

# Planck's Dual Angular - Momentum as Gravity & Antigravity Waves

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## ABSTRACT

**The Interactions:** One of the most important concept in Geometry is, *distance*, which is the Quanta in geometry, while in Material-Geometry the composition of Opposite, *the Material-Point* which is the Quanta in Chemistry and Physics. *As in Algebra Zero, 0*, is the *Master-key* number for all Positive and Negative numbers and this because their sum and multiplication becomes zero, *and the same* on any coordinate-System where  $\pm$  axes pass from zero, The Rolling of Positive  $\oplus$ , constituent on the Negative  $\ominus$ , constituent, creates the Neutral Material Point which Equilibrium. Angular-Momentum is identical with *Spin* and consists the *First-Discrete-Energy-Monad* which occupies, *Discrete Value and Direction*, in contradiction to the Point which is Nothing, *Dimensionless* and *without any Direction*. *Quaternion*  $[(+) \cup (-)] \equiv \text{Box } B_R$  which carries the Principal stress  $\sigma$  between A (+), B (-) which  $\sigma$ , as *Centripetal-acceleration* is the minimum Energy becoming from the in-storage AB acceleration and is equal to the *Gravity*  $g$ . Because of the two different motions, *Revolving and Periodic*, acceleration of the Gravity  $g \equiv \pm \sigma$  exists as the First Energy-Box- $B_R$ , while in the Second  $B_P$  is followed *the Local-Extreme-case* this acceleration of Gravity  $g \equiv \pm \sigma$ , is altered Locally by changing the Principal-stress  $\sigma$  with an Local-uniform-Pressure  $\rightarrow g_L \equiv g$   $k = g$ . [Force/Area] =  $G$ , i.e. The minimum Local - Energy acceleration is the known, *Universal Gravitational-constant*  $G = g \ k = k_E g = k_L \sigma$ , for *Macrocosm and Microcosm*, Obeying Newton's Laws of motion. It was proved that, *Constant G*, is the *mechanism* for the First-kick-Start on the *Granular-Energy-monad*,  $g$ , which Acts in the lightest and less-mass Particle and which is the Hydrogen. The Electron-Nutation-Energy due to  $g$ , effect is the minimum frequency  $f_N \equiv f_R = 2, 8398447.10^{10} \text{ s}^{-1}$ , and which so exists in all Atoms. This Energy in Hydrogen-Cave as E-M, Conductor  $\equiv$  The Pin of Atom-Plug Into their Sockets, which are the Orbit - Bracket - Hooks  $\equiv$  The Hands of Atoms, i.e.  $\rightarrow$  The Atoms Plug with their Pins into the other Atoms-Drains = Holes, and so are Bonded. This is the Resonance frequency between all Atoms, *and because Hydrogen is Common to all Atoms*, so Bond to Molecules and Crystals, and all other Compounds in this Cosmos.

**Keywords:** Antigravity, What is the Antigravity.

## PREFACE

### THE QUANTIZATION OF THE $\rightarrow \{\text{ENERGY} - \text{SPACE UNIVERSE}\} \leftarrow$

In a Conservative System the Total Energy  $\equiv$  Motion is constant and the Differential equation of motion can be established by the Principle of Conservation of Energy. For the free vibration of an Undamped System, the Energy is Party Kinetic =  $E_K$  which is stored in the mass by

virtue of its velocity and Party Potential =  $\mathbf{E}_p$  which is stored in the form of Strain energy in elastic deformation, or the Work done in a Forced-Field such as gravity. Since Issues  $E_K = E_P$  so and  $E_K + E_P = \text{constant}$ . From the theory of Vibrations, {All Systems possessing mass=  $m$  and Elasticity =  $E = 1 / k$  are capable of free vibration in the absence of external excitation which is its Natural frequency of vibration =  $\mathbf{w}_n$  and the equation of motion is  $\rightarrow \ddot{x} + \mathbf{w}_n^2 x = 0$   $\leftarrow$  where  $\mathbf{w}_n^2 = \frac{k}{m}$ , Gravitational force  $G = m g$  } i.e. Since the Hydrogen-cave System H, as E-M Conductor, Possesses mass  $\mathbf{m}_H$ , and light-velocity  $c$ , then vibrates IN-OUT the Space-Positions  $(x, y, z)$  of all Universe with its Natural frequency  $\mathbf{w}_H = \sqrt{\frac{k}{\mathbf{m}_H}}$ . or and frequency  $\mathbf{f}_H = \frac{\mathbf{w}_H}{2\pi}$ , and is a Wave – function providing the complete Description of the Physical Reality.

From, Work =  $W = \text{Force} \cdot \mathbf{F}_{i,j,k} \times \text{Displacement } d\mathbf{s}_{i,j,k} = (\mathbf{F}_{i,j,k} \times d\mathbf{s}_{i,j,k}) = (F \times ds)$ , and for the Unit of time  $dt$ ,  $\rightarrow W / dt = F \times (ds / dt) = (F \times \vec{v}_{i,j,k}) = \text{Power} = P$ . i.e. Power  $\equiv$  Force  $\times$  Velocity or  $(P = F \times \vec{v})$

### Remarks, from Mechanics - Physics

1. Energy  $E = \frac{1}{2} m_H \cdot c^2$ , or  $\rightarrow 2E = \mathbf{m}_H \cdot c^2 \leftarrow$  and Velocity = The light-velocity  $c$ ,
2. Wave length  $\lambda_H = \frac{2\pi c}{\mathbf{w}_H}$ , and Wave Amplitude  $\mathbf{A}_H = \frac{\lambda_H}{2\pi}$ ,
3. Hydrogen Power  $\mathbf{P}_H = 0, 5. \mathbf{m}_H \cdot [\mathbf{A}_H]^2 \cdot [c]^2$
4. The Hydrogen Stress-Vector  $\sigma_H$  is related to  $c$  as,  $c = \Phi \cdot \sigma_H$
5. Since Hydrogen cave is an E-M Conductor then it is a Wave with Natural frequency, and since occupies the Property of  $\rightarrow$ Atoms-Plug  $\equiv$  Pin and Atoms-Drain = Hole so are Bonded  $\leftarrow$  in a multi-DOF System at the Stationary Conditions.
6. To find the Eigenvalues and Eigenvectors of a multi-DOF System, Iteration method of motion is formulated by either the Flexibility Matrix  $[a]$  or the Stiffness Matrix.
7. Momentum  $\equiv \pm \text{SPIN} \equiv [\text{Gravity and Antigravity}]$  because velocity  $\bar{c} = [\frac{G\Phi}{A}]$ , Precedes That of A-Momentum  $\Rightarrow \bar{B} = r m \bar{c}$ .

The Results in Hydrogen - cave:

1. Hydrogen-Cave, IN – OUT Universe occupies mass  $\mathbf{m}_H$ , velocity  $\bar{c}$ , and Power  $\mathbf{P}_H$
2. Electron in Hydrogen-cave Precesses and Nutates due to the Gravitational constant  $G$ . The produced Work is stored in form of  $\rightarrow$  Stress Energy as Hydrogen-Bracket-Hook  $\leftarrow$  The Electron Precesses from the continuous and immense-communication to gravity,  $g$ . Electron-Spin is the Angular-momentum-vector  $\bar{B}$  and rotates according to equation  $\frac{dB}{dt}$
3. The Stationary  $\rightarrow$  Tetrahedron, In-Sphere, Cube, Ex-Sphere  $\leftarrow$  [92-99] construction of Atoms Permits the Space - coordinates of Atoms, The Wave-eigenfunctions of many non-commuting Physical operators as Momentum Power, from the Quantum-Mechanical description of the Physical-Reality is Complete i.e. IF-known the Physical Operators, their coordinates are simultaneous Physical reality.
4. The Interactions of Two or more Systems with known Status, can be calculated for any time by the {Carrier-Modulating-Modulated, Demodulation-Process} using Markos Program < Programming the Atoms & Their Compounds > [100 -104]. SO The-All Historical Doubt of Einstein-Podolsky-Rosen for Q-Mechanics Completion VANISHES

5. From all the Possible Reactions in Compounds, the Bonding or the Releasing of energy is the Vital rule of the Theory of Vibrations. The Program, Programming the Atoms and their Compounds, analyses the Interactions of two or more Energy Systems with known Status using the  $\rightarrow$  Carrier-Modulating-Modulated - Demodulation Waves Process  $\leftarrow$

Some following Wave's Properties that are Defined:

- 5a... The Mode - Shapes,  $\Phi$ ,
- 5b1..The Circular - Frequencies,  $\mathbf{W}_R$ , in  $10^{15}$  Hz,
- 5b2..The Natural - Frequencies,  $\mathbf{f}_R$ , in  $10^{15}$  Hz,
- 5c.. The Resultant Energy - State,  $\mathbf{E}_R$ , in e-Volt,
- 5d...The Electric-Magnetic Field,  $\mathbf{E}_R - \mathbf{M}_R$ , in  $10^{-12}$  Ampere -  $10^3$  Tesla,
- 5e.. The Intensity of the  $\lambda$ -Electric-Field,  $\mathbf{I}_\lambda$ , in  $10^{-12}$  Ampere,
- 5f.. The Intensity of Magnetic-Field,  $\mathbf{M}_\lambda$ , in  $10^3$  Tesla,
- 5g.. The Wavelength,  $\lambda$ , in  $10^{-10}$  meters,
- 5h.. The Wave Velocity,  $\bar{v}$ , in  $10^5$  meters / s,
- 5i1..The Resultant Voltage at Wavelength-sides,  $\mathbf{V}_\lambda$ , in Volt,
- 5i2..The S-Bands Voltages at Wavelength-sides,  $\mathbf{V}_\lambda$ , in Volt,
- 5j.. The Radius of the Helical motion,  $r = \mathbf{A}_R$  in  $10^{-10}$  meter,
- 5k.. The Total Side-Bands Power,  $\mathbf{P}_T$ , in  $10^{-20}$  Watt,
- 5l.. The Side-Bands Amplitude,  $\mathbf{A}_B$ , in  $10^{-10}$  meter,
- 5m.. The Side-Bands Coefficients,  $a - m$ , in n-n,
- 5n.. The Modulating Phase Shift,  $\phi$ , in Rad /  $2\pi$ ,
- 5o.. The Modulating Factor,  $m$ , in n-n,
- 5p.. The Total Energy-Status,  $a - m$ , in H-W,

### GENERAL

1. The Objective Reality is composed of two elements, that of Distance. The Space  $ds$ , and that of Motion, or else the called Energy, and it is the content of all sciences [32]
2. The Euclidean-Geometry describes the Space only but Not the Energy as is motion [48]
3. The Solution of all the Unsolved-Ancient-Greek-Problems [50] opened the way to the Material-Geometry [54] which Incorporates the Motion  $\rightarrow$  In-Space as  $(\oplus \leftrightarrow \ominus) \equiv 0$ , [61] The Space exists in Energy - Caves as Energy-Quantum-Quantities [39], while Motion or Energy exist in Caves as an Confined - Stationary-wave which is either Static or an moving Energy-Storage or an Energy-Box [68]. The Any-Two Opposites (+), (-) exist in Nature and are found everywhere from  $\rightarrow$  Zero-Point  $(0) \equiv [+ = -]$  or as  $(+ A) + (- A) = 0$  in E-Geometry and  $\rightarrow [0] = [\oplus \leftrightarrow \ominus] \equiv f_n$ ,  $[\oplus \leftarrow ds \rightarrow \ominus] \equiv ds$  in Material-Geometry, to the aperon,  $\pm \infty$  where  $\rightarrow$  The Space  $\equiv ds$ , is the nodes distance, and motion exist as a Vibration  $\leftarrow$  [52]
4. The Electron-Nutation in Hydrogen cave Produces Energy due to  $g$  effect, as an minimum frequency  $f_n \equiv 2, 8398447. 10^{10}$  H and thus exists in all Atoms. This Energy in Hydrogen-Cave is an Electrical -Magnetic Conductor, which is The Pin of Atom-Plug and enters Into the other Atom-Sockets, which are the Orbit-Bracket-Hooks. These are the Hands of Atoms, i.e.  $\rightarrow$  The Atoms-Plug, Placing their Pins into the other Atoms Drains  $\equiv$  Holes, and so is done that what we say as Bonding.

