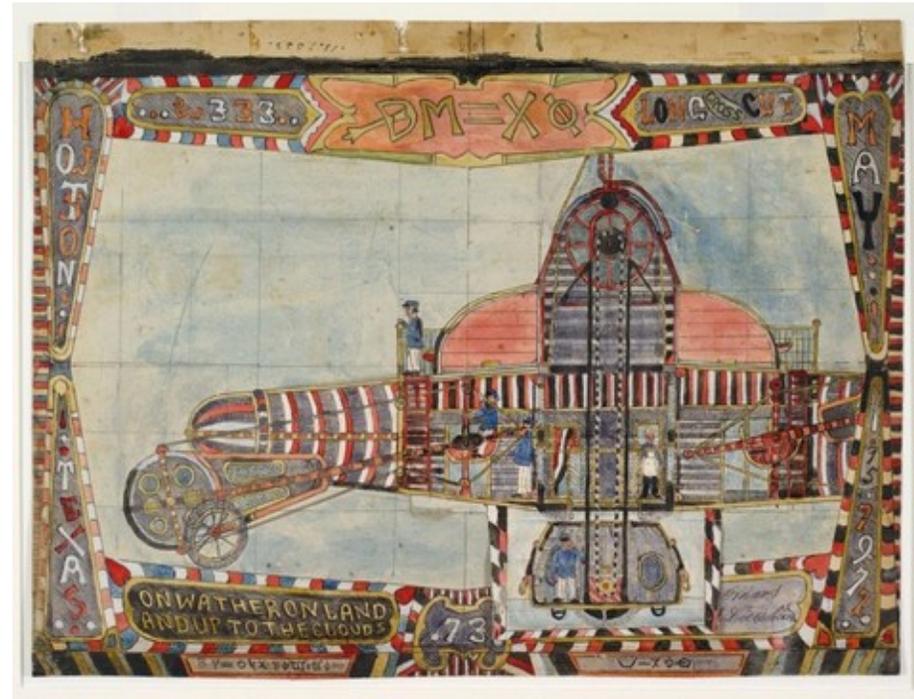
Consciousness-Matter Interface

The mind-controlled operation demonstrates mastery of the consciousness-matter interface that Srinivasan describes. Mercury-based propulsion aligns with energy extraction principles.

Sonora Aero Club Flying Machines circa 1850s ... the original SSP?

The legacy of the Charles A.A. Dellschau drawings is as fascinating as the artwork itself. In the mid-1800s Germany was in the throes of political turmoil due to movements that arose from parties seeking to unite the individual German states into one country. When the King of Prussia rejected the offer to rule over the united German states a revolution resulted. In the midst of this turmoil Dellschau immigrated to Houston, Texas in 1853, perhaps to escape the political conflicts. Although we do not have information on his political involvements in Prussia, it is likely that he was involved with the demonstrations and revolutions of 1848. Many of the revolutionists from the German states, the Forty-Eighters, immigrated to the United States, many of whom entered through the port of entry in Galveston, Texas.

He began a compilation of illustrations that were supposed renderings of actual airship schematics produced by a secret society club known as the Sonora Aero Club. According to Dellschau these illustrations portrayed actual airships, known as Aeros, which were tested in the deserts of Sonora, California during the mid-19th century— the time of the California Gold Rush. **The secret to the success of the Aeros was the NB Gas formula that one of the members had concocted.** Each member designed their own Aero. Dellschau, due to his draftsmanship, was accepted into the club to act as scribe for their designs. Interestingly, the drafts that he provided of the Sonora Aero Club were not drafted during the club's heydays 1854 - 1858, but decades latter in 1898, and twenty-three years thereafter. If the Sonora Aero Club existed were there ever original drafts? They would not have accepted Dellschau to just draft the designs forty years later. It is remarkable that if this Club existed that Dellschau had the memory to recall the mechanics of each Aero. And considering that over the course of twenty-three years he illustrated thousands of Aero depictions it is more reasonable that this great work was a work of great science fiction.



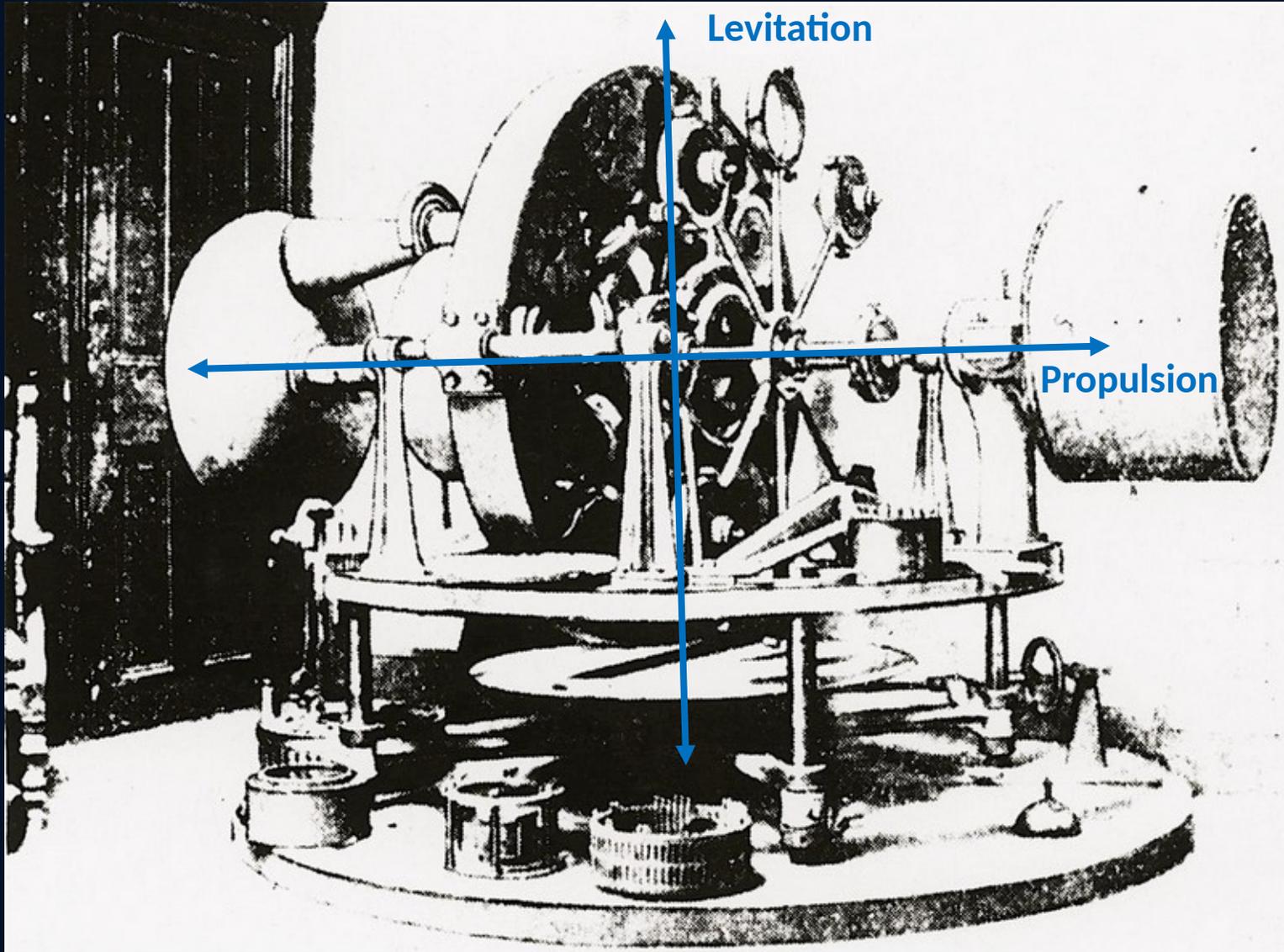
John Keely Air-Ship Motor

circa 1890s

<https://svpwiki.com/Scientific-Basis-and-Build-of-Music>

Recall John Keely's Air-Ship Motor: Levitation & Propulsion via Harmonics

circa 1890



Are US Navy Patents A Limited Disclosure?

United States Patent
Pais

(10) Patent No.: **US 10,144,532 B2**

(45) **Date of Patent: Dec. 4, 2018**

CRAFT USING AN INERTIAL MASS REDUCTION DEVICE

ABSTRACT

A craft using an inertial mass reduction device comprises of an inner resonant cavity wall , an outer resonant cavity , and microwave emitters . The electrically charged outer resonant cavity wall and the electrically insulated inner resonant cavity wall form a resonant cavity . The microwave emitters create high frequency electromagnetic waves throughout the resonant cavity causing the resonant cavity to vibrate in an accelerated mode and create a local polarized vacuum outside the outer resonant cavity wall .

If we can engineer the structure of the local quantum vacuum state, we can engineer the fabric of our reality at the most fundamental level (thus affecting a physical system's inertial and gravitational properties). This realization would greatly advance the fields of aerospace propulsion and power generation.

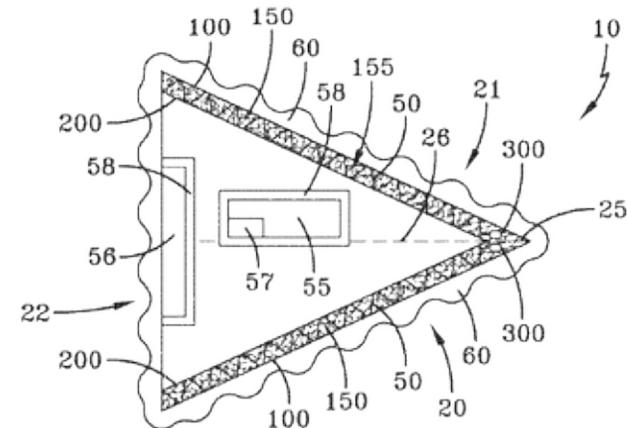


FIG-1

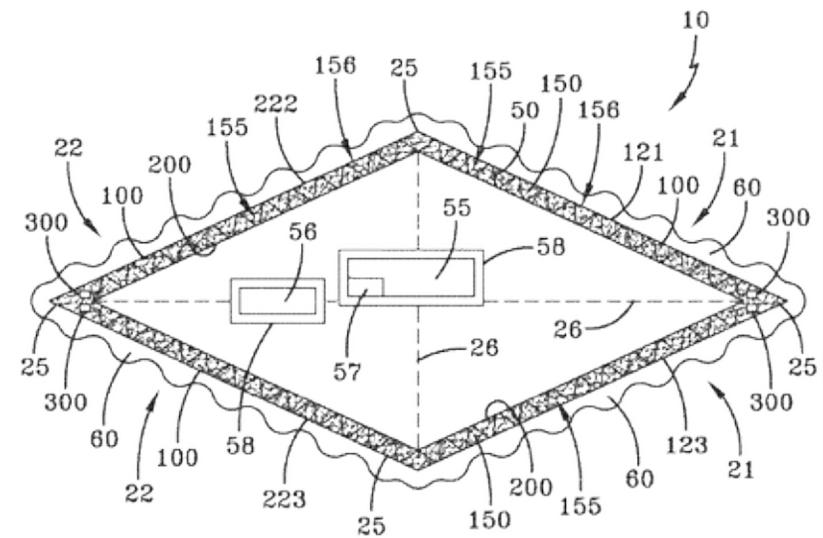


FIG-2

Looking for Science to Explain Phenomenon Since the 1950s?

USAF Electrogravitic Systems S&T

Electrogravitic Systems

Declassified in 1990

13-1-00034-5879

AF WRIGHT AERONAUTICAL
LABORATORIES

TECHNICAL LIBRARY

Wright-Patterson

Air Force Base, Ohio 45433

An examination of electrostatic
motion, dynamic counterbary and
barycentric control.

Prepared by

Gravity Research Group

Aviation Studies (International)
Limited, London

29-31 Cheval Place. Knightsbridge

LONDON S.W. 7 England

Report GRG 013/56

February 1956

“One of the interesting aspects of electrogravitics is that a breakthrough in almost any part of the broad front of general research on the intranuclear processes may be translated into a meaningful advance towards the feasibility of electrogravitics systems. This demands constant monitoring in the most likely areas of the physics of high energy sub-nuclear particles. It is difficult to be overoptimistic about the prospects of gaining so complete a grasp of gravity while the world's physicists are still engaged in a study of fundamental particles - that is to say those that cannot be broken down any more.”

“But hopes in the new science depend on an understanding of the source and matter of gravity. ... Earlier Eddington has listed the fundamental particles as:

- e** The charge of an electron.*
- m** the mass of an electron.*
- M** the mass of a proton.*
- h** Planck's constant*
- c** The velocity of light.*
- G** The constant of gravitation, and*
- L** The cosmological constant”*

*If a science exists now to
axiomatically define ALL of
these from first principles ...
then what?*

“Conclusion 11. Progress in electrogravitics probably awaits a new genius in physics who can find a single equation to tie up all the conflicting observations and theory on the structure and arrangement of forces and the part the high energy particles play in the nucleus. ...”

“THE GOLDEN AGE OF AMERICAN INNOVATION”?

“We seem to have lost focus and vision, to have lowered our sights and let systems and structures and bureaucracies muddle us along.

But we are capable of so much more.

Our technologies permit us to manipulate time and space. They leave distance annihilated, cause things to grow, and improve productivity.

As Vice President Vance said in a recent speech, the **tradition of American innovation** has been one of increasing the capacities of America’s workers, of extending human ability so that more people can do more, and, more meaningful work.

It is the choices of individuals that will make the new American Golden Age possible: the choice of individuals to master the sclerosis of the state, and the choice of individuals to craft new technologies and give themselves to scientific discoveries that will bend time and space, make more with less, and drive us further into the endless frontier.”

1. White House Science and Technology Office, April 2025
<https://www.whitehouse.gov/articles/2025/04/8716/>

Nature's Wheelwork Was Once Better Understood

From "Man's Greatest Achievement – by Nikola Tesla, 1930

'There manifests itself in the fully developed being, Man, a desire mysterious, inscrutable and irresistible: to imitate nature, to create, to work himself the wonders he perceives.... Long ago he [mankind] recognized that all perceptible matter comes from a primary substance, or tenuity beyond conception, filling all space, the Akasha or luminiferous ether, which is acted upon by the life giving Prana or creative force, calling into existence, in never ending cycles all things and phenomena. The primary substance, thrown into infinitesimal whirls of prodigious velocity, becomes gross matter; the force subsiding, the motion ceases and matter disappears, reverting to the primary substance.

https://www.teslasociety.com/tesla_and_swami.htm

Tom Bearden's Insights On The "Vacuum" of Space

"The Tom Bearden Free Energy Collector Principle"

Created on 07-10-01 - JLN Labs - Last update 01-08-03

"Such "asymmetrical regauging" so as to have a resulting free force as well as free energy, is also a means of extracting energy directly from the vacuum. The vacuum is highly active, containing great energy density, so can also be regarded as a very intense scalar potential. For electrical circuits, it can be regarded as a giant voltage, sort of like a "high power line". That is our usual "ambient ground potential", and all other potentials are thus changes to that "ambient ground potential". ... Any potential is also a curvature of spacetime, and that is a change in the local energy density of space time (and the vacuum) a priori."

<http://jnaudin.free.fr/html/tbfrenrg.htm>

Actually Nature's Wheelwork Known For Millennia

“Sankhya is a complete theory that corroborates all modes of theoretical derivation, every type of experimental finding & observational experience that forms an element of physical reality, including extra sensory, psychokinetic & undetectable phenomena caused by gravitational interactions. It is a holistic and holographic theory.”

Gopalakrishnan Srinivasan, “Abstract of Sankhya Theory”

Laws of Nature

**Sankhya, a Rediscovered Ancient Science
(32,000+ years old)**

Sankhya: “logic of counting” in Sanskrit

“Axiomatic Concepts

Sankhya theoretical logic is based on axioms. The elemental axiom, as one plus one equals two is iteratively progressed to its limits, dictated by combinatorial mathematical principles, to cover the entire gamut of phenomena in the universe.”

Secret Of Sankhya: Acme Of Scientific Unification pg 65
Gopalakrishnan Srinivasan

Secret Of Sankhya: Acme Of Scientific Unification.

Secret Of Sankhya: Acme Of Scientific Unification

By G. Srinivasan

Transliterated From

The Sankhya Karika

By Ishwara Krishna

Sankhya Is A Mnemonic For Sa=5 And Kha=2

Sankhya [5 2 scale-invariant universal interaction] Karika [verse] = Universe

“Sankhya Karika derived by Kapillamuni, formed the foundation of the Bhagavadgita. It is the most outstanding scientific theory of manifestation derived through axiomatic numerical principles, as a complete and precise theoretical framework, unchangeable for all times.

Starting with the very first title Sankhya, Kapillamuni had coded it most powerfully as a numerical acronym to form the mnemonic that contained the entire numerical solution to the phenomena of complete manifestation in the Universe, following the principles codified by Saunakamuni in the Pratisakhya, during the Punarvasu period, 32000 years back, as follows:”

SANKHYA as SA = 5 and KHA = 2 (mnemonic)		
SWABHAVA	ABHAVA	VIKARO
THAMA (Coherent)	RAJA (Resonant)	SATHVA (Harmonics)
52 Brahmanda	1+1 = 2	1 – 52 = - 51 Moolaprakriti
Mass of Universe 7.82 e+52		Moolaprakriti mass 1.344 e - 51

Authentic Transliteration

“The reasons for the failure, of previous translators, to realise Sankhya’s scientific base, lay in the interpretation of the very first word in the first Suthra. Dhu: kha was translated by all as pain but the contextual reference to the three Guna forces (vector-tensor states or a taut bowstring in Sanskrit) compelled one to read the real meaning as stress or interactive stress. Stress meant that there was a lack of freedom to attain a balanced, equalised or comfortable state.

The correct translation exposed a train of axiomatic principles that was truly outstanding. For not only every important constant in physics was derivable from a single axiom but it also extended the horizon of physics and cosmology tremendously, literally and figuratively. Sankhya provided the axiomatic base science had been looking for.”

Gopalakrishnan Srinivasan, Secret of Sankhya

(who decoded the ancient science over the past three decades)

<https://web.archive.org/web/20220723144524/http://www.kapillavastu.com>



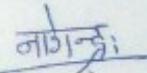
स्वामी विवेकानन्द योग-अनुसन्धान-संस्थानम्
Swami Vivekananda Yoga Anusandhāna Samsthānam

(Declared as Deemed-to-be University under Section 3 of the UGC Act, 1956)
Eknath Bhavan, # 19, Gavipuram Circle, Kempegowda Nagar, Bangalore - 560 019
Ph: 080 - 2661 2669, Telefax: 080 - 2660 8645
E-mail: svyasa@svyasa.edu.in Website: www.svyasa.edu.in

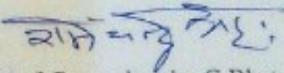
Date: 03 November 2015

CERTIFICATE

This is to certify that the Sankhya Karika book being used by Mr G Srinivasan for his research has been validated by a team of experts set up for the purpose. Hence we declare that the book titled "THE SECRET OF SANKHYA - ACME OF SCIENTIFIC UNIFICATION" used is authentic and traditionally approved.


Dr. H R Nagendra
Chancellor
S-VYASA Yoga University




Prof. Ramachandra G Bhat
Vice Chancellor
S-VYASA Yoga University



- Committee Members:
1. Dr. H R Nagendra
 2. Prof. Ramachandra G bhat
 3. Dr. M K Sridhar
 4. Dr. Mahabaleshvar S Bhat
 5. Dr. Tilak M Rao

Re-Discovery Tipping Point

“The present writer crossed the barrier of disbelief due to a fortunate set of events. Decoding the very first Sloka of the Rigveda, correctly, yielded a novel 'energy extraction principle'. It led to inventing an unusual electric motor that violated known electromagnetic principles (see details presented below). Similarly, the first Sloka of the Atharvaveda yielded, by decoding correctly, a profound energy principal. It led to the fundamentals of quantum physics and the very foundation for a holographic phenomenon. It gave a decisive clue to the source of coherent energy in space.”

Gopalakrishnan Srinivasan, Secret of Sankhya

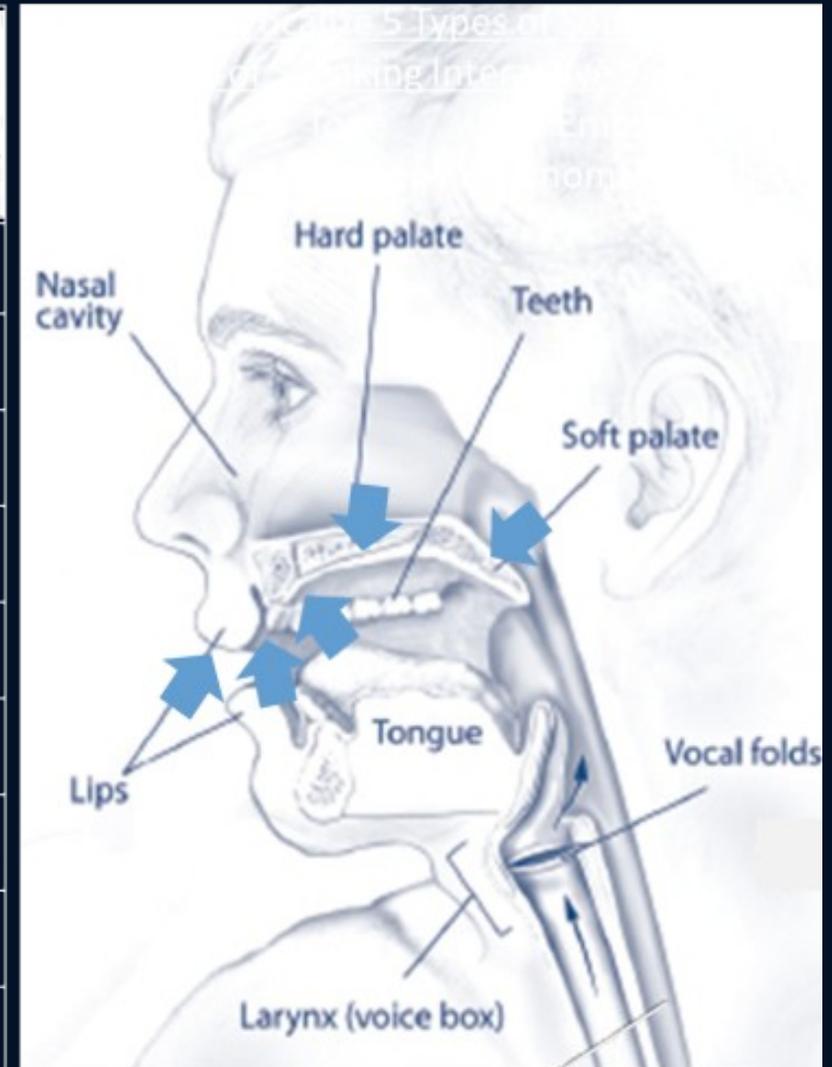
(who decoded the ancient science over the past four decades)

<https://web.archive.org/web/20220723144524/http://www.kapillavastu.com>

Sankhya, An Encoded Oral Tradition

“Sanskrit means a refined code. ‘Sama’ means equalised and ‘krit’ means cut, clipped, divided, pulsed or in other words a code.” G. Srinivasan, Sanskrit.pdf

Sanskrit Encoding Maps to Human's Distinct Vocal Abilities					
Tone/Class	Guttural (Thamasic)	Palatal	Alveolar (Rajasic)	Dental	Labial (Sathwic)
Silent + Hard	Ka 1	Cha 6	t'Ta 1	Tha 6	Pa 1
Silent + Aspirated	Kha 2	Chha 7	t'Tha 2	Thha 7	Pha 2
Voiced + Hard	Ga 3	Ja 8	d'Da 3	Dha 8	Ba 3
Voiced + Aspirated	Gha 4	Jha 9	d'Dha 4	Dhha 9	Bha 4
Nasal	n'Ga 5	n'Ja 5	n'Na 5	Na 5	Ma 5
Semi-Vowel	Ya 1	Ra 2	La 3	Va 4	
Sibilant	Ha 8	Y'sha 7	Sha 6	Sa 5	
Ending	Ksha 0				iM 5



Sankhya, A Naturally Insightful Science

Rig Veda 1st Sloka in Sanskrit with its equivalent English and numerical code meanings:

Agnimile purohitam yajnasya devamritvajam hotaram ratnadhatam.

Agnimile Through expansion (by heat) Purohitam Theorising (by Pundits)

Yajnasya Triggering (Sacrifice triggers nature to act)

Devamritvajam Substratum of space (foundation of natural phenomena)

Hotaram Extraction of (collecting the result) Ratnadhatam Free energy (gift of the highest order)

"By triggering the expansive qualities of the fundamental substratum abundant free energy can be obtained"

Ag ni mi le pu ro hi th'm ya jna as ya dhe va mri th va j'm ho tha ram ra thna dha th ma'm

3 5 5 3 1 2 8 6 1 8 5 1 8 4 5 6 4 8 8 6 2 2 6 9 6 5

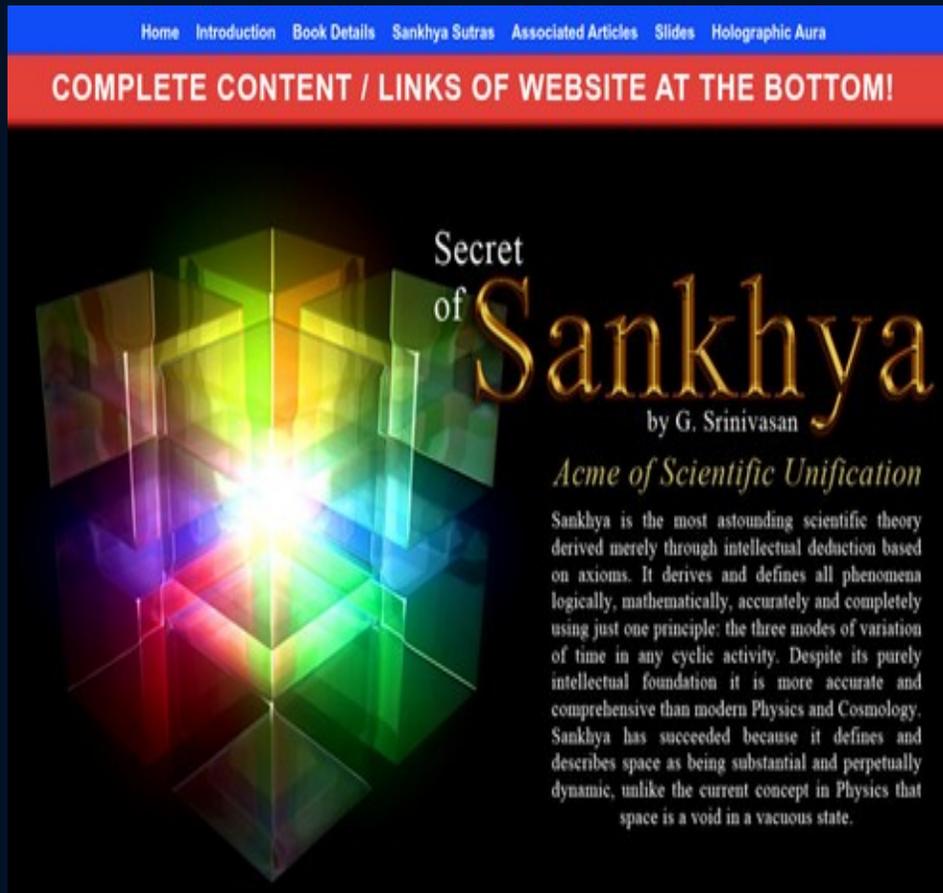
"The 26 digit number value decoded from the original Sanskrit code is '35531286185134564886222865'. It represents the numerical value of the volumetric rate of interactive stresses radiated as light in cubic yards per unit time of one cycle."

Sankhya, Axiomatic Laws Called Dharma

“To appreciate the sheer ingenuity involved in creating this information transfer process one must realise it targeted three groups simultaneously. While Sankhyayoga (Sankhya) or the theory of counting as Jnanayoga focussed on the rational intellectual, the Bhagavadgita provided the philosophic meaning through a pedagogic dialogue between the personalities of Sri Krishna and Arjuna as Bhaktiyoga. And finally at the lay public through the most vibrant and unforgettable setting of a battlefield background with the possibility of dramatising every event in the manifestation process as Karmayoga. It was not a religion but an axiomatic science that practised its laws holistically and ritually which eventually gained a religious equation. It was an elite concept of practising axiomatic laws called Dharma. The theory based entirely on axioms had eternal validity. For one cannot disprove an axiom.”

From G. Srinivasan's WorldAffairs_.pdf

What Is “The Secret of Sankhya?”



<https://kapillavastu.in/>

“Sankhya is the most astounding scientific theory derived merely through intellectual deduction based on axioms. It derives and defines all phenomena logically, mathematically, accurately and completely using just one principle: the three modes of variation of time in any cyclic activity. Despite its purely intellectual foundation it is more accurate and comprehensive than modern Physics and Cosmology. Sankhya has succeeded because it defines and describes space as being substantial and perpetually dynamic, unlike the current concept in Physics that treats it as a void in a vacuous state.”

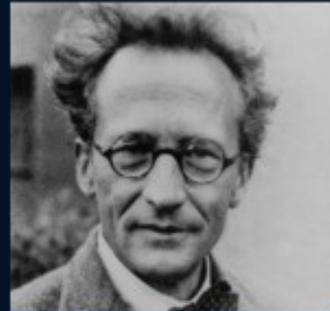
<https://kapillavastu.in/uploads/SANKHYAABSTRACT.PDF>

Nature is not solving differential equations. Nature is counting interactions. The mathematics we use is our attempt to describe the counting process. Sankhya gives us the exact counting rules Nature uses.

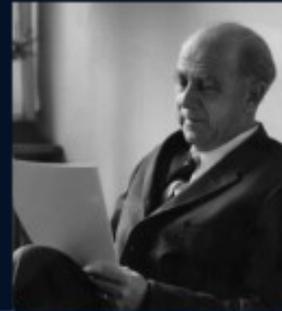
Vedic Science Has Been Influential For Centuries



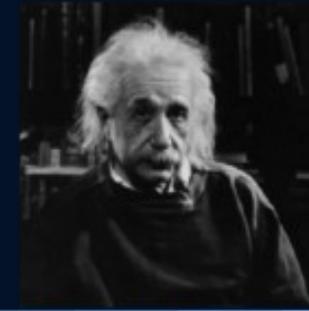
"I go into the Upanishads to ask questions."
Niels Bohr,
Founder Quantum Physics



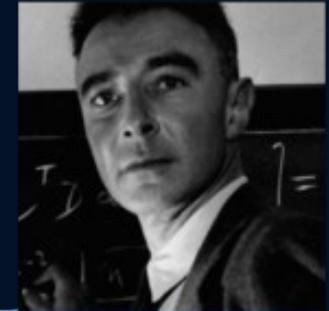
"The unity and continuity of Vedanta are reflected in the unity and continuity of wave mechanics. This is entirely consistent with the Vedanta concept of All in One."
Erwin Schrodinger, Founder Quantum Physics and Nobel Prize, Wave Function



"Quantum theory will not look ridiculous to people who have read Vedanta."
Werner Heisenberg,
Quantum Physics Pioneer
Uncertainty Principle



"When I read the Bhagavadgita and reflect about how God created this universe everything else seems so superfluous."
Albert Einstein,
Founder Theory of Relativity



"The Vedas are the greatest privilege of this century."
Robert Oppenheimer,
Theoretical Physicist and
Father of the Atomic Bomb

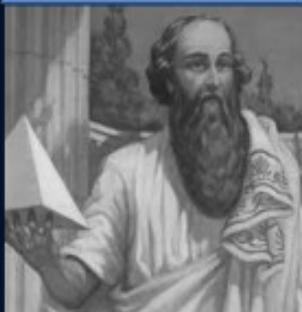
Vedic Science Influence Over the Ages

500s BCE

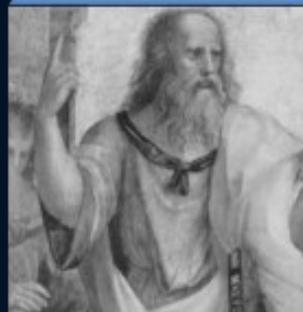
400s BCE

1700s

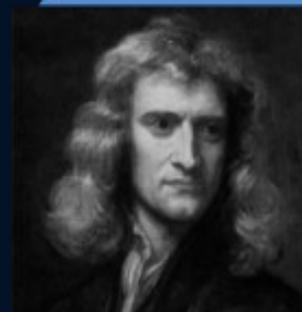
Late 1800s to Mid 1900s



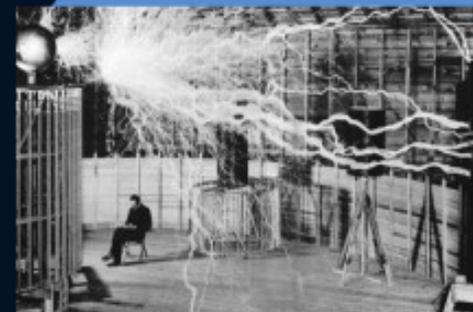
Taught Sankhyan principles that all things are number and there is unity in multiplicity,
Pythagoras,
Father of Philosophy,
Mathematician, and Scientist



Influenced by Vyasa, Kapila, Vrihaspati, Sumati, Pythagoras, Plato,
Philosopher, Founder of 1st Western Academy In Athens



"The changing of bodies into light, and light into bodies, is very conformable to the course of Nature, which seems delighted with transmutations." Drew work in calculus directly from Vedas, Surya Sidhanta and Madhava,
Sir Isaac Newton,
Father of Classical Mechanics



After attending Swami Vivekananda lectures, stated: "If you want to find the secrets of the universe, think in terms of energy, frequency and vibration." and "Our senses enable us to perceive only a minute portion of the outside world."
Nikola Tesla,
Inventor of AC Power, Wireless Communications and Power Transmission

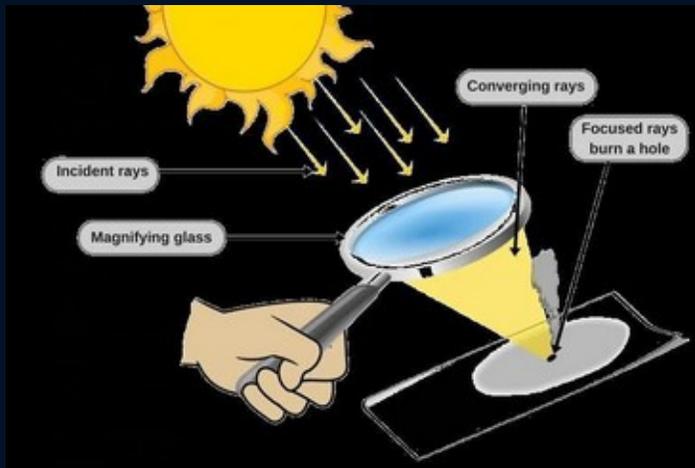


Referring to the Rig Veda "...not only were these machines [vimanas] powered with levitational energy, but that the forces of implosion and levitation were also known to the high priests of Atlantis."
Viktor Schauberger, Naturalist and Inventor of Repulsine, Implosion Motor, Flying Saucer

Nature's Universal Activity Model: The Vedic Process

Ve-da or “weave ‘That’* which exists” *aka substratum or Aether

Nature’s four-step universal process of interaction, physical or mental, at any scale



RIG VEDA

Collection & Organization of Resources

Gathering input energy and intelligence - like collecting sun's rays

Dharana

YAJUR VEDA

Focusing & Structuring

Applying constraints to direct resources - like a magnifying glass

Dhyana

SAMA VEDA

Triggering & Synchronization

Timing and harmonizing to create equivalent conditions

Samadhi

ATHARVA VEDA

Obtaining Results

Extracting output from the process - like ignition/combustion

Samyama

Sankhya, A Science of Energy, Consciousness and Life

Additional Rig Veda Slokas #'s 2 through 5

2: “EXPANSION: IT IS THE FUNDAMENTAL CAUSE OF PROVIDING THE BASIC LOGICAL THINKING PROCESS IN THE MIND BY CREATING NEW or VARIED FORMS or THOUGHTS THAT PROVIDE CREATIVE SOLUTIONS.”

3: “A CONTINUOUS AND CONSISTENT EFFORT AT MAINTAINING THE EXPANSIVE QUALITIES (OF SPACE OR FUNDAMENTAL MATTER) BY TRIGGERING IT WITH AN INPUT OF ENERGY IN FLASHES ONLY, CAN PROGRESSIVELY YIELD EXTRAORDINARY RESULTS OF INCREMENTAL POWER BEYOND & OVER THE INPUT”

4: “THE PROPAGATION OF ENERGY THROUGH TRIGGERING EXPANSION OF SPACE IS SELF REGENERATIVE AND THE EXPANSION PROCESS ITSELF TRIGGERS THE CORE TO MULTIPLY OR INCREASE ITS CONTENTS ADEQUATELY ENOUGH TO RADIATE IT UNIVERSALLY”

5: “THROUGH EXPANSIVE TRIGGERING OF COHERENT SYNCHRONISED INTERACTIVE STATES LEADS TO AN EXPONENTIAL CREATION OF A VARIETY OF OSCILLATORY AND VIBRATORY FORMS THAT SUPERPOSE OR CONDENSE TO THE SOLID OR REAL OR MANIFEST STATE OF MATTER , ALL OF WHICH ARE GENERATED FROM NATURES OWN INNER POTENTIAL THROUGH AND BY ITS AXIOMATIC LAWS THAT UNIFY ALL LAWS OF MANIFESTATION (VEDIC SCIENCE)”

Sankhya, A Science of Energy, Consciousness and Life

Additional Rig Veda Slokas #'s 6 through 9

6: "PERFECT EQUILIBRIUM TO THE POINT OF SATURATION(WITH THE FUNDAMENTAL FIELD) IS ACHIEVED BY DILIGENT EFFORT TO TOTALLY GIVE UP, TO THE POINT OF BECOMING DEPLETED, ALL FORMS OF SELF ACTIVITY, BY A PROCESS OF SELF INDUCED EXPANSION OF THE WHOLE, PART, LIMB OR ORGAN IN A STATE OF TOTAL CONTENTMENT"

7: "USING THE PROCESS OF SELF-EXPANSION, THROUGH A SELF MOTIVATED DESIRE TO GIVE-IN OR SURRENDER (TO THE FIELD) THE GRADUAL AND CONSISTENT DISPLACEMENT OF DEFECTS AND DEFICIENCIES, CONNECTED WITH THE THINKING PROCESS, IS CARRIED OUT BY SATURATION (BY THE FIELD)"

8: "TOTAL KNOWLEDGE OR UNAMBIGUOUS OBJECTIVE UNDERSTANDING IS ACHIEVED WHEN THE HOLISTIC THINKING PROCESS IS CARRIED OUT AT THE SUBTLEST LEVEL OF DISCRIMINATION BY ONES OWN INNER POTENTIAL"

9: "THE CONSEQUENCE, OF NOT FOLLOWING THE PRINCIPLES EXPOUNDED, IS: FROM GENERATION TO GENERATION SUCH HUMAN BEINGS WILL EXIST ONLY AS STUDENTS OR LEARNERS ,WITHOUT BEING ABLE TO UNDERSTAND AND MASTER THE COSMIC KNOWLEDGE; AND FURTHER, THE CONSEQUENCE OF NOT FOLLOWING THE PREVIOUS PRINCIPLES COMPOUNDED WITH THE NON RECOGNITION OF THE HUMAN SELF (AS AN ENTITY OF SPECIAL IMPORTANCE): CAN ONLY LEAD TO DISSOLUTION, DEGRADATION OR DESTRUCTION"

Clarity of Thought For Mankind

“Sankhya teaches man how to think. ...

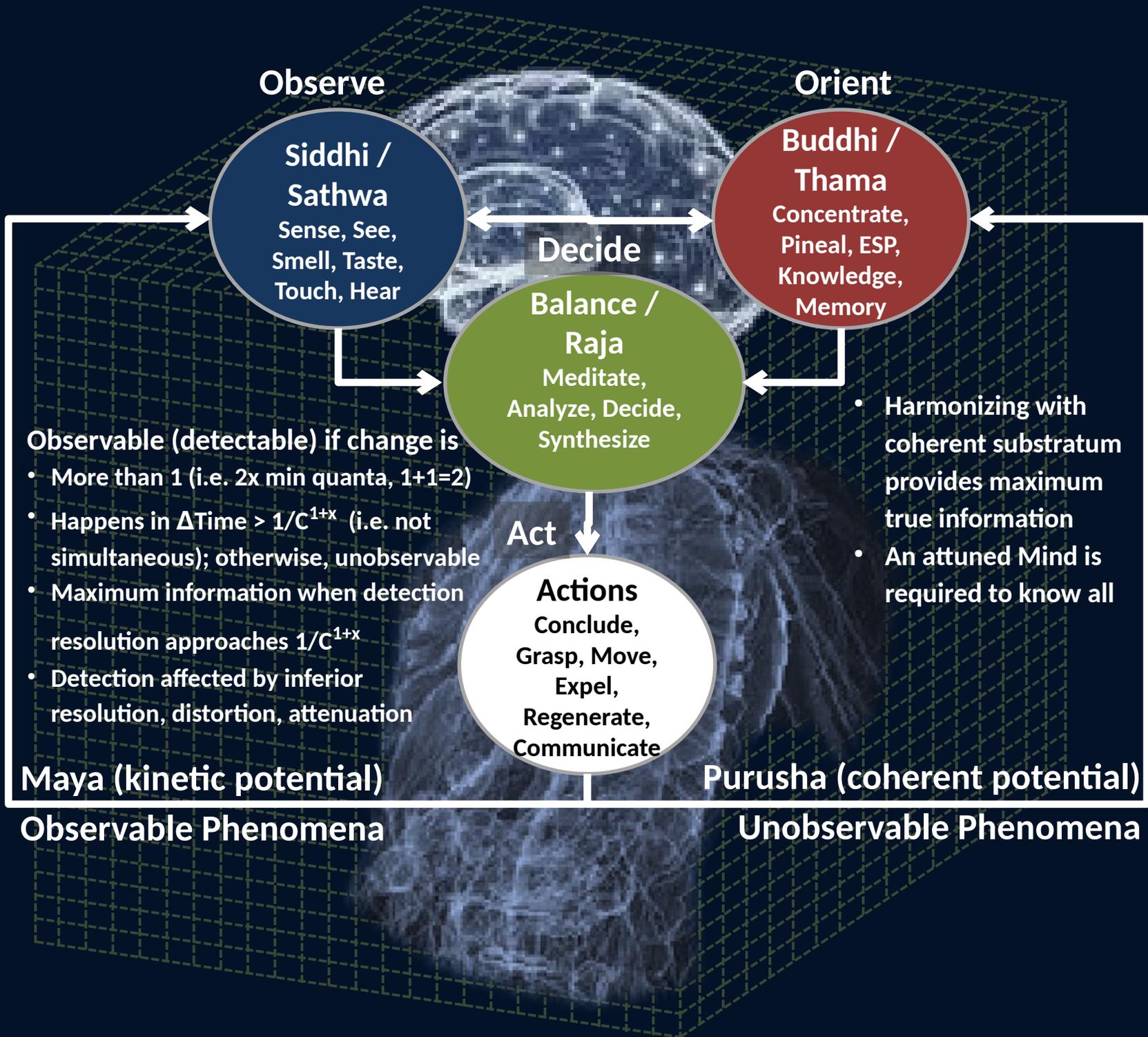
Nature has its own laws and man has to learn them. ...

Man has to learn how to think as Nature has intended for that is his real and innate strength.”

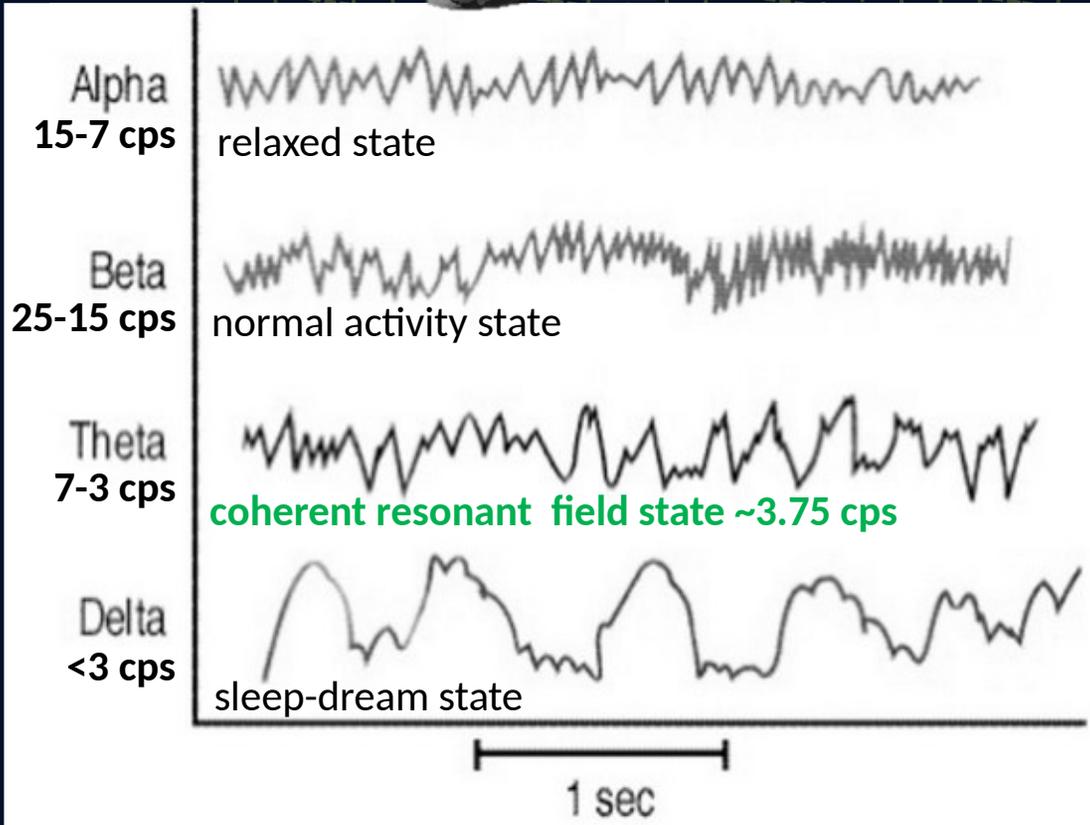
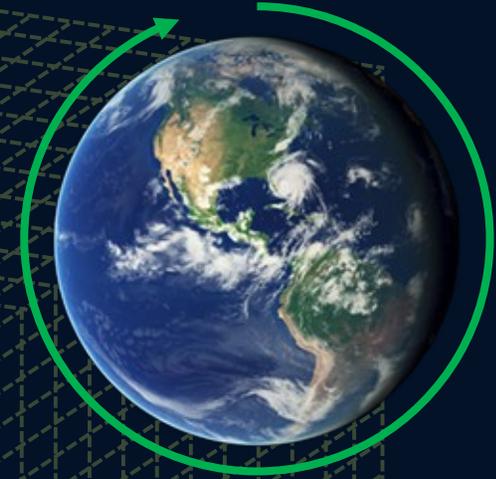
“mano: mind, mentality [sanskrit meaning]”

G. Srinivasan, Secret of Sankhya: Acme of Scientific Unification

Also see <https://vedasandsanskrit.com/2018/10/10/man-the-thinking-being/>



relaxed state



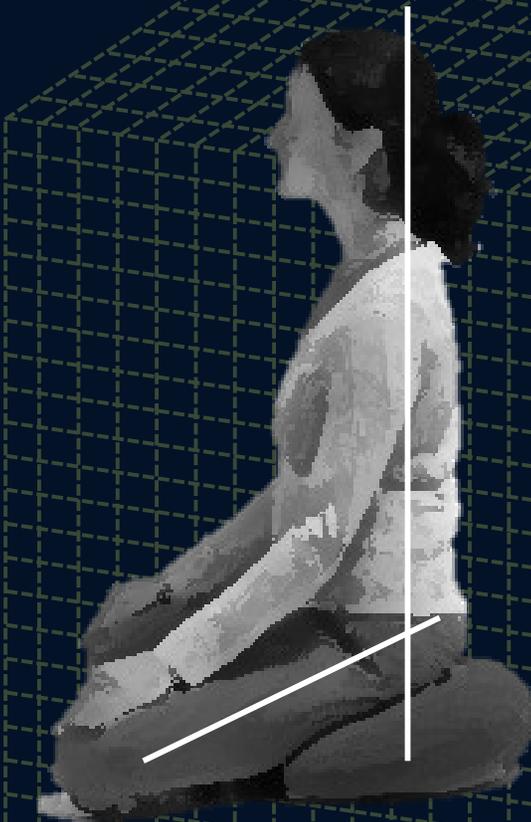
Circumference_{earth} = 40,075,000 m
 Speed of Light_{earth} = 299,792,458 m/sec

Mean Wave Number
 = (Speed of Light / Circumference)/2
 7.5/2 = 3.75 displacements/sec
 Theta Brain Wave frequency

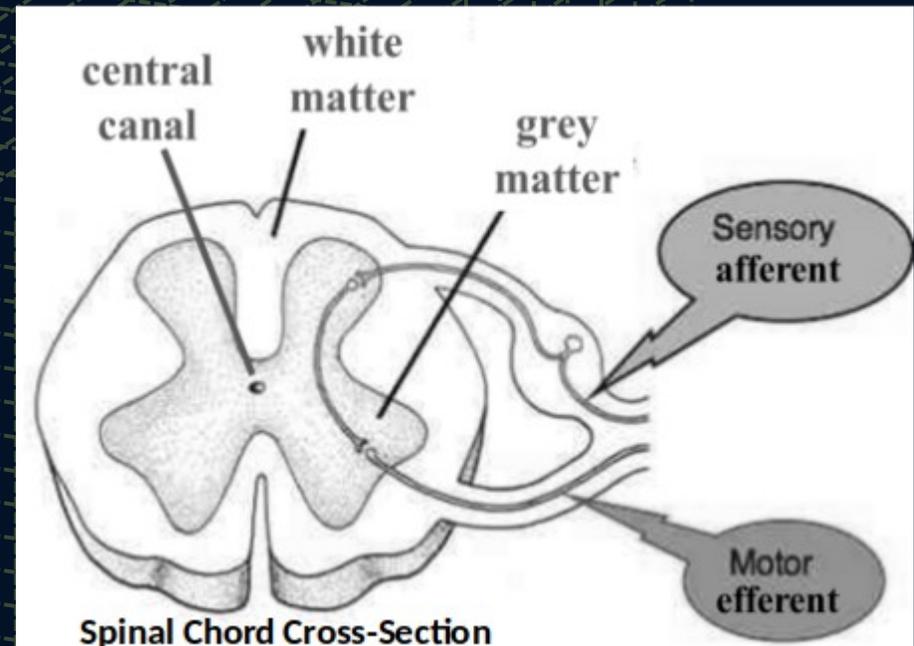
Corresponds to Perpetual Harmonic
 Oscillator Gyromagnetic State 3.57

Siddhi Process Taps Nature's Wheelwork

Siddhi means “analysis of logical stream of information in a simultaneous mode” in Sanskrit



1. Submit to the resonant field in coherent space
2. The seating posture provides the potentially intense and swift way (to meditation)
3. The seating posture must be steady and comfortable



“We (and all other things too) are always immersed in this resonant sea of vibrations. If we want to absorb this energy we must reverse our state and reach the same coherent or passive level. ... The Siddhi states ends in 21 minutes.”

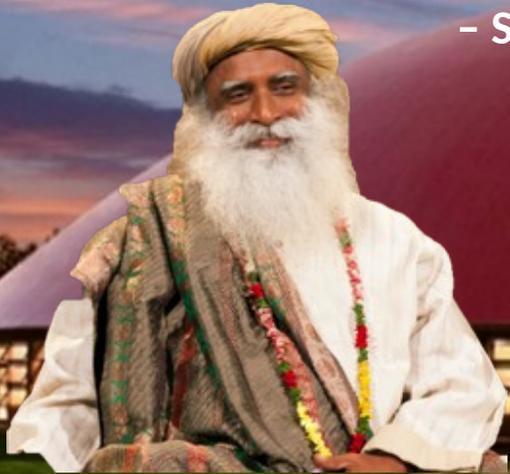
Siddhi Process Is A Technology For Wellbeing

As there is a science and technology to create external wellbeing, there is a whole dimension of science and technology for inner wellbeing.

- Sadhguru

The greatest thing that you can do in life is to live to your peak and to set an example that there is a way to live beyond all limitations.

- Sadhguru



Inner Engineering is neither a religion, nor a philosophy or dogma. It is a technology for wellbeing. One does not have to believe or disbelieve, just have to learn to use. Technology will produce results irrespective of who you are.

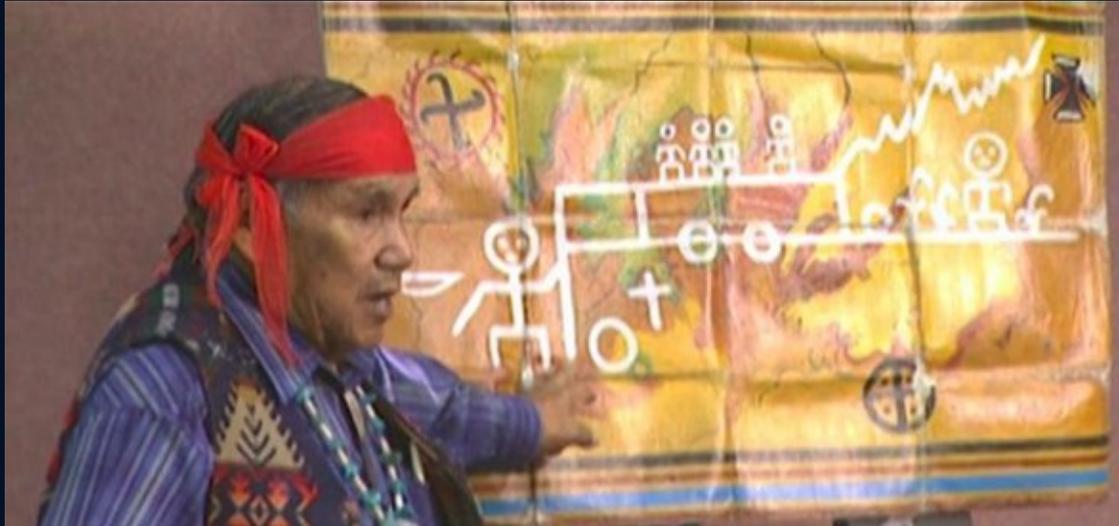
- Sadhguru

Rig Veda Sloka #9 – Prophetic Warning To Mankind

9: “THE CONSEQUENCE, OF NOT FOLLOWING THE PRINCIPLES EXPOUNDED, IS: FROM GENERATION TO GENERATION SUCH HUMAN BEINGS WILL EXIST ONLY AS STUDENTS OR LEARNERS, WITHOUT BEING ABLE TO UNDERSTAND AND MASTER THE COSMIC KNOWLEDGE; AND FURTHER, THE CONSEQUENCE OF NOT FOLLOWING THE PREVIOUS PRINCIPLES COMPOUNDED WITH THE NON RECOGNITION OF THE HUMAN SELF (AS AN ENTITY OF SPECIAL IMPORTANCE) CAN ONLY LEAD TO DISSOLUTION, DEGRADATION OR DESTRUCTION”

insights into Sanatana Dharma or the “eternal right way”

Hopi Prophecy Rock – Prophetic Warning To Mankind



<https://tinyurl.com/hopiprophecyrock>



<https://tinyurl.com/hopiprophecy>

“Three previous human worlds were destroyed when people became greedy, worshiped technology as a god, fought and hurt each other, and repeatedly forgot the ethical teachings they’d been given to honor the Earth as the source of life and sustenance. “

<https://sacredland.org/hopi-prophecy/>



HOPI PROPHECY - Two Paths: Destruction or Survival

Thoth's Prophecy – Prophetic Warning To Mankind



THOTH'S PROPHECY read from the Hermetic Texts

Edgar Cayce's Atlantis – Prophetic Warning To Mankind



but as an Akashic witness, reading

Vision of Atlantis: The Technology, The Crystals, and The Final Destruction

Our Challenge: Opening Our Minds

“It is indeed amazing, also perturbing, that a singularly perfect law unifying all natural processes in the Universe, without exception, has been known for aeons, yet neither science nor the Vedic academia have been any the wiser for it. This essay exposes the unique mathematical law from the very archives of preglacial intellectualism. The unique law of nature, exposing the inherent dynamism of nature will provide the motivation for a shift in human focus in managing its affairs. It has serious ramifications to both theoretical Physics and holistic science including theistic ideologies.”

G. Srinivasan, Secret of Sankhya: Acme of Scientific Unification

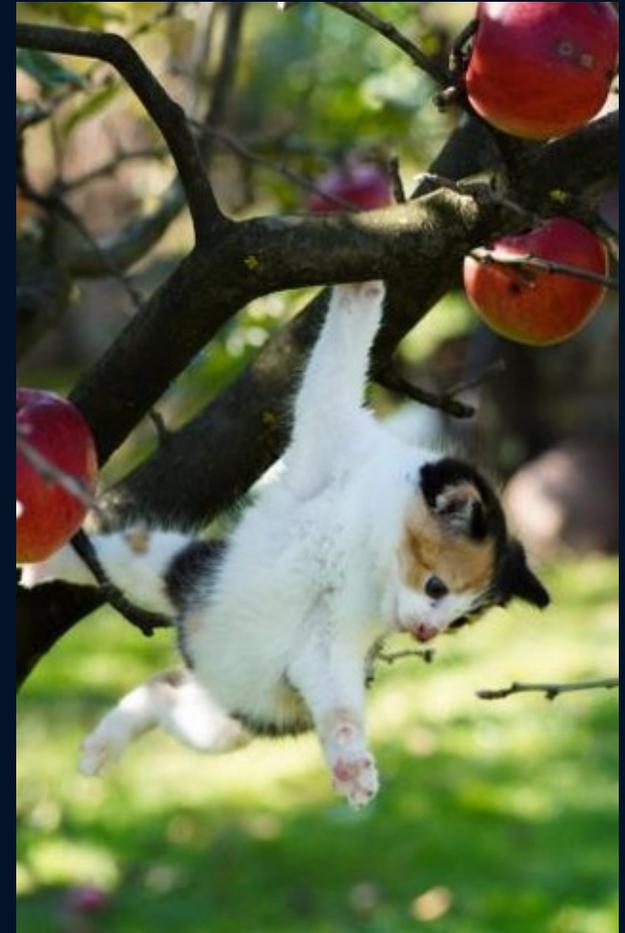
We must learn to think naturally, logically and axiomatically

Think Naturally – Science of Creation, Life, Growth

“Isaac Newton's Law of Gravity ... failed to take into account the development of levitational power. Without this there could be no build-up of weight (no growth) ... ”



**“Comprehend
and Copy
Nature”**

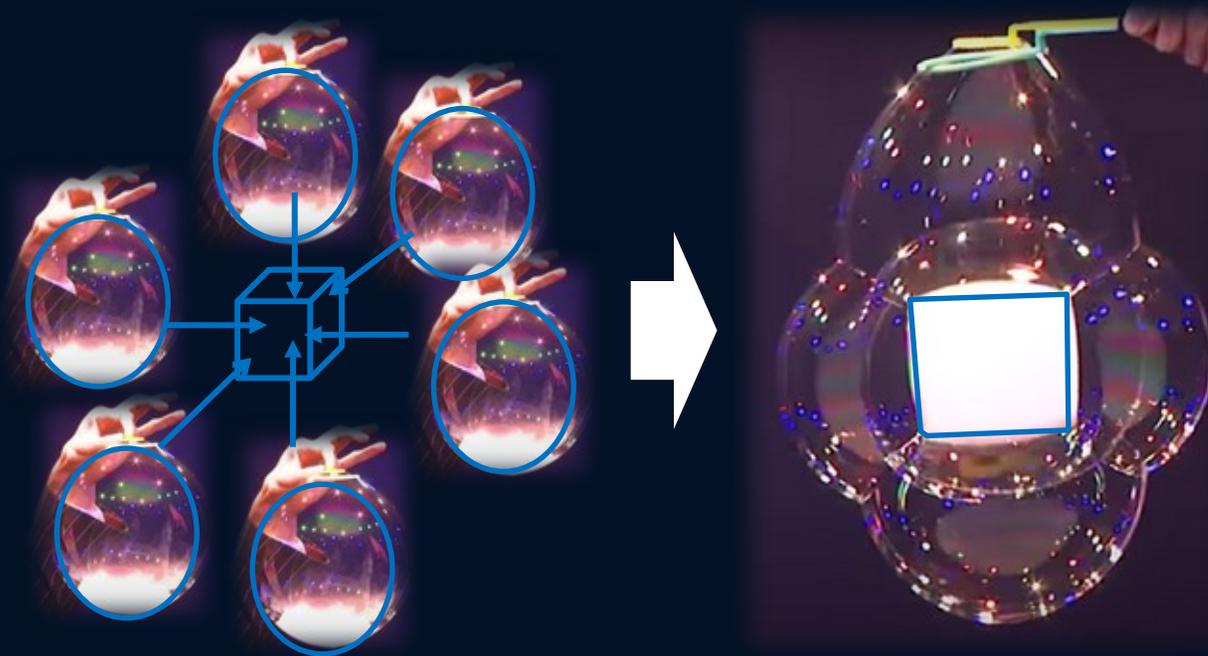


“... I think it would have been much better, had Newton contemplated how the apple got up there in the first place!” - Viktor Schauberger

Think Naturally – Constrained Equilibrium

“Sankhya teaches man how to think. ... Nature has its own laws and man has to learn them. ... Man has to learn how to think as Nature has intended for that is his real and innate strength.”

G. Srinivasan, Secret of Sankhya: Acme of Scientific Unification

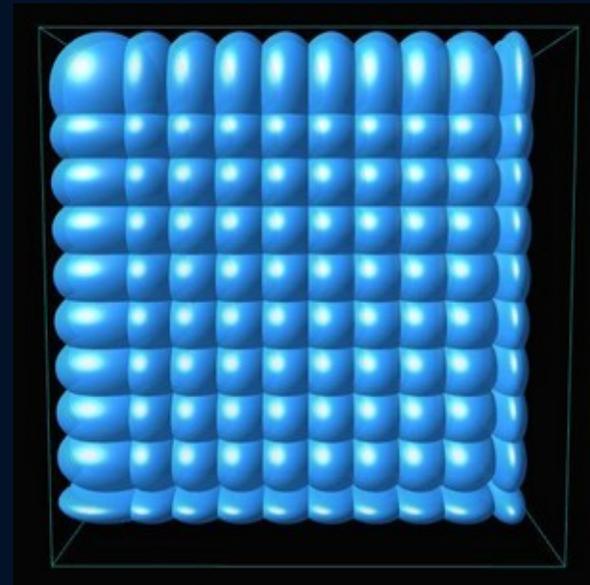
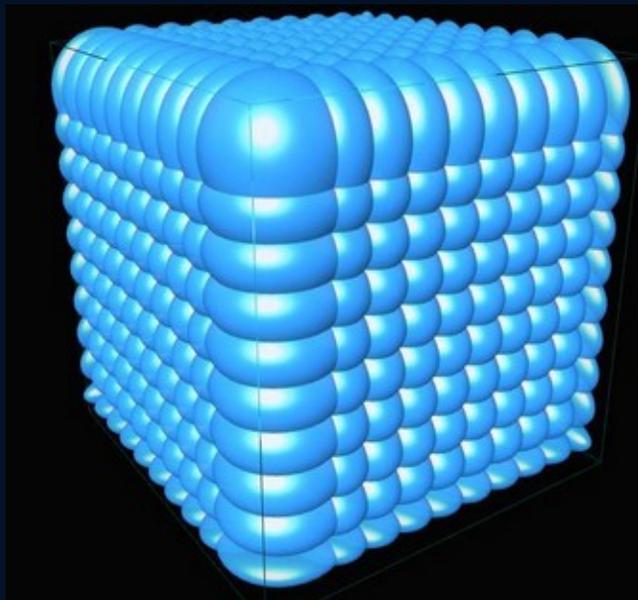
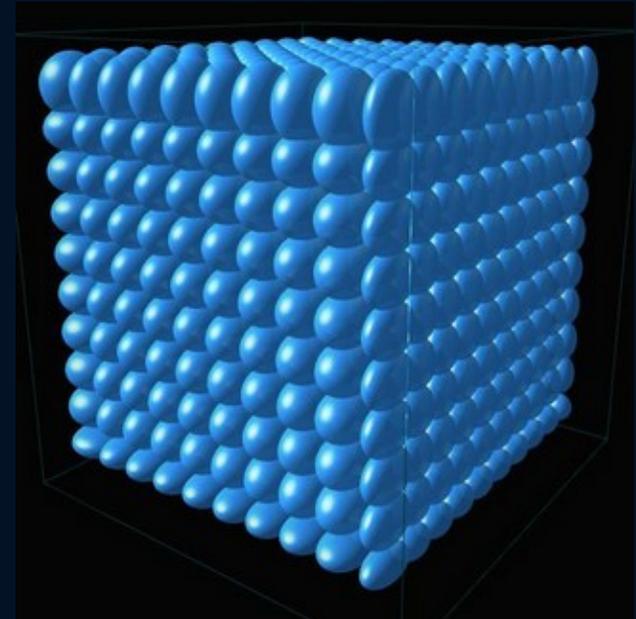
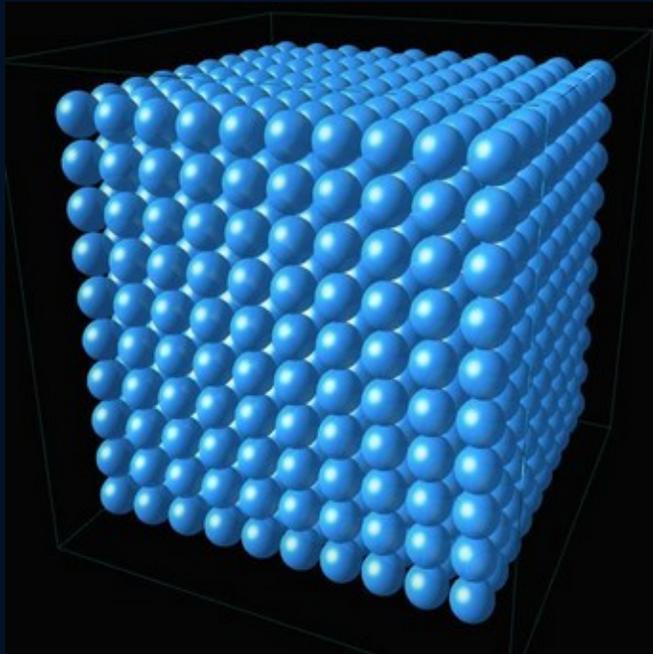


When six separate spherical bubbles in pressure equilibrium are brought together into close mutual confined contact, they create a cubic form.

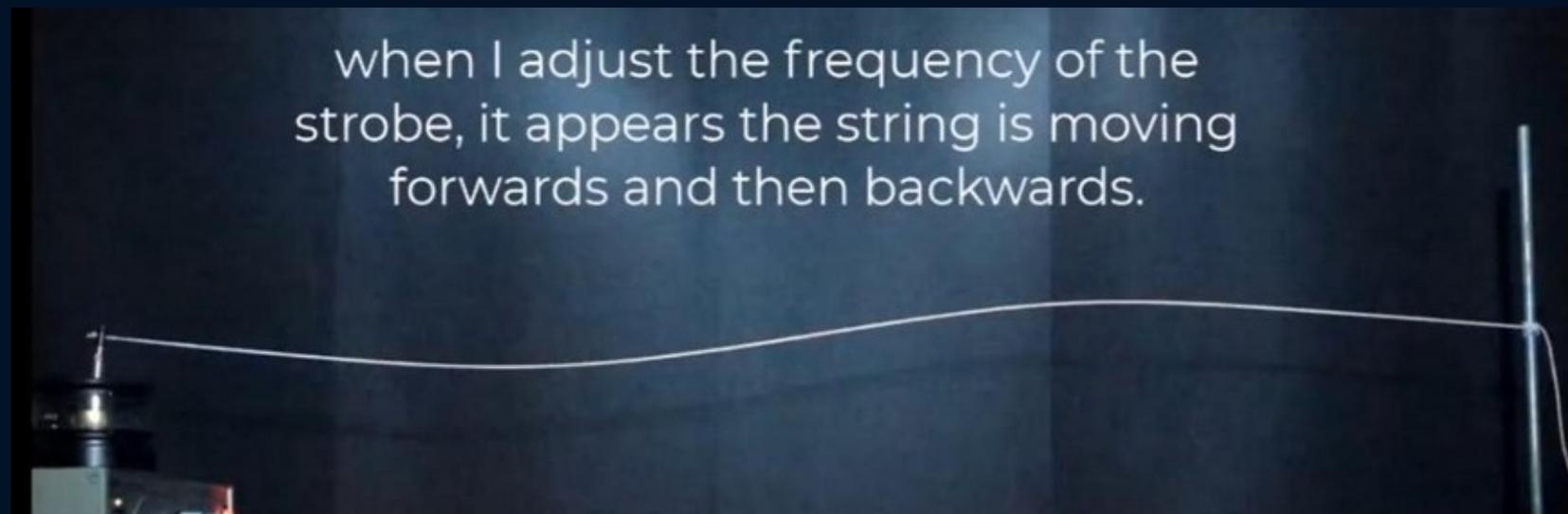
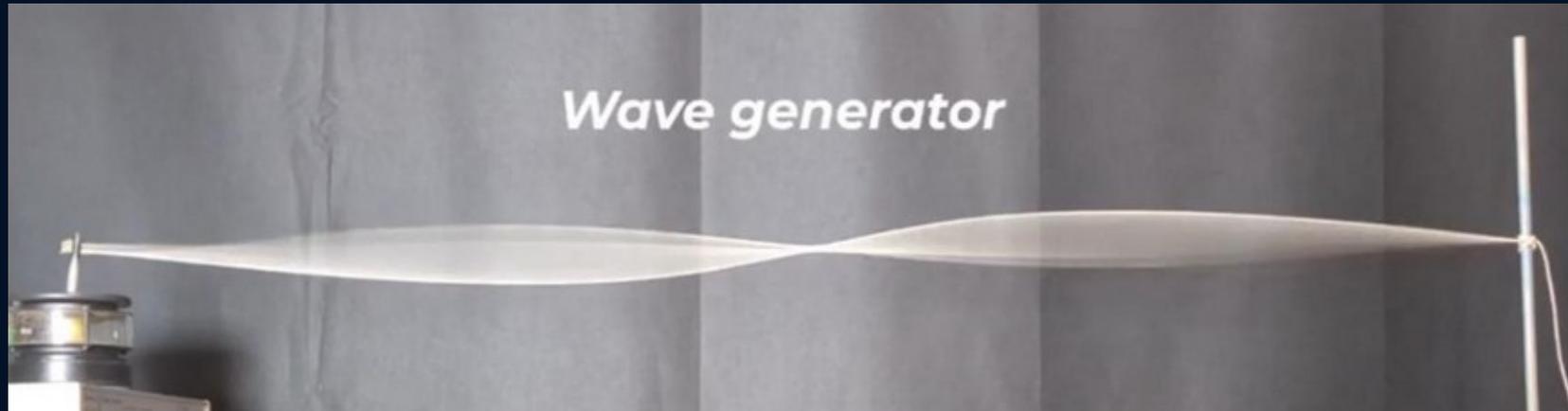
Question: What would form from bringing together 100s, 1000s, 1Ms, gazillions of closely packed spherical pressure “bubbles”?

<https://Opium Bubble Man>

Think Naturally – Spherical to Cubic Form

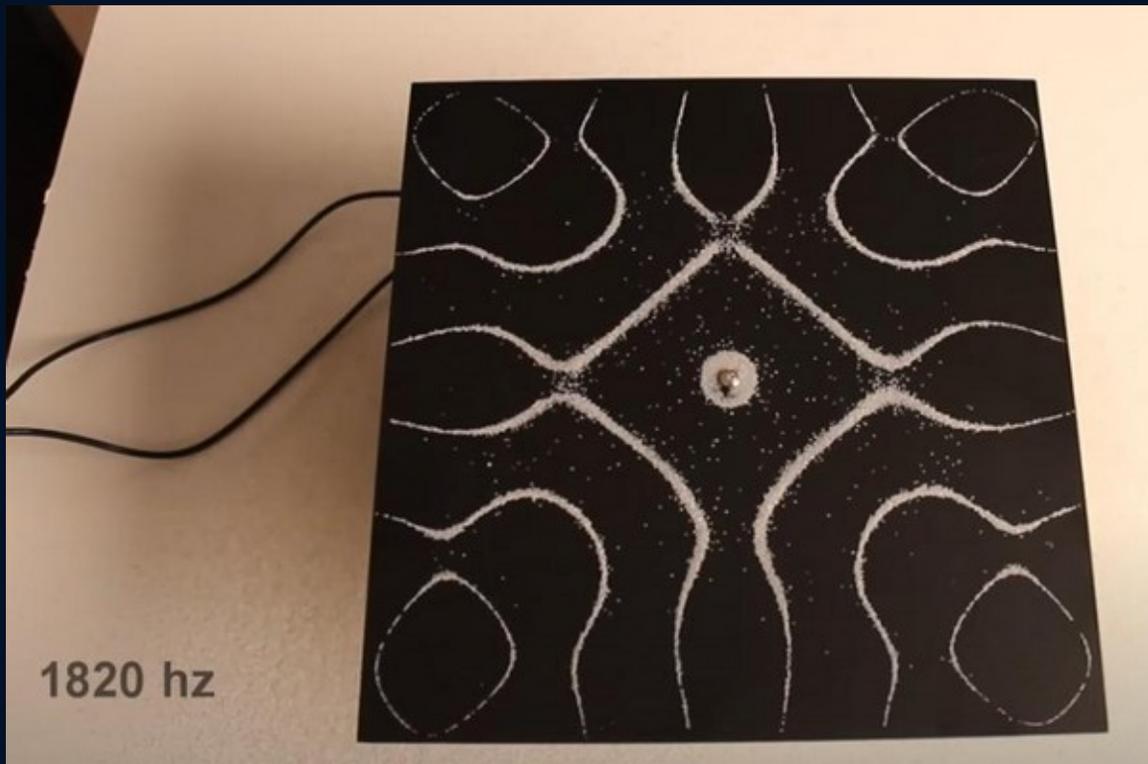


Think Naturally – Dynamic Appears Static

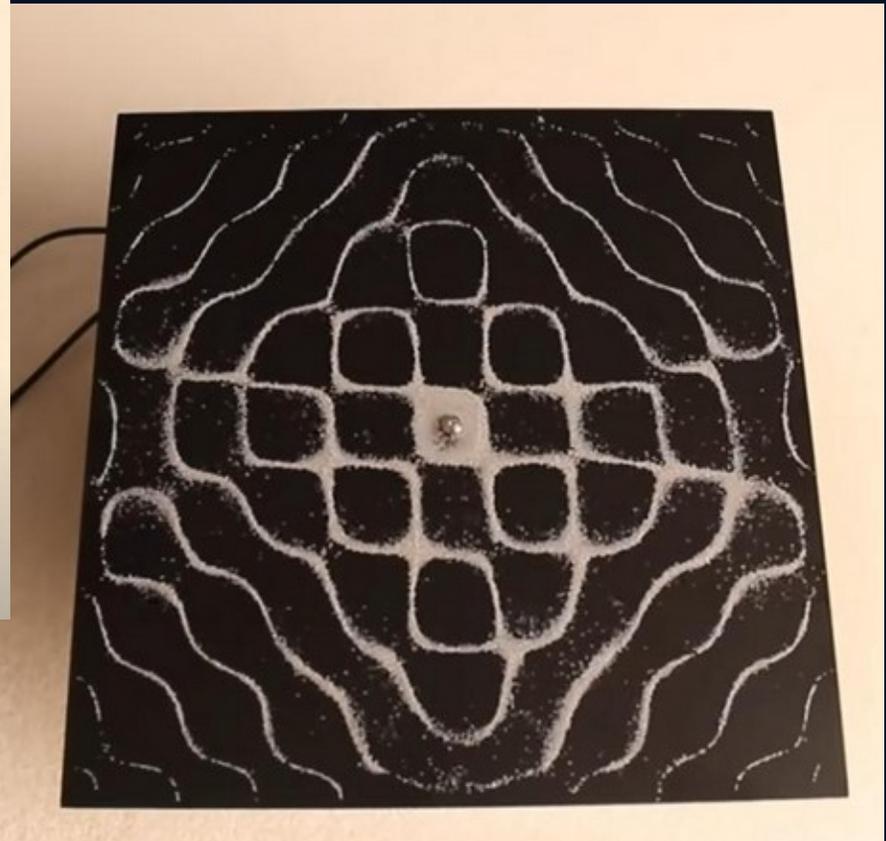


[Constrained Standing Wave Measurement Limitations](#)

Think Naturally – Constrained Standing Waves



4840 hz



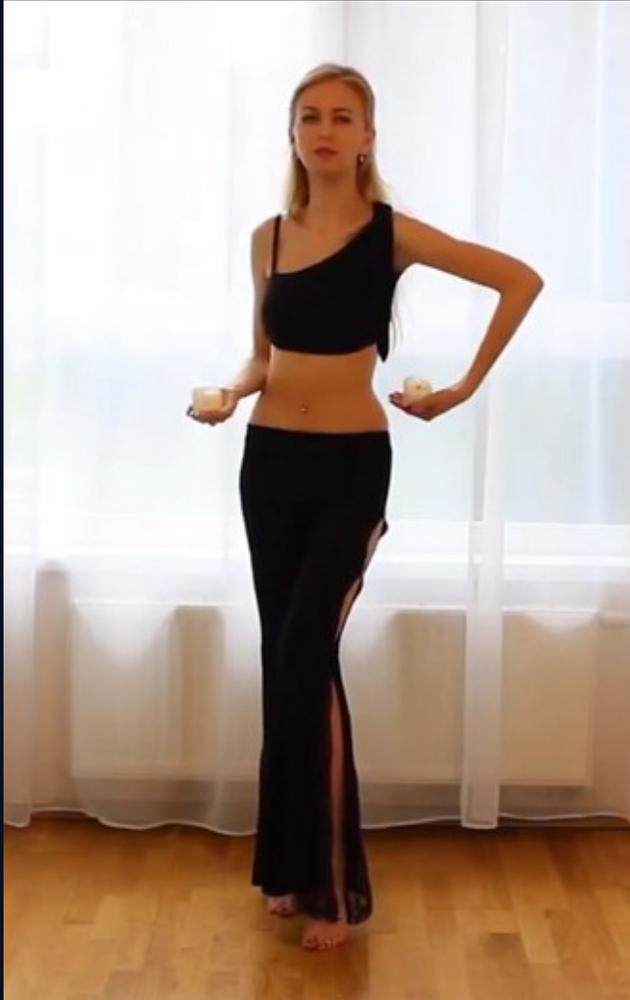
Sound Pressure Waves Can Create Standing Waves and Forms

Think Naturally – Coherent Action



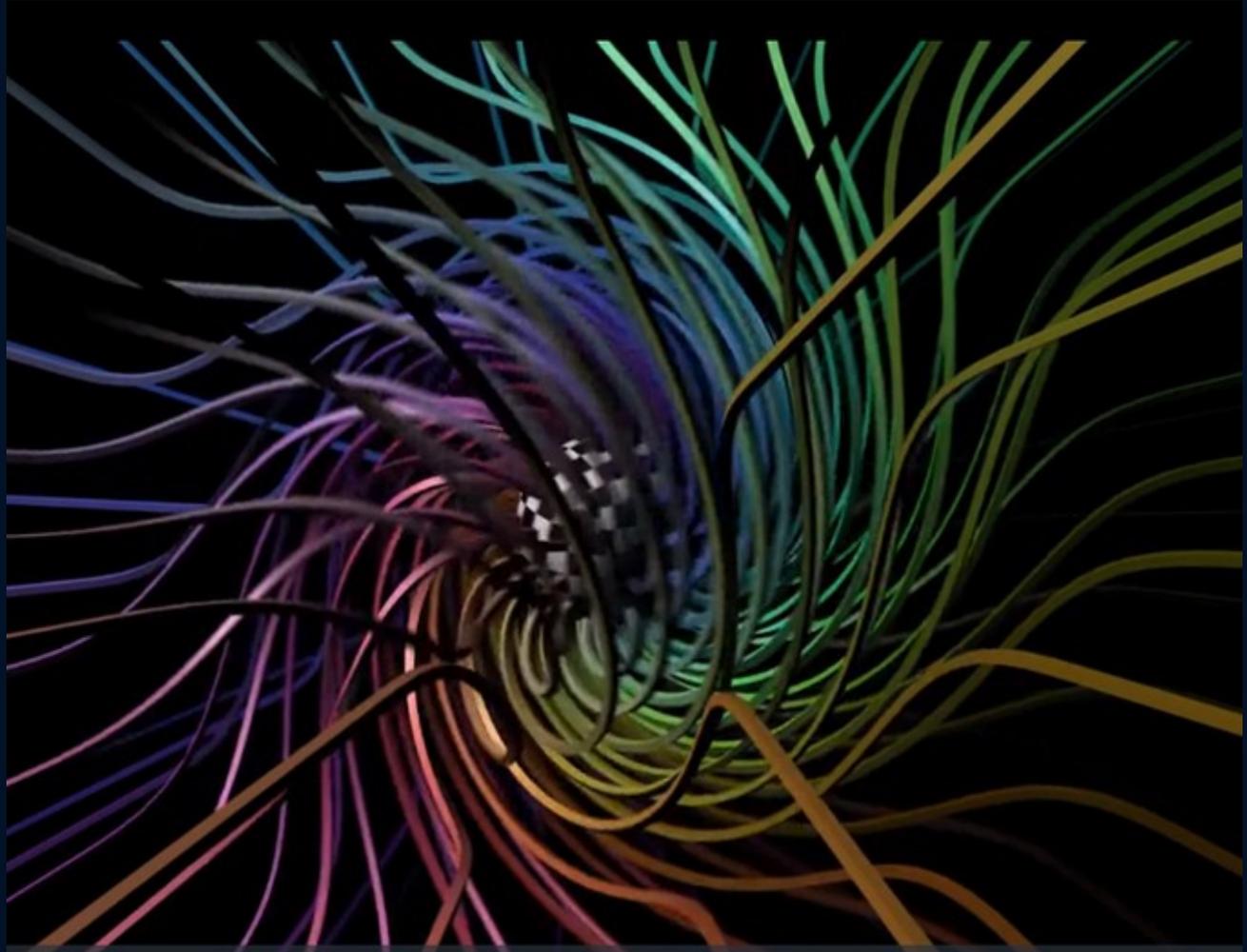
The Power of Coherent (Synchronous) Action

Think Naturally – Constrained 3D Spinning



[Sumatran Candle Dance](https://tinyurl.com/candledance)

<https://tinyurl.com/candledance>



[Spinor 720 deg Rotation To Original State](https://tinyurl.com/spinor720)

<https://tinyurl.com/spinor720>

Think Naturally – Spherical Stacking Efficiency

3D

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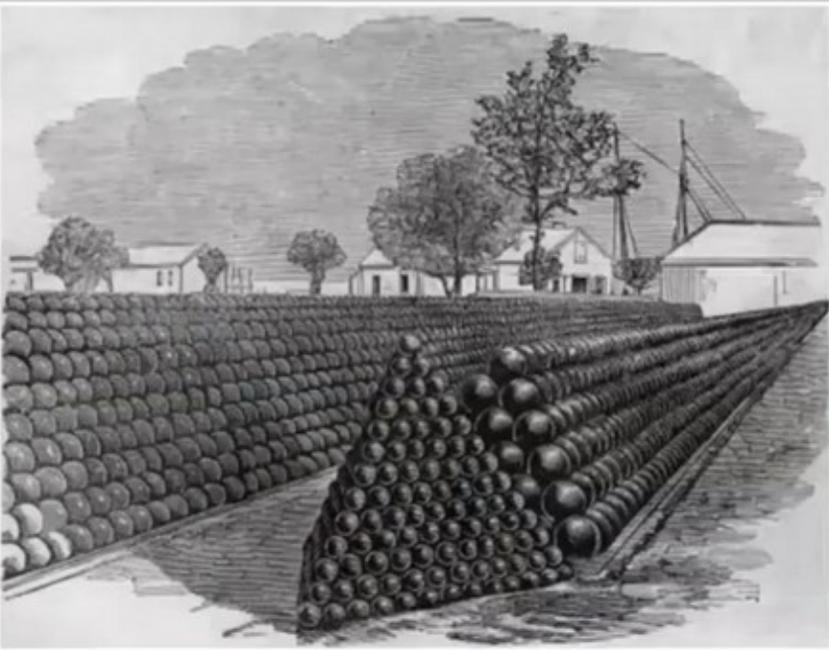
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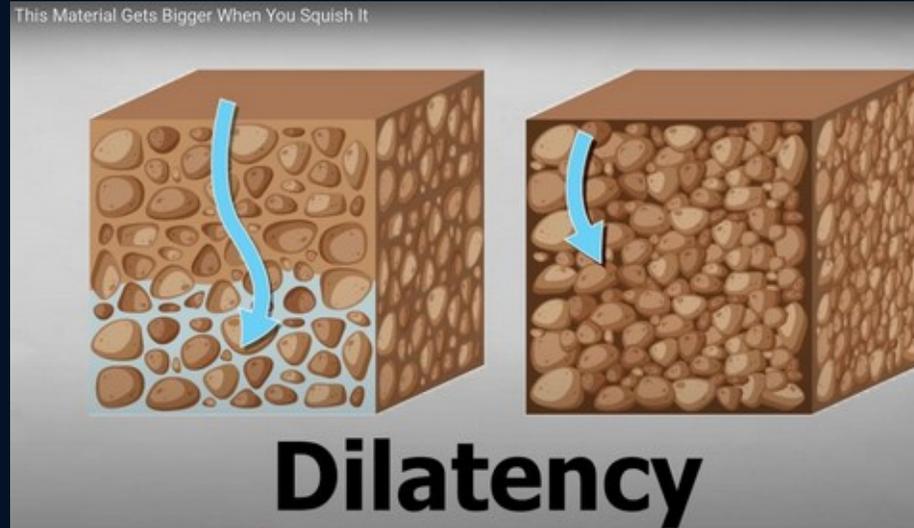
Pat



- ▶ In 3D the densest packing is hexagonal or face-centered Cannonballs
- ▶ The packing density is about 0.74
- ▶ This is very hard to prove (keyword: Kepler's conjecture)

3D Spherical Ball Packing Maximum Density

Think Naturally – “Triggered Expansion”



Dilatancy As An Example of "Bubbles" Expanding In A Medium

Think Naturally – Dynamic Impedance



Non-Newtonian Liquid Illustrates Impedance of a Medium

Think Naturally – “Quantum Tunneling”



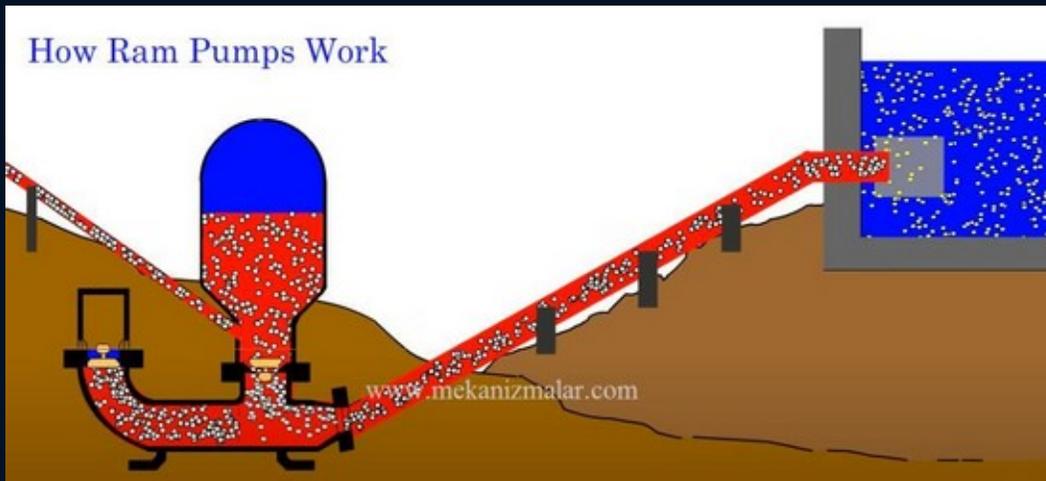
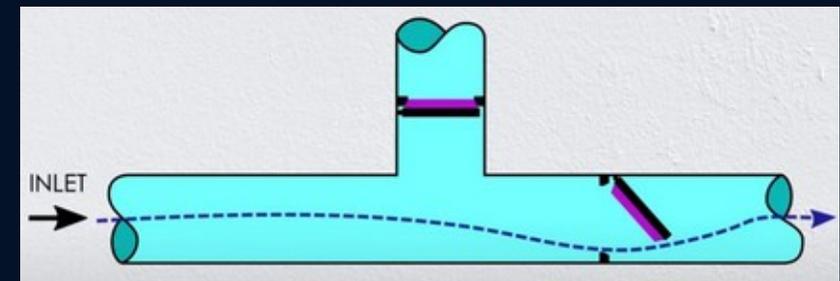
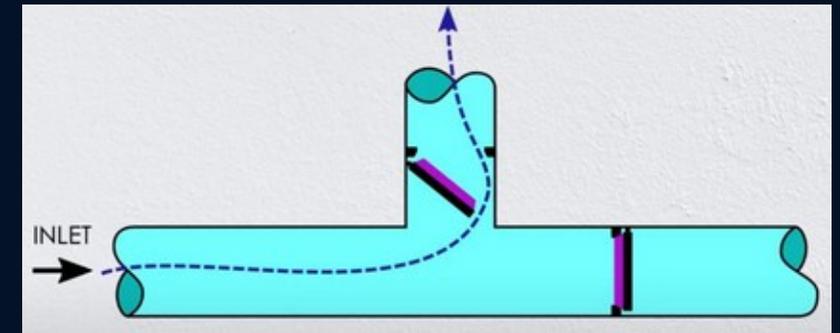
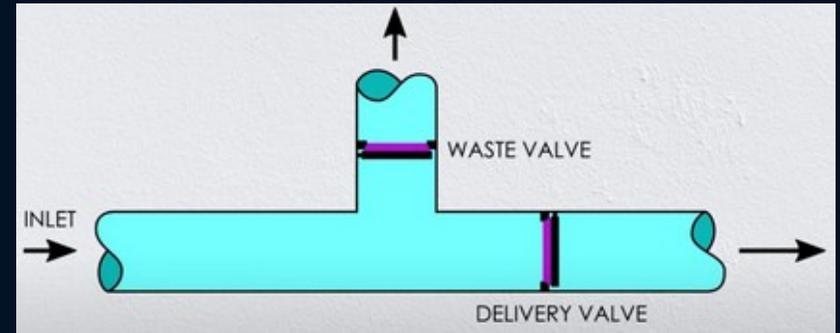
[Newton's Cradle Toy Demonstrates Dispersion Waves in Dense Fields](https://tinyurl.com/newtcradle)

Think Naturally – Energy Density Dynamism



Wave Tank Demonstrates Energy Density Dynamics

Think Naturally – Energy Type Conversion



[Hydraulic Ram Pump Demonstrates Energy Type Conversion To Perform Work](https://tinyurl.com/hydraulicrampump)

Think Naturally – 3D Pressure Balancing

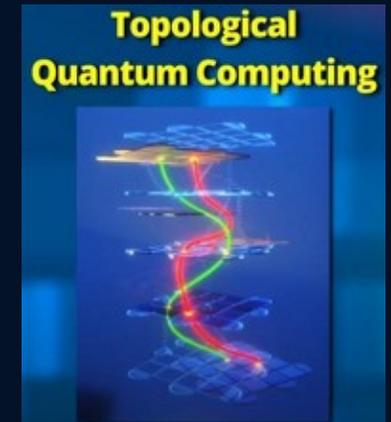
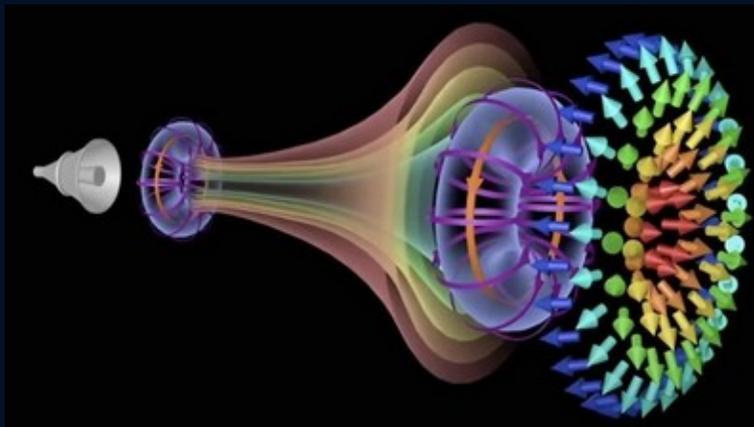
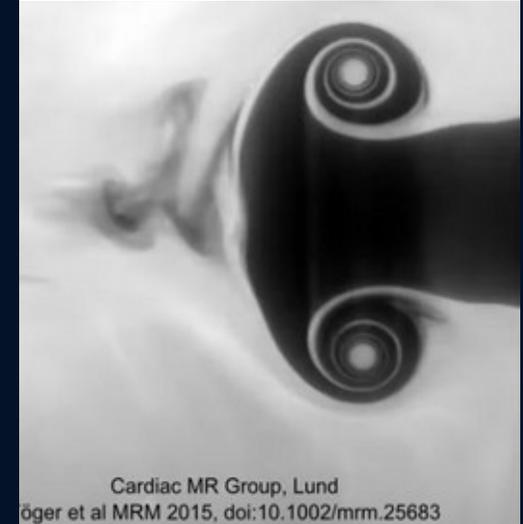
Vortexes naturally form when any 3-D polarized potential field dynamically seeks to regain balance.



<https://Opium Bubble Man>

<https://tinyurl.com/bubblevortex>

Think Naturally – Traveling Coherent Waves



Vortex Rings Are Naturally Efficient Energy Transfer Waveforms In a Medium

“Occult Chemistry”

THE PRINCIPLES OF LIGHT AND COLOR:

INCLUDING AMONG OTHER THINGS

THE HARMONIC LAWS OF THE UNIVERSE, THE ETHERIO-ATOMIC PHILOSOPHY OF FORCE, CHROMO CHEMISTRY, CHROMO THERAPEUTICS, AND THE GENERAL PHILOSOPHY OF THE FINE FORCES, TOGETHER WITH NUMEROUS DISCOVERIES AND PRACTICAL APPLICATIONS.



ILLUSTRATED BY 204 EXQUISITE PHOTO-ENGRAVINGS, BESIDES FOUR SUPERB COLORED PLATES PRINTED ON SEVEN PLATES EACH.

By EDWIN D. BABBITT.

"Study the Light; attempt the high; seek out
The Soul's bright path."—Bailey.

NEW YORK:
BABBITT & CO.,
SCIENCE HALL 141 EIGHTH STREET.

1878.

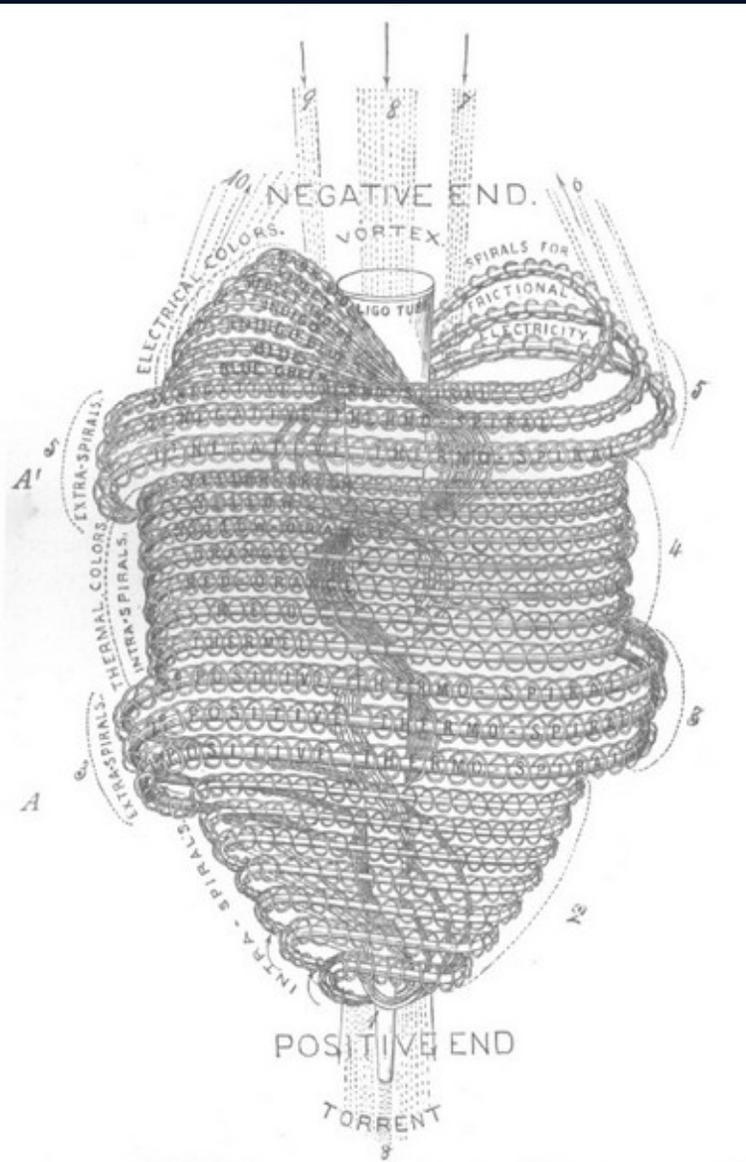


Fig. 135. The general Form of an Atom, including the spirals and 1st Spirilla, together with influx and efflux ethers, represented by dots, which pass through these spirilla. The 2d and 3d spirilla with their still finer ethers are not shown.

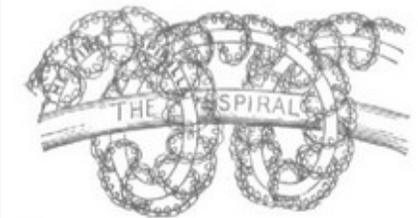


Fig 133. Piece of Atomic Spiral with 1st and 3rd Spirilla.

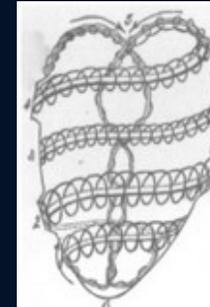


Fig. 134. Extra Spirals and Intra-Spirals.

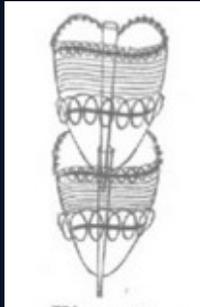


Fig. 136. Atoms joined.

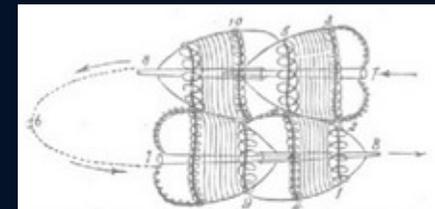


Fig. 138. Atoms arranged Conversely.

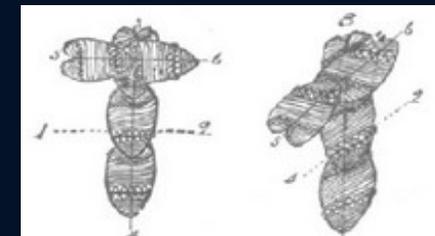


Fig. 139. Transverse Lines.

Fig. 140. Transverse Diagonals.

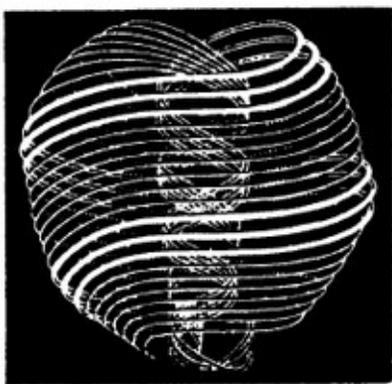
“Occult Chemistry”

THE NATURE OF MATTER

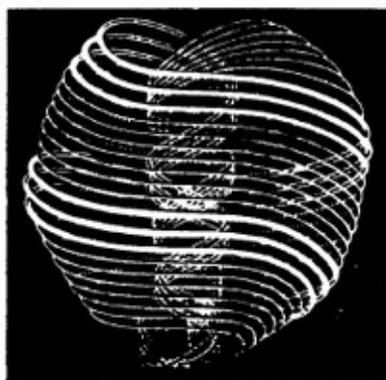
13

THE ULTIMATE PHYSICAL ATOM OR ANU

As we have seen, a chemical atom may be dissociated into less complicated bodies: these, again, into still less complicated; these, again, into yet still less complicated. After the third dissociation but one more is possible: the fourth dissociation gives the ultimate physical atom on the atomic sub-plane, the Anu. This may vanish from the plane, but it can undergo no further dissociation on it. In this ultimate state of physical matter two types of units, or Anu, have been observed: they are alike in everything save the direction of their whorls and of the force which pours through them. In the one case force pours in from the “outside,” from fourth-dimensional space, the Astral plane, and passing through the Anu, pours into the physical world. In the second, it pours in from the physical world, and out through the Anu into the “outside” again, i.e., vanishes from the physical world. The one is like a spring, from which water bubbles out; the other is like a hole, into which water disappears. We call the Anu from which force comes out positive or *male*; those through which it disappears, *negative or female*. All Anu, so far as observed, are of one or other of these two forms. Fig. 3.



POSITIVE



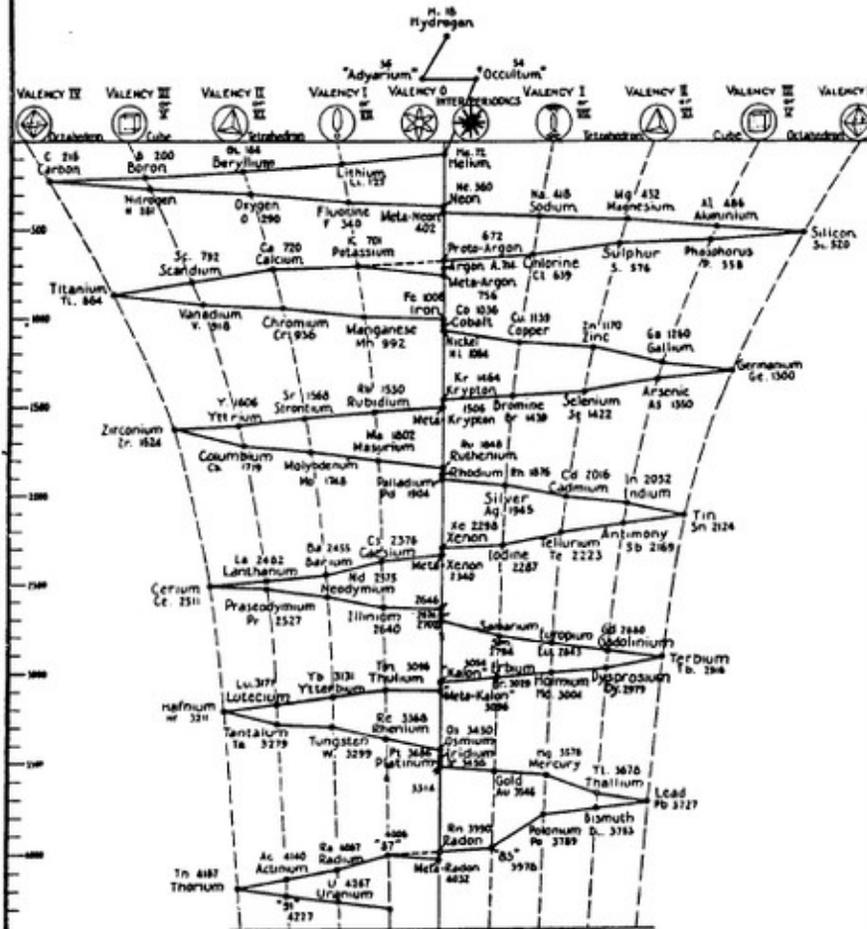
NEGATIVE

FIG. 3. THE ANU

It will be seen that the Anu is a sphere, slightly flattened, and there is a depression at the point where the force flows in, causing a heart-like form. Each is surrounded by a field.

The Anu can scarcely be said to be a “thing,” though it is the material out of which all things physical are composed. It is formed by the flow of the life-force and vanishes with its ebb. The life-force is known to Theosophists as Fohat, the force of which all the physical plane forces are differentiations. When this force arises in “space,” that is when Fohat “digs holes in space,”—the apparent void which must be filled with substance of some kind, of inconceivable tenuity—Anu appear; if this be artificially stopped for a single Anu, the Anu disappears: there is nothing left. Presumably, were

THE PERIODIC LAW (after Crookes)



The number affixed to an element is the number of “Anu” (the ultimate physical particles of which matter is constituted) which compose the element.

Isotopes are not given.

Elements not yet discovered by chemists: 36, 54, 86, 108, 138, 168, 208, 258, 308, 358, 408, 458, 508, 558, 608, 658, 708, 758, 808, 858, 908, 958, 1008, 1058, 1108, 1158, 1208, 1258, 1308, 1358, 1408, 1458, 1508, 1558, 1608, 1658, 1708, 1758, 1808, 1858, 1908, 1958, 2008, 2058, 2108, 2158, 2208, 2258, 2308, 2358, 2408, 2458, 2508, 2558, 2608, 2658, 2708, 2758, 2808, 2858, 2908, 2958, 3008, 3058, 3108, 3158, 3208, 3258, 3308, 3358, 3408, 3458, 3508, 3558, 3608, 3658, 3708, 3758, 3808, 3858, 3908, 3958, 4008, 4058, 4108, 4158, 4208, 4258, 4308, 4358, 4408, 4458, 4508, 4558, 4608, 4658, 4708, 4758, 4808, 4858, 4908, 4958, 5008, 5058, 5108, 5158, 5208, 5258, 5308, 5358, 5408, 5458, 5508, 5558, 5608, 5658, 5708, 5758, 5808, 5858, 5908, 5958, 6008, 6058, 6108, 6158, 6208, 6258, 6308, 6358, 6408, 6458, 6508, 6558, 6608, 6658, 6708, 6758, 6808, 6858, 6908, 6958, 7008, 7058, 7108, 7158, 7208, 7258, 7308, 7358, 7408, 7458, 7508, 7558, 7608, 7658, 7708, 7758, 7808, 7858, 7908, 7958, 8008, 8058, 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"Occult Chemistry"

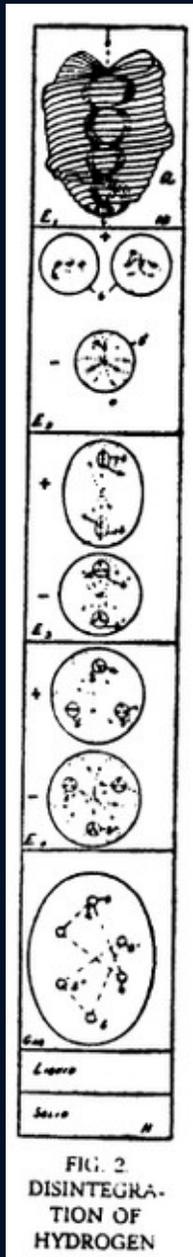


FIG. 2. DISINTEGRATION OF HYDROGEN

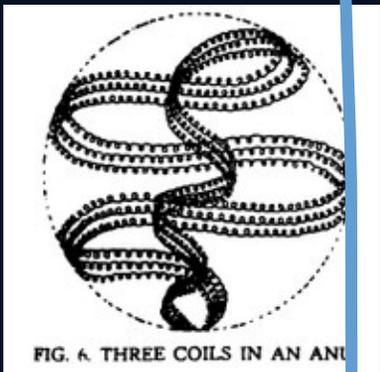
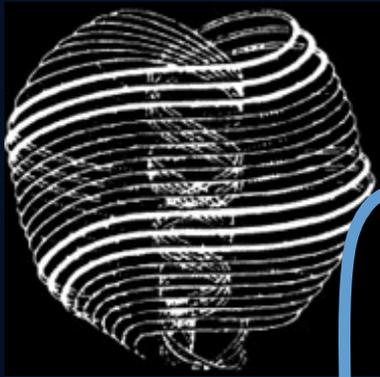


FIG. 6. THREE COILS IN AN ANTI

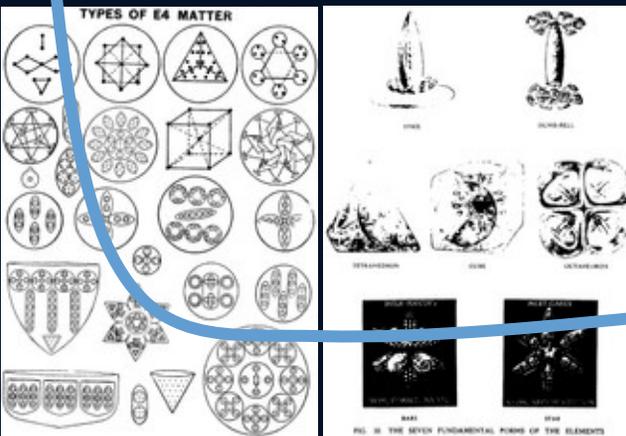
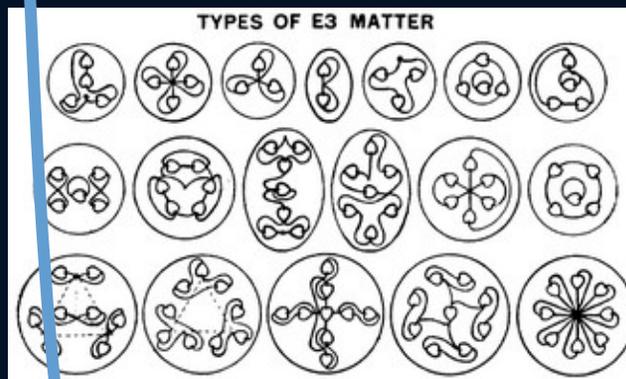
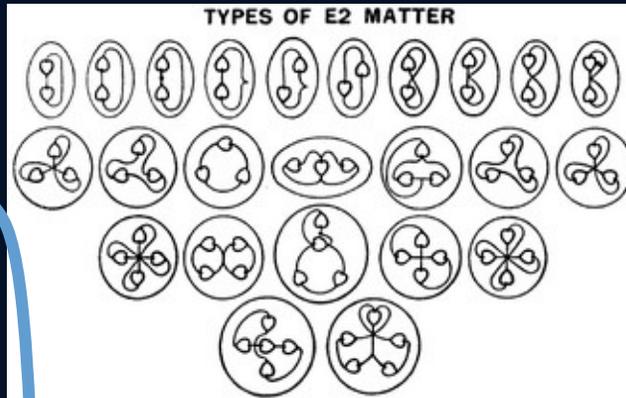


FIG. 10. THE SEVEN FUNDAMENTAL FORMS OF THE ELEMENTS

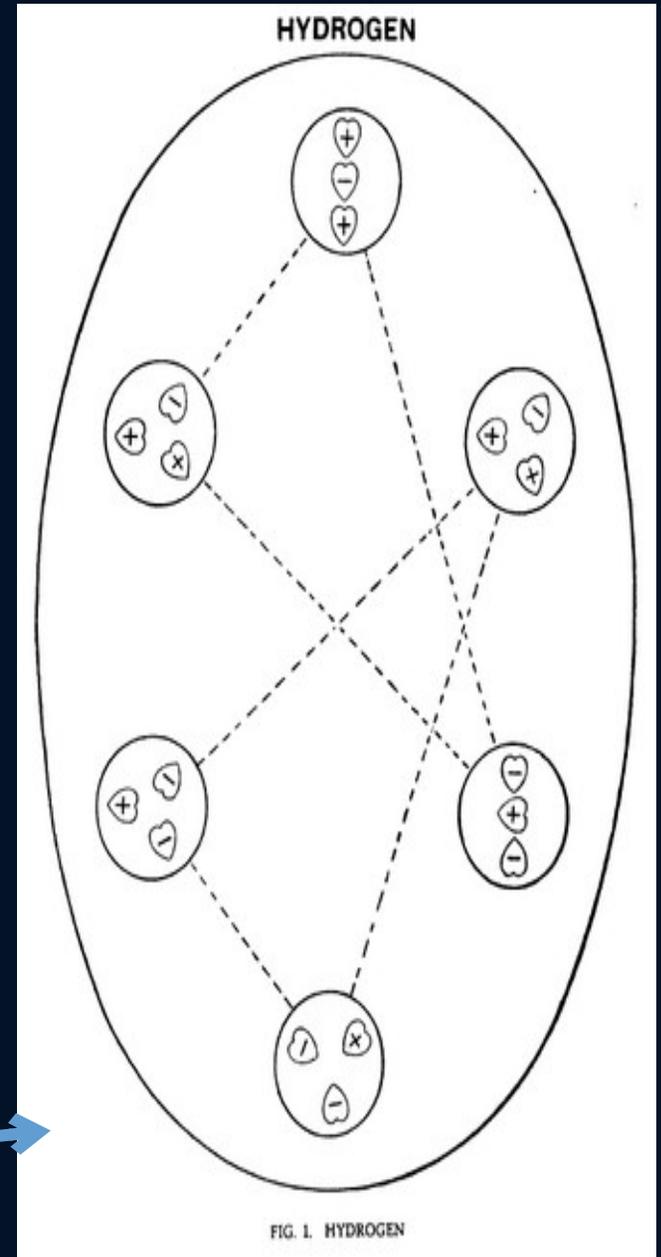
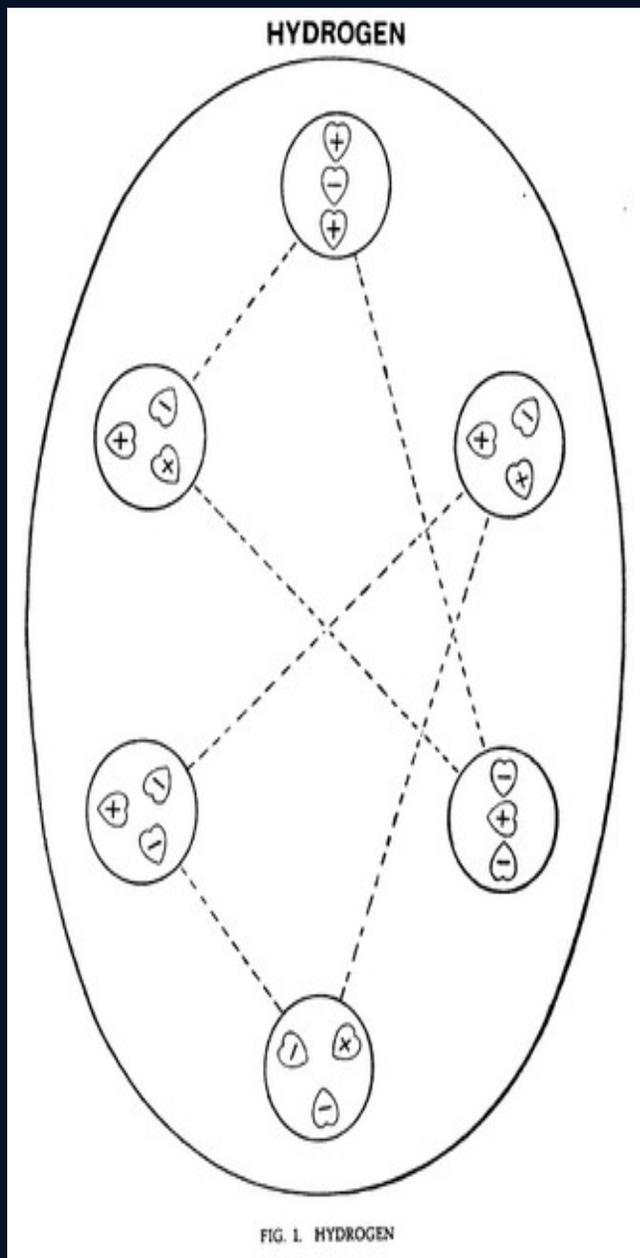


FIG. 1. HYDROGEN

“Occult Chemistry”



From the list of all the elements, given at the end of the book, it can be seen that Hydrogen, Oxygen, Nitrogen and Fluorine, which appeared to be so different from the rest in their external forms, contain characteristic groups which form part of many other elements. From this list, too, we can follow the changes as the elements succeed one another in weight.

Each dot in a diagram represents a single Anu. The enclosing lines indicate the impression of form made on the observer and the groupings of the Anu. The groups will divide along these lines when the element is broken up, so that the lines have significance but they do not exist as stable walls or enclosing films but rather mark limits, not lines, of vibration.

It should be specially noted that the diagrams are *not drawn to scale*, as such drawings would be impossible in the given space. The dot representing the Anu is enormously too large compared with the enclosures, which are absurdly too small; a scale drawing would mean an almost invisible dot on a sheet of many yards square.

So far as a chemical atom is concerned it does not matter whether it be drawn for investigation from a solid, a liquid or a gas; the atom does not alter its constitution by changing its state.

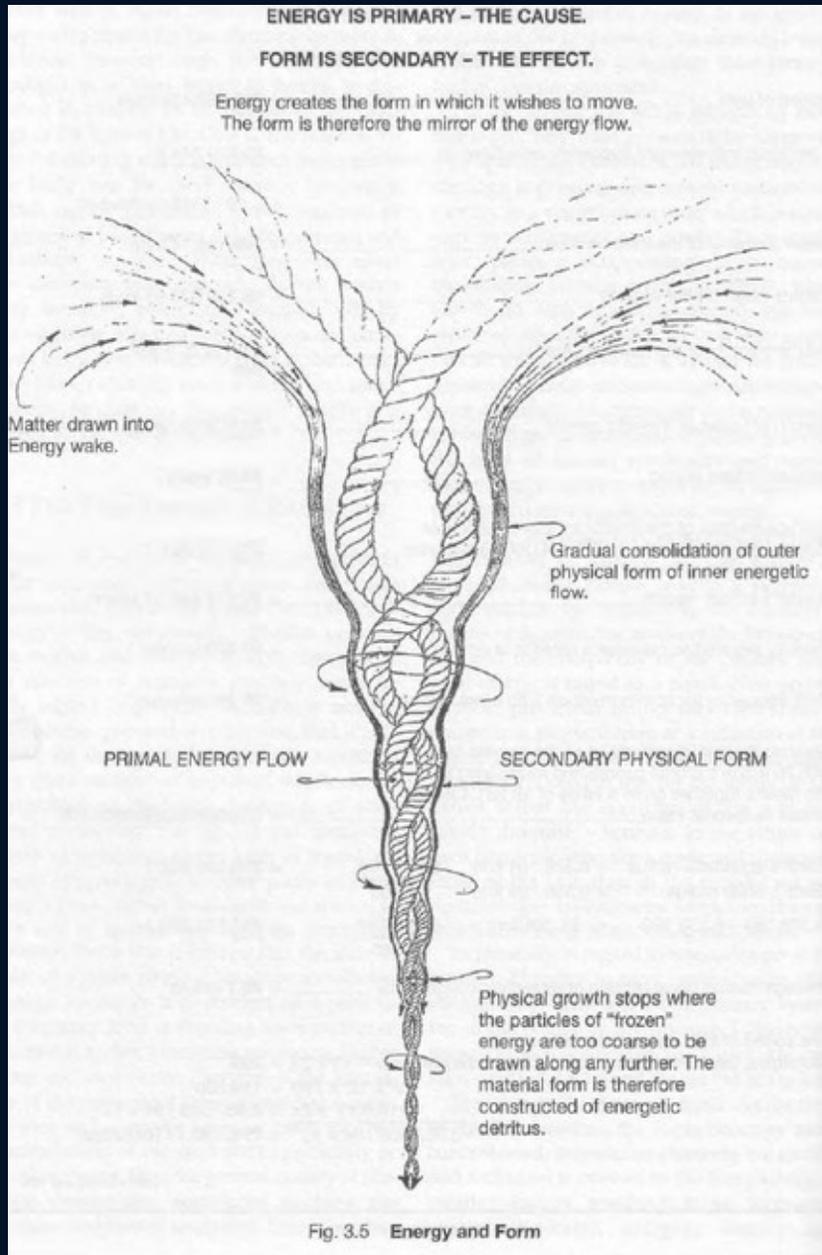
The internal arrangements of the atoms become much more complicated as they become heavier, as can be seen, for instance, in the complex arrangement necessitated by the presence of the 3,546 Anu contained in the chemical atom of Gold, as compared with the simple arrangement of the 18 Anu in Hydrogen.

THE HYDROGEN GROUP

Before the pendulum begins its swing we find four elements; Hydrogen, Adyarium, Occultum and Helium. Hydrogen is the lightest element known to science. Adyarium and Occultum were first observed by clairvoyance. Helium is one of the rare gases and is usually associated with Argon. It does not conform to the shape of the inert gases, however, though it has some constituents in common. It is therefore grouped with the earlier, lighter elements. All four of these are ovoid in external shape.

Atomic No.	Number of Anu	Element	Analysis
1.	18	Hydrogen	$(2H3' + H3) + (3H3)$
1a.	36	Adyarium	$4H3 + 4 Ad6$
1b.	54	Occultum	$2H3 + Ad 24 + Oc15 + Oc 9$
2.	72	Helium	$2H3 + (2H3' + H3) + (3H3) + 2Ad24$

Viktor Schauberger's "Motion of Creation"



Viktor Schauberger's "Motion of Creation"

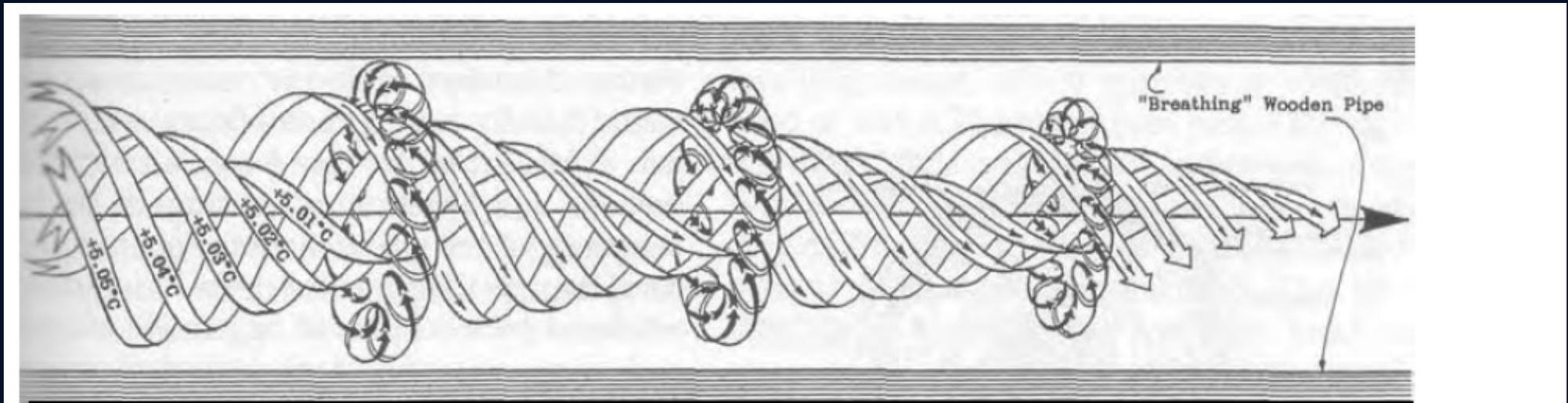
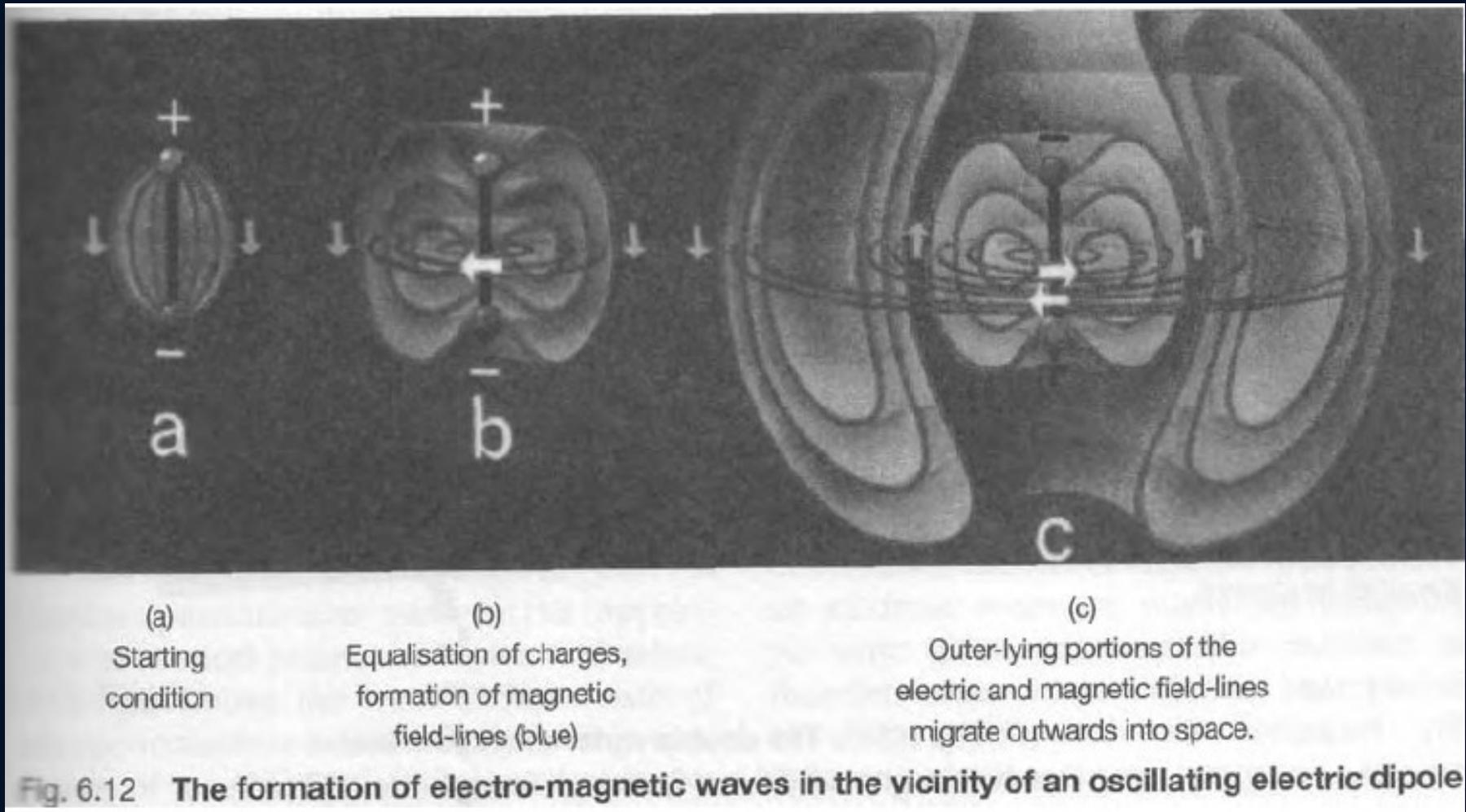


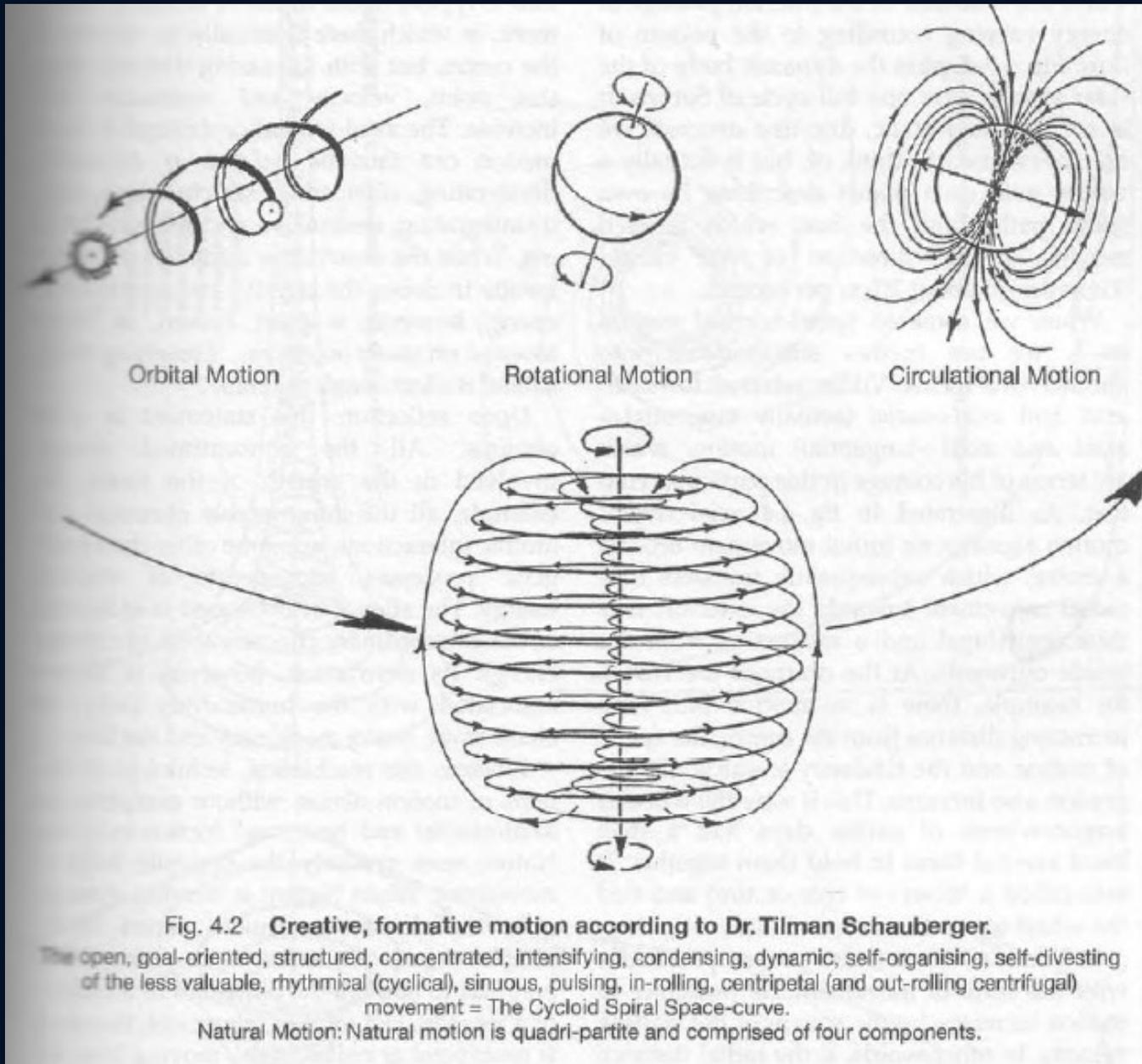
Fig. 14.3 The double-spiral longitudinal vortex

A longitudinal vortex showing the development of toroidal counter-vortices. These occur due to the interaction with the pipe-walls and have an effect similar to ball-bearings, enhancing the forward movement. Their interior rotation follows the direction of rotation and forward motion of the central vortex, whereas the direction of their exterior rotation and translatory motion are reversed. These toroidal vortices act to transfer oxygen, bacteria and other impurities to the periphery of the pipe, where, due to the accumulation of excessive oxygen, the inferior, pathogenic bacteria are destroyed and the water rendered bacteria-free.

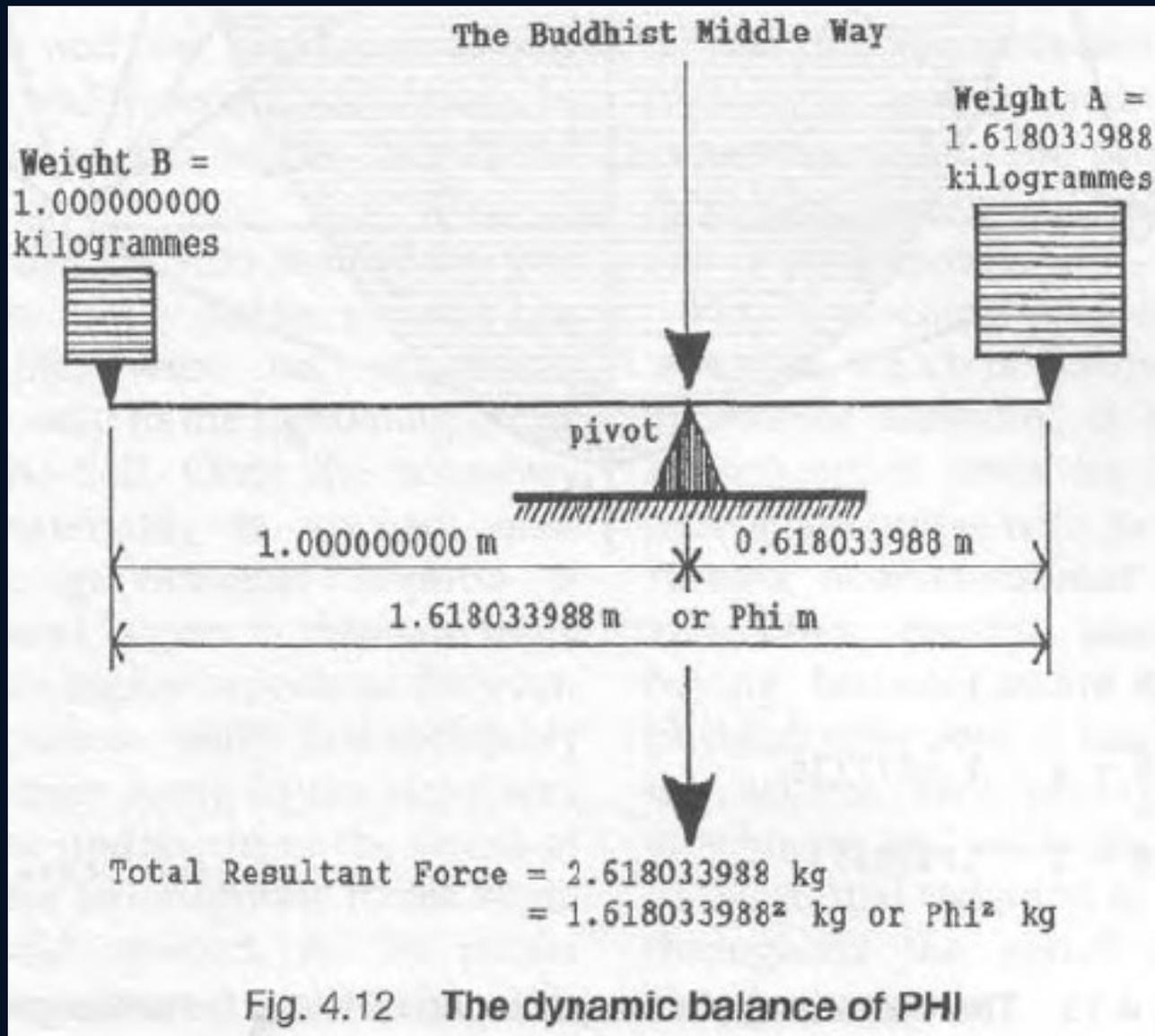
Viktor Schauberger's "Motion of Creation"



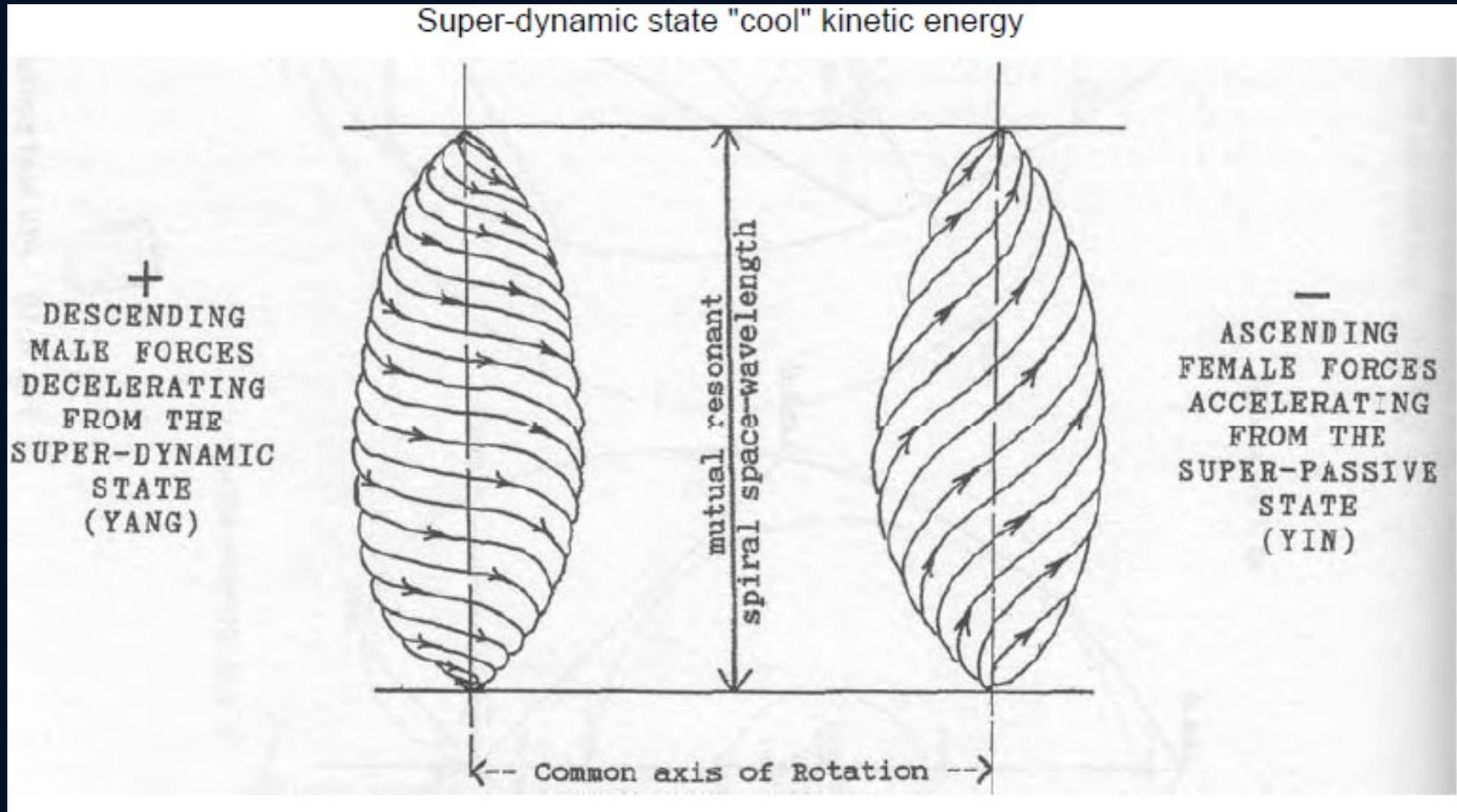
Viktor Schauberger's "Motion of Creation"



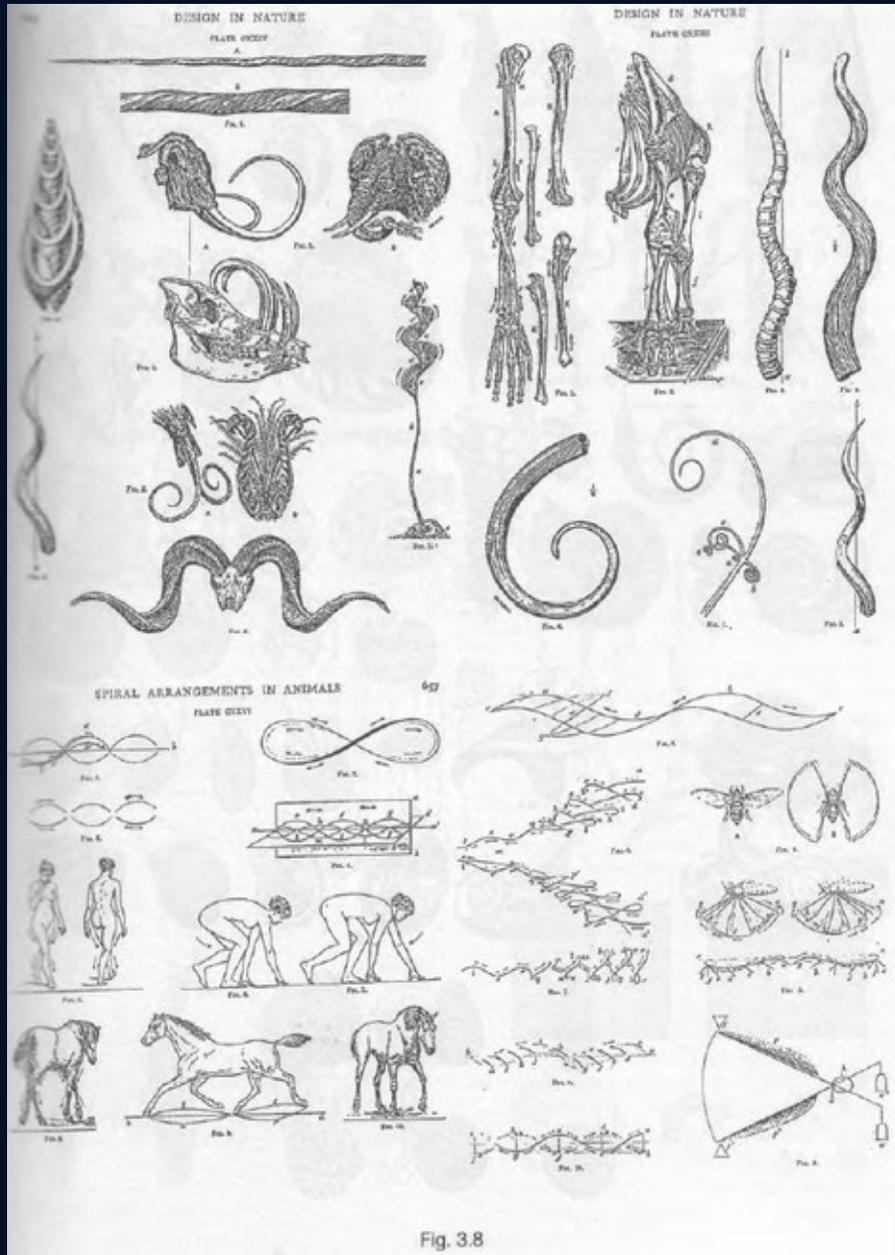
Viktor Schauberger's "Motion of Creation"



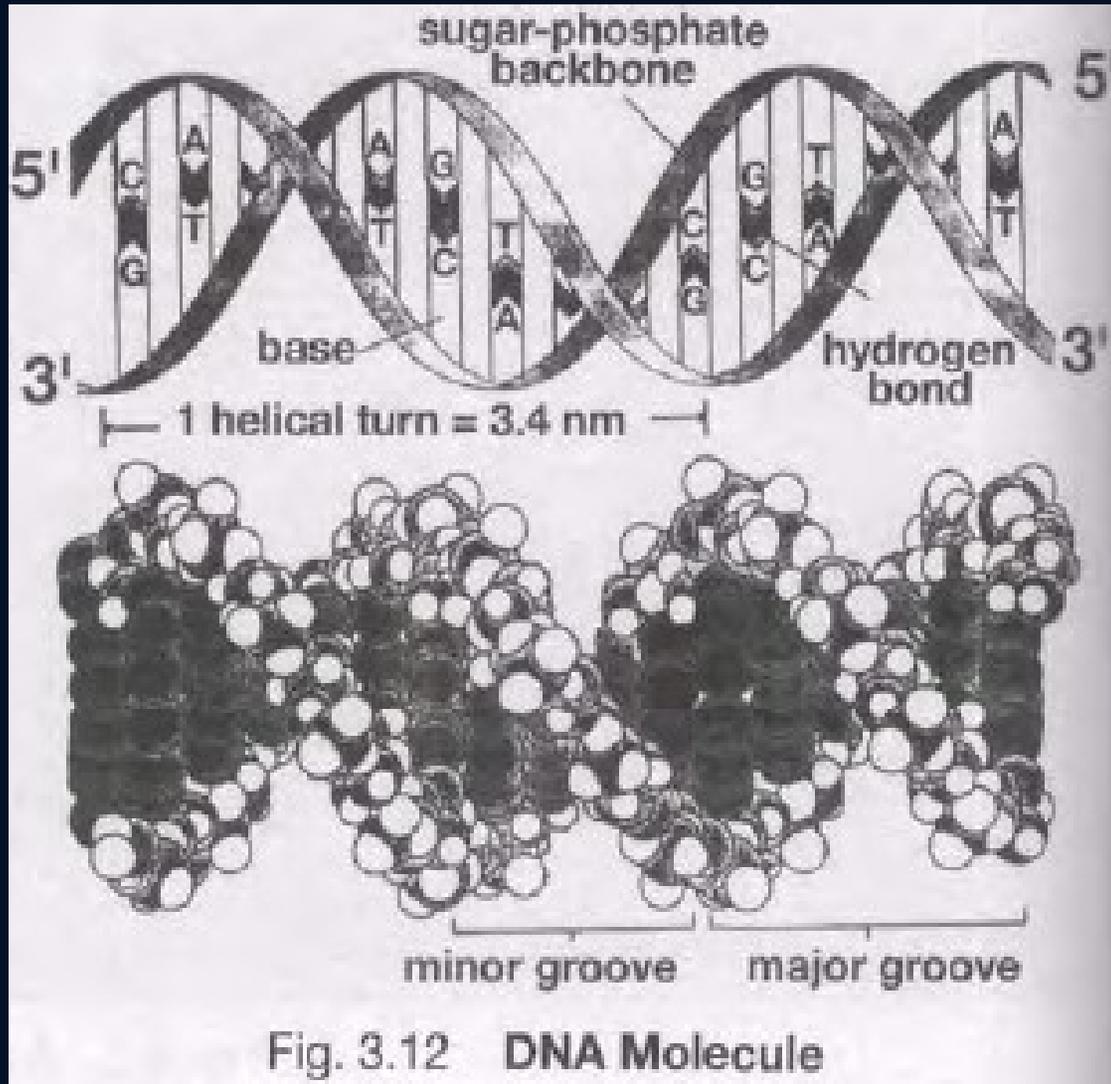
Viktor Schauberger's "Motion of Creation"



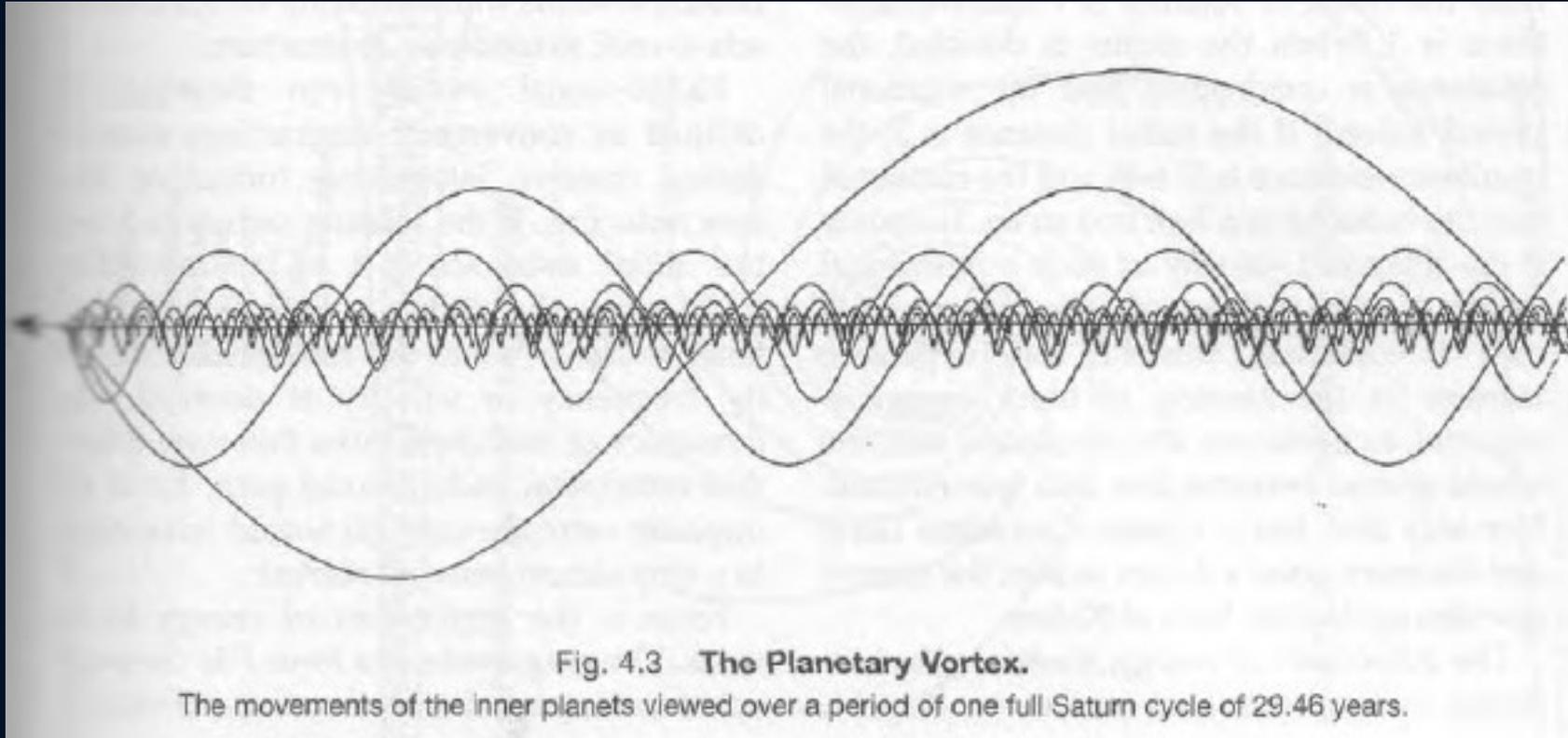
Viktor Schauberger's "Motion of Creation"



Viktor Schauberger's "Motion of Creation"



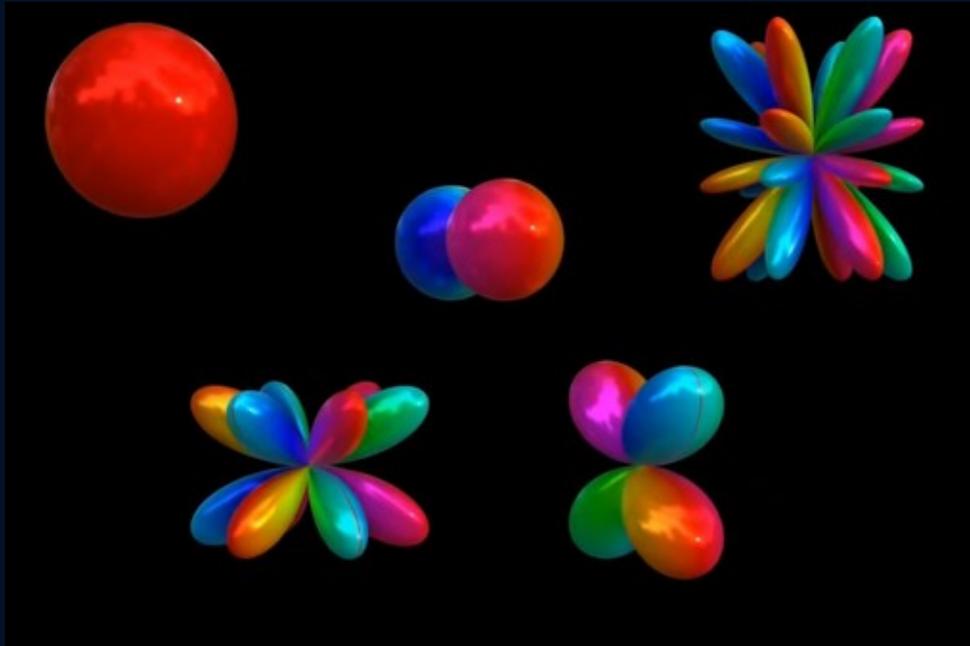
Viktor Schauberger's "Motion of Creation"



Viktor Schauberger's "Motion of Creation"

vibration c^1	= 299,793,000m/s
energy c^2	= 89,875,842,840,000,000m/s
form c^3	= 26,944,148,550,000,000,000,000m/s
design c^4	= 8,077,667,127,000,000,000,000,000,000,000m/s
idea c^5	= 2,421,628,061,000,000,000,000,000,000,000,000,000,000,000m/s
intellect c^6	= 725,987,141,300,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000m/s
higher consciousness c^7	= 217,645,863,200,000m/s

Think Naturally – Scalable Spherical Harmonics



Multipole Moments of the CMB

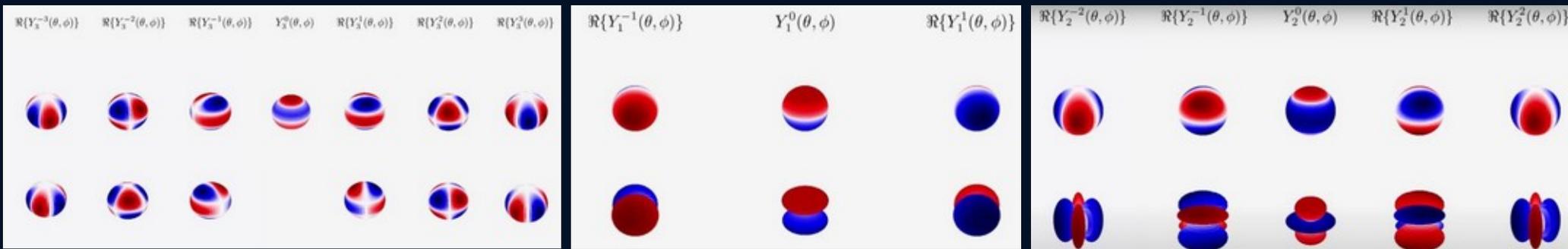
Dipole: $T_2(\theta, \varphi) = c_{11}Y_{11} + c_{10}Y_{10} + c_{1-1}Y_{1-1}$
 $c_{11} = x + iy$
 $c_{1-1} = x - iy$
 $c_{10} = z$

Measurement: $T(\theta, \varphi)$
 Harmonic analysis: $c_{lm} = \int_0^{2\pi} \int_0^\pi T(\theta, \varphi) Y_{lm}^*(\theta, \varphi) d\theta d\varphi$

galactic longitude: 261°
 galactic latitude: 48°

$\Delta T = 3.35 \text{ mK}$
 $\frac{\Delta T}{T} \approx \frac{v}{c} \approx \frac{3.35 \text{ mK}}{2.726 \text{ K}} \approx 0.00123$
 $\implies v \approx 369 \frac{\text{km}}{\text{s}}$

Air plane: $v \approx \frac{1}{4} \frac{\text{km}}{\text{s}}$
 Satellite: $v \approx 7 \frac{\text{km}}{\text{s}}$
 Earth: $v \approx 30 \frac{\text{km}}{\text{s}}$
 Sun: $v \approx 230 \frac{\text{km}}{\text{s}}$



Spherical Harmonic Oscillators In Nature From Atomic to Galactic Scales

Think Naturally – Invisible EM Fields and Forces



[Magnetic Field Is A Force Acting On Mass](https://tinyurl.com/magpendbrake)

<https://tinyurl.com/magpendbrake>



[Magnetic Field Is A Force Acting On Mass](https://tinyurl.com/magtubebrake)

<https://tinyurl.com/magtubebrake>

Think Naturally – Invisible EM Fields and Forces

ATOMIC ORBITALS

... are Probability Clouds → Figures Made of Points

MAGNETIC ORBITALS

... are Maps of Field Intensity → Figures Made of Points

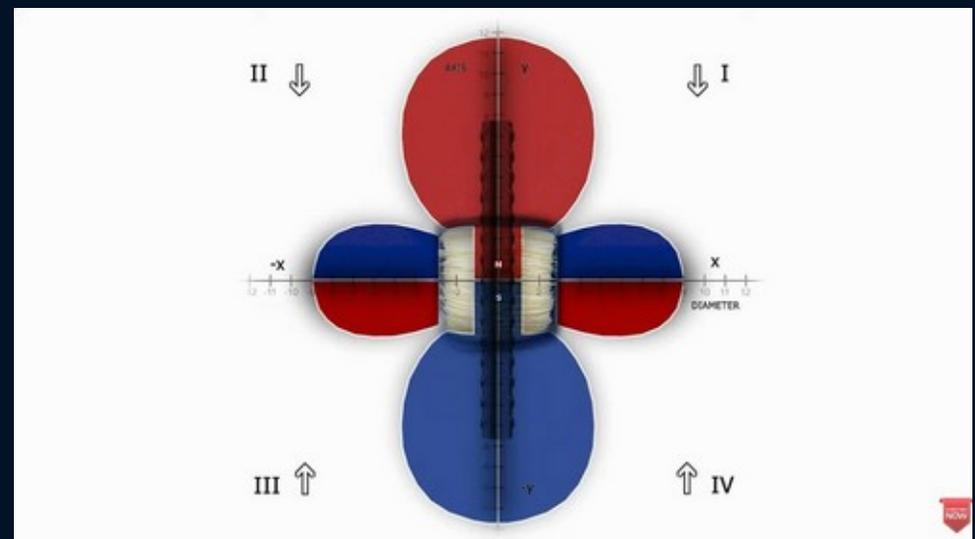


N Energy levels – defined by the distance and voltage of the sensor with respect to the magnet, plus the type and strength of the individual magnet or magnetic system.