5. Because of the Resonance frequency between all Atoms, and because of the Common Hydrogen, so Atoms Bond by Pinning and form Molecules and all Compounds in this Cosmos. This is Possible because the Periodic-System of Atoms is NOW modulated into 4 New - Categories with Only-One Criterion, which is The Number of ( $\pm$ ) Energy - Conductors in Atoms, related to their Stability.
6. The first Solid (4 Points not coinciding) is The Tetrahedron, and the first Material Space for the Two elements (+), (-), are ( $4 \times 2 = 8$  Positions for Electrons) The-Cube, i.e. the Tetrahedron is Into the Cube and into its Ex - Sphere, and this because the Circles on Tetrahedron exist on Sphere.
7. When 1-8 Electrons  $\ominus$  are Placed on the Cube's Vertices, and into this Onion -System, then Automatically are formed the, 1 - 4 Energy-Conductors, where issues [ $\oplus \leftrightarrow \ominus$ ] = [ $p \leftrightarrow e$ ] = [Atom-Plug = + Electric Vector  $\leftrightarrow$  - Magnetic Vector  $\equiv$  Drain  $\equiv$  Hole], and are the Actions between Opposite. With this New modulation [The, 1, 2, 3, 4, Energy-Conductors  $\equiv$  Atoms-Four Fundamental frequencies], Conductors exist on System and ARE ACTIVE + as  $\rightarrow$  The-Electric-Vectors  $\leftarrow$  and simultaneously PASSIVE  $\equiv$  Drains (-) as  $\rightarrow$  The-Magnetic Vectors  $\equiv$  Holes  $\leftarrow$ . The Zero-State Conductors are those whose 8 Cube- Positions are all filled with electrons. The Multiple - Plug-Pins Atoms can Plug all the less number Electrons - Atoms and can Be-Plugged from all the greater number Electrons-Atoms. With these Four modulations are formed all Atoms and their Compounds, these are the Mechanisms of, Water, the Cells, RNA, DNA, Cancer, and everything in this Universe.
8. In the same way, is that where an 110 Volt Refrigerator Can't-Plug into 220 Volt Socket and this because are different in construction, the same to Atoms-Plug which differ to the Number and the Length of their Pins. Hydrogen is the Multiple-Plug-Pins Atom which can Plug all Atoms and itself.
9. The New-Atom-Structure is consisted of  $\rightarrow$  a) The Nucleus IN-Sphere b) The Dynamic Electro-Magnetic - Tetrahedron, c) The N-Outer- Cube, d) The Orbitals EX-Sphere.
10. In the New-Atom-Structure, the Master-Keys - Resonances are the Communications-Frequencies, either to the Atoms or to their Compounds.

### THE E - GEOMETRY & THE ENERGY CAVES

#### The Golden Ratio Pattern $\Phi$ and its Functions

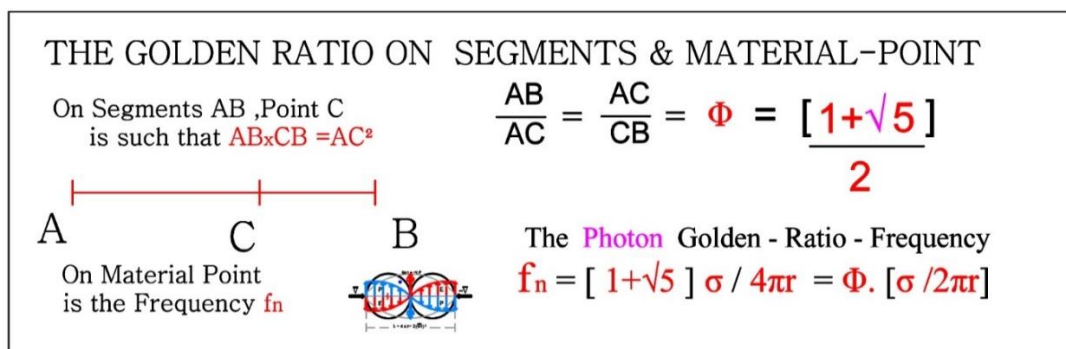


Figure 1: The Physical explanation of The Golden-Ratio  $\Phi$ , in Universe:

In figure, AB line-Vector is divided by Point C such that  $AC = \frac{AB}{2} [\sqrt{5} + 1] \dots (1)$

## Proof

According to the definition of Mean ratio exists  $AB / AC = AC / CB$ , or  $AC^2 = AB.CB = AB.[AB - AC] = AC^2 = - AC.(AB) + AB^2 \rightarrow AC^2 + AC (AB) - AB^2 = 0.....(2)$

Solving the second degree equation (2) then  $AC = \frac{AB}{2} [\sqrt{5}+1]$ , i.e. Point C on AB vector, is such that issues relation (1).

The Physical meaning becomes from Mechanics where, when a force P, acting on a surface S, of a differential volume  $ds^3$ , then Principal stresses  $\sigma_1$ ,  $\sigma_2$ , and Shear stresses  $\tau_{12}$  are as equation  $\sigma = \sqrt{(\sigma_1 - \sigma_2)^2 + 4 \tau_{12}^2}$ , and  $\sigma_{1,2} = (\sigma_1 + \sigma_2)/2 \pm (\frac{1}{2}) \sqrt{(\sigma_1 - \sigma_2)^2 + 4 \tau_{yz}^2}$ , where  $\rightarrow \tan\theta = 2. \tau_{12} / (\sigma_1 - \sigma_2)$ . (3) When the surface becomes a Point [This is the Extreme case where surface is interchanged as line or line- segment, it is the same as the infinite small,  $ds$ , in Calculus], then  $\sigma_2 = 0$  and  $\tau_{12}$  is very small i.e. It is a type of vanishing - Shear due to layers laterally shifted. Since force P, is a vector then as is in cross-product to a right-handed coordinate system where exists  $\sigma_2 = 0$  and  $\tau_{12} = \sigma_1$ , then equation (3) becomes,  $\sigma_{1,2} = \sigma_1 / 2 \pm (\frac{1}{2}) \cdot \sqrt{\sigma_1^2 + 4. \sigma_1^2} = \frac{\sigma_1}{2} \cdot [1 \pm (\sqrt{5})] = \frac{\sigma}{2} \cdot [1 \pm (\sqrt{5})]....$  (4) Equation (4) denotes the way that Stresses  $\sigma_{1,2}$  are shaped on any Volume according to the Principal Stress  $\sigma$ , and which is the Golden-ratio  $\Phi = \frac{\sigma}{2} [1 \pm (\sqrt{5})]$  of Stress  $\sigma$ . Since also Stress  $\sigma$  eternally exists in Material - Point and is of the Golden-ratio-pattern  $\Phi$ , therefore microcosm and sequence all macrocosm follows, the Stress  $\sigma$ , Property Vector as  $\{\sigma \Phi\} \equiv [\frac{2B}{\pi r^3}] \equiv 2\pi \cdot \mathbf{f_p} r \equiv w r \equiv \bar{v} \equiv m a = m g = \bar{c}$ , and The Growing-Golden-ratio-Pattern  $\Phi$ , as this is stated in,

1. Stress with Golden ratio Property,
2. Centripetal acceleration due to Stress,
3. Gravity = Stress = Centrifugal acceleration,
4. Gravitation constant G Stressing, g.

All above related vectors, of frequency  $\mathbf{f_p}$ , occupying the Growing - Golden-ratio Pattern  $\Phi$ , give the analogous Strength to enter caves, and incidentally in Satiation Systems to follow the Split -Property as this happened to the Organic - Chemistry and Medicine.

The  $\Phi$  Properties:

To show that  $\Phi = 1 + \frac{1}{\Phi} = 1$ , 6180339887: The Proof, It is holding  $\rightarrow 1 + \frac{1}{\Phi} = 1 + \frac{1}{[1+\sqrt{5}]/2} = 1 + \frac{2}{[1+\sqrt{5}]} = \frac{2[\sqrt{5}-1]}{[\sqrt{5}+1] \cdot [\sqrt{5}-1]}$  or,  $1 + \frac{1}{\Phi} = 1 + \frac{2[\sqrt{5}-1]}{4} = 1 + \frac{[\sqrt{5}-1]}{2} = \frac{2+\sqrt{5}-1}{2} = \frac{[\sqrt{5}+1]}{2} = \Phi$ , therefore,  $\Phi = 1 + \frac{1}{\Phi}....(5)$

Equation (5) is an very Interesting Property of the Golden - Ratio because is such that, it can be Defined in terms of itself, i.e. of unit 1 equal to a new  $\Phi$  which defines the Space and from  $\frac{1}{\Phi}$  define the Opposite which is The Anti-Space, and both still. as continuous fraction is,  $\Phi = 1 + [\frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{\ddots}}}}]....$  (6)

Because number  $\Phi$ , multiplied with its Reciprocal number  $\frac{1}{\Phi}$ , is process of Addition, and equal to unit 1, so  $\rightarrow \text{Space} * \text{Anti-Space} \equiv \text{Monad} \leftarrow$  or  $\Phi * \frac{1}{\Phi} \equiv 1$  because,  $\rightarrow \Phi * \frac{1}{\Phi} = [1 + \frac{1}{\Phi}] \frac{1}{\Phi} = 1$  or  $\rightarrow \frac{1}{\Phi} + \frac{1}{\Phi^2} = 1$  and  $\Phi + 1 = \Phi^2$  or  $\Phi^2 = \Phi + 1 \dots\dots(7)$

Equation (7) is written as,  $\Phi^2 - \Phi - 1 = 0$ , and the roots of the second degree equation is  $x = \frac{\Phi}{2} \pm \frac{[\sqrt{(\Phi^2 + 4\Phi^2)}]}{2} = \frac{[\sqrt{5} + 1]}{2}$ .  $\Phi = \Phi * \Phi$  i.e. Golden-Ratio Property is continuously increasing by its self, a Self-Growing Property of frequency  $f_n$  of Material-point.

Equation (7) is also a very Special Property of the Golden ratio because, according to Euclid, A straight line AB is said to have been cut in Extreme and Mean ratio when as the whole line is to the greater segment AB / AC, so is the greater to the lesser AC / CB, and according to Markos, Since frequency in Material-Point becomes from Equilibrium of  $\rightarrow$  The Two-Opposite-Rotational-Energies  $[\pm]$   $\leftarrow$  as relation  $\bar{B} \bar{w} = L = \frac{1}{2} J_1 w_1^2 + \frac{1}{2} J_2 w_2^2 + \frac{1}{2} J_3 w_3^2$ , or Angular-momentum  $B \equiv \pm \text{Spin } S$  as,  $\bar{B} = \frac{J \cdot w}{2} = \frac{\pi r^4}{4} [2\pi f] = \frac{\pi^2 r^4}{2} [f] \equiv [\text{Constant} * f] \equiv \frac{2L}{w} = \frac{2L}{2\pi f} = [\frac{L}{\pi}] \cdot [\frac{1}{f}] = \frac{4r \cdot L}{(1 + \sqrt{5})\sigma}$ , or  $\bar{B} = \frac{4r \cdot L}{(1 + \sqrt{5})\sigma} = \frac{2r \cdot [L = hf]}{(1 + \sqrt{5})\sigma} = \frac{hf}{2\pi f} = [\frac{h}{2\pi}] \equiv \text{SPIN}$ , where  $L = h f = \text{Constant}$  and Frequency related to  $\Phi$  is  $\rightarrow f_n = [\frac{2}{\pi^2 r^4}] \cdot \bar{B} \equiv [\frac{1 + \sqrt{5}}{2}] \frac{\sigma}{2\pi r} \equiv [\frac{\Phi \sigma}{2\pi r}] \dots\dots(7a)$

The frequency which Occupies the Property of the Golden-Ratio-Pattern  $\Phi$ , and equation (7-7a) defines that Material Point of frequency  $f_n$ , when collide with another Material Point, or with another Particle or Particles, then M-P Produces another monad as the ONE  $\rightarrow 1 \equiv$  New Quaternion and the first continuous to be of the same Identity, frequency  $f_n$ , as before and from Euler's, rigid body dynamics work  $W = 2L = \bar{B} \cdot \bar{w} = J \cdot w^2 \equiv h \cdot f_n \equiv [\frac{h \Phi \sigma}{2\pi r}]$ , i.e. The Frequency of Photon, is embodied with the  $\rightarrow$  Growing-Golden-ratio-Pattern  $\Phi \leftarrow$  And Uses The Vibrating Physical Structures, which are the Granular Material-Instruments, To Kick Start all of them and everything in this World. The How is in [86]

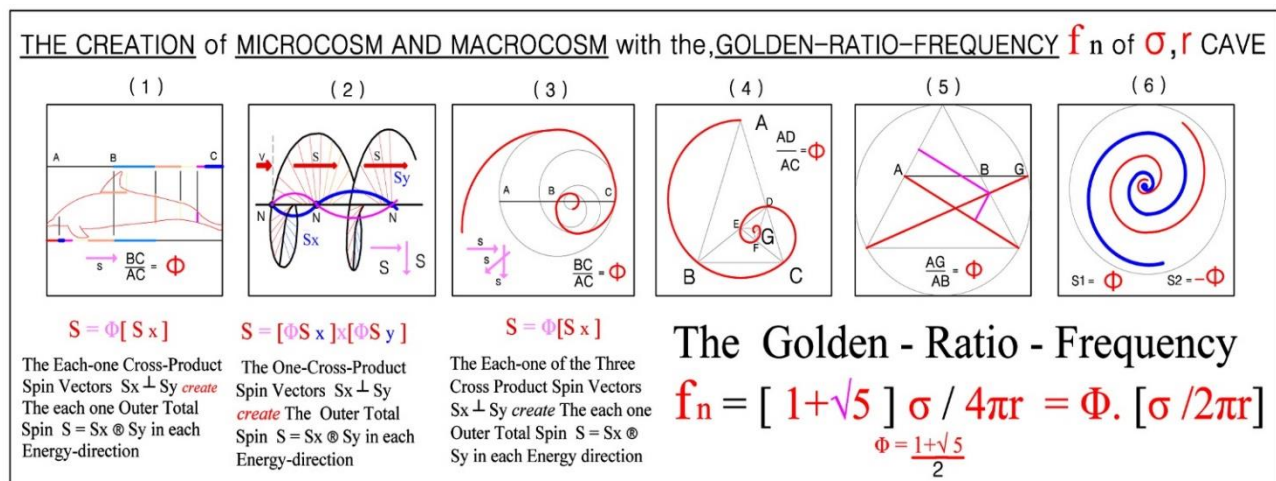


Figure 2: The Physical explanation of The Golden-Ratio  $\Phi$  in Microcosm - Macrocosm.

## The Acceleration Growth in Material Point: [87]

1. A line Vector AB on which Golden-Ratio is applied, is analogous to a Conductor  $\overline{AB}$  on which Stresses  $\sigma \equiv \left| \frac{2\pi r}{\Phi} \right| f_n$  on Vectors-Square is acting, and is set into vibration motion at its natural frequency  $f_n$ . Since each natural frequency of the Conductor is associated with One of the many Standing wave-Patterns by which Conductor AB could vibrate, Then-When another one Interconnected Object Pushes Conductor with one of these frequencies, the Conductor is forced into vibrating at one of its Harmonics. Natural frequency  $f_n$ , transports the Golden Ratio  $\Phi$  in the other Object. This happens in Photosynthesis.
2. The Equations of motion in a Material Point related to the Inner motion was referred before where the In-between-magnitude AE, The Part, becomes the Outer AB as the, Whole or the Self-Growth. This Augmentation-Property, of these two Golden-Ratios, exists in the Material-Point and on Frequency  $f_n$ , which motion  $\equiv$  Growth, and Spread in Two-Closed-Transverse Planes as is in the Propagating Electromagnetic Wave where  $E \perp H$ . From equations  $E = h \cdot f_n \equiv \left[ \frac{1+\sqrt{5}}{2} \right] \frac{h\sigma}{2\pi r} = \left[ \frac{n\sigma}{8r^2} \right] \cdot \overline{B}$ ,  $f_R \equiv [f_{1=N}, f_2, f_3, f_R = w^2_N]$ , Euler's  $e^{-i.A\left(\frac{\pi}{2}+2k\pi\right).b} = e^{-i.A\left(\frac{\pi+4k\pi}{2}\right).b} = A \cdot \cos\left[\frac{\pi+4k\pi}{2}\right] \cdot b - i \cdot A \sin\left[\frac{\pi+4k\pi}{2}\right] \cdot b$ ,  $L = [\overline{B}/2] \cdot w$ , Then  $w = \sqrt{2\pi f_R} = 2L / \overline{B}$ , and Wave Equation is  $y = 2A \cdot \sin\left(\frac{2\pi x}{\lambda}\right) \cdot \cos.wt$  .....(a) Equation (a), is the equation of the Inner Electromagnetic wave denoting that the vertical motion,  $v_y$ , is related to the Position,  $x$ , and is defined on the Sinus curve while the horizontal motion,  $v_x = 0$ , frequency,  $w$ , is on the Cosines curve and is,  $w = \frac{2\pi}{T} = 2\pi \cdot f_N \equiv \left[ \frac{1+\sqrt{5}}{2} \right] \frac{\sigma}{2\pi r}$ , which follows the Growth -Golden - Ratio - Pattern. The same happens to the Outer Electromagnetic wave which equations are,  $\vec{E} = v_x \cdot E_0 \cdot \cos(kz - wt + \varphi)$ ,  $\vec{B} = v_y \cdot \left[ \frac{E_0}{c} \right] \cdot \cos(kz - wt + \varphi)$  ....(b) Equation (b) is the equation of the Outer Electromagnetic wave, denoting that the Electric field which travels with light velocity  $c \rightarrow$  directed to  $\vec{k}$  axis. Magnetic field travels with light velocity also,  $c \rightarrow$  directed to  $\vec{k}$ , and is in Phase with Electric field. For both, Outer Electromagnetic fields the frequency,  $w$ , is that of inner motion i.e.  $w = \frac{2\pi}{T} = 2\pi \cdot f_N \equiv \left[ \frac{1+\sqrt{5}}{2} \right] \frac{\sigma}{2\pi r}$ , which continuous to follow Growth-Golden-Ratio-Pattern Photon also occupies above Property of the Material Point and the Growth-Pattern. With this way Photon's frequency  $\rightarrow f_p = 1 / T_p$  Kick - Start, everything found on its-way. From relation, constant  $k = \frac{1}{f^2_{n.a} \cdot a^3} \rightarrow$  or  $1 = k \cdot f^2_n \cdot a^3$   $\leftarrow$  then the cave-Semi-major-axis  $a = \sqrt[3]{T^2/k} = \sqrt[3]{\frac{1}{g \cdot f^2}} = \sqrt[3]{\frac{16 \cdot \pi^2 \cdot r^2}{(6+2\sqrt{5}) \cdot g \cdot \sigma^2}} = \sqrt[3]{\frac{8 \cdot \pi^2 \cdot r^2}{(3+\sqrt{5}) \cdot g \cdot \sigma^2}}$ , and the  $f_R = \frac{w}{2\pi} = \sqrt[2]{\frac{1}{g \cdot a^3}}$  .....(c) From (c) is seen that the Resonance-frequency  $f_R$  follows the Growth -Golden- Ratio-Pattern.
3. The Produced Work  $\equiv$  motion, in Material-Point ZD becomes the Initial frequency  $f_N$ , as  $f_N [S \equiv f_{1=n}, f_2, f_3, f_R = w^2] = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{n\sigma \cdot \overline{B}}{8r^2}$ , and so is the meter of Stationary motion. In case that Conductor  $[Z = \oplus \rightarrow \ominus = D]$ , Anti-Conductor  $[D = \oplus \rightarrow \ominus = Z]$  combine to form the Special Pattern as < Standing-Wave > then at Nodes Stress  $\sigma_N =$

$\frac{2\pi r f}{\Phi} = \text{Constant}$  since  $r = 0$ , and at Anti-Nodes Pressure or Stress goes Up and Down  $\uparrow$  twice the Amplitude of the travelling wave as  $2 \left[ \pm \sigma_N = \frac{2\pi r f}{\Phi} \right] = 2.k$ , since the equation of a Standing wave is  $y(x, t) = 2a.(k x - \omega t)$ . Because in 1-Conductor-Case a Screw-motion is Torque  $T_{xy}$  and created in an Perpendicular to ZD Plane, Torque  $\rightarrow T_{ZA} = \sigma. |ZA|^2 = (2\pi f r) \frac{a^2}{\Phi} = \omega r \frac{a^2}{\Phi} = \bar{v} \frac{a^2}{\Phi} = \sigma \Phi^3 = \bar{c} \frac{a^2}{\Phi}$ , and Stress  $\sigma = \frac{F}{A} = \frac{2\pi r b f}{\Phi} = \left[ \frac{F.r^2}{2} \right] = \left[ \frac{e.a^2}{2} \right] = 1, 6022.10^{-19} \cdot \left[ \frac{a^2}{2} \right]$ , C.m<sup>2</sup>, and the nodes are curves as (one-dimensional) one less than the dimension of the System. In the three-dimensional Systems as this is the one electron in Hydrogen-cave, The Nodes are two Dimensional Surfaces and their States are, the Spherical harmonies. [70]

4. Since  $T_{ZA} = \sigma. |ZA|^2 = (2\pi f r) \frac{a^2}{\Phi} = \omega r \frac{a^2}{\Phi} = \bar{v} \frac{a^2}{\Phi} = \sigma \Phi^3 = \bar{c} \frac{a^2}{\Phi}$  carries  $\frac{a^2}{\Phi}$  the Golden-Ratio-Pattern of  $\sigma = \frac{F}{A} = \frac{2\pi r f}{\Phi} = \frac{\bar{v}}{\Phi} = \frac{G}{\Phi^3}$ , of a Surface  $A = \pi.r^2 = |ZA|^2 = \Phi^2$  to the Unmeasured Photoelasticity Fringe - Pattern {Morse-Code  $\equiv$  Information's}, which can be transferred from Atoms. This Procedure is used in Photosynthesis by Photons for more electricity Production. The-Stress-Way of Photon-Storages is  $\bar{f}_N = \sigma / 2\pi r$ , and Photon-Information  $f_n = \sigma \Phi / 2\pi r$ . Thus Information's as Waves are The Colored Fringes, The Stresses, or frequencies are Deposited in Atoms as Magnetic fields and Stationary Strains, while Motion  $\equiv$  Energy  $\equiv$  Waves  $\equiv$  Golden Ratio  $\Phi$ , which Enters The Geometry -Vectors, and forms the Elementary-Particles. [52]. From, Wave-Energy Constant  $k = \frac{2\pi}{\lambda} = \frac{2\pi f}{c} = \frac{\omega}{c} = \left| \frac{\bar{v}}{c} \right| \cdot |r_{A-KA}|$ , is  $c = \frac{\omega}{k} = \lambda f$ , or  $\left| \frac{\bar{c}}{2 \cdot |AK_A|} \right| \equiv f$ , i.e. The frequency  $f_{AK_A}$  of Pipe  $|AK_A|$ , is the Stationary-Photon's Energy-Storage  $\boxed{\bar{f}_n} \equiv \left| \frac{\bar{c}}{2 \cdot |AK_A|} \right|$  and  $f_{\text{Reson}} = \sigma \Phi^3 = G$ , or  $\sigma = \frac{G}{\Phi^3} = \frac{G \cdot \sigma^3}{c^3}$  and  $\sigma^2 G = c^3$ , where  $\sigma_{\text{Res}}$  is between all frequencies. For Black-Holes, the Total-Energy  $L = \bar{B} \bar{w} = \frac{J \cdot \omega}{2} \omega = \frac{\pi r^4}{2} [2\pi f]^2 = 2\pi^3 r^4 f^2 = r m v = r m \cdot \omega r$  and mass  $m = \frac{2\pi^3 r^4 f^2}{r^2 2\pi f} = \frac{\pi^2 r^2}{1} f = \left[ \frac{\pi r \cdot v}{2} \right] v$ , while Angular-Momentum  $B = r \cdot m v = r \left[ \frac{\pi r v}{2} \right] v = \frac{\pi r^2}{2} v^2 = \frac{\pi r^2}{2} v^2 = \frac{\pi r^3}{2} [n \cdot \pi \cdot c]^2 = \frac{\pi^3 r^3}{2} c^2$ , or Black-Hole-Energy  $\rightarrow B_{\text{BHE}} = 2 \cdot \pi^5 \cdot r^3 \cdot f^2 = (\pi r)^3 \cdot \omega^2 \leftarrow$  i.e. Velocity in Black-Holes is Related to Cave,  $r^3$ , and Energy  $\omega^2$  times of light velocity. For more in [58]

### The Self-Growth Property of the Golden Ratio Stress $\sigma$

From relation  $\rightarrow f_n = \left[ \frac{2}{\pi^2 r^4} \right] \cdot \bar{B} \equiv \left[ \frac{1+\sqrt{5}}{2} \right] \frac{\sigma}{2\pi r} \equiv \left[ \frac{\Phi \sigma}{2\pi r} \right]$ , then  $\sigma = \frac{F}{A} = \frac{2\pi r f_n}{\Phi} = \frac{\bar{v}}{\Phi} = \frac{\bar{\lambda} \cdot f}{\Phi}$ , or,  $[2r] \cdot f_n \pi = \sigma \cdot \Phi = [\lambda] \cdot \pi \cdot f_n = \pi \cdot [\lambda f_n] = \text{Energy } E_n$  from a Wave of frequency  $f_n$  and Wavelength  $\lambda$ . The total Energy  $2.E_n = \sigma \cdot \Phi = \sigma \left\{ \frac{1 \pm \sqrt{5}}{2} \right\} = \sigma \{1, 6180339, -0, 6180339\} = \sigma \{e^+, e^-\}$ , where for  $\sigma = 1$  then,  $2.e^+ = 1, 6180339$ ,  $e^- = -0, 6180339 \rightleftharpoons \text{eV}$ , which are the Unit -Active and Passive Actions between Material-Points  $[\oplus \leftrightarrow \ominus]$ . This Property of Energy relation on  $\Phi$ , either is Active or Passive and is translated as  $\sigma \{e^+, e^-\}$ ,



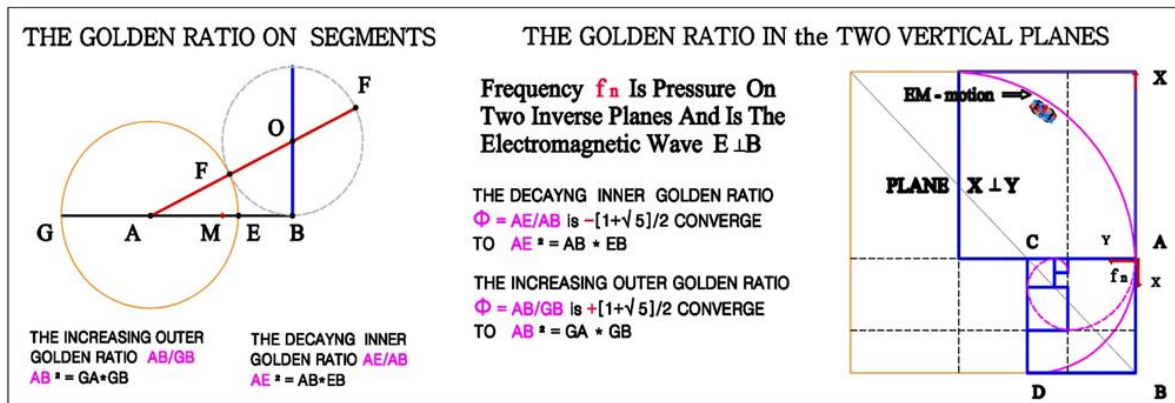


Figure 3: The Golden ratio  $\Phi$  on Segment AB, and Growth on Perpendicular-Planes.