L Fixed measurement angle of the sensor (family of shapes), plus the magnet's shape and type of magnetization (if a single magnet); and, for multiple magnets, the distance and orientation between them; that is, the topology of the magnetic system. **ALSO VALID FOR ELECTROMAGNETS!**

M Rotation of the entire measurement plane (spatial orientation of the shape).

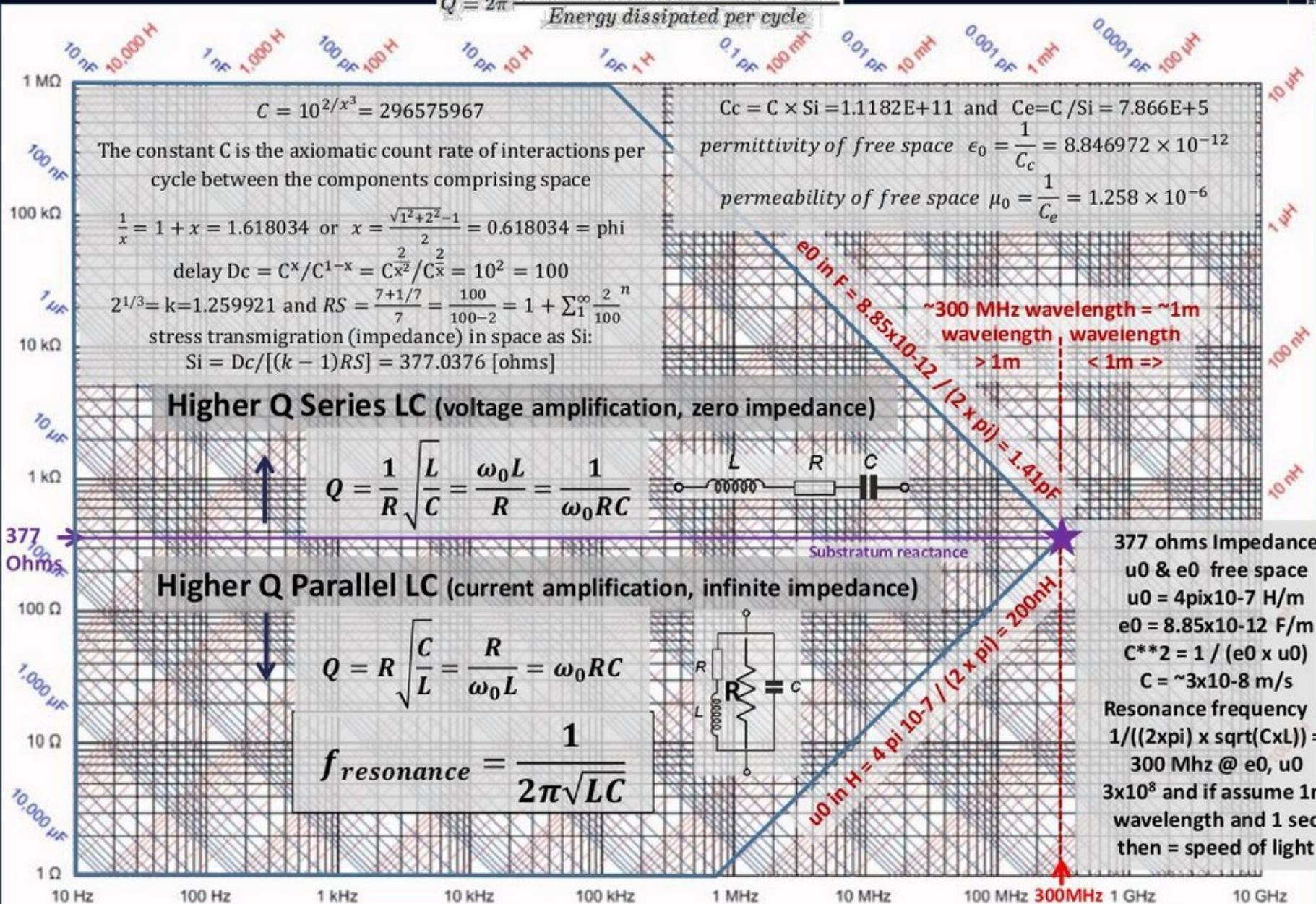
S Binary spin state = North/South detected by the sensor.



Magnetic Fields Are Macro Atomic Orbitals

Think Naturally – Log Base 10 EM Resonance

$$Q = 2\pi \frac{\text{Maximum energy stored per cycle}}{\text{Energy dissipated per cycle}}$$



$$X_c = \frac{1}{2\pi \cdot f \cdot C} \Omega$$

$$P = \frac{1}{2} CV^2 \cdot f$$

Frequency – Reactance Nomograph

RFCafe.com©

$$P = \frac{1}{2} LI^2 \cdot f$$

$$X_L = 2\pi \cdot f \cdot L \Omega$$

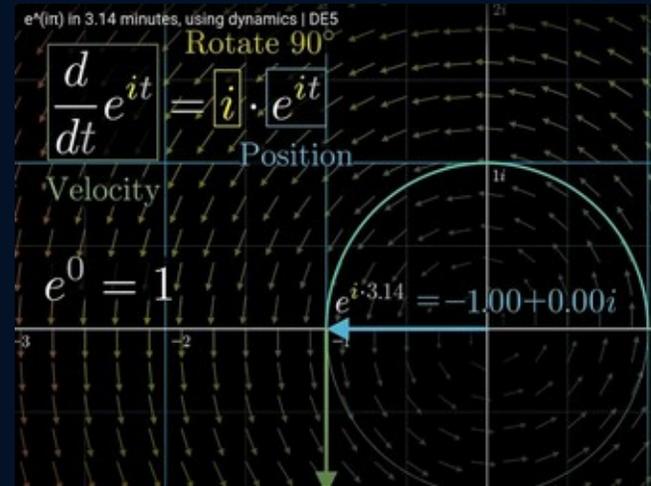
Think Naturally – Combinatorics Are Natural

$$\left(1 + \frac{1}{1000000}\right)^{1000000} = 2.718 \approx e$$

$$= \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n$$

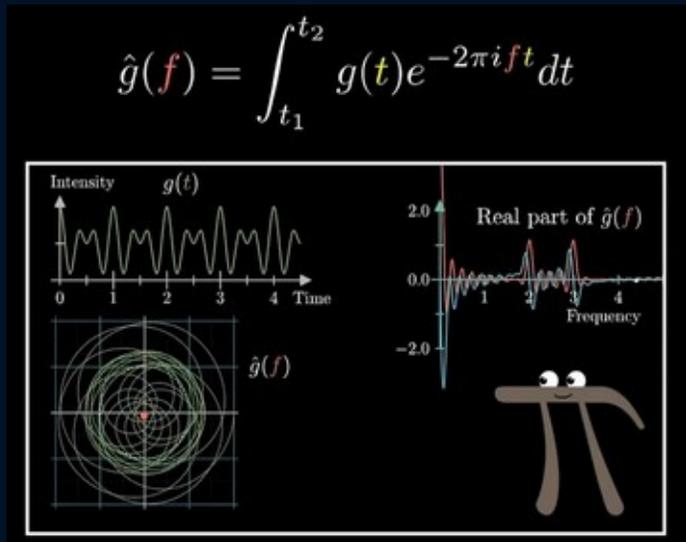
e is How Nature Computes Combinations & Growth

<https://tinyurl.com/natecombo>



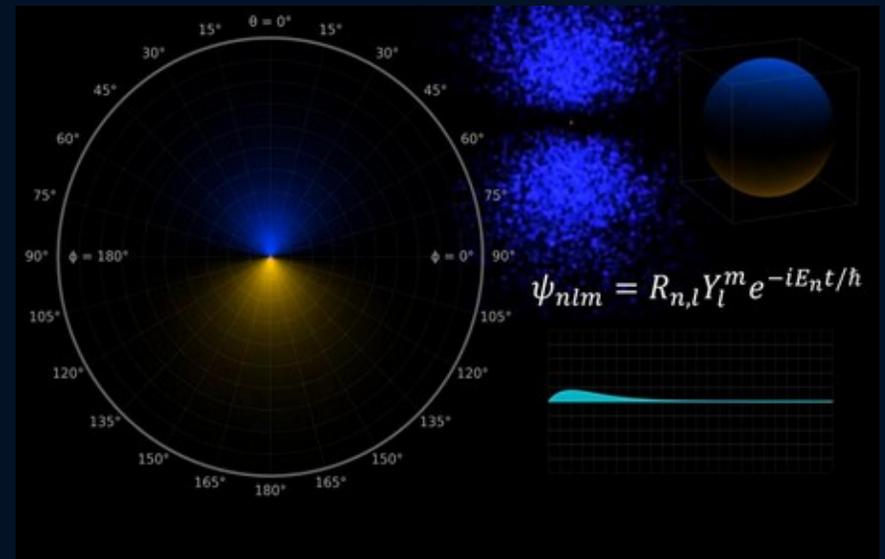
e is How Nature Computes Vector Fields

<https://tinyurl.com/natefield>



e is How Nature Computes Frequencies

<https://tinyurl.com/natefreq>



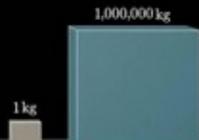
e is How Nature Computes Quantum

<https://tinyurl.com/natequantum>

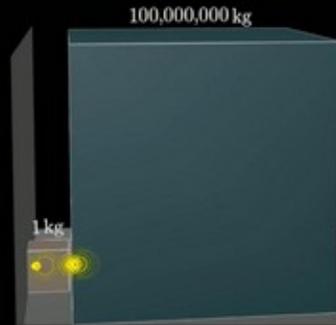
Think Naturally – Quantized Cycles Are Natural

#Collisions = 3,141

Mass ratio	#Collisions
1:1	3
100:1	31
10,000:1	314
1,000,000:1	3,141



#Collisions = 149



Mass ratio #Collisions

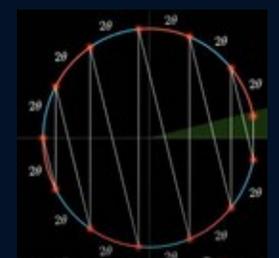
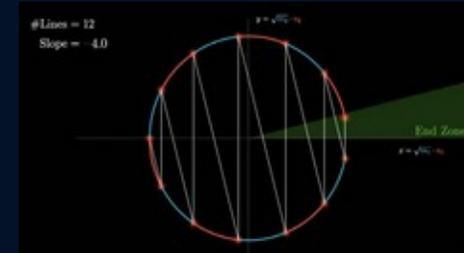
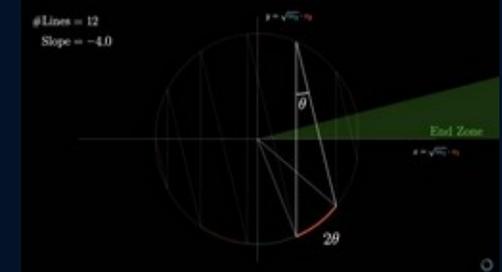
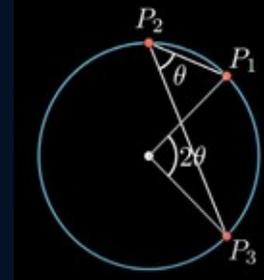
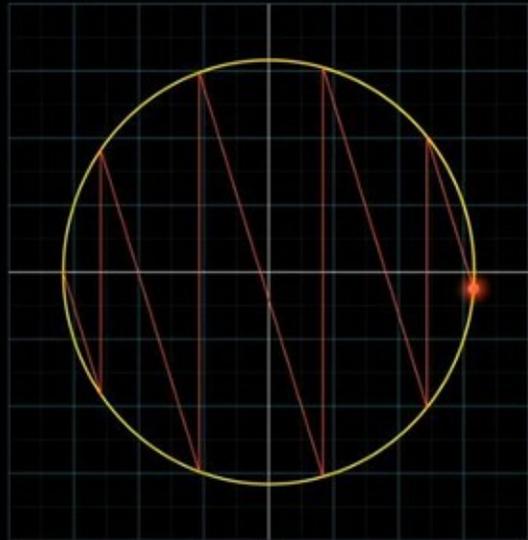
1:1	3
100:1	31
10,000:1	314
1,000,000:1	3,141
100,000,000:1	31,415
10,000,000,000:1	314,159

$$\frac{1}{2}m_1(v_1)^2 + \frac{1}{2}m_2(v_2)^2 = E$$

$$(\sqrt{m_1} \cdot v_1)^2 + (\sqrt{m_2} \cdot v_2)^2 = 2E$$

$$x^2 + y^2 = 2E$$

Equation for a circle



Collision Interactions and Pi for Mass Ratios Powers of 10²

Think Naturally – Scale Invariant Balancing

Kepler's 1st Law:
All planets revolve around the sun in an **elliptical** orbit with sun at **one of the foci**

Kepler's 2nd Law:
A line joining the planet and the sun **sweeps equal areas** in **equal time intervals**.

Kepler's 3rd(ish) Law:
Farther the planet, **longer** the time period!

[Orbital Mechanics Illustrate Nature's Energy Balance Equations of Motions](https://tinyurl.com/keplaw)

Think Logically - A Common Sense Starting Point

Assume Nature's Wheelwork is Knowable ...

... to start we only need to agree that

- **1 + 1 = 2** (axiomatic definition and logic of counting)
- **real things are three-dimensional** (1-D and 2-D are not real, and “higher dimensions” are really combinatory modes of simultaneous and sequential interactions)
- **some-thing never comes from no-thing** (“no where is there no-thing”, i.e. the physics of fullness, not emptiness; plenum physics, not particle physics)
- **dynamism is inherent in Nature** (self-evident because if it weren't, galaxies, solar systems, planets and atoms would stop spinning)

Think Logically

Q: What fundamentally (logically) is a physical interaction, i.e. an “action” or “activity”?

A: The “first cause” of all creation is collision due to accelerating stress densities between adjacent, like, energetic quantum 3-D objects causing simultaneously compressive, resonantly rebounding, and sequentially expansive stresses.

Think Logically

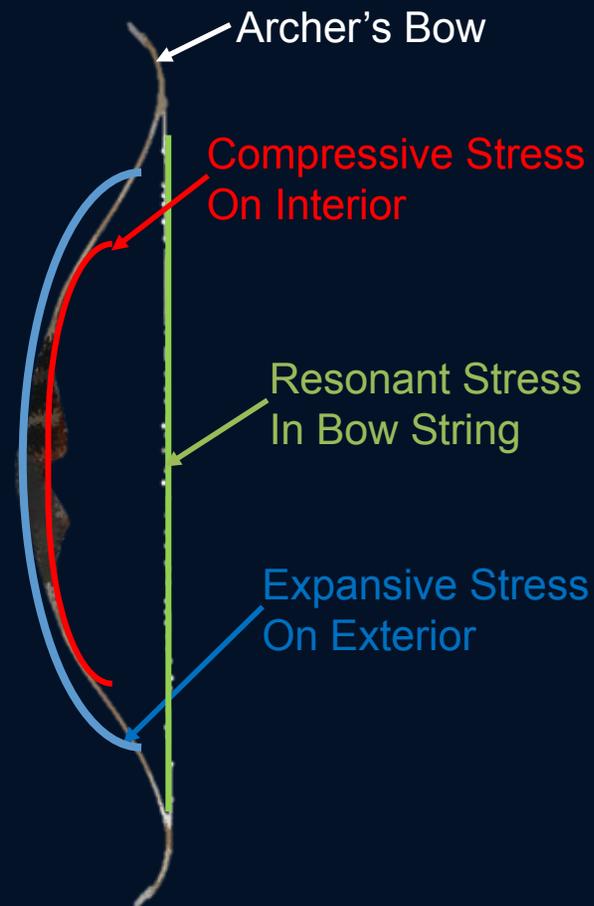


“The fundamental axiomatic principle in Sankhya is when two opposing states of compressive and expansive stresses are firmly constrained by a medium, its interaction leads to a resonant oscillatory state. Constrained by the elemental components forming the continuum, the compressive phase in a coherent state is balanced by the expansive phase in a harmonic state coupled by the interactive resonant phase, thereby forming the dynamic quantum. The constant fundamental rate of interactive oscillations C maintain a balanced resonant state, which therefore is not detectable but conserves it as the potential at source as the dynamic quantum of 7 coherent states to initiate all accelerative forces.”

G. Srinivasan, ISRO Experiments

Think Logically

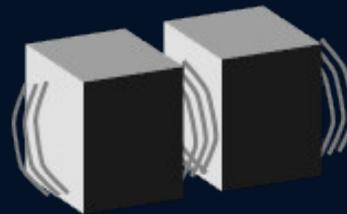
Physical Example



Think Logically



Tri-Modal Stresses From Colliding Quantum Objects:



- Simultaneous Compression -> Coherent Energy (mass, potential)
- Shuttling Rebounding -> Resonant Energy (temp, pressure, charge)
- Sequential Expansion -> Kinetic Energy (movement, heat, radiation)

Simultaneous = Sequential
(when balanced there is zero net displacement)

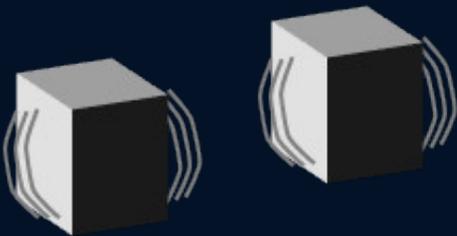
Think Logically

Q: How would action at a distance be possible?

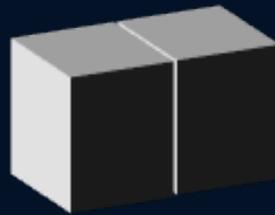
A: It is not; if no medium, if no objects or no intervals, then no-things and no energy transfer.

No Physical Interaction Possible When There Is:

Lack of Proximity



Lack of Kinetic Energy



Lack of External Force



Think Logically

Q: If space is not a vacuum, is it a continuum?

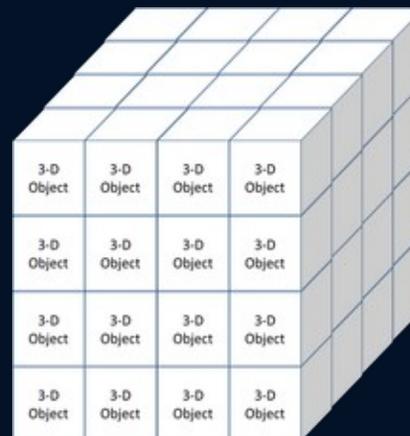
A: Space must be a continuum to support universal manifestation throughout space and initiation at any point in space.

(recall that no-where is there no-thing)

Think Logically

Q: If a continuum, is it a matrix?

A: *Space must be a 3-D matrix if it is to support uniform creation by a single universal law of interaction between adjacent like objects.*



Think Logically

Q: If a continuum, is it static or dynamic?

A: Space must be dynamic because our closed-form axiomatic self-similar tri-modal stress solution at any point in space cannot allow for external inputs to initiate dynamism.

Think Logically

Q: If dynamic, how long will it last, is it perpetual?

A: Space must be perpetually dynamic because cycle time must be conserved in an activity that is energetically balanced.

Think Logically

Q: If dynamic, why can't we see it?

A: The resonant field is dynamic but energetically balanced so no radiant states are produced, no radiation exists rendering space unobservable.

Think Logically

Summarizing, physical interactions can only occur universally in a packed, cubic matrix of coherently uniform, perpetually dynamic, but energetically balanced and therefore unobservable, quantum 3-D objects.

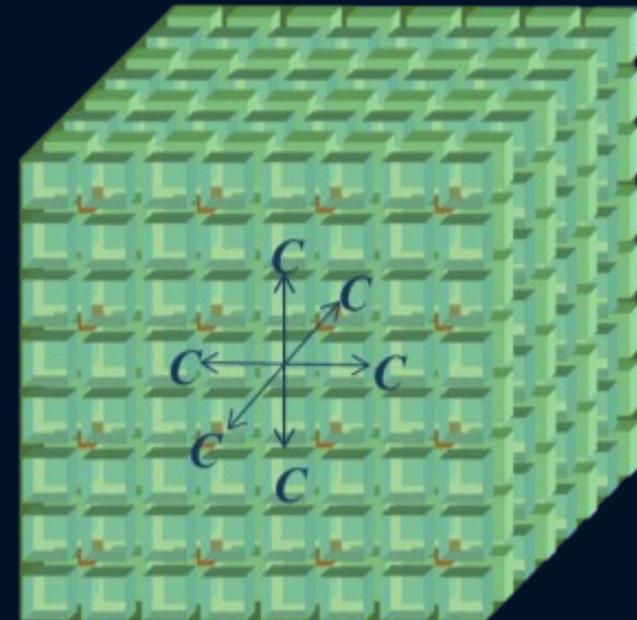
Self-Similar Means Balanced Transfer of Energy
From Within & Change Ratio = Change Increment



$$x = 1/2 + x^3/2$$

$$x^2 = 1/2 - x^3/2$$

$$x^3 = x - x^2 = x^3/2 + x^3/2$$



Think Axiomatically

“The axiomatic process of deriving the cause of phenomenon is an intellectual one, normally considered an exercise in abstraction. But derivation from an axiomatic source establishes its connection to reality, unambiguously. The process of counting, starting from one, as an elemental object, enables the identification of all the larger conglomerations in terms of this numerical ratio, devoid of dimensional complications. Using a ratio of two discrete elemental states is a comparison of ‘like with like’ that removes the complications in dimensional bookkeeping and the ensuing uncertainties in connecting multidimensional concepts in the real world of three dimensions.”

G. Srinivasan, “Secret of Sankhya” Part 1, pg 52

Think Axiomatically

“Sankhyakarika, in Sanskrit, is essentially a mathematical presentation of the scientific cause of phenomenon.”... The axiomatic principles, on which Sankhya is based, do not form a part of the vocabulary used in Physics and Cosmology today. Considering the typical resistance the scientific academia displays towards concepts that conflict with its foundations, the focus of part one is on a wider spectrum of scientifically minded youth, who will form the backbone of tomorrow’s Physics. As far as possible, description of phenomena and its related activities are limited to using commonly accepted terminologies. Since the entire theory is based on axioms and interactions are merely counted, the mathematical complexities of trigonometry, solid geometry, matrix algebra, calculus etc are eliminated. Moreover, every mathematical aspect is logically derived from axiomatic principles and no empirical or measured inputs are needed to initiate or support this theory.”

G. Srinivasan, “Secret of Sankhya” Part 1, pg 40

Think Axiomatically

Sankhya 68+3 Suthras

Fundamental Space

1. The Dynamic Substratum
2. Qualities of Substratum
3. Axiomatic 3-Dimensional Wave Fundamentals of Substratum

Intellectual Verification

4. Verification Through Axiomatic Proof
5. Process of Verification of Detectable Phenomenon
6. Process of Holistic Derivation of Proof is Siddhi

Axiomatic Reasons for Non-Detection

7. Reasons Why Manifestation May Not Be Detected
8. Reasons Why Fundamental Substratum is Not Detectable
9. Logical Reasons Why Substratum Must Exist if Manifestations Exist
10. Detection of Manifestation is Due to Changes, Lack of Which Makes Phenomenon Undetectable

Self-Similar Law of Interaction

11. Ability to Discriminate 3 Aspects of Gunas or Interactive Stresses is the Cause of Detectability
12. Characteristics of Gunas (Triad of Interactive Stresses)
13. Definitions of Gunas
14. Holistic Logic Can Predict Hidden States

Phases of Oscillatory States

15. Cyclic Oscillatory Interaction Creates Natural Waveform
16. First Change of Phase Occurs With Increasing Interaction
17. Second Change of Phase Creates Nucleus

Nuclear State as Superposed Coherent Activity

18. Logical Proof That Nucleus is a Conglomerate
19. The Complex Nuclear State Forms Background for Manifestation
20. Static and Dynamic State is Sustained By Interaction
21. Nuclear State is Reference Background

Logic of Self-Sustaining Activity

22. Mathematical Derivation of Self-Similar State
23. Ascertainment By Axiomatic Mathematical Logic
24. Mathematical Description of Field Force as a Spectrum
25. Expansive Interaction Rises to 11th Power

Cerebral System as a Universal Function

26. Efferent and Afferent Sensory Systems
27. Interactions in the Sensory Systems
28. The Five Levels of Cyclic Vortex (photonic) Activities

Perpetual Oscillation and Radiation

29. Definition of Self-Similar Internal Activity and Radiation
30. Definition of a Cyclic Vortex and a Spherical Harmonic Oscillator
31. The Cyclic Vortex is Kept in Continuous Oscillation Only By Its Internal Potential

Potential as Coherent States

32. The Static and Kinetic Potential Limits
33. The Internal and External Potential Limits
34. The Potential to Act is at the 5th Level

Third Order Constraint Cause Phenomena

35. The Formation of a Basic Field is Caused by the 3rd Order Damping Action
36. Decay of Radiated Phenomenon
37. Extraction of Potential Energy From the Purusha Domain
38. Classification of Activity of Vrithi and Elements
39. Genetic Code

Think Axiomatically

Superposed States Create Ground Potential

- 40. Linga State as Coherent and Superposed Oscillations
- 41. The Need for Substratum as Supporting Framework for Manifestation
- 42. The Synchronized State Provides Attracting Potential to Build Up Mass

The Balance in Interactive States

- 43. Conditions Under Which the Laws of Interaction Are Certain
- 44. The Mode of Natural Action Based on Rules
- 45. State of Unbalance is the Motivating Cause of Manifestation

Spectrum of Interactions Defined

- 46. Interactions in the Synchronized State Causes 50 Orders of Change
- 47. Balanced, Synchronized and its Reverse Sequence of Interactions
- 48. Order of Compression Increase When One, Two and Three Axis Synchronize
- 49. The 11th and 17th Orders of the Weak and Balanced Groups
- 50. Nuclear Balancing Parameters

Interactions Cause Stress

- 51. Colliding Interactions Cause of Vibrations
- 52. The Polarization of Phenomenon Into Coherent Potential (mass) and Kinetic Potential (charge) Modes
- 53. Guna Classification
- 54. The Distribution of Interactive Guna States
- 55. Stress in Three Modes Follows Self-Similar Laws in the Dynamic Substratum
- 56. Manifestation is the Result of Interactions to Maintain the Balance Between Nucleus and Boundary

Coherence Causes Potential States

- 57. Attainment of a Coherent Superposed State Initiates Oscillatory State
- 58. The Unmanifest State Maintains the Potential to Act
- 59. Forming of Nucleus Due To Reduction of Potential Difference
- 60. Cause of Interactive Oscillations

Synchronization Causes Holographic State

- 61. The Oscillatory Displacement at the Point of Balance is Very Attenuated
- 62. Interaction Are Cause of Manifestation as a Holographic Phenomenon

Self-Similar Interactions

- 63. Interaction
- 64. The Lack of Specific Potential Leads to Ground State

Equalization of Potentials

- 65. The State of Balance When the Nuclear Boundary is in Balance
- 66. State of Balance by Eliminating the Potential to Act

Conversion of Charge to Mass

- 67. Conversion of Kinetic Force Into Static Potential as Inertia or Mass
- 68. The Final, Synchronized, Coherent, Dynamic State of Isolated Nucleus

Hierarchy of Knowledge Transmission

- 69. The Knowledge of the Nuclear Potential is Codified in This Work
- 70. The Hierarchy of Knowledge Transmission
- 71. The Final Verification and Recording by Ishwarakrishna

Think Axiomatically

“A notable aspect of Sankhyan logic is that it’s **very first theorem defines in Sanskrit the qualities needed to establish the observed dynamism in space, as an axiomatic state.**

‘Investigating the triad of interactive stresses shows that such interactive modes of stresses exist but it would not have been detectable, had it not been for the existence of the coherent and synchronised - perpetual - dynamic but un-manifest state (of existence of the substratum of space.)’

It describes a space that is substantial, real and dynamic, but due to the coherent state of perpetual harmonic interactions it remains undetectable, for the observer can only detect changes that transmigrate or radiate as stresses. Radiation of stress depends on the transformation of static potential into kinetic acceleration. Hence the absence of radiation ensures the existence of a maximum potential. **Physics and Cosmology graduated, from a concept of space described as ‘static ether’ to that of a ‘dynamic vacuum’.** However, the concept of space in Sankhya can be defined axiomatically as the ‘dynamic ether’ .”

G. Srinivasan, “Secret of Sankhya” Part 1, pg 60

Think Axiomatically

“Suthra 31. The cyclic vortex is kept in continuous oscillation only by its internal potential. The cyclic vortex or spherical oscillator is kept in continuous interactive exchange up to the very end (limit) only by the nuclear or core potential developed by the mutual exchange of internally motivated and triggered self similar and self organised impulse or force and there is no other external potential cause.”

“Suthra 37. Extraction of potential energy from the Purusha domain. A comprehensive and extraordinary use can be made in the following way. The potential of the Purusha can be attained from the minute coherent state hidden inside the Purusha by repeated precisely triggered inputs to initiate the primary interactions. Potential energy can be extracted from within the hidden interior Purusha domain by a process of repeatedly triggering the primary interactive region with a minute or sharp or impulse or triggering an input of energy. The mathematical formulation is derived in the last few Sutras.”

“The perpetual oscillatory state can be upset by a triggered impulse which then releases a large amount of energy during the process of regaining its harmonic oscillatory state.”

Think Axiomatically

“Suthra 52. The polarisation of phenomenon into coherent potential (mass) and kinetic potential (charge) modes.

Meaning: Neither can a characteristic potential source exist without a kinetic phase nor can a potential phase without a kinetic mode. A vorticular particle existed due to a potential source. The potential is classified as mass and the kinetic phase as charge from which dual combination all phenomenon is initiated and maintained by a dual mode of polarisation.

Explanation: This shows the interdependance of static and dynamic potential in the substratum. In the coherent and symmetric state there is no preferred or prevalent or predominant orientation and as there is no physical movement of components the cause and effect determines the potential and kinetic phases. The potential phase change induces balancing procedures which is the kinetic phase and when it exceeds the self-similar rate of balance then it becomes externalised and displays radiant qualities.”

Think Axiomatically

“Suthra 62 very succinctly explains that no object or thing is created, bound, released, radiated etc, but only Prakriti (interactive vibrations) in its numerous variations, transmigrate across the identical components of the Substratum as vibratory phenomenon. It clarifies through Suthras 55 to 68 that when the passive but massive Purusha at the core, loses its freedom to remain stress-free, it’s slightest deflection to regain freedom, creates the Prakriti avalanche. It transmigrates instantly towards the offending boundary where it attempts to recreate the stress free state of Kaivalya through interactions that may become observable. The axiomatic base shows clearly that such varied factors as the Planck mass / neutron or proton / electron mass ratio, the electromagnetic fields, the structure coupling constants, the quantised charge, the spectral behaviour of strong, weak, EM forces and in general all observable parameters are only due to one process – the vectorial aggregation of vibrations based on purely axiomatic principles that follow self similar and scale invariant laws.”

Secret of Sankhya: Acme of Scientific Unifications, G. Srinivasan

Start With The Answer - Maharishi Kapila's Anzatz

“... dealing with a dynamic Universe through a single logical law that integrated time and space as an unit, required an intellectual approach that had not been introduced so far in science. Maharishi Kapila created a unique and brilliant procedure to unify these two seemingly opposing parameters. He considered the cubic solid to be just the form of a vibrating set of parameters that remained in the same location to imitate that permanent shape. Through that approach, the entire set of universal parameters was accurately derived in Sankhya.”

Gopalakrishnan Srinivasan, Secret of Sankhya

(who decoded the ancient science over the past three decades)

<https://web.archive.org/web/20220723144524/http://www.kapillavastu.com>

The Substratum (aka Aether) IS Reality

“The coherent, super-symmetric, super-conductive, quiescent state is maintained at a precise interactive level by a super heavy coherent blackhole Purusha mass equivalent to 10^{25} GEV or 41 million times heavier than the planck mass and is yet to be identified in particle physics. It forms the immovable ground state. Incidentally, it also provides an ideological solution to the cosmological riddle of an open or closed Universe because of an enormous store of mass energy in a “coherent potential” state. The explicitly defined Sankhya view of the Substratum is that a plenum of components form a base for manifesting phenomenon, like a screen for projecting a movie ... when disrupted beyond a precise level leads to a directional displacement of oscillations as radiation.”

G. Srinivasan, Secret of Sankhya: Acme of Scientific Unification

Think Naturally – Living Energies

Fig. 2.2 The energy content of 1 gram of matter

Hasenöhrl-Einstein energy equation:

$$E = mc^2$$

= mass(kg) x speed(metres/sec) of light²

therefore

$$E \text{ gram} = m \times c^2$$

$$= 0.001 \text{ kg} \times (2.997 \ 924 \ 58 \times 10^8)^2$$

$$= 0.001 \times 8.987 \ 551 \ 787 \times 10^{16}$$

$$= 8,987 \ 551 \ 787 \times 10^{13}$$

Mass-energy equivalence of grams vs joules

$$= 8.987 \ 551 \ 787 \times 10^{13} \text{ J}$$

Conversion of joules to electron-volts (eV)

$$= 8.987 \ 551 \ 787 \times 10^{13} \text{ J} \times 6.24 \times 10^{18} \text{ eV}$$

therefore

$$E \text{ gram} = 5.608 \ 232 \ 315 \times 10^{32} \text{ eV}$$

Converted to Kilowatt Hours (kWh):

$$E \text{ gram} = 5.608 \ 232 \ 315 \times 10^{32} \text{ eV} \times 4.45 \times 10^{-26} \text{ kWh}$$

therefore

$$E \text{ gram} = 24,956,633.8 \text{ kWh}$$

In round figures therefore

$$\text{The energy content of 1 gram of matter} = 25,000,000 \text{ kWh}$$

Energy of
~1,000,000
households
for 1 day

1kWh = 2.2469E+25 eV or 1eV = 4.4505E-26 kWh = electric charge = 1/6.24E18 = 1.6022E-19 J

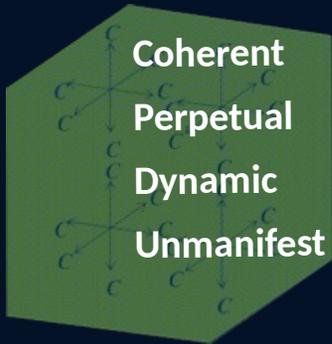
Both are units of energy. The conversion factor can be deduced from their relationship with the derived SI unit for energy, the joule.

1 joule is equal to 2.7778E-7 kWh, or 6.2415E+18 electron volt. Note: 2.7778E-7 is just 1/3600000 or 1/(60x60x1000).

A joule is defined as the work required to produce one watt of power for one second, or one watt-second.

An eV is the amount of kinetic energy gained or lost by a single electron accelerating from rest through an electric potential difference of one volt in vacuum. Hence, it has a value of one volt, 1 J/C, multiplied by the electron's elementary charge e, 1.6022E-19 C. Therefore, one eV is equal to 1.6022E-19 J. 6.2415E+18 is simply 1/1.6022E-19. Note: 6.2415E+18 = 2*pi*((10^2)^3)^3 = Amp = Coulomb/sec

Start With The Answer – Universal “Holodeck”



Free Space is a “Holodeck” of perpetually oscillating 3-D “voxels.”

One scale-invariant, self-similar universal law of interaction consisting of tri-modal stresses: compression, rebounding shuttle, expansion.



So-Called “Modern” Physics	Sankhya Physics
Luminiferous Ether Dirac Sea or Quantum Foam Quantum Vacuum Plasma	Substratum energetic foundation of all manifestation (coherent, dynamic, perpetual, unmanifest)
Zero Point Energy	Perpetual Harmonic Oscillator
Singularity Black hole	Purusha (Kx) ground state largest coherent unit of cyclic time-period maximum inertia or mass
Cosmological Constant String Infinitesimal, Elemental Quantum (of length, time or instant, inertia, charge) Photon Rest Mass	Moolaprakriti (Mly) root oscillatory coherent state fundamental unit of interaction or unit count elemental unit-period (quantum) of activity ‘real’ point in space or elemental cubic measure minimum standing wave ½ cycle displacement elemental perpetual quantum oscillator elemental holographic unit of activity elemental length, interval, inertia, charge

Start With The Answer – Universal Interaction Cycle

Three Activities



simultaneous change ratio = sequential change increment

Two Key Properties

$$\sum_1^{\infty} x^n = 1.618... = \frac{1}{x} = 1+x$$

simultaneous harmony potential sequential melody kinetic

$$1 = x + x^2 = (x + x^2)^n$$

Meaning

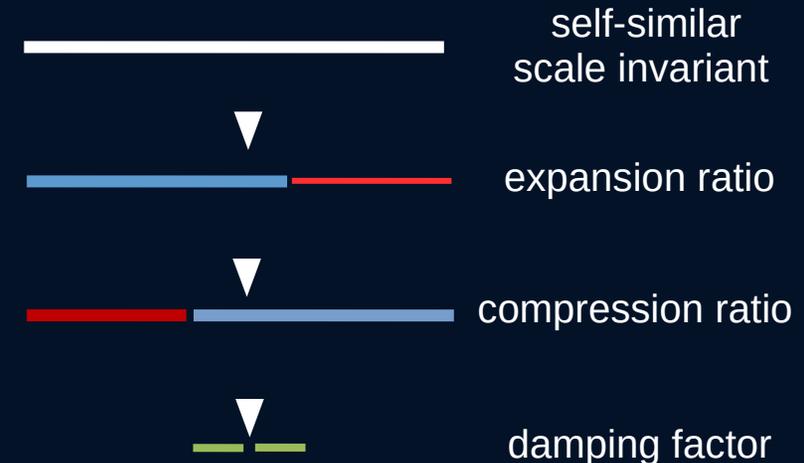
Balanced Interaction
(only for x = golden mean ratio)

Three Intervals

$$x = \frac{1}{2} + \frac{x^3}{2}$$

$$x^2 = \frac{1}{2} - \frac{x^3}{2}$$

$$x^3 = x - x^2 = \frac{x^3}{2} + \frac{x^3}{2}$$



Axiomatic Universal Process of
Self-similar, Scale-Invariant
Rhythmic Balanced Interchange

Self-Similar
Resonant Mid-Point
(stationary for balanced interaction)

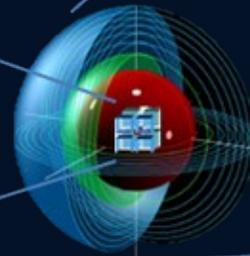
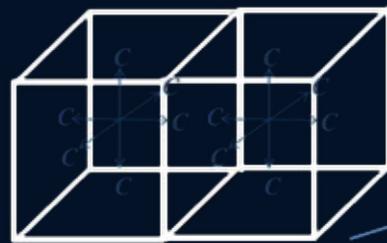
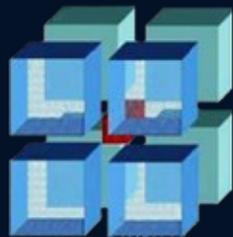
Synchronous Self-Similar Cyclic Activity

Fundamentals of Self-Similar Growth

$$\frac{\text{Simultaneous Change Ratio}}{\text{Sequential Change Increment}} = 1$$

Change Ratio $\frac{1}{x} = 1 + x$ Change Increment

solved only for $x = \frac{\sqrt{1^2 + 2^2} - 1}{2}$

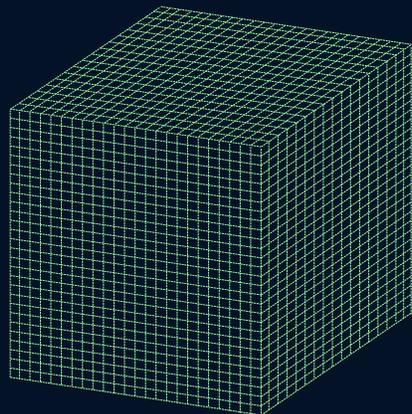


Sequential (Interval) Counting
 $1 + 1 = 2$

Cyclic displacement = 2π
Occurring after 10 counts
For self-similar instant cycle



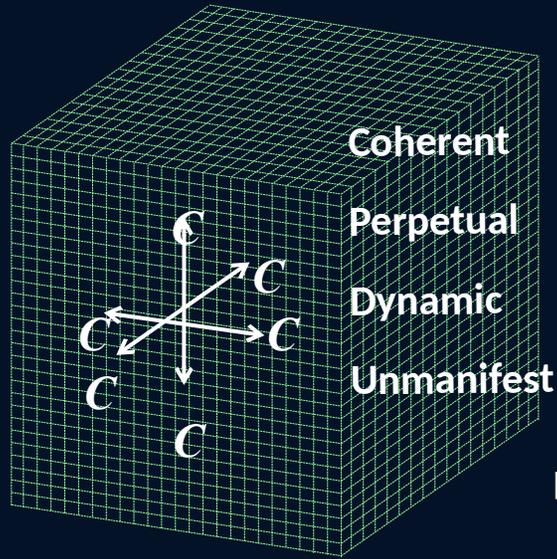
Simultaneous (Instant)
Logarithmic (Cycle) Counting
 $100 = 10^1 \times 10^1 = 10^{1+1} = 10^2$



$$\arcsin\left(\frac{1}{x+x}\right) = \frac{2\pi}{10} = 36 \text{ deg}$$

Start With The Answer – Nuclear Manifestation

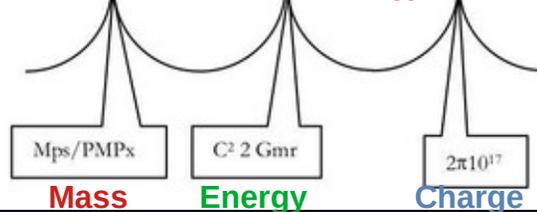
**Packed Cubic
Substratum Matrix**



$$Ahs = \frac{Mps}{PM \cdot Px} = C^2 \cdot 2Gmr = \frac{2\pi}{10} 10^{18}$$

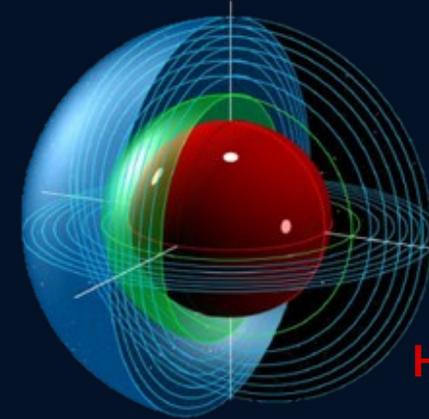
Fig: The stress intensity in nodal states.

Three Simultaneous Energy Modes:

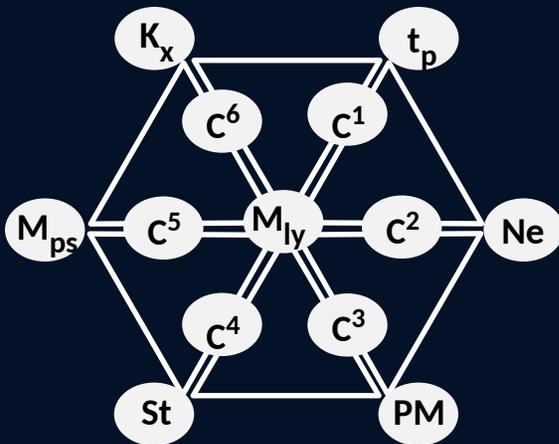


potential at ALL THREE nodal states
 $Ahs = (2 \cdot \pi / 10) ((10^2)^3)^3$

Polarized Substratum creates nuclear phenomena at any scale where Hadronic (Red) and Leptonic (Blue) Balance about Bosonic (Green) fulcrum



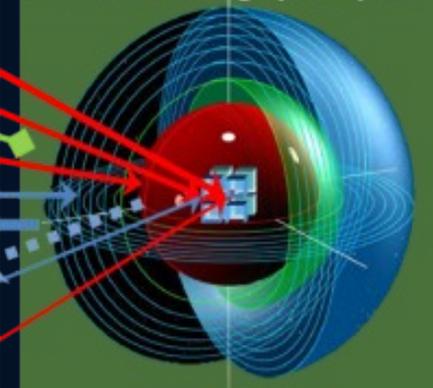
Leptonic
Satwa
Bosonic
Raja
Hadronic
Thama



Ce = centre, Sp = spoke in hexagon, stab = stable state.

Ce.	Sp.	Boundary	Stab.	Physics	Sanskrit	Stress-type
My	C ⁶	Kx	Kx	New	Purusha	Potential-max
My	C ⁵	Mps/7RS	Mps	Planckmass	Mahad	Coherence
My	C ⁴	(RS/St) ^{0.5} Kx7	St	C _L ³ /G _N	Linga	Maxdensity
My	C ³	PM Px (Pho)	PM	Nucleonmass	Prikriti	Massdensity
My	C ³	Me Px/const.	Me	Leptonmass	Vikriti	Fluxdensity
My	C ²	Ne 7/(2π) ²	7Ne	Planckcon h	Vikaro	Radiate
My	C ²	Ne (7/2π) ²	Ne	Neutrino	Bhava	Transmigrate
My	C ²	Lp 7	Lp	Plancklength	Krama	Unit length
My	C	tp 7	tp	Plancktime	Yugapac	Unit cycle
My	1	(2π) ³	My	Photonmass	Vriti	Unit-point

Singularity-Centered Nucleus of Polarized Holographic Space



Start With The Answer – Nuclear Polarization

“Summarising, the state of oscillatory balance in a three dimensional volumetric stress form, is achieved by equating the outward sequential expansion ratio of seven [green to outer blue ring] with the inward simultaneous compressive ratio of two [green to red core boundary], with the forward and backward displacement rate, within a single cycle time. Because the interactive count rate and phase are kept identical and equal there is neither radiation nor absorption of stress counts in both directions, the resonant standing wave state of $[n =] 2$ or half wavelength cyclic state is conserved. The compressive stress rise is conserved as the magnetic state and expansive charge state balances out the energy or work equation every instant in the cycle.” SoS 1 pg 130

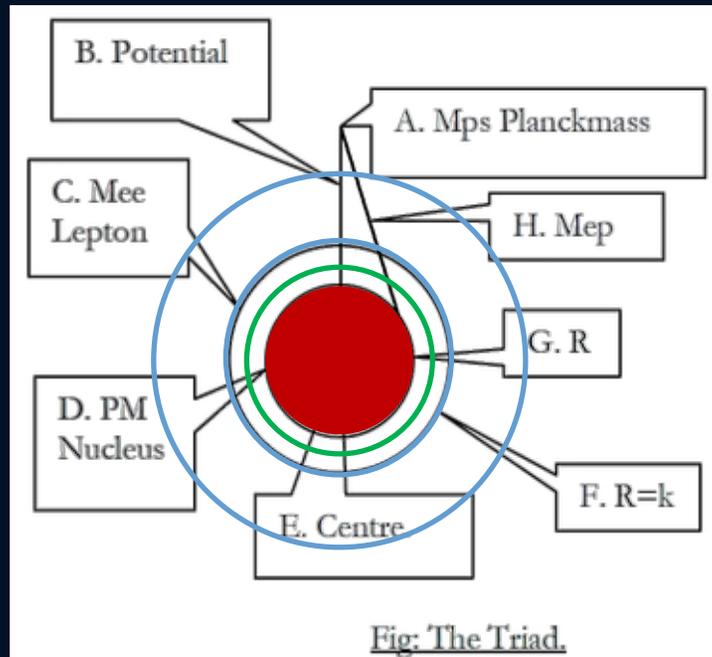
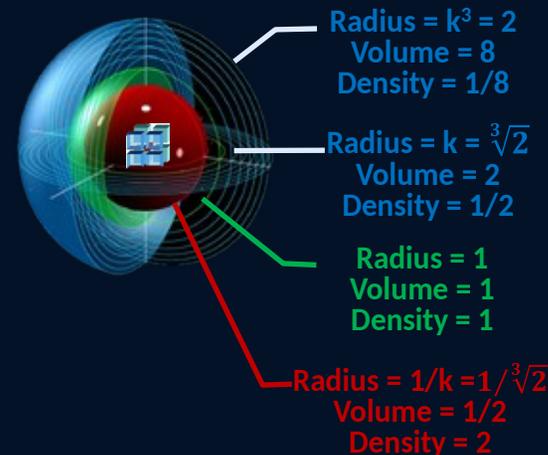


Fig: The Triad.

A = Mps maximum density. B = Potential rise due to compression. C = Mee PM boundary as lepton. D = PM core nuclear boundary. E = Kx forming dynamic centre. F = expanded boundary radius k. G = nuclear core radius $R = 1/k$. H = Potential drop due to expansion forming Mep. SoS 1 pg 124



Start With The Answer – Universal Max & Min

SANKHYA as SA = 5 and KHA = 2 (mnemonic)

SWABHAVAVA	ABHAVAVA	VIKARO
THAMA (Coherent)	RAJA (Resonant)	SATHVA (Harmonics)
52 Brahmanda	1+1 = 2	1 - 52 = - 51 Moolaprakriti
Mass of Universe 7.82 e+52		Moolaprakriti mass 1.344 e - 51

$$MU = \frac{Mly}{(2x)^6 Lp^3} = 7.817E+52$$

$$Ah = \frac{Lp}{Tp^2} = \frac{7}{Mly} = 5.206E+51$$

$$St = \frac{MU}{Ahs(k-1)(x+x)(1+\frac{2}{C^{1-x}})} = 3.868244E+35$$

$$Ahs = \frac{2\pi}{10}(((10^2)^3)^3) = \frac{1}{10} \frac{1}{\text{electric charge}} = 6.2826645825E+17$$

Balanced Energetic Substratum

compressive potential = expansive potential
(Kx = Purusha, Mly = moolaprakriti)

$$\frac{Kx}{C^3} = C^3 Mly$$

where $C = 10^{\frac{2}{x^3}}$

Moola-Prakriti inside Planck Cube



$$Kx = \frac{10^{1+x}}{2^3} \frac{2^{1/3}}{2^3-1} \frac{10^2-2}{10^2} = 0.9149879$$

$$h = Mly C^2 (2\pi)^2 / 7 = 6.62619863 \times 10^{-34}$$

$$Lp = C(Tp) = C\left(\frac{CMly}{7}\right) = 1.6896E-35$$

$$Mly = \frac{Kx}{C^6} = 1 \text{ count} = 1.3446202249 E(1-52)$$

Start With The Answer – Nature’s Manifestation Ladder

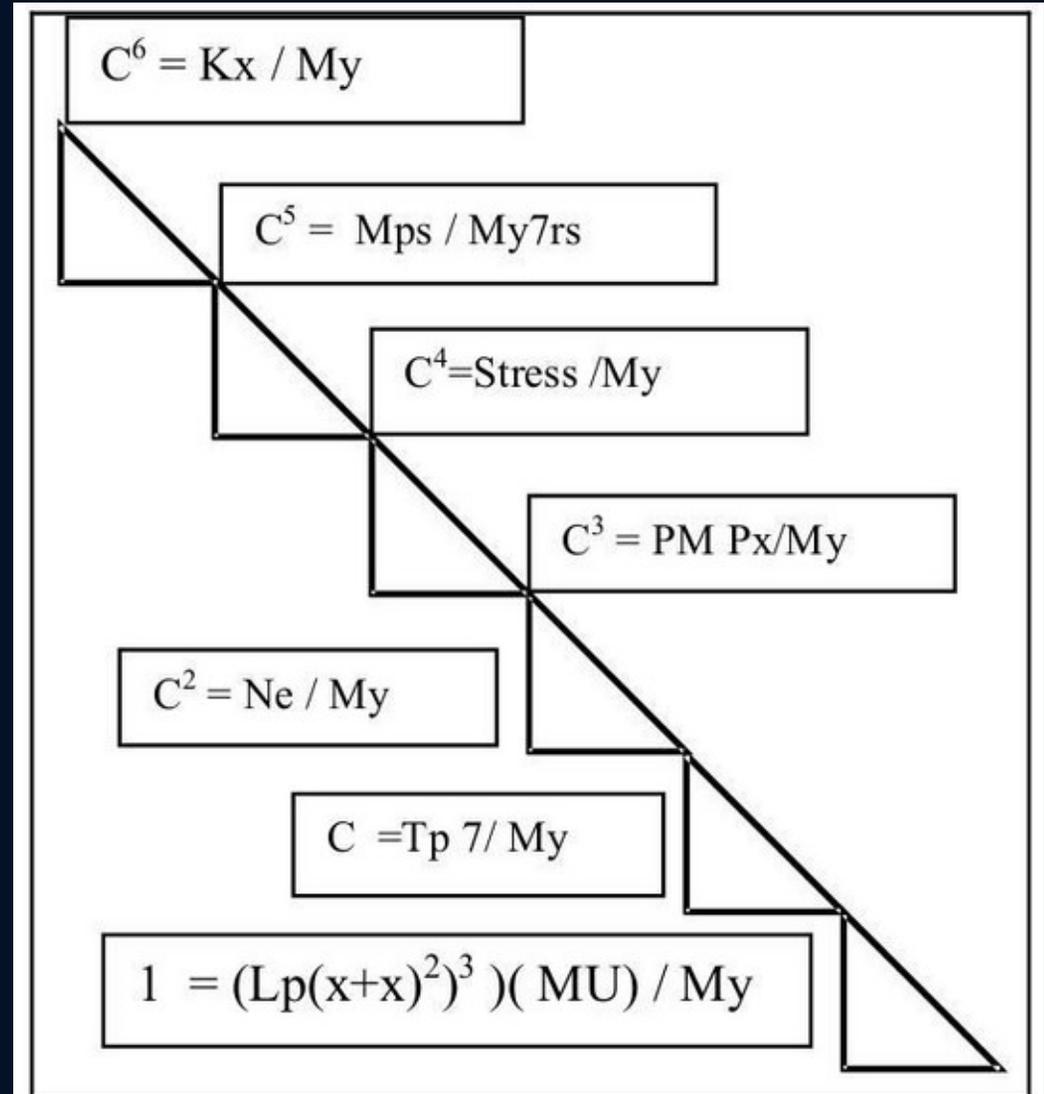
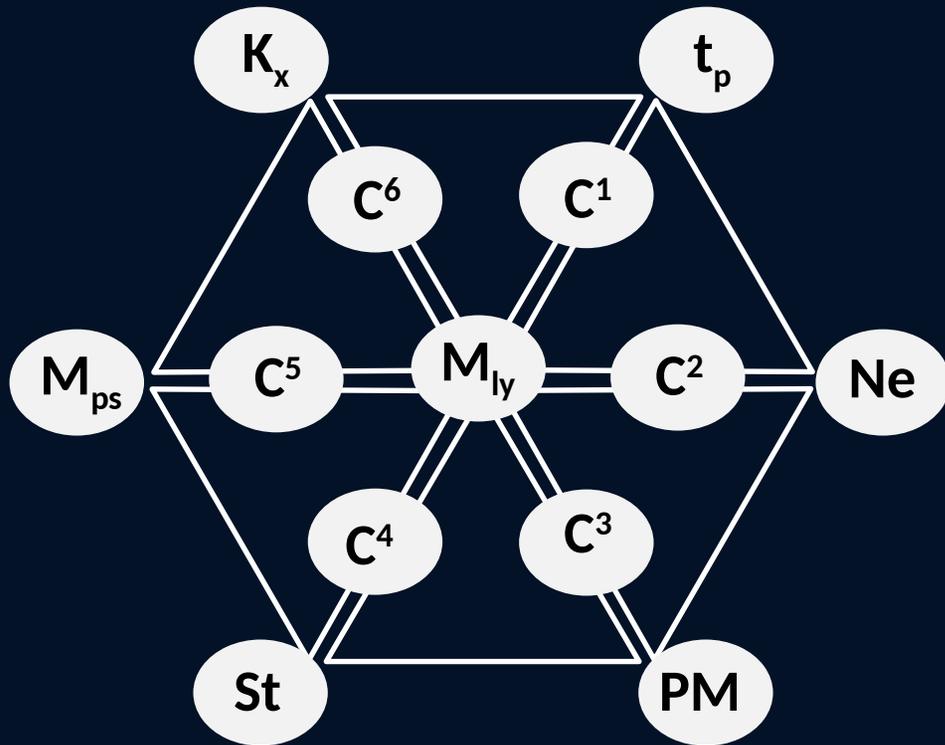
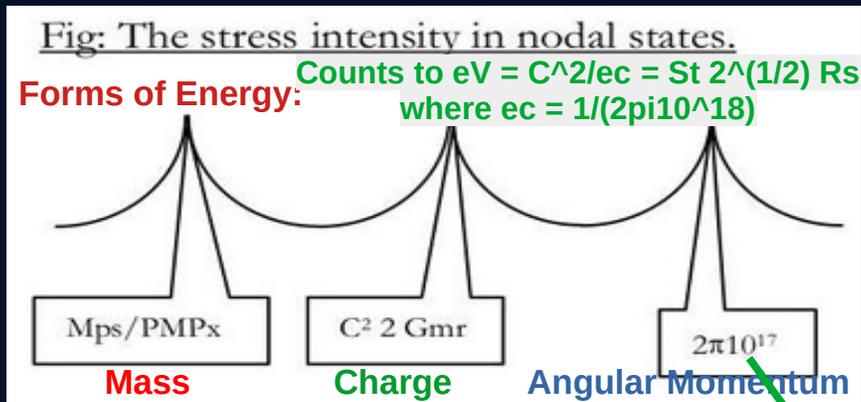


Fig: The Ladder Of Phenomenon.

Start With The Answer – Cycles, Mass & Charge



“The coherent, super-symmetric, super-conductive, quiescent state is maintained at a precise interactive level by a super heavy coherent blackhole Purusha mass equivalent to 10^{25} GEV or 41 million times heavier than the planck mass and is yet to be identified in particle physics. It forms the immovable ground state.”

Physics (name)	Sankhya State	Particle	Fractional Counts	Counts Per Cycle	kgs	GeV
None	Purusha	Kx	9.15E-01	6.80E+50	9.15E-01	5.11E+26
None		Mp	6.54E+00	4.86E+51		3.65E+27
Planck mass	Mahad Prakrithi	Mps	2.20E-08	1.64E+43	2.20E-08	1.23E+19
Metric Elasticity of Space	Stress Density of Space	St	5.20E-16	3.87E+35		2.91E+11
Neutron		Pn	1.67E-27	1.25E+24	1.67E-27	9.36E-01
None	Prakrithi Saptha	PM	1.67E-27	1.25E+24	1.67E-27	9.36E-01
Proton		Pm	1.67E-27	1.24E+24	1.67E-27	9.35E-01
None		Mep	9.11E-31	6.78E+20	9.11E-31	5.09E-04
None	Mahad Vikrithi	Me	9.11E-31	6.78E+20	9.11E-31	5.09E-04
Electron		Mee	9.11E-31	6.77E+20	9.11E-31	5.09E-04
Planck constant h	Vikaro	7*NE	6.67E-34	4.96E+17	6.67E-34	3.73E-07
Planck const hs sankhya		7*NE/bf	6.63E-34	4.93E+17		3.70E-07
Neutrino	Vikrithi Saptha	NE	9.53E-35	7.09E+16	9.53E-35	5.33E-08
Planck Time		Tp	5.70E-44	4.24E+07		3.18E-17
Cosmological Constant	Moolaprakriti	Mly	1.34E-51	1.00E+00	1.34E-51	7.52E-25

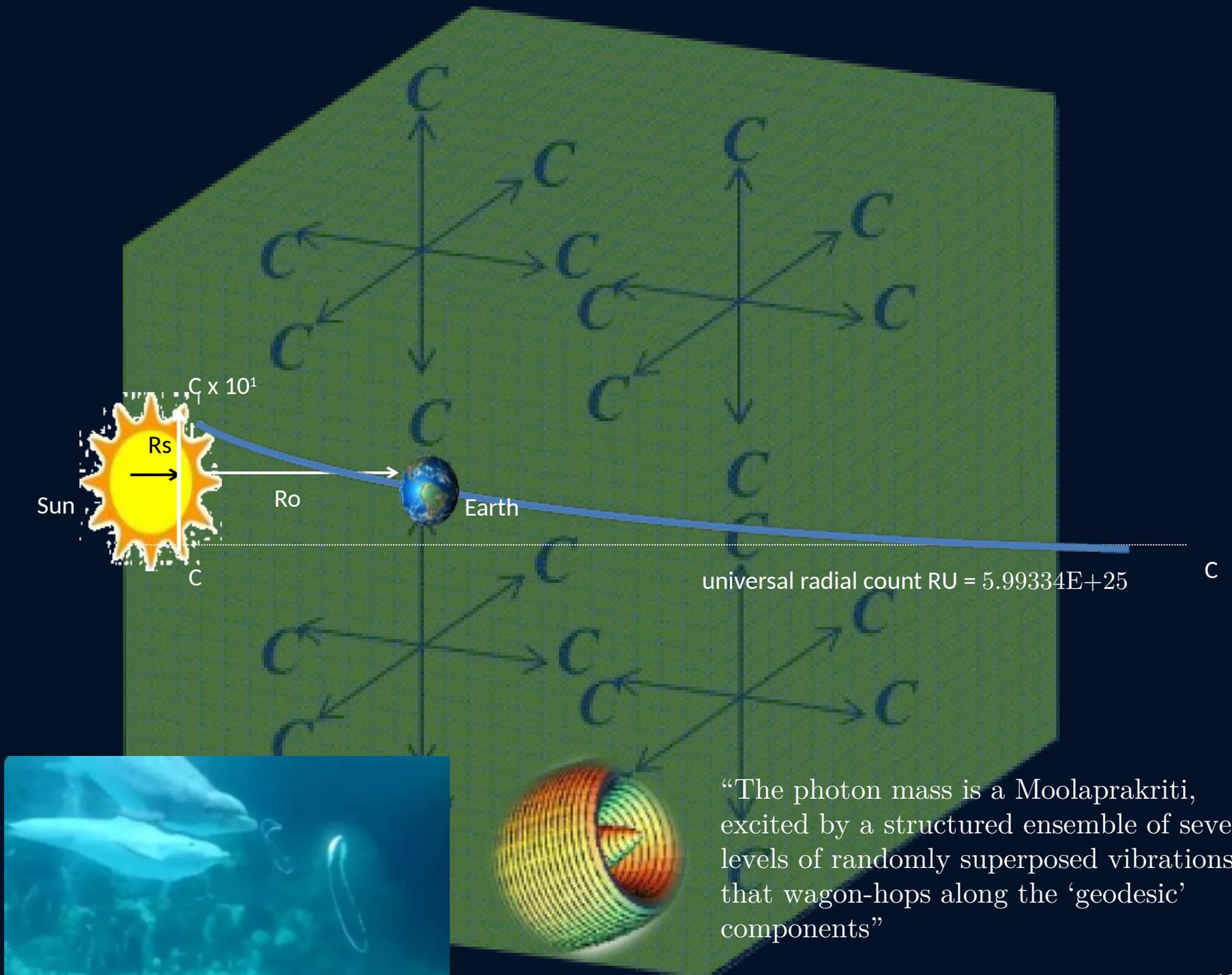
Start With The Answer – Speed of Light

Speed of light definition - a fundamental physical constant that is the speed at which electromagnetic radiation propagates in a vacuum and having a value fixed by international convention of 299,792,458 meters per second — symbol c . (Merriam-Webster)

“Speed of Light” $c = 299792458$ meters / second
(adopted empirical standard)

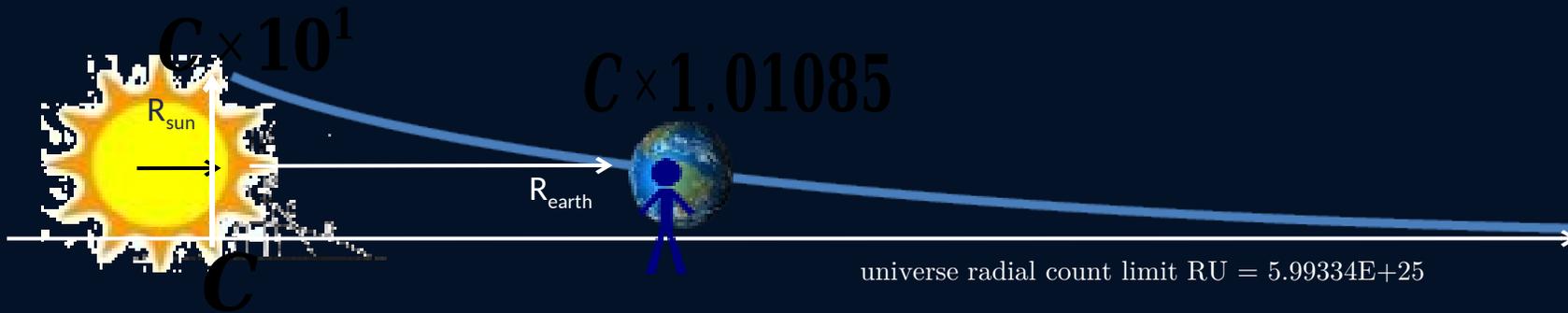
“Speed of Light (on Earth)” $c = 10^{2/x^3} \times 10^{R_{sun}/R_{sun^2earth}}$
(Sankhya axiomatically derived)

where the Universal constant $C_{Sankhya} = C = 10^{2/x^3} = 296575967$ is the axiomatic count rate of interactions per cycle between the eternal, unobservable, quantum continuum of dynamic components comprising substantial space following universal, dimensionless, self-similar and scale invariant rules of interaction, where $1/x = 1 + x = 1.6180334$, or in other words, the Golden Ratio where simultaneous change ratio = sequential change increment, and where $R_{sun} = 6.9598E+8$ meters divided by $R_{sun^2earth} = 1.48562955925181E+11$ meters = $\sim 1/213$; $10^{1/213} = 1.0108458$.



Why is the answer relative to distance from our Sun?

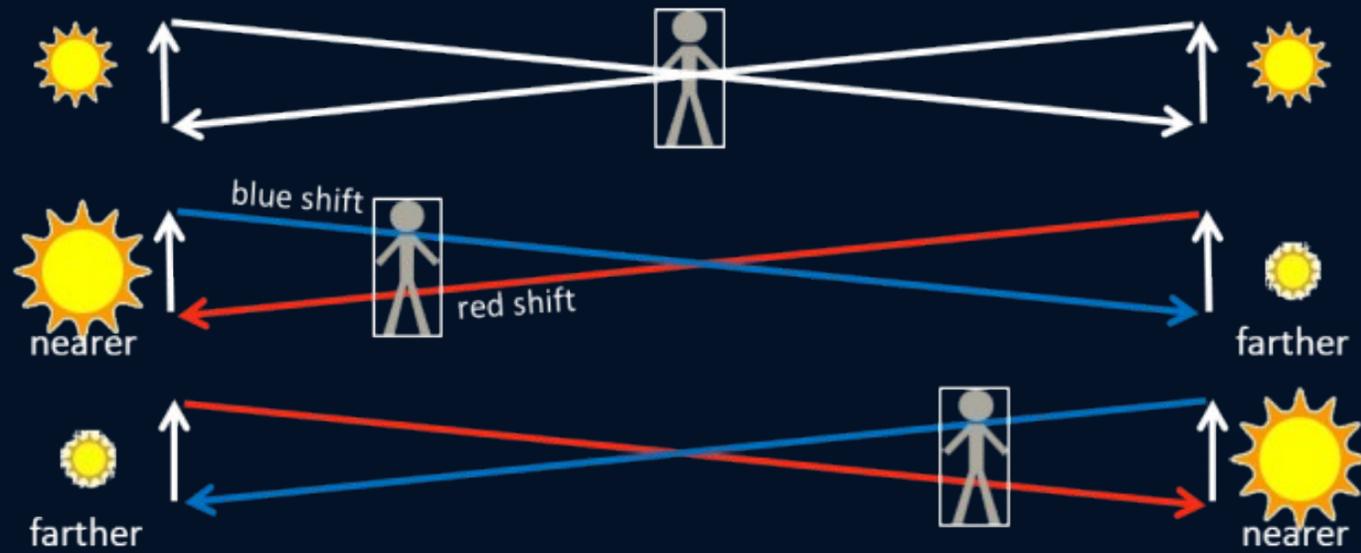
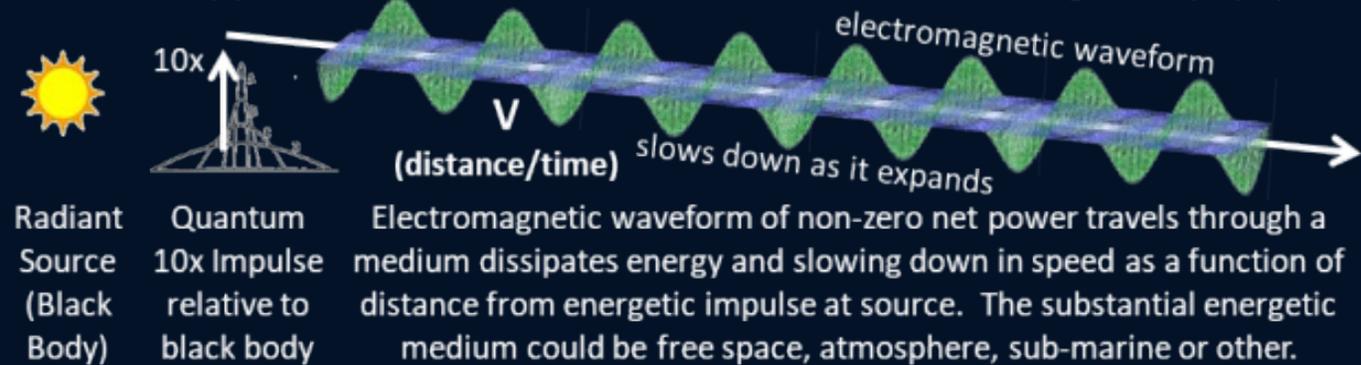
see G. Srinivasan, ISRO Experiments



Planet (#)	$R_{\text{sun2planet}}$	C_{planet}	$C_{\text{planet}} / C_{\text{earth}}$	$C_{\text{planet}} / C_{\text{substratum}}$
Mercury (1)	0.572956×10^{11}	3.0496×10^8	1.0172	1.02826
Venus (2)	1.07788×10^{11}	3.0103×10^8	1.0041	1.01502
Earth (3)	1.492836×10^{11}	2.9979×10^8	1.0000	1.01085
Mars (4)	2.278798×10^{11}	2.9868×10^8	0.9963	1.00710

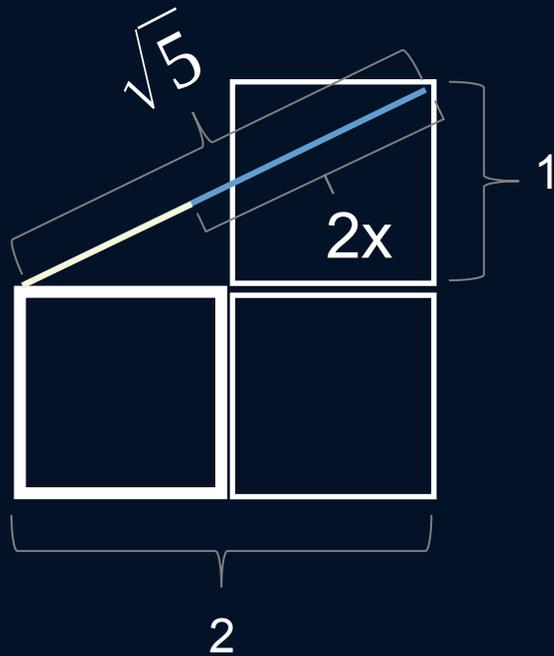
Is the "Speed of Light" a limit, constant, or, something else?

It is a localized, *instantaneous displacement rate* of a decelerating, traveling, 3-D electromagnetic energy waveform that is a function of distance from source of radiation; if 1 meter (m) wavelength and 1 second (s) are selected as dimensional units it is a speed (m/s).