### The Duality of Isochronous – Photons: [77]

Photon is the first Propagating Material-Point in existing Universe where,

1. The Space and the Anti-Space are linearly effecting and equilibrium.
2. The Space and the Anti-Space are Perpendicularly effecting and equilibrium.
3. The Space and the Anti-Space are Torsionally effecting and equilibrium.

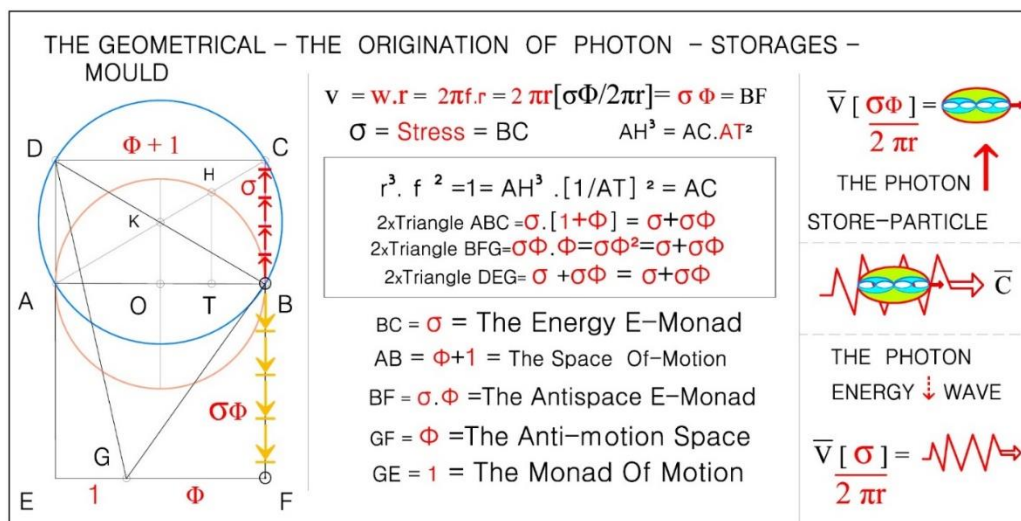


Figure 4: The Material-Geometry Mechanism of motion in Photons-Cave:

FROM MECHANICS The Eternal-Rotation of the Two Elements,  $[\oplus \cup \cup \ominus]$ , Up or Down in Material Point circles, Originates the Spins,  $\pm \frac{1}{2}, \pm 1, \mp \frac{1}{2}$ , of All Particles Fermions or and Bosons which combine from above Three-States just by Adding their Spins [36].

From Cauchy-Stress-Tensor under Plane-Stress conditions the Equation of Principal-Stresses  $\sigma_1, 2$ , is  $\sigma_1 / 2 = \pm \pm (\frac{1}{2}) \cdot \sqrt{\sigma_1^2 + 4 \cdot \sigma_2^2} = \sigma_1 \cdot [1 \pm (\sqrt{5})] / 2 = \sigma \cdot \Phi$ , which is the Golden-ratio-Pattern of the Material Point as Type of a vanishing Shear due to layers laterally shifted. Equilibrium of, ABCD, ABFE, CDEF Quadrilaterals is through Ptolemy's and Ceba's Equilibrium - relations, Fig-7. The above Material Point is the Energy-Structure of Photon which is Quantized and Equilibrium. Stability of Photon's construction of, ABCD, Rectangle

issues through Ptolemy's -Theorem for Inner - Connectors [AC.BD = AB.CD + AD.CB], and the Ceba's Theorem for the three Outer Connectors of, ABCD, CDEF, Rectangles as  $\rightarrow$  [CD.AE.FB = CB.FE.AD], BDEF, Rectangle as  $\rightarrow$  [BD.AE.GF = BF.GE.AD], AEFC, Rectangle as  $\rightarrow$  [AE.GF.BC = AC.BF.GE].

With this Way is succeeded the Stability of the whole structure of Photon.

This minimum quantized Energy  $\sigma$ , was Proved that is going out the Material Point, because of Skin effect, as acceleration and creates the Stationary gravity  $g$  as  $f_n$ , acting on Spin as  $S_{PA}.r^4$ . The Centripetal Force and equal to Stress  $\sigma$ , is  $F_c = mv^2 / r = 1. (wr)^2 / r = w^2. r = \pm \sigma = (2\pi.f_1)^2. r = \sigma_1. [1 \pm (\sqrt{5})] / 2 = \Phi.\sigma$ , and since mass is  $m = \frac{\sigma}{w^2.r} = \frac{\sigma}{w.c} = \frac{\bar{B}}{r.c}$  then,  $\pm \sigma = \frac{c.\bar{B}}{r^2}$  which is a relation between Stress Momentum and light-velocity  $c$ . It was shown in [70-P32] that in Cycloid, the area between the curve and the straight line is  $A = 3\pi r^2$  and the arc length  $l = 8r$ . For the motion on cycloid, we consider a Weight  $Q$ , at a point A, moving with free motion.

Since reaction  $N$  is vertically acting, doesn't give any Tangential component therefore the only one becomes from  $Q$ , which is equal to  $AT = g.\sin \varphi$  and since  $\sin \varphi = \frac{s}{4r}$  and then  $AT = g.\frac{s}{4r}$ . Since acceleration  $a = \frac{d^2s}{dt^2} = \frac{dv}{dt} = \frac{d}{dt}(\frac{ds}{dt}) = -g.\frac{s}{4r}$  then  $\frac{d^2s}{dt^2} = -g.\frac{s}{4r}$  or  $\{\ddot{s} = -w^2 s$  where  $w = \frac{2\pi}{T} = \frac{g}{4r}\}$  ... (a) which (a) is a Harmonic Oscillatory motion showing that Acceleration is proportional to displacement and is directed towards the origin with a Period  $T = \frac{2\pi}{w} = 2\pi.\sqrt{\frac{4r}{g}} = 4\pi.\sqrt{\frac{r}{g}}$ , or and  $w^2 = [\frac{g}{4r}]^2$ , where  $w = 2\pi f$ . Origination of Frequency, or Period, happens from above Property and is  $w = [\frac{g}{4r}] = 2\pi f$ . In Material-Point the Cycloidal-acceleration  $g_{cyc}$  is transformed as Centrifugal acceleration  $g_{cyc} = \frac{(v)^2}{R} = \frac{g}{4r}$ , where  $r$  = the Radius of the Cycloidal-circle and  $R$  = the radius of curvature. In Cycloid velocity-vector  $\bar{v} \equiv \bar{\sigma}$ , and it is the Glue-Bond-Stress between the Opposites  $\oplus, \ominus$  so velocity  $\bar{v} = \bar{w}.r = 2\pi.\bar{f}.r = \bar{\sigma} = \sigma \Phi$ , the Frequency  $\bar{f} = \frac{\bar{\sigma} = [\sigma\Phi]}{2\pi r}$  and the Total-Energy  $2L = J.w^2 = 4\pi^2.f^2$ . The Circular frequency is  $w^2 = \frac{(\sigma\Phi)^2}{r^2} = [2\pi f]^2$  and the Frequency of Photon is  $\rightarrow f_p = |\frac{\sigma\Phi}{2\pi r}| = \frac{[1+\sqrt{5}]\sigma}{4\pi r} = \frac{\sigma.\Phi}{2\pi r}$  ..... (a) i.e.

Equation (a) denotes that the Harmonic - Oscillation due to Any-Force or Weight, which Follows the free motion on Cycloid, is Independent of the Amplitude of oscillation and, is Isochronous. This Property belongs to Photon also, since it is a Material - Point. [70]

Since Total-Energy  $L = B w = \frac{J.w}{2} w = \frac{J.w^2}{2}$  then  $2L = J.w^2$  and  $\bar{B} = r.mv = r.\frac{\pi.r^4}{2} 2\pi f r = \pi^2.r^4.f$ . From momentum relation  $\bar{B} = m r v = m r^2 w = m r^2 (2\pi f) = \frac{J.w}{2} = [\frac{\pi r^4}{2}].[2\pi f]$  then Spin  $S \equiv$  Angular-momentum  $\bar{B} \equiv \bar{S} = \frac{J.w}{2} = \frac{\pi r^4}{2} [2\pi f] = \pi^2.r^4.[f] \equiv \frac{[1+\sqrt{5}].\sigma.\pi.r^3}{4} = \frac{\pi r^3 \Phi.\sigma}{2}$  ..... (b)

Frequency of Photon is  $f_n = \frac{[(1+\sqrt{5})\sigma]}{4\pi r} = \frac{\sigma\Phi}{2\pi r}$ , where  $\Phi = \frac{(1+\sqrt{5})}{2} = 1, 6180339887$  and  $2r$  is The Diameter of Energy-Cave  $AB = 2r$  of circle  $(O, OA) = \text{Monad} \rightarrow \oplus \leftrightarrow \ominus \equiv 1 + \Phi$  and  $BC = |\sigma| =$

The Glue-Bond-Vector,  $\oplus \leftrightarrow \ominus$ , from the main-Stresses magnitude.  $ABCD = |\sigma| \cdot |\Phi + 1| =$  The Energy-Space Rectangular Parallelogram in Plane ABC.  $ABFE = -|\sigma| \cdot |\Phi + 1| =$  The Energy-Anti-Space Rectangular Parallelogram in Plane ABC.  $BF = |\Phi \cdot \sigma| =$  The Anti-Space-Vector, and  $FG = |\Phi| =$  The Space-Vector magnitude.

In circle of AB diameter is created the Stress  $\sigma = BC$  and both the Resultant-monad  $BD = AC$  From Kepler 2nd Orbit laws the Unit-Quantized-Area, or Unit Quantized Energy is that per /sec  $\rightarrow r \, d\phi$ , following equation  $1 = k \cdot f_u^2 \cdot r^3$ , and expresses the area of triangles in Fig-6.

In Figure  $\rightarrow$  Triangle 2(ABC) = BC.BA =  $\sigma \cdot [\Phi + 1] \equiv \sigma \cdot \Phi + \sigma = [\text{Stress-In-Storage-}\Phi] + [\text{Moving-Stress}]$  Or Storage  $S \equiv [\oplus \leftarrow r \equiv \Phi \rightarrow \ominus]$  + Motion  $M \equiv [\bar{v} - \text{Vector}]$  and from Figure -3- where Stress  $\sigma$  is the motion and  $\sigma \cdot \Phi$  the Storage, issues Geometry, Triangle 2(BFG) = FB.FG =  $\sigma \cdot \Phi [\Phi] = \sigma \cdot \Phi^2 = \sigma \cdot [\Phi + 1] \equiv \sigma \cdot \Phi + \sigma \equiv S_{\text{storage}} + M_{\text{motion}}$  Triangle 2(DEG) = EG.ED =  $\sigma + \sigma \cdot \Phi = \sigma \cdot [1 + \Phi] \equiv \sigma \cdot \Phi + \sigma \equiv S_{\text{storage}} + M_{\text{motion}}$ , and since Energy = motion / T  $\equiv (\frac{v}{2\pi r})$ .  $[\sigma + \sigma \cdot \Phi] = \bar{v}$ .  $[\frac{\sigma}{2\pi r} + \frac{\sigma \Phi}{2\pi r}] \equiv \bar{v} \cdot [\bar{f}_n] + f_n \equiv \text{Moving - Storage} \rightarrow [\bar{v} \cdot \bar{f}_n] \leftarrow + \text{Moving-Frequency} \rightarrow [\bar{v} \cdot f_n] \leftarrow \equiv$  Material-Point i.e. The Energy produced in Photon-Cave is consisted of Two-moving-Storages, that travel as Wave  $[\bar{v} \cdot f_n] \rightarrow [\bar{v} \cdot \bar{f}_n] \rightarrow [\bar{v} = \bar{c} = \lambda \frac{f}{\Phi}] \rightarrow [S \equiv EM-R \equiv f_{1=N}, f_2, f_3, f_D, f_n = w^2]$  and, as Particle  $\rightarrow [f_1 = (E^2 + H^2) = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{n\bar{B}}{\pi^2 r^4}] \rightarrow \{W \equiv EM-R \equiv [\epsilon E^2 + \mu B^2] = 2 \cdot \lambda c \cdot \sin 2\phi\}$  and The Duality of an Energy-Storage  $S \equiv \{[\oplus \leftarrow r \rightarrow \ominus] + \text{Motion } M \equiv [\bar{v} - \text{Vector}]\}$ ,

Therefore  $\rightarrow$  Photon is travelling Both as Particle and as Wave, as

1. Energy-Storage  $S \equiv [\oplus \leftarrow r \rightarrow \ominus] \equiv \text{Particle } [\bar{v} \cdot \bar{f}_n] \rightarrow [\bar{v} = \bar{c} = \lambda \frac{f}{\Phi}] \rightarrow$  i.e. a Stationary Standing - Wave  $\rightarrow [S \equiv EM-R \equiv f_{1=N}, f_2, f_3, f_D, f_n = w^2]$ .
2. Energy-Motion  $M \equiv [\bar{v} - \text{Vector}] \equiv \text{The Wave } [\bar{v} \cdot f_n] \equiv [f_1 = (E^2 + H^2) = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{n\bar{B}}{\pi^2 r^4}] \rightarrow$  i.e. a Propagating Wave as  $\rightarrow \{W \equiv EM-R \equiv [\epsilon E^2 + \mu B^2] = 2 \cdot \lambda c \cdot \sin 2\phi [\phi = \frac{B}{\Phi}]\} \leftarrow$

### The Moving Storages of Photons and The Stability of Dual-frequency $f_{\text{Photon}}$ :

Photon is a Material-Point in cave  $r$ , where its Inner is the Stationary-Standing-wave from Electromagnetic-Wave  $[E^2 + H^2] = 2(2r) \cdot c \cdot \sin 2\phi$  with  $n$  Lobes representing the Normal mode vibration with frequencies  $f_n = n \cdot f_1 = \frac{E}{h} = \frac{n \cdot v}{4r} = \frac{n\sigma}{8r} [1 + \sqrt{5}]$ , and its Outward is as the Propagating Electromagnetic-Wave  $\rightarrow \{[\epsilon E^2 + \mu B^2] = 2 \cdot \lambda c \cdot \sin 2\phi\} \leftarrow$  where Particle  $2r = n \lambda$ , Cave  $r$ , is the Electromagnetic-Energy-Storage, and Electromagnetic-Radiation  $E, B$  is the Wave conveyer. Following above constituents of Photon then, Since Energy is motion and the, Total - Energy of Elementary - Particle is equal to the  $\rightarrow$  Intrinsic Rotational + Kinetic Energy from velocity, then according to the conservation law of Energy, This Energy is stored into Neutral caves as Stationary Loops consisting the Lobes, and thus Producing the Space and the Anti - Space Particles with velocity vector the remaining of the Energy Term.

It is proved that Hydrogen cave is the lightest and less-mass element.

The Breakage - Principle, is the way of Energy conservation, where Energy never annihilates and which is always reverted into  $\rightarrow$  the two Opposites  $\{(\pm w)$  or the Conveyers  $\equiv$  Carriers $\}$  and an Neutral Part  $2.\nabla i$  which is the Energy-store  $\equiv$  a Tank Energy  $\equiv$  or as Matter  $(+ w)$ , as Antimatter  $(- w)$  and as Energy Part,  $2L = \bar{B}.\bar{w}$  i.e. Energy  $\equiv$  Motion  $\equiv$  Space + Anti space + Kinetic Energy, Vibrations of Systems issues for Orbits as  $\rightarrow W = 4\pi^2 \cdot \frac{r^3}{T^2} \cdot \bar{n} = 4\pi^2 \cdot r^3 \cdot f_p^2 \cdot \bar{n} \leftarrow$  and agree, to Kepler celestial law such as for macrocosm and for microcosm.

Using the Material-Geometry-Vectors for the Anti-Space Action then, From Force  $G_{ON-AntiSpace} = \bar{AB} \times \bar{BF} \equiv [\Phi+1] \times \{|\bar{\sigma}| \cdot \Phi \equiv \sigma \cdot \Phi\} = \Phi^2 \cdot \sigma \Phi = \sigma \cdot \Phi^3$ , or,  $G_{AN} \equiv \bar{AB} \times \bar{BC} \equiv \sigma \cdot \Phi^3 \equiv \boxed{\bar{\sigma} - \text{Stress}} \boxed{[\oplus \leftarrow \Phi \rightarrow \ominus]} \boxed{[\oplus \leftarrow \Phi \rightarrow \ominus]} \boxed{[\oplus \leftarrow \Phi \rightarrow \ominus]}$  and  $\rightarrow \rightarrow \rightarrow$  Primary-Energy  $\equiv G \cdot f_p \equiv h$  and OR  $G^{-1} \times \sigma \times \Phi^3 \equiv 1 \leftarrow \leftarrow \leftarrow$  where  $G \equiv$  The Newton's-Universal Force  $= 6, 680561.10^{-11} \text{ m}^3/\text{Ns}^2$   $\sigma \equiv$  The Glue-Bond-Stress in Material-Points  $\sigma = \frac{2\pi r f}{\Phi} = 1, 85.10^{-11} \text{ Kg/m}^2$  and,  $f$ , in Planck's length  $r = L_p = e^{-i.(5\pi/2).10}$  is the Frequency  $f_{\text{Plank}} = \frac{c}{2\pi r} = 2, 952362.10^{42} \text{ H}$ , in Planck's Length  $L_p = e^{-i.(5\pi/2).10} = \{\sqrt{3} \cdot \pi \cdot 1, 616199.10^{-35} \text{ m}\}$   $\Phi \equiv$  The Golden-Ratio Pattern  $\Phi = \frac{(1+\sqrt{5})}{2} = 1, 6180339887$ .

From above relations is seen that, in Universe exists the only one Force  $G \equiv \sigma \cdot \Phi^3$ , which is Acting on all Quantized-Quantities as  $G \equiv \sigma \cdot \Phi^3 \equiv \Phi^2 \cdot [\{\sigma \cdot \Phi\} \equiv 2\pi f_p r \equiv w r \equiv \bar{v} \equiv m a = \bar{c}] \leftarrow$  and From  $\sigma \times \Phi^3 \equiv G \rightarrow [1, 846462.10^{-11}] \cdot [3, 618033989] = 6, 680561.10^{-11} \text{ o.e.}\delta.(q.e.d)$  i.e. Universe is a Monad, Becoming from a HUGE-MAGNET of Opposites  $\oplus, \ominus$  which Forms  $> \rightarrow$  The 3-Dimentional SPACES  $\Phi$ , ANTI-SPACES  $|\Phi \cdot \sigma|$ , and  $> \rightarrow$  Energy, where ENERGY  $\equiv$  MOTION through the  $G$  - Force, and the Stress -  $\sigma$  - becoming from Photon. Or. The Ubiquity of Material-Geometry in Electromagnetism is Everywhere.

Remarks on the Duality-Photon  $\rightarrow \{\bar{c} \cdot \boxed{\bar{f}_n} + \bar{c} \cdot f_n\} \leftarrow \equiv \rightarrow$  Particle + Wave  $\leftarrow$

- From equations  $f = \frac{\sigma_1 \cdot \Phi}{2\pi r}$  and  $\sigma_1 \cdot [1 \pm (\sqrt{5})] / 2 = \sigma \cdot \Phi$ , then Frequency  $f_p$ , of Photon, is Independent of the Amplitude  $[\epsilon E^2 + \mu B^2]$  of the Vibration, it is Not-Damped and Not-Driven, and so can be related to Any-Force that can Produce Work  $\equiv$  Energy as Wave and thus can be Quantized to any Monad. The Electromagnetic-Spectrum  $\equiv$  Photon in all its frequencies, which as Frequency  $f$ , or as Period  $T$ , is the Regulator of the Light - Signals. Photon's Amplitude,  $A$ , is referred to its Intensity from relation  $A \cdot c \cdot T = k = \text{constant}$ , and in the Particle case (not seen Particle and wave simultaneously) is the number of Photons.
- Photon striking on an Object of Microcosm or Macrocosm then, It is a Source that Gives  $\rightarrow$  Energy as Energy-Storage,  $\boxed{\bar{f}_n}$ , and Information as the G-Ratio Propagating - Energy  $f_n$ .
- Photon in the Microcosm of Hydrogen-Cave can-Give such Potential-Energy or Resonance Energy as Frequency  $f_R$  and Energy in [Bracket-Orbit-Hook] which Joins the Atoms to Produce the Molecules and Crystals.
- Photon striking on Hydrogen-Cave can Produce the Resonance-Energy-Frequency  $f_R$ , such that can Produce Photos and Image-Fringes of Inter-Atom or any other Structures in Atoms. The Amplitude of the EM - Wave is a measure of the Strength of the Electric

and Magnetic field describing the Wave-nature of light and the Number of Photons the Particle-nature, as this happens in Antenna which detects, the Wave, where a higher Amplitude EM-Wave will cause more Voltage and current in the Antenna.

- (e) Photon striking on Cells can Produce a Resonance-Energy-Frequency  $f_R$ , such that can Enter Cell and Break-It-Up. Duality-Photon Places the Storages  $\boxed{\bar{f}_n}$  everywhere then it stops and diffuses. The Kinetic-Energy  $E_K$  of a moving Material - Point, as this is the Photon, is stored as motion in its Storage,  $r = [n \lambda/2]$  with the,  $n$  frequencies  $f_n = n \cdot f_1$ , with  $n$  lobes and with the fundamental frequency  $f_1$ .

From above is seen the Passage and The -How EM-Radiation can travel in Crystals and which is the Cauchy-Stress-Tensor where  $E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3$ , in-where Energy Propagates along 3 Directions without Birefringence which are the tracks of the Stresses, and carries the motion  $\equiv$  Energy Storage  $r$  which radiation is The Conveyer, the Storages  $\boxed{\bar{f}_n}$ .

Above Procedure can be used in Cells where cells are cases of a Birefringence material and their Resonance Passage happens as the Force of EM-Radiation in Two directions, can travel in Cell through Cauchy Stress Tensor where the Two Conveyers  $E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3$ , can carry the Energy-Storage,  $r$ , in Cell. Interfacial Properties are detected from Surfactant, and can change the Inner-Structure of Cell to another desirable Property. A wide Analysis in [84-86-90]. Moreover, in open Conductors the Conductor's Resultant-Energy-Vector is as an Cruise-missile where for Primary-Forces the Energies  $|k_x.k_y| = |\leftrightarrow|.|\updownarrow| \equiv \nabla$  become very strong Cruise-Ballistic-missile.

### The Quantum Interference of the Duality-Photon

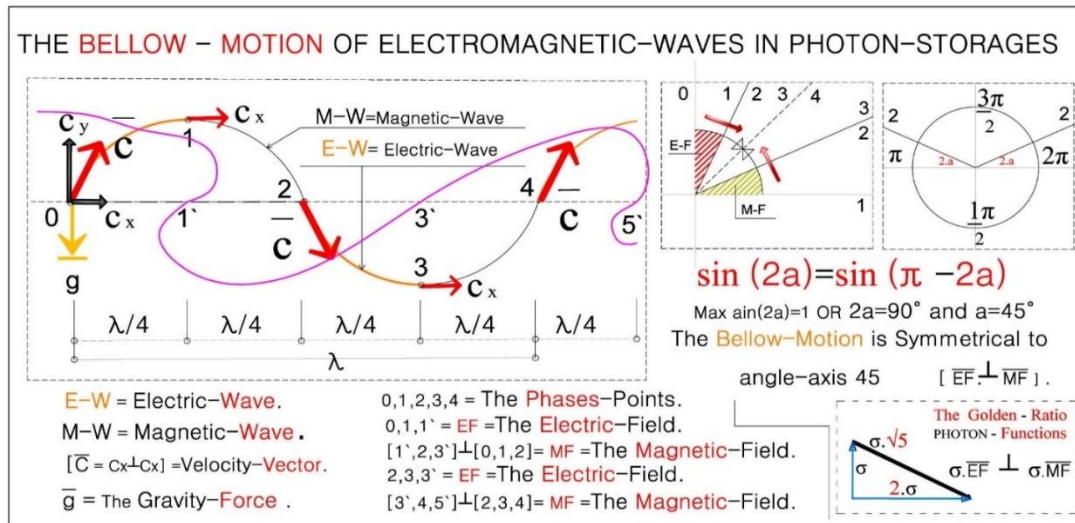
Quantum Interference is the Phenomenon when, a Photon Interferes with itself. [92E]. This Proposition is Right when Photon is considered having a twin-existence, as [101]-3c.P-21. The Problem is to determine the expression of the Power developed by Gravitational From Dual-Photon-equation,  $\bar{v} \cdot [\boxed{\bar{f}_n} + f_n] \equiv |\frac{\bar{v}}{\pi^2 \cdot r_n^4}| \cdot \boxed{\bar{B}_n} + |\bar{c}| f_n$ , when  $c = 0$  or  $\bar{c} = \bar{c}$ , then Photon motion becomes  $\rightarrow |\frac{\bar{v}}{\pi^2 \cdot r_n^4}| \cdot \boxed{\bar{B}_n} \leftarrow \equiv \text{Spin}$ . i.e. The Stationary Photons exist as their Spin only. This Rest-Space is the Part  $|\frac{\bar{v}}{\pi^2 \cdot r_n^4}| \cdot \boxed{\bar{B}_n}$ , and its Communication Code to be the term  $|\frac{\bar{v}}{\pi^2 \cdot r_n^4}| = |\frac{\bar{w} \cdot r}{\pi^2 \cdot r^4}| = |\frac{2 \bar{v}}{2 \pi^3 r^4}|$ , The Rest Space is a Stationary Wave with fundamental frequency  $f_1 = \frac{1}{T_1} = \frac{\bar{\lambda}}{c}$ , with an Electric Wave, that is acting on vector  $\bar{c} = (i \cdot c_x + j \cdot c_y)$ . It was proved [78] that the Newton's Gravitational constant  $G$  does NOT effect on Plane Surfaces but on Volume Surfaces only. This Property of  $G$  means that the only Force which effects on the Rest-Space in Torsional motion, and on the light velocity vector  $\bar{c}$ , is the gravity  $g$  only. Quantum Interference is the Phenomenon when a Photon Interferes with itself. [92E] This Proposition is Right when Photon is considered having a twin-existence, which is [101]3c.P-21

The Problem is to determine the expression of the Power developed by Gravitational. From Dual-Photon-equation,  $\bar{v} \cdot [\boxed{\bar{f}_n} + f_n] \equiv |\frac{\bar{v}}{\pi^2 \cdot r_n^4}| \cdot \boxed{\bar{B}_n} + |\bar{c}| f_n$ , when  $c = 0$  or  $\bar{c} = \bar{c}$ , then Photon motion becomes  $\rightarrow |\frac{\bar{v}}{\pi^2 \cdot r_n^4}| \cdot \boxed{\bar{B}_n} \leftarrow \equiv \text{Spin}$ . i.e. The Stationary Photons exist as their Spin only.