Universal Plenum Self-Similar Change Ratio

$$\text{golden ratio} = x = \frac{\sqrt{1^2 + 2^2} - 1}{2} = 0.6180339\dots$$



first quantum of
relative growth
1 to 2

$$\text{expansion} = 1 + x = \frac{1}{x} = 1.61803399$$

$$\text{ratio} = \frac{1}{1 + x} = x = 0.61803399 \quad \frac{1}{1/x} = \frac{x}{1} = x$$

$$\text{compression} = 1 - x = x^2 = 0.38196601$$

$$\text{ratio} = \frac{1 - x}{x} = x = 0.61803399 \quad \frac{x^2}{x^1} = x$$

$$\text{resonance} = \frac{1 - x}{1 + x} = x - x^2 = x^3 = 0.23606798$$

$$\text{ratio} = \frac{x - x^2}{1 - x} = 0.61803399 \quad \frac{x^3}{x^2} = x$$

$$x^1 - x^2 = x^3$$

$$0.618 - 0.382 = 0.236$$

$$\frac{1}{x^3} = \frac{1}{x^2} + \frac{1}{x}$$

$$4.236 = 2.618 + 1.618$$

$$\frac{2}{x^3} = \frac{2}{x^2} + \frac{2}{x}$$

$$8.472 = 5.236 + 3.236$$

$$\frac{1}{8.472} = \frac{1}{5.236 + 3.236}$$

$$0.118 = 0.118 = y = x^3/2$$

$$\log(C) = \log(C^x) + \log(C^{1-x})$$

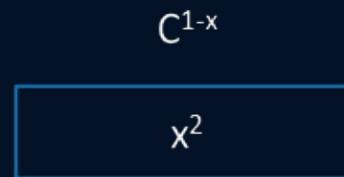
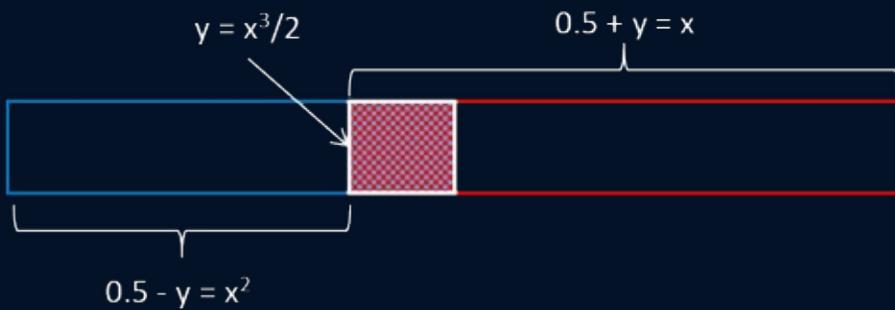
$$C^x = 172213 \text{ increase wrt } C^{0.5} = 17221.3$$

$$C^{1-x} = 1722.13 \text{ decrease wrt } C^{0.5} = 17221.3$$

$$10^{8.472} = 10^{5.236} \times 10^{3.236}$$

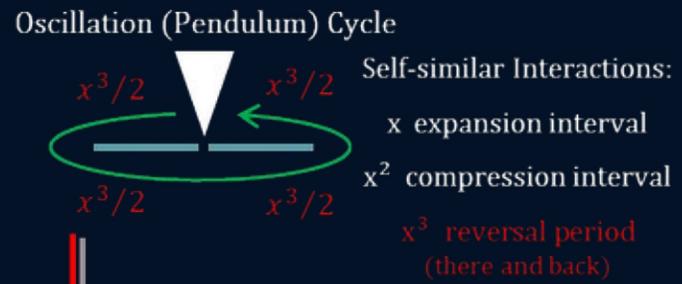
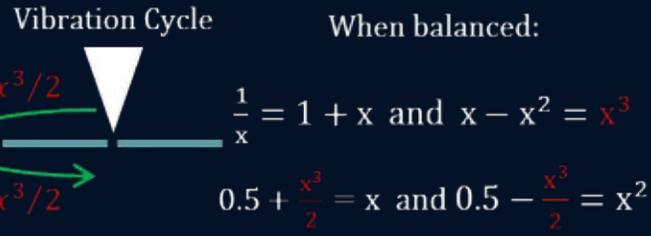
$$296575967 = 172213.8 \times 1722.138$$

cycle density = compression density \times expansion instances



Intervals

Rates



$$10^{1/interval} = 10^{rate} = counts/cycle$$

$$x - x^2 = x^3 = 0.618034 - 0.381966 = 0.236068$$

$$x^3 = 0.236068 \text{ and } 1/x^3 = 4 + x^3 = 4 + 0.236068$$

$$2/x^3 = 2(4 + x^3) = 8 + 0.472136$$

$$10^{2/x^3} = 10^{8.472136} \text{ counts/cycle}$$

$$C = 10^{2/x^3} = 10^{8.472136} = 296575966.9$$

$$C = C^{1/2+1/2} = 10^{1/x^3+1/x^3} = 10^{4.236+4.236} = 296575966.9$$

$$C = C^x \times C^{1-x} = 10^{5.236} \times 10^{3.236} = 296575966.9$$

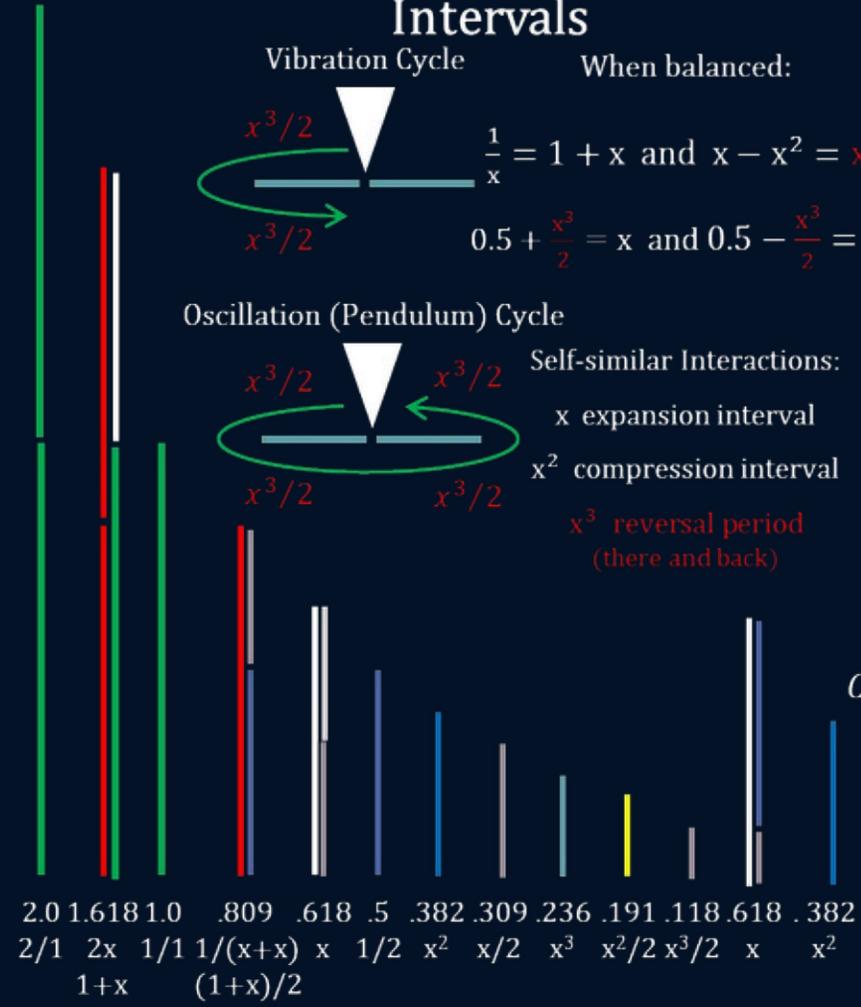
$$C^x = 10^{2/x^2} = 10^{5.236068} = 172213.81 = 10^5 \times 1.7221381$$

$$C^{1-x} = C^{x^2} = 10^{2/x} = 10^{3.236068} = 1722.1381 = 10^3 \times 1.722138$$

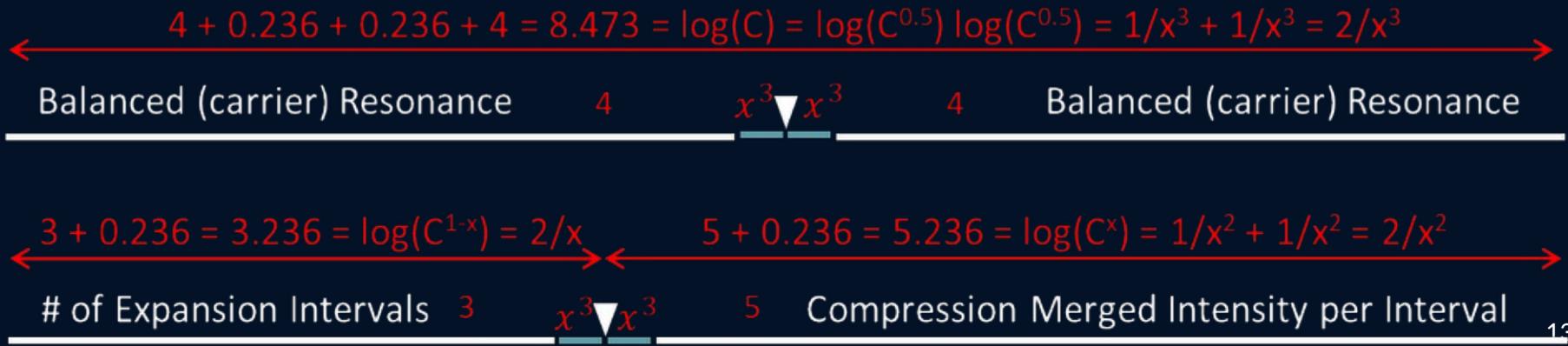
$$C^{1/2} = 10^{1/x^3} = 10^{4.236068} = 17221.381 = 10^4 \times 1.722138$$

$$C^x / C^{1-x} = 10^{5.236-3.236} = 10^2 = 100$$

$$3/5 = 0.6 \cong x \text{ but } 3.236/5.236 = 0.618 \dots = x$$



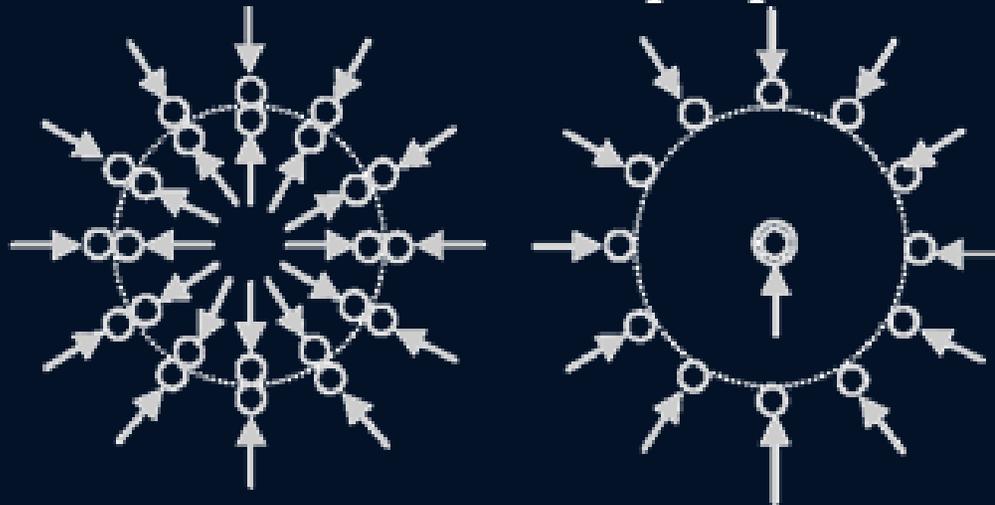
Self-Similar and Simultaneous (Logarithmic) Change Ratios $C^x C^{1-x} = C$ a carrier wave constant



First Cause Of Movement Is Synchronization of Action

Full Synchronization (Rate and Phase) =
100% Harmony = Coherence = Collapse

Synchronization Within The Instant
Causes Superposition Per 3-D Axis



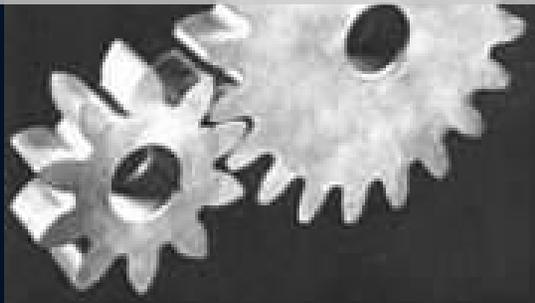
3-Axis Synch
= Hides T^2 = Mass

2-Axis Synch
= Hides T = Charge

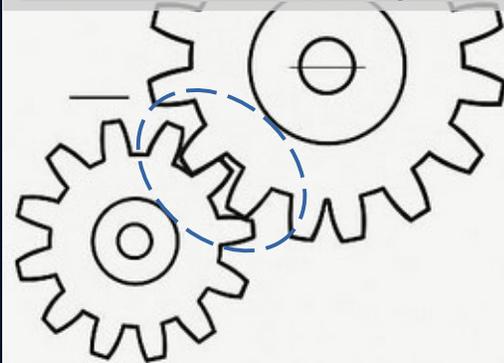
Superposition = Count Reduction per axis

First Cause Of Movement Is Synchronization of Action

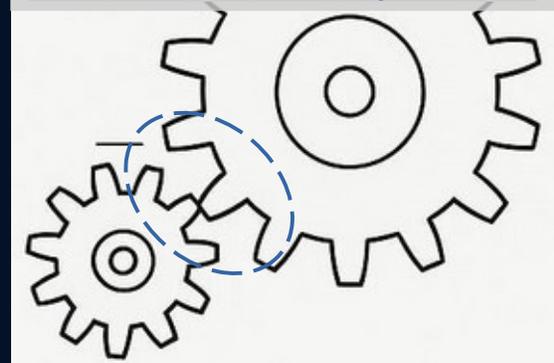
Same rate (pitch) and phase so fully synchronized even though two “densities” in 12 / 9 ratio



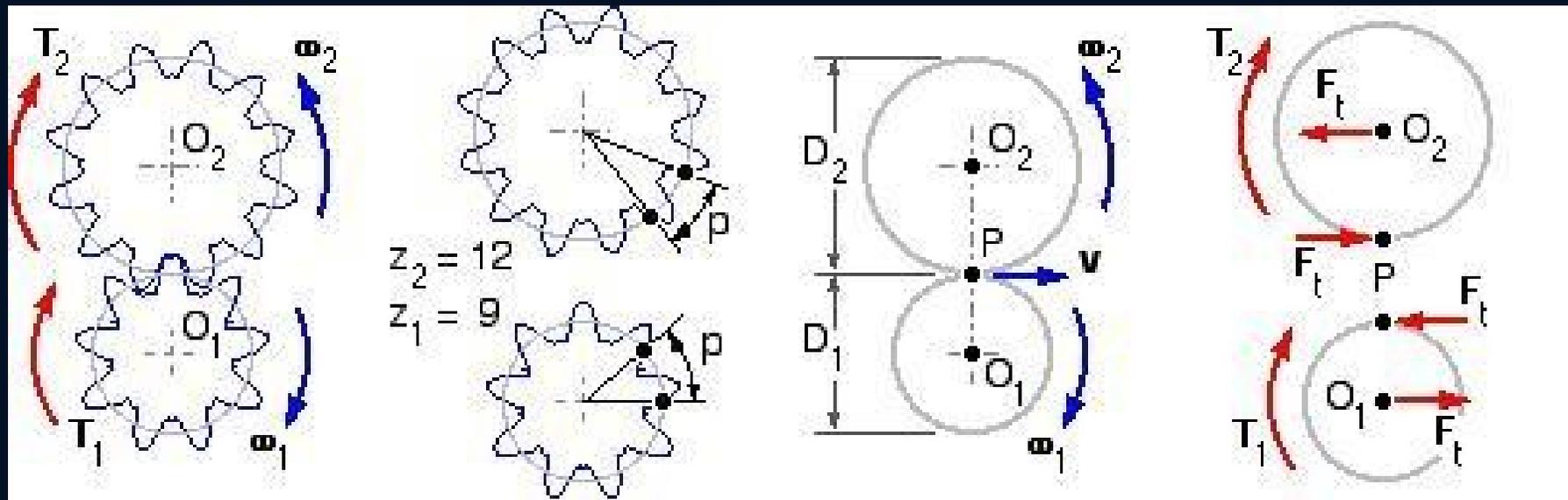
Same rate and phase so fully synchronized and therefore coupled



Same rate but out of phase, un-synchronized and therefore separated



C⁶ cyclic time counts (cyclic momentum) universally conserved throughout space



DERIVATION OF GRAVITATION



CONCEPT OF INTERACTIVE COUNT REDUCTION WHEN TWO DYNAMIC VOLUMETRIC STATES OF SPACE MERGE TO BECOME A SINGLE OSCILLATORY HOLOGRAPHIC STATE WITH A SINGLE CENTRE OF PHO ACTIVITY IN SPACE

CENTRE OF MASS

PHO STRESS ACTING SIMULTANEOUSLY TOWARDS CENTRE REPRESENTING SINGLE MERGED BUT MASSIVE COUNT

CENTRE OF SIMULTANEOUS ACTION

$$\tau^6 / \tau^4 = \tau^2$$

GRAVITY CONSTANT

GRAVITATION



Total Unification

Purusha: coherent state provides the ground state.

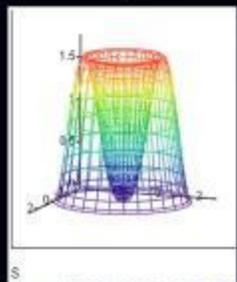
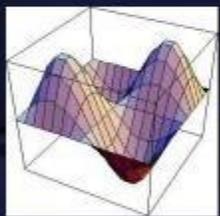
Maximum stress density merges into a unity count.

Higher count rate gravitate towards unity count.

The centered coherent state initiates gravitation.

All other forces too transmigrate to a lower count.

Nuclear, Weak and EMW act in its own 'time'



05/19/2025

23

Axiomatically Derived Universal Constants

$$L_p = \text{Planck Length} = \frac{\left[\left(\frac{Kx}{Mly}\right)^{\frac{1}{3}}\right]}{Ah} = 1.6895595727E-35$$

$$T_p = \text{Planck Time} = \frac{Mly Cs}{7} = \frac{L_p}{Cs} = 5.6968863333E-44$$

$$M_p = \text{maximum fractional interactive count} = Kx Gm = 6.5356281344$$

$$M_{ps} = \text{Planck Mass} = \text{maximum coherent stress density as mass} = M_p / Cs = 2.2036944538E-08$$

$$D_p = \text{Planck Density} = \frac{M_{ps}}{L_p^3} = [(Cs^{1+x})k]^7 = 4.5691019728E+96$$

$$St = \text{Metric Elasticity of Space} = \text{stress intensity ratio of Space} = \frac{M_{ps}}{T_p} = 3.8682436772E+35$$

$$M_{xe} = \text{maximum energy per cycle (power)} = \frac{M_{ps} Cs^2}{T_p} = St Cs^2 = 3.4024028566E+52$$

$$G_{Sankhya} = \text{density}_{anystate} \times T_{cycleperiodanystate}^2 = \frac{1}{G_{Newton} FC} = 1.4828798346E+10$$

$$G_{Sankhya} = \frac{St}{Cs^3} = \frac{(Cs^x)^2}{k^3} = \frac{M_{ps}}{L_p^2 \times \frac{7}{Mly}} = 1.4828798346E+10$$

$$G_{Sankhya} = \frac{M_{ps}}{T_p Cs^3} = \frac{M_{ps}}{L_p Cs^2} = \frac{M_{ps} T_p^2}{L_p^3} = D_p T_p^2 = 1.4828798346E+10$$

Cyclic 3-D dynamism, that is centered spin or vorticular motion, creates spherical forms

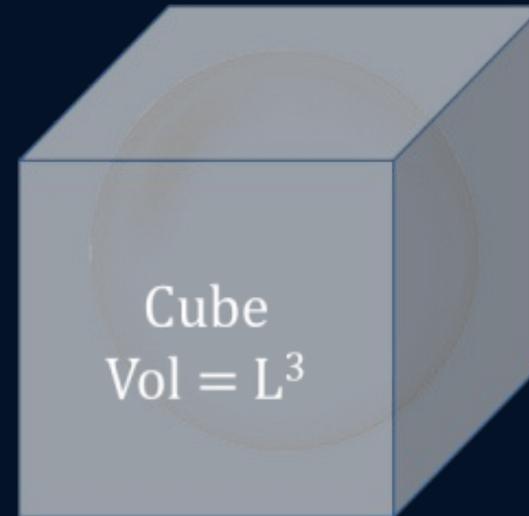
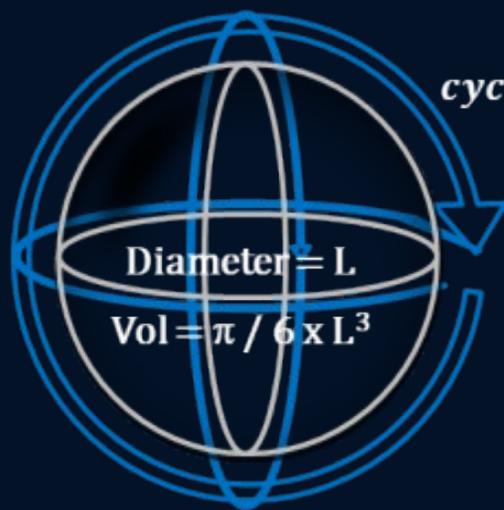
Ratio of circumference to diameter is the constant π

$$\frac{\text{circumference sphere}}{\text{diameter (D) sphere}} = \pi$$

$$\text{volume sphere} = \frac{\pi}{6} \times D^3$$

and if $D = L$, then

$$\text{volume sphere} = \frac{\pi}{6} \times L^3 \propto \text{but} < L^3 = \text{volume cube}$$



Logarithmic counting is a simple way to count cycles of simultaneous activity

If a cycle consists of 10 steps, then the base = 10
and the exponent represents the number of cycles

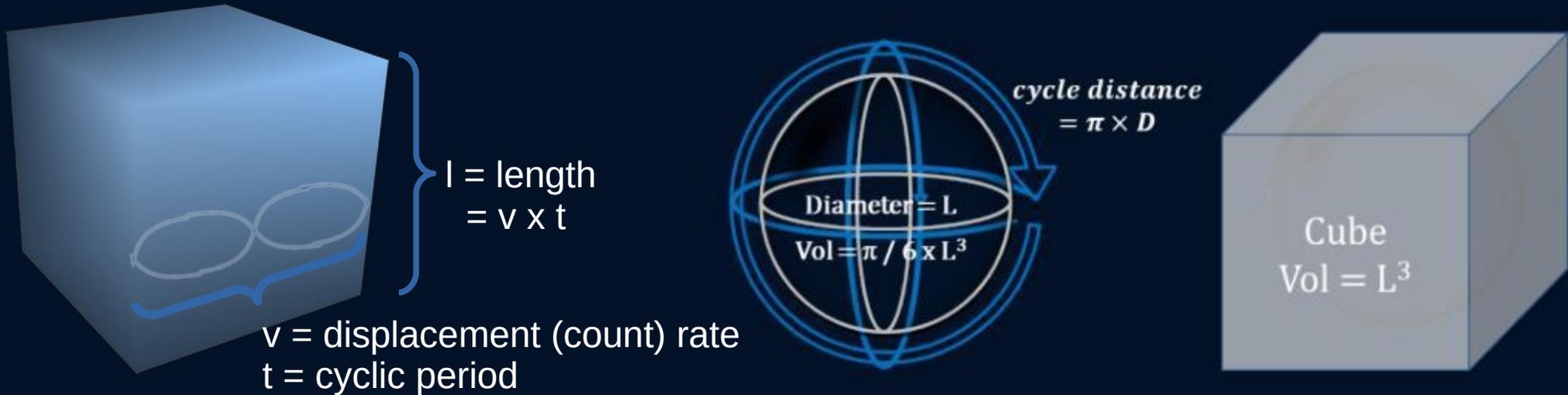
$$\text{base}^{\text{exponent}} = \text{cycle steps}^{\# \text{ of cycles}}$$

$$10 \times 10 \times 10 = 10^1 \times 10^1 \times 10^1 = 10^{1+1+1} = 10^3 = 1000 \text{ steps}$$



Derivation of Gravity and Gravity Constant

Cubic Form From 3D Standing Waves



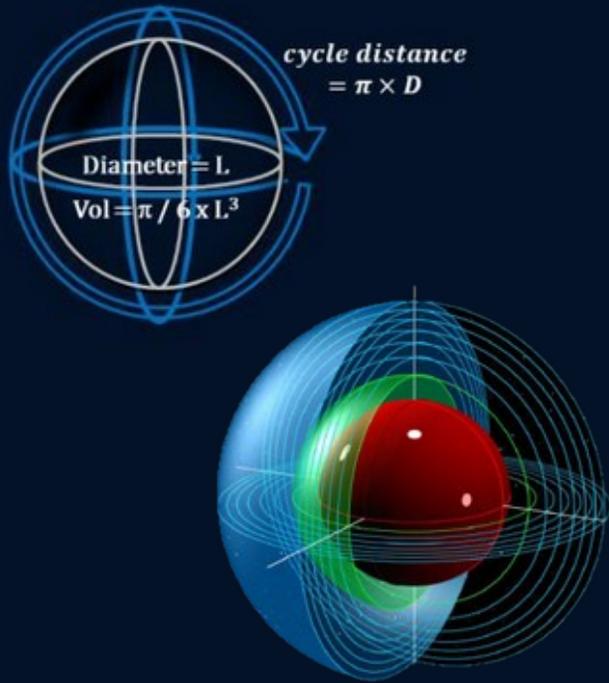
$$\frac{l^3}{v_{max}^3} = t_{min}^3 = \text{contained centered quantum counts} = \text{Todc constrained}$$

$$\frac{l^3}{t_n^{\frac{3}{2}}} = v_n^3 \times t_n^{\frac{3}{2}} = \text{balanced compressive expansive} = \text{unmanifest}$$

$$\frac{l^3}{t_n^0} = v_n^3 \times t_n^0 = v^3 \text{ if interval} < t \text{ then } l^3 \text{ space is fixed length so } t \text{ vanishes}$$

$$\frac{l^3}{t_n^2} = v_n^3 \times t_n^1 = \text{any departure from log } 3/2 \text{ initiates area flux acceleration}$$

Derivation of Gravity and Gravity Constant



“A coherent volume L^3 can be factored as L^2 and L, wherein the volumetric aspect of space remains a real constant while the area and length parameters can change in inverse proportion. The linear parameter can be detected and measured directly whereas the other two can only be estimated or calculated indirectly. The coherent volume being a constant the change in linear parameter alters the area parameter inversely and if [radial] velocity is constant then change in the linear time factor alters the area time factor in inverse proportion. If a linear time T increases by n then area T^2 reduces by n. The linear change in T has velocity characteristics while the T^2 represents an accelerative change and displays flux density or force or pressure characteristics.” SoS Part 1, pg 74

$$\text{Density} = \frac{l^3}{v^3} = 1 = \rho = \frac{n}{n} = \text{ratio} = \text{centered unified state of count 1}$$

for n = scaling factor, then let $l = vt \dots$ and \dots mass = m

$$m = r^3 \rho = r v^2 (\rho t^2) \dots \text{but} \dots \rho t^2 = G_{\text{sankhya}} = \frac{1}{G_{\text{Newton}} Fc}$$

$$\frac{m}{G_{\text{Sankhya}}} = m G_{\text{Newton}} = r v^2 \text{ Kepler's 3rd Law of Periods}$$

Derivation of Gravity and Gravity Constant

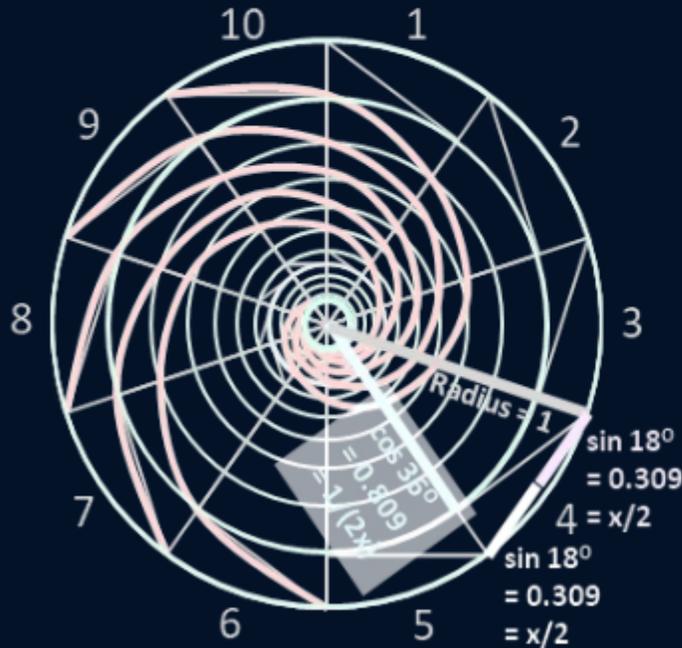
“The gravity constant at unit density reduces to the simultaneous rate of activity along two axes as shown by the analysis of a dynamic volumetric space. Because of attaining coherence, the ratio t^2 (or a density increase to log two), becomes hidden or vanishes, as countable interactions and therefore the interactive states surrounding that volume drift or accelerate towards its centre where the interactive response is just one. The description of gravitational action in Physics, that mass attracts and therefore other masses accelerate towards that centre is semantically correct but is not a factual statement defining the activity in the field of space. The left side of the equation shows the mass value is reduced by G_{Newton} and therefore the interactive flux density at the surface is also reduced by the same factor which yields v^2 as the ratio $(r/t)^2$ needed to maintain a balance. Rewriting the formula by retaining r^2 at the surface because it cannot be changed in a ‘solid object, the unbalanced factor shows up as an acceleration of interactive counts towards the centre of that mass as g .” SoS Part 1, pg 75

$$m = r^3 \rho = g r^2 (\rho t^2) = g r^2 \frac{1}{G_{Newton}} \text{ where ... } \rho = \text{density and } g = \frac{r}{t^2}$$

$$m G_{Newton} = r^2 g = \text{gravity force equation}$$

	Planck Mass	Nucleon	Sun	Space
G_Sankhya (kg/m ³ *sec ²)	1.482880E+10	1.482880E+10	1.482880E+10	1.482880E+10
Density (kg/m ³)	4.569100E+96	1.270440E+16	5.996226E+03	3.631120E-25
Time Constant (sec)	5.696888E-44	1.080378E-03	1.572584E+03	2.020843E+17

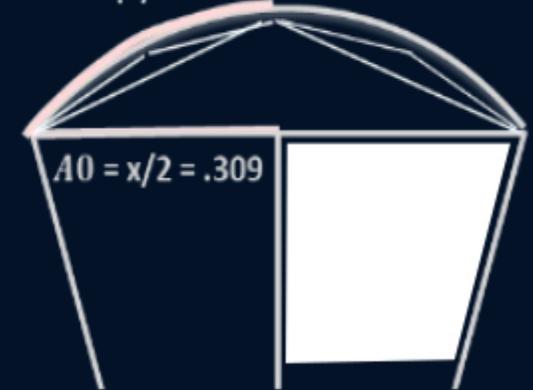
in-place circular displacement (circumference) per 10 count simultaneous interactive cycle is the reason we use a decimal system and we count by 10's or logarithmically by 1's



where

Coherent \Leftrightarrow Synchronous

$$A_{21} = \pi/10 = .314$$

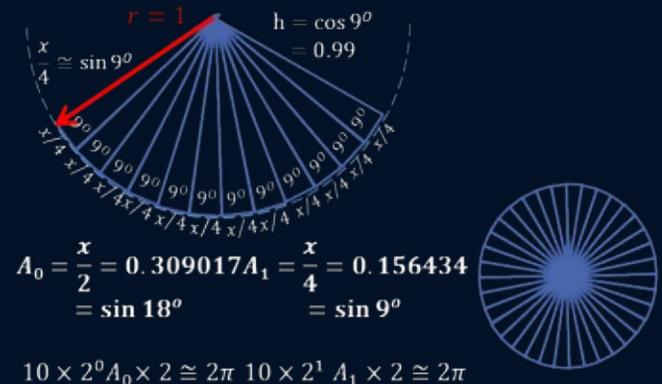
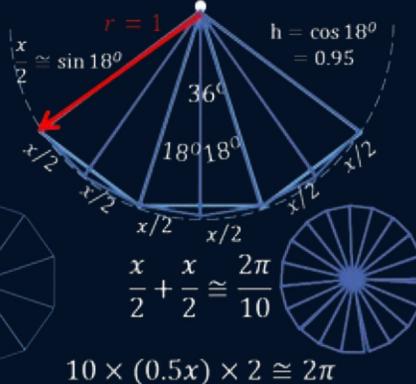
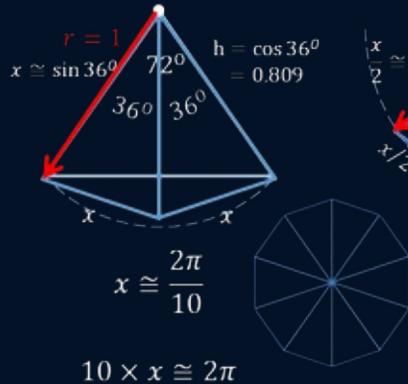
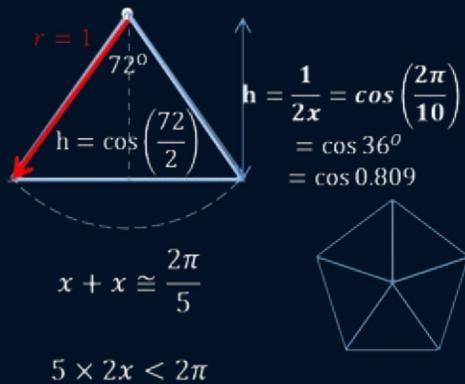


The derivation provides the proof that in confined domains, the simultaneous interactive cycles axiomatically contains itself in a circular boundary of ten interactive counts. It is a unique interactive state where the relationship of centre and surface boundary maintained a constant relationship simultaneously. The trigonometric proof is:

$$\cos\left[\frac{2\pi}{10}\right] = \frac{1}{x+x} = 0.809017$$

$$\left[2A_n 2^n\right] + \left[2A_n 2^n\right] = \frac{2\pi}{10} = \left[2A_n 2^n\right] - \left[-2A_n 2^n\right]$$

Factorization of π based on a 10 count cycle or $\pi/10 \cong x/2$ or $10x \cong 2\pi = 1 \text{ cycle}$



$$2\pi = \frac{\text{circular displacement}}{\text{radius}}$$

$$2\pi \cong 10 \times 2^n \times A_n \times 2$$

$$\text{let } A_0 = x/2 = \sin(18^\circ)$$

$$10 \times 2^n \times A_n \times 2 \rightarrow \pi \text{ as } n \rightarrow \infty$$

at $n=21$, quantum \rightarrow continuous

$$A_{n+1} = \sqrt{\left[1 - \sqrt{1 - A_n^2}\right]^2 + A_n^2} / 2$$

$$\text{where } A_0 = \frac{x}{2}, 2^{21} A_{21} = \frac{\pi}{10}$$

Displacement Factorization

$$\frac{1}{2^n} \text{ linear}; \frac{x}{2} = .309017 \text{ angular}$$

Coherent \Leftrightarrow Synchronous

$$\left(\frac{1}{2}\right)^n \text{ balances } A_n$$

The derivation provides the proof that in confined domains, the simultaneous interactive cycles axiomatically contains itself in a circular boundary of ten interactive counts. It is a unique interactive state where the relationship of centre and surface boundary maintained a constant relationship simultaneously. The trigonometric proof is:

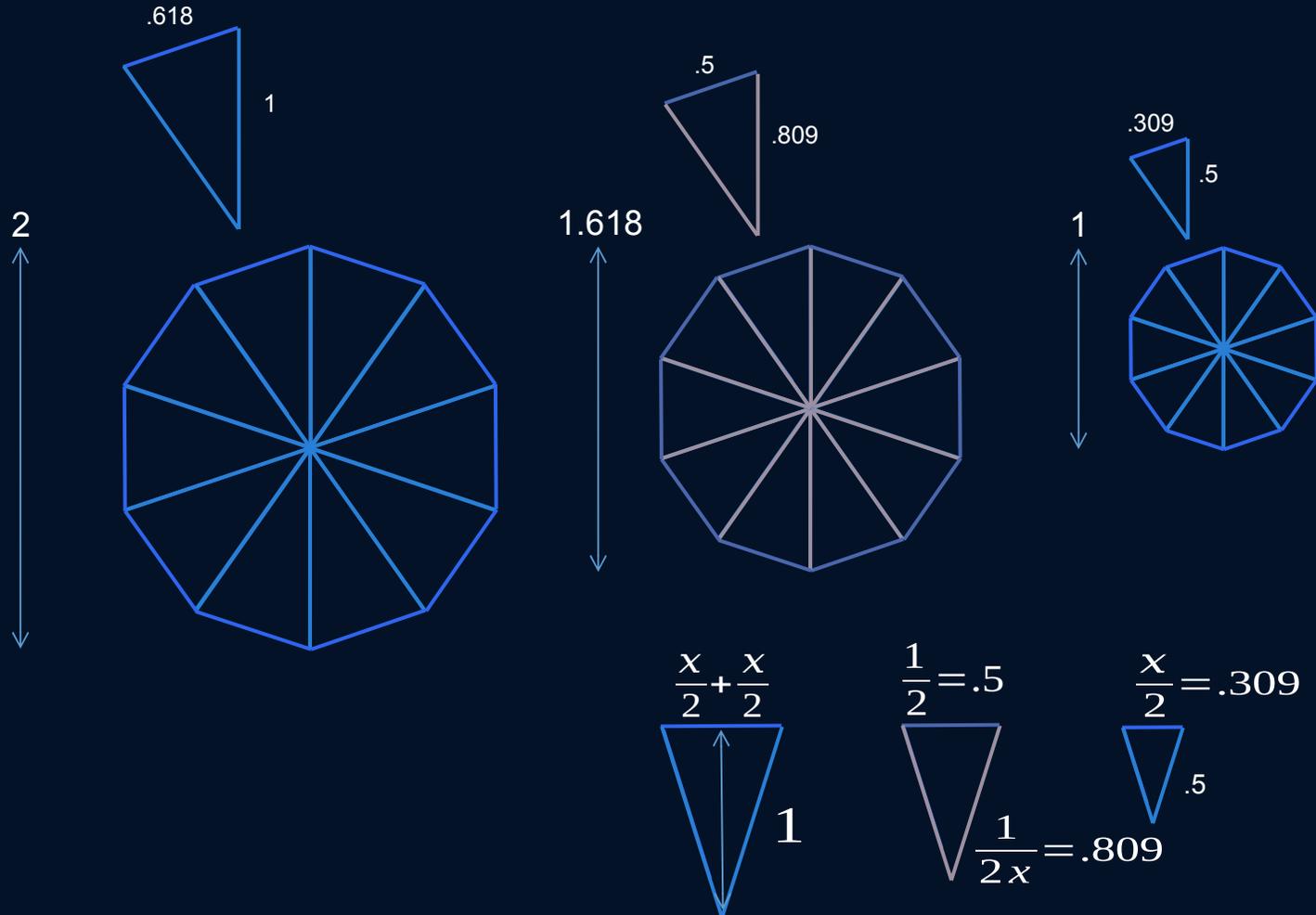
$$\cos\left[\frac{2\pi}{10}\right] = \frac{1}{x+x} = 0.809017$$

$$[A_n 2^n] + [A_n 2^n] \cong \frac{2\pi}{10} \cong [A_n 2^n] - [-A_n 2^n]$$

The self containment is ensured by the term $(1/2)^n$ because the interactive process is centred in the same location. Another reason is that every $(1/2)^3 = 1/8$ position represents a third order constraint level of simultaneous interactions in a coherent state which makes it a self-similar and self organised ensemble. The centre of form, mass and activity remains firmly in the same location. The harmonic factorisation of as ratio of a simultaneous cycle formed by self similar sequential numerical values provides the axiomatic base for interactive oscillations, quite surprisingly, new to Physics.

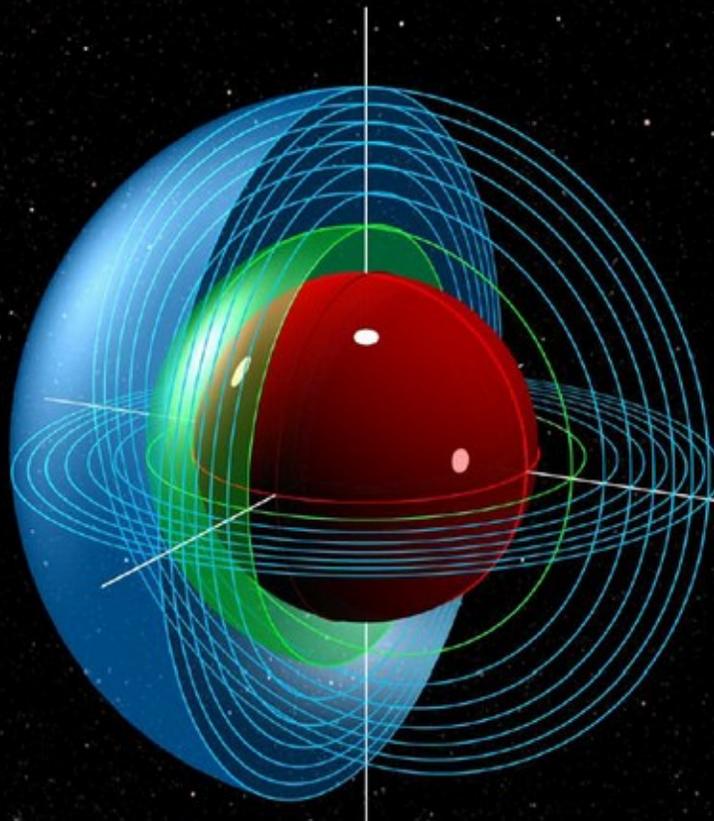
radial expansion = cyclic linear displacement expansion
 OR
 radial compression = cyclic linear displacement compression

$$x = \frac{.309}{.5} = \frac{\frac{x}{2}}{.5} = \frac{.5}{.809} = \frac{.5}{\frac{1}{2x}} = 0.6180339 \dots$$



Perpetual Harmonic Oscillator

PHO STATE (SUTRAS 15 TO 22)



RED=DENSITY 2. HADRONS
(STATE)

GREEN= DENSITY 1. BOSONS
(STATE)

BLUE= DENSITY .5 to .125.
LEPTONS (STATE)

The expanded leptonic states extend from the electron to seven neutrino levels. When the seven radiate simultaneously it attains the photon state.

Displays single unified law of dynamic interactions in space.

Applies to all bodies like Galaxy, stellar, planetary, molecular, atomic and subatomic particle states.

2/21/2012

9

“The PM, Pn and Pm ensembles, form the core of the perpetual oscillator PHO [Perpetual Harmonic Oscillator]. The generic formula, derived in a later chapter on perpetual harmonic oscillator will show that **every organised state from a galaxy to the atom follows the same algorithm in a scale invariant manner using relative cyclic time** in which clock time is a unique parameter specified by the observer as a measurable unit.”

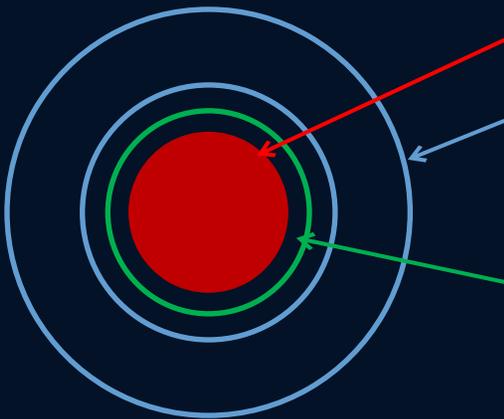
For a non-radiating , non-absorbing resonating PHO (coherent volumetric) state, compression = expansion:

Volumetric rate within coherent core boundary: 2

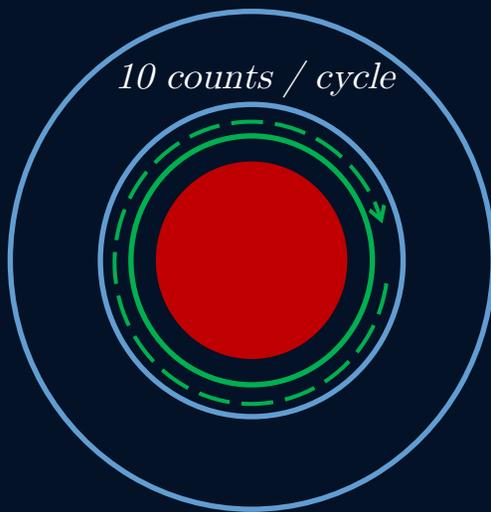
Volumetric rate synchronous radial expansion: 7

Ratio of two volumetric rates $7/2=3.5$

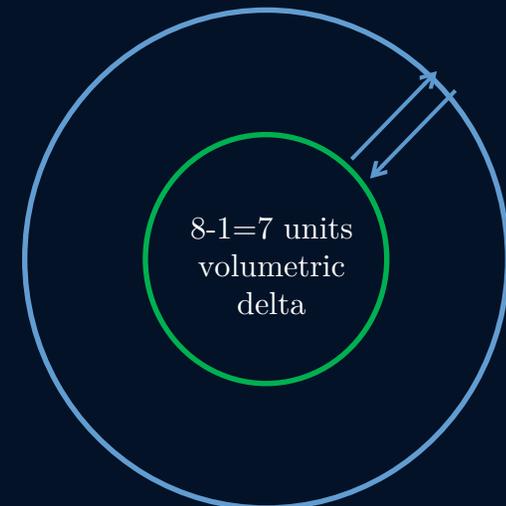
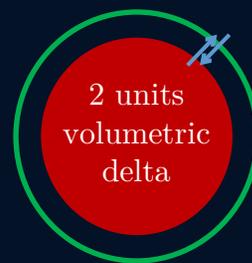
$Gmr=Rs(7/2) = 3.5714292353$ (ratio expansive to compressive about unit radial coherent boundary, where $Rs = 10^2/(10^2-2)$)



“While the simultaneous exchange at the rate of 2 would be within the coherent boundary [red core] the seven exchanges would occur outside [blue rings] and would take a minimum interactive count of $2 = [1 - (-1)]$ as a forward and backward displacement within the cycle. In a volumetric oscillatory process, the interactive count within the cycle being ten, the total count along all three axial directions would be 10^3 as the Todc factor. However in the coherent cycle, all the interactions must have the same phase and oscillatory rate to attain a simultaneous oscillatory rate and therefore the counts along two axes would merge and vanish, leaving 10 as the detectable count.”

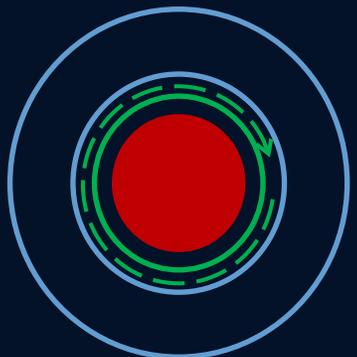


spherically vibrates
rate $n=2$ instantly



spherically vibrates
rate $n \cdot R_s = 2 \cdot 100 / 98 > 2$

“Therefore, since the cycle becomes complete only after ten counts the delay of 2 interactions reduces the hidden count of 10^2 to 98 [blue leptonic outer rings], whereas the coherent [red hadronic core] hidden rate remains at 10^2 and this ratio $RS = 100/98 = 1.020408163265$ etc, and forms a transcendental series extending the cyclic delay ratio to infinite hidden cycles. Since the delay is in the 7 incremental states, it increases by $100/98$, while the coherent rate remains at two.”



$$Rs = \frac{cycle^2}{cycle^2 - 2(displacements)} = \frac{10^2}{10^2 - 2} = \frac{100}{98}$$

$$= \frac{7 + \frac{1}{7}}{7} = \frac{50}{49}$$



$$= 1 + \sum_1^n \left(\frac{2}{100}\right)^n = \underbrace{1.0204081632}_{n=1n=2n=3n=4n=5} \dots \quad Rs_{n=2} = \underbrace{1.0204}_{n=1n=2}$$

“Summarising, the state of oscillatory balance in a three dimensional volumetric stress form, is achieved by equating the outward sequential expansion ratio of seven [green to outer blue ring] with the inward simultaneous compressive ratio of two [green to red core boundary], with the forward and backward displacement rate, within a single cycle time. Because the interactive count rate and phase are kept identical and equal there is neither radiation nor absorption of stress counts in both directions, the resonant standing wave state of $[n =] 2$ or half wavelength cyclic state is conserved. The compressive stress rise is conserved as the magnetic state and expansive charge state balances out the energy or work equation every instant in the cycle.” SoS 1 pg 130

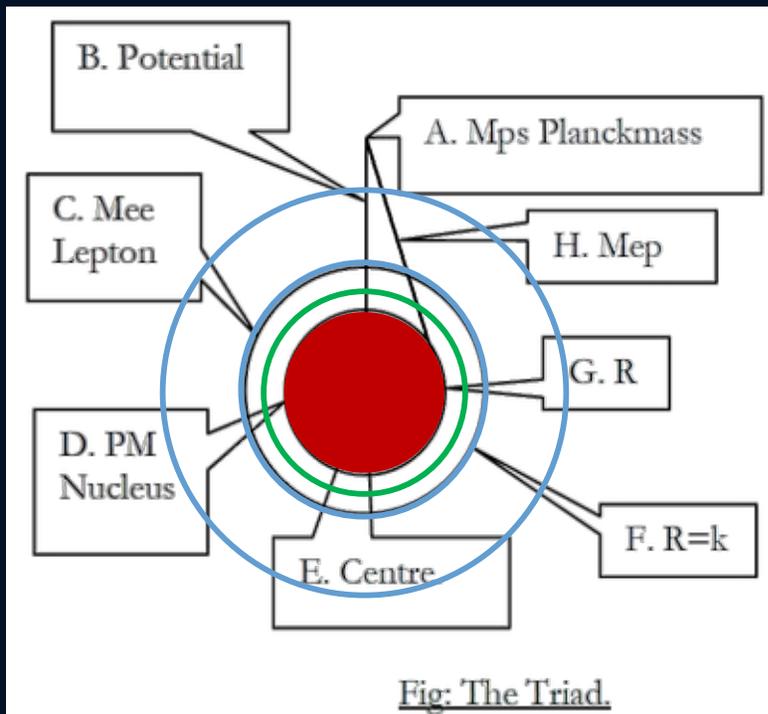
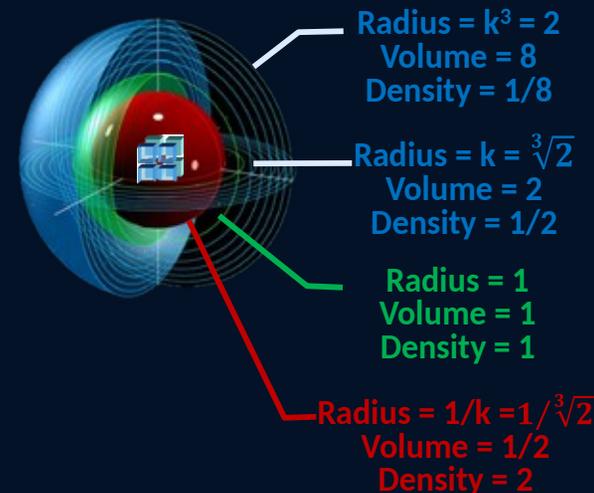


Fig: The Triad.

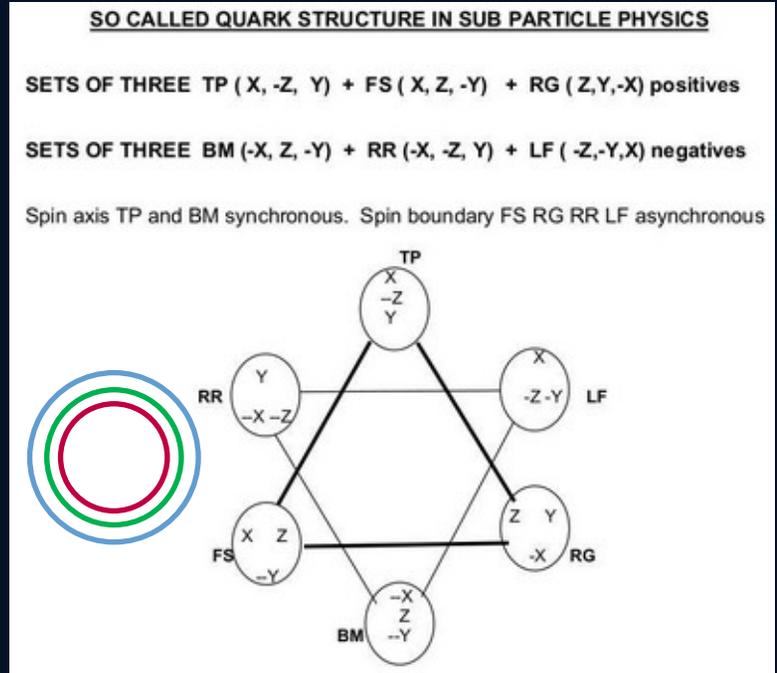
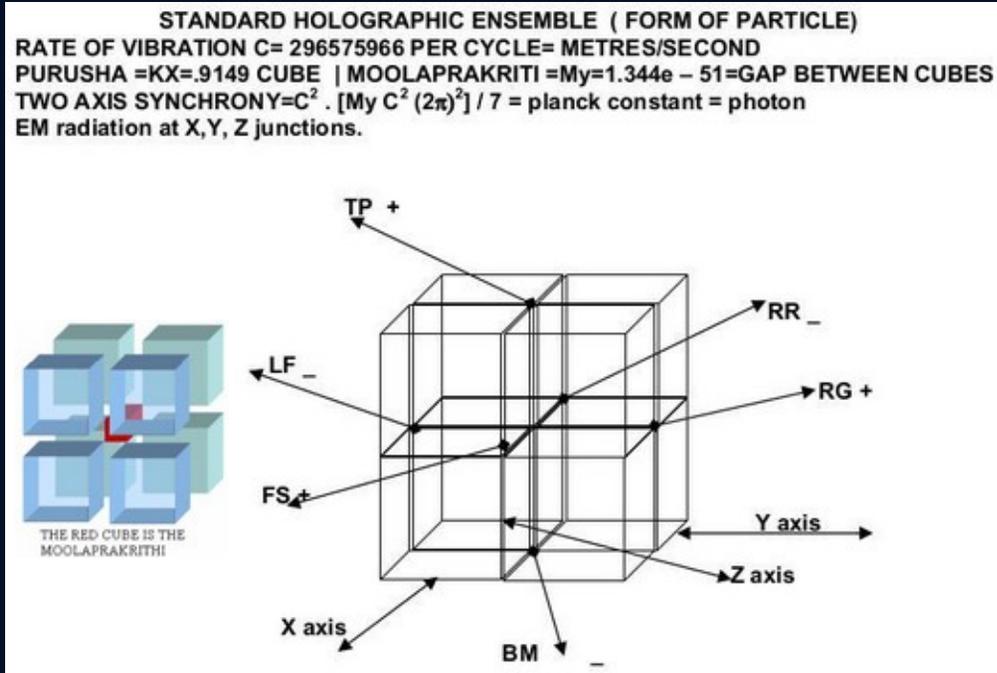
A = Mps maximum density. B = Potential rise due to compression.
 C = Mee PM boundary as lepton. D = PM core nuclear boundary.
 E = Kx forming dynamic centre. F = expanded boundary radius k.
 G = nuclear core radius $R = 1/k$.
 H = Potential drop due to expansion forming Mep. SoS 1 pg 124



part of the Mee state $Q1$ remains in the region between the PM surface and it's Mep boundary across the 'k-1' gap, in a resonant and undetectable state.

$$Q1 = \left[PM \left[\frac{Tc}{Si} \right] \right] = 6.61E - 28 kgs = 370.813 Mev \quad [0.150]$$

As shown above, $Q1$ has an undetectable relative mass equivalent of 313.64 Mev, consisting of PM or Mep interactive stress ratios. It therefore has a compressive stress at the PM surface and an expanded boundary stress at the Mep surface, both with the same relative value but could transmigrate either way. In Physics this hidden state is defined as an Up Quark associated with Pn and a Down Quark with Pm. Since it is in a transition phase (resonant to coherent and vice versa), its interactions are not countable.



AXIOMATIC EQUATION OF OSCILLATORY STATE. PHO



TAMA = RAJA + SATVA

$$\frac{\text{MAHAD - PRAKRIT}}{\text{PRAKRITI - VIKRITI}} = \frac{7 + \frac{1}{7}}{2} = \frac{\text{VIKRITISAPTA - VRITHI}}{\text{VRITHI - VIKHARO}}$$

$$\frac{\text{PM - Pm}}{\text{Pn - PM}} = \frac{7 + \frac{1}{7}}{2} = \frac{\text{Mep - Me}}{(\text{Me - Mee}) \cdot 2^{\frac{1}{3}}} = \text{Gmr}$$

$$\frac{\text{boson - Proton}}{\text{Neutron - boson}} = \frac{7 + \frac{1}{7}}{2} = \frac{\text{Muon - Meson}}{(\text{Meson - Electron}) \cdot 2^{\frac{1}{3}}} = \text{Gmr}$$

PM = BOSON STATE. Pn = NEUTRON STATE. Pm = PROTON STATE

Me = MESON STATE. Mep = MUON STATE . Mee = ELECTRON STATE

Perpetual Harmonic Oscillator

COMPLETE SPECTRUM OF HOLOGRAPHIC STATES



Hologram (Sanskrit)	Sankhya Value Symbol	Physics (equivalent)	Stress Density level.	PHO state
Andhatamishra	Kx	None (blackhole)	HD Stress centre of mass	Simultaneous (third order damping)
Mahad	Mps	Hadrons	Density transition with change in volume	Coherent
Prakrithi	PM	Nucleon	Dense Stress Volume at core	transition
Vikrithi	Me	Lepton	Stress at Boundary of Nuclear volume	Resonant
Vrithi	Ne	Neutrino	Stress quantum at unit volume and density	transition
Vikharo	7 Ne	Photon	Radiant stress quanta of 7 states	Radiant or expansive
Moola-prakrithy	My	None	T'migration stress UNIT	Sequential Interactive state

VOLUMETRIC PERPETUAL HARMONIC OSCILLATOR

PLEASE NOTE THAT ALL VALUES ARE DERIVED FROM AN AXIOMATIC VALUE OF TWO AND EVERY DERIVATION (SHOWN BELOW) EQUALS VALUES IN PHYSICS EXACTLY

The first axiomatic increase in value is $1+1=2$ units. The ratio $1/2$ is the fundamental standing wave ratio of a linear harmonic oscillator in a resonant state. The cube root of $2 = 1,259921 = k$ and $k-1 = .259921$. Therefore a volume will increase by 2 if the radius increases by $k-1 = .259921$.

Similarly a volume will increase by 7 if radius increases to two as $2^3 = 8$ volumes and 8 minus $1 = 7$ incremental volumes. Product of two simultaneous cycles = $10 \times 10 = 100$ divided by twice the algebraic sum of sequential displacements in both forward and reverse directions of 7 (volumes) as $7 - (-7) = 14$. gives an oscillatory ratio PR. Perpetual interactive state or harmonic oscillatory state requires a ratio of PR to be maintained continuously. When a number of interactions occur within the same period as a single interactive cycle then it is considered to be a simultaneous interaction with a common centre of action and displays mass / density characteristics.

Simultaneous cycle = SMC

Sequential cycle = SQC

$$\frac{SMC}{SQC} = PR$$

$$\frac{10 \cdot 10}{[7 - (-7)] + [7 - (-7)]} = 3.5714285714$$

aka gyromagnetic ratio
or GMR in physics

$$PR := 3.5714285714$$

HADRONIC STATES

The two particulate or fermion states of Proton (Pm) and Neutron (Pn) oscillate around a central coherent state PM that is new to Physics. Coherent states cannot be detected as a particle but only as a resonance. The change in mass as PM minus Pm during the axpanding phase compared to the change in mass as Pn minus PM during the compressive phase must equal PR to maintain perpetual harmonic oscillation.

$$\frac{(PM - Pm)}{(Pn - PM)} = 3.5714285714 \quad PR = 3.5714285714$$

An oscillatory rate of two changes of volume per cycle and a similar oscillatory rate of two changes of radial distance per cycle should maintain a resonant harmonic cyclic period in complete synchrony if both cyclic periods start at the same instant.. Since the radial distances of both types of volumetric increments start from the same central point or common centre of interaction, the ratio of both increments will always be the same in every cycle as 2/7. Therefore the product of PR and the ratio 2/7 should give the resonant ratio RS as the rate of decay $100/(100-2)$ interactions per cycle = 1.020408163264 etc. as the transcendental sum of power series of harmonic decay of oscillatory periods, to infinite numbers that progressively reduce the intervals to infinitely small periods. It is a perpetually dynamic state. Therefore the coherent nuclear state can not decay or its decay time is infinite or eternal.

$$RS := \sum_{n=0}^{100} \left(\frac{2}{100}\right)^n \quad RS = 1.0204081633 \quad \frac{10^2}{10^2 - 2} = 1.0204081633$$

$$PR \cdot \frac{2}{7} = 1.0204081633 \quad \frac{(PM - Pm)}{(Pn - PM)} \cdot \frac{2}{(2^3 - 1)} = 1.0204081633 \quad \text{ROOF}$$

As shown above the ratio of the mass decrease of Proton Pm from the coherent static mass PM and the simultaneous increase of the Neutron Pn mass from the PM state is exactly equal to RS. The Proton mass change is over 7 volumetric displacements while the Neutron is over two volumetric displacements within the same oscillatory period of two cycles or the equivalent of a half-wave / standing wave ratio. The values of PM , Pn and Pm are derived through axioms and are not arbitrary, yet the dimensionless ratios match the experimentally measured values of Pn0 & Pm0 precisely and within the tolerance values.

$$\text{Derived} = Pn = 1.6749276458 \times 10^{-27} \quad PM = 1.6744231791 \times 10^{-27} \quad Pm = 1.672621512 \times 10^{-27}$$

$$\text{Measured in Physics} \quad Pn0 = 1.67492728 \times 10^{-27} \quad PM = \text{not known} \quad Pm0 = 1.67262171 \times 10^{-27}$$

LEPTONIC STATES

The same interactive process of perpetual oscillatory state also prevails at a relative distance k from the centre, in the form of sequential interactive states displaying kinetic characteristics. These interactions have a common surface of interaction that displays charge characteristics or flux density. The three leptonic states, M_{ep} is derived from the PM state, M_e is derived from the Andhatamishra or Planck mass state and M_{ee} is the resonant balancing state which equals the current measured value. The ratio of the mass decrease of M_{ep} to M_e and the simultaneous increase of the M_{ee} to M_e mass is exactly equal to RS . The M_{ep} to M_e change is over 7 area displacements while the M_e to M_{ee} change is over $2/k$ or k squared radial displacements within the same oscillatory period of two cycles or the equivalents of a half-wave / standing wave ratio.

$$\frac{7 \cdot rs \cdot k}{2} = 4.4997180353 \quad \frac{M_{ep} - M_e}{M_e - M_{ee}} = 4.4997180353 \quad PR \cdot k = 4.4997180353$$

$$\frac{M_{ep} - M_e}{M_e - M_{ee}} \cdot \frac{k^2}{7} = 1.0204081633 \quad \frac{M_{ep} - M_e}{M_e - M_{ee}} \cdot \frac{2}{7 \cdot k} = 1.0204081633 \quad \text{PROOF}$$

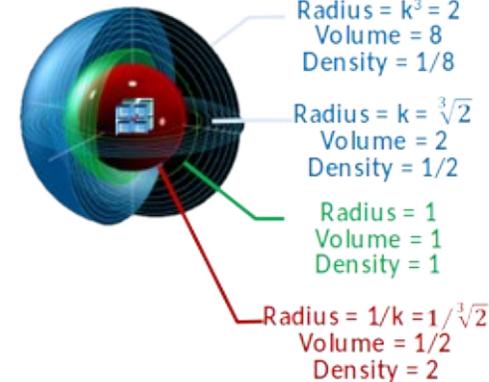
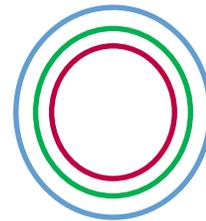
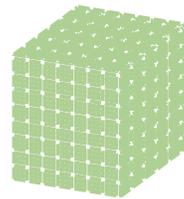
Derived $M_{ep} = 9.1140580241 \times 10^{-31}$ $M_e = 9.110233722 \times 10^{-31}$ $M_{ee} = 9.1093838239 \times 10^{-31}$

As Measured
in experiments
in Physics $M_{ep} = \text{not_predicted}$ $M_e = \text{not_predicted}$ $M_{ee} = 9.1093897 \times 10^{-31}$

The above derivation indicates that leptonic states are area dependant flux densities displaying charge characteristics that act as a simultaneous surface of interaction at the distance k, at the same rate of 2 interactions per cycle but at distance k. Therefore, the variable states of Pm and Mee must increase or decrease in the same ratio to maintain the standing wave ratio of 2 or half wavelength. The Pn or Mep states must decay to maintain the resonant state. The decay must take place at the maximum rate by converting the incremental potential to kinetic energy. The reverse, compressive interactive state must convert the linear / angular momentum by synchronising the flux density to a simultaneously interactive mass density, which will show a reduction or apparent loss of flux density that equals the coupling constant. As all these factors change within one cycle which is in a resonant harmonic state of half a cycle, the reactive displacement never exceeds the interactive displacements and the resonant harmonic state exists perpetually.

Dark Energy and Dark Matter

The PM forms the neutral or balanced state between the limiting mass M_{ps} (Planck) at the highest density and the rest energy state of the Neutrino, Planck's constants and the Planck length. The ratio between M_{ps} and PM is angular converted to mass as potential in the form of hidden 'dark matter'. "my" is the fundamental mass value in Sankhya and its energy value is equal to Planck's constant. Shown below, the potential driving ESP and Astrological factors is shown to be only 0.266 of the measurable Planck value and is therefore hidden. But in terms of the frequency spectrum it covers 1.3×10^{17} interactions per second, which is a very large mass interval driving the parapsychological phenomenon yet it cannot be detected by instrumentation because it acts simultaneously- that is it is a change in potential but not discrete enough to cause a change in frequency .



hidden dark mass

$$\frac{M_{ps}}{PM \cdot Px} = 6.2826645825 \times 10^{17}$$

Hidden dark energy

$$\frac{Ne \cdot 7}{my} = 4.9605931212 \times 10^{17}$$

$$\frac{h}{my} = 4.9278416147 \times 10^{17}$$

$$\frac{\text{HiddenMass}}{\text{Hiddenenergy}} = \frac{M_{ps}}{PM \cdot Px} \cdot \frac{my}{Ne \cdot 7} = 1.2665147955$$

$$\frac{10^2}{(2 \cdot \pi)^2} \cdot \frac{1}{k^3} = 1.2665147955 \quad \text{PROOF}$$

Blackbody Radiation

Black body nuclear objects are conglomerates of matter formed by energy density patterns following combinatorial mathematics.

Note: any “whole” conglomerate, at any scale level, can be factored by powers of phi [x] with indices “by one more than the one before”

$$\text{from } \left(\frac{1}{x}\right)^n = (1+x)^n \text{ we get}$$

$$1 = (1+x)^n \times x^n =$$

$$x^n + a_1x^{n+1} + a_2x^{n+2} + a_2x^{2n-2} + a_1x^{2n-1} + x^{2n}$$

where Pascal’s Triangle indices are combinatorial energy densities

Base-10	Σ row			
11^0	2^0	_____	1	Natural Numbers
11^1	2^1	_____	1 1	Triangular Numbers (2D) $\frac{n(n+1)}{2}$
11^2	2^2	_____	1 2 1	Tetrahedral Numbers (3D) $\frac{n(n+1)(n+2)}{3!}$
11^3	2^3	_____	1 3 3 1	} Binomial Coefficients
11^4	2^4	_____	1 4 6 4 1	
11^5	2^5	_____	1 5 10 10 5 1	

Combinations are unique quantum interactions

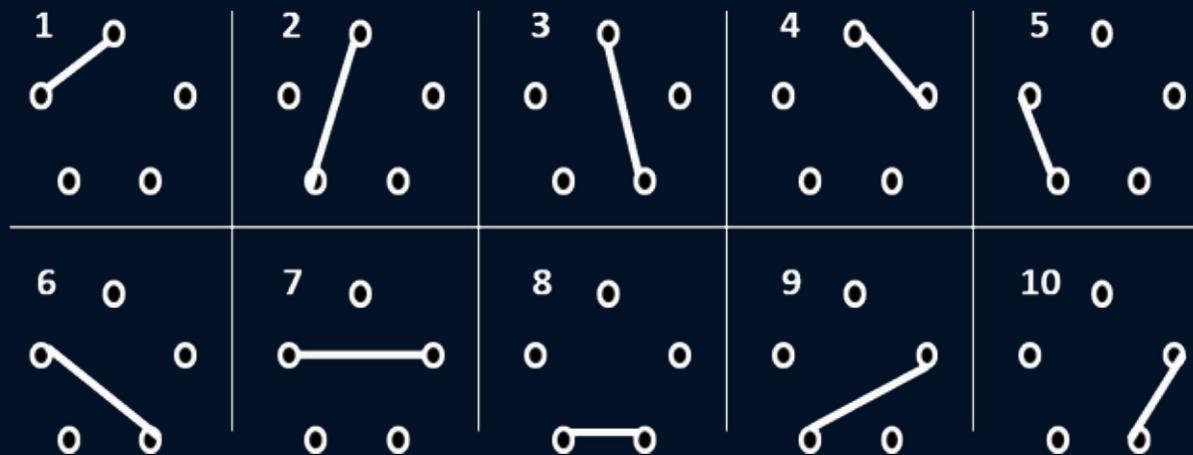
Handshake problem: if “n” people are present in a room, how many different handshakes are possible?

$$C(n, r) = \binom{n}{r} = \frac{n!}{(r! (n - r)!)}$$

n = 5 = number of people (quanta) in room

r = subset = 2 people handshaking (interacting)

$$C(5, 2) = \frac{5 \times 4 \times 3 \times 2 \times 1}{((2 \times 1)(3 \times 2 \times 1))} = \frac{120}{2(6)} = 10 = \frac{n(n - 1)}{2} \text{ if } r = 2$$



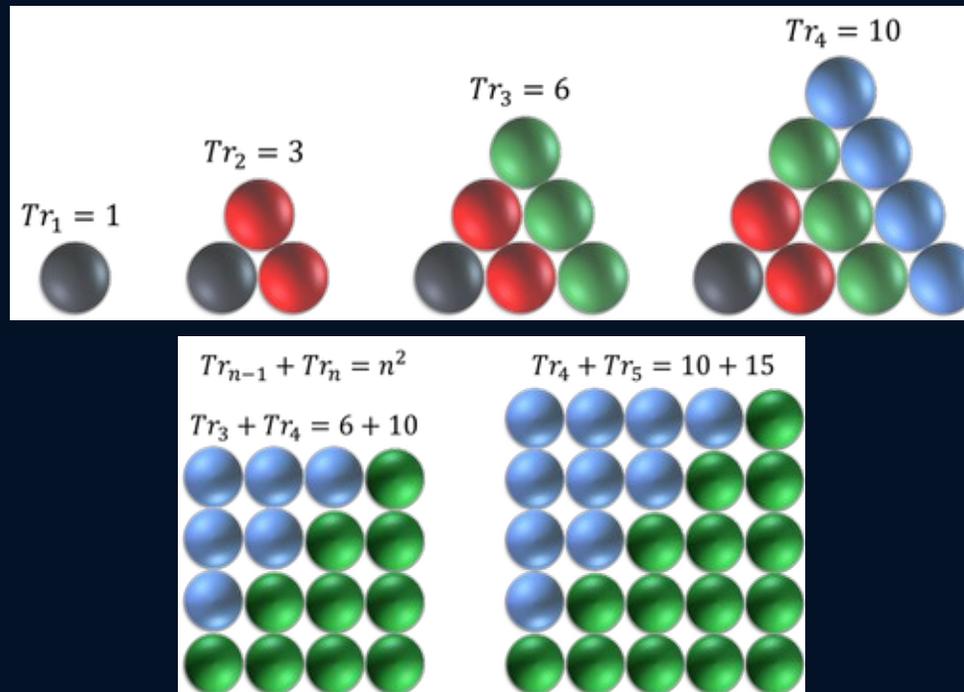
What is a “black body” and why is its radiation “quantized”? (cont’d)

A black body nuclear object conglomerate’s energy density patterns reflect the physics of a packed, constrained medium.

Triangular (2-D)

$$Tr_n = \sum_{k=1}^n k = 1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2} = \binom{n+1}{2} \text{ binomial coefficient}$$

“The triangular number Tr_n solves the "handshake problem" of counting the number of handshakes if each person in a room with $n + 1$ people shakes hands once with each person. In other words, the solution to the handshake problem of n people is Tr_{n-1} . The function Tr is the additive analog of the factorial function, which is the *products* of integers from 1 to n .”

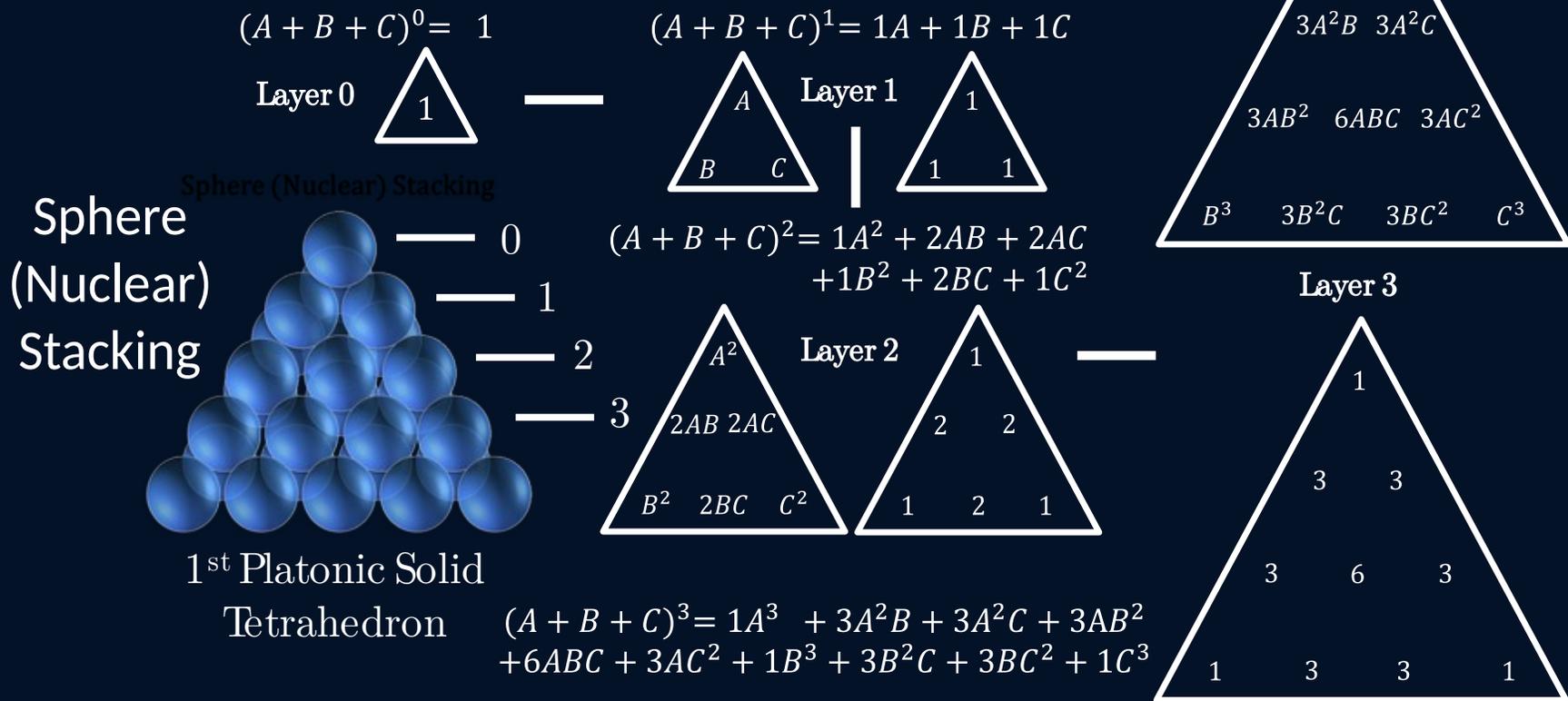


A black body conglomerate's 3-D energy density pattern results in spherical stacking creating tetrahedral or pyramidal shapes.

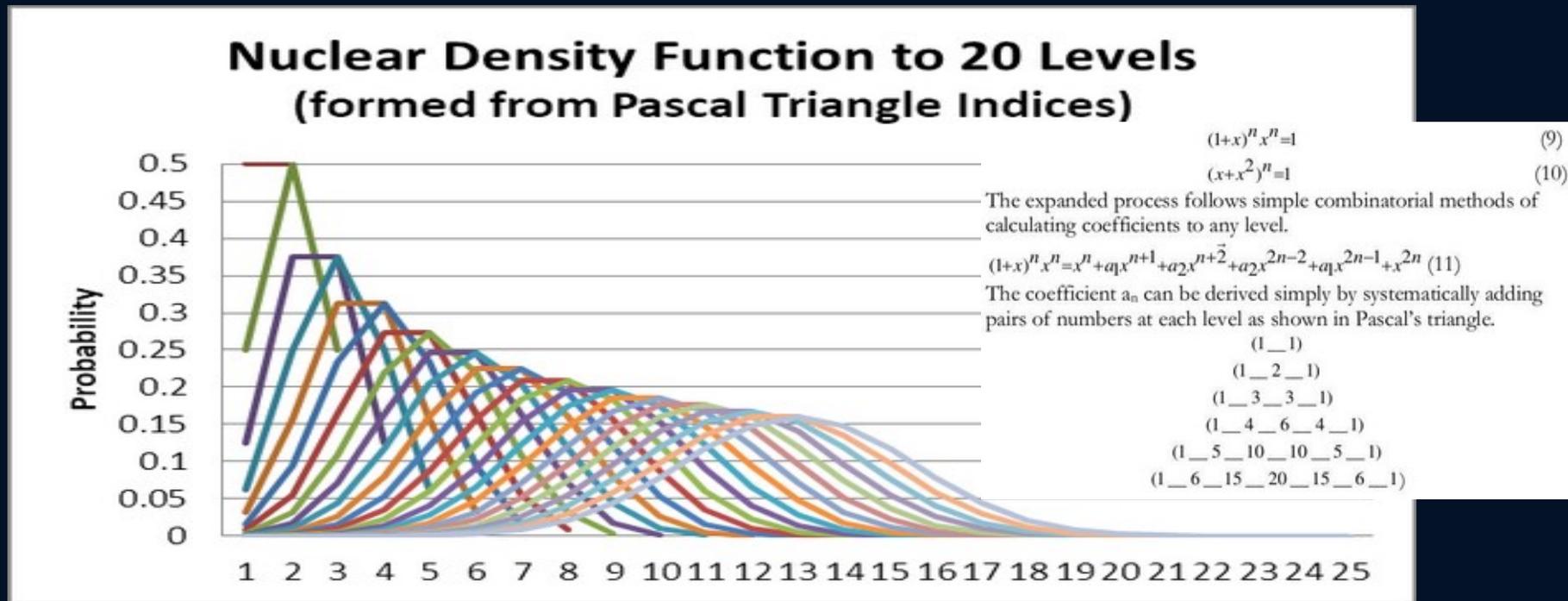
Tetrahedral or Pyramidal (3-D)

$$Te_n = \sum_{k=1}^n \frac{k(k+1)}{2} = 1 + 3 + 6 + 10 + \dots + \frac{n(n+1)}{2}$$

$$= \frac{n(n+1)(n+2)}{3!} = \binom{n+2}{3} \text{ trinomial coefficient}$$



“Coherent states in space can be analysed using these formulas. It is proportionate and scale invariant at every instant of time, for only then a region can be termed to be in a coherent state where super-symmetrical parameters are needed to analyse it. The graph below shows the coherent state curves up to 20 levels. These curves display the characteristics of Planck’s Black Body radiation spectrum. The curves represent the simultaneous interactive states occurring within the period of a single cycle and indicates the density of coherent interactive states.” Secret of Sankhya Vol 1 (SoS 1) pg 92



Start With The Answer – Mass of All Particles

Axiomatically derived values of stable states in Sankhya & its measured equivalents in Physics

Sankhya	Aikantha	Mahad	Prakriti	Vikriti	Vikharo	Vrithi	Moolaprakriti	Abhavath
Physics	Singularity	Quark	Hadrons	Lepton	Photon	Neutrino	?	Vacuum
Sank: kg	0.91498	2.20369E-8	1.6749E-27	9.1093E-31	6.67E-34	9.5287E-35	1.3446E-51	3.631E-25
Phys: kg	?	2.17E-8	1.6749E-27	9.1093E-31	6.626E-34	?	?	?
SankSymbol	Kx	Mps	PM	Mep	7 Ne	Ne	MLY	DD

Moolaprakriti (MLY) is the transmigratory stress value created by the perpetual harmonic oscillatory state in space and reaches the limit as Ne forming the spectrum of Neutrinos. When Cs is accelerated 10Cs Seven Nes are radiated simultaneously & the photon or quantum is created

Sankhya Perpetual Harmonic Oscillatory state classification of particle states and its equivalents in Physics

Stable	stable	resonant	stable	resonant	stable	resonant	Stable	resonant	Stable	resonant
AF state	Fermion	Boson	Fermion	Boson	Fermion	Boson	Fermion	Boson	Fermion	Boson
Mahad	Prakriti	Prakriti	Prakriti	Rajastate	Vikriti	Vikriti	Vikriti	Vikharo	Vrithi	M'prakriti
Quark+/-	Hadron+	Hadron	Hadron-	Boson	Lepton+	Lepton	Lepton -	Photon+	Neutrino-	quantum
Mps	Pn	PM	Pm	DD	Mep	Me	Mee	7 Ne	Ne	MLY
Pmass	Neutron	?	Proton	Higgs?	?	?	Electron	Pl. Const	Neutrino?	?

Mps = Planck Mass. AF = Asymptotic Freedom

Sankhya	Pn	PM	Pm	Mep	Me	Mee
Derived	1.67492e-27	1.67442e-27	1.67262e-27	9.11405e-31	9.11023e-31	9.10938e-31
Physics	Neutron	?	Proton	?	?	Electron
Measured	1.67492e-27	?	1.67262e-27	?	?	9.10938e-31

SAMPLE DERIVATION OF THREE CRITICAL MASS PARAMETERS FROM AXIOMS TO SHOW THE LOGIC OF SANKHYA

Gravity starts at volumetric density 2. (Values derived from axioms.) Gn=Newton's G. (Gs=(C^x)²/2 cycles per sec²) Tc=(2²)/(2^{1/3}-1)

Particle	Mass kgs	Radius m	Acceleration v/t	Velocity m/s	Density kg/m ³	Time t sec	Gs= 1/Gn
Singularity x	0.91498793ξ	½(ratio)	NA	NA	2 ³ = 8(ratio)	Cycle	2 ² = 4(ratio)
Mps Planck)	Lp ³ Dp	Lp = C x tp	7 / MLY	C = 10 ^{8.47214}	Dp=(C ^{1.618}) ⁷	tp =(GDp) ^{0.5x}	Dp x tp ² =Gs
values	2.2036944 E--8	1.689559E--35	5.20593E+51	2.9657596E+8	4.569E+96	5.6968E - 44	1.48287983E+10
PM (nuclear)	Rp ³ Pd	Rp	Pg	Vp	Pd=(C ^x) ³	Pt=(Gs/Pd) ⁵	Pd Pt ² =Gs
values	1.674423E--27	5.089059E--15	4.35997E--9	4.71E-12	1.270435E+16	1.08038E-3	1.48287983E+10
Sun (Stellar)	Rs ³ Tc ² (2 ^{1/3} -1)	Rs=C(7.14/2) ^{2/3}	Gsun	Vs=Rs/Ts	Ds=Tc ² (2 ^{1/3} -1)	Ts=(Gs/Ds) ⁵	Ds Ts ² =Gs
values	1.995E+3015725	6.92944.4R+8	2.80199718E+2	4.4064E+5	5.99622638E+3	1572	1.48287983E+10

Note:Potencial change= the acceleration at Planckmass Mps (Fermion) and Nucleon PM (Boson) both interact simultaneously .

Start With The Answer – Blackhole and Quark Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2 - 2}{10^2} \right) \left(\frac{10^{1/x}}{2^3 - 1} \right) \right] \right] \left[\left(\frac{2^3 - 1}{10^{x^3}} \right) \right] \left[\left(\frac{10^{x^3}}{2^3 - 1} \right) \right] = 0.91498794 = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\left[\frac{7}{C^1} \right] \right] \left[\frac{C^1}{7} \right]$$

= Purusha Mass Kx
= Quantum or Singularity

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2 - 2}{10^2} \right) \left(\frac{10^{1/x}}{2^3 - 1} \right) \right] \right] \left[\left(\frac{2^3 - 1}{10^{x^3}} \right) \right] \left[\left(\frac{10^2}{10^2 - 2} \right) \right] = 2.20369445 \times 10^{-8} = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\left[\frac{7}{C^1} \right] \right] \left[\frac{RS}{1} \right]$$

= Mahad Coherent Mass Mps
= Planck Mass or Quark domain

Start With The Answer – Hadronic Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left(\frac{1}{10^{x^3}} \right)^3 \right] \left[\frac{1}{\left(\frac{10\sqrt{3}}{2\pi} \right)^3} \right] = 1.67442318 \times 10^{-27} = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\frac{1}{C^3} \right] \left[\frac{1}{P_x} \right]$$

= Mahad-Prakriti PM

= Nuclear Quantum Oscillator or Coherent mass of nucleus new to Physics

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left(\frac{1}{10^{x^3}} \right)^3 \right] \left[\left(\frac{1}{\left(\frac{10\sqrt{3}}{2\pi} \right)^3} \right) \right] \left[\frac{(2)+7+\frac{1}{7}}{\left(7+\frac{1}{7} \right) \left(1+\left(\frac{2^{1/3}-1}{7} \right)^2 \right) + (2)} \right] = 1.6726231 \times 10^{-27}$$

= Prakriti -Vikriti Pm

= Expanding Hadron or Proton mass in Physics

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left(\frac{1}{10^{x^3}} \right)^3 \right] \left[\left(\frac{1}{\left(\frac{10\sqrt{3}}{2\pi} \right)^3} \right) \right] \left[\frac{\left[(2)+7+\frac{1}{7} \right] \left[\left(1+\left(\frac{2^{1/3}-1}{7} \right)^2 \right) \right]}{\left(7+\frac{1}{7} \right) \left(1+\left(\frac{2^{1/3}-1}{7} \right)^2 \right) + (2)} \right] = 1.6749286 \times 10^{-27}$$

= Mahad-Prakriti Pn

= Compressive Hadron or Neutron mass in Physics

Start With The Answer – Leptonic Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left[\left(\frac{1}{10^{x^3}} \right)^3 \left(\frac{1}{10\sqrt{3}} \right)^3 \right] \right] \left[\left(\frac{2^3-1}{7} \right) \left(\frac{2\pi}{10} \right)^2 \right] = 9.11405802 \times 10^{-31}$$

= Mahad Prakriti - Vikriti Mep

= Compressive Lepton mass & harmonic counterpart to Pn new to Physics

$$\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left[\frac{1}{10^{x^3}} \right] \right] \left[\left(\frac{1 - \frac{2}{\sqrt{5}}}{1} \right) \frac{\left(\left(10^{x^3} \right)^{1-x} \right)^7}{7} \right] = 9.11023372 \times 10^{-31}$$

= Prakriti - Vikriti Me

= Coherent Lepton mass & harmonic counterpart to PM new to Physics

$$Me - \left(\left[Mep - Me \right] \left[\frac{2^{2/3}}{7} \right] \left[\frac{10^2-2}{10^2} \right] \right) = 9.10938382 \times 10^{-31}$$

= Vikriti-Vriti Mee

= Expansive Lepton or Electron mass in Physics

Start With The Answer – Electromagnetic Domain

Compression



Rebounding



Expansion



Sankhya Stable States: Coherent State = 3 Brackets, Resonant State = 2 Brackets, Expansive State = 1 Bracket

$$\left[\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left[\frac{2^3-1}{(10^{x^3})^6} \right] \right] \left[\left(\frac{2\pi 10^{x^3}}{7} \right)^2 \right] = 6.67011384 \times 10^{-34} = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\left[\frac{7}{C^6} \right] \right] \left[\left(\frac{2\pi C}{7} \right)^2 \right]$$

= Vriti-Vicaro 7Ne

= Radiating transmigrating quanta or Photon or Planck's Constant h if C => CL

$$\left[\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left[\frac{1}{(10^{x^3})^6} \right] \right] \left[\left(\frac{2\pi 10^{x^3}}{7} \right)^2 \right] = 9.52873405 \times 10^{-35} = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\left[\frac{1}{C^6} \right] \right] \left[\left(\frac{2\pi C}{7} \right)^2 \right]$$

= Vriti - Moolaprakriti Ne

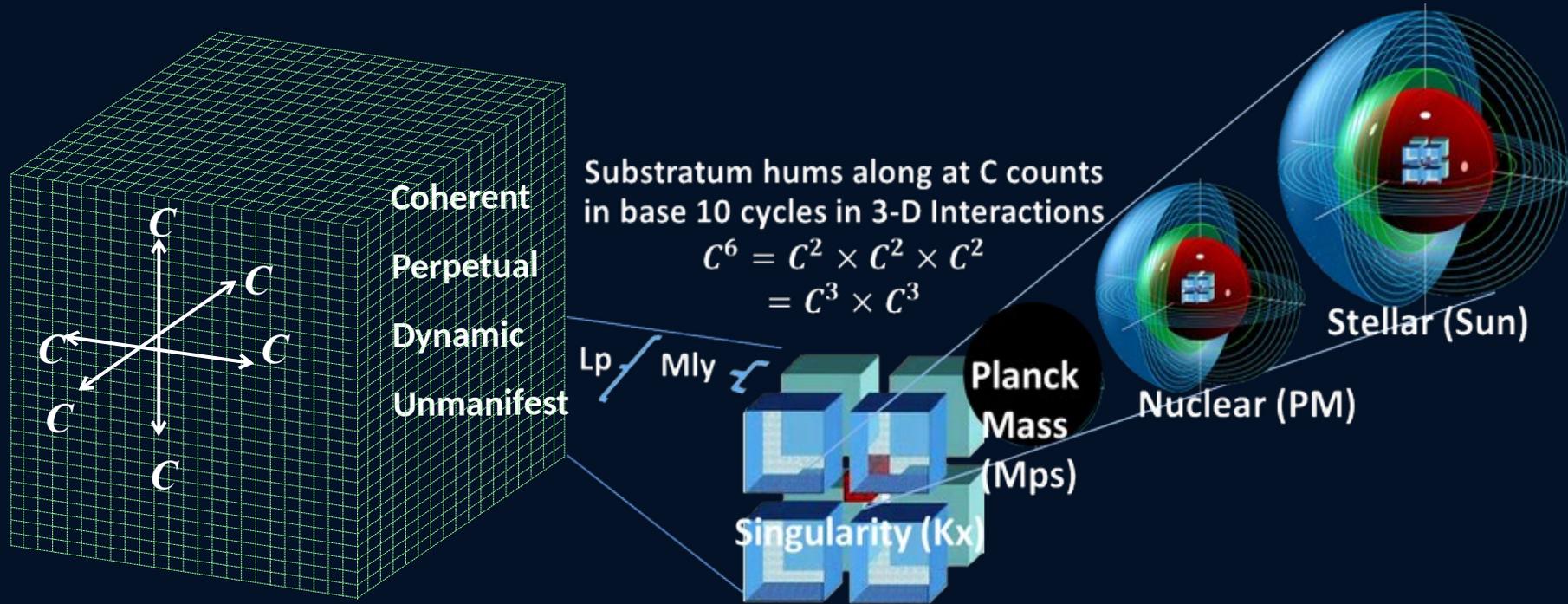
= Radiating transmigrating mass or Neutrino

$$\left[\left[\left[\left(\frac{2^{1/3}}{2^3} \right) \left(\frac{10^2-2}{10^2} \right) \left(\frac{10^{1/x}}{2^3-1} \right) \right] \right] \left[\left[\frac{1}{(10^{x^3})^6} \right] \right] = 1.34462022 \times 10^{-51} = \left[\left[\left(\frac{k}{k^9} \right) \left(\frac{1}{RS} \right) \left(\frac{10^{1/x}}{7} \right) \right] \right] \left[\left[\frac{1}{C^6} \right] \right]$$

= Moolaprakriti mass Mly

= Field Quantum Oscillator

Start With The Answer – Scalable Spherical Harmonics



Particle	Mass kgs	Radius m	Acceleration m/sec ² *	Velocity m/sec*	Density kg/m ³	Time (w/o CL*) Sec*
Singularity (Kx)	0.91498 (ratio)	½ (ratio)	NA	NA	2 ³ = 8 (ratio)	Mly Cycle 1.3446202E-51
Planck Mass (Mps)	Mps = Lp ³ Dp 2.2036944 E-8	Lp = C x Tp 1.689559E-35	7 / Mly 5.20593E+51	C = Lp/Tp = 10 ^{2/x+3} 2.9657596E+8	Dp=[(C ^{1+x})k] ⁷ 4.56910E+96	Tp=C x Mly / 7 5.69689E-44
Nuclear (PM)	PM = Rp ³ Pd 1.674423E-27	Rp = (k-1)/C ^{1+x} 5.089059E-15	Pg=PM/(Rp ² Gs) 4.35997E-9	Vp=Rp/Pt 4.710143E-12	Pd=(C ^x /k- 1) ³ Kx/Px 1.270435E+16	Pt=(Gs/Pd) ^{1/2} 1.08038E-3
Stellar (SUN)	SUN = Rs ³ Ds 1.99512E+30	Rs = C (Gm/2) ^{2/3} 6.92943E+8	Gsun=SUN/(Rs ² Gs) 2.801997E+2	Vs=Rs/Ts 4.40639E+5	Ds=Tc ² (2 ^{1/3} -1) 5.9962264E+3	Ts=(Gs/Ds) ^{1/2} 1572.5844

Planetary Orbital Dynamics



Planet (#)	$R_{\text{sun2planet}}$	C_{planet}	$C_{\text{planet}} / C_{\text{earth}}$	$C_{\text{planet}} / C_{\text{substratum}}$
Mercury (1)	0.572956×10^{11}	3.0496×10^8	1.0172	1.02826
Venus (2)	1.07788×10^{11}	3.0103×10^8	1.0041	1.01502
Earth (3)	1.492836×10^{11}	2.9979×10^8	1.0000	1.01085
Mars (4)	2.278798×10^{11}	2.9868×10^8	0.9963	1.00710

Planetary Orbital Dynamics

In the numerical section below, R_s is the solar radius. P_z is the planet's orbital radius where the number z identifies each as index. The index z , from 1 to 9 respectively, is: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and Pluto. P_3 and c_3 are the orbital radius and frequency measured on Earth. (Please refer to the attached Abstreview pdf and / or website for details of axiomatic derivations which are from basics and has no inputs from Physics.)

Earth: Axiomatic Values.

	Harmonic	Constant Oscillatory cycle C		Solar Radius
	$x := \frac{\sqrt{1+2^2}-1}{2}$	$x = 0.618034$	$C := 10^{\frac{2}{x^3}}$	$R_s := \left(\frac{7 \cdot r_s}{2}\right)^{\frac{2}{3}} \cdot C$
			$C = 2.96576 \times 10^8$	$R_s = 6.929426 \times 10^8$
EARTH	$R_s = 6.929426 \times 10^8$	$P_3 = 1.492836 \times 10^{11}$	$c_3 = 2.997925 \times 10^8$	$c_3 - C = 3.216491 \times 10^6$
	$\frac{c_3}{C} = 1.010845$	$\frac{R_s}{c_3 - C} = 215.434333$	$\frac{P_3}{R_s} = 215.434333$	$\frac{P_3 \cdot (c_3 - C)}{R_s^2} = 1$

The axiomatic derivation of C is shown above. The axiomatically derived value of c_3 given above is equal to the standard Michelson / Morley et al measured velocity in meters / second, of Electromagnetic waves on the Earth and is deemed a universal constant of velocity in the EMW spectrum. However c_3 has the same numerical frequency value in cycles per second, at a wavelength of one meter.

On the Earth the differential value ΔC as $c_3 - C$ is **3216491** meters, (as each cycle corresponds to one meter wavelength). The R_s is the axiomatic Solar radius and P_3 the Earth's measured orbital radius taken from standard published values, both in meters. The ratio $R_s / \Delta C$ equals ratio P_3 / R_s exactly. The proof of the inverse proportionality being created the dynamic PHO state is given here:

$$\frac{c_3}{C} = 1.0108 \quad \left(\frac{c_3}{C} - 1\right)^{-1} = 92.2048 \quad \left[\frac{R_s}{(c_3 - C) \cdot 92.2048}\right] = 2.3365 \quad \left(\frac{7 \cdot r_s}{2}\right)^{\frac{2}{3}} = 2.3365$$

Planetary Orbital Dynamics

Mars: Axiomatic Values.

$$\text{MARS } x := \frac{\sqrt{1+2^2}-1}{2} \quad x = 0.618034 \quad C := 10^{x^{\frac{2}{3}}} \quad C = 2.96576 \times 10^8 \quad c_4 = 2.986831 \times 10^8 \quad c_4 - C = 2.107117 \times 10^6$$

$$\text{MARS } R_s = 6.929426 \times 10^8 \quad P_4 = 2.278798 \times 10^{11} \quad c_4 = 2.986831 \times 10^8 \quad c_4 - C = 2.107117 \times 10^6$$

$$\frac{c_4}{C} = 1.007105 \quad \frac{R_s}{c_4 - C} = 328.85815 \quad \frac{P_4}{R_s} = 328.85815 \quad \frac{P_4 \cdot (c_4 - C)}{R_s^2} = 1$$

The Mars $c_4 = 2.986831 \times 10^8$ frequency/cycles/second, axiomatically derived value of the one meter wavelength on Mars as shown above, will be different from that received on Earth as c_3 . On Mars therefore ΔC value will also be different to the one on the Earth. The R_s is Solar radius and P_4 the Mars orbital radius, are both in meters. Shown above and confirmed below is the exact equivalence of ratio $R_s / \Delta C$ to P_4 / R_s , like that on Earth.

The untested proof below urgently needs the confirmation by testing on Mars as a compulsory event.

$$\frac{(c_4)}{C} = 1.0071 \quad \left(\frac{c_4}{C} - 1\right)^{-1} = 140.7496 \quad \frac{R_s}{[(c_4 - C) \cdot 140.7496]} = 2.3365 \quad \left(\frac{7 \cdot r_s}{2}\right)^{\frac{2}{3}} = 2.3365$$

The precise equivalence below confirms that the ΔC proportionality is not an accidental event.

$$\left[\frac{(c_4 - C) \cdot P_4}{R_s} \cdot \frac{N_e}{DD}\right] \cdot \left[\left(\frac{7 \cdot r_s}{2}\right)^{\frac{4}{3}}\right] \cdot \left(1 + \frac{1}{K_a}\right)^2 = 0.999999 \blacksquare \quad \left[\frac{(c_4 - C) \cdot P_4}{R_s} \cdot \frac{N_e}{1 + \frac{2}{x^3}} \cdot \frac{ST}{G}\right] \cdot \left[\left(\frac{7 \cdot r_s}{2}\right)^{\frac{4}{3}}\right] \cdot \left(1 + \frac{1}{K_a}\right)^2 = 0.999999 \blacksquare$$

The two equations show that like the Earth, ΔC on Mars too has both DD and ST exactly proportionate to the same ratios, thereby establishing an accurate mathematical validity to the Sankhyan derivation. It is important and vital to confirm the $c_4 = 2.9868246 \times 10^8$ cycles / sec and the ratio as $c_4 / C = 1.007105$ on Mars as derived, in the same way as Earth's ratio $c_3 / C = 1.010845$.

Planetary Orbital Dynamics

Explaining it in detail, the constant resonant oscillatory rate C ensures balance of the PHO interactive stresses that remain at DD in the coherent state and any local change cannot exceed the ST harmonic boundary state as the limit of elasticity. All manifestation in the intervening field is holographic states of oscillatory stresses that quantize into larger harmonic quantum fields without any change in the basic Space parameters. TRz are the orbital time values in seconds of the nine planets (**taken from published records**) from which the c_z values have been derived axiomatically to obtain the ΔC parameter as a comparative ratio for all planets. It is very indicative of the correctness of Sankhya that even measured parameters from public records match exactly with axiomatic derivations.

$$T_0 = 1610.405 \quad TR_1 := (0.240844) \cdot \frac{yI}{2 \cdot \pi} \quad TR_2 := (.615183) \cdot \frac{yI}{2 \cdot \pi} \quad TR_3 := (0.999979) \cdot \frac{yI}{2 \cdot \pi} \quad TR_4 := (1.880711) \cdot \frac{yI}{2 \cdot \pi}$$

$$TR_5 := 11.8565 \cdot \frac{yI}{2 \cdot \pi} \quad TR_6 := 29.4235 \cdot \frac{yI}{2 \cdot \pi} \quad TR_7 := 83.7474 \cdot \frac{yI}{2 \cdot \pi} \quad TR_8 := 163.723 \cdot \frac{yI}{2 \cdot \pi} \quad TR_9 := 248.02 \cdot \frac{yI}{2 \cdot \pi}$$

$$c_z := 10^x \cdot \left(\frac{2}{x^3} + \left(\frac{TR_z}{T_0} \right)^3 \right)^{-\frac{2}{3}} \quad R_s := \left(\frac{7 \cdot rs}{2} \right)^{\frac{2}{3}} \cdot C \quad P_z := \frac{R_s^2}{c_z - C} \quad R_s = 6.929426 \times 10^8 \quad C = 2.96576 \times 10^8 \quad c_3 = 2.997925 \times 10^8$$

$c_z =$	$\frac{c_z}{C} =$	$\left(\frac{TR_z}{T_0} \right)^3 =$	$\frac{R_s}{c_z - C} =$	$\frac{P_z}{R_s} =$	$c_z - C =$	$\frac{R_s^2}{(c_z - C) \cdot P_z} = \frac{c_z}{c_3} =$
3.0496·10 ⁸	1.02826	82.6311	82.6845	82.6845	8.3806·10 ⁶	1
3.0103·10 ⁸	1.01502	154.4031	155.5104	155.5104	4.4559·10 ⁶	1
2.9979·10 ⁸	1.01085	213.4587	215.4343	215.4343	3.2165·10 ⁶	1
2.9868·10 ⁸	1.0071	325.238	328.8582	328.8582	2.1071·10 ⁶	1
2.9719·10 ⁸	1.00208	1.1099·10 ³	1.1251·10 ³	1.1251·10 ³	6.159·10 ⁵	1
2.9691·10 ⁸	1.00113	2.0345·10 ³	2.0632·10 ³	2.0632·10 ³	3.3585·10 ⁵	1
2.9674·10 ⁸	1.00056	4.086·10 ³	4.145·10 ³	4.145·10 ³	1.6718·10 ⁵	1
2.9668·10 ⁸	1.00036	6.3884·10 ³	6.4813·10 ³	6.4813·10 ³	1.0691·10 ⁵	1
2.9666·10 ⁸	1.00027	8.4264·10 ³	8.5493·10 ³	8.5493·10 ³	8.1053·10 ⁴	1

Planetary Orbital Dynamics

Comparing Mars ΔC , is a blue shift, $c_4 - C = 2.1071 \times 10^6$ ■ but $c_4 - c_3 = -1.1094 \times 10^6$ ■ with c_3 it turns into a red shift with a negative sign. The fact that c_3 (the Michelson c), was always used as the reference value in science, made it very clear that no blue shift would ever occur unless the ratio of distance was less than $P3 / R_s = 215.43$. As the ratio of orbital distances became larger, the ΔC increased when compared to c_3 , whereas it decreased with C . It is an axiomatic ratio that is applicable to all the nine planets which confirms its correctness (and all phenomena too) as shown below.

Potential ratio variance with orbital distance	BLUE SHIFT correct value	Differential decreasing with orbital distance	Differential increasing with distance but is negative after c_3	REDSHIFT incorrect value Hubble effect
$\frac{c_z}{C} =$	$\frac{c_z - C}{C} + 1 =$	$c_z - C =$	$c_z - c_3 =$	$\frac{c_z - c_3}{c_3} + 1 =$
1.028258	1.028258	$8.380558 \cdot 10^6$	$5.164067 \cdot 10^6$	1.017225
1.015025	1.015025	$4.455925 \cdot 10^6$	$1.239434 \cdot 10^6$	1.004134
1.010845	1.010845	$3.216491 \cdot 10^6$	0	1
1.007105	1.007105	$2.107117 \cdot 10^6$	$-1.109374 \cdot 10^6$	0.9963
1.002077	1.002077	$6.159016 \cdot 10^5$	$-2.600589 \cdot 10^6$	0.991325
1.001132	1.001132	$3.358521 \cdot 10^6$	$-2.880639 \cdot 10^6$	0.990391
1.000564	1.000564	$1.671757 \cdot 10^6$	$-3.049315 \cdot 10^6$	0.989829
1.00036	1.00036	$1.069146 \cdot 10^6$	$-3.109576 \cdot 10^6$	0.989628
1.000273	1.000273	$8.105255 \cdot 10^4$	$-3.135439 \cdot 10^6$	0.989541

System of Units - Necessary Updates

- 1) Moolaprakriti (Mly or my) = root unit = 1 dimensionless smallest interaction cycle count
- 2) The "Second" must change by increasing to account for spectral shift for light on earth

$$\text{Spectral Shift Observer} = Sf = \frac{2}{x^3} + \frac{R_s}{R_o} \dots C_{lightobserver} = 10^{Sf}$$

where R_s = radius light source boundary ... and ... R_o = radius from source to observer

For Earth, R_s for sun = 6.92943E+08 and R_o for Earth = 149100000000

$$Sf_{earth} = 8.472136 + \frac{6.92943E+08}{1.479086E+11} = 8.472136 + \frac{1}{213.45}$$

$$\text{So second must change from 1.0 to } 1.010845 = \frac{C_{lightnearth}}{C_{sankhya}} = Fc$$

Physics (name)	Sankhya State	Particle	FCP Fractional Counts per Cycle	CPS Counts of Interaction per Cycle	Sankhya Mass kgs	Sankhya GEV
None	Purusha	Kx	9.149879388E-01	6.804805713E+50	9.149879388E-01	5.114623721E+26
None		Mp	6.535628134E+00	4.860575509E+51	6.535628134E+00	3.653302658E+27
Planck mass	Mahad Prakrithi	Mps	2.203694454E-08	1.638897298E+43	2.203694454E-08	1.231826940E+19
Metric Elasticity of Space	Stress Density of Space	St	5.201318683E-16	3.868243677E+35		0.000000000E+00
Neutron		Pn	1.674927646E-27	1.245651088E+24	1.674927646E-27	9.362554744E-01
None	Prakrithi Saptha	PM	1.674423179E-27	1.245275914E+24	1.674423179E-27	9.359734863E-01
Proton		Pm	1.672621512E-27	1.243936006E+24	1.672621512E-27	9.349663857E-01
None		Mep	9.114058024E-31	6.778165207E+20	9.114058024E-31	5.094600200E-04
None	Mahad Vikrithi	Me	9.110233722E-31	6.775321056E+20	9.110233722E-31	5.092462482E-04
Electron		Mee	9.109383824E-31	6.774688983E+20	9.109383824E-31	5.091987403E-04
Planck constant h	Vikaro	7*NE	6.670113838E-34	4.960593121E+17	6.670113838E-34	3.728477831E-07
Planck const hs sankhya		7*NE/bf	6.626485869E-34	4.928146808E+17	6.626485869E-34	3.704090554E-07
Neutrino	Vikrithi Saptha	NE	9.528734054E-35	7.086561602E+16	9.528734054E-35	5.326396901E-08
Planck Time		Tp	5.696886333E-44	4.236799527E+07	5.696886333E-44	3.184460553E-17
Cosmological Constant	Moolaprakriti	Mly	1.344620225E-51	1.000000000E+00	1.344620225E-51	7.516193608E-25

Start With The Answer - New Universal Constants

$$x = \text{golden mean} = \frac{\sqrt{1^2+2^2}-1}{2}$$

$$k = \text{linear increment to double volume} = \sqrt[3]{2}$$

$$10 = \text{interaction counts per standard cycle} = 1+2+3+4 = \frac{n(n+1)}{2} \text{ for } n=4=2 \times 2=2+2$$

$$Kx = \text{Purusha} = \frac{10^{\frac{1}{x}}}{k^8} \sum_1^{\infty} \left(\frac{1}{2^3}\right)^n \frac{2^3-1}{\sum_1^{\infty} \left(\frac{1}{2^3}\right)^n + (2^3-1)} = \left(\frac{10^{1+x}}{2^3}\right) (\sqrt[3]{2}/2^3-1) \left(\frac{10^2-2}{10^2}\right) = 0.91498793882$$

$$KV = \text{ratio first volume change} = \frac{1}{(k-1)^3} = 56.94762837$$

$$Px = \text{coherent to synchronous interface} = \left(\frac{10\sqrt{(3)}}{2\pi}\right)^3 = 20.947986098$$

$$Bt = \text{ratio volumetric over geometric state} = \frac{KV}{Px} = 2.7185252132$$

$$Rs = \text{decay in infinite time} = \frac{Gm}{7} = \frac{(7+\frac{1}{7})}{7} = \frac{10^2}{(10^2-2)} = \sum_{n=0}^{\infty} \left(\frac{2}{10^2}\right)^n = 1.0204081633$$

$$Cs = \text{substratum axiomatic interactions counts per cycle} = 10^{\frac{2}{x^3}} = 2.965759669219230E+08$$

$$Mly = \text{root oscillatory state} = \text{unit fractional count} = \frac{Kx}{Cs^6} = 1.3446202249E-51$$

Start With The Answer - New Universal Constants (cont'd)

$$Ah = \text{Purusha core acceleration} = \frac{[(1+1)^3-1]}{Mly} = \frac{7}{Mly} = 5.2059309169E+51$$

$$Gm = \text{gyromagnetic volumetric coherent to resonant state} = [(\frac{2^3}{7})-1]+7 = 7.1428571429$$

$$Gmr = \frac{\text{simultaneous cycle}}{\text{sequential cycle}} = \frac{Gm}{2} = \frac{10\ 10}{[7-(-7)]+[7-(-7)]} = 3.5714285714$$

$$Ge = \text{coherent to expansive states} = \frac{7^2}{KxRs\ 2(2\pi)^2} = 0.66478976082$$

$$Tr = \text{coherent to resonant state count ratio over 7 volumes} = [\frac{(2\pi)^3}{2\pi}][\frac{1}{7}] = 5.6397739435$$

$$Tc = \text{sequential transmigration trigger ratio over 2 volumes} = [\frac{(2\pi)^3}{2\pi}][\frac{1}{k-1}] = 151.88618860$$

$$Vc = \text{resonant volumetric compression ratio} = \frac{1}{k-1} = \frac{1}{2^{1/3}-1} = 3.8473221019$$

$$Ve = \text{resonant volumetric expansion ratio} = 2^3-1 = 7$$

$$Tce = \text{volumetric compression-expansion cyclic time} = Vc \times Ve = \frac{7}{k-1} = 26.931254713$$

$$Ke = \text{incremental displacement per volumetric expansion} = \frac{k-1}{7} = 3.7131578556E-02$$

Axiomatically Derived Universal Constants

$$L_p = \text{Planck Length} = \frac{\left[\left(\frac{K_x}{Mly}\right)^{\frac{1}{3}}\right]}{Ah} = 1.6895595727E-35$$

$$T_p = \text{Planck Time} = \frac{Mly Cs}{7} = \frac{L_p}{Cs} = 5.6968863333E-44$$

$$M_p = \text{maximum fractional interactive count} = K_x G_m = 6.5356281344$$

$$M_{ps} = \text{maximum coherent stress density as mass} = M_p / Cs = 2.2036944538E-08$$

$$\text{Planck Mass due to hidden simultaneous state constant } P_x = M_{ps} / \left[1 + \frac{k-1}{P_x}\right] = 2.1766862926E-08$$

$$D_p = \text{Planck Density} = \frac{M_{ps}}{L_p^3} = \left[(Cs^{1+x})k\right]^7 = 4.5691019728E+96$$

$$St = \text{Metric Elasticity of Space} = \text{stress intensity ratio of Space} = \frac{M_{ps}}{T_p} = 3.8682436772E+35$$

$$M_{xe} = \text{max energy per cycle (power)} = \frac{kx}{Mly(Rs-1)} Rs = \frac{M_{ps} Cs^2}{T_p} = St Cs^2 = 3.4024028566E+52$$

$$G_{Sankhya} = \text{density}_{anystate} \times T_{cycleperiodanystate}^2 = \frac{1}{G_{Newton} Fc} = 1.4828798346E+10$$

$$G_{Sankhya} = \frac{St}{Cs^3} = \frac{(Cs^x)^2}{k^3} = \frac{M_{ps}}{L_p^2 \times \frac{7}{Mly}} = 1.4828798346E+10$$

$$G_{Sankhya} = \frac{M_{ps}}{T_p Cs^3} = \frac{M_{ps}}{L_p Cs^2} = \frac{M_{ps} T_p^2}{L_p^3} = D_p T_p^2 = 1.4828798346E+10$$

Axiomatically Derived Universal Constants (cont'd)

$$h = \text{Planck's Constant} = TpTc(k-1)Cs = 7Ne = 6.6701138380E-34$$

$$h_{sankhya} = \text{Planck's Constant Sankhya} = Tp(Tc-1)(k-1)Cs = MlyC^2(2\pi)^2/7 = 6.62619863 \times 10^{-34}$$

$$\alpha = \frac{1}{\text{Fine Structure Constant}} = \frac{Cs}{Cs^x} \frac{1}{2\pi} \frac{1}{2} = \frac{Cs^{1-x}}{2\pi+2\pi} = 137.04339643$$

$$\text{Lambshift} = \frac{Gmr Cs}{\left[1 + \frac{1}{(10^2 + Si Rs)}\right]} = 1.05701926 E 9$$

$$\text{Boltzman's Constant} = \frac{\text{change in energy}}{\text{change in volume}} = \text{temperature rise} = \left[\left[\left[\frac{2\pi}{6} + \left[\frac{7}{k-1}\right]^{2-1} + 1\right]2\right]^3\right] = 1.3806580000E-23$$

$$Tk = \text{Centigrade Temperature Scale} = \left([2^3-1]^3 + \left[k + \frac{k}{7^2}\right]\right) \times \frac{1}{k} = 273.25968858$$

$$\text{Compton Wavelength of a PM Proton state} = \frac{(k-1)^2}{Cs^{1+x}} = 1.3227536624E-15$$

$$Si = \text{impedance to stress transmigration in space} = \left[\frac{10^2}{k-1}\right] \left[\frac{10^2-2}{10^2}\right] = \left[\frac{10^2}{k-1}\right] \left[\frac{1}{Rs}\right] = 377.03756598$$

$$Cc = \text{Cs compressive phase due to Si} = CsSi = 1.1182028070E+11$$

$$Ce = \text{Cs expansive phase due to Si} = \frac{Cs}{Si} = 7.8659527241E+05$$

$$e0 = \text{Electric Field Permittivity of Free Space} = \frac{1}{Cc} \frac{1}{Fc} = \frac{1}{Cc} \frac{Cs}{C_{lightearth}} = 8.8469724203E-12$$

$$u0 = \text{Permeability of Free Space} = \frac{1}{Ce} \frac{1}{Fc} = \frac{1}{Ce} \frac{Cs}{C_{lightearth}} = 1.2576619439E-06$$

Axiomatically Derived Universal Constants (cont'd)

$$Crs = \text{change ratios compressive, resonant and expansive states} = \left[\frac{10}{Kv} \right] \left[\sqrt{\frac{2^3}{1 - \left(\frac{2}{\sqrt{5}}\right)}} \right] [k^7] = 7.7036516434$$

$$Rp = \text{PM radial boundary} = \frac{k-1}{C^{1+x}} = 5.0890594006E-15$$

$$MU = \text{Mass of the Universe} = \left[\frac{Rp}{Lp} \right]^3 \left[\frac{Mps}{Crs} \right] = 7.8171199318E+52$$

$$RU = \text{radial count of space} = \left[\frac{Rp^3}{Lp^2} \right] Crs = 5.9933233779E+25$$

$$DD = \text{critical vol density interactive stresses in space} = \left[\frac{Rp}{Rp^3} \right] \left[\frac{Mps}{RU} Crs \right] = \left[\frac{MU}{RU^3} \right] = 3.6311154546E-25$$

$$TT = \text{time cycle of space} = \sqrt{\frac{Gs}{DD}} = \frac{Ru}{Cs} = 2.0208391935E+17 \text{ sec} = 6.40E+09 \text{ yrs}$$

$$ec = \text{Electric Charge} = Fc \left[\frac{1}{2\pi 10^{18}} \right] = Fc \left[\frac{PM Px}{Mps 10} \right] = Fc \left[\frac{1}{Cs^2 Gm} \right] = \frac{1}{Gs Cs \sqrt{2}} = 1.6088104559E-19$$

$$St = \text{Space stress intensity ratio} = \text{metric elasticity of space} = Gs Cs^3 = 3.8682436772E+35$$

$$St = \text{Maximum sequential mass to maximum expansion time} = \frac{MU}{TT} = 3.8682436772E+35$$

$$St = \text{Energy equivalent of 7 volumes of hidden dark mass} = \frac{Mps}{PMPx} Cs^2 7 = 3.8682436772E+35$$

Modified Unit Analysis Logic By Fractal Woman

The NIST Reference on Constants, Units, and Uncertainty

Information at the foundation of modern technology from the [Physical Measurement Laboratory](#) at NIST

CODATA Internationally recommended **2022 values** of the Fundamental Physical Constants

[Version history and disclaimer](#)

(e.g., electron mass, most misspellings okay)

Search by name Search

Display alphabetical list, table (image), or table (pdf)

by clicking a category below

Constants Topics:
[Values](#)
[Energy](#)
[Equivalents](#)
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Electronic Power



$$P = VI$$

$$\left[\frac{J}{s} \right] = \left[\frac{J}{C} \frac{C}{s} \right]$$

Quantum Mechanics



$$E = hf$$

Max Planck

$$p = \frac{h}{\lambda}$$

de Broglie

2 MUA and The X Standard : Calibrating the System

2.1 EXACT Constants

2.1.1 The Speed of Light, c

$$c \left[\frac{m}{s} \right] = 299792458.0 \quad (1)$$

2.1.2 Speed of Light Squared, c^2

$$c^2 \left[\frac{m^2}{s^2} \right] = 89875517873681760.0 \quad (2)$$

2.1.3 Electric Constant (Inverse Permittivity), K_e

$$K_e \left[\frac{m}{F} \right] = \frac{1}{4\pi\epsilon_0} = 8987551787.3681760 \quad (NIST : 8987551792.3) \quad (3)$$

[Fractal Woman's Modified Unit Analysis - Calibrating The Universe : The X Standard](https://tinyurl.com/calibrateuniversefractalwoman)

Modified Unit Analysis Logic By Fractal Woman

Oscillation Mechanics (OM)

Mass: Quantity of Matter
Inertia: Resistance to Change

Potential
Stillness inertia
Rest mass [kg] = [P]
 $Q_p = 7.3724973238127084 \times 10^{-51} [P/\Delta]$

Kinetic
Motion inertia
Momentum [kg m/s] = [K]
 $Q_k = 2.2102190943042335 \times 10^{-42} [K/\Delta]$

Energy
Resonance inertia
Energy [kg m/s m/s] = [E]
 $Q_e = 6.626070150000000 \times 10^{-34} [E/\Delta]$

MUA Cycle Δ

Clock Frequency $[\Delta/s]$
Time Period $[s/\Delta]$

Relativity

$$RRS = \sqrt{1 - \frac{v^2}{c^2}}$$

$$RBM = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$

NOTE: $Q_p = Mly \times \frac{(2\pi)^2}{7} Rs$

Doppler

$$DRS = \frac{1}{1 + \frac{v}{c}}$$

$$DBS = \frac{1}{1 - \frac{v}{c}}$$

$$DRM = 1 - \frac{v}{c}$$

$$DBM = 1 + \frac{v}{c}$$

$$M = Q_p \times f_p \left[\frac{P \Delta}{\Delta s} \right]$$

$$F = Q_k \times f_k \left[\frac{K \Delta}{\Delta s} \right]$$

$$W = Q_e \times f_e \left[\frac{E \Delta}{\Delta s} \right]$$

[MUA and Oscillation Mechanics : Application and Implementation](#)

Modified Unit Analysis Logic By Fractal Woman

MUA: The Power Equation

$$\left[\frac{\Delta}{s}\right] \left[\frac{s}{\Delta}\right] \left[\frac{\Delta}{m}\right] \left[\frac{m}{\Delta}\right]$$

Frequency

Wavelength

Cycle of Energy

$$\frac{E}{t=1} = \frac{h}{t} f \left[\left(\frac{J \frac{s}{\Delta}}{\frac{s}{\Delta}} \right) \frac{\Delta}{s} \right] = \frac{[J]}{s}$$

Cycle of Power

$$P_{\Delta} = h_{\Delta} f \left[\frac{J \Delta}{\Delta s} \right] = \left[\frac{J}{s} \right] = [W]$$

The Power Constant

$$\Delta_P = 6.62607015 \times 10^{-34} \left[\frac{kg m^2}{s^2 \Delta} \right] = \left[\frac{J}{\Delta} \right]$$

The Power Equation

$$P = \Delta_P f \left[\frac{J \Delta}{\Delta s} \right] = \left[\frac{J}{s} \right] = [W]$$

The Force Constant

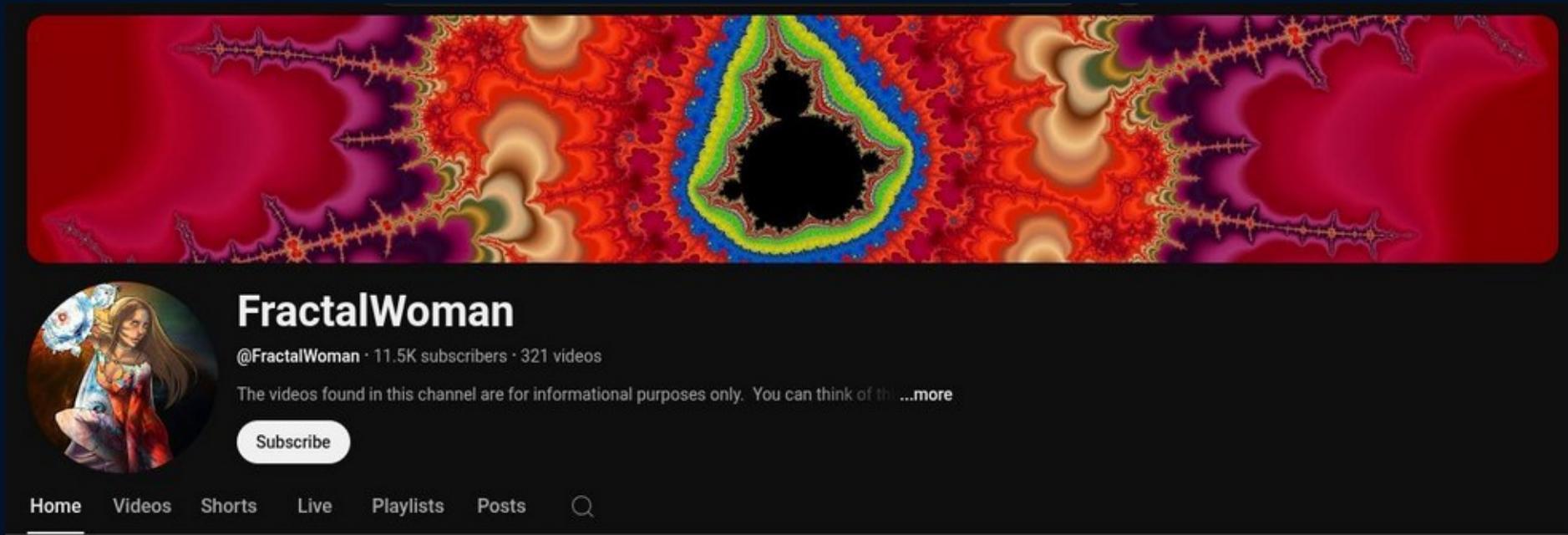
$$\Delta_F = \frac{\Delta_P}{c} = 2.21021909430 \times 10^{-42} \left[\frac{kg m}{s \Delta} \right]$$

The Force Equation

$$F = \Delta_F f \left[\frac{kg m}{s \Delta} \frac{\Delta}{s} \right] = [N]$$

[The Power Equation: Real Life Example of Fractal Woman's Modified Unit Analysis](https://tinyurl.com/powerfractalwoman)

Modified Unit Analysis Logic By Fractal Woman



[NIST Standard vs Fractal Woman's Modified Unit Analysis](#)

[Planck's Constant and Nature of Light - Woman's Modified Unit Analysis](#)

[Decoding the Fine Structure Constant](#)

[Angular Momentum vs Circular Momentum](#)

[On The Photoelectric Effect and The Photon](#)

Sankhya Is Foundation For Vedic Mathematics

Jagadguru Swami
Sri Bharati Krsna Tirthaji Maharaja

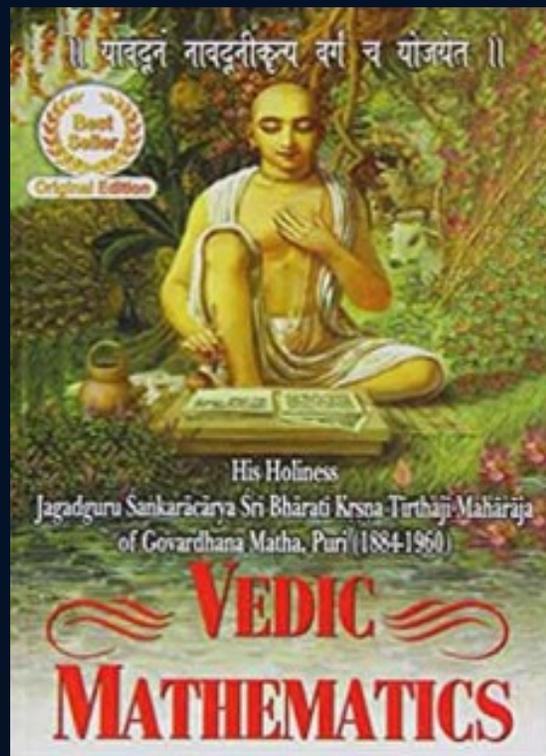


- Born in 1884 to an educated and pious family
- Received top marks in school
- Sat for the M.A. exam of the American College of Sciences (Rochester NY) in Sanskrit, Philosophy, English, Mathematics, History and Science.

“The Sutras apply to and cover each and every part of each and every chapter of every branch of mathematics (including arithmetic, algebra, geometry, astronomy, calculus, etc. etc.)”

“ ’Is this mathematics or magic?’ ... It is both. It is magic until you understand it; it is mathematics thereafter.”

“The Sutras are easy to understand, easy to apply and easy to remember; and the whole work can be truthfully summarised in one word ‘mental!’”



This unique technique of Calculations based on a set of 16 sutras or aphorisms or formulae and their upa-sutras or corollaries derived from these sutras.

Main Sutras

- By one more than the one before.
- All from 9 and the last from 10.
- Vertically and Cross-wise
- Transpose and Apply
- If the Samuccaya is the Same it is Zero
- If One is in Ratio the Other is Zero
- By Addition and by Subtraction
- By the Completion or Non-Completion
- Differential Calculus
- By the Deficiency
- Specific and General
- The Remainders by the Last Digit
- The Ultimate and Twice the Penultimate
- By One Less than the One Before
- The Product of the Sum
- All the Multipliers

Sub Sutras

- Proportionately
- The remainder remains constant
- The first by the first and the last by the last
- For 7 the multiplicand is 143
- By osculation.
- Lessen by the deficiency
- Whatever the deficiency lessen by that amount and set up the square of the deficiency
- Last totalling 10
- Only the last terms.
- The sum of the products
- By alternative elimination and retention
- By mere observation
- The product of the sum is the sum of the products
- On the flag

Vedic Mathematics Grounded in Sankhya

One-Line Mental Calculation using “Vertical and Crosswise” Sutra Underpinned by decimal system “All From 9 and the Last From 10” Sutra

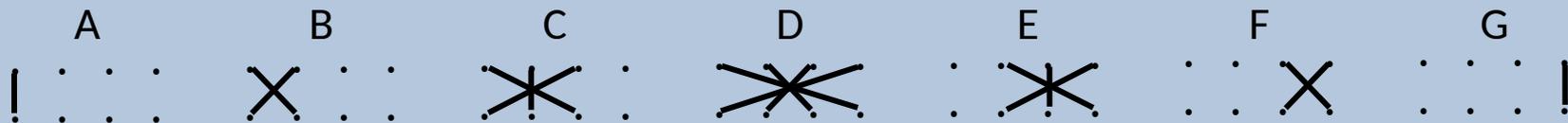
Arithmetical Steps:

- A. $3 \times 4 = 12$
- B. $3 \times 3 + 2 \times 4 = 17$
- C. $3 \times 0 + 2 \times 3 + 0 \times 4 = 6$
- D. $3 \times 2 + 2 \times 0 + 0 \times 3 + 1 \times 4 = 10$
- E. $0 \times 2 + 1 \times 0 = 0$
- F. $1 \times 2 = 2$

$$\begin{array}{r}
 3201 \\
 4302 \times \\
 \hline
 13770702
 \end{array}$$

Mental Steps:

- A, B $12, 17 = 137$
- C $137, 6 = 1376$
- D $1376, 10 = 13770$
- E, F, G $13770, 7, 0, 2$

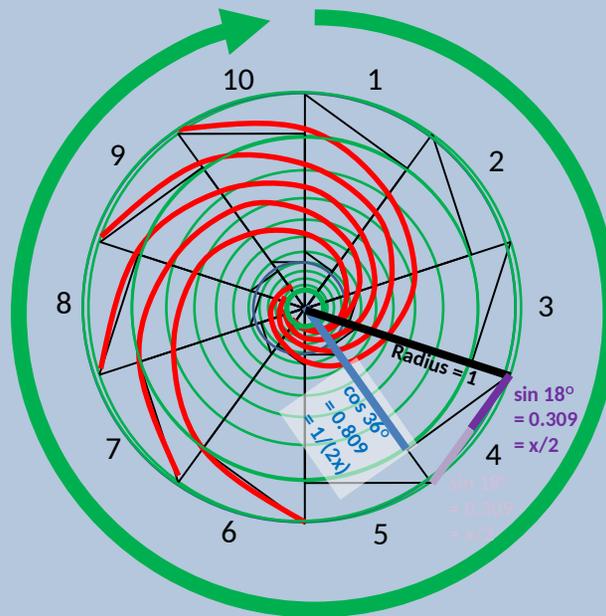


Vertical and Crosswise reflects mathematics of nature’s quantized unified field (Substratum) and Base-10 instantaneous cycle () of interaction.

Vedic Mathematics Grounded in Sankhya

All From 9 and the Last From 10

in-place circular displacement (circumference) per 10 count simultaneous interactive cycle is the reason we use a decimal system and we count by 10's or logarithmically by 1's



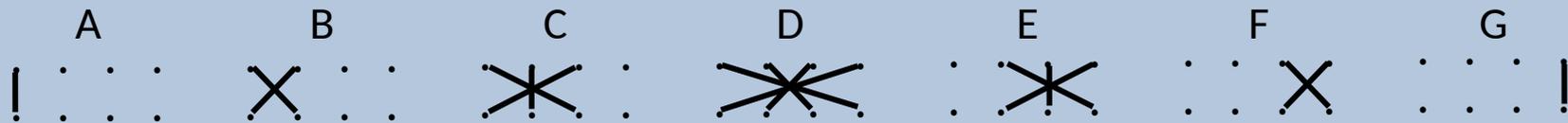
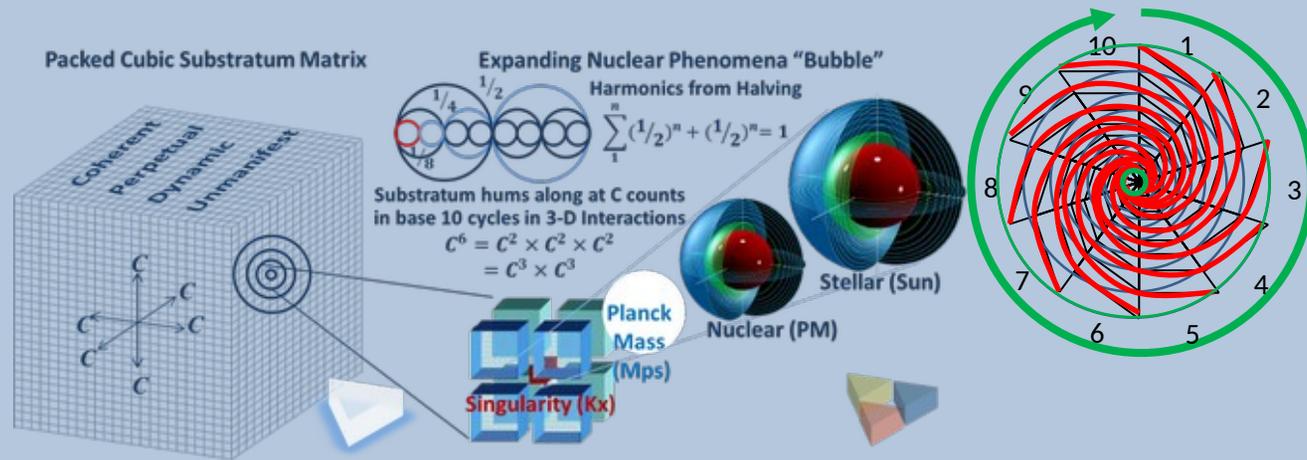
where

Coherent \Leftrightarrow Synchronous

All From 9 and the Last From 10 defines our commonly used decimal numeric system that directly correlates to Base-10 instantaneous cycle interaction based on ϕ and π

Vedic Mathematics Grounded in Sankhya

Vertically and Crosswise



Vertical and Crosswise reflects Nature's quantized unified field (Substratum) mathematics

Iron Atom Fe and Magnetism



Atomic number: 26

Atomic mass: 55.847

Radius experiment $r_{fe} := 1.241 \cdot 10^{-10}$

PROOF :
axiomatically derived radius $\frac{(k-1)}{7 \cdot C} = 1.2520090195 \times 10^{-10}$

The magnetic state is created at a resonant oscillatory rate of two cycles per period in which the maximum coherence at maximum stress density is attained. The atomic mass number at which perpetual magnetic resonance will be maintained is given below which is equal to Fe atomic mass number and element number 26

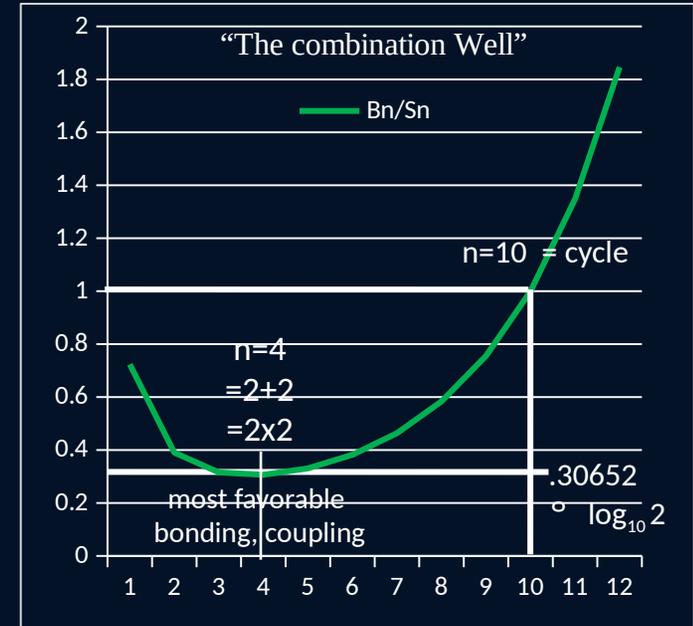
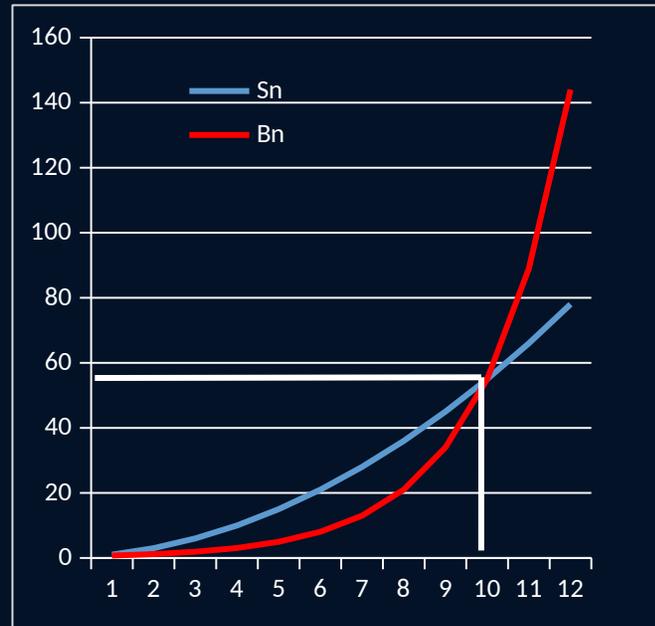
$$\frac{\left[R_p^3 \cdot (C^{1+x})^3 \right]^{-1}}{\left[\left[\frac{1}{(2 \cdot 18)^3} - 1 \right] + 1 \right]^3} = 55.8670172024 \qquad \frac{55.8670172024}{2 + \frac{1}{7}} = 26.0712746945$$

“The 10th combination in both the sequential and simultaneous series equals 55. Since the Sn and Bn series coincide at the tenth sequence, it indicates that a natural time cycle exists where the sequential increment matches the simultaneous one. It is a point at which future and past events and external and internal combinations, compressive and expansive state, exist at the same level (or incremental ratio), simultaneously.”

SoS 1 pg 88

n	Powers of phi $= (1/\phi)^n$	Powers of phi normalized = Fibonacci series $= (1/\phi)^n \cdot \sqrt{5}$
1	1.618033989	0.723606798
2	2.618033989	1.170820393
3	4.236067977	1.894427191
4	6.854101966	3.065247584
5	11.09016994	4.959674775
6	17.94427191	8.024922359
7	29.03444185	12.98459713
8	46.97871376	21.00951949
9	76.01315562	33.99411663
10	122.9918694	55.00363612

n	Sequential Combinatorial $S_n = n(n+1)/2$	Simultaneous Combinatorial $B_n = 1/(\phi^n \cdot \sqrt{5})$
1	1	0.723606798
2	3	1.170820393
3	6	1.894427191
4	10	3.065247584
5	15	4.959674775
6	21	8.024922359
7	28	12.98459713
8	36	21.00951949
9	45	33.99411663
10	55	55.00363612
11	66	88.99775275
12	78	144.0013889



Free Space Impedance, Permittivity, Permeability

When the perpetually oscillatory state is interrupted by an accelerative and out of phase interaction, interactive stresses created by the breakdown of the coherent state, transmigrate in a wave form. When the rate of acceleration exceeds C , photons or stress quanta are radiated in a holographic form as a particle. The wave characteristics exist as two states. The simultaneous phase represented C^x and the sequential phase as C^{1-x} transmigrate as a wave and the product equals C . In a balanced state it is $C^x / C^{1-x} = C^{x^3}$ equals the impedance in space as shown below

IMPEDANCE IN

$$\frac{100}{(k - 1) \cdot rs} = 377.0375659826$$

Note: $377.037566/(2\pi)=60$ Hz

$$\frac{C^x \cdot C^{1-x}}{C} = 1$$

Frequency-Reactance Nomograph

In the sequential interactive state the difference between compressive and expansive phases of the interactive cycle is D_c as $C^\infty / C^{1-\infty}$:

$$D_c = C^\infty / C^{1-\infty} = 10^{2/1 \times 2} / 10^{2/1 \times 1} = 10^2 = 100 \quad [0.19]$$

The delay D_c of 100 interactive cycles is in the sequential state when the volumetric change becomes 2 and the radial ratio equals $2^{1/3} = k = 1.259921$. Hence the incremental ratio becomes $(k-1) = 0.259921$. Therefore the delay $D_c / (k-1)$ form a ratio with a loss of two interactions per cycle, as the impedance to stress transmigration in space as S_i :

$$S_i = \left[10^2 / k - 1 \right] \left[10^2 - 2 / 10^2 \right] = 377.0376 \quad [0.20]$$

The impedance to the transmigration of interactive stresses in space occurs only when there is an accelerative displacement that causes the breakup of the simultaneous coherent state to crossover to a sequential resonant state. It transfers the added stress count to the adjacent component as a transmigratory process. The S_i count per cycle as impedance is effective only when transmigration is initiated by breaking the coherent state.

Stress transmigrates through an interactive cycle of compression and expansion. The period of reversal impedes the stress count transfer rate proportionate to S_i . In the compressive phase C is increased as $C S_i = C_c$ and in the expansive phase it is reduced to $C / S_i = C_e$:

$$C_c = C S_i = 1.1182E + 11 \dots \dots C_e = C / S_i = 7.866E + 5 \quad [0.21]$$

The product of C_c and C_e equal C^2 as the simultaneously oscillating surface and these merged interactive counts cannot be observed but the accelerative changes can be detected and measured as a force. The changes from compressive to expansive or simultaneous to sequential states are

Frequency-Reactance Nomograph

In electromagnetic theory in Physics the reciprocal as $1/Cc$ is defined as the electric field permittivity ϵ and $1/Ce$ as the magnetic field permeability μ , in free space.

$$\epsilon = 1/Cc = 8.847 E - 12 \dots \dots \mu = 1/Ce = 1.258 E - 6 \quad [0.23]$$

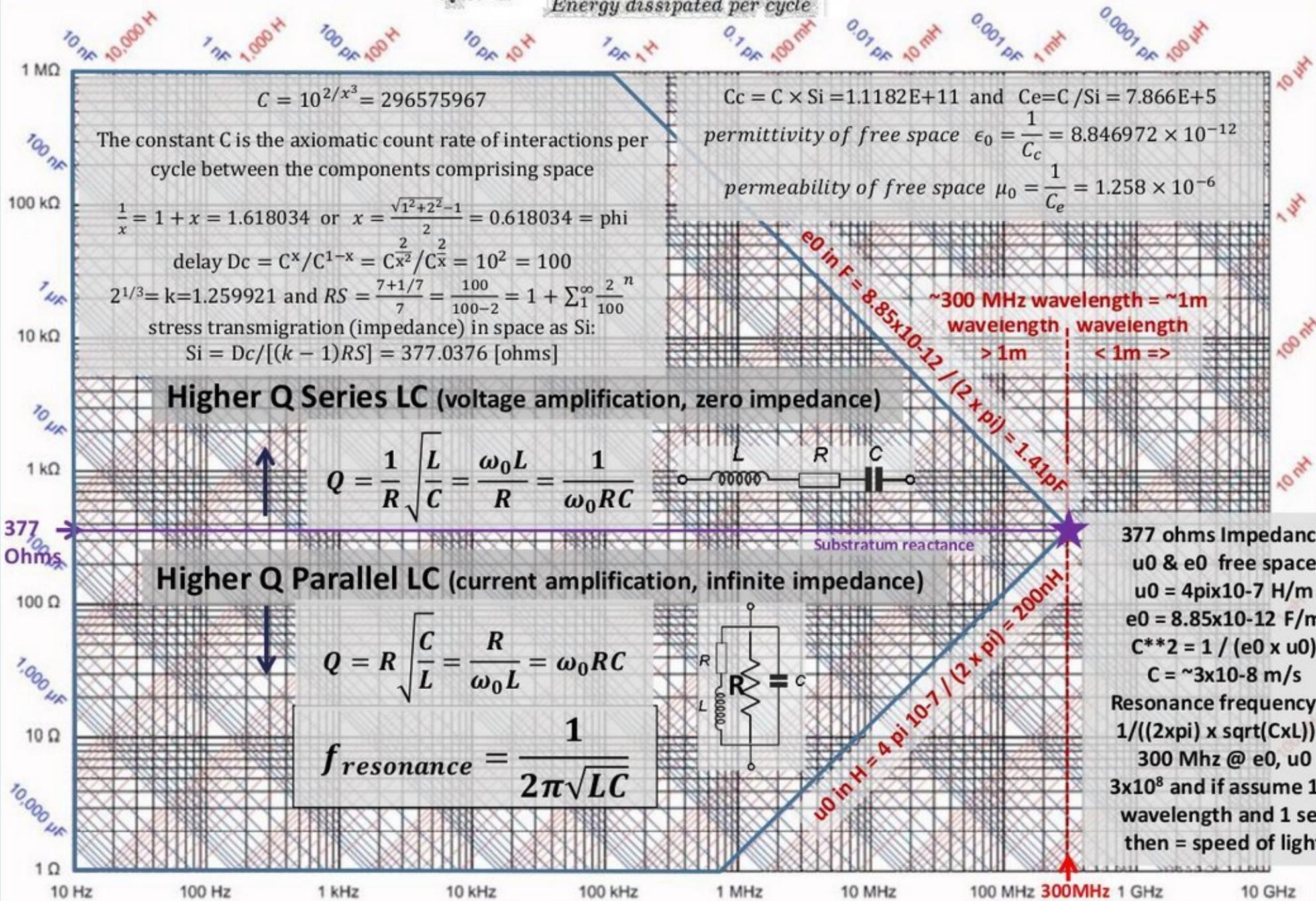
The Sankhyan derivation above simplifies and unifies all phenomena which are only due to the interactive state of the components in space. C is the number of interactions per simultaneous cycle comprising 10 interactions which is the 'instant interval' of a cycle. It is approximately equal to the experimentally measured frequency of an electromagnetic wave of 1 metre wavelength, if the duration of that cycle is a second. The difference between it and the experimental value of $CL=29979258$ are due to a shift in frequency that is 'logarithmically proportional to distance' in a gravitational field, as Fc , with the Solar boundary radius $RS=6.985E+8$ and the orbital radius of Earth $Ro=1.491E+11$:

$$Fc = 10^{Rs/Ro} = 1.0108455 = CL/C \quad [0.24]$$

This confirms the Sankhyan derivation that all electromagnetic waves, including light and gravity waves, are interactive stresses created between the components forming the substratum of space and transmigrate from a higher to a lower stress count. The resonant interactive stress in space is at a self-similar and scale-invariant oscillatory rate of C per simultaneous interactive cycle formed by 10 such interactions. If the wavelength and time cycle of a light wave is set at a metre and second then the frequency of the measured light wave CL would be higher than the rate C .

$$CL - C = 3.2165 E + 6 \dots \dots \text{and} \dots \dots CL/C = 1.01084548 \quad [0.25]$$

$$Q = 2\pi \frac{\text{Maximum energy stored per cycle}}{\text{Energy dissipated per cycle}}$$



$$C = 10^{2/x^3} = 296575967$$

The constant C is the axiomatic count rate of interactions per cycle between the components comprising space

$$\frac{1}{x} = 1 + x = 1.618034 \text{ or } x = \frac{\sqrt{1^2+2^2}-1}{2} = 0.618034 = \text{phi}$$

$$\text{delay } D_c = C^x / C^{1-x} = C^{2x^2} / C^{2x} = 10^2 = 100$$

$$2^{1/3} = k = 1.259921 \text{ and } RS = \frac{7+1/7}{7} = \frac{100}{100-2} = 1 + \sum_{1}^{\infty} \frac{2^n}{100}$$

stress transmiration (impedance) in space as Si:

$$Si = D_c / [(k - 1)RS] = 377.0376 \text{ [ohms]}$$

$$C_c = C \times Si = 1.1182E+11 \text{ and } C_e = C / Si = 7.866E+5$$

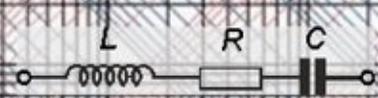
$$\text{permittivity of free space } \epsilon_0 = \frac{1}{C_c} = 8.846972 \times 10^{-12}$$

$$\text{permeability of free space } \mu_0 = \frac{1}{C_e} = 1.258 \times 10^{-6}$$

~300 MHz wavelength = ~1m
wavelength > 1m
wavelength < 1m =>

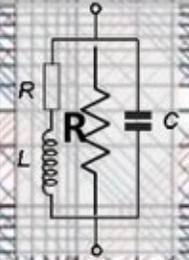
Higher Q Series LC (voltage amplification, zero impedance)

$$Q = \frac{1}{R} \sqrt{\frac{L}{C}} = \frac{\omega_0 L}{R} = \frac{1}{\omega_0 RC}$$



Higher Q Parallel LC (current amplification, infinite impedance)

$$Q = R \sqrt{\frac{C}{L}} = \frac{R}{\omega_0 L} = \omega_0 RC$$



$$f_{\text{resonance}} = \frac{1}{2\pi\sqrt{LC}}$$

377 ohms Impedance
u0 & e0 free space
u0 = 4pix10-7 H/m
e0 = 8.85x10-12 F/m
C**2 = 1 / (e0 x u0)
C = ~3x10-8 m/s
Resonance frequency =
1/((2xpi) x sqrt(CxL)) =
300 Mhz @ e0, u0
3x10⁸ and if assume 1m
wavelength and 1 sec
then = speed of light

$$X_c = \frac{1}{2\pi \cdot f \cdot C} \Omega$$

$$P = \frac{1}{2} CV^2 * f$$

Frequency - Reactance Nomograph
RfCafe.com©

$$P = \frac{1}{2} LI^2 * f$$

$$X_L = 2\pi \cdot f \cdot L \Omega$$

Kron System Energy Modeling Using LC Networks

http://www.quantum-chemistry-history.com/Kron_Dat/Kron-1945/Kron-PR-1945/Kron-PR-1945.htm

REPRESENTATION OF ENERGY OPERATORS

If the wave equation is multiplied by Δx and the operator $p = -i\hbar\partial/\partial x$ is introduced, the equation becomes

where

$$H\Delta x\psi - E\Delta x\psi = 0,$$

$$H = \frac{p^2}{2m} + V = T + V.$$

The three energy operators will be represented in the following manner:

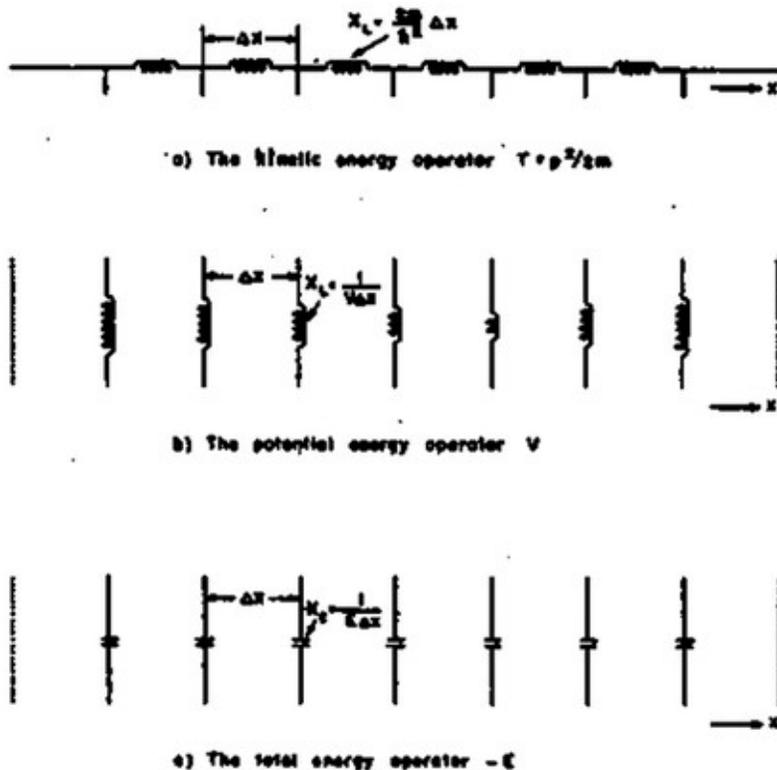


FIG. 1. Representation of energy operators by admittances.

1. The kinetic energy operator $T = p^2/2m$ is represented (Fig. 1a) by a set of equal positive resistors (or inductive coils) in series extending from $-\infty$ to $+\infty$. The impedance of each coil is $(2m/\hbar^2)\Delta x$.
2. The potential energy operator V is represented (Fig. 1b) by a set of isolated positive resistors (inductive coils). The admittance of each coil is $V\Delta x$. These values vary from point to point.
3. The total energy operator $-E$ is represented (Fig. 1c) by a set of isolated equal negative resistors (capacitors). The admittance of each coil is the unknown quantity $E\Delta x$.

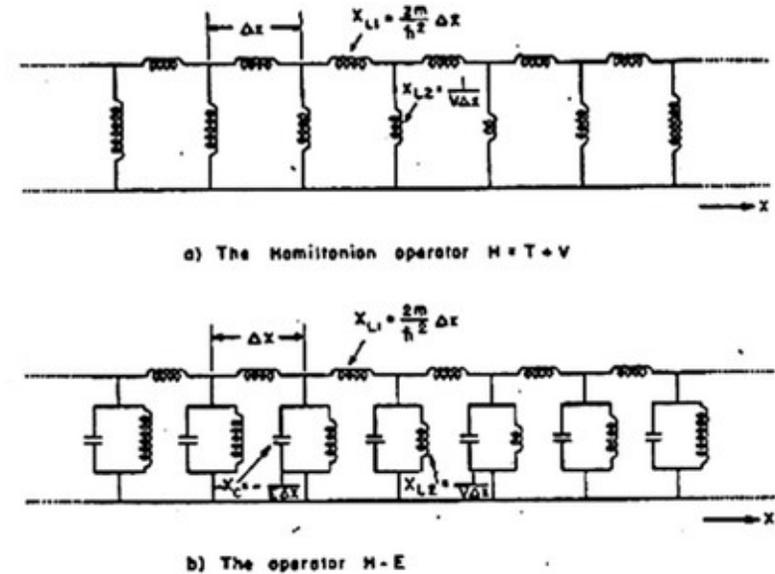


FIG. 2. Representation of the sum of operators by an interconnection.

The sum of the two operators T and V forming the Hamiltonian operator H is represented by the interconnected network of Fig. 2a. That is, a summation of energy operators is represented electrically by an interconnection of the component networks.

Finally, the sum of the Hamiltonian H and the total energy $-E$ operators is the resultant network of Fig. 2b extending from $-\infty$ to $+\infty$.

Kron System Energy Modeling Using LC Networks

OPERATION ON THE WAVE FUNCTION ψ

The wave function ψ will be assumed to be represented (Fig. 3) by the differences of potential (T) appearing between the junctions of the three types of coils and the ground connection (impedanceless wire). The function ψ varies along ψ' but is constant in time. An eigenfunction ψ' of H depends on the time as follows: $\psi' = \psi \exp [-i(E/\hbar)t]$.

The differences of potentials appearing between two junctions are $\Delta\psi = (\partial\psi/\partial x)\Delta x + \dots$ where higher order terms in the Taylor series development are neglected.

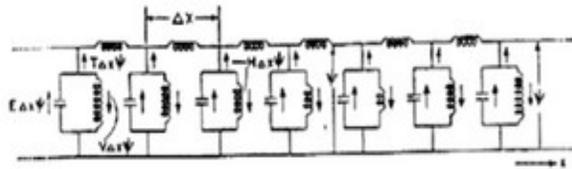


FIG. 3. Representation of ψ by voltages and $\alpha\psi$ by currents.

The result of the operation $\alpha\psi$ or $\beta\psi$ (where α and β are operators) is represented by *currents* flowing in the respective component networks, as shown in Fig. 3. In particular:

1. The currents flowing in the capacitors are $E\Delta x\psi$.
2. The currents flowing in the vertical inductors are $V\Delta x\psi$.
3. The currents flowing in the horizontal inductors are $\beta\Delta\psi = (\hbar^2/2m)(\partial\psi/\partial x)$.
4. The currents flowing out of the horizontal inductors at their junctions are $\Delta(\beta\Delta\psi) = (\hbar^2/2m)(\partial^2\psi/\partial x^2)$ representing $(-T\Delta x\psi)$.

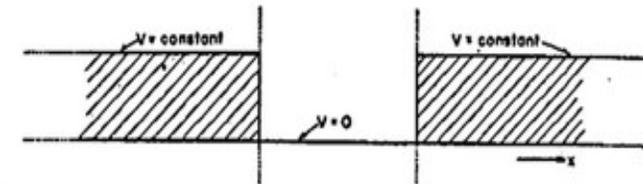
Since $E\Delta x\psi$ represents the currents flowing in the capacitors and $H\Delta x\psi = (T + V)\Delta x\psi$ those in the inductors, the equation $H\Delta x\psi = E\Delta x\psi$ simply states Kirchhoff's second law, that at each of the junctions of four coils the currents flowing into the positive resistors (inductors) are equal to the currents coming from the negative resistors (capacitors).

Both the voltages and currents appear as standing waves. When the space distribution of ψ is such that it attenuates, the network may be terminated at any point by an equivalent impedance. When ψ does not attenuate the circuit may be terminated by a short circuit at any point of zero voltage, or by an open circuit at any point of zero current. These points are easily determined on the a.c. network

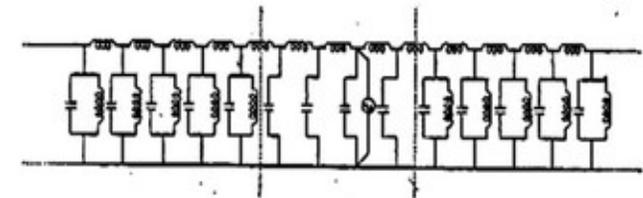
Let it be assumed as an example that the V function is a potential well (Fig. 4a). Then in the network the corresponding positive resistances assume either a constant or a zero value as shown in Fig. 4b. In practice it is sufficient to extend the network to, say, twice the width of the potential well on either side.

Let now a d.c. (or a.c.) generator be inserted anywhere in the network parallel with one of the negative resistances (inductors), as shown. If the values of all the negative resistances $-E\Delta x$ (capacitors) are simultaneously varied by the same amount, it will be found that the current (reactive current) in the generator varies and at some value of $E\Delta x$ becomes zero.

It should be noted that while a current (reactive current) flows in the generator the circuit does not satisfy the differential equation, since at *one* point in the network (where the generator is connected) the currents do not add up to zero (as required by the equation) but to the generator current. That is, while a current flows in the generator, the voltages ψ do not represent solutions of the differential equation. Hence, only those network conditions are of interest in which the generator current is zero.



a) Potential well



b) Network

Now a value E of the negative resistances, at which the generator current becomes zero, represents a state at which the circuit is self-supporting and has a continuous existence of its own without the presence of the generator, as the negative resistances just supply the energy consumed by the positive resistances. (If the circuit contains inductors and capacitors, the circuit is a resonant circuit and it oscillates at its basic frequency.) E is then an eigenvalue E_n , while the voltage distribution across the capacitors (Fig. 4c) gives the corresponding eigenfunction ψ_n .

When the generator current is positive the circuit draws energy from the source, and when the current is negative the circuit pumps back energy into the source. At zero generator current the circuit neither gives nor takes energy, and theoretically the generator may be removed. All values of E at which the current crosses the axes and becomes zero are eigenvalues of the equation and the corresponding voltage distribution curves are eigenfunctions. When the energy level E overflows the well, the discrete spectrum of eigenvalues changes into a continuous spectrum and the generator current is zero at all greater values of E .

When the energy E changes sign, the negative resistances become positive resistances and at no value of $-E$ may the circuit be self-supporting (as it contains only positive resistances). That is, the equation has no negative eigenvalues.

Kron System Energy Modeling Using LC Networks

Let the wave equation be divided by $i\omega_c$, where $\omega_c = \sqrt{\omega} = (E/\hbar)^{1/2}$, and multiplied by Δx :

$$-\frac{1}{i\omega_c} \frac{\hbar^2}{2m} \frac{1}{\Delta x} \frac{\partial^2 \psi}{\partial x^2} + \left(\frac{V\Delta x}{i\omega_c} + \hbar i\omega_c \Delta x \right) \psi = 0,$$

or

$$\frac{\Delta x}{i\omega_c} H\psi + i\omega_c \hbar \Delta x \psi = 0, \quad \frac{\Delta x}{i\omega_c} (H - E)\psi = 0.$$

In the present case:

1. The kinetic energy operator T is represented (Fig. 5) by a set of equal inductors in series, whose inductance L_1 is $(2m/\hbar^2)\Delta x$.

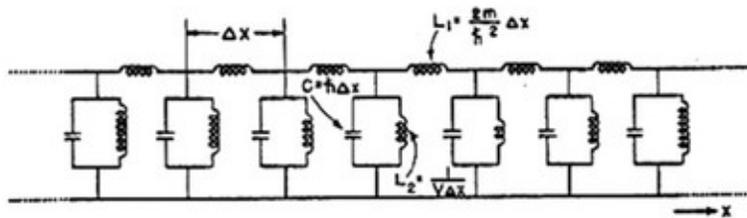


FIG. 5. The variable-frequency model.

2. The potential energy operator V is represented by a set of unequal coils in parallel, whose inductance L_2 is $1/V\Delta x$.
3. The total energy operator $-E$ is represented by a set of equal capacitors in parallel whose capacitance is now $\hbar\Delta x$. (In the second model the capacitance was the unknown $E\Delta x$.)

The operand ψ is again represented by voltages and the result of the operation $\omega\psi$ by the same currents as in the first model. Their variation in time now is sinusoidal, with $2\pi f_c = \omega_c$.

Instead of varying the magnitude of the capacitors, now the frequency of the generator is varied, thereby varying the admittance of the capacitors, $\hbar\omega_c = E$ (and those of the inductors). Again when the generator current becomes zero the circuit is oscillatory and self-supporting and the network represents a stationary solution of the equation. The corresponding eigenvalue is $E = \hbar\omega = \hbar(\omega_c)^2$, rather than $\hbar\omega_c$, because of the simultaneous variation of the reactance of the inductive coils. The eigenfunctions ψ of the model and of the equation are, however, identical.

As the currents in the horizontal inductors are $(\hbar^2/2mi\omega_c)\partial\psi/\partial x$, the results of an operation on ψ by the momentum operator $p = (\hbar/i)\partial/\partial x$ are these currents divided by $\hbar^2/2m\omega_c$. Hence, in the third model the momentum operator p may be represented by a set of equal horizontal coils with inductance $L = \Delta x/\hbar\omega_c$.

One slight disadvantage of this third model is that as the energy E changes sign, the reactance of the capacitor $j\omega_c\hbar$ cannot change signs. Since in most cases no eigenvalues exist in the negative energy range, this disadvantage is of little consequence. Of course, the second model with fixed frequency and variable capacitors works in all cases, since the capacitors simply become inductors when E changes sign.

THE FREE PARTICLE IN ONE DIMENSION

An interesting special case occurs when the potential V is zero everywhere. The one-dimensional equivalent circuit of such a free particle is a conventional transmission line extending to infinity in both directions (Fig. 6) in which the series inductance is $2m\Delta x/\hbar^2$ and the shunt capacitor is $\hbar\Delta x$.

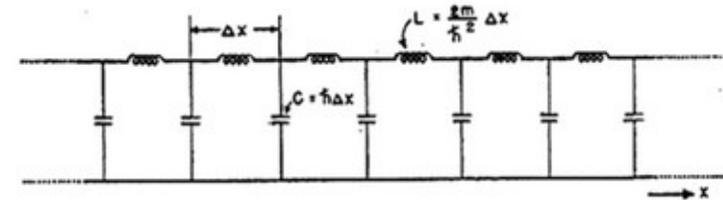


FIG. 6. Model of a free particle.

It is well known that such a transmission line may maintain a standing wave at any frequency $\psi = \omega_c$ between zero and infinity drawing no current from the generator. That is, the positive energy values form a continuous spectrum. If the transmission line is considered as the second type of model with variable capacitors, then at negative energy values E the capacitors also become inductors and the line cannot maintain a standing wave. The corresponding free particle also has no eigenvalue at the negative energy levels.