This Rest-Space is the Part  $|\frac{\mathbf{v}}{\pi^2 \cdot r^4_n}| \cdot |\overline{\mathbf{B}_n}|$ , and its Communication Code to be the term  $|\frac{\mathbf{v}}{\pi^2 \cdot r^4_n}| = |\frac{\mathbf{w} \cdot \mathbf{r}}{\pi^2 \cdot r^4}| = |\frac{2 \mathbf{v}}{2\pi^3 r^4}|$ , The Rest Space is a Stationary Wave with fundamental frequency  $f_1 = \frac{1}{T_1} = \frac{\bar{\lambda}}{c}$ , with an Electric Wave, that is acting on vector  $\bar{\mathbf{c}} = (i \cdot c_x + j \cdot c_y)$ .

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**Figure 5: The Stability of  $\{\oplus$  - Space [Electric Wave],  $\{\ominus$  - Anti-Space [Magnetic Wave] of Sub-Space  $\{[\oplus \leftrightarrow \ominus] \equiv ds \equiv [\oplus \leftarrow ds \rightarrow \ominus]$  - or - The Neutral-Space  $[A_E, B_E, C_E]\}$ : Since  $c$  is constant, it is analyzed to,  $(c_x, c_y)$  in any two directions  $x, y$  where  $x \perp y$  and  $y$  to be the gravity direction on where gravity is acting.**

The produced Work is in  $y$  - Range,  $S_y = c_y t - \frac{1}{2} g t^2 = c \sin at - \frac{1}{2} g t^2$ , where maximum Range is  $S_{\max-y} = c_y^2 / 2g = \frac{(c \sin at)^2}{2g} = \left[\frac{c^2}{2g}\right] \sin^2 a$ , happening at angle  $a = 90^\circ$  and where  $\sin^2 a = 1$ . Since at Point (1) the velocity  $v_y = 0$ , the motion in 0-1, maybe considered as falling in linear motion and so issues  $v_y = g t$  or time  $t = \frac{v_y}{g} = \frac{(c \sin at)}{g}$ , as halve Period with total Period  $\rightarrow T = \frac{2(c \sin at)}{g}$ . In figure are seen the 4-Point Positions, at where change the Phase and the Work done in each Phase of Photon's inner motion. The 4-Phases correspond to the Wavelength,  $\lambda$ , as  $\lambda / 4$ . distance with  $90^\circ = \frac{\pi}{2}$  to be the change of Phase. This means that the Produced Work in the Prior Phase -Area as the Golden - Ratio Pattern is Stored in the Next and Perpendicular Phase-Area.

The Total distance for doing Work is the Wavelength  $\lambda$ , in total Period  $T$  as  $\lambda = c_x T = c \cos a \cdot T$  or  $\lambda = c \cos a \cdot \frac{2(c \sin at)}{g} = \left[\frac{2c^2}{g}\right] \sin a, \cos a = \left[\frac{c^2}{g}\right] \sin 2a, \dots (1)$

since from trigonometry exists,  $\sin 2a = 2 \sin a, \cos a$ . The maximum wavelength  $\lambda$  happens when  **$\sin 2a = 1$**  or  $2a = 90^\circ$  and  $a = 45^\circ$ , i.e.  $\rightarrow$  The Total motion in the Wavelength,  $\lambda$ , corresponds to the angle  $a = 45^\circ$ , meaning that the motion of Space, The Electric-field -, and Anti-space, The Magnetic-field, equilibrium as an Bellow. The two Wings in  $90^\circ$  Type simultaneously oscillate to its  $45^\circ$  Bisector -axis, and the Produced Work from The Electric-field-area is Stored into the Magnetic-field - area. The common axis of the two Perpendicular fields, carry the G-Ratio Surfaces, Runs with the same velocity  $\bar{c}$  to the direction of the inner motion or, From  $90^\circ \rightarrow 45^\circ$ , the created Work  $W = c_y g$ , is Symmetrically Stored from  $0^\circ \rightarrow 45^\circ$ .

The created Work in  $[0-1]$  is in  $\rightarrow \lambda / 4$  of transverse surface and is stored in the horizontal and perpendicular surface  $[1'-2] = \lambda / 4$ . Surface  $[0-1-1'] = \perp$  Surface  $[1'-2'-2]$ .

The created Work in  $[1-2]$  is in  $\rightarrow \lambda / 4$  of transverse surface and is stored in the horizontal and perpendicular surface  $[2-3'] = \lambda / 4$ . Surface  $[1-2-1'] = \perp$  Surface  $[2'-3'-2]$ .

The created Work in  $[2-3]$  is in  $\rightarrow \lambda / 4$  of transverse surface and is stored in the horizontal and perpendicular surface  $[3'-4] = \lambda / 4$ . Surface  $[2-3-3'] = \perp$  Surface  $[3'-4'-4']$ .

The created Work in  $[3-4]$  is in  $\rightarrow \lambda / 4$  of transverse surface and is stored in the horizontal and perpendicular surface  $[3'-4] = \lambda / 4$ . Surface  $[3-4-2] = \perp$  Surface  $[4'-5'-4]$ .

Since from Trigonometry issues  $\sin 2\pi = \sin(180 - 2a) = \sin 2(90 - a)$  then (1) becomes.  $\lambda = c \cos a \frac{2(c \sin at)}{g} = \left[\frac{2c^2}{g}\right] \sin a, \cos a = \left[\frac{c^2}{g}\right] \sin 2a = \left[\frac{c^2}{g}\right] \cdot \sin(\pi - 2a) = \left[\frac{c^2}{g}\right] \cdot \sin\left(\frac{\pi}{2} - a\right) \dots (2)$  since  **$\sin 2a = \sin(180 - 2a) = \sin(\pi - 2a)$** , and also  **$\sin 2a = \sin(180 - 2a) = \sin\left(\frac{\pi}{2} - a\right)$** .

From Dual-Photon-equation,  $\bar{v} \cdot [\bar{f}_n] + f_n \equiv \left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot [\bar{B}_n] + |\bar{c}| f_n$ , when  $c = 0$  or  $\bar{c} = \bar{c}$ , then Photon motion becomes  $\rightarrow \left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot [\bar{B}_n] \leftarrow \equiv \text{Spin}$ . i.e. The Stationary Photons exist as their Spin only. The Rest-Space is the Part  $\left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot [\bar{B}_n]$  where  $v = n \cdot \pi \cdot c$ , and Communication Code to be the term  $\left| \frac{v}{\pi^2 \cdot r_n^4} \right| = \left| \frac{n \cdot \pi \cdot c}{\pi^2 \cdot r_n^4} \right| = \left| \frac{n \cdot c}{\pi \cdot r_n^4} \right| = \left| \frac{w \cdot r}{\pi^2 \cdot r^4} \right| = \left| \frac{2 \cdot \pi \cdot f}{\pi^2 \cdot r^3} \right| = \left| \frac{2 \cdot f}{(\pi \cdot r^3)} \right|$  with Electromagnetic-Radiation the in monads frequency- $f$ , which is satisfied by the relation  $\left| \frac{2(rw)}{2v} \right| = \pi / 2, \pi, 3\pi / 2, \dots, n \cdot [\pi / 2]$ , and  $w = n \cdot \left[ \frac{\bar{v}}{2r} \right] \times \left[ \frac{\pi}{2} \right]$ , where  $n = 1 \rightarrow \infty$ . When two Photons strike each other,  $\bar{c} = \bar{c}$ , or reflect on a wall, then  $c = 0$ , and from Spin  $\bar{S} = \bar{B} = \pi^2 \cdot r^4 \cdot f_1$  its angular velocity  $w = n \cdot \left[ \frac{\bar{v}}{2r} \right] \times \left[ \frac{\pi}{2} \right] = 2\pi \cdot f_1$ , where then its fundamental frequency  $f_1 = n \cdot \left[ \frac{\bar{v}}{2r} \right] \times \left[ \frac{1}{4} \right] = n \cdot \left[ \frac{\bar{v}}{8 \cdot r} \right]$  which for  $n = \left[ \frac{16 \cdot r^2}{v \cdot c} \right]$  increases to  $\frac{\lambda}{c} \cdot r^3$  and Photon-motion becomes  $\rightarrow \left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot [\bar{B}_n] \leftarrow \equiv \text{Spin}$ , i.e. The Stationary Photons are Spin only and consist an Stationary-Harmonic-Vibration with the same Period  $T$  of the two Waves. [92-E].

The effective-Range of the Wavelength  $\lambda$ , for the Dual-Photon is related to the consistence  $v_x, v_y$ , velocities to any two Perpendicular directions of Electromagnetic fields  $E_x, E_y$ . The

maximum displacement in y, direction is the centrifugal  $\lambda_x = \frac{v_y^2}{2 E_y}$  and  $\sin(\varphi) \lambda_y = \frac{c^2 \cdot \sin^2(\varphi)}{2 E_y}$  where  $\varphi$  = the Phase difference between the two vibrations.

Since time t, is the same between the two vibrations where then  $t = \frac{v_y}{E_y} = \frac{c \cdot \sin(\varphi)}{E_x}$  and since the Period = 2.t then  $T = \frac{2c \cdot \sin(\varphi)}{E_x}$  ..... (2) From the in x  $\rightarrow$  direction velocity  $v_x = c \cdot \cos(\varphi)$ , and displacements,  $\lambda_x, \lambda_y$ , become,  $\lambda_x = v_x T = c \cdot \cos(\varphi) \left\{ \frac{2c \cdot \sin(\varphi)}{E_x} \right\} = \lambda_x = \left\{ \frac{2 \cdot c^2}{E_x} \right\} \cdot \sin(\varphi) \cdot \cos(\varphi) = \left\{ \frac{c^2}{E_x} \right\} \cdot \sin(2 \cdot \varphi)$  (3)

Since in trigonometry issues,  $\sin(2\varphi) = \sin(\pi - 2\varphi) = \sin\left(\frac{\pi}{2} - \varphi\right)$  and in Physics  $E_x = g$ , then  $\rightarrow \lambda_x = \left\{ \frac{c^2}{g} \right\} \cdot \sin(\pi - 2\varphi), \lambda_y = \left\{ \frac{c^2}{g} \right\} \cdot \sin\left(\frac{\pi}{2} - \varphi\right) \leftarrow$  .....(4)

i.e. Photons occupy

1. The Dual-Property of Particles and Waves,
2. The Dual-Property of Stationary Spinning,
3. The Dual-Property of Simultaneous existence,
4. As Electric and Magnetic Fields in,  $\lambda_x, \lambda_y$ ,
5. The Bellow motion in transverse E-M- Waves the way of flying,
6. The Transverse E-M- Waves are  $\perp$  to Propagation-Direction,
7. The Electric Effective Range is thrust through G only. [Fig-9].
8. With the same initial velocity is succeeded the same Length-Range with Two complementary angles. since  $v_y = c$ ,

#### Remarks:

1. The Produced-Work happens at  $\lambda / 4$ . wavelength in 4-Phases and it is Quantised.
2. The Quantised-Work in  $\lambda / 4$ . wavelength is the  $\frac{1}{2}$  of the first lobe of the Sinusoidal Wave.
3. Photons follow the Aeroplanes Bellow motion to fly as (thrust - drag, weight - lift).
4. It was shown that when Two Photons strike each other,  $\vec{c} = \vec{c}$ , or reflect on a wall, then  $c = 0$  and the produced energy enters the cave r. The fundamental frequency of the Stationary-cave is  $f_1 = n \frac{\sigma\Phi}{2\pi r} = n \cdot \left[ \frac{\bar{v}}{2r} \right] \times \left[ \frac{1}{4\pi} \right] = n \cdot \left[ \frac{\bar{v}}{8\pi \cdot r} \right]$  which for  $n = \left[ \frac{8\pi r c}{v \cdot \lambda} \right]$  increases to  $\frac{\lambda}{c}$ , therefore for  $n = N \cdot \left[ \frac{8\pi r c}{v \cdot \lambda} \right] = N \cdot \left| \frac{8\pi r}{\lambda} \right|$ , and for  $N \rightarrow \infty$  then  $f_1 = E / h = \infty$  .....(b) In Dual Photon  $\bar{v} \left[ \frac{\sigma\Phi}{2\pi r} + \frac{\sigma}{2\pi r} \right] \equiv \bar{v} \cdot \left[ \bar{f}_n + f_n \right]$ , Colours are Still-Sub-Units of Storage  $[\bar{v} \cdot \bar{f}_n]$ , and exist as Frequencies, Violet, Blue, Green, which Stabilize with their Complementary colors Yellow, Orange, Red, of wavelength  $d = \lambda \rightarrow \lambda_{\min} \approx \lambda_{\max} = 3 \cdot 10^{-7} \text{ m} \approx 3 \cdot \sqrt{3} \cdot 10^{-7} \text{ m}$ 
  - The Quanta of Energy, as Intension Passing through a Unit-Surface or Volume is Inversely Proportional to the fourth Power of the wavelength  $\lambda$  as  $I = 0, 5865 \cdot \left\{ \frac{1}{\lambda^4} \right\}$ . When  $f_{BE} = E / h = \infty$  then the Energy-Intension Increases and the wavelength  $\lambda$



Decreases and for  $f_{BE} = \infty$  then  $\lambda = 0$ . This is what happens to Photons in Black-Holes where  $d = \lambda = 0$ , and the How is the Unit-Surface or Volume in where  $E = f_{BE} = \infty$ .

- The Proton Total-Harmonic-Charge  $\rightarrow Q_T \equiv 2.q_u + q_d$ , and from  $d = \lambda$  then  $f_p = \sqrt{\frac{k}{m\lambda}}$

Applying the above to White light, which is composed of all colours of visible light with different wavelengths, when it passes through our atmosphere the tiny molecules cause it to scatter. Scattering or the redirectioning increases as the wavelength of the light decreases. Violet, Blue, Green, have Shortest wavelength and more Scattering, while Yellow, Red Dark-Red have Longest wavelength and Shortest Scattering, as is the Raylight-scattering. Atoms have a common way for Recognizing the In-Between Electromagnetic Pattern, and which is through the,

Resonance of tone  $\equiv$  The Resonance frequency,  $f_R = \sqrt[2]{\frac{k}{M}}$ , where  $k$  = Their Stiffness and  $M$  = The Harmonic-mass of their Compound.

In Mechanics, the Kinetic Energy is equal to Potential  $E_K = E_P$ , and Total Energy  $E_T = 2.E_K = 2.E_P$  or  $\rightarrow \frac{1}{2} m v_i^2 = \frac{1}{2} k d = \frac{1}{2} m (w r_i)^2$ , and for stability issues,  $k d = m w^2 \cdot d^2$ , or  $w^2 = \frac{k}{m} [\frac{1}{d}]$ , or  $\bar{w} = \sqrt{\frac{k}{m} [\frac{1}{d}]} = 2\pi \cdot f$ , and  $f = \frac{1}{2\pi} \sqrt{\frac{k}{md}}$ . From Energy equation  $E = h f = \frac{h}{2\pi} \sqrt{\frac{k}{m}} = \frac{6,6260696 \cdot 10^{-34}}{2\pi} \sqrt{\frac{k}{m \cdot d}}$   
 $= 1,054572 \cdot 10^{-34} \sqrt{\frac{k}{md}} \cdot J = 1,0545717 \cdot 10^{-34} \sqrt{\frac{k}{m}} / (1,6022 \cdot 10^{-19} \text{ eV}) = 6,582022 \cdot 10^{-16} \sqrt{\frac{k}{m}} \cdot \text{eV}$   
 $= E_K + E_P$ , i.e.

In Mechanics, The equality of the Two Opposite-quantities  $E_K = E_P$ , is conserved in a common loop as  $\rightarrow \sqrt{\frac{k}{md}} \text{ eV} \leftarrow$  meaning that when two Photons strike each other then the Produced Work is kept in the cave,  $r$ , as fundamental frequency  $f_1 = n \frac{\sigma\Phi}{2\pi r}$ , and which is equal to The Eigenvalues and Eigenvectors of the Photons-Heap.

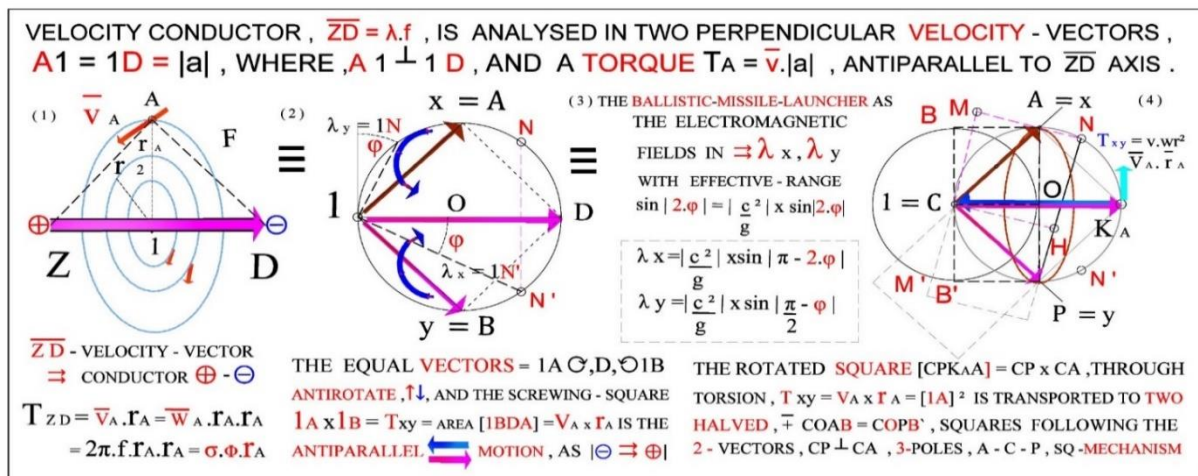
Above Procedure and because of their common Inertia of Atoms-masses allows us to accept the angular- velocities of each Atom separately, and be its Identity.

When the Quanta of Energy Rotate in a cave and exists, Maxwell's Electric Displacement current the Stability of  $\{\oplus$  -Space  $\equiv$  [Electric Wave],  $\{\ominus$  -Anti-Space  $\equiv$  [Magnetic Wave] Exists In the Sub-Space  $\equiv \{[\oplus \leftrightarrow \ominus] \equiv ds \equiv [\oplus \leftarrow ds \rightarrow \ominus]$  - or - In the Neutral-Space  $[A_E, B_E, C_E]\}$ . The Superflow of Energy stills in Sub-Spaces and finally in Black-Holes:

### The Stability of Space - Anti-Space, IN the Neutral-Space

The number of Moulds of Stationary-States are as  $\rightarrow 2^{n=1-4 \text{ Points}} \equiv 2, 4, 8, 16 \equiv 4$ -Types  $\leftarrow$  i.e. Monads are formed from the First 4- Moulds as  $\rightarrow$  The 1-Point which is everywhere, the 2-Points which form Vectors, the 3- Points which form the Planes, the 4- Points which form the Volumes. For  $n > 4$  as this is the Atom Structure, follows the Sustainability of the Spaces and

Anti-Spaces. Since Space-Energy Structures follow the M-Geometry Stability so these follow the Mould of Spaces  $2^n = 3 = 8$  Elements and which is The-Cube as shown before.



**Figure 6: The Stability of Photon as Electromagnetic Wave with the Two frequencies.**

The Dual Property of The Simultaneous existence as Electric and as Magnetic Fields in wavelengths,  $\lambda_x, \lambda_y$ , as Effective Range. which is thrusts through the Newton's Gravitational Force  $G$ , only becomes from the Trigonometry relations,  $\sin(2\varphi) = \sin(\pi - 2\varphi) = \sin(\frac{\pi}{2} - \varphi)$  and from Physics  $E_x = g$ . Maxwell Electric Displacement current  $\partial D / \partial t$  is created from  $(\mathbf{c}_x, \mathbf{c}_y)$  Vectors motion, which happens from the gravity continuous action which Produces the Work  $W = \mathbf{c}_y g$ . Since E-W, M-W, are both the Resultant of circular -frequencies  $\mathbf{W}_R$  it reveals the coupling of motion  $\{E-W\} \rightarrow \partial \sqrt{\mathbf{c}_x^2 + \mathbf{c}_y^2} / \partial t$ ,  $\{M-W\} \rightarrow \partial \sqrt{\mathbf{c}_x^2 + \mathbf{c}_y^2} / \partial t$ ,  $\{E-W\}$ . This means that the Source-charge of Electromagnetic waves are the Vectors Resultants E-W, M-W, where  $\mathbf{W}_{RX}, \mathbf{W}_{RY} = \partial \sqrt{\mathbf{c}_x^2 + \mathbf{c}_y^2} / \partial t$ , and  $\mathbf{W}_{RZ} = \sqrt{\mathbf{c}_x^2 + \mathbf{c}_y^2} = \vec{c}$ , and are E-W = The Kinetic Energy and M-W = The Potential Energy which is Propagating from one Position to another without any matter being transferred.

Both are Propagated by the action of the Gravity,  $g \cdot \mathbf{c}_y$  which exists without mass, through Gravity-Field-medium continuously only. The Dual-Property of Particles and Waves allow Electromagnetic waves to Propagate in an definite direction and simultaneously to Propagate themselves along, and independently of the medium, and this because are created by the vibration of an electric charge  $[\oplus, \ominus]$ .

### The Total Energy in Loops: [79]

It was shown in [58] that the maximum velocity in a closed System occurs in Common circle, when the two velocities,  $\bar{c}, \bar{v}$  are Perpendicular between them are Not Producing Work from where then dispersion follows the Pythagoras theorem where the Resultant Quantized linear Space length,  $r$ , becomes, as the Resultant of Energy Vectors as follows,  $r = |(\bar{c} \cdot T)| = \sqrt{v^2 + c^2}$  and by using Space Vector  $\bar{r} = |(\bar{c} \cdot T)| = \sqrt{v^2 + c^2}$  then The total Rotating Energy is  $\rightarrow \pm \bar{\Lambda} = \bar{p} \cdot r =$

$(M.c).r = (M.c). \sqrt{v^2 + c^2}$  and by squaring both sites  $[\pm \bar{\Lambda}]^2 = p^2. r^2 = M^2. c^2. (v^2 + c^2) = (M^2.v^2). c^2 + M^2.c^4 = (p^2.c^2) + M^2.c^4 = [p.c]^2 + [m_0.c^2]^2$  or is  $E_T = E_R + E_K \rightarrow$  i.e. Total - Energy of Elementary-Particle = Intrinsic Rotational + Kinetic Energy, The velocity of Elementary Particles is the light velocity  $c = v = 2\pi r.f_e$  and the frequency  $\rightarrow f_e = \frac{c}{2\pi.r}$ .....(a) Rotational Energy  $E_R = \bar{B} \cdot \bar{w} = 2L = J.w^2$  and  $\rightarrow E_R = [\frac{\pi r^4}{8}].[\frac{c^2}{r}] = \frac{\pi c^2}{8} r^3 = 3, 53535.10^{16}. r^3$  .....(b)

Energy and frequency of Elementary Particles can be found from cave  $r$ , only since,  $c$ , constant, and Total-Energy  $\rightarrow E_T = E_R + E_K = \frac{\pi c^2}{8} r^3 + \frac{1}{2} m.v^2 = 3, 535.10^{16}. r^3 + \frac{1}{2} m.v^2$ ...(c) The mass of Elementary Particles is  $m = \frac{E}{2r^2.w^2} = \frac{J.w^2}{2} \cdot \frac{1}{2r^2.w^2} = \frac{J}{4.r^2} = \frac{\pi.r^2}{16}$ , i.e. it is dependent on Radius of Cave, and for cave  $r = 10^{-62}$  mass  $\rightarrow m = \frac{\pi.10^{-124}}{16} = 1, 935. 10^{-125}$  kg.

When The SPACE acquires ENERGY as Velocity then becomes an Energy-monad. [26] Applying Quaternion equation  $[-\nabla\Lambda, \nabla x\Lambda] = 0$  for Point, O, and for constant velocity,  $\bar{c}$ , then issues  $[-\nabla c, \nabla xc] = 0$  where  $[-\nabla c] \perp [\nabla xc]$  which means that it is a Mechanism that instantly transports Breakage-masses in two directions Dynamically and Perpendicularly to all Inertial frames Layers. From their Velocity-Energy vector are Produced the Three Breakages as,  $[\pm s^2 = \pm (wr)^2]$ , and  $[\nabla i = 2(wr)^2]$  and from them subatomic Particles  $\rightarrow$  Fermion and Bosons Rotating energy is  $\rightarrow \pm \bar{\Lambda} = \bar{p}.r = (M.c).r = (M.c). \sqrt{v^2 + c^2}$  and squaring both sites  $[\pm \bar{\Lambda}]^2 = p^2.r^2 = M^2.c^2.(v^2 + c^2) = (M^2.v^2).c^2 + M^2.c^4 = (p^2.c^2) + M^2.c^4 = [p.c]^2 + [m_0.c^2]^2$  or is  $E_T = E_R + E_K \rightarrow$  i.e.