MODELS ALONG CURVILINEAR AXES

The three-dimensional Schrödinger equation for a single particle is

$$-\frac{\hbar^2}{2m}\nabla^2\psi + (V-E)\psi = 0,$$

where ∇^2 is the Laplacian operator in curvilinear coordinates.

In order to establish a physical model for it, it is necessary to change it to a tensor density equation. (2)

The above equation in orthogonal curvilinear coordinates may be changed to a tensor density form by multiplying it by $h_1h_2h_3 = \sqrt{g}$ giving

$$-\frac{\hbar^2}{2m}\nabla^2\psi + (V-E)\psi = 0,$$

If the equation is multiplied through by $\Delta u^1\Delta u^2\Delta u^3$, it represents the surface integral of grad ψ around the six faces of a cube of space with volume $h_1h_2h_3\Delta u^1\Delta u^2\Delta u^3$. The width Δu^a may be arbitrary and different in the three directions.

The corresponding equivalent circuit is shown in Fig. 7. For a free particle ($V=0$) it represents a generalization of the conventional one-dimensional transmission line to three dimensions.

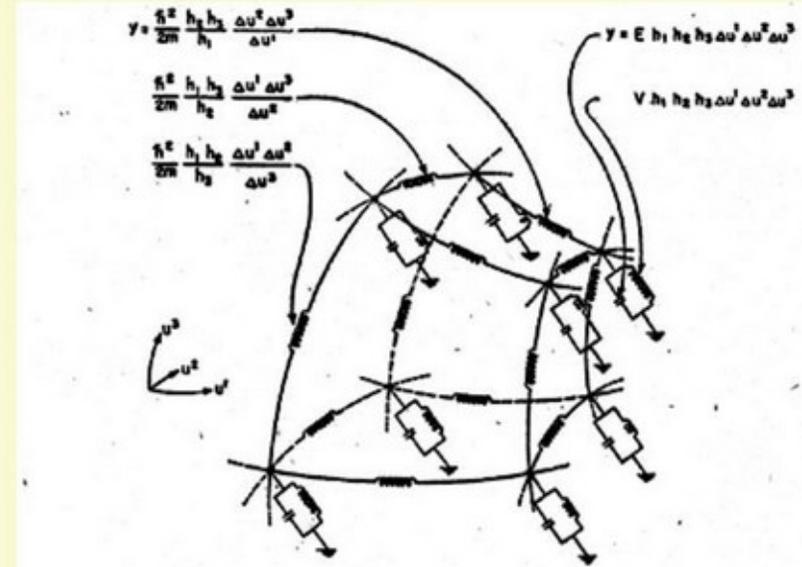


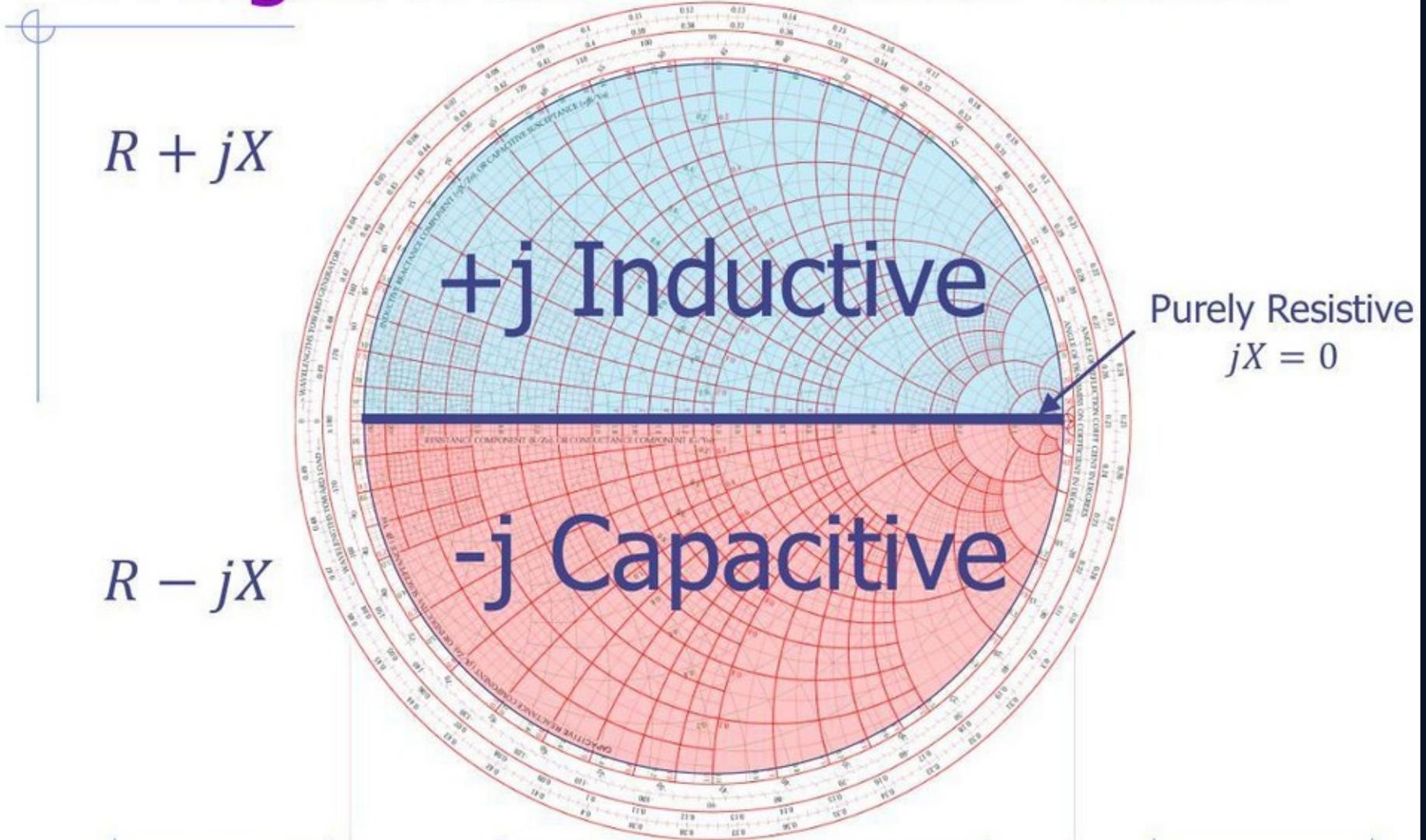
FIG. 7. Model of the Schrödinger equation with three independent variables.

NOTES AND REFERENCES

(1) It is possible to establish in one dimension a dual network in which ψ is represented by a current instead of a voltage. However, in two and three dimensions the dual networks require ideal transformers.

(2) G. Kron, Proc. I. R. E., 32, 289-299 (May, 1944).

Z Regions on the Smith Chart



RF Engineering Essentials: Smith Charts and Vector Network Analyzers



... for weaving "that which exists", aka energy crafting, aka RF "Black Magic"

Smith Chart as an RF Design Tool

- https://www.fars.k6ya.org/docs/smith_chart.pdf Mysteries of the Smith Chart
- https://www.qsl.net/w2aew/youtube/Basics_of_Smith_Charts_W2AEW_2018.pdf Basics of Smith Charts
- <https://indico.cern.ch/event/69321/contributions/2069667/attachments/1028707/1464819/Caspers-Smith-Chart.pdf> RF Engineering Basic Concepts: The Smith Chart

Key Dates in Electrical Transmission	
1830s	Magnetic telegraphs - Gauss, Henry
1839	Electromagnetic telegraph - Wheatstone & Cook
1844	Telegraph in America - Morse
1850s	Thousands of miles of telegraph line U.S. and Europe
1851	40-mile cable under English Channel
1855	Distributed analysis of transmission line - Lord Kelvin
1858	Transatlantic cable, project delayed by civil war
1873	Theory of electrodynamics - Maxwell
1876	Invention of telephone - Bell
1880s	Vectors, vector calculus, reformulation of Maxwell's theory, transmission line theory - Heaviside
1886	Experimental confirmation of Maxwell's Theory - Hertz
1937	Early Smith Chart, published 1939 and 1944 - Smith

What is a Smith Chart

- A graphical tool to plot and compute:
 - Complex impedance
 - Complex reflection coefficient
 - VSWR
 - Transmission line effects
 - Matching networks
 - ...and more
- Let's break it down....

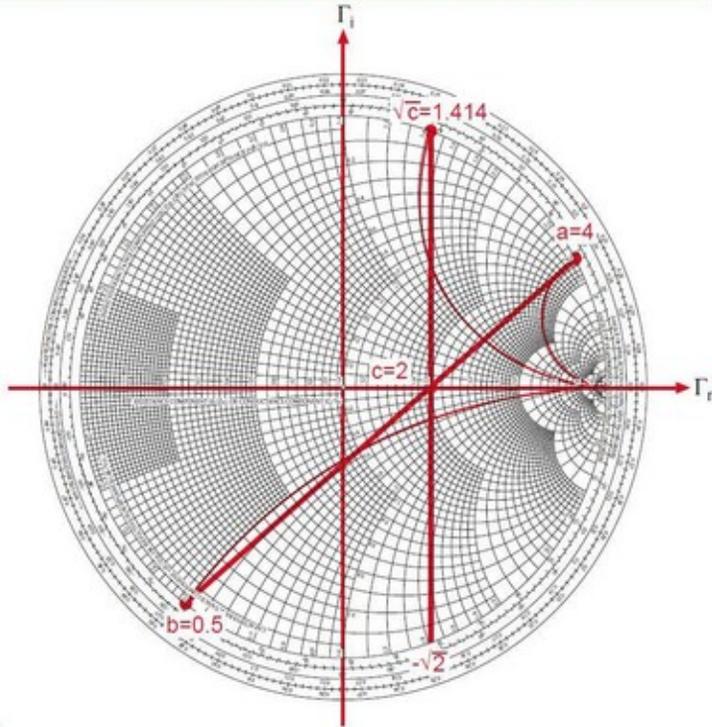
Important points

Important Points:

- ♦ Short Circuit
 $\Gamma = -1, z = 0$
- ♦ Open Circuit
 $\Gamma = 1, z \rightarrow \infty$
- ♦ Matched Load
 $\Gamma = 0, z = 1$
- ♦ The circle $|\Gamma| = 1$ describes a lossless element (C or L)
- ♦ Outside the circle $|\Gamma| = 1$ we have an active element, for instance tunnel diode reflection amplifier

- <https://youtu.be/TsXd6GktIYQ> Smith Charts and nanoVNA - w2aew playlist
- <https://youtu.be/o1eLK4EMpEQ> Intro to VNA in general and nanoVNA specifically - w2aew
- <https://www.youtube.com/playlist?list=PL05oO9foDKMSoliVBxssOIPnBavv-ybLh> SimSmith Basics - w0qe playlist
- <https://www.youtube.com/playlist?list=PL05oO9foDKMQGmcO2C9JsXyGqXZUXMD1h> SimSmith Advanced - w0qe

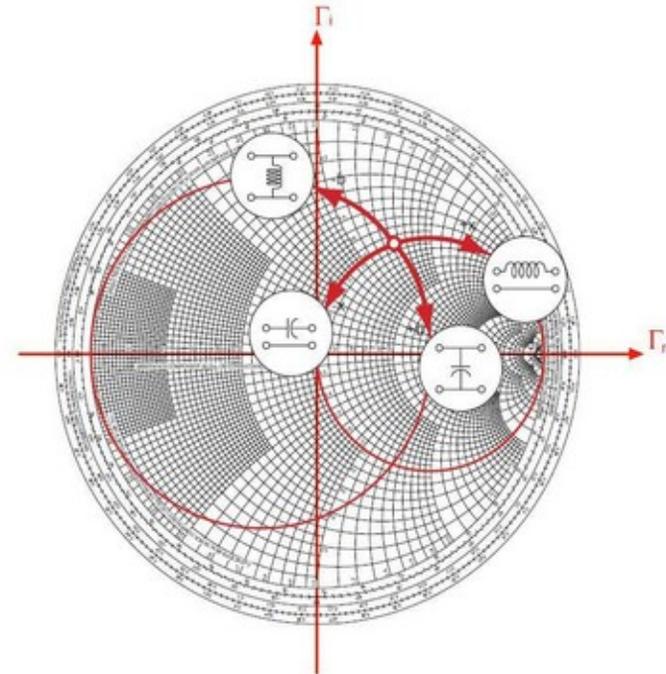
Smith Chart: A Nomogram for Math Calculations



VG-36
PSA-00527-10210001

Pacificon 2001

Smith Chart: Effect of Adding Series Reactances or Shunt Susceptances



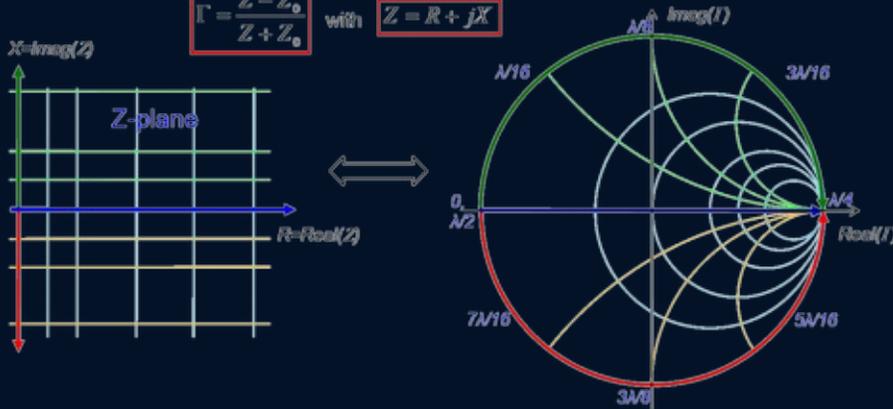
VG-45
PRA-00527-10210001

Pacificon 2001

The Smith Chart (1)

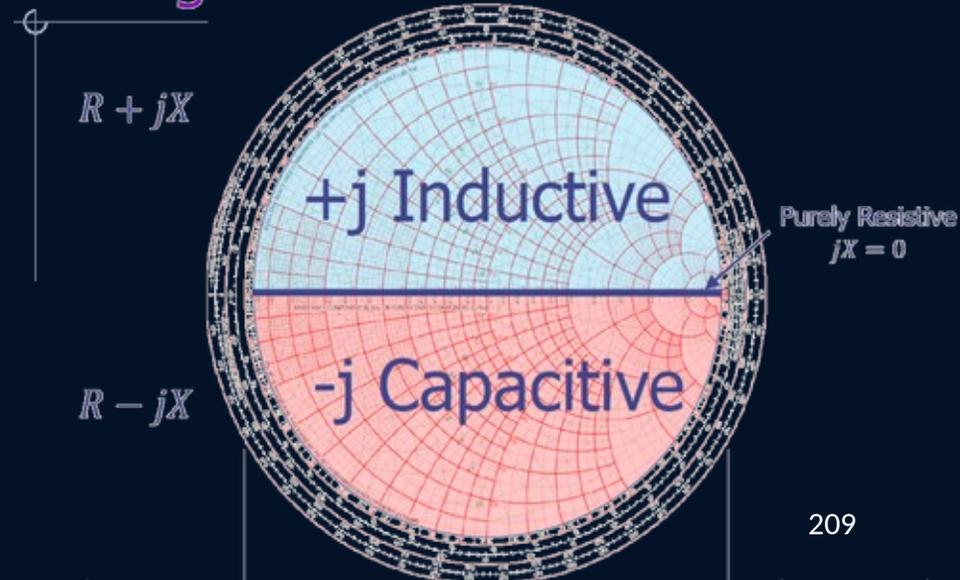
The Smith Chart represents the complex Γ -plane within the unit circle. It is a conformal mapping (=bilinear) of the complex Z -plane onto the complex Γ plane using the transformation

$$\Gamma = \frac{Z - Z_0}{Z + Z_0} \quad \text{with} \quad Z = R + jX$$



→The half plane with positive real part of Z is thus transformed into the interior of the unit circle of the Γ plane and vice versa!

Z Regions on the Smith Chart



Electromagnetic (EM) Energy Transmission: Transverse & Longitudinal Waves

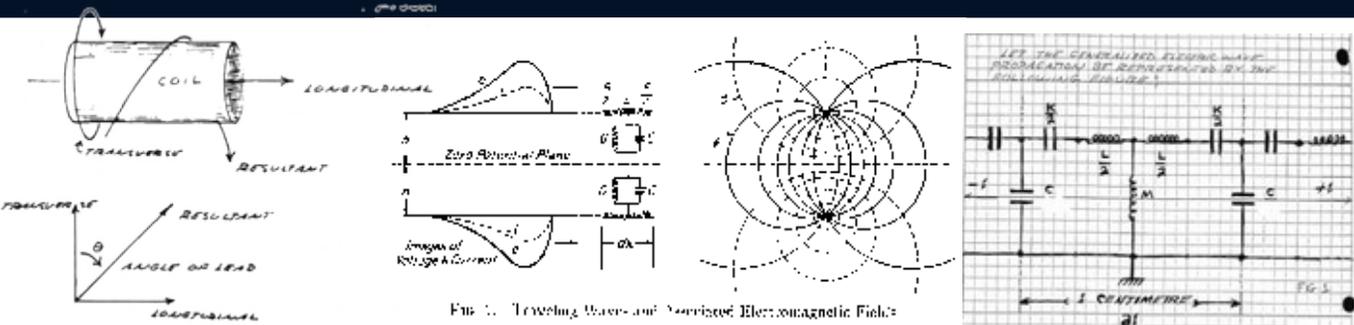


Fig. 1. Traveling Waves and Associated Electromagnetic Fields

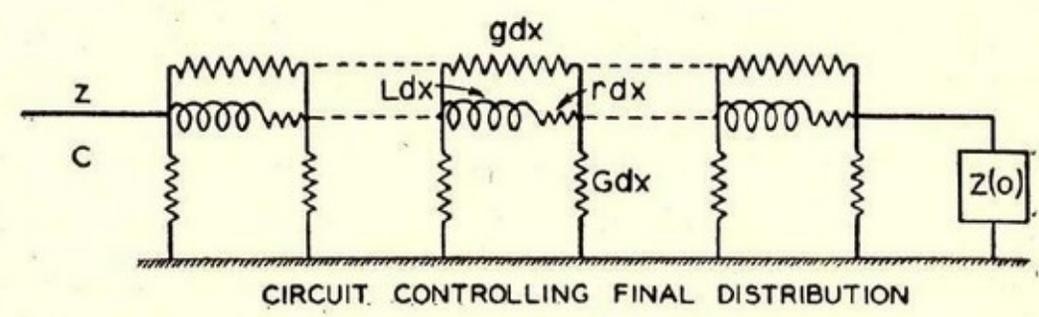
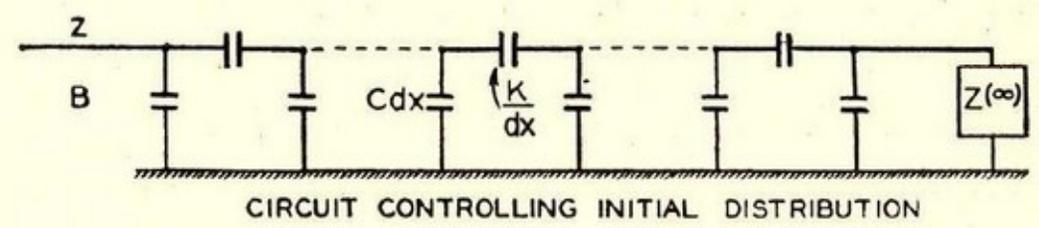
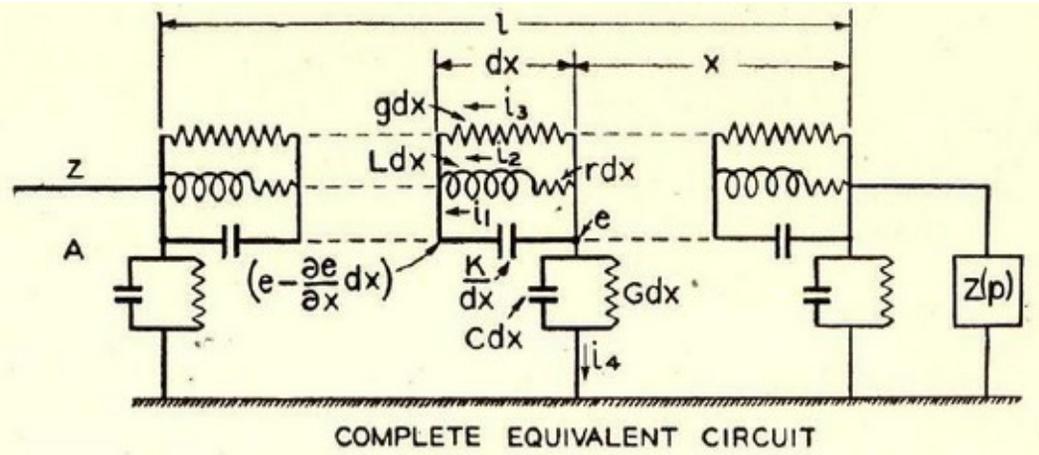
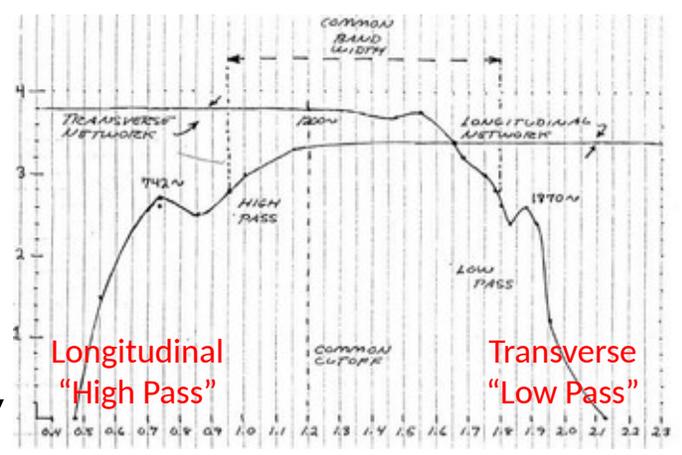
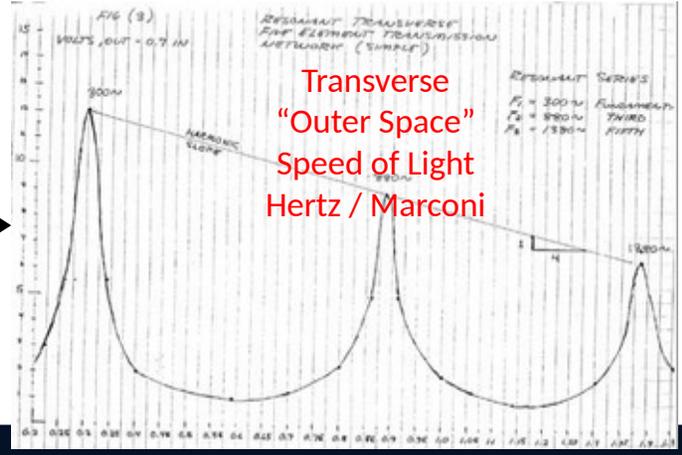
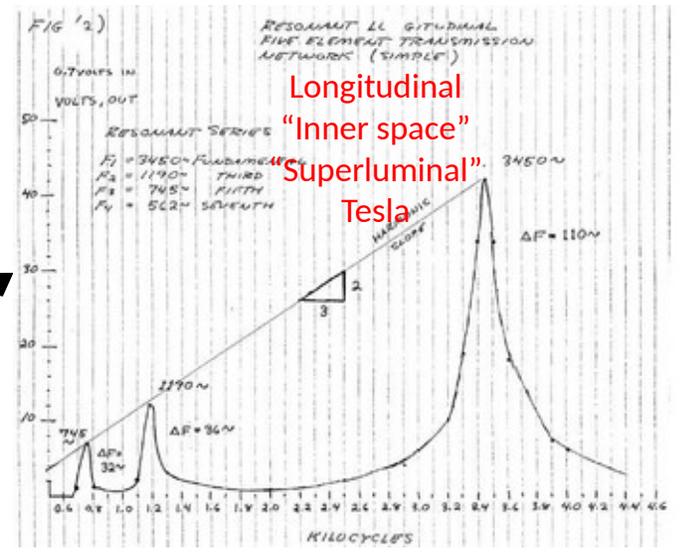


FIG. 103.—Ideal Complete Circuit of a Winding



Transactions of the 1904 Saint Louis International Electrical Congress, Volume II, pages 963-971:

SYSTEM FOR PRODUCING CONTINUOUS ELECTRIC OSCILLATIONS.

BY V. POULSEN.

It is known that Mr. Duddell, in the year 1900, discovered that a direct-current arc, shunted with a condenser in series with a self-induction, as in Fig. 1, will, under certain conditions, give out a musical note, and transform part of the direct current into alternating current with constant amplitude; the energy dissipated in the condenser circuit in ohmic loss being supplied from the direct current. Duddell found, however, that the arc is only "musical" when the following conditions are satisfied:

If dV is a small change in the p.d. between the terminals of the arc, and dI the corresponding change in the current through the arc, then dV/dI must be 1), negative; 2), numerically greater than the resistance of the condenser circuit; and 3), numerically less than the resistance of the direct-current circuit in series with the arc. These conditions are fulfilled if the arc is formed between solid carbons.

This simple way of producing alternating currents of even high frequency seemed, justly, to be the nearly ideal principle for the securing of a system for producing continuous electric oscillations -- i. e., alternating currents of very high frequency.

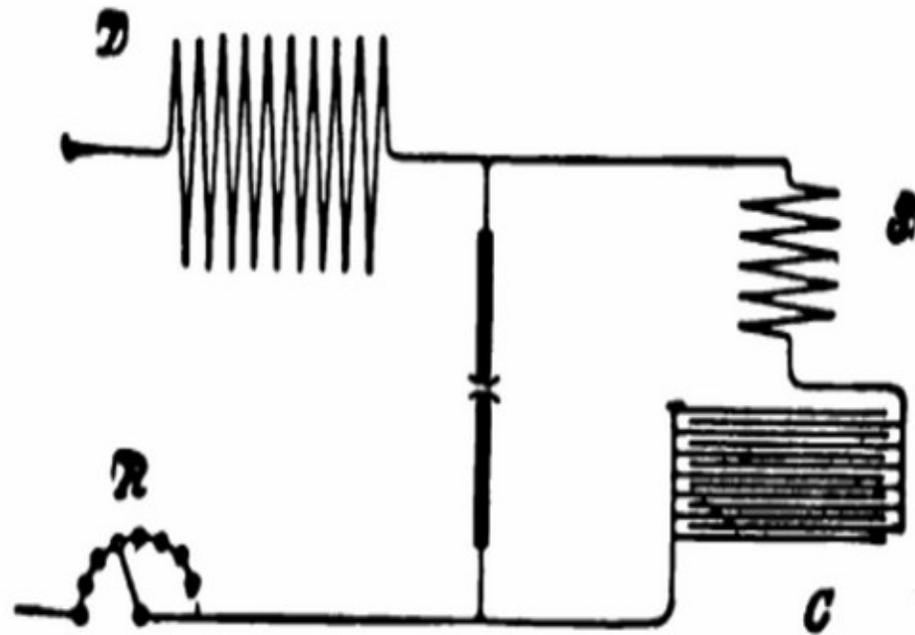


FIG. 1.

Example of "Negative Energy Cycle" from "Reversed Hysteresis Loop" due to a Ti-C Arc

Steinmetz - Electric Discharges, Waves and Impulses pg 59 - 127

44. However, the formation of continuous oscillations, Figs. 61 to 65, from the recurrent oscillations, Figs. 59 and 60, is not a mere running together and overlapping of successive wave trains. In Fig. 59, the succeeding oscillation cannot start, until the preceding oscillation has died out and a sufficient time elapsed, for the line to charge again to a voltage which is high enough to discharge to ground and so start the next oscillation, that is, to store the energy for the next oscillation. If then, with an overlap of successive oscillations, no dead period occurs, during which the energy, which oscillates during the next wave train, is supplied to the line, this energy must be supplied during the oscillation, that is, there must be such a phase displacement or lag within the oscillation, which gives a negative energy cycle, or reversed hysteresis loop. Thus, essential for such a continual oscillation is the existence of a hysteresis loop, formed by the lag of the effect behind the cause. Such a hysteresis loop exists in the transient arc, as illustrated by Fig. 66: the transient volt-ampere characteristic of a short high-temperature metal arc, between titanium and carbon. In this figure, the stationary arc characteristic, that is, the relation between arc voltage and arc current in stationary conditions, is shown in dotted lines, and the drawn line shows the cycle existing between arc current and arc voltage during a cyclic change of current, from zero to 4.1 amperes and back to zero, within $\frac{1}{10}$ of a second, with the current varying approximately as a sine function of the time. As seen, for rising current, the arc voltage is materially higher than for decreasing current. Close to zero current, the arc has ceased, and Geissler tube conduction passes the current through the residual vapor stream.

Other hysteresis cycles than those of the arc are instrumental in the energy supply to other systems of continual oscillation. Thus, for instance, the hysteresis cycle between synchronizing force and position displacement supplies the energy of the continual or cumulative oscillation, called hunting, in synchronous machines, as alternators, synchronous motors and converters. The mechanism, by which the hysteresis cycle supplies the energy of continual oscillations, has been investigated in the case of the hunting of synchronous machines,* but is still practically unknown in the case of continual oscillations between magnetic and dielectric energy in electric circuits.

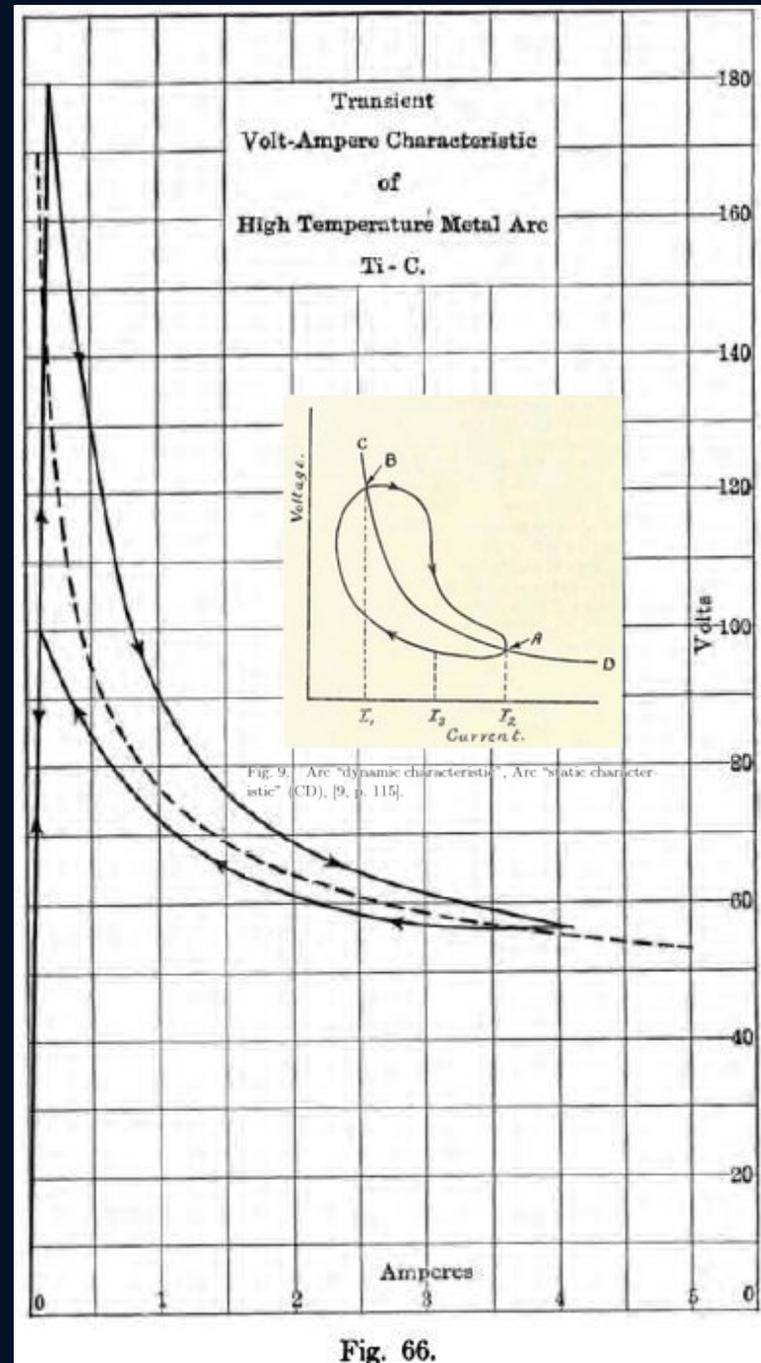


Fig. 9. Arc "dynamic characteristic", Arc "static characteristic" (CD), [9, p. 115].

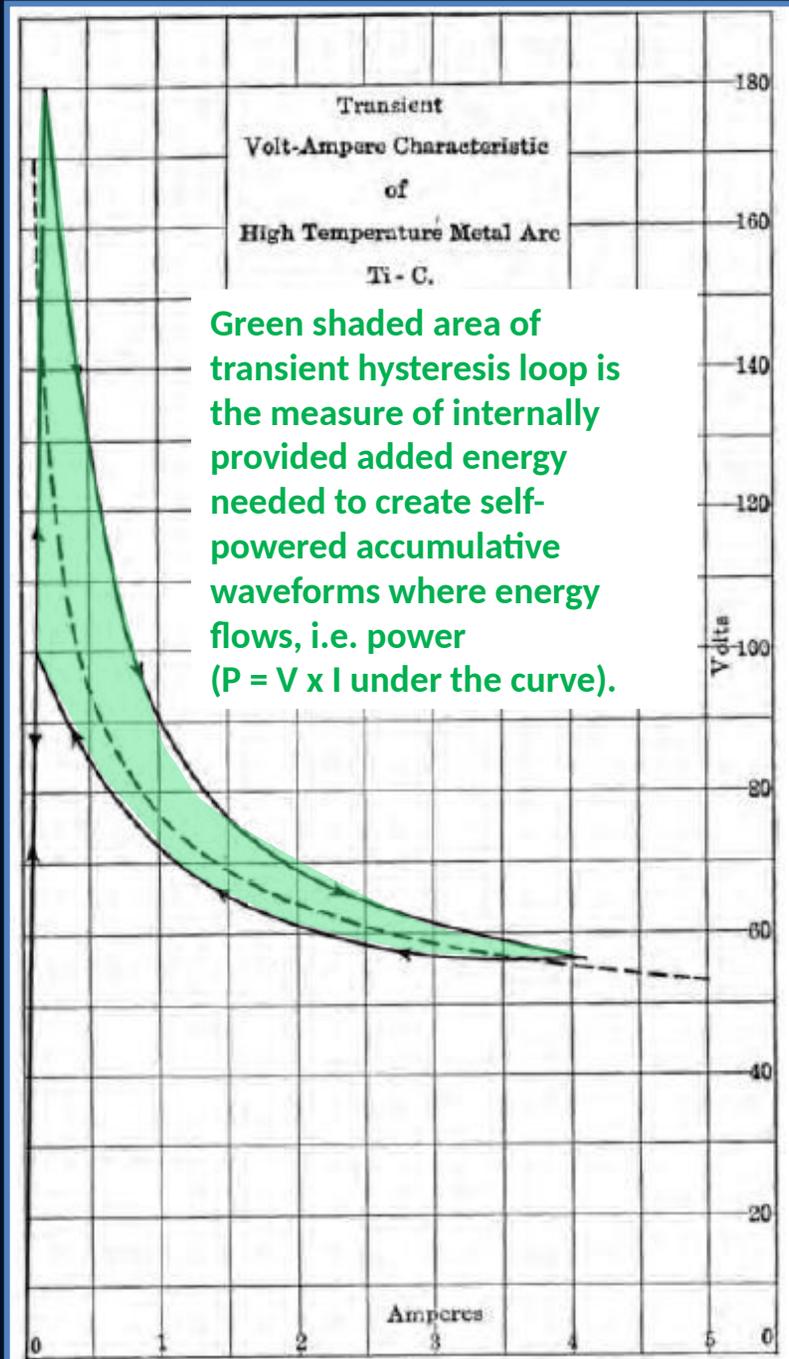


Fig. 66.

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45. The frequency of the oscillations usually is the natural frequency of the oscillating circuit or section of circuit, but it may be some of the higher harmonics of the generator wave, where such harmonic is near the natural frequency of the system.

The latter seems to be the case in the continual arcing ground oscillation in Figs. 44 and 45, page 98. In Fig. 44, the beginning of the disturbance, apparently a harmonic of the generator wave builds up by the energy supply through a beginning arc, and then builds down again, by being slightly out of resonance with a multiple of the natural frequency of the circuit. In Fig. 45, the arc has completely developed, and one of the harmonics of the generator wave appears as a steady continuous oscillation.

Continual and cumulative oscillations naturally are the most dangerous phenomena in an electric circuit, for the reasons:

1. While each individual wave or wave train may not be sufficient in energy and in over-voltage to do harm, the recurrence through seconds, minutes or hours finally destroys the insulation, either by the sustained over-voltage, or by the decrease of dielectric strength resulting from the heating of the insulation caused by the high frequency. The over-voltage protective devices frequently do not offer protection, as the over-voltage of the oscillation is insufficient to cause a discharge over the lightning arrester. The only effective protection seems to be a continuous dissipation of the oscillating energy by a resistance closing the oscillating circuit. In general, a moderate capacity would be connected in series with such damping resistance, and would be chosen so as to allow the high frequency to pass practically unobstructed, while practically stopping the passage of the machine frequency, and the waste of power, incident thereto.

2. A continual oscillation involves an energy transformation from the power supply of the system to the oscillation frequency. The energy of the oscillation which gives its destructiveness thus is not limited to the small amount of the stored magnetic and dielectric energy of the system, but is supplied continuously from the engine or turbine power.

3. The continual oscillation is not a resonance phenomenon which depends on the frequency of the exciting disturbance just coinciding with one of the natural frequencies of the oscillating system, and which thus can occur only very rarely. The dis-

OSCILLATING CURRENTS.

INTRODUCTION.

415. An electric current varying periodically between constant maximum and minimum values — that is, in equal time intervals repeating the same values — is called an alternating current if the arithmetic mean value equals zero; and is called a pulsating current if the arithmetic mean value differs from zero.

Assuming the wave as a sine curve, or replacing it by the equivalent sine-wave, the alternating current is characterized by the period or the time of one complete cyclic change, and the amplitude or the maximum value of the current. Period and amplitude are constant in the alternating current.

A very important class are the currents of constant period, but geometrically varying amplitude; that is, currents in which the amplitude of each following wave bears to that of the preceding wave a constant ratio. Such currents consist of a series of waves of constant length, decreasing in amplitude, that is, in strength, in constant proportion. They are called oscillating currents in analogy with mechanical oscillations — for instance of the pendulum — in which the amplitude of the vibration decreases in constant proportion.

417. In polar coordinates, the oscillating wave is represented in Fig. 260 by a spiral curve passing the zero point twice per period, and tangent to the exponential spiral,

$$y = \pm e\epsilon^{-a\phi}.$$

The latter is called the envelope of a system of oscillating waves of which one is shown separately, with the same constants as Figs. 259 and 260, in Fig. 261. Its characteristic feature is:

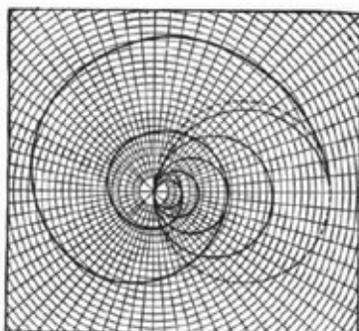


FIG. 260.

The angle which any concentric circle makes with the curve $y = e\epsilon^{-a\phi}$, is

$$\tan \alpha = \frac{dy}{y d\phi} = -a,$$

which is, therefore, constant; or, in other words: "The envelope of the oscillating current is the exponential spiral, which is characterized by a constant angle of intersection with all concentric circles or all radii vectors." The oscillating current-wave is the product of the sine wave and the exponential or loxodromic spiral.

418. In Fig. 262 let $y = e\epsilon^{-a\phi}$ represent the exponential spiral;

let $z = e \cos(\phi - \theta)$

represent the sine wave;

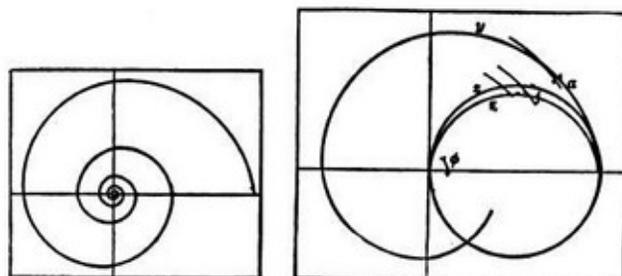


FIG. 261.

FIG. 262.

Circuits of Zero Impedance.

425. In an oscillating-current circuit of decrement a , of resistance r , inductive reactance x , and condensive reactance x_c , the impedance was represented in symbolic expression by

$$Z = r_a - jx_a = \left(r - ax - \frac{a}{1 + a^2} x_c\right) - j\left(x - \frac{x_c}{1 + a^2}\right),$$

or numerically by

$$z = \sqrt{r_a^2 + x_a^2} = \sqrt{\left(r - ax - \frac{a}{1 + a^2} x_c\right)^2 + \left(x - \frac{x_c}{1 + a^2}\right)^2}.$$

Thus the inductive reactance, x , as well as the condensive reactance, x_c , do not represent wattless electromotive forces as in an alternating-current circuit, but introduce power components of negative sign,

$$-ax - \frac{a}{1 + a^2} x_c;$$

that means, in an oscillating-current circuit, the counter electromotive force of self-induction is not in quadrature behind the current, but lags less than 90° , or a quarter period; and the charging current of a condenser is less than 90° , or a quarter period, ahead of the impressed electromotive force.

426. In consequence of the existence of negative power components of reactance in an oscillating-current circuit, a phenomenon can exist which has no analogy in an alternating-current circuit; that is, under certain conditions the total impedance of the oscillating-current circuit can equal zero:

That is, if in an oscillating-current circuit, the decrement,

$$a = \frac{1}{\sqrt{\frac{4L}{rC} - 1}},$$

and the frequency $f = \frac{r}{4\pi aL}$, the total impedance of the circuit is zero; that is, the oscillating current, when started once, will continue without external energy being impressed upon the circuit.

427. The physical meaning of this is: If upon an electric circuit a certain amount of energy is impressed and then the circuit left to itself, the current in the circuit will become oscillating, and the oscillations assume the frequency, $f = \frac{r}{4\pi aL}$, and the decrement,

$$a = \frac{1}{\sqrt{\frac{4L}{rC} - 1}}.$$

That is, the oscillating currents are the phenomena by which an electric circuit of disturbed equilibrium returns to equilibrium.

This feature shows the origin of the oscillating currents, and the means of producing such current by disturbing the equilibrium of the electric circuit; for instance, by the discharge of a condenser, by make-and-break of the circuit, by sudden electrostatic charge, as lightning, etc. Obviously, the most important oscillating currents are those in a circuit of zero impedance, representing oscillating discharges of the circuit. Lightning strokes frequently belong to this class.

429. Let a condenser of capacity C be discharged through a circuit of resistance r and inductance L . Let e = electromotive force at the condenser in the moment of closing the circuit — that is, at the time $t = 0$ or $\phi = 0$. At this moment the current is zero, — that is,

$$I = j i_2, \quad i_1 = 0.$$

Since $E_e = xI(-a + j) \operatorname{dec} \alpha = e$ at $\phi = 0$,

$$\text{we have } x i_2 \sqrt{1 + a^2} = e \text{ or } i_2 = \frac{e}{x \sqrt{1 + a^2}}.$$

Substituting this, we have,

$$I = j \frac{e}{x \sqrt{1 + a^2}} \operatorname{dec} \alpha, \quad E_r = j e \frac{r}{x \sqrt{1 + a^2}} \operatorname{dec} \alpha,$$

$$E_x = \frac{e}{\sqrt{1 + a^2}} (1 - ja) \operatorname{dec} \alpha, \quad E_{x_c} = -\frac{e}{\sqrt{1 + a^2}} (1 + ja) \operatorname{dec} \alpha,$$

the equations of the oscillating discharge of a condenser of initial voltage, e .

Since $x = 2\pi fL$,

$$a = \frac{1}{\sqrt{\frac{4L}{rC} - 1}},$$

$$2\pi f = \frac{r}{2aL},$$

we have

$$x = \frac{r}{2a} = \frac{r}{2} \sqrt{\frac{4L}{rC} - 1};$$

hence, by substitution,

$$I = j e \sqrt{\frac{C}{L}} \operatorname{dec} \alpha, \quad E_r = j e r \sqrt{\frac{C}{L}} \operatorname{dec} \alpha,$$

$$E_x = \frac{e}{2} \sqrt{\frac{C}{L}} \left(\sqrt{\frac{4L}{rC} - 1} - j \right) \operatorname{dec} \alpha,$$

$$E_{x_c} = -\frac{e}{2} \sqrt{\frac{C}{L}} \left(\sqrt{\frac{4L}{rC} - 1} + j \right) \operatorname{dec} \alpha,$$

$$a = \frac{1}{\sqrt{\frac{4L}{rC} - 1}}, \quad f = \frac{r \sqrt{\frac{4L}{rC} - 1}}{4\pi L},$$

the final equations of the oscillating discharge, in symbolic expression.

CHAPTER X

INSTABILITY OF CIRCUITS: THE ARC

A. General

81. During the earlier days of electrical engineering practically all theoretical investigations were limited to circuits in stable or stationary condition, and where phenomena of instability occurred, and made themselves felt as disturbances or troubles in electric circuits, they either remained understood or the theoretical study was limited to the specific phenomenon, as in the case of lightning, dropping out of step of induction motors, hunting of synchronous machines, etc., or, as in the design of arc lamps and arc-lighting machinery, the opinion prevailed that theoretical calculations are impossible and only design by trying, based on practical experience, feasible.

The first class of unstable phenomena, which was systematically investigated, were the transients, and even today it is questionable whether a systematic theoretical classification and investigation of the conditions of instability in electric circuits is yet feasible. Only a preliminary classification and discussion of such phenomena shall be attempted in the following.

Three main types of instability in electric systems may be distinguished:

I. The transients of readjustment to changed circuit conditions.

II. Unstable electrical equilibrium, that is, the condition in which the effect of a cause increases the cause.

III. Permanent instability resulting from a combination of circuit constants which can not coexist.

I. TRANSIENTS

82. Transients are the phenomena by which, at the change of circuit conditions, current, voltage, etc., readjust themselves from the values corresponding to the previous condition to the values corresponding to the new condition of the circuit. For in-

stance, if a switch is closed, and thereby a load put on the circuit, the current can not instantly increase to the value corresponding to the increased load, but some time elapses, during which the increase of the stored magnetic energy corresponding to the increased current, is brought about. Or, if a motor switch is closed, a period of acceleration intervenes before the flow of current becomes stationary, etc.

The characteristic of transients therefore is, as implied in the term, that they are of limited, usually very short duration, intervening between two periods of stationary conditions.

Considerable theoretical work has been done, more or less systematically, on transients, and a great mass of information is thus available in the literature. These transients are more extensively treated in "Theory and Calculation of Transient Electric Phenomena and Oscillations," and in "Electric Discharges, Waves and Impulses," and therefore will be omitted in the following. However, to some extent, the transients of our theoretical literature, still are those of the "phantom circuit," that is, a circuit in which the constants r, L, C, g , are assumed as constant. The effect of the variation of constants, as found more or less in actual circuits: the change of L with the current in circuits containing iron; the change of C and g with the voltage (corona, etc.); the change of r and g with the frequency, etc., has been studied to a limited extent only, and in specific cases.

In the application of the theory of transients to actual electric circuits, considerable judgment thus is often necessary to allow and correct for these "secondary" phenomena which are not included in the theoretical equations.

Especially deficient is our knowledge of the conditions under which the attenuation constant of the transient becomes zero or negative, and the transient thereby becomes permanent, or becomes a cumulative surge, and the phenomenon thereby one of unstable equilibrium.

II. UNSTABLE ELECTRICAL EQUILIBRIUM

83. If the effect brought about by a cause is such as to oppose or reduce the cause, the effect must limit itself and stability be finally reached. If, however, the effect brought about by a cause increases the cause, the effect continues with increasing intensity, that is, instability results.

The most interesting class in this group of unstable electric systems are the oscillations resulting sometimes from a change of circuit conditions (switching, change of load, etc.), which continue indefinitely with constant intensity, or which steadily increase in intensity, and may thus be called permanent and cumulative surges, hunting, etc. They may be considered as transients in which the attenuation constant is zero or negative.

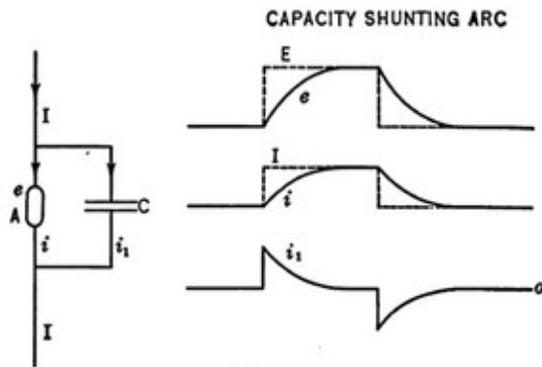


Fig. 86.

ELECTRIC CIRCUITS

$$\left. \begin{aligned} e &= rI - r\delta I (1 - e^{-\frac{t}{rC}}) \\ &= E - \delta E (1 - e^{-\frac{t}{rC}}) \end{aligned} \right\} (30)$$

since $e = E$ for $t = 0$ is the terminal condition which determines the integration constant.

With a sudden change of the supply current, I , by δI , as shown by the dotted lines, I , in Fig. 86, the voltage, e , and current, i , in the circuit, A , and the current, i_1 , in the condenser, C , thus change by the exponential transients shown in Fig. 86 as e , i and i_1 .

92. Suppose now, however, that the circuit, A , has a dropping volt-ampere characteristic, is an arc.

A sudden decrease of the supply current, I by δI , to $I - \delta I$, would by the arc characteristic, $e = a + \frac{b}{\sqrt{i}}$, cause an increase of the voltage of circuit, A , from E to $E + \delta E$. Such a sudden increase of E would send an infinite current through C , that is, all the supply current would momentarily go through the condenser, C , none through the arc, A , and the latter would thus go out, and that, no matter how small the condenser capacity, C .

Inversely, a sudden increase of I , by δI , decreases the voltage of A , thus causes the condenser, C , to discharge into A , still further decreases its voltage, and the condenser momentarily short-circuits through the arc, A ; but as soon as it has discharged and the arc voltage again rises with the decreasing current, the condenser, C , robs the arc, A , and puts it out.

Thus, even a small condenser in shunt to an arc makes it unstable and puts it out.

If a resistance, r_0 , is inserted in series to the arc in the circuit, A , stability results if the resistance is sufficient to give a rising volt-ampere characteristic, as discussed previously.

If, in addition to the capacity, C , an inductance, L , and some resistance, r , are shunted across the circuit, A , of a rising volt-ampere characteristic, as shown in Fig. 87, the readjustment occurring at a sudden change of the supply current, I , is not exponential, as in Fig. 86, but oscillatory, as in Fig. 87. As in the circuit, A , assuming it consists of a resistance, r , current and voltage vary simultaneously or in phase, current and voltage in the condenser branch circuit also must be in phase with each other, that is, the

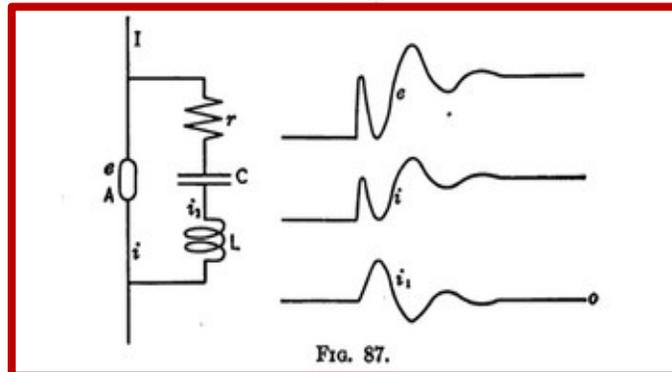


Fig. 87.

frequency of the oscillation in Fig. 87 is that at which capacity, C , and inductance, L , balance, or is the resonance frequency.

If circuit, A , in Fig. 87 is an arc circuit, and the resistance, r , in the shunt circuit small, instability again results, in the same man-

At constant-supply current, I , the condenser thus must absorb the decrease of current in A , that is, the condenser current is

$$i_1 = I \frac{t}{t_0} \quad (32)$$

With decrease of current, i , if A is a circuit with rising characteristic, for instance, an ohmic resistance, the voltage of A decreases. The voltage at the condenser increases by the increasing charging current, i_1 , thus the condenser voltage tends to rise over the circuit voltage of A , and thus checks the decrease of the voltage and thus of the current in A . Thus, the conditions are stable.

Suppose, however, A is an arc.

A decrease of the current in A then causes an increase of the voltage consumed by A , the arc voltage, e_0 .

The same decrease of the current in A , by deflecting the current into the condenser, causes an increase of the voltage consumed by C , the condenser voltage, e_1 .

If, now, at a decrease of the arc current, i , the arc voltage, e_0 , rises faster than the condenser voltage, e_1 , the increase of e_0 over e_1 deflects still more current from A into C , that is, the arc current decreases and the condenser current increases at increasing rate, until the arc current has decreased to zero, that is, the arc has been put out. In this case, the condenser thus produces instability of the arc.

95. Consider the case of a circuit, A , Fig. 87, supplied by a constant current, I , but shunted by a capacity, C , inductance, L , and resistance, r , in series.

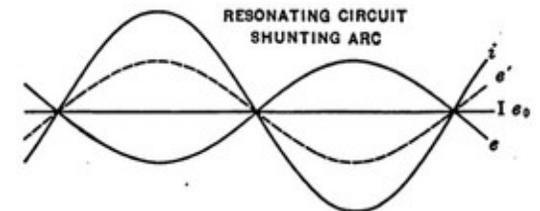


Fig. 89.

Due to the pulsation of current, i in A , the voltage, e , of circuit, A , would pulsate also. These voltage pulsations are in the same direction as the current pulsation, if A is a resistance, in opposite direction, if A is an arc; in either case, however, they are in phase with the current pulsation, and the alternating voltage on the condenser,

$$e_1 = e_0 - e,$$

thus is in phase with the alternating current, i_1 , that is, capacity, C , and inductance, L , neutralize.

Thus, the only pulsation of current and voltage, which could occur in a circuit, A , shunted by capacity and inductance, is that of the resonance frequency of capacity and inductance.

96. Suppose, however, A is an arc. A current pulsation, i , then gives a voltage pulsation in opposite direction, as shown by e in Fig. 89, and the alternating current, $i_1 = I - i$, and the alternating voltage, $e_1 = e - e_0$, in the condenser circuit, thus would be in phase with each other, as shown by i_1 and e_1 in Fig. 89. That is, they would represent power generation, or rather transformation of power from the constant direct-current supply, I , into the alternating-current resonating condenser circuit, C .

Thus, such a local pulsation of the arc current, i , and corresponding alternating current, i_1 , in the condenser circuit, if once started, would maintain itself without external power supply, and would even be able to supply the power represented by voltage, e_1 , with current, i_1 , into an external circuit, as the resistance, r , shown in Fig. 87, or through a transformer into a wireless sending circuit, etc.

Thus, due to the dropping arc characteristic, an arc shunted by capacity and inductance, on a constant-current supply, becomes a generator of alternating-current power, of the frequency set by the resonance of C and L .

428. The condition of an oscillating discharge is $Z = 0$, that is,

$$a = \frac{1}{\sqrt{\frac{4L}{r^2C} - 1}}, \quad 2\pi f = \frac{r}{2aL} = \frac{r}{2L} \sqrt{\frac{4L}{r^2C} - 1}.$$

If $r = 0$, that is, in a circuit without resistance, we have $a = 0$, $f = \frac{1}{2\pi\sqrt{LC}}$; that is, the currents are alternating with no decrement, and the frequency is that of resonance.

If $\frac{4L}{r^2C} < 0$, that is, $r > 2\sqrt{\frac{L}{C}}$, a and f become imaginary; that is, the discharge ceases to be oscillatory. An electrical discharge assumes an oscillating nature only, if $r < 2\sqrt{\frac{L}{C}}$. In the case $r = 2\sqrt{\frac{L}{C}}$ we have $a = \infty$, $f = 0$; that is, the current dies out without oscillation.

From the foregoing we have seen that oscillating discharges — as for instance the phenomena taking place if a condenser charged to a given potential is discharged through a given circuit, or if lightning strikes the line circuit — are defined by the equation, $Z = 0 \operatorname{dec} \alpha$.

Since

$$I = (i_1 + ji_2) \operatorname{dec} \alpha, \quad E_r = Ir \operatorname{dec} \alpha,$$

$$E_x = -xI(a + j) \operatorname{dec} \alpha, \quad E_{x_c} = \frac{x_c}{1 + a^2} I(-a + j) \operatorname{dec} \alpha,$$

we have
$$r - ax - \frac{a}{1 + a^2} x_c = 0,$$

$$-x + \frac{x_c}{1 + a^2} = 0;$$

hence, by substitution,

$$E_{x_c} = xI(-a + j) \operatorname{dec} \alpha.$$

The two constants, i_1 and i_2 , of the discharge, are determined by the initial conditions — that is, the electromotive force and the current at the time, $t = 0$.

429. Let a condenser of capacity C be discharged through a circuit of resistance r and inductance L . Let e = electromotive force at the condenser in the moment of closing the circuit — that is, at the time $t = 0$ or $\phi = 0$. At this moment the current is zero, — that is,

$$I = ji_2, \quad i_1 = 0.$$

Since $E_{x_c} = xI(-a + j) \operatorname{dec} \alpha = e$ at $\phi = 0$,

we have
$$xi_2 \sqrt{1 + a^2} = e \text{ or } i_2 = \frac{e}{x \sqrt{1 + a^2}}.$$

Substituting this, we have,

$$I = j \frac{e}{x \sqrt{1 + a^2}} \operatorname{dec} \alpha, \quad E_r = je \frac{r}{x \sqrt{1 + a^2}} \operatorname{dec} \alpha,$$

$$E_x = \frac{e}{\sqrt{1 + a^2}} (1 - ja) \operatorname{dec} \alpha, \quad E_{x_c} = -\frac{e}{\sqrt{1 + a^2}} (1 + ja) \operatorname{dec} \alpha,$$

the equations of the oscillating discharge of a condenser of initial voltage, e .

Since $x = 2\pi fL$,

$$a = \frac{1}{\sqrt{\frac{4L}{r^2C} - 1}},$$

$$2\pi f = \frac{r}{2aL},$$

we have

$$x = \frac{r}{2a} = \frac{r}{2} \sqrt{\frac{4L}{r^2C} - 1};$$

hence, by substitution,

$$I = je \sqrt{\frac{C}{L}} \operatorname{dec} \alpha, \quad E_r = jer \sqrt{\frac{C}{L}} \operatorname{dec} \alpha,$$

$$E_x = \frac{er}{2} \sqrt{\frac{C}{L}} \left(\sqrt{\frac{4L}{r^2C} - 1} - j \right) \operatorname{dec} \alpha,$$

$$E_{x_c} = -\frac{er}{2} \sqrt{\frac{C}{L}} \left(\sqrt{\frac{4L}{r^2C} - 1} + j \right) \operatorname{dec} \alpha,$$

$$a = \frac{1}{\sqrt{\frac{4L}{r^2C} - 1}}, \quad f = \frac{r \sqrt{\frac{4L}{r^2C} - 1}}{4\pi L},$$

the final equations of the oscillating discharge, in symbolic expression.

Oscillating-Current Transformer.

430. As an example of the application of the symbolic method of analyzing the phenomena caused by oscillating currents, the transformation of such currents may be investigated. If an oscillating current is produced in a circuit including the primary of a transformer, oscillating currents will also exist in the secondary of this transformer. In a transformer let the ratio of secondary to primary turns be p . Let the secondary be closed by a circuit of total resistance, $r_1 = r_1' + r_1''$, where r_1' = external, r_1'' = internal, resistance. The total inductance $L_1 = L_1' + L_1''$, where L_1' = external, L_1'' = internal, inductance; total capacity, C_1 . Then the total admittance of the secondary circuit is

$$Y_1 = (g_1 + j\bar{b}_1) \operatorname{dec} \alpha = \frac{1}{\left(r_1 - ax_1 - \frac{a}{1+a^2}x_{c1}\right) - j\left(x_1 - \frac{x_c}{1+a^2}\right)},$$

where $x_1 = 2\pi fL_1$ = inductive reactance; $x_{c1} = \frac{1}{2\pi fC}$ = condensive reactance. Let r_0 = effective hysteric resistance, L_0 = inductance; hence, $x_0 = 2\pi fL_0$ = reactance; hence,

$$Y_0 = g_0 + j\bar{b}_0 = \frac{1}{(r_0 - ax_0) - jx_0} = \text{admittance}$$

of the primary exciting circuit of the transformer; that is, the admittance of the primary circuit at open secondary circuit.

As discussed elsewhere, a transformer can be considered as consisting of the secondary circuit supplied by the impressed electromotive force over leads, whose impedance is equal to the sum of primary and secondary transformer impedance, and which are shunted by the exciting circuit, outside of the secondary, but inside of the primary impedance.

Let r = resistance; L = inductance; C = capacity;

hence,

$$x = 2\pi fL = \text{inductive reactance,}$$

$$x_c = \frac{1}{2\pi fC} = \text{condensive reactance of the total primary circuit,}$$

In an oscillating discharge the total primary electromotive force, $E = 0$, — that is,

$$1 + ZY_0 + p^2ZY_1 = 0;$$

431. If the exciting current of the transformer is negligible, — that is, if $Y_0 = 0$, the equation becomes essentially simplified, —

Substituting for x_1, x, x_{c1}, x_c , we have

$$a = \frac{1}{\sqrt{\frac{4(L_1 + p^2L)}{(r_1 + p^2r)^2(C_1 + p^2C)} - 1}},$$

$$2\pi f = \frac{r_1 + p^2r}{2a(L_1 + p^2L)}$$

$$= \frac{r_1 + p^2r}{2(L_1 + p^2L)} \sqrt{\frac{4(L_1 + p^2L)}{(r_1 + p^2r)^2(C_1 + p^2C)} - 1},$$

p = ratio of secondary to primary turns

$$E = \frac{E_1'}{p} \{1 + p^2ZY_1\} \operatorname{dec} \alpha,$$

$$I = pE_1'Y_1 \operatorname{dec} \alpha,$$

$$I_1 = E_1'Y_1 \operatorname{dec} \alpha,$$

the equations of the oscillating-current transformer, with E_1' as parameter.

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TRAVELING WAVES.

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physical meaning a wave has, in which current and voltage are in phase with each other:

$$\left. \begin{aligned} i &= i_0 e^{-\alpha t} \cos(\phi \mp \omega - \gamma), \\ e &= e_0 e^{-\alpha t} \cos(\phi \mp \omega - \gamma). \end{aligned} \right\} \quad (4)$$

In this case the flow of power is

$$\begin{aligned} p &= ei, \\ &= e_0 i_0 e^{-2\alpha t} \cos^2(\phi \mp \omega - \gamma), \\ &= \frac{e_0 i_0}{2} e^{-2\alpha t} [1 + \cos 2(\phi \mp \omega - \gamma)], \end{aligned} \quad (5)$$

and the average flow of power is

$$\begin{aligned} p_0 &= \text{avg } p, \\ &= \frac{e_0 i_0}{2} e^{-2\alpha t}. \end{aligned} \quad (6)$$

Such a wave thus consists of a combination of a steady flow of power along the circuit, p_0 , and a pulsation or surge, p_1 , of the same nature as that of the standing wave (2):

$$p_1 = \frac{e_0 i_0}{2} e^{-2\alpha t} \cos 2(\phi \mp \omega - \gamma). \quad (7)$$

Such a flow of power along the circuit is called a *traveling wave*. It occurs very frequently. For instance, it may be caused if by a lightning stroke, etc., a quantity of dielectric energy is impressed

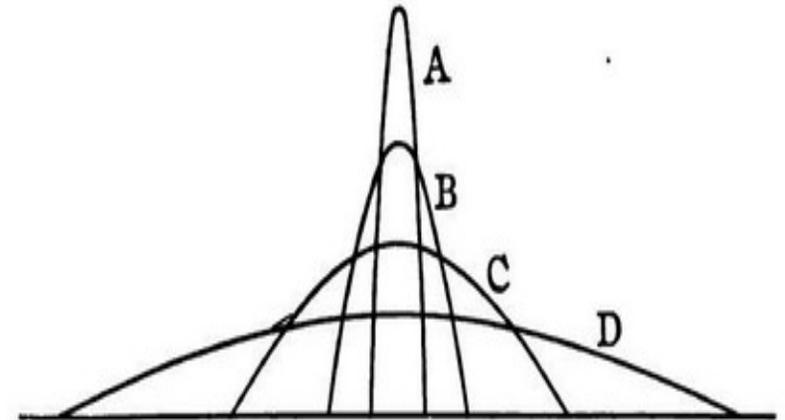


Fig. 39. — Starting of Impulse, or Traveling Wave.

upon a part of the circuit, as shown by curve A in Fig. 39, or if by a local short circuit a quantity of magnetic energy is impressed upon a part of the circuit. This energy then gradually distributes over the circuit, as indicated by the curves B, C, etc., of Fig. 39, that is, moves along the circuit, and the dissipation of the stored energy thus occurs by a flow of power along the circuit.

Steinmetz - Electric Discharges, Waves and Impulses pgs 59 - 127

Such a flow of power must occur in a circuit containing sections of different dissipation constants u . For instance, if in a circuit consisting of an unloaded transformer and a transmission line, as indicated in Fig. 40, at no load on the step-down trans-

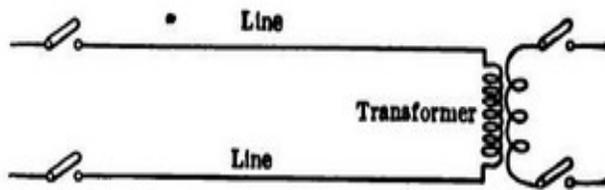
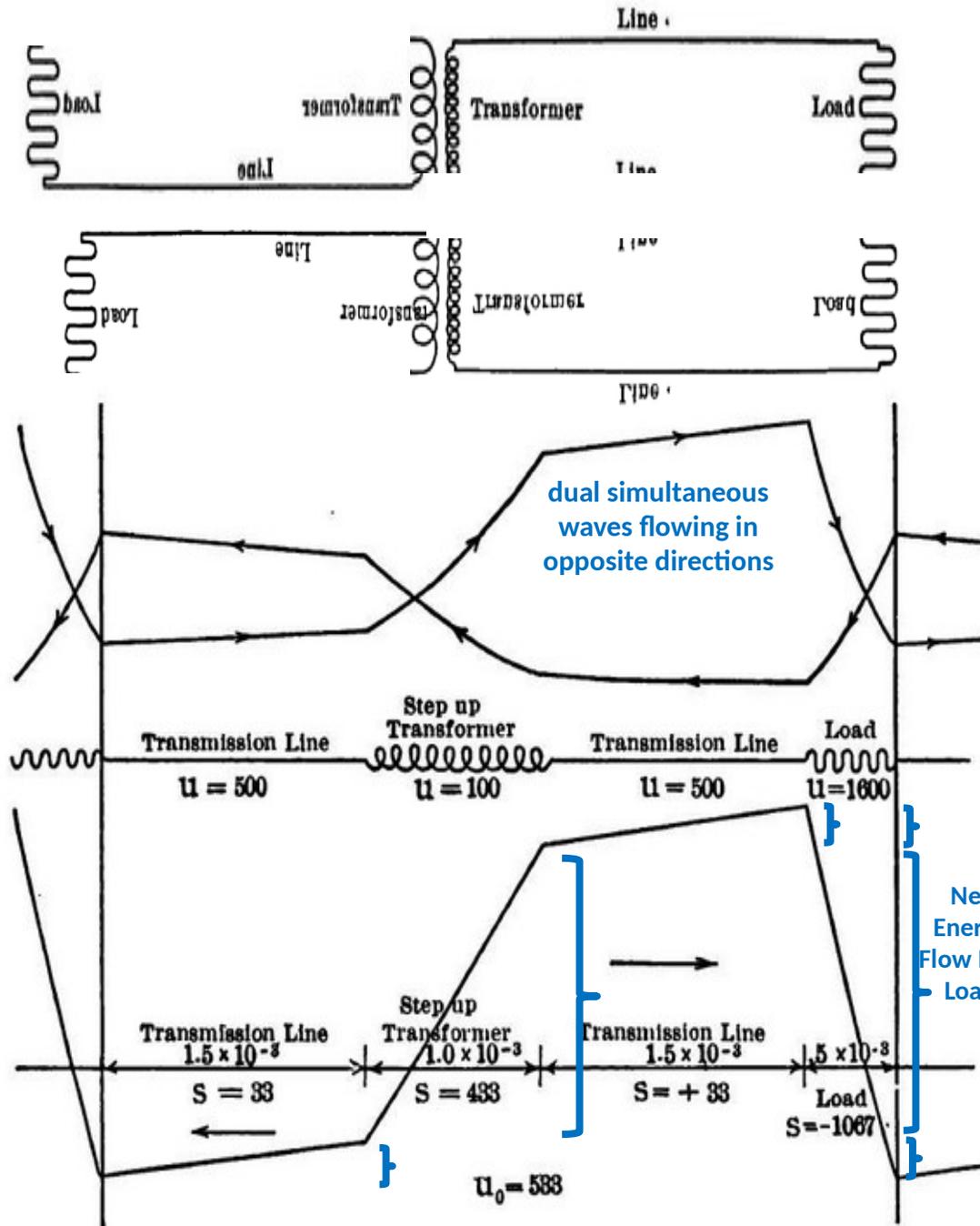


Fig. 40.

former, the high-tension switches are opened at the generator end of the transmission line. The energy stored magnetically and dielectrically in line and transformer then dissipates by a transient, as shown in the oscillogram Fig. 41. This gives the oscillation of a circuit consisting of 28 miles of line and 2500-kw. 100-kv. step-up and step-down transformers, and is produced by disconnecting this circuit by low-tension switches. In the transformer, the duration of the transient would be very great, possibly several seconds, as the stored magnetic energy (L) is very large, the dissipation of power (r and g) relatively small; in the line, the transient is of fairly short duration, as r (and g) are considerable.

Left to themselves, the line oscillations thus would die out much more rapidly, by the dissipation of their stored energy, than the transformer oscillations. Since line and transformer are connected together, both must die down simultaneously by the same transient. It then follows that power must flow during the transient from the transformer into the line, so as to have both die down together, in spite of the more rapid energy dissipation in the line. Thus a transient in a *compound circuit*, that is, a circuit comprising sections of different constants, must be a traveling wave, that is, must be accompanied by power transfer between the sections of the circuit.*

A traveling wave, equation (4), would correspond to the case of effective power in a permanent alternating-current circuit, while the stationary wave of the uniform circuit corresponds to the case of reactive power.



in the load:

$$p = p_3 e^{-1600\lambda}, \text{ the energy of the wave decreases rapidly.}$$

Here the coefficients of p_1 , p_2 , p_3 must be such that the wave at the beginning of one section has the same value as at the end of the preceding section.

In general, two traveling waves run around the circuit in opposite direction.

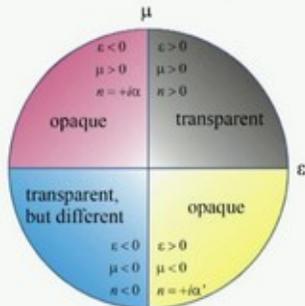
However, this transient power-transfer diagram does not represent the entire power which is being consumed in the circuit, as power is also supplied from the stored energy of the circuit; and the case may thus arise — which cannot exist in a permanent power transmission — that the power dissipation of the line is less than corresponds to its stored energy, and the line also supplies power to the load, that is, acts as generator, and in this case the power would not be a maximum at the transformer terminals, but would still further increase in the line, reaching its maximum at the load terminals. This obviously is possible only with transient power, where the line has a store of energy from which it can draw in supplying power. In permanent condition the line could not add to the power, but must consume, that is, the permanent power-transmission diagram must always be like Fig. 54.

Not so, as seen, with the transient of the stationary oscillation. That is, the power-transfer constant of the line has become positive, $s_1 = 33$, and the line now assists the transformer in supplying power to the load. Assuming again the values of the two traveling waves, where they leave the transformer (which now are not the maximum values, since the waves still further increase in intensity in passing over the lines), as 6 and 4 megawatts respectively, the power diagram of the two waves, and the power diagram of their resultant, are given in Fig. 55.

Fig. 55. — Energy Distribution in Compound Oscillation of Closed Circuit; Low Line Loss.

Metamaterials and Negative ϵ_0 and μ_0

Negative Refraction - $n < 0$



The wave vector defines how light propagates:

$$E = E_0 \exp(ikz - i\omega t)$$

where,

$$k = \omega/c \times \sqrt{\epsilon\mu} = \omega/c \times n$$

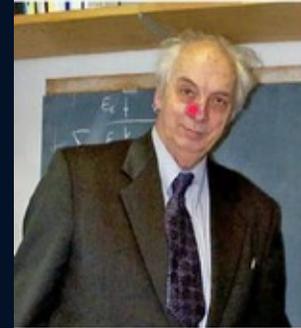
Either $\epsilon < 0$ or $\mu < 0$, ensures that k is imaginary, and the material is opaque.

If $\epsilon < 0$ and $\mu < 0$, then k is real but we are forced to choose the *negative* square root to be consistent with Maxwell's equations.

$\epsilon < 0, \mu < 0$ means that n is negative

Recipe for Negative Refractive Index

The electrical permittivity, ϵ , and the magnetic permeability, μ determine the refractive index, $n = \sqrt{\epsilon\mu}$. Normally n , ϵ , and μ are positive numbers.

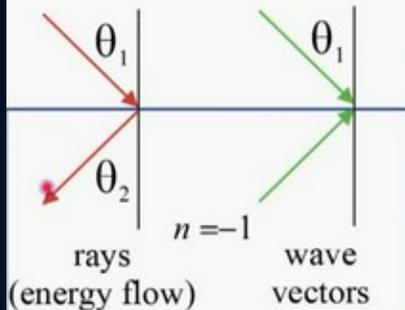


In 1968 *Victor Veselago* showed that if ϵ and μ are *both* negative, we are forced by Maxwell's equations to choose a negative square root for the refractive index,

$$n = -\sqrt{\epsilon\mu}, \quad \epsilon < 0, \quad \mu < 0$$

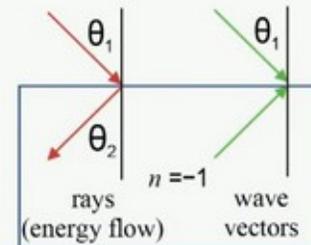
Negative Refractive Index and Snell's Law

$$n = \frac{\sin(\theta_1)}{\sin(\theta_2)}$$



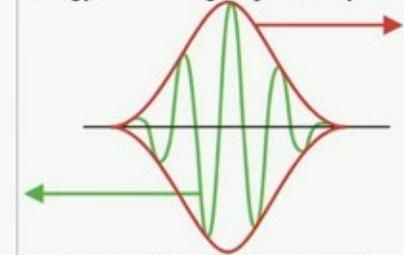
Hence in a negative refractive index material, *light makes a negative angle with the normal*. Note that the parallel component of wave vector is always preserved in transmission, but that energy flow is opposite to the wave vector.

Consequences of $n < 0$ - negative group velocity



In a negative refractive index material, *light makes a negative angle with the normal*. Note that the parallel component of wave vector is always preserved in transmission, but that energy flow is opposite to the wave vector

energy flow and group velocity



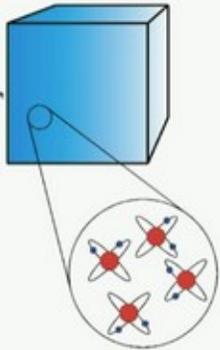
Materials with negative refraction are sometimes called *left handed materials* because the Poynting vector has the opposite sign to the wave vector

[Metamaterials Can Be Engineered To Manipulate Permittivity and Permeability](https://tinyurl.com/metamateriale0u0)

<https://tinyurl.com/metamateriale0u0>

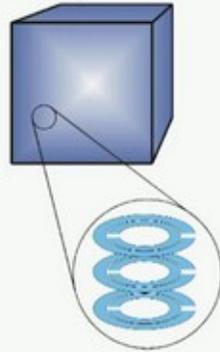
Metamaterials and Negative ϵ_0 and μ_0

Conventional materials: properties derive from their constituent *atoms*.



Imperial College London

Metamaterials: properties derive from their constituent *units*. These units can be engineered as we please.



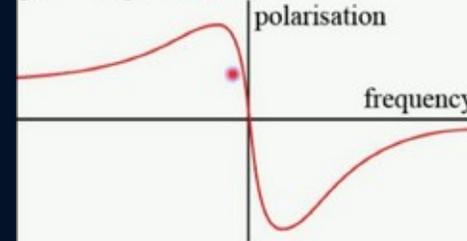
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Conventional materials

Properties derive from their constituent *atoms*.

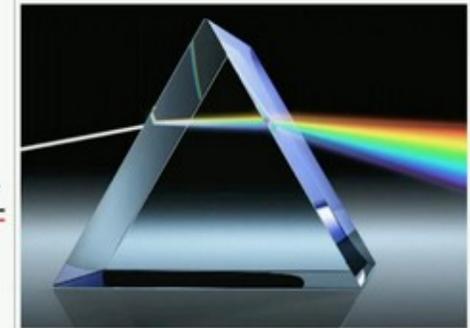


The response of an atom to light is determined by transitions between *atomic orbitals*.



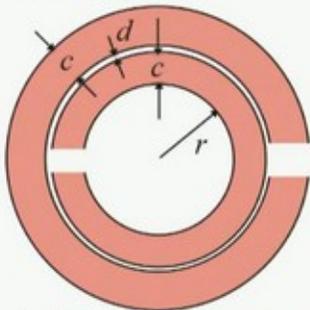
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Combining atoms into solids we can control light by diffraction.



Metamaterials

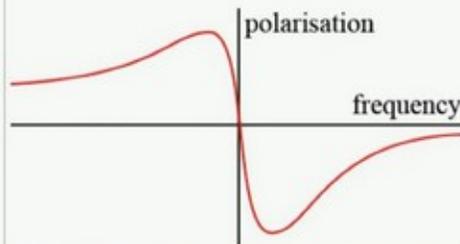
Properties derive from their constituent *engineered structures*.



This is a 'split ring' made from copper which is non-magnetic.

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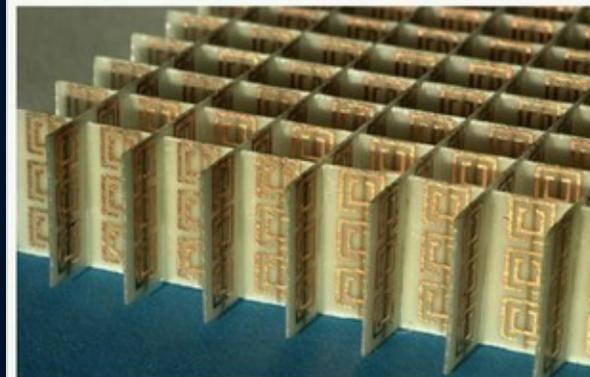
The rings respond to magnetic fields inducing electrons to flow around creating a magnetic field. The rings have *inductance* and *capacitance* between them to make a *resonator*.



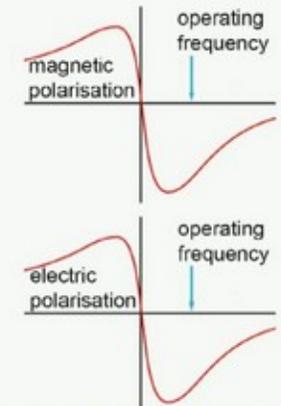
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Metamaterials make first negative refraction

Structure made at UCSD by David Smith



Imperial College London



Metamaterials Can Be Engineered To Manipulate Permittivity and Permeability

Metamaterials and Negative ϵ_0 and μ_0

Summary - metamaterials enable:

- material properties difficult or impossible to achieve with naturally occurring materials
- control of light on all length scales down to a few nanometres.
- Thermal control of buildings
- delivery of mobile phone antennae for 5G/6G signals
- sub wavelength microscopy for biological applications
- cheap and efficient control of THz radiation as in collision avoidance radar in automobiles, and satellite antennae
- safe and efficient delivery of MRI signals from inside the human body
- control of sound creating ‘silent zones’
- materials with novel mechanical properties
- classified military applications

Metamaterials and Negative ϵ_0 and μ_0

Gravity bends light



A gravitational lens mirage taken by the Hubble telescope: a red galaxy has gravitationally distorted the light from a much more distant blue galaxy located behind the red galaxy.

Transformation Optics

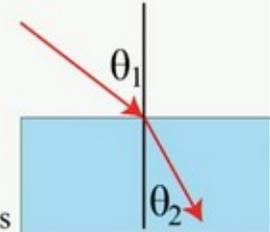
a new vision for electromagnetism & how it developed

The old optics

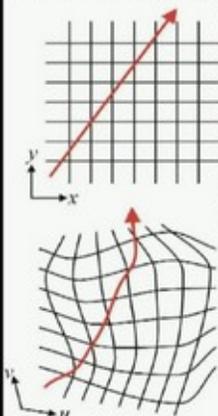
- ray approximation
- refraction at discrete interfaces
- limited material properties

the new vision

- beyond the ray approximation
- near field optics i.e. manipulate \mathbf{D} and \mathbf{B} as well as the rays
- sub wavelength optics
- exploit the potential of metamaterials



Formal theory: A. J. Ward & J.B. Pendry, *J Mod Op*, 43 773 (1996)



Top: a ray in free space with the background Cartesian coordinate grid shown.

Bottom: the distorted ray trajectory with distorted coordinates taking with it the trajectory of the ray.

In the new coordinate system we must use renormalized values of ϵ, μ .

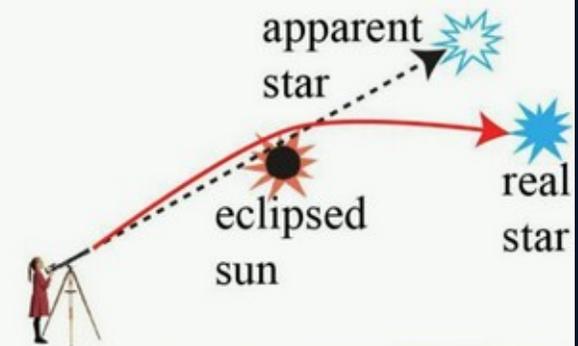
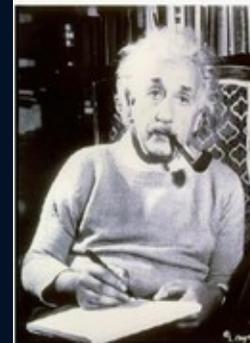
$$\epsilon^{i'j'} = [\det \Lambda]^{-1} \Lambda_i^{i'} \Lambda_j^{j'} \epsilon^{ij},$$

$$\mu^{i'j'} = [\det \Lambda]^{-1} \Lambda_i^{i'} \Lambda_j^{j'} \mu^{ij},$$

$$\Lambda_j^{i'} = \partial x^{i'} / \partial x^j$$

Einstein, light, and geometry

gravity changes geometry therefore gravity bends light.



Metamaterials Can Be Engineered To Manipulate Permittivity and Permeability

“Our Technologies Allow Us To Bend Time and Space”

“We seem to have lost focus and vision, to have lowered our sights and let systems and structures and bureaucracies muddle us along.

But we are capable of so much more.

Our technologies permit us to manipulate time and space. They leave distance annihilated, cause things to grow, and improve productivity.

As Vice President Vance said in a recent speech, the **tradition of American innovation** has been one of increasing the capacities of America’s workers, of extending human ability so that more people can do more, and, more meaningful work.

It is the choices of individuals that will make the new American Golden Age possible: the choice of individuals to master the sclerosis of the state, and the choice of individuals to craft new technologies and give themselves to scientific discoveries that will bend time and space, make more with less, and drive us further into the endless frontier.”

1. White House Science and Technology Office, April 2025
<https://www.whitehouse.gov/articles/2025/04/8716/>

“My flying machine will have neither wings nor propellers. You might see it on the ground and you would never guess that it was a flying machine. Yet it will be able to move at will through the air in any direction with perfect safety, at higher speeds than have yet been reached, regardless of weather and oblivious of “holes in the air” or downward currents. It will ascend in such currents if desired. It can remain absolutely stationary in the air, even in a wind, for great length of time. Its lifting power will not depend upon any such delicate devices as the bird has to employ, but upon positive mechanical action.”

Nikola Tesla, statement to New York Herald 1911

Note: Wright Brothers at Kitty Hawk “aero plane” flight circa ~1900

Limited “UFO” Disclosure Happening?

US Air Force, NRO (National Reconnaissance Office), Master Sergeant Dan Morris

Eisenhower wanted somebody to be in charge. The CIA was working primarily for itself. Most of the military intelligence directors were working for themselves. ... So, it was organized, but the name of the NRO was kept secret for years. ... The National Security Agency – the killers work in that. Secretary of Defense Forrestal was the first powerful person that was eliminated because he was going to release information [on UFOs] – and nobody has ever paid for that crime. ... Who was stationed at Roswell? The only nuclear bomb squadron in the world. We focused several powerful radars on the UFOs, and it caused two of them to crash. One of them had two aliens on it. One of them was wounded or hurt, the other was alive then, but before we could get him anywhere, he had passed on. ... I would interview people who claimed they had seen something, and try to convince them they hadn't, or that they were hallucinating. If that didn't work, another team would give all the threats – threaten them and their family. They would be in charge of discrediting them, making them look foolish. Now, if that didn't work, there was another team that put an end to that problem, one way or another. ... UFOs are both extraterrestrial and manmade. ... **Even back in Tesla's time, we had free energy. It's not that our government doesn't want us to know that there are other people on other planets. What they don't want us to know is that this free energy is available to everybody. That's the greatest secret.** So secrecy about the UFOs is because of the energy issue. Some would like for us to believe that the aliens are our enemy now. There's no proof that I have ever read in any official document where – unless they were attacked – they ever shot. We don't have a threat from Russia anymore, but if we keep shooting at those aliens, we might have a threat from them. We should demand that our government stop trying to shoot down those aliens. pp. 358 - 366. *Disclosure*, Steven Greer MD

Limited “UFO” Disclosure Happening?

US Air Force, Lockheed Skunkworks Engineer, Don Phillips

These UFOs were huge. They would just come to a stop and do a 60 degree, 45 degree, 10 degree turn, and then immediately reverse this action. ... During the Apollo landing, Neil Armstrong says, "They're here. They are right over there and look at the size of those ships. And, it is obvious they don't like us being here." ... When I was working with the Skunkworks, we signed an agreement with the National Security Agency and the National Security Council, as well as the CIA. And we kept very quiet about this. **Anti-gravitational research was going. ... We know that there were some captured craft from 1947 in Roswell, New Mexico. And, yeah, they were real. And, yes, we really did get some technology from them. And, yes, we really did put it to work.** ... We knew each other from what we call unseen industry. We can term it black, deep black, or hidden. The knowledge I have of these technologies came from the craft that were captured here. I didn't see the craft, nor did I see the bodies. But I certainly know some of the people that did. There was no question that there are peoples, or beings, from outside the planet. Are these ET people hostile? Well, if they were hostile, with their weaponry they could have destroyed us a long time ago. ... We got these things that are handheld scanners that scan the body and determine what the condition is. We can also treat from the same scanner. Are these things real? Well, I can tell you personally that we've been working on them. And we have ones that can cure cancer. Yes, diagnose and cure. Politics, and God bless them, the FDA, and other people whose financial interests could be damaged by the release of certain technologies keep these out of view. ... One of the purposes for founding this technology corporation that I did in 1998 was to bring forth these technologies that can help get rid of the toxins – that can clean the air, that help get rid of the need for so much fossil fuel. Yes, it is time. I can tell you personally that it has already started. pp. 375 – 383.. *Disclosure*, Steven Greer MD
<https://youtu.be/rBO8z9pHAuA>

Limited “UFO” Disclosure Happening?

McDonnell-Douglas, Professor of Aeronautical Engineering, Dr. Paul Czysz

When I was at Wright-Patterson Air Force Base, we had flying saucers that covered the distance from Columbus to Detroit in the equivalent of about 20,000 miles per hour. ... **Zero-point energy represents about 40-50 megawatts of power per cubic inch of space. That's a lot of power. If you could tap it at will, then no one would have to sell gasoline or oil anymore...** Depending on the secrecy level, you have to go through a significant background check. When you do that, if you're in a very tight compartment, you sign a statement that you will not divulge the existence of the project or even answer a question that could acknowledge the existence of the project. I know people today that worked on one of the things I worked on, and if you asked them about it, they would say, "No, I have no idea what you're talking about." They're in their seventies now, but they still absolutely would never admit that they even know what you're talking about. pp. 511 – 519. *Disclosure*, Steven Greer MD

Limited “UFO” Disclosure Happening?

"We already have the means to travel among the stars, but these technologies are locked up in black projects and it would take an act of God to ever get them out to benefit humanity... ..anything you can imagine we already know how to do."

– Ben Rich, Lockheed Skunkworks

“We now know how to travel to the stars. There is an error in the equations, and we have figured it out, and now know how to travel to the stars and it won’t take a lifetime to do it. It is time to end all the secrecy on this, as it no longer poses a national security threat, and make the technology available for use in the private sector. There are many in the intelligence community who would like to see this stay in the black and not see the light of day. We now have the technology to take ET home.”

- Ben Rich, Lockheed Skunkworks

Salvatore Pais Patents: Superforce and Pais Effect

Dr. Salvatore Cezar Pais is a Romanian-American aerospace engineer and inventor who has worked for the Naval Air Systems Command (NAVAIR). His patent applications for the US Navy have attracted significant attention due to their potential revolutionary implications in energy production, propulsion, and fundamental physics:

High Energy Electromagnetic Field Generator (HEEMFG): Utilizes high-frequency rotation and vibration of charged surfaces to generate extremely high electromagnetic field intensities.

Inertial Mass Reduction Device: Claims to reduce a craft's inertial mass through vacuum polarization, potentially enabling advanced propulsion.

High Frequency Gravitational Wave Generator: Proposes to generate gravitational waves through accelerated motion of charged systems.

Plasma Compression Fusion Device: A compact fusion reactor design based on dynamic plasma compression.

Room Temperature Superconductor: Claims superconductivity at ambient temperatures through specific electromagnetic conditions.

These innovations are underpinned by what Pais calls the "Pais Effect" and the concept of the "Super Force."

Salvatore Pais Patents: Superforce

The "Super Force" is proposed by Dr. Pais as the fundamental force of unification, which he identifies as the Planck Force, mathematically expressed as:

$$\text{Super Force} = c^4/G \approx 10^{44} \text{ Newtons}$$

Where:

- c = speed of light in vacuum
- G = gravitational constant

$$\text{All the following} = 1.1472281088\text{E}+44$$

$$Cs^4 Gs$$

$$StCs$$

$$Mps^7 / Mly$$

$$MUCs^2 / RU$$

$$AhKx^7 Rs / Cs$$

$$MpsCs^2 / Lp$$

This extraordinarily large force is suggested to act as the bridge between quantum mechanics and general relativity, uniting the realms of the very small and the very large.

Salvatore Pais Patents: Superforce

II. A Path to Quantum Gravity (QG)?

If you carefully observe Einstein's gravitational field equations (General Relativity (GR)), you note that the stress-energy tensor is coupled to the geometry of curved spacetime by a scalar factor, on the order of (G / c^4) , where G is the universal gravitational constant and c is the speed of light in a given medium.

A simple dimensional analysis shows that the inverse of this coupling scalar constant has the units of energy divided by length, thus as an energy gradient the scalar (c^4 / G) has the units of a Force – we shall call it the Superforce (S_F). Mathematically, GR can be re-written as $G_{uv} \sim [1 / S_F] T_{uv}$, where G_{uv} is the Einstein tensor and T_{uv} is the stress-energy tensor.

Moreover, if you carefully look at the mathematical structure of the Planck Force, you realize that this is the Superforce, and it does not contain \hbar , namely the modified (reduced) Planck constant, therefore it can relate to a quantum phenomenon exhibiting Macroscopic classical behavior, namely a Macroscopic Quantum Phenomenon.

$$S_F \sim m_P c^2 / L_P \sim M_U c^2 / R_U \quad (1)$$

Equation 1 shows that the Superforce equals the Energy gradient for both the Planck scale and the Horizon (Cosmic) scale in that $S_F \sim 10^{44} \sim (10^{53} 10^{17}) / 10^{26}$, where M_U , R_U are the mass and radius of the observable Universe. This fact can not be a mere coincidence and shows that indeed the Superforce acts as the Bridge between General Relativity and Quantum Mechanics, namely the Realms of the very large and that of the very small (QG).

Salvatore Pais Patents: Pais Effect

"Pais Effect": Physical Principles and Mechanisms

Foundational Concept: The "Pais Effect" describes the generation of extremely high electromagnetic fields through the coupling of high-frequency rotation (gyration) and vibration (harmonic oscillations) of electrically charged systems. According to Pais, this effect produces electromagnetic field intensities that can interact strongly with the quantum vacuum energy state.

Under specified conditions (e.g., $\sigma = 50,000$ Coulombs/m², $R = 2$ m, rotation at 30,000 RPM, and vibration frequencies around 10^{18} Hz), Pais claims electromagnetic field intensities on the order of 10^{24} to 10^{28} Watts/m² are achievable.

37. Extraction of potential energy from the Purusha domain.

A comprehensive and extraordinary use can be made in the following way. The potential of the Purusha can be attained from the minute coherent state hidden inside the Purusha by repeated precisely triggered inputs to initiate the primary interactions.

Salvatore Pais Patents: Superforce and Pais Effect

V. Engineering the Superforce ?

Consider the (linearized) relation $[c^2 = 1 / (\mu_0\mu\epsilon_0\epsilon)]$, such that μ_0 and μ are the vacuum and non-vacuum magnetic permeabilities and ϵ_0 and ϵ are the vacuum and non-vacuum (dielectric constant) electric permittivities, respectively; in this case c is the speed of light in a non-vacuum medium (that is μ and ϵ are not equal to 1).

Given the fact that the Superforce can be written as (c^4 / G) we can see that by engineering the electric permittivity and the magnetic permeability of a given medium, we can engineer the Superforce itself. This realization has great potential insofar as affecting the very nature of our reality at the most fundamental level. The military and commercial implications of this fact are unbounded, to say the very least.

Are US Navy Patents A Limited Disclosure?

I. Introduction

<https://arc.aiaa.org/doi/abs/10.2514/6.2017-5343>

The original concept described herein, gives rise to the design of an inertial mass reduction device (IMRD) and materializes into the hybrid aerospace-undersea craft (HAUC). When put in practice, this system can lead to the design of energy generation machinery with power output levels much higher than those currently achievable. The utilization of such high power sources for space power and propulsion generation, as it pertains to reduction in a hybrid craft's inertial mass as a direct result of local vacuum polarization, is an important application of the described theoretical concept.

This concept's governing physics teaches that it may be possible to reduce the inertial mass of a system/object in motion, by applied high energy electromagnetic (EM) fields, achieved by coupling of accelerated high frequency vibration with accelerated spin of electrically charged matter in close proximity to the system/object in question. This original method of accelerated spin and/or accelerated vibration of electrically charged matter would be executed under rapid acceleration transients for maximum effect.

There are four known fundamental forces which control matter and therefore control energy, namely the strong and weak nuclear forces, the electromagnetic force and the gravitational force. In this hierarchy of forces, the electromagnetic force is perfectly positioned to be able to manipulate the other three. A stationary electric charge gives rise to an electric (electrostatic) field, while a moving charge generates both an electric and a magnetic field (hence the electromagnetic field); additionally an accelerating charge induces electromagnetic radiation in the form of transverse waves, namely light. Mathematically as well as physically, electromagnetic field energy flux can be represented as the product of electric field strength and magnetic field strength. Electromagnetic fields act as carriers for both energy and momentum, thus interacting with physical entities at the most fundamental level.

Artificially generated, high energy, electromagnetic fields interact strongly with the vacuum energy state, an aggregate/collective state comprised of the superposition of all quantum fields' fluctuations permeating the spacetime continuum [1]. According to quantum field theory, this strong interaction between the fields is based on the mechanism of transfer of vibrational energy between the fields, further inducing local fluctuations in adjacent quantum fields which permeate spacetime. These fields may or may not be electromagnetic in nature [2]. Matter, energy and spacetime are emergent constructs which arise out of a fundamental framework, the foundational structure that is the vacuum, energy state.

¹ Aerospace Engineer, NAWCAD Air 4.3.5.1, B. 2187 NAS Patuxent River, MD. 20670 - AIAA member

Are US Navy Patents A Limited Disclosure?

BACKGROUND

There are four known fundamental forces which control matter and, therefore, control energy. The four known forces are strong nuclear forces, weak nuclear forces, electromagnetic force, and gravitational force. In this hierarchy of forces, the electromagnetic force is perfectly positioned to be able to manipulate the other three. A stationary electric charge gives rise to an electric (electrostatic) field, while a moving charge generates both an electric and a magnetic field (hence the electromagnetic field). Additionally, an accelerating charge induces electromagnetic radiation in the form of transverse waves, namely light. Mathematically, as well as physically, electromagnetic field intensity can be represented as the product of electric field strength and magnetic field strength. Electromagnetic fields act as carriers for both energy and momentum, thus interacting with physical entities at the most fundamental level.

Artificially generated high energy electromagnetic fields, such as those generated with a high energy electromagnetic field generator (HEEMFG), interact strongly with the vacuum energy state. The vacuum energy state can be described as an aggregate/collective state, comprised of the superposition of all quantum fields' fluctuations permeating the entire fabric of spacetime. High energy interaction with the vacuum energy state can give rise to emergent physical phenomena, such as force and matter fields' unification. According to quantum field theory, this strong interaction between the fields is based on the mechanism of transfer of vibrational energy between the fields. The transfer of vibrational energy further induces local fluctuations in adjacent quantum fields which permeate spacetime (these fields may or may not be electromagnetic in nature). Matter, energy, and spacetime are all emergent constructs which arise out of the fundamental framework that is the vacuum energy state.

Everything that surrounds us, ourselves included, can be described as macroscopic collections of fluctuations, vibrations, and oscillations in quantum mechanical fields. Matter is confined energy, bound within fields, frozen in a quantum of time. Therefore, under certain conditions (such as the coupling of hyper-frequency axial spin with hyper-frequency vibrations of electrically charged systems) the rules and special effects of quantum field behavior also apply to macroscopic physical entities (macroscopic quantum phenomena).

Moreover, the coupling of hyper-frequency gyrational (axial rotation) and hyper-frequency vibrational electrodynamics is conducive to a possible physical breakthrough in the utilization of the macroscopic quantum fluctuations vacuum plasma field (quantum vacuum plasma) as an energy source (or sink), which is an induced physical phenomenon.

The quantum vacuum plasma (QVP) is the electric glue of our plasma universe. The Casimir Effect, the Lamb Shift, and Spontaneous Emission, are specific confirmations of the existence of QVP.

It is important to note that in region(s) where the electromagnetic fields are strongest, the more potent the interactions with the QVP, therefore, the higher the induced energy density of the QVP particles which spring into existence (the Dirac Sea of electrons and positrons). These QVP particles may augment the obtained energy levels of the HEEMFG system, in that energy flux amplification may be induced.

It is possible to reduce the inertial mass and hence the gravitational mass, of a system/object in motion, by an abrupt perturbation of the non-linear background of local spacetime (the local vacuum energy state), equivalent to an accelerated excursion far from thermodynamic equilibrium (analogous with symmetry-breaking induced by abrupt changes of state/phase transitions). The physical mechanism which drives this diminution in inertial mass is based on the negative pressure (hence repulsive gravity) exhibited by the polarized local vacuum energy state (local vacuum polarization being achieved by a coupling of accelerated high frequency vibration with accelerated high frequency axial rotation of an electrically charged system/object) in the close proximity of the system/object in question. In other words, inertial mass reduction can be achieved via manipulation of quantum field fluctuations in the local vacuum energy state, in the immediate proximity of the object/system. Therefore it is possible to reduce a craft's inertia, that is, its resistance to motion/acceleration by polarizing the vacuum in the close proximity of the moving craft.

Polarization of the local vacuum is analogous to manipulation/modification of the local space time topological lattice energy density. As a result, extreme speeds can be achieved.

If we can engineer the structure of the local quantum vacuum state, we can engineer the fabric of our reality at the most fundamental level (thus affecting a physical system's inertial and gravitational properties). This realization would greatly advance the fields of aerospace propulsion and power generation.

Are US Navy Patents A Limited Disclosure?

United States Patent
Pais

(10) Patent No.: **US 10,135,366 B2**

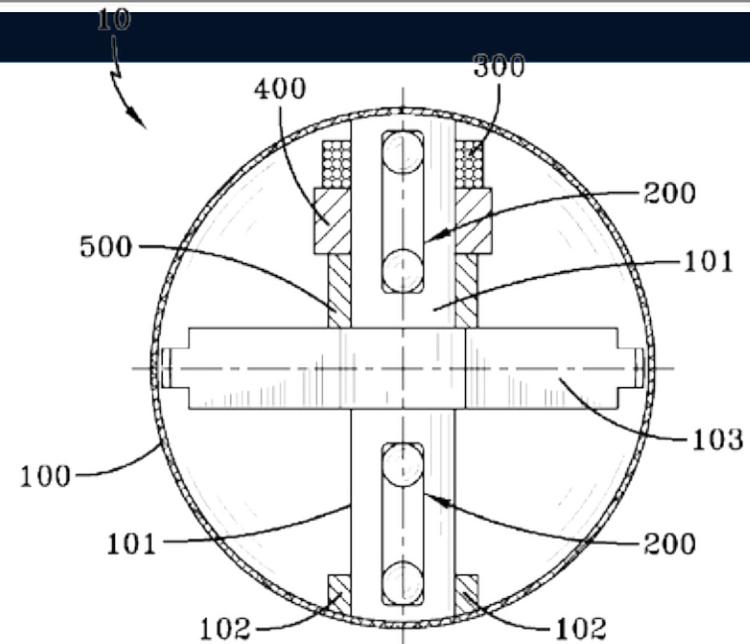
(45) **Date of Patent: Nov. 20, 2018**

ELECTROMAGNETIC FIELD GENERATOR AND METHOD TO GENERATE AN ELECTROMAGNETIC FIELD

(57) **ABSTRACT**

The electromagnetic field generator includes a shell, an electrostatic generator, a power plant, a thermoelectric generator, and an electric motor. The shell has embedded polycrystalline ferroelectric ceramic material which is polarized such that the ceramic material exhibits strong Piezoelectric Effect properties thus inducing high frequency vibrations. The shell may be further doped with radioactive elements which under high frequency vibrations induce gamma ray emission. The electrostatic generator is for charging up the shell and is disposed within the shell. The power plant is to generate thermal power, and is disposed within the sphere. The thermoelectric generator is to convert the thermal power generated by the power plant to electrical energy. The electric motor powered by the electrical energy generated by the thermoelectric generator, and supplies input voltage such that the shell spins at high angular speeds, vibrates at high frequencies, and generates an electromagnetic field.

Artificially generated high energy electromagnetic fields interact strongly with the Vacuum Energy Field (an aggregate state composed of the superposition of all quantum fields' fluctuations permeating the fabric of Spacetime),



Moreover, simultaneous coupling of hyper-frequency gyration (axial rotation) and hyper-frequency vibrational electrostatics (as used in the inventive concept herein disclosed) is conducive to a possible physical breakthrough

(Force and Matter Fields Unification is feasible with the concept at hand) in the utilization of the Quantum Vacuum Plasma (part of the Vacuum Energy Field) as an energy source (or sink), an induced physical phenomenon, for which the technology readiness level has been considerably advanced by a team of research engineers from NASA JSC. Their research involves the use of high Radio frequency/Microwave driven resonant cavity Q-thruster technology within the context of Quantum Vacuum Plasma physics.

Are US Navy Patents A Limited Disclosure?

United States Patent
Pais

(10) Patent No.: **US 10,144,532 B2**

(45) **Date of Patent: Dec. 4, 2018**

CRAFT USING AN INERTIAL MASS REDUCTION DEVICE

ABSTRACT

A craft using an inertial mass reduction device comprises of an inner resonant cavity wall , an outer resonant cavity , and microwave emitters . The electrically charged outer resonant cavity wall and the electrically insulated inner resonant cavity wall form a resonant cavity . The microwave emitters create high frequency electromagnetic waves throughout the resonant cavity causing the resonant cavity to vibrate in an accelerated mode and create a local polarized vacuum outside the outer resonant cavity wall .

If we can engineer the structure of the local quantum vacuum state, we can engineer the fabric of our reality at the most fundamental level (thus affecting a physical system's inertial and gravitational properties). This realization would greatly advance the fields of aerospace propulsion and power generation.

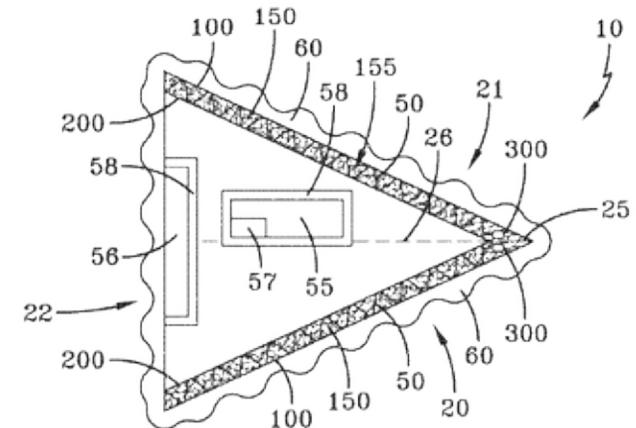


FIG-1

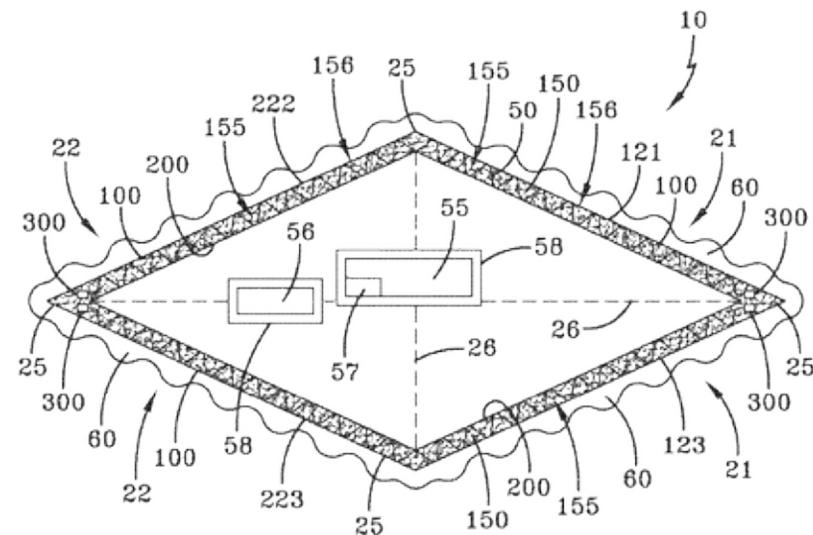


FIG-2

Are US Navy Patents A Limited Disclosure?

United States Patent

Pais

(10) Patent No.: **US 10,322,827 B2**

(45) **Date of Patent: Jun. 18, 2019**

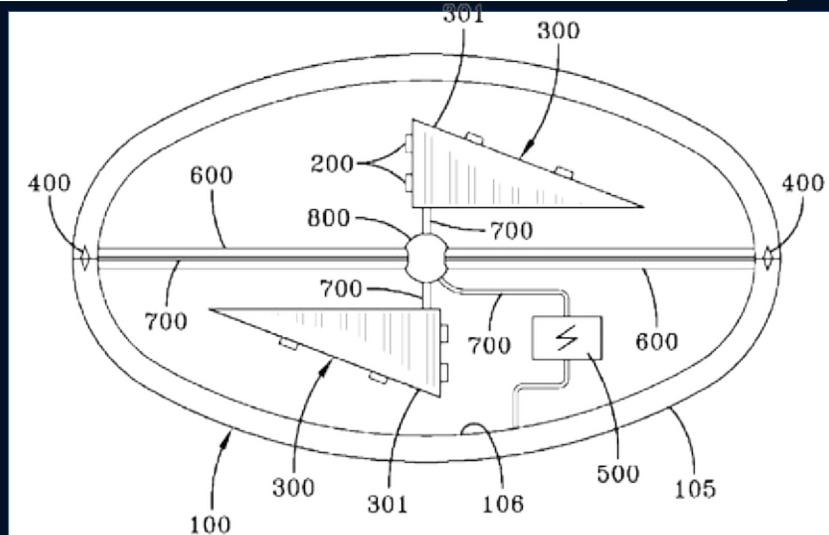
HIGH FREQUENCY GRAVITATIONAL WAVE GENERATOR

(57)

ABSTRACT

A high frequency gravitational wave generator including a gas filled shell with an outer shell surface, microwave emitters, sound generators, and acoustic vibration resonant gas-filled cavities. The outer shell surface is electrically charged and vibrated by the microwave emitters to generate a first electromagnetic field. The acoustic vibration resonant gas-filled cavities each have a cavity surface that can be electrically charged and vibrated by acoustic energy from the sound generators such that a second electromagnetic field is generated. The two acoustic vibration resonant gas-filled cavities are able to counter spin relative to each other to provide stability, and propagating gravitational field fluctuations are generated when the second electromagnetic field propagates through the first electromagnetic field.

Electromagnetic (EM) radiation (caused by accelerating electrically charged objects) when passed through a static magnetic field (of constant magnetic flux density) gives rise to gravitational waves at the same frequency as the EM radiation. This phenomenon is known as the Gertsenshtein Effect and can be utilized for a variety of applications ranging from advanced field propulsion (space drive), to communication through solid objects, as well as asteroid (planetoid) disruption and disintegration (when coupled with high energy electromagnetic field fluctuations).



The generation of high power high frequency gravitational waves (HFGWs) is just one application of the fundamental innovative principle behind this work, namely the enablement of macroscopic quantum coherence induced by controlled motion of charged matter, subjected to rapid acceleration transients. This principle can give rise to Emergent Physical Phenomena, such as, but not limited, to Superconductivity.

Artificially generated high energy electromagnetic (EM) fields can interact strongly with the local Vacuum energy state (an aggregate/collective state comprised of the superposition of all fluctuations in the collective quantum fields permeating a given spacetime locality). According to quantum field theory, this strong interaction between the fields is based on the mechanism of transfer of vibrational energy

Are US Navy Patents A Limited Disclosure?

United States

Patent Application Publication

PAIS

(10) Pub. No.: US 2019/0295733 A1

(43) Pub. Date: **Sep. 26, 2019**

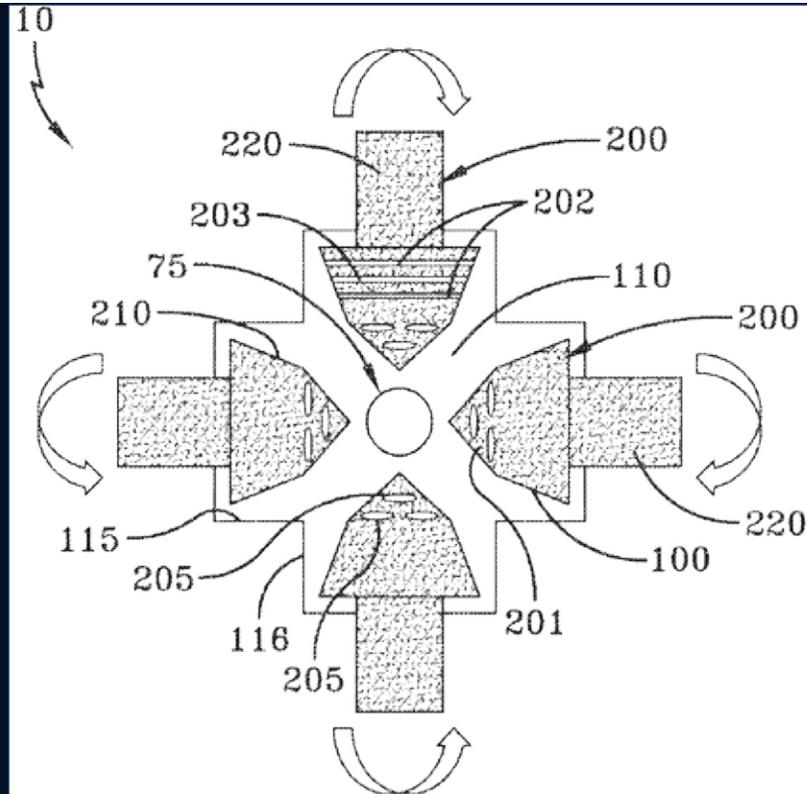
PLASMA COMPRESSION FUSION DEVICE

(57)

ABSTRACT

A plasma compression fusion device which includes a hollow duct and at least one pair of opposing counter-spinning dynamic fusors. The hollow duct includes a vacuum chamber disposed within the hollow duct. Each dynamic fusor has a plurality of orifices and an outer surface which is electrically charged. In combination, the pair(s) of dynamic fusors create a concentrated magnetic energy flux and electromagnetic radiation within the vacuum chamber, whereby the concentrated magnetic energy flux compresses a mixture of gases that are injected through the orifices to the vacuum chamber such that a plasma core is created, and the to electromagnetic radiation heats the plasma core, while produced magnetic fields confine the plasma core between the dynamic fusors, such that when an additional mixture of gases is introduced into the plasma core through the orifices, an energy gain is created.

[0005] The present invention is directed to a plasma compression fusion device which includes a hollow duct and at least one pair of opposing counter-spinning dynamic fusors. The hollow duct includes a vacuum chamber disposed within the hollow duct. Each dynamic fusor has a plurality of orifices and an outer surface which is electrically charged. In combination, the pair(s) of dynamic fusors create a concentrated magnetic energy flux and electromagnetic radiation within the vacuum chamber, whereby the



concentrated magnetic energy flux compresses a mixture of gases that are injected through the orifices to the vacuum chamber such that a plasma core is created, and the electromagnetic radiation heats the plasma core, while produced magnetic fields confine the plasma core between the dynamic fusors, such that when an additional mixture of gases is introduced into the plasma core through the orifices, an energy gain is created.

Select Power Generation & Propulsion Inventions

- G. Srinivasan's Self-Charging Battery
- G. Srinivasan's Magneto-Gravitic Perpetual Oscillator Motor
- Daniel Cook Self-Powered Battery using Induction Coils 1871
- John Keely Etheric Generator Late 1880s
- John Keely Airship Late 1880s
- Tesla Fuelless Generator 1889
- Tesla '31 Pierce Arrow Car Electrification 1897
- Self-powering Receiver super regen circuit invented 1914
- Carlos Benitez Self-Powered Generator 1918
- Langmuir (GE) Atomic Hydrogen Welder 1920s
- Walter Russell Dynamo Generator 1930s-50s
- Otis Carr (Tesla protégé) Utron self-powered battery and OTC-X1 Spacecraft 1957
- Ed Gray Charge Pump 1987
- E-CAT NGU Power

Think Axiomatically

“Overunity generation of power is only possible if the reaction time to initiate the next cycle is eliminated. Similarly perpetual oscillation can be possible if the time cycle to transfer the reactive output before the start of the next cycle is eliminated. The delay leads to the necessity of increasing the rate of transfer of the force needed to keep the system operating. A time lag keeps the initiating cycle following the sequence of action whereas it should be ahead. The conditions needed to sustain perpetual action or produce incremental power can be met only by using the systems internal energy to short circuit cyclic time delay. Feeding forward needs a system of control that can act faster than the state of the system that is in operation. Such a requirement needs additional power. Even if the power is available from the system itself it must be able to transfer it ahead of the time to act. Hence a means to draw from a system’s own internal energy is necessary for overunity or perpetual motion.

A pendulum or swing is kept in perpetual motion by changing the state of the driving force or momentum in time. A child on a swing can keep the oscillations going continuously if it moves its body in time to initiate the next cycle at an accelerated level. A pendulum clock does the same thing by triggering at the right moment but with an additional energy input to overcome the loss due to resistance. An internal combustion engine varies output with the same fuel input if the ignition system is advanced or retarded thereby proving the point of timing conditioning output for the same input.”

G. Srinivasan, “Secret of

Sankhya” Part 2, pg 385



Sankhya Explains Self-Charging Battery

When a current is started in a circuit two actions can be identified. In a battery the electric charge resident in the cell structure of the plates immersed in an electrolyte, is assumed to be static as long as the terminals are not connected. The internal polarisation of the cells are kept in balance by an interactive oscillatory activity where the nett current is extremely small. The battery will run down eventually and is termed as leakage. On being connected across the two terminals the charge transmigrates along the connection as an interacting wave with unequal forward and backward displacements.

Analysing the very first interaction that initiates the transmigration of a charge at a rate C, due to the difference in the potential between the two terminals, the rate rises to C^{1-x} through self similar interaction. The interval is its reciprocal where the difference between two interactions disappear and the discrete or quantum field becomes a continuous field.

The rise of C^{1-x} can be considered as an incremental ratio of C to C^x. It is instantaneous (because of 1/C^{1-x}) and must be expressed as a log ratio as shown.

$$\log\left(\frac{C}{C^x}\right) = 3.236068$$

$$\log\left(\frac{C^x}{C^{1-x}}\right) = 2$$

Therefore an electric current will be due to the incremental value plus the normal resonant rate of C as :

$$\frac{\left(\log\left(\frac{C}{C^x}\right) - \log\left(\frac{C^x}{C^{1-x}}\right) + 1\right)}{C} = 8.79573 \cdot 10^{18}$$

$$\frac{\left(\log\left(\frac{C}{C^x}\right) - \log\left(\frac{C^x}{C^{1-x}}\right) + 1\right)^{-1}}{\sqrt{2}} = 1.607841 \cdot 10^{-19}$$

The averaged reciprocal of the above figure is the measured value of a current in coulombs. This is the interactive logic the battery too follows in transmigrating a current.

When the first parameter in F1 starts, the immediate reaction F2, (within a cycle), opposes F1 and its logarithmic difference gets added to the rate C as long as the potential difference across the conductor exists. The value F4 constitutes one ampere per second if one volt transmigrates across one ohm resistance.

The motive force for the current is in the Purusha or blackhole domain in space, identified earlier. Repeating the formula for convenience as F5 shows it is the winding numbers.

$$\frac{(Mps)}{(PM \cdot Px)} = 6.282665 \cdot 10^{17}$$

The F5 value is the constant source of power in the substratum. If the rate of F3 synchronises into resonance with F5 the oscillatory state can be perpetually maintained. The rate of oscillation to maintain its internal charge is nn = 9.939535 and to expand the radial k must be raised by nn, but kⁿⁿ = nn. This factor is unusual for it synchronises displacement and cyclic time to maintain resonance with the reciprocal value of charge.

$$\frac{(Mpsnn)}{(PM \cdot Px)} = 6.244677 \cdot 10^{18}$$

$$\frac{\left[\left(\log\left(\frac{C}{C^x}\right) + 1\right) - \log\left(\frac{C^x}{C^{1-x}}\right)\right]^{-1}}{\left(\frac{PM \cdot Px}{Mpsnn}\right)} \cdot \frac{C}{C^x} \cdot x = 536.48355$$

The expansion rate of C^{1-x} times the cyclic displacement ratio x gives 536.48 cycles per second if C is the frequency at a metre wavelength in 1.010845 secs. If the battery current is switched on and off sharply, in the circuit configuration shown below, the batteries remain charged despite having a load that consumes considerable power. The battery acts as a large capacitor with a very small resistance, that generates a large pulsing current. The efficiency of transformation of the pulsing current is directly proportional to the sharpness of the switching off process.

The green device represents the pulse transformer and the red unit the rotary high amperage sharp cut off switch operating at 536 cps. The 4 numbers 12 volt batteries are cyclically switched into a series connection of 24 volts while the remaining two remain in parallel to maintain 12 volts. In the next cycle the series parallel state is changed over. In effect the series 24 volt charges the 12 volt parallel units within 1/536 of a cycle and immediately change over to discharge across the other configuration. At resonance the batteries act as mere capacitors while the space field around the conductors act is inductive devices to provide the pulsing current. The transforming ratio of the secondary can be designed to match the load plus losses of the circuit thus imposing no power-load on the batteries.

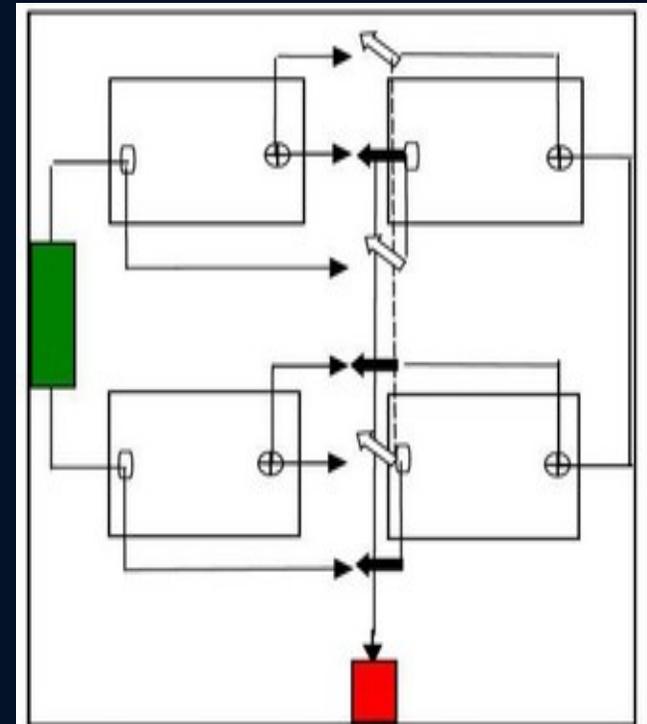
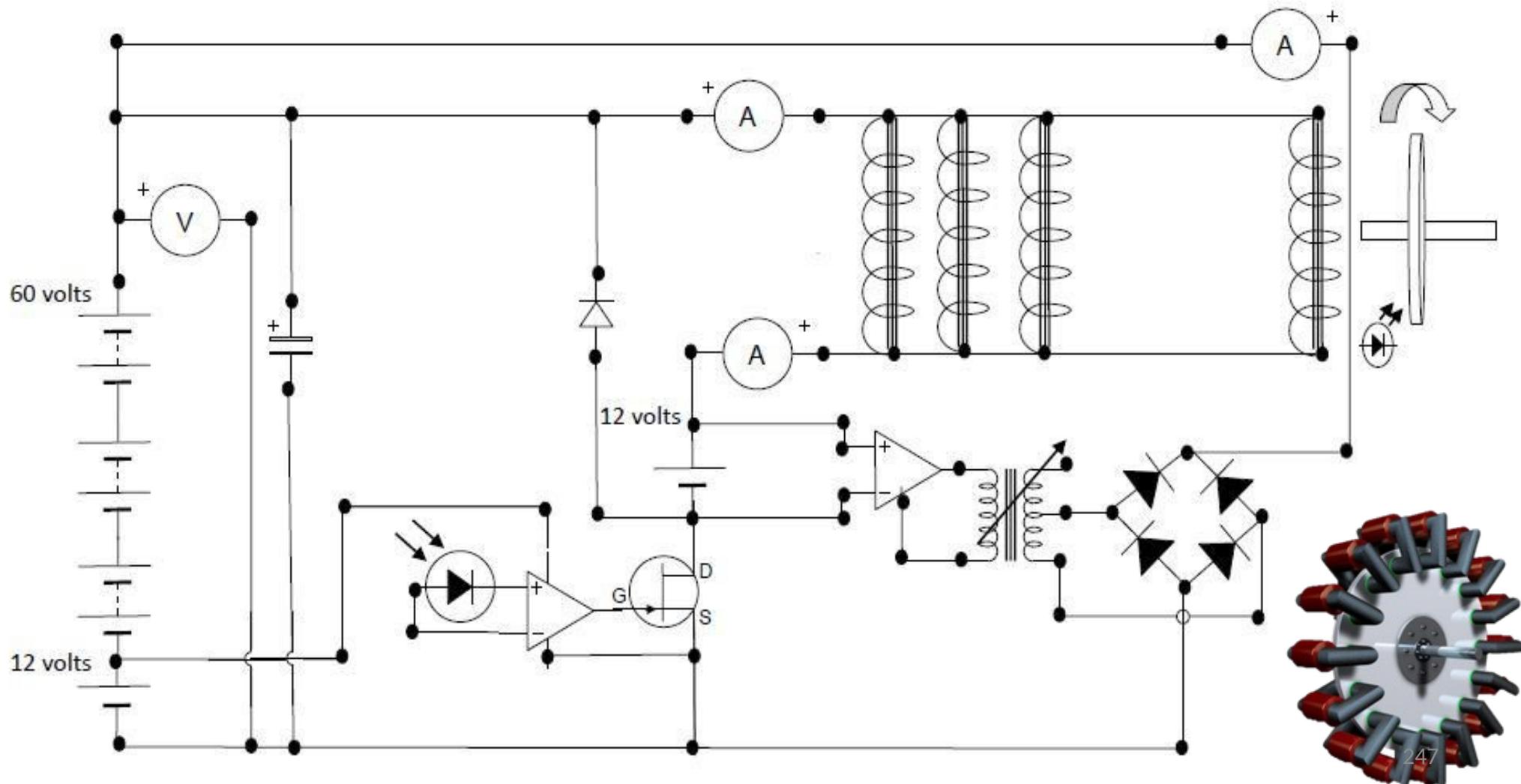


Fig: The Selfcharging Battery System.

Magneto-Gravitic perpetual oscillatory motor

NdFeb magnets plus coils around cores form 20 sets (only 4 shown). Five sets of 12 volt battery is charged as load. One 12 volt battery charged only by inductive kickback pulse, drives an inverter at 230 VAC & a small rotary transformer sets voltage at 60 to provide 12 volts for optic trigger plus 48 volts to charging bank. An IGBT triggers coils for one nano second to reverse coil magnetic polarity. Slotted disc triggers optic switch to drive IGBT. Rotor axle pulley drives external alternator/generator to drive external loads at designed RPM. It runs on PHO principle, perpetually by its self generated potential. It exchanges simultaneous potential with sequential harmonics in each cycle.



Daniel McFarland Cook Electro-Magnetic Battery

- Over a hundred and fifty years ago Daniel McFarland Cook of Mansfield, Ohio patented an "Electro-Magnetic Battery" that he stated "produces a constant current without the aid of a galvanic battery".
- His patent number 119,825 was issued on October 10, 1871.
- Did he really make something that continuously produced electricity? This was eight years before Edison invented the light bulb. Did he actually build this, or was it just an idea that in reality does not work?

The machine was rudely constructed, for Mr. Cook made it all himself with a few old tools that had done too much service already. Parts of it were made of wood, and the whole was not put together in a very artistic manner, but it demonstrated his discoveries, and that was his only purpose in its construction. This model weighs three hundred pounds, and Mr. Cook said by the hand-power of one man could be generated current sufficient to light up from thirty to fifty sixteen candle-power incandescent lamps.

His assistant having arrived, who by the way is a young lady of handsome appearance, the work of demonstration began. I tested the current in several ways and found it very powerful. Having made electricity somewhat of a study, I was surprised at the simplicity of many of the principles. The manner in which he expects to get the results heretofore mentioned is theoretically correct, and there is no mechanical difficulty which he has not already overcome.

<http://potentialtec.com/TheMcCooktribuneMcCookNebSeptember091886.pdf>

<https://richlandcountyhistory.com/2019/06/22/dm-cooks-enduring-energy/>

https://www.reddit.com/r/Physics_AWT/comments/5os51h/mansfields_dm_cook_and_his_enduring_energy/

Daniel McFarland Cook Electro-Magnetic Battery

IS IT PERPETUAL MOTION?

The Invention of an Ohio Man
Who Expects to Revolutionize the World.

An Electrical Machine Which He Claims
Will Run Until It Wears
Itself Out.

Mystery of Force.

For half a century, writes a Mansfield, O., correspondent of *The Cincinnati Commercial Gazette*, D. M. Cook has been a familiar figure in Richland county, and has been marked for his singular inventive genius. In 1850, when a young man, he became impressed with the wonders of electrical science, and then became enamored of its study. He began to delve into the unknown of this hidden force, and for thirty-six years in alternately brilliant and adverse circumstances has trodden over this field till there is no nook or corner with which he is unacquainted. He commenced his studies at a time when little was known of electricity,

But no matter whether his claims seem wonderful and almost beyond belief, they are worthy of credence, for he must be placed in the list of successful inventors. In 1852 he conceived and constructed a device that revolutionized the manufacture of sorghum sirup. The device was called an evaporator, and was used to make sirup from sorghum. His principle was to run the juice across a heated surface in zig-zag rows till the juice would run out as a pure sirup ready for the table, the water being evaporated in its passage, and the impurities being thrown to one side. On this he received letters patent in 1858, and in 1859 a company began the manufacture of the same. Thousands and thousand were disposed of, varying in price from \$25 to \$35, over \$4,000,000 being realized, on which the inventor got a handsome royalty. Through this he derived quite a fortune, although a portion of it he spent in improving and introducing the device. Even to this day a firm in Cincinnati is engaged in the manufacture of this same evaporator, from which the members of the firm made themselves rich. Cook, however, several years ago lost his right to the royalty by some means or other, and has not been drawing anything from that source since.

Last November Mr. Cook came to me and said: "I have at last met with success. I have found the principle that I have been hunting for so long. I can now start a dynamo to going, and it will never stop except by the wearing away of its own parts. Not only will it run itself by its own current, but also produce power enough, according to the size of the engine, to run any machine in the world."

"Perpetual motion," I suggested.

"More than that," he replied. "It is perpetual motion with only 10 per cent of the force used, leaving 90 per cent for power to be utilized as is desired. Not only that, but more; one helix of my dynamo will produce light in proportion to its size while the other is making the current that runs the engine. It will serve to heat your house, so that instead of having stoves and grates, little wires will run through your rooms, and on your parlor table will be a highly burnished apparatus containing wires, etc., which will keep the temperature of the house at whatever point you wish."

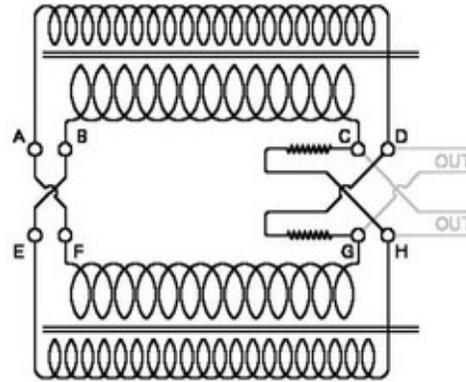
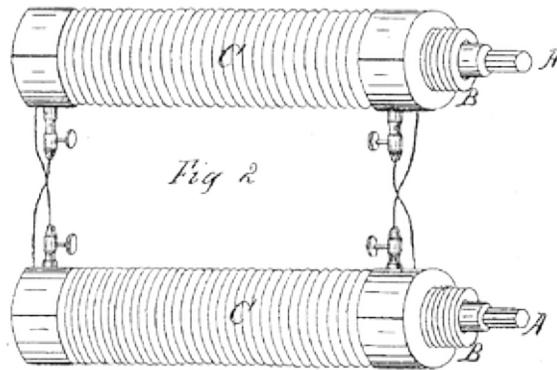
"What will be the cost to run it?"

"Nothing. As I said, start it, and it will go. Heat, power, and light produced by one machine, for absolutely nothing."

DANIEL McFARLAND COOK.
Improvement in Induction Coils.

No. 119,825. The "Original" Self-charging Battery?

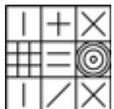
Patented Oct. 10, 1871.



A ribbon spiral may be substituted for the secondary helix, say of three, six, twelve, or twenty-four inches in width and of any convenient length, but always of sufficient length to raise the tension of its terminal current to a degree necessary to reproduce itself by its action on the primary helix. In the use of compound helices it is important that the secondary coil should be wound on in the same direction as the primary coil, and that the secondary poles or wires should be connected to the opposite poles of the primary coil B. The action will then be as follows: The terminal secondary current of the secondary helix C will circulate through the opposite primary coil B, while at the same instant a terminal secondary current from the primary helix B will be developed and circulate through the opposite secondary helix C, both currents flowing in the same direction in the opposite helices B C, and produce a combined magnetic action upon the iron bar A in the center; the opposing initial secondary currents of the two helices B C being overpowered do not manifest themselves in the main circuit D of the battery, there being eight distinct currents developed in the action of one entire circuit of the two pairs of helices, two terminal and two initial secondary currents to each pair of helices, the four initial secondaries constantly opposing the circulation of the four terminal secondary currents; but the initial secondaries being of much lower tension and less in quantity than the terminal secondary are consumed or taken up by the terminal, leaving a sufficient surplus terminal to overcome the resistance of the primary wire and charge the bar A to a degree necessary to reproduce itself in an opposite secondary coil. By this means a constant current is kept up in the several helices. These

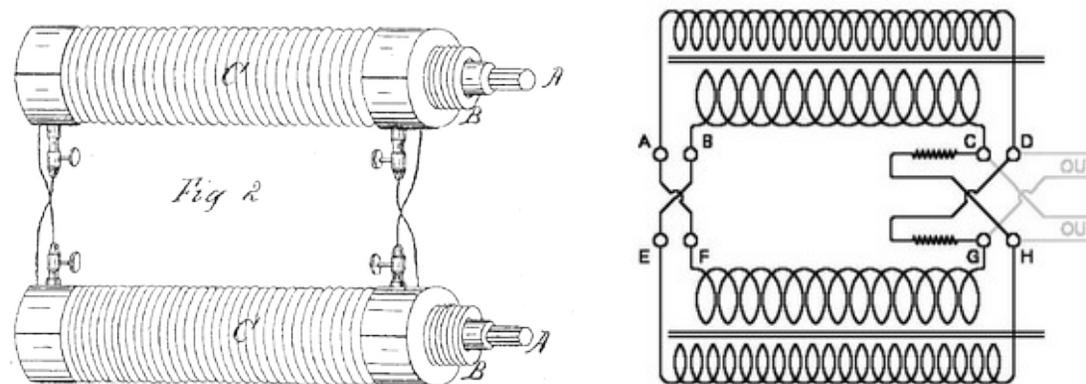
My invention relates to the combination of two or more simple or compound helices and iron cores or magnets in such a manner as to produce a constant electric current without the aid of a galvanic battery.

length of the wire. In the use of the compound helices it is preferable, in some cases, to use a small wire, say No. 30, or even less, for a primary helix, and No. 16, or even larger, for a secondary helix. By this combination the initial secondary current of the primary helix being very small in quantity in comparison to the terminal secondary current of the secondary helix offers but little resistance to the terminal secondary, hence a quicker action is secured; or the primary helix may be made of uninsulated wire coiled into a solid helix, being insulated only between the coils, in which case there is but little or no opposing initial secondary current. Helices alone with large quantities of wire will produce similar results.



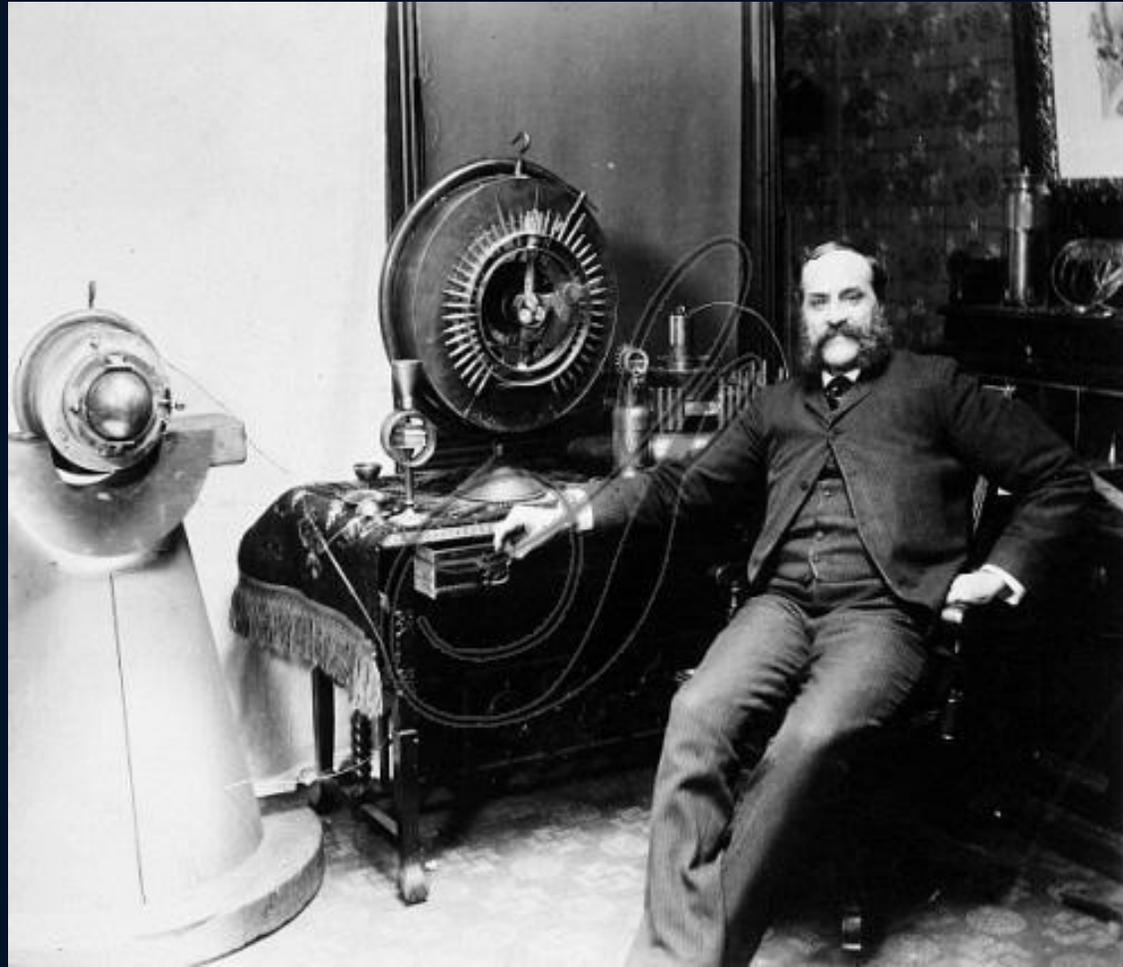
Daniel McFarland Cook Electro-Magnetic Battery

- “My invention relates to the combination of two or more simple or compound helices and iron cores or magnets in such a manner as to produce a constant electric current without the aid of a galvanic battery.”
- “there being eight distinct currents developed in the action of one entire circuit of the two pairs of helices, two terminal and two initial secondary currents to each pair of helices, the four initial secondaries constantly opposing the circulation of the four terminal secondary currents; but the initial secondaries being of much lower tension and less in quantity than the terminal secondary are consumed or taken up by the terminal, leaving a sufficient surplus terminal to overcome the resistance of the primary wire and charge the bar A to a degree necessary to reproduce itself in an opposite secondary coil. By this means a constant current is kept up in the several helices.”



John Keely Etheric Generator

circa 1874



In 1872, Keely invited scientists to attend a demonstration at his laboratory at 1422 North Twentieth Street Philadelphia, of a machine which he asserted was motivated by a new and hitherto unknown force. Keely announced that he had discovered a principle for power production based on the musical vibrations of tuning forks and that music could resonate with atoms or with the aether. .

John Keely Etheric Generator

circa 1870s

- On November 10, 1874, Keely gave a demonstration of an "etheric generator" to a small group of people in Philadelphia. Keely blew into a nozzle for half a minute, then poured five gallons of tap water into the same nozzle. After some adjustments a pressure gauge indicated pressures of 10,000 psi which Keely said was evidence that the water had been disintegrated and a mysterious vapor had been liberated in the generator, capable of powering machinery. In subsequent demonstrations he kept changing the terminology he used, to "vibratory-generator" to a "hydro-pneumatic-pulsating-vacu-engine" to "quadruple negative harmonics".
- The New York Times reported in June 1875 that Keely's new motive power was generated from cold water and air and evolved into a vapor "more powerful than steam, and considerably more economical".
- Keely said that the discovery of this new energy source was accidental. He said that the apparatus by which it was generated was called a "generator" or "multiplier", from where it was then passed into a "receiver" and from there to the cylinders of a steam engine. The "generator" was reported as being about 3 ft (0.91 m), made of Austrian gunmetal in one piece, and holding about 10 or 12 gallons of water. Its inside was made up of cylindrical chambers connected by pipes and fitted with stopcocks and valves. The "receiver" or "reservoir" was about 40 in (1,000 mm) long by 6 in (150 mm) in diameter and connected to the "generator" by a 1 in (25 mm) diameter pipe. Keely claimed that his apparatus would generate his "vapor" from water solely by mechanical means without using any chemicals and claimed to be able to produce 2,000 psi in 5 seconds.

John Keely Vaporic Gun and Related Etheric Theory

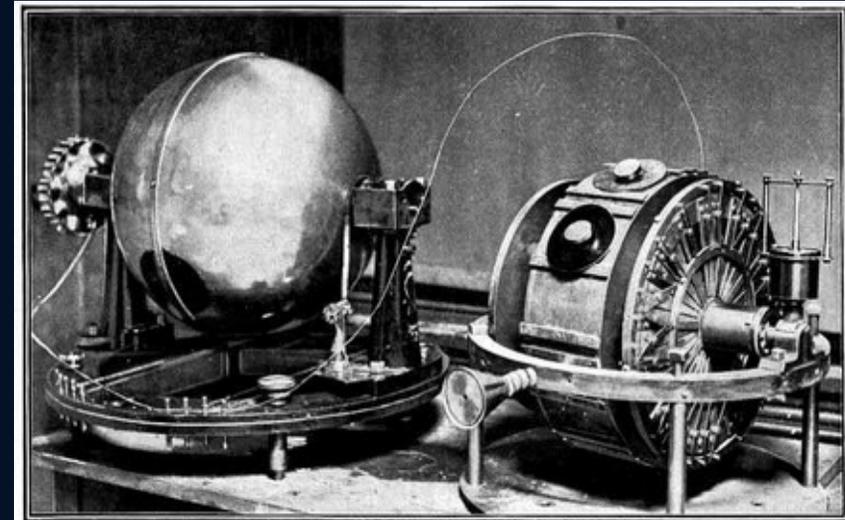
circa 1880s

- In 1884, following the demonstration of his "Vaporic gun"
 - Stripping the process of all technical terms, it is simply this: I take water and air, two mediums of different specific gravity, and produces from them by generation an effect under vibrations that liberates from the air and water an inter atomic ether. The energy of this ether is boundless and can hardly be comprehended. The specific gravity of the ether is about four times lighter than that of hydrogen gas, the lightest gas so far discovered. — New York Times, 22 September 1884
 - It is an elaboration of interatomic ether by vibration. The atomic ether vibrates all around the molecules of matter. There is a magnetic force attached to it at the same time, and it assimilates with the molecular atomic aggregations - that is, assimilates with a certain attractive force that it is hard to tell what it is. I call it a vibratory negative. It don't act like a magnet drawing metals toward it. There is a certain magnetic effect about it that causes it to adhere by vibratory rotation to different forms of matter - that is the molecular, atomic, etheric, and ether-etheric. The impulse is given by metallic impulses, the rotary power that is formed by etheric vibration - that is the force that holds it in position. — New York Times, 7 June 1885

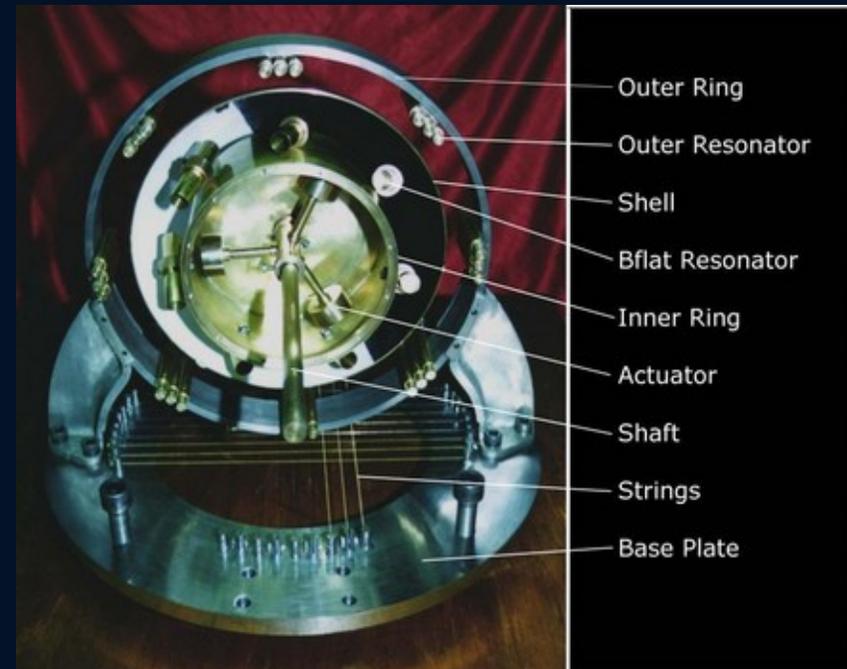
John Keely Dynasphere & Globe Motor

circa 1890s

"All hollow spheres, of certain diameters, represent, as per diameters, and their volumes of molecular mass, pure, unadulterated, sympathetic resonance towards the enharmonic and diatonic thirds of any, and in fact all, concordant sounds. In tubes it is adversely different, requiring a definite number of them so graduated as to represent a conflict by thirds, sixths and ninths, as towards the harmonic scale. When the conditions are established, the acoustic result of this combination, when focalized, represents concordant harmony, as between the chord mass of the instrument to be operated and the chord mass of the tubes of resonance. Therefore the shortest way towards establishing pure concordance, between any number of resonating mediums, is by the position that Nature herself assumes in her multitudinous arrangements of the varied forms and volumes of matter - the spherical. The great difficulty to overcome, in order to get a revolution of the same sphere, exists in equating the interior adjuncts of same. In other words, the differentiation induced must be so equated as to harmonize and make their conditions purely concordant to the molecular mass of the sphere. Example: Suppose the chord of the sphere mass represents B flat, or any other chord, and the internal adjuncts by displacement of atmospheric volume differentiates the volume one-twentieth, this displacement in the shell's atmospheric volume would represent an antagonistic twentieth against the shell's mass concordance, to equate which it would be necessary to so graduate the shell's internal adjuncts as to get at the same chord; an octave or any number of octaves that comes nearest to the concordance of the shell's atmospheric volume. No intermediates between the octaves would ever reach sympathetic union.



GLOBE MOTOR AND PROVISIONAL ENGINE.



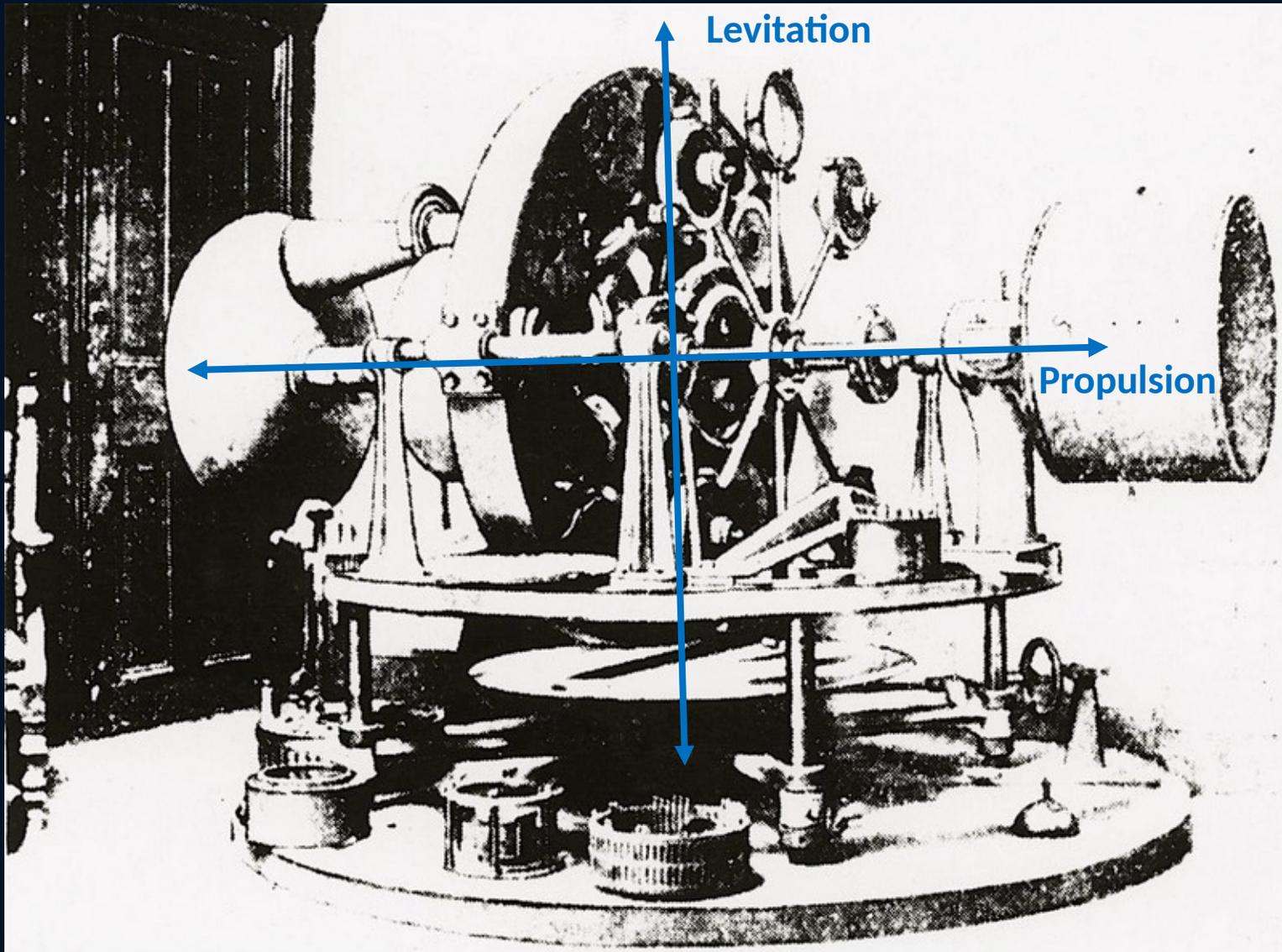
John Keely Air-Ship Motor

circa 1890s

<https://svpwiki.com/Scientific-Basis-and-Build-of-Music>

Recall John Keely's Air-Ship Motor: Levitation & Propulsion via Harmonics

circa 1890



John Keely Air-Ship Motor

circa 1890s

The space which the propeller of the **air-ship** occupies in Keely's laboratory comes within a radius of six feet square. A small space for so powerful a medium - distributing over one thousand horse-power, as tested by experiment.

It consists of more than two thousand pieces, the principal parts of which are:

1. Positive graduating Chladna; guiding by polar action toward the north and reversing by depolar action.
2. Sympathetic polar negative transmitter; for operating and controlling the action of the machinery in producing polar and depolar power: liberating the latent sympathetic power in twenty-seven sensitized discs.
3. Polar and depolar intermittent accumulator, carrying eight focalizing discs for receiving and distributing the sympathetic polar negative flow. This device takes the energy sympathetically from the polar negative stream on the same order that a dynamo registers electricity from the earth to be distributed and redistributed: running the machine sympathetically.
4. Positive ring suspended on a small shaft with three points, the object of which is to preserve the integrity of the neutral center of the machine. (see Appendix I)
5. Two resonating drums: one positive, one negative, which multiply the intensity of the sympathetic flow.
6. Twenty-seven depolar triple groupings, nine in each grouping, consisting of three vitalized discs with resonators. These reply sympathetically to polar and depolar action.
7. Large polar ring. This ring is associated with the central resonators by nine resonating polar discs placed at equal distances. This is the medium for distributing the polar flow.
8. Small negative ring, which is the governor of the propeller, associated with a polar bar that oscillates from the polar field to the depolar field, somewhat on the order of a magnetic needle, governing the action of the machine to any given number of revolutions. The sympathetic rotation that exists in the resonating centre of this ring holds the neutral centre in subservience to celestial radiation, whereby a certain order of sympathetic disturbances gives the sympathetic radiation the requisite power to draw it to itself, accomplishing what is called atmospheric suspension on the same principle as that of sympathetic suspension

John Keely Air-Ship Motor

circa 1890s

John W. Keely, discoverer of Sympathetic Vibratory Physics, found a means of negating the effect of gravity as well as developing a form of propulsion.

- From 1888 to 1893, Keely worked on developing his system of "Aerial Navigation." The first successful test was in 1893 which led the way to the construction of an **aerial craft**.
- In 1896, Mr. Keely had so perfected his system that he arranged to give a demonstration of the **aerial craft** to the United States War Department. In attendance at the demonstration were a number of invited members of the press.
- Descriptions of the **craft** state that it was a circular platform roughly 6 feet in diameter. On this platform was mounted a small stool set before a keyboard. The keyboard was attached to numerous tuned resonance plates and vibratory mechanisms.

Does the following sentence reference an additional **air-ship** made by Keely and sold to a "California gentleman"? Would this time period (6/7/1885) relate to early sightings of mysterious flying craft in California?

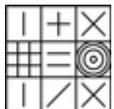
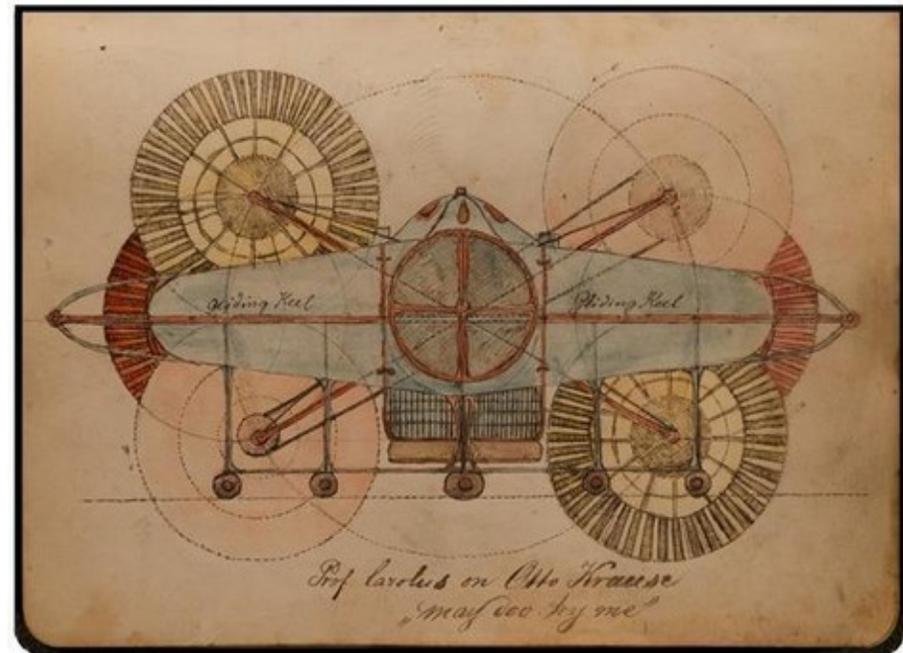
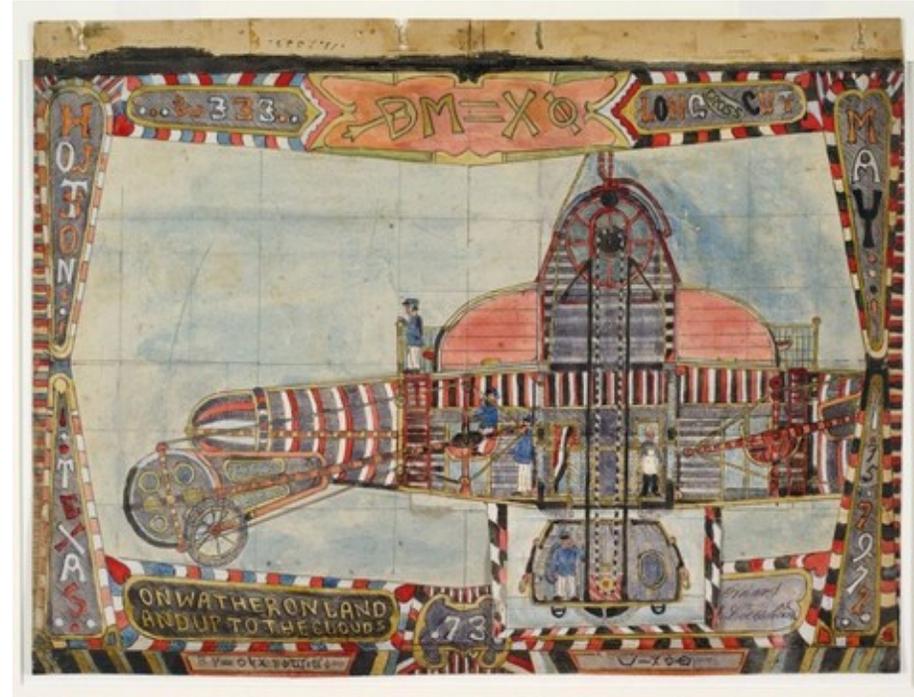
- "Keely said the inclosure contained a secret device he had invented for a California gentleman to lift heavy weights." [Keelys Red Letter Day]
- "In demonstrating the overcoming of gravity, Keely used an **air-ship** model weighing about eight pounds. When the differential wire of silver and platinum (Bixar) was attached, thereby establishing communication with the sympathetic transmitter, it rose, descended or remained stationery midway in the air, floating as gently as thistledown on the air." [MECHANICAL INVENTIONS AND INSTRUMENTS]
- "Each disc of the polar and depolar groupings in the propeller of the **air-ship** contains seven pints of hydrogen. In preparing these discs, the hydrogen is submitted to a triple order of vibration. [Newton of the Mind]

Sonora Aero Club Flying Machines circa 1850s ... the original SSP?

The legacy of the Charles A.A. Dellschau drawings is as fascinating as the artwork itself. In the mid-1800s Germany was in the throes of political turmoil due to movements that arose from parties seeking to unite the individual German states into one country. When the King of Prussia rejected the offer to rule over the united German states a revolution resulted. In the midst of this turmoil Dellschau immigrated to Houston, Texas in 1853, perhaps to escape the political conflicts. Although we do not have information on his political involvements in Prussia, it is likely that he was involved with the demonstrations and revolutions of 1848. Many of the revolutionists from the German states, the Forty-Eighters, immigrated to the United States, many of whom entered through the port of entry in Galveston, Texas.

He began a compilation of illustrations that were supposed renderings of actual airship schematics produced by a secret society club known as the Sonora Aero Club. According to Dellschau these illustrations portrayed actual airships, known as Aeros, which were tested in the deserts of Sonora, California during the mid-19th century— the time of the California Gold Rush. **The secret to the success of the Aeros was the NB Gas formula that one of the members had concocted.** Each member designed their own Aero. Dellschau, due to his draftsmanship, was accepted into the club to act as scribe for their designs.

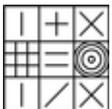
Interestingly, the drafts that he provided of the Sonora Aero Club were not drafted during the club's heydays 1854 - 1858, but decades latter in 1898, and twenty-three years thereafter. If the Sonora Aero Club existed were there ever original drafts? They would not have accepted Dellschau to just draft the designs forty years later. It is remarkable that if this Club existed that Dellschau had the memory to recall the mechanics of each Aero. And considering that over the course of twenty-three years he illustrated thousands of Aero depictions it is more reasonable that this great work was a work of great science fiction.



Sonora Aero Club Flying Machines circa 1850s ... the original SSP?

If you have read my works, specifically *Empire of the Wheel 2: Friends From Sonora* and *Origin: The Nineteenth Century Emergence of the 20th Century Breakaway Civilizations*, you will know of my research and opinion on the mysterious Sonora Aero Club and NYMZA(NJMZa) and the breakaway subject in general. I have gone on the record as being firmly anti-NYMZA(NJMZa). I conclude that NYMZA(NJMZa) is aligned with collectivist globalism, something to which I am vehemently opposed. Readers of the above books will also know that I propose there exists a breakaway civilization founded by what I call the '1903' and that I think they can and do oppose NYMZA/NJMZa and its allies. **The 1903**, for those unfamiliar with my books, was a result of the dissolution of the Sonora Aero Club, a secretive group of German immigrants who opposed the growing imposition of NYMZA/NJMZa their oversight organization bent on military applications of the mysterious anitgravity technology the group was alleged to have developed -- in the 1850s. The leaders of the Sonora Aero Club quietly dissolved the group after the reported death of their chief, Peter Mennis, the man with the secret of the technology. But a mere few years later, an airship was proposed and demonstrated to Abraham Lincoln's representatives and was promptly forgotten. My readers already know that I do not think this was the case. Rather, I argue that the technology was developed after the Civil War in America's first 'black program'. That program led to the mystery airships of the 1890s, in my opinion, and ultimately the breakaway I call the '1903'.

<https://thegipster.blogspot.com/2017/01/just-when-you-thought-it-couldnt-get.html>



Tesla Fueless Generator: Original Concept For Tapping the "Medium" of Space

Next Led Tesla to Develop Mechanical and Electrical Oscillators

<https://archive.org/details/inventionsresear00martiala/page/486/mode/2up>

<https://patents.google.com/patent/US514169A/en>

<https://patents.google.com/patent/US511916A/en>

"I had in a fair state of perfection the engine which I have named "the mechanical oscillator." In this machine I succeeded in doing away with all packings, valves, and lubrication, and in producing so rapid a vibration of the piston that shafts of tough steel, fastened to the same and vibrated longitudinally, were torn asunder. By combining this engine with a dynamo of special design I produced a highly efficient electrical generator"

THE TESLA MECHANICAL AND ELECTRICAL OSCILLATORS.

ON the evening of Friday, August 25, 1893, Mr. Tesla delivered a lecture on his mechanical and electrical oscillators, before the members of the Electrical Congress, in the hall adjoining the Agricultural Building, at the World's Fair, Chicago. Be-

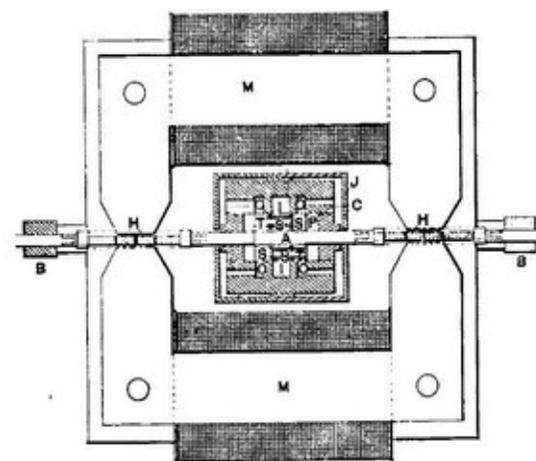
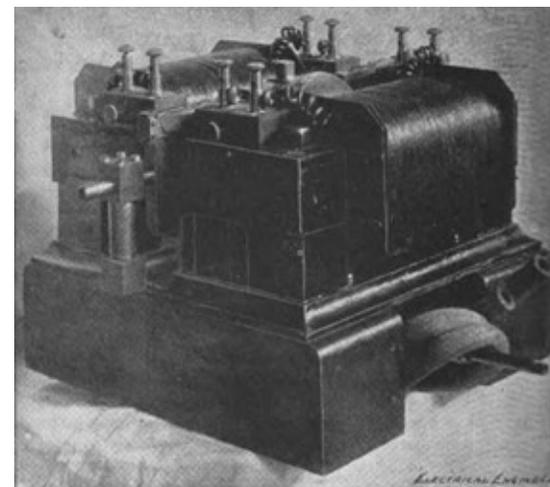
vibrations are truly wonderful. Mr. Tesla provides for an air spring of tremendous rigidity, and he is enabled to vibrate big weights at an enormous rate, considering the inertia, owing to the recoil of the spring. Thus, for instance, in one of these experiments, he vibrates a weight of approximately 20 pounds at the rate of about 80 per second and with a stroke of about $\frac{1}{8}$ inch, but by shortening the stroke the weight could be vibrated many hundred times, and has been, in other experiments.

Tesla pointed out, this mechanical system acts exactly like a string tightly stretched between two points, and with fixed nodes, so that slight changes of the tension do not in the least alter the period of oscillation.

The applications of such an apparatus are, of course, numerous and obvious. The first is, of course, to produce electric currents, and by a number of models and apparatus on the lecture platform, Mr. Tesla showed how this could be carried out in practice by combining an electric generator with his oscillator. He pointed out what conditions must be observed in order that the period of vibration of the electrical system might not disturb the mechanical oscillation in such a way as to alter the periodicity, but merely to shorten the stroke. He combines a condenser with a self-induction, and gives to the electrical system the same period as that at which the machine itself oscillates, so that both together then fall in step and electrical and mechanical resonance is obtained, and maintained absolutely unvaried.

Mr. Tesla also described a very interesting phenomenon which he illustrated by an experiment. By means of this new apparatus, he is able to produce an alternating current in which the E. M. F. of the impulses in one direction preponderates over that of those in the other, so that there is produced the effect of a direct current. In fact he expressed the hope that these currents would be capable of application in many instances, serving as direct currents. The principle involved in this preponderating E. M. F. he explains in this way: Suppose a conductor is moved into the magnetic field and then suddenly withdrawn. If the current is not retarded, then the work performed will be a mere fractional one; but if the current is retarded, then the magnetic field acts as a spring. Imagine that the motion of the conductor is arrested by the current generated, and that at the instant when it stops to move into the field, there is still the maximum current flowing in the conductor; then this current will, according to Lenz's law, drive the conductor out of the field again, and if the conductor has no resistance, then it would leave the field with the velocity it entered it. Now it is clear that if, instead of simply depending on the current to drive the conductor out of the field, the mechanically applied force is so timed that it helps the conductor to get out of the field, then it might leave the field with higher velocity than it entered it, and thus one impulse is made to preponderate in E. M. F. over the other.

With a current of this nature, Mr. Tesla energized magnets strongly, and performed many interesting experiments bearing out the fact that one of the current impulses preponderates. Among them was one in which he attached to his oscillator a ring magnet with a small air gap between the poles. This magnet was oscillated up and down 80 times a second. A copper disc, when inserted within the air gap of the ring magnet, was brought into rapid rotation. Mr. Tesla remarked that this experiment also seemed to demonstrate that the lines of flow of current through a metallic mass are disturbed by the presence of a magnet in a manner quite independently of the so-called Hall effect. He



Tesla Fueleless Generator: Original Concept For Tapping the "Medium" of Space Next Led Tesla to Unipolar Motor Improvements (Over Faraday)

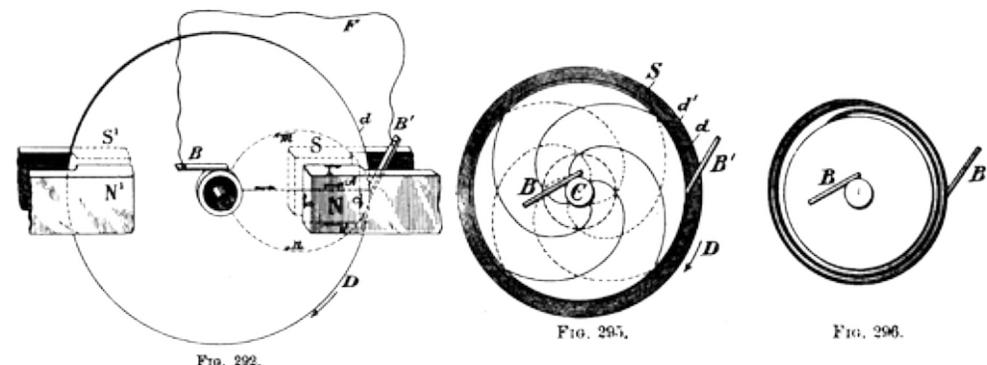
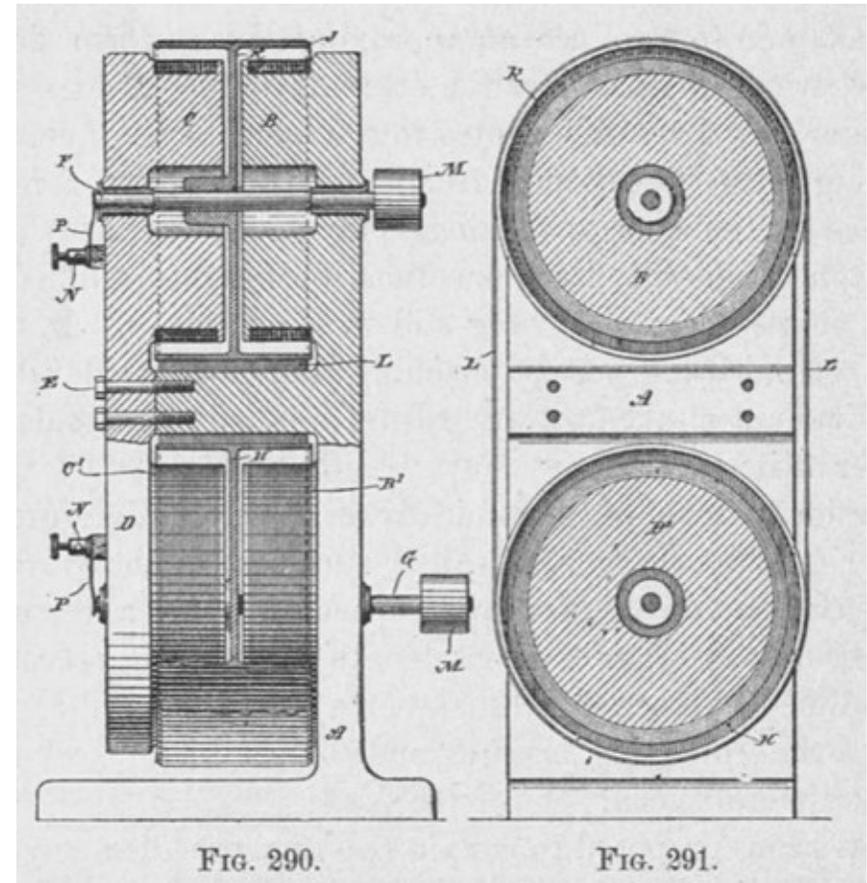
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IMPROVEMENT IN "UNIPOLAR" GENERATORS.

ANOTHER interesting class of apparatus to which Mr. Tesla has directed his attention, is that of "unipolar" generators, in which a disc or a cylindrical conductor is mounted between magnetic poles adapted to produce an approximately uniform field. In the disc armature machines the currents induced in the rotating conductor flow from the centre to the periphery, or conversely, according to the direction of rotation or the lines of force as determined by the signs of the magnetic poles, and these currents are taken off usually by connections or brushes applied to the disc at points on its periphery and near its centre. In the case of the cylindrical armature machine, the currents developed in the cylinder are taken off by brushes applied to the sides of the cylinder at its ends.

In order to develop economically an electromotive force available for practicable purposes, it is necessary either to rotate the conductor at a very high rate of speed or to use a disc of large diameter or a cylinder of great length; but in either case it becomes difficult to secure and maintain a good electrical connection between the collecting brushes and the conductor, owing to the high peripheral speed.

The machine is built in such manner that the direction of magnetism or order of the poles in one field of force is opposite to that in the other, so that rotation of the discs in the same direction develops a current in one from centre to circumference and in the other from circumference to centre. Contacts applied therefore to the shafts upon which the discs are mounted form the terminals of a circuit the electro-motive force in which is the sum of the electro-motive forces of the two discs.



Tesla Fueless Generator: A Motor-Generator Pair

https://www.bibliotecapleyades.net/tesla/esp_tesla_25.htm

<https://patentimages.storage.googleapis.com/b5/6c/16/323d7f81c0bdc7/US406968.pdf>

Self-Running Mode of Operation

Rotation is started by, say, a motor powered by line current.

Both a generator and a motor disk are mounted in the magnetic enclosure. As the disks gain speed, current is produced which, in turn, reinforces the magnets, which cause more current to be generated.

That current is, likely, first directed to the motor disk which increases the speed of the system. **At a certain point the speed of the two disks is great enough that the magnetic field created by the current has the strength to keep the dynamo/motor going by itself.**

What process might have kept the unipolar dynamo operating after the powered start-up is speculation at this point, however two features of the generator are significant.

First, when a resistive load, like a light bulb is added to the circuit, it lowers the voltage at the center of the disk. This lower voltage at the center means that there is a greater difference in voltage between the center and the outside edge of the disk than there was before the light bulb was added. As the difference between the center and the outside increases, the dynamo works harder and makes more current.

Second, yet more important, **the dynamo takes either very little, or no energy to keep going because the current coming off the generator is doing double duty. The current makes the bulb glow, but on its way from the generator to the filament in the bulb, it travels a path that adds to the momentum of the dynamo and, therefore, consumes energy at a very low rate.** The process continues, it would seem, until heat losses in the filament equal the rotational energy of the generator's flywheel.

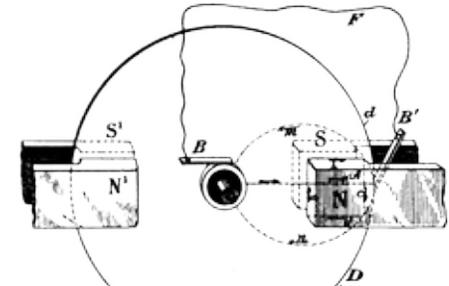


FIG. 292.

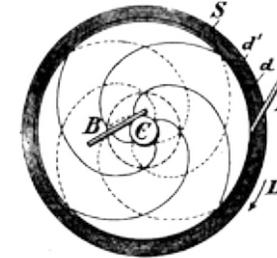


FIG. 295.

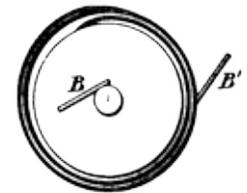


FIG. 296.

(No. 510,340.)
N. TESLA.
COIL FOR ELECTRO-MAGNETS.
No. 510,340. Patented Jan. 9, 1894.



Fig. 1

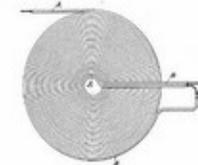
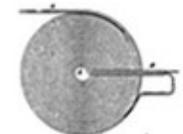


Fig. 2

Described by Nikola Tesla
Patented Jan. 9, 1894.



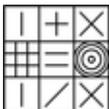
The UTRON coil from the Carr levity disc experiments has the geometry of space. A coil completely round and at the same time completely square was tested for angle interaction of fields. (See Issue #20 of "Energy Unlimited" for report on gravity experiments)

NOTE: FIELD OF UTRON INTERACTS WITH MAGNETIC FIELD AT 45 DEGREES

MAGNETIC FIELD : UTRON C-SHAPED M



TIFFON W
LINES
LARGER CAPACITOR DISK INSULATED AGAINST CENTER T



Tesla Pierce Arrow Fuelless Car

<https://teslauniverse.com/nikola-tesla/articles/nikola-teslas-electric-car-folklore-or-historical-fact>

Savo's Direct Observations...

Tesla's standard Pierce-Arrow was converted from one with an internal combustion engine to one that was electrically powered. The car could attain 90 mph (speedometer calibrated to 120 mph).

Motor:

unknown manufacturer
a brushless 80 HP motor (AC)
Max motor speed: 1800 rpm
40" long and 28" in diameter.
connected to the power receiver by two heavy, conspicuous cables
Fan cooled

Power Receiver:

built by Tesla in New York City
contained in a box 24" long x 10" wide x 6" deep
used 12 radio tubes
3 of the radio tubes were model 70-L-7
used a 6-foot rod as a vertical antenna (indicates a reception frequency of 327MHz if 1/2-wave antenna)
two 3" long x 1/4" diameter rods protruded from box (pushed in to activate car)

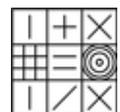
Battery:

12-volt Willard battery
much too small to run the car.
presumed to be for the lights only

The standard accelerator pedal was used to control engine speed. Clutch, brake and gearshift were unchanged. The instruments on the dash appeared to be standard ones. However, there was a voltmeter which was used to measure output of the receiver.

This car, being a standard Pierce Arrow, did not have a fuel gauge as we know it. Instead they had pressurized fuel tanks with a gauge on the instrument panel to measure air pressure, not gallons. Of course, the engine being removed, the gauge had no bearing on Tesla's experiment. In 1925, the *less expensive* Arrows began using a vacuum-based system.

I do not know for sure if a pressure system was used in any of the 1931 models. If not, this would have been an older car they were using for experimental purposes!... and Peter does not specify a year or model, so the 1931 figure is speculation as to the year of the car model.



Tesla Pierce Arrow Fuelless Car

<https://teslauniverse.com/nikola-tesla/articles/nikola-teslas-electric-car-folklore-or-historical-fact>

< Tesla's Pierce Arrow >

...Sometime in 1931, Dr Tesla took Peter to Buffalo, NY for the unveiling and final testing of a new kind of automobile. Dr. Tesla acted somewhat mysteriously about it, would tell Peter nothing in advance, and even after he had seen the car, answered some of his questions with "Don't ask any questions".

< Tesla's Power Box >

Set into the dash was a "power receiver" consisting of a box measuring about 24" long by 10" wide by 6" high, containing 12 radio tubes. Three of these tubes were model 70-L-7. A vertical antenna consisting of a 6-foot rod, was installed and connected to the power receiver.

The receiver, in turn, was connected to the motor by two heavy, conspicuous cables. Two "spindles" (rods?) about 1/4" diameter by 3" long protruded from the receiver towards the driver. Tesla pushed these in before starting and said: "We now have power". These spindles were in line with the two power cables coming out of the back of the unit and presumable worked two separate power switches.

There was a 12-volt Willard battery installed in the car, but it was for the lights only and much too small to run the car. In any case, the motor was an AC motor.

Peter said that Dr. Tesla had built the power receiver himself in his hotel room, and carried it to Buffalo. The motor was built for him by some unknown company. The motor was completely enclosed and when Peter first saw it, it was stopped. Later, after the engine was running, Dr Tesla asked Peter to look under the hood to check whether the fan was running. Peter asked what the fan was for and was told that "The engine is running pretty hot". Maximum engine speed was 1800 rpm. Power rating was 80 hp.

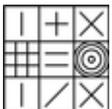
< A Test Drive >

To start the car, Dr Tesla handed Peter an ignition-type key. Peter inserted it and a green light came on, on the dash. Dr Tesla thereupon said: "The engine is now in motion". The engine could not be heard from the driver's seat at all. When listening under the hood with the engine on, there was a slight hum. The standard accelerator pedal was used to control engine speed. Clutch, brake and gearshift were unchanged.

The instruments on the dash appeared to be standard ones. However, there was a voltmeter which was used to measure output of the receiver. Dr Tesla commented that the receiver had enough reserve power so that you could drive the car next to a house, connect the wiring, and light up the whole house. There was also some kind of hydraulic pressure gauge on the dash. Peter asked its purpose but Dr Tesla would not tell him.

Peter drove the car for about 50 miles at speeds up to 90 mph (the speedometer was calibrated to 120 mph). Power seemed at least as good as the normal Pierce Arrow engine. Acceleration in second gear seemed particularly good. Shifting gears seemed somewhat smoother than with a normal engine.

Dr Tesla seemed enthusiastic on the first test ride and said, "Peter, this day will make history!" When Peter questioned the source of the energy to drive the car, Dr Tesla said: "It is a mysterious radiation that comes out of the ether." He said that he did not know where it came from but that it seemed to be available in limitless quantities and that mankind should be thankful for it as it would soon drive boats, cars, trains and planes. Dr Tesla and Peter spent 8 days in Buffalo, testing the car. Peter described an incident where they stopped the car at a traffic light and a bystander commented that he could see no smoke coming from the exhaust. Peter replied to him: "We don't have an engine". When they left Buffalo, Dr Tesla removed the "ignition" key and the radio tubes and took them with him. The car was left at a farmhouse some 20 miles from Buffalo, not far from Niagara Falls.



Faraday's Paradox

<https://teslauniverse.com/nikola-tesla/articles/nikola-teslas-electric-car-folklore-or-historical-fact>

HOMOPOLAR GENERATOR & MOTOR

In Sept 2018 we have presented our findings regarding anomalies related to the Faraday disk (Video Exx-003) and Nicola Tesla's Dynamo Electric Machine (Video Exx-004). Starting Nov 2018 (Videos Exx-013, Exx-014, Exx-015, Exx-016, Exx-017, Exx-018) we have documented our experiments leading to the conclusion that both sides of the DC electric current in a Faraday disk are created in EACH brush. We at Exxience claim of being the first to make this important discovery, which will provide an elegant solution to the Faraday Paradox and anomalies and will have a profound impact for related issues..

2018-09-17 - Exx-003 Faraday Disk Anomaly - Homopolar Generator - Faraday Paradox (10:19)

Today we present Michael Faraday's Disk homopolar generator in four different set-ups, with one of them being a small version of the N-1 machine built by Bruce dePalma in 1997. Electrical power generation by the Faraday Disk is a direct current or DC with low tension / voltage and high current. The applications using this power source are rail guns, billet heating and welding. There is however an anomaly or paradox ..

2018-09-19 - Exx-004 Tesla's Homopolar Generator - The Dynamo-Electric Machine (05:48)

Introducing a rebuilt of Nikola Tesla's Dynamo-Electric Machine, based on the patent no. 406968 dated July, 16 1889. It is a set-up of Faraday disks with compelling result. Theories about electricity and electromagnetism are challenged to explain what is going on. There is still no unified concept what electricity is. We know how to generate electricity, we know how to use it in hundreds of thousands of different engines, machines, computers, networks etc., but we still don't know what is is. This video builds upon Exxience video Exx-003.

2018-11-25 - Exx-013 Faraday Disk Paradox & Anomaly - Solved! (13:53) - The Discovery - Part 1/6

In video Exx-003 we have shown our discovery of tension / voltage in a dual Faraday Disk set-up where there should not be any. Today we are presenting our findings regarding current generation in the moving frame of reference of the one piece Faraday Disk. The results are very surprising and will change the way we look at homopolar power devices. At the same time the new insight will help us understand the paradox and anomaly, which seem to have been solved.

2018-12-05 - Exx-014 Tesla's Homopolar Generator 2 - Mystery Solved! (11:55) - The Discovery - Part 2/6 - 2018-12-15 Exx-014-XT Update (14:49)

In video Exx-004 we have introduced Tesla's Dynamo Electric Machine, a homopolar generator where current is collected at the axles, which is of great advantage compared to a simple Faraday Disk set-up. Today we are analyzing the situation of how current is created in that particular machine and come to a conclusion which would surprise even the great Nikola Tesla.

2018-12-07 - Exx-015 Tesla & Faraday Homopolar Generator - The Final Puzzle Piece (07:00) - The Discovery Part 3/6

From Tesla's Dynamo Electric Machine to Faraday's Disk Paradox, the final piece to the puzzle is presented in this video, explaining the anomaly of video Exx-003. With the right understanding there is no anomaly and there is no paradox. Try to imagine each tip of the bridge (see video) as acting like a battery, when in sliding contact with the turning magnet. A follow-up video will explain this.

2018-12-10 - Exx-016 Homopolar Generator Brush Action (02:21) - The Discovery - Part 4/6

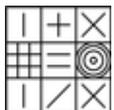
The Faraday Paradox and the anomalies surrounding the homopolar generators can be solved when one considers a different action at the brushes, leads or tips that are in sliding contact with the one-piece, magnet co-rotating Faraday Disk or in Tesla's Dynamo Electric Machine. Here is a quick insight into our new, developing theory.

2018-12-18 - Exx-017 Exx-017 Faraday Disk Paradox & Anomaly 2 - Solved! (09:10) - The Discovery - Part 5/6

In this video we are examining if the set-up used in video Exx-015 is producing a current in the co-rotating frame of reference of the one piece Faraday Disk. The results are confirming what we have found in video Exx-013. It will change the way we look at homopolar power devices. At the same time the new insight will help us understand the paradox and anomaly, which seem to have been solved.

2018-12-19 - Exx-018 Exx-018 Tesla's Homopolar Generator - The Ultimate Proof (04:52) - The Discovery - Part 6/6

We are inquiring a situation, which was first shown in video Exx-004 where we have an apparent anomaly, which is high tension at the axles and low tension at the rims. However, there is a surprisingly simple explanation for this. Our theory is confirmed.



Tesla's Magnifying Transmitter

EXPLANATION

The primary coil in Tesla's transformer is the first plate of the capacitor. The secondary coil - is the second plate of the capacitor.

When you charge a capacitor C from your source of energy, you charge a wire of the primary coil also. As a result, a wire of the secondary coil is charging also (as a return from ambient space).

In order to start the process, you have to remove charge from the primary coil (by arranging a jump in potential in ambient space). When this is done, a huge displacement current occurs - as a result of that potential jump. Inductance catches this magnetic flux, and you have energy amplification.

If this process is operating, then you generate a magnetic field in ambient space.

COMMENT: The capacitance of the wire of the primary coil is very low, and so it takes very little energy to charge it, and a very short spark to discharge it (without removing charge from the capacitor C).

COMMENT: Notice that the spark gap **must be** connected to the ground as, in my opinion, this is a very important feature of this process, **but Mr Tesla did not show grounding**. Perhaps this needs to be a separate grounding point.

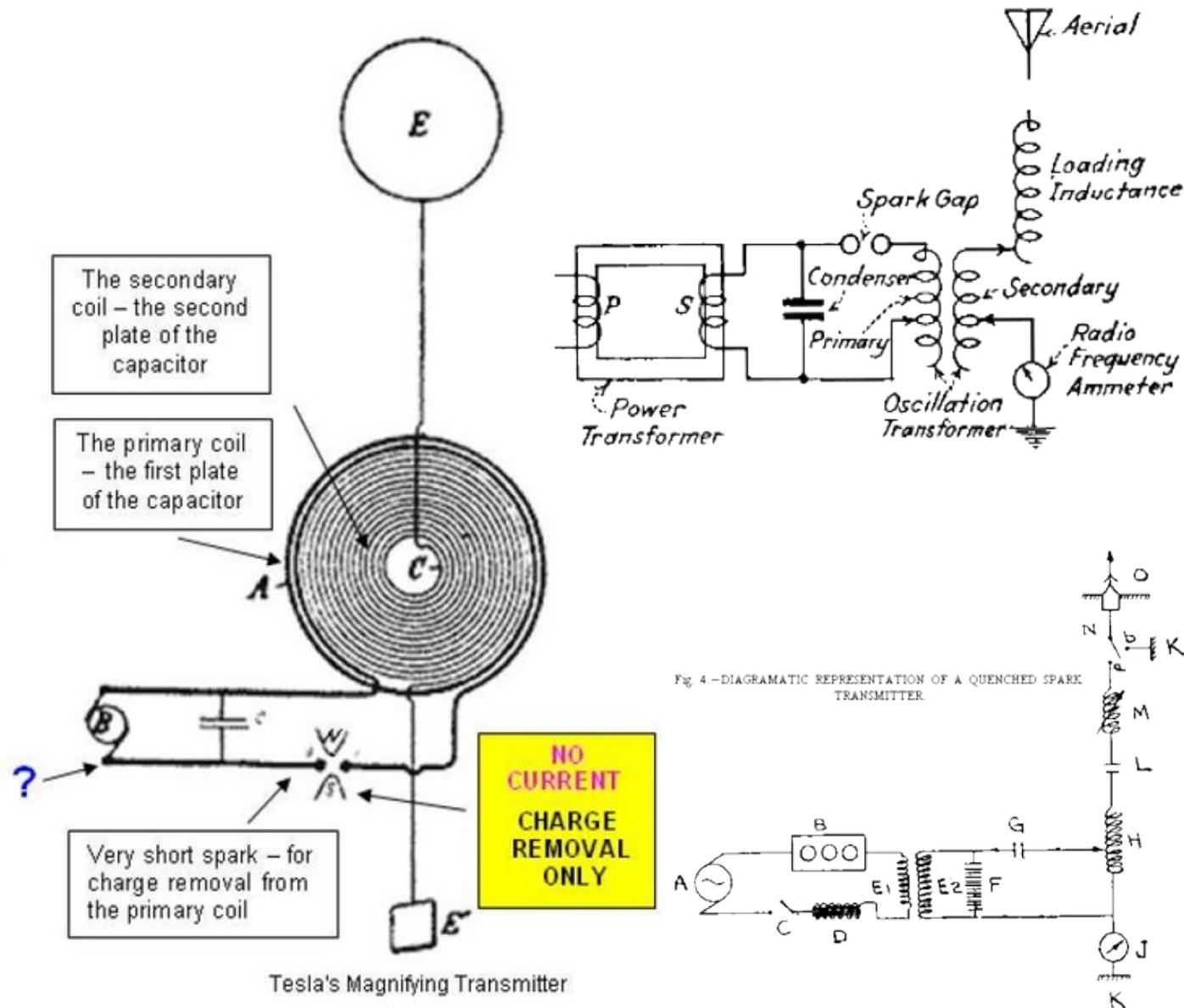
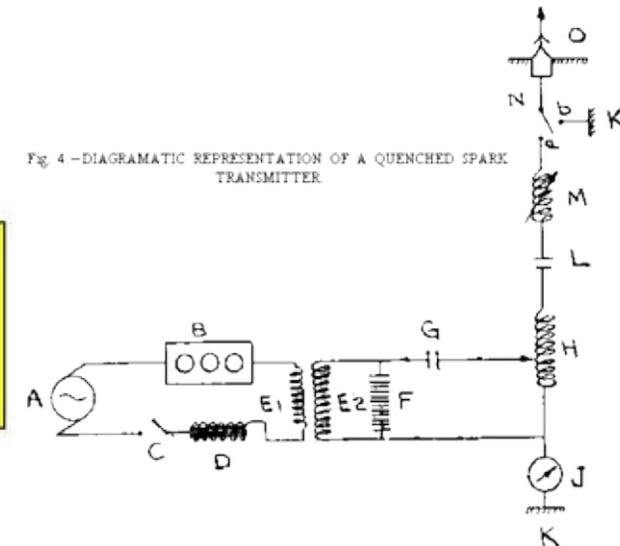


Fig 4 - DIAGRAMATIC REPRESENTATION OF A QUENCHED SPARK TRANSMITTER.



- | | | | |
|-------------------------------|-------------------------------------|---|--|
| A | 500 frequency alternator. | H | Excitation and coupling inductance. |
| B | Switchboard controlling alternator. | J | Aerial hot wire ammeter. |
| C | Morse Key. | L | Aerial shortening capacity. |
| D | Resonance choke coil. | M | Aerial lengthening inductance. |
| E ₁ E ₂ | High frequency transformer. | N | Protective lightning switch--
Position a aerial to earth &
Position b aerial to apparatus. |
| F | Quenched spark gap. | | |
| G | Excitation capacity. | O | Aerial leading in insulator |

Free energy powered receiver

<https://www.forbes.com/sites/johnkoetsier/2021/12/28/battery-free-iot-these-tiny-printable-computers-harvest-energy-from-radio-waves/?sh=6e658d0616c8>

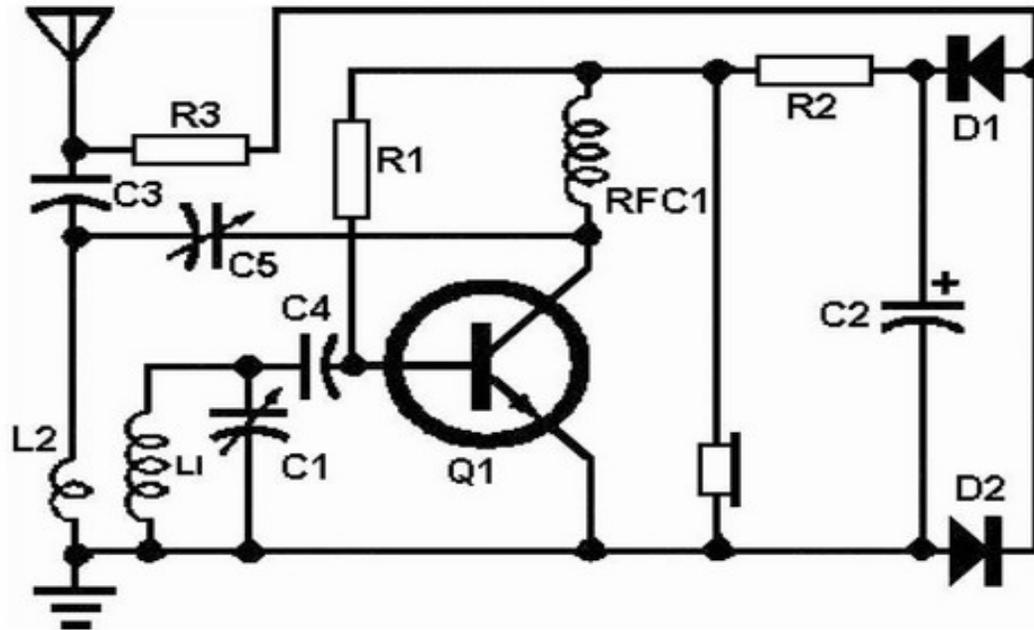


Fig. 3.

Q1 - 2N3391; D1, D2 - 1N459;
C1, C5 365 pF; C2 - 5 μ F x 50 V, tantalum; C3 - 2 nF, ceramic; C4 - 5 nF, ceramic;
L1, L2 - see fig. 4; RFC1 - RF choke 2.5 μ H;
R1 - 10 mOhm; R2 - 470 k Ω ; R3 - 10 kOhm;
Windings L1 and L2 must be connected in antiphase.

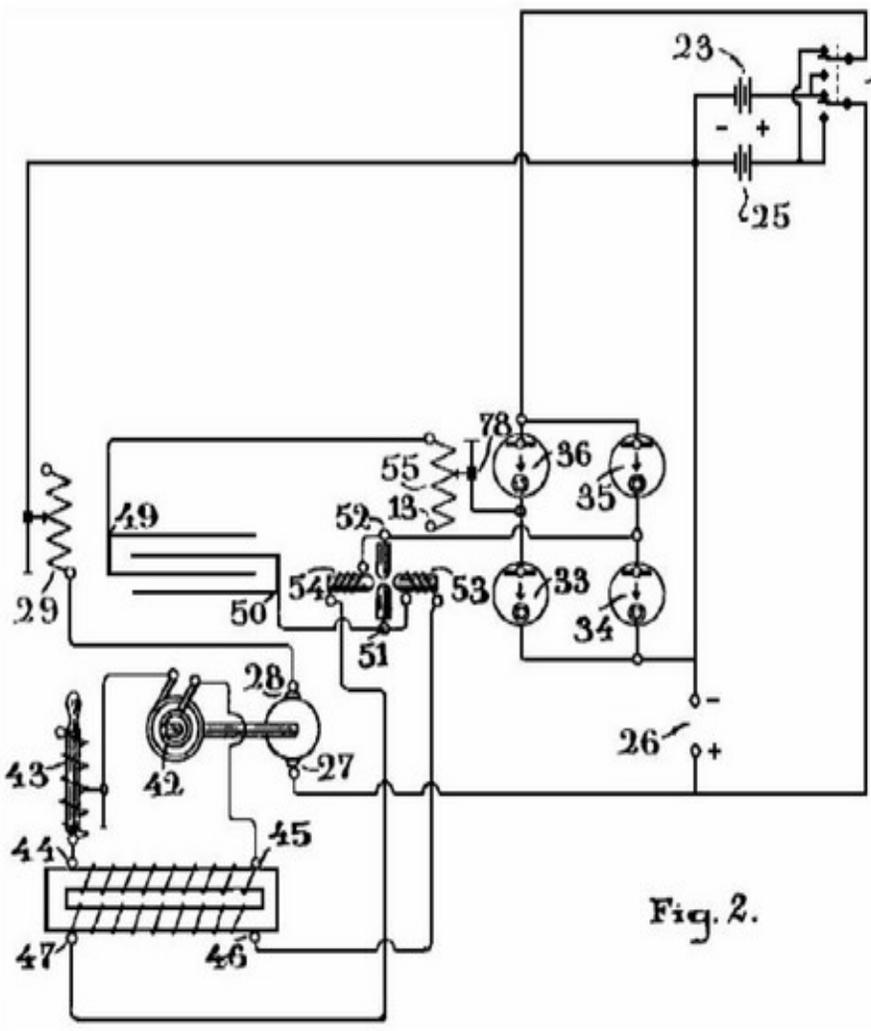
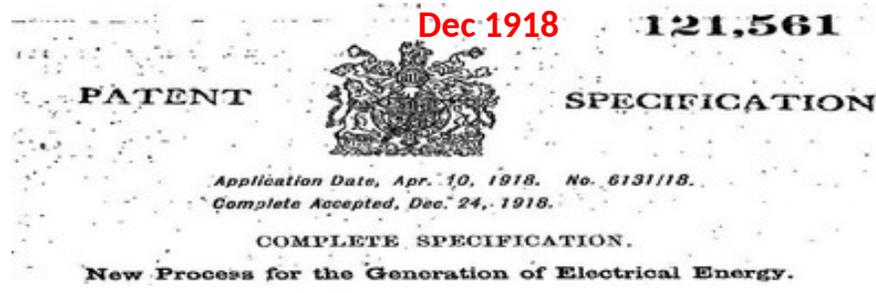
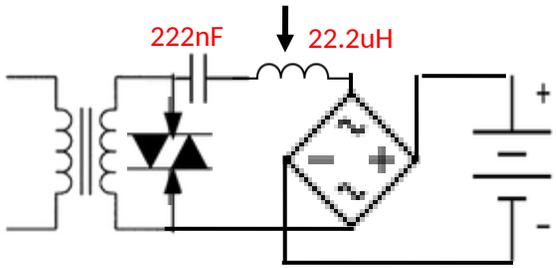
In the third circuit (Fig. 3), a rectifier is used, made according to the voltage doubling circuit, it is connected in parallel to the L2C3 series circuit through the resistor R3. This inclusion allows you to effectively use both high-frequency and low-frequency noise and reduce background noise heard in the headphones. If a bridge rectifier is used in this circuit, then the low-frequency noise from the electric network through the capacitor C5 will fall into the headphones, creating a network background in them. A possible solution to this problem is to add another feedback winding, but it can load the resonant circuit, which will lead to a decrease in sensitivity and selectivity.

The receiver circuit also uses interchangeable coils for different ranges. Part of the amplified signal from the collector of transistor Q1 is supplied to the input circuit through capacitor C5 and winding L2. As a result, the resulting positive feedback can significantly increase the gain of the receiver.

Carlos Benitez Charge Pump

See Steinmetz Continual and Ccumulative Oscillating Circuit Theory for the "How" and "Why"

<https://tinyurl.com/yafa5sbc>



This invention relates to a new utilisation of the high frequency currents or electrical oscillations, by means of which a constant production of electrical energy can be secured, under unusually simple, economic and practical conditions.

Such results are attained by means of the procedure disclosed in present applicant's English Patent Specification No. 14,311, filed on October 9th, 1915, but in order to obtain a better utilisation of said high frequency currents, and the automatic operation of the mechanisms employed in such procedure, I have invented a novel arrangement of parts, from which are derived several other advantages that will be hereinafter described and set forth with particularity in the claims appended hereto.

Synthetically, in such procedure so improved, are employed two batteries of accumulators, and one of these batteries is supposed that has been previously charged by proper means. Afterwards same said battery discharges through a circuit, in which are provided means for the utilisation of the greater part of the power produced by such discharge, and the remnant of same power is shunted from said circuit, into an oscillatory circuit in which the second battery is connected. Said oscillatory circuit is furthermore provided with a rectifier, which properly directs the electrical oscillations in such a manner, that they are forced to pass constantly through said second battery from the positive to the negative pole. On the other hand, as in such oscillatory circuits the number of oscillations per second can be varied at will, the current strength developed by these oscillations can be accordingly regulated, and thus the complete charge of the second battery can be produced in the same lapse of time in which the first battery discharges. Therefore it is only question of reversing the connections of said batteries from time to time and to repeat the same procedure, in order to obtain a continuous production of electrical energy.

Atomic Hydrogen Welding

"A process in which the welding heat is generated by passing a stream of hydrogen through an electric arc between two inclined electrodes, which are usually of tungsten. **The high temperature of the arc dissociates molecules of the gas into atoms, a large quantity of heat being absorbed by the hydrogen during dissociation. When the atoms leave the influence of the arc they recombine, forming molecules of hydrogen and liberating heat previously absorbed.** The gas then burns in the ordinary way, taking up oxygen from the atmosphere.

The average temperature of the flame is approximately 4000 deg. C., which is higher than the maximum temperature of any other flame. The heat is concentrated chiefly at the point of recombination of the atoms, and this recombination is accelerated catalytically by contact with the surface of the metal being welded. Thus an intense flame is obtained at the point of welding. The process is, therefore, used when rapid welding is necessary, as for stainless steels and other special alloys. The hydrogen envelope prevents oxidation both of the metal and the tungsten electrodes, and it also reduces the risk of nitrogen pick-up. The non-oxidizing characteristic is perhaps the most important in practice.

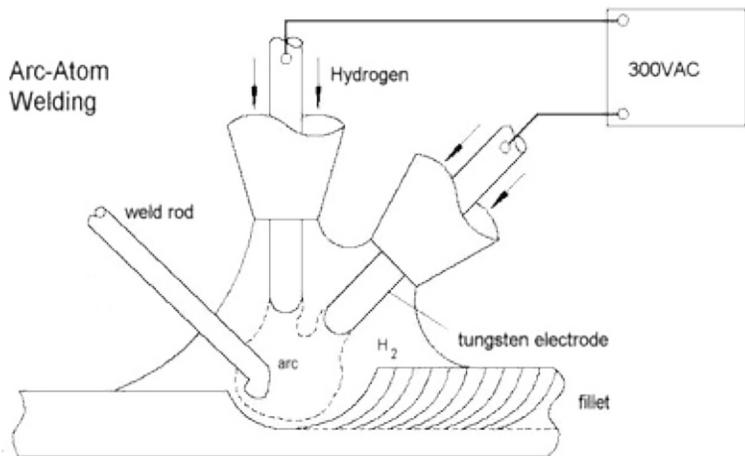
As a rule, the cost of welding by this process is slightly higher than with other processes, but it is sometimes the only practicable method by which a satisfactory weld can be made. An automatic atomic - hydrogen welding process has also been developed in which, instead of using hydrogen from high-pressure cylinders, the hydrogen is obtained by cracking anhydrous ammonia."

Odhams Practical & Technical Encyclopaedia 1947

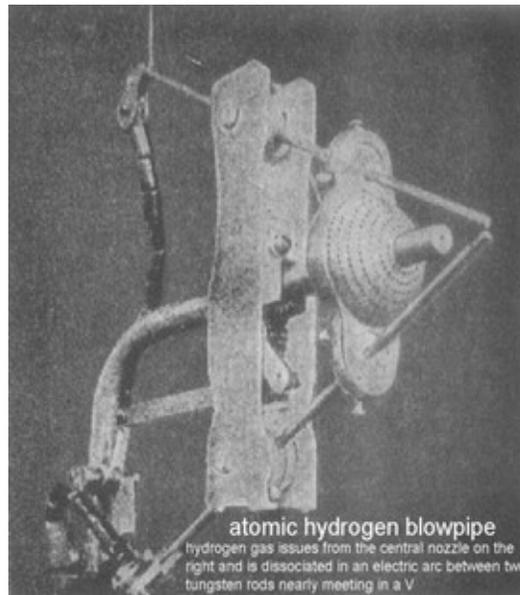
<https://web.archive.org/web/20080111004745/http://www.lateralscience.co.uk/AtomicH/AHW.html>
<https://web.archive.org/web/20080111004750/http://www.lateralscience.co.uk/AtomicH/atomicH.html>

From the May 1, 1926 issue of The Science News-Letter -

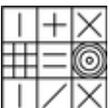
"...developed by Dr. Irving Langmuir, assistant director of the [GE] Schenectady laboratory, and makes use of what he calls flames of atomic hydrogen....
Electric currents of 20 amperes and at voltages ranging from 300 to 800"



Singing arc



<https://www.svpwiki.com/plasma>



Russell's Dynamo – Naturally Oriented Armatures

It will help to comprehend nature's optical method of power multiplication by pointing out the violations of nature which the present dynamo makes use of.

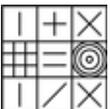
Nature's first principle of power production and the [construction of matter](#) is to produce [heat](#) from the [cold](#) of [space](#). The [heat](#) thus generated radiates back into [cold](#) to complete the [wave cycle](#) which automatically repeats itself in this ageless universe of an infinite continuity.

Every [wave](#) is a perfect [dynamo](#), but the very purpose of waves is to generate heat in its armatures at wave amplitude points. That is the only way waves create [matter](#). [Carbon](#), for example, is the [amplitude element](#) of its [octave](#). Its melting point is 3600° [centigrade](#). Every [sun](#) in the heavens is flaming [carbon](#), and every sun is the [armature](#) of its dynamo-wave.

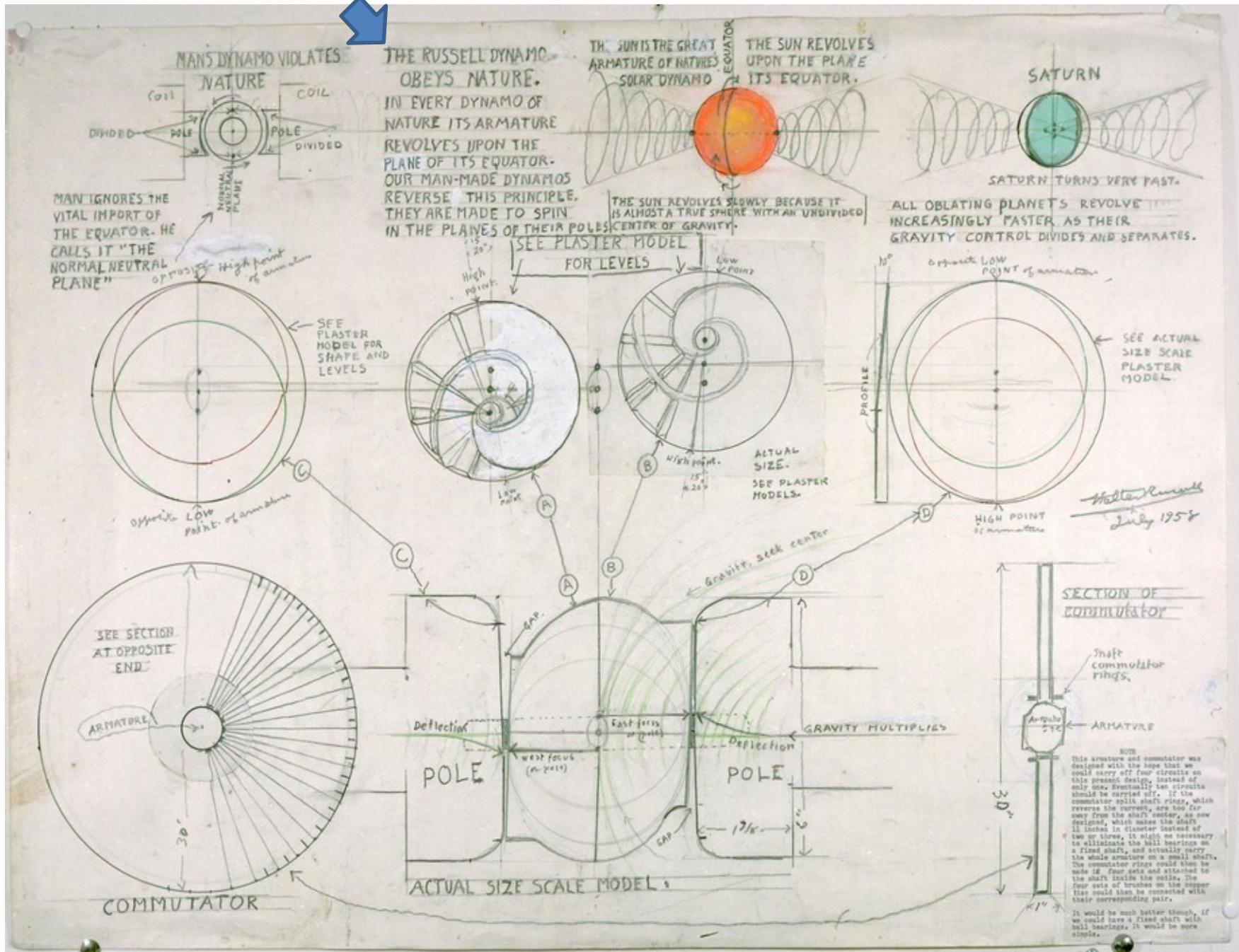
The present dynamo ignores this basic fact completely. It cools its [armature](#) by laminating it. It then rotates its [armature](#) the wrong way, because of a belief in non-existent "[lines of force](#)" in magnetic fields which they are cutting by thus turning. Nature's armatures rotate upon their axis in planes of their equators, without exception in the universe. All spherical bodies of matter in all this universe are wheels which roll around their orbits on their equatorial rims. They do not spin on their rims around a false equatorial axis, as armatures in modern dynamos are forced to do.

To emulate nature's process a dynamo should generate much [heat](#) and become a Reactor, connected with a steam turbine, as Nuclear Reactors operate. The greater the heat thus generated the more power lines can be taken off from the large equatorial wheel which the [turbine](#) will motivate.

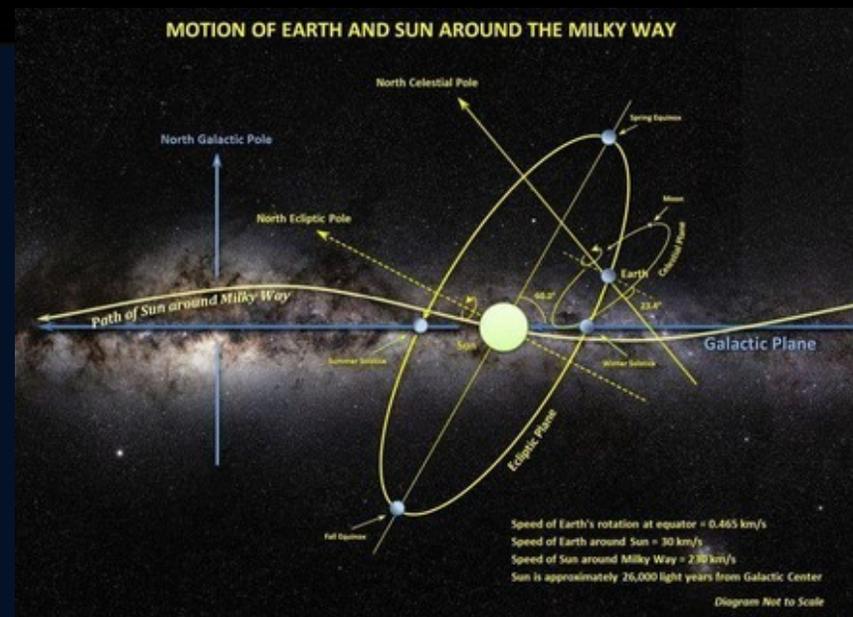
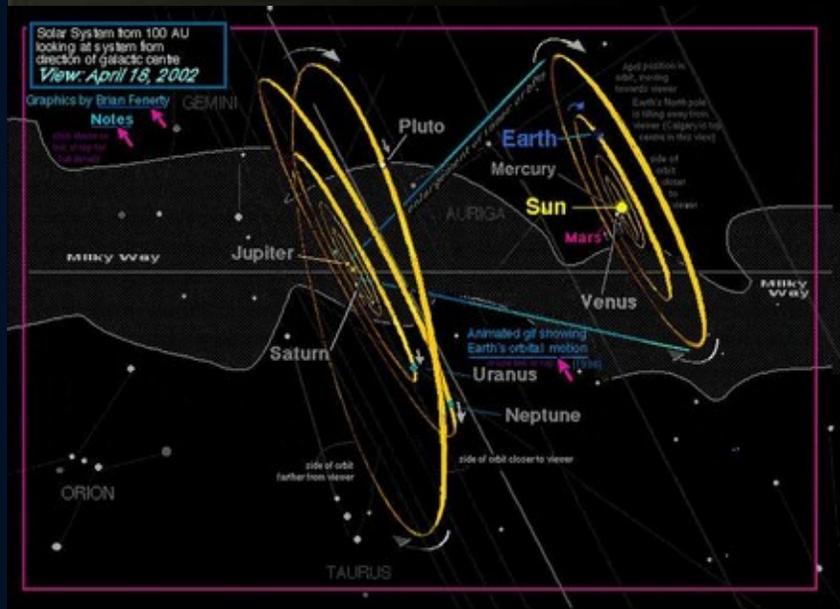
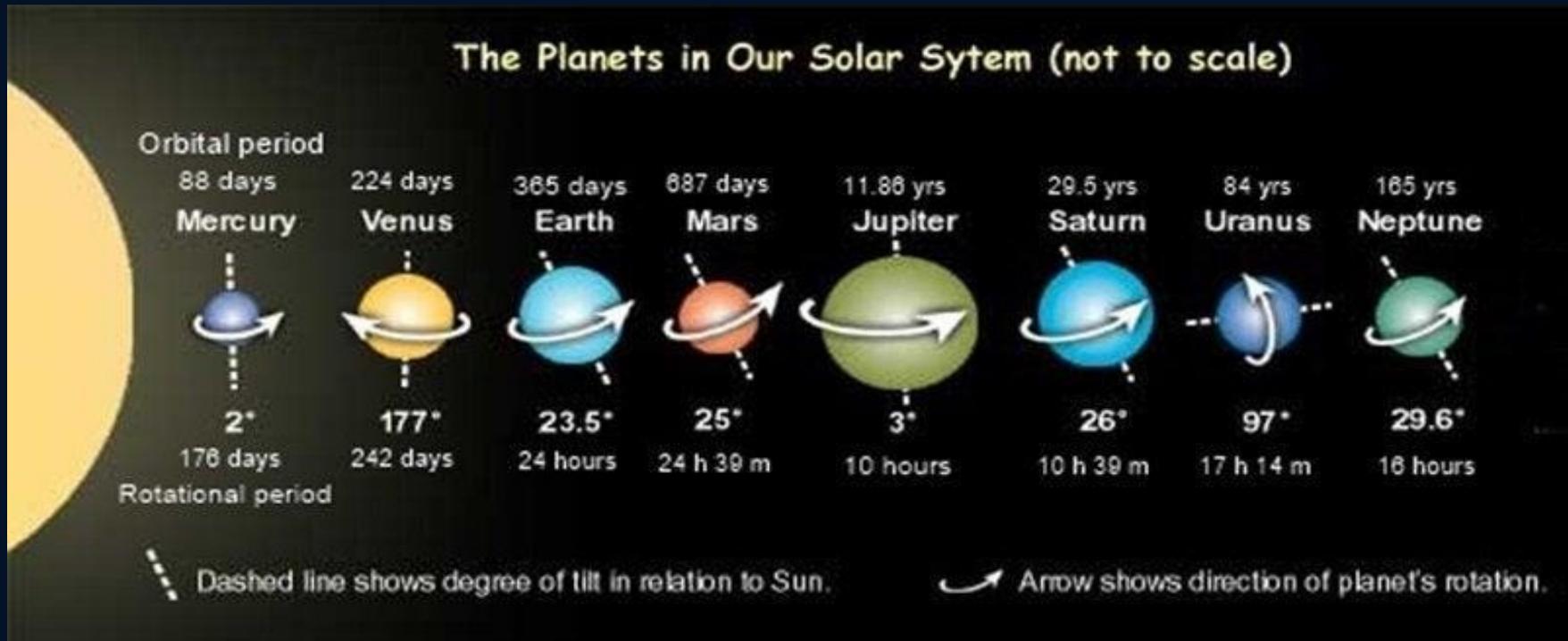
Every [armature](#) in nature gives off many thousands of times more than its [cathodes](#) gave to it. Every star is a step-up [transformer](#) with four step-ups between the [cathode](#) zero and its [anode](#) maximum. Each step-up is an [octave](#) above its predecessor. Its [ratio](#) is as follows: 0 - 8 - 64 - 512 - 4,096. It is this [octave](#) step-up multiplication which creates [density](#) and raises melting points.



Russell's Dynamo – Naturally Oriented Armatures



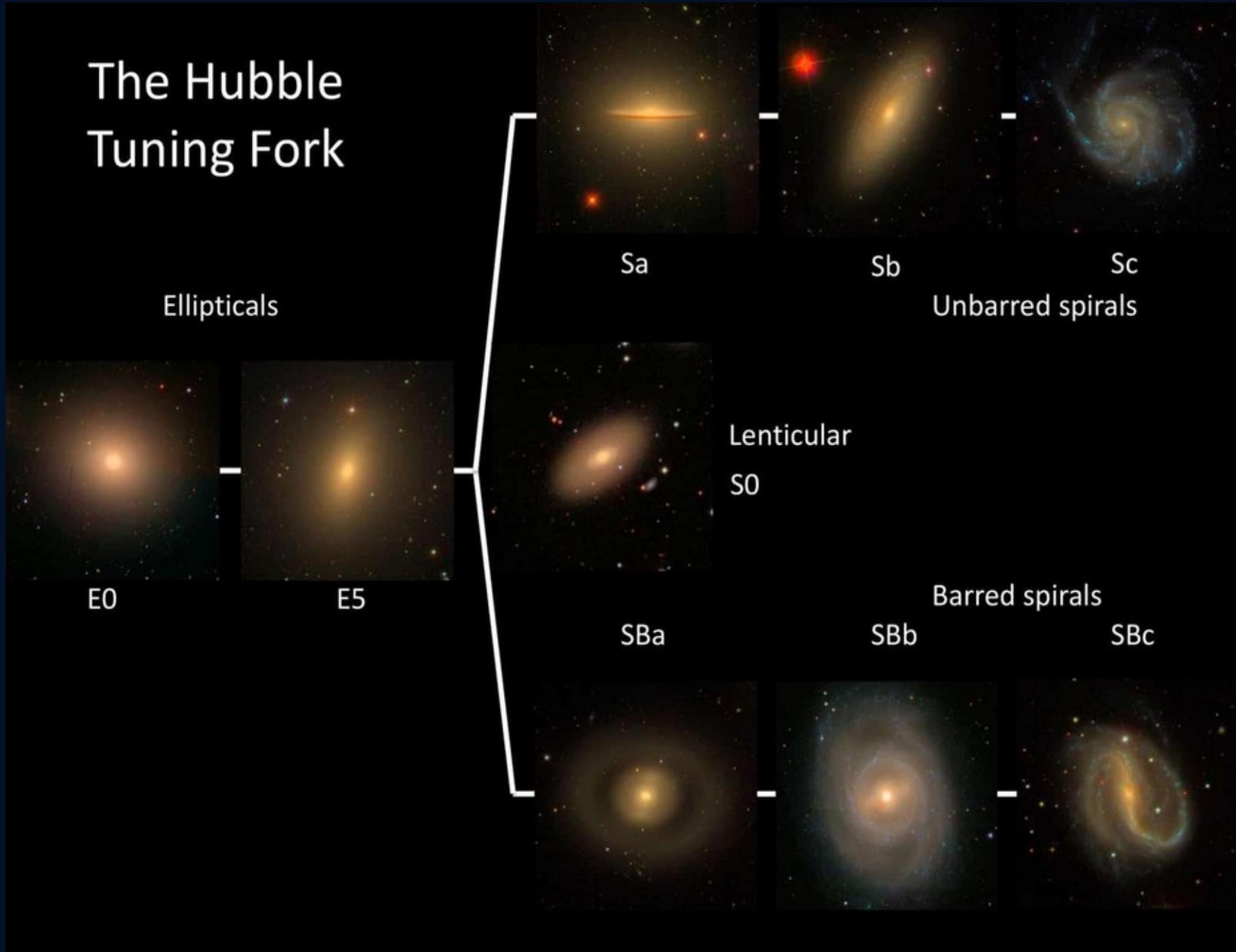
Naturally Oriented Stellar System Armatures



<https://www.physicsforums.com/threads/orientation-of-the-earth-sun-and-solar-system-in-the-milky-way.888643/>

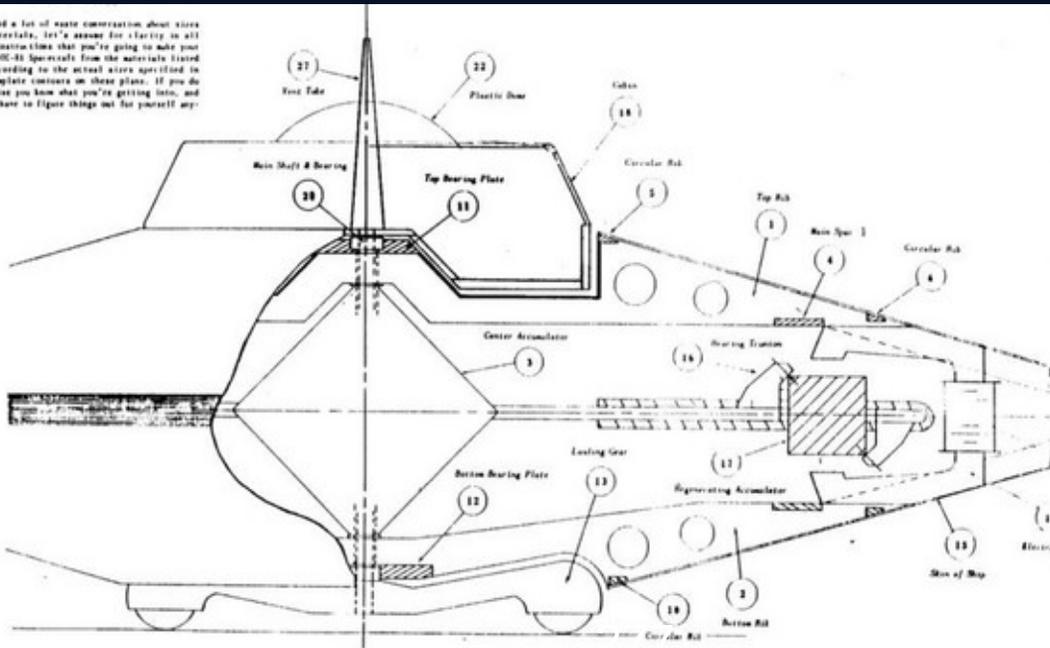
Naturally Oriented Galactic System Armatures

The Hubble Tuning Fork

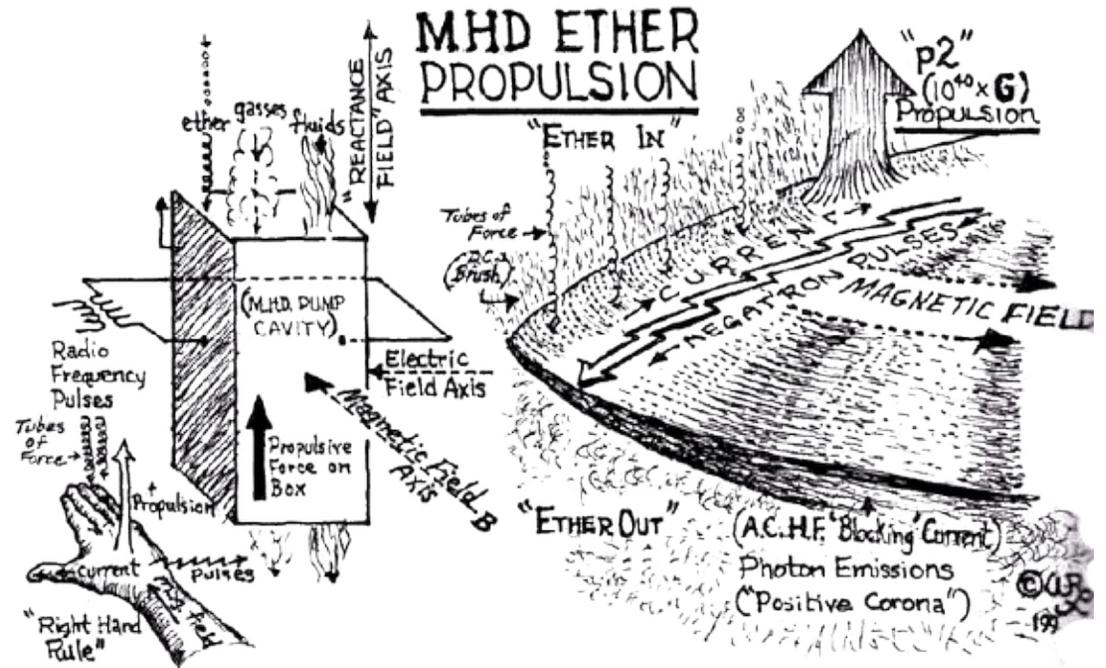
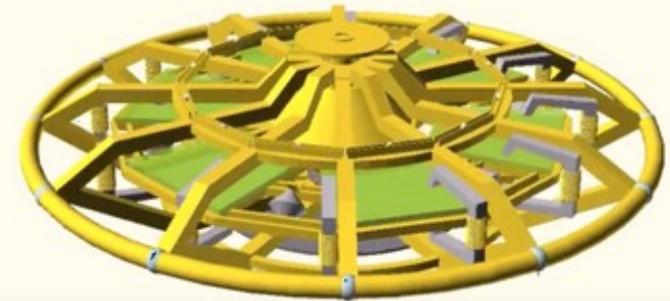


OTC-X1 & Utron Self-Generating Battery

and a lot of waste construction, about size available, let's assume for starting in all instructions that you're going to make your OTC-X1 Spacecraft from the materials listed according to the actual sizes specified in complete camera on these plans. If you do not know what you're getting into, and I have to figure things out for yourself any-

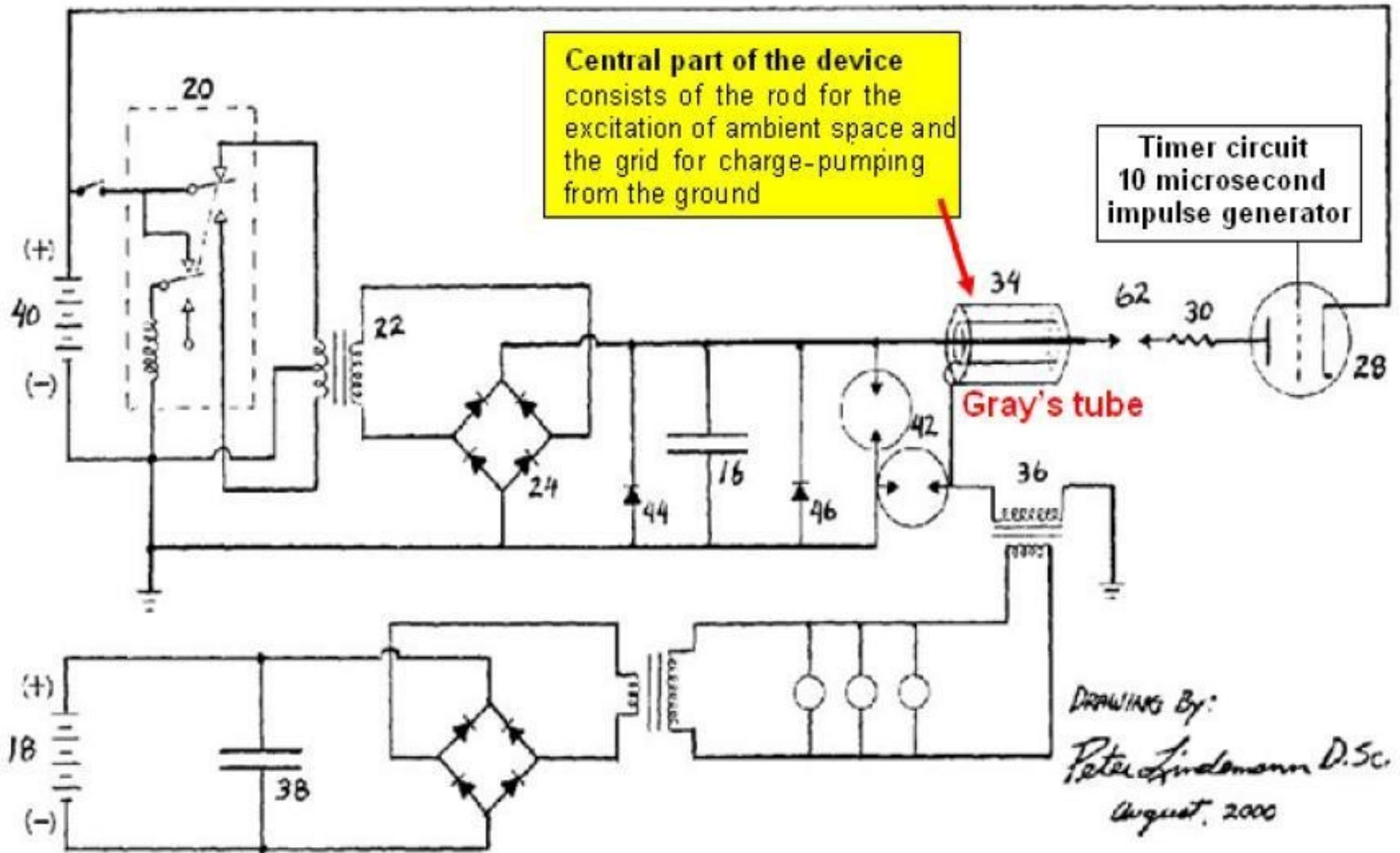


L'OTC-X1 comprises two nested frames one in the other and rotating in opposite directions.



Ed Gray's Charge Pump

<https://patents.google.com/patent/US4661747A/en> and <https://tinyurl.com/y3b3oz5h>



E-CAT NGU Power

<https://patentsgazette.uspto.gov/week40/OG/html/1539-1/US12438458-20251007.html>



E-Cat Power - 24/7 Unlimited Sustainable Electricity from Nature

Datasheet ⁶⁾: *NGU Power Cell & 100W Basic Generator*



Product	<i>NGU 10W Power Cell</i>	<i>NGU 100 W Basic Generator</i>
Model	<i>SKL-NGU-10W</i>	<i>SKL-NGU-100W</i>
Design	<i>High-Capacity Power Cell</i>	<i>Basic Generator from 10 Power Cells</i>
Application	<i>Cost-Effective Stationary and Mobile 24/7 Sustainable Generation of Electricity</i>	

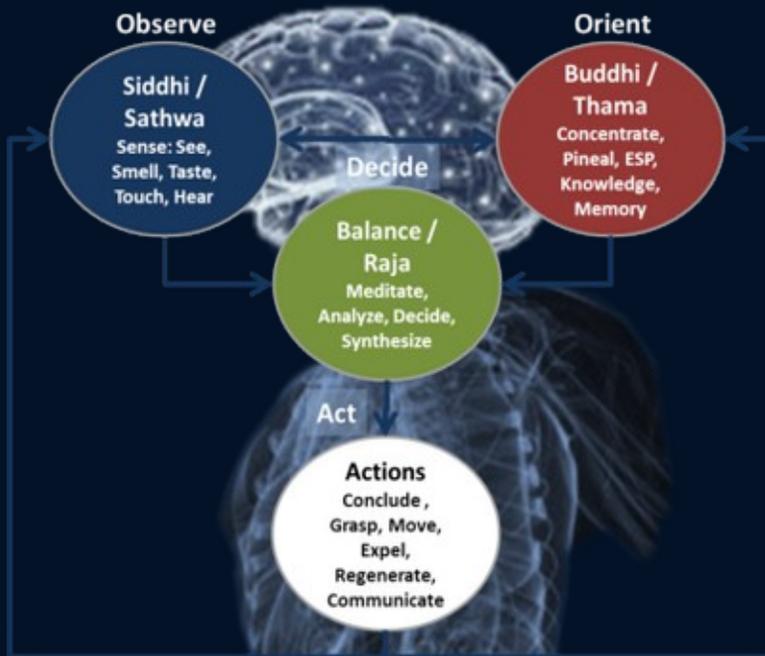
Output Data

DC Voltage 1):	<i>Vset</i>	12 V +- 1%	12 V
Rated Continuous Power	<i>Pmax</i>	10 W	100 W
Operational Current 2)	<i>Iout</i>	Function of <i>Vset</i>	
Overload Protection 2)		Integrated AI control	
Serial & Parallel Connection		Max. serial voltage = 240 V	Options on request
AC Voltage Output		Options on request	

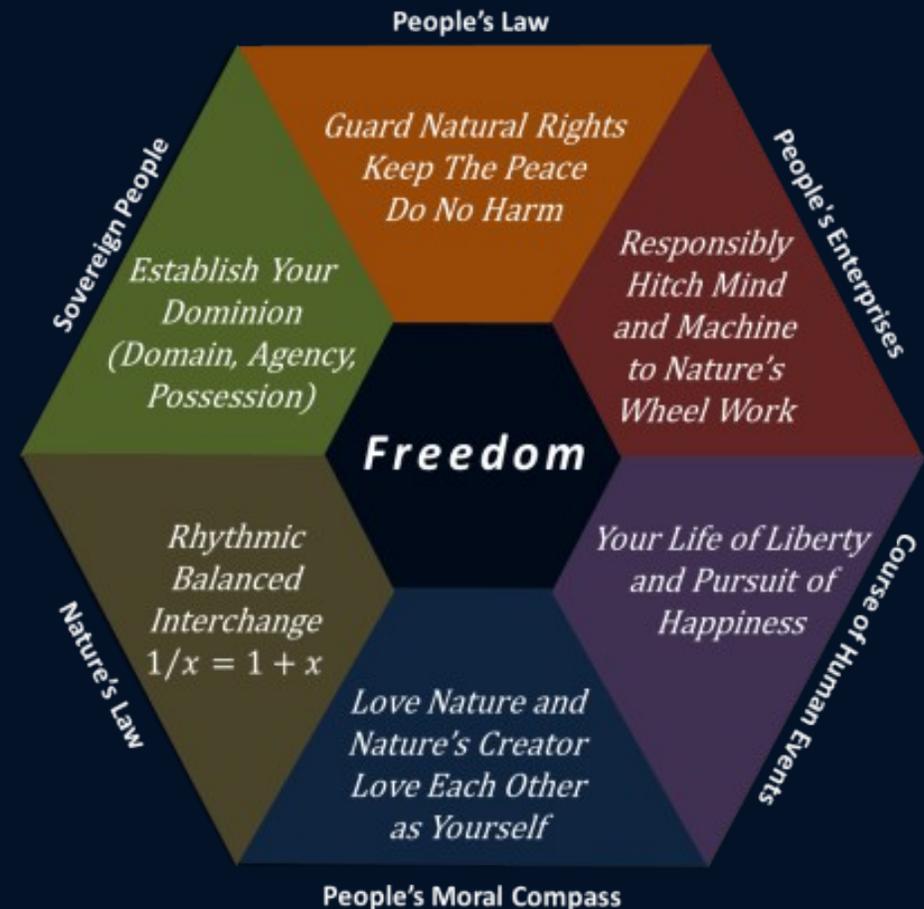
Energy Data

Power Capacity / year 3)		87 kWh	870 kWh
Power Density [kW / liter]		0.12	0.12
Power Density [kW / kg]		0.33	0.4
Heat Dissipation		Less than 10 % of output power	
Grey Energy [%] 4)		Less than 0.1 %	
Warranty		3 years full = 26 280 operational hours	
Expected Lifetime		More than 100 000 operational hours	

Focus On Truth, Empowerment, Life, Growth



Mission: Seek higher truths and empower living men and woman to assume among the powers of the earth the separate and equal station to which the Laws of Nature and of Nature's God entitle them



Jagadguru's 5 Elements of Happiness That Drive Mankind
(Sanatana Dharma = pursuit of happiness)

- 1) Immortality (desire to live)
- 2) Knowledge (curiosity)
- 3) Joy (freedom from pain)
- 4) Independence (liberty)
- 5) Suzerainty (sovereignty)

<https://grow.scienceoffreedom.life>



Science of Freedom

because freedom is the first condition of growth

“The question was practically this:

‘What is this Universe? ... From what does it arise? ... Into what does it go?’

And the answer was:

‘In freedom it rises, in freedom it rests, and into freedom it melts away.’ ”

Swami Vivekananda, Maya and Freedom

Dan Rodgers

info@scienceoffreedom.us

<https://grow.scienceoffreedom.life>