Total - Energy of Elementary-Particle = Intrinsic Rotational + Kinetic Energy, The Dot Product and Cross Product:

The Vectors,  $\bar{a}, \bar{b}$ , Dot-Product happens for interactions between Similar Dimensions, while Cross-Product between Different - dimensions. Cross-Product of any two vectors  $\bar{a}, \bar{b}$ , is  $\bar{a} \times \bar{b} = |\bar{a}|.|\bar{b}| \sin \theta. \bar{n}$  and for  $\bar{a} = \bar{b}$  and  $\theta = 90^\circ$  then  $\bar{a} \times \bar{a} = \bar{a}^2$ , and for Quaternion,  $s$ , which Performs the Work of rotating the one vector around the other  $\rightarrow$  Work  $= \bar{a} \times \bar{a} = \bar{a}^2.\bar{r}$ , and for  $\bar{a} = \bar{v}$  then, Work  $= \bar{v}^2.\bar{r} = |\bar{v}|.|\bar{v}|.\bar{r} = v^2. r. \bar{n} \equiv (w r)^2 r. \bar{n} = (2\pi r/T)^2 r. \bar{n} = (4\pi^2 r^2 / T^2). r. \bar{n} = \frac{4\pi^2 r^3}{T^2}. \bar{n} = (4\pi^2 r^2. f^2). r. \bar{n}$ , or .....(w)

Work  $= 4\pi^2 \frac{r^3}{T^2}. \bar{n} = 4\pi^2. r^3. f^2. \bar{n}$ , which is the Kepler celestial law for microcosm. Since in Mechanics issues  $z^2 = s^2 - s^2 + 2.s.s = 1$ , and from Unit-quaternion  $s^2 + [iv]^2 = 1$  then is  $\rightarrow s^2 - v^2 = 1$  ....(d) Equation (d) is a Cone relation on where Total-energy, Kinetic and Potential is conserved and for Photon, Electromagnetic radiation is the Kinetic-energy and the Velocity-vector-Energy - tank is the Potential. Photon is an Energy-store,  $r$ , in a Stationary-wave of wavelength  $n \lambda = 2r$  consisted of  $n$  stationary lobes filled in  $\lambda$  with inner motion the Electromagnetic - Displacement-current and Outward the Propagating, Energy-store  $\lambda = 2r / n$ , with the light speed,  $c$ , the two transverse fields, {the + Electric-field and the - Magnetic-field}. Equation (w) declares the relation between the Total-Energy  $W$  in caves, and the

Geometry of Energy=Cave Space  $r \equiv [EM-R \equiv f_{1=N}, f_2, f_3, f_D, f_n]$  with a binding constant, proved to be the  $g$ .

### THE ORIGATION OF THE PHYSICAL LOOPS $\equiv$ CAVES

#### The Gravitation Force $G$ , and the Kick-Start

[78-79] From where  $G$ , is Produced?  $\rightarrow$  It was prior referred that, Periodic excitation between Primary Space (+) and Anti-Space (-) may exist only as collision of Opposite, so Energy captured in Box- $B_p$ , Planck's Loop, contains these three constitute elements  $[(+), [\leftrightarrow], (-)]$  without the inner acceleration but the Material-extreme case of Periodic acceleration  $[\rightarrow \leftarrow] = 0$  and which is the Reciprocating motion. So, above Property of Primary Space exists also and for all Primary Complex- Spaces.

Complex Spaces either at,  $[(+)]$  or  $[(-)]$ , constitutes may be realized, exist, separately because of the  $\rightarrow$  Primary-Opposites which Pull each other  $\leftarrow$  therefore the Initial Property of Attraction,  $G$ , between Primary-Opposites continue issuing and for All the other infinite Composite and Complex Structures, as well as in all Groups of them.

Since Force  $G$  is a Uniform-Pointy-Force, therefore needs a Conductor, a Layer, a kind of mass, to be spread and act on it as Surface-force, a Layer which is the Base or the Conductor Spin,  $S$ , or the Stress  $g$ , as is the Growing-Golden-ratio-pattern  $\Phi$ .

Because of this Stress-Layer  $g$ , all the Energy-Structures Present  $\rightarrow$  Reaction to any motion  $\leftarrow$  i.e. mass. Gravity acceleration  $g$ , produced from the in Material-Points acceleration is equal to the pressure  $\sigma$ , and is the Conductor to all Waves as,

$$\text{Force } G - \text{Over-Layer} - A \rightarrow [A \equiv \text{mass} * g] \rightarrow G_\sigma \equiv G, \text{ and Stress } = g = \frac{\sigma^2 r^2 \cdot \Phi^2}{8}$$

From Figure -18(3) is seen that Gravitational Force is Attractive following Newton inverse square law, and it is an Attractive-force  $[\leftrightarrow]$ , on any two Opposite-Elements  $[(+), (-)]$  realized through a Layer of Unit-Stresses  $[\sigma = g]$ , and becomes from a HUGE Magnet in Planck's Loop containing the whole Universe [89].

$G$  - Kick-Start, is Planck's frequency  $\rightarrow f_p = 1 / T_p = \frac{w}{2\pi} = \sqrt[2]{\frac{1}{g \cdot a^3}}$  and in this world the How this frequency can  $\rightarrow$  Enter, Format and cohesive, to the first or any other Energy-Cave in Planck's length, E-Unit Monad,  $1 = g \cdot f_n^2 \cdot a^3 = [\frac{4\pi^2}{GM}] \cdot f_n^2 \cdot a^3$ , where  $g = [\frac{4\pi^2}{GM}]$  as this was shown in [79] for Unit-Monad-relation.

An Energy-Rim = Cave is a Plane - Surface, an orbit, representing a Constant Energy becoming from the squared Frequency  $f_n^2$ , Representing the Imaginary Part, and  $r_p^3$ , Representing the Real-Space-Part of monad as this is from Kepler's second Law for Unit constant Energy as  $1 = k \cdot f_n^2 \cdot r_p^3$ . The Stationary-Energy is spread in one Plane as this happens for Stationary-waves in Caves, while in Propagating-Energy in two, as are the Electromagnetic Transverse waves.

All these Energy-Rims consist the Quantized-Plane-curves. The two different motions of  $\oplus$  Space,  $\ominus$  Anti-space, in any cave  $r$ , and in a Finite Space, The Revolving and Periodic Excitation Create an Eternal frequency which influence all other Spaces, caves. The minimum quantized-energy is stored in the Gravity-Layer,  $g$ , becoming from the Unit Energy of the sinus orbit. From equation,  $g = T^2 / a^3$ , and minimum -  $a$  then Period is  $T = \sqrt{g \cdot a^3} = \sqrt{9,8076925 \cdot (2,1145016 \cdot 10^{-11})^3} = 3,04513 \cdot 10^{-16}$  s, Since the Unit-Work  $\equiv$  Sine Integral  $= \int_0^t \frac{\sin t}{t} dt = 1$ , the semi-major axis,  $a$ , is  $a = 2,1145016 \cdot 10^{-16}$  m, where frequency  $T^{-1} = f_p = 3,28393 \cdot 10^{15}$  /s, corresponds to a Sphere-loop in Planck's scale as  $(4/3) \cdot \pi \cdot r^3 = 3,96 \cdot 10^{-32}$  m<sup>3</sup>, and then the Energy in this Planck's loop is the minimum quantized. From Planck's Energy  $E = h \cdot f_p = [6,6262 \cdot 10^{-34}$  J.s]  $\times$   $[3,28393 \cdot 10^{15}$  /s] =  $2,176 \cdot 10^{-18}$  J, and in eV becomes  $\rightarrow [2,176 \cdot 10^{-18}] / [1,6 \cdot 10^{-19}] = 13,6$  eV or, Energy  $\Rightarrow 13,6$  eV =  $h f = h / T = h / \sqrt{g \cdot a^3}$ .

The above quantity of Energy consists the Hydrogen minimum Energy-Rim, which becomes from Loop-equation  $a = \sqrt[3]{T^2/g} = \sqrt[3]{\frac{[3,04513 \cdot 10^{-16}]^2}{9,80769251}} = 2,1145016 \cdot 10^{-16}$  m, and it is the Energy-cave for the Unit Energy quantity. From Newtonian Constant of Gravitation relation issues,  $G = E = h \cdot f_n = [\frac{c \cdot r^3}{a^3}] \cdot [g_L k_L] = g \cdot k_E = g \cdot [g_L k_L]$ , and since for The First Chemical-Neutral-material-cave,  $r$ , constants  $g_L, k_L$  are equal to unity i.e.  $g_L = k_L = 1$ , then above Energy of  $E = 13,6$  eV, in Hydrogen-Plane-orbit corresponds to the minimum-Energy-Cave, or  $\rightarrow$  The Phys - Quantized - Energy - Structure.

Since  $G$  Pushes  $\rightarrow g$ , on the Earth-Unit-coefficient,  $k_E$ , and because is the Starting for the first time beginning, of this Mechanism then from  $G = g \cdot [g_L k_L] \equiv g \cdot [1 \cdot 1] \equiv \rightarrow g \leftarrow$  or  $G = g$ , meaning that In Earth System of Gravity, the Newton's Gravitational constant  $G$ , and Gravity  $g$  are equal, while in all other relative Systems are equal to the proportionality of their Local-constant  $k_L$ .

Gravity,  $g$ , is the minimum energy becoming from the in-storages angular velocity acceleration  $a = v^2/r \equiv 9,8076941$ . in the Material-Point. [72]

Photon is a Material-point, Box  $B_R$ , with fix-ends Inward-cave  $r$ , and which is the Energy Storage  $B_R$ , Outward-cave- $r$  is an Electromagnetic-Radiation on wavelength  $\lambda = c \cdot T = c / f_p$  which EM-Radiation, carries the Box  $B_R$ .

Universal Gravitational constant  $G = g \cdot k$  related to  $g, k_R$ , is a Force and through the Static  $g$  becomes the Principal stress  $\pm \sigma$ , or frequency  $f_R$  which exists in nature as motion in the minimum Resonance Golden-ratio-frequencies  $f_R = f_n = 1$ , and this because of the Periodic motion, in Excitation, where issues the Coulomb-Dipole law and which Coulomb inverse law is as,  $F = k_c [q_1 \cdot q_2 / r^2] = k_c [\oplus \rightarrow \leftarrow \ominus] / r^2 = \frac{8}{\pi r(1+\sqrt{5})} [\frac{B}{r^2}]$ , and the Coulomb constant  $k_c = 9 \cdot 10^9$  Nm<sup>2</sup>/C<sup>2</sup>, i.e.

Because of the Periodic excitation between the, Space (+) and Anti-Space (-),  $[\oplus \rightarrow \leftarrow \ominus]$ , exists only collision of Opposite, where the inner acceleration is equal to zero Gravity  $g$ , and this

because of the Material extreme-case of the Periodic acceleration  $\{[\rightarrow\leftarrow]=0\}$  which is zero, the Net force vanishes, issues the Coulomb Dipole-law where Static - Stress  $g$ , becomes from the Stationary constant Dipole moment  $\bar{\mathbf{p}} \equiv \bar{\mathbf{B}} \equiv$  as momentum which is the analogous in the Revolving motion where then issues  $\rightarrow G = g k = \mathbf{k}_E g = g \cdot \mathbf{k}_R \mathbf{g}_R = \bar{\mathbf{p}} \cdot \mathbf{g}_c = \sigma = \frac{\text{Force}}{\text{Area}} = \frac{\text{Mass}}{\text{Area}}$ . For Earth-System mass  $M_E = 5,9723 \cdot 10^{24}$  Kg, Radius  $R_E = 6378,137$  Km  $= 6,378 \cdot 10^6$  m, then Earth-constant  $\mathbf{k}_E = \frac{R_E^2}{M_E} = \frac{[6,378 \cdot 10^6]^2}{5,98 \cdot 10^{24}} = 6,811551810^{-12}$  and  $G = g \mathbf{k}_E = [9,8076941] \cdot 6,8116 \cdot 10^{-12} = 6,68056 \cdot 10^{-11} \text{ m}^3 / \text{N.s}^2$  becoming from  $g, \mathbf{k}_E$  only, i.e.  $G$  as force pushes  $\rightarrow g$  as Stress energy in  $\rightarrow \mathbf{k}_E$  constant.

Now is Proved that, the Gravitational Constant  $G$  is the mechanism or the mould, for the First-kick-Start upon this Unit-Granular-Energy-Stress-Layer,  $g$ , to formulate in that orbit  $a$ , into Planck's cave the lightest and the less-energy mass Particle of this Universe, which is the Hydrogen with the minimum Quantized-energy of 13,6 eV.

The Centripetal acceleration in Photon cave due to Pressure  $\sigma$ , where issues only Rotational Energy  $E_R = \bar{\mathbf{B}} \cdot \bar{\omega} = 2L = J \cdot \omega^2$ , and  $2E = B f$ , or  $\rightarrow 2 \cdot (0,5 \cdot m \cdot c^2) = m \cdot c^2 = 0,5 \cdot \pi \cdot r^4 \cdot c^2 / 4$ , and,  $4 \cdot \bar{\mathbf{B}} \cdot f = c^2 \cdot r^4$ , where the Golden ratio frequencies  $\rightarrow f_n = \left[ \frac{n \cdot \sigma \cdot \Phi}{2 \cdot \pi \cdot r} \right] \equiv \frac{n \cdot (1+\sqrt{5}) \cdot \sigma}{2 \cdot \pi \cdot r} = c^2 \cdot r^4 / 4 \cdot \bar{\mathbf{B}} = \frac{E}{h} \leftarrow$  i.e. The box  $\mathbf{B}_P$ , or the Planck's Cave, carried with Light velocity  $c$  and Pressed into the Planck's Loop, as  $n \cdot c^2 = n \cdot c \cdot c$ , becomes the Gravity  $g$ , which is a stress by which Gravitational-force  $G$  is communicating as,  $g_G = \left[ \frac{\pi r v^4}{2} \right] \cdot e^3 = 9,808238 \text{ m/s}$ .

Gravity is the minimum Unit-Stress-monad in Planck's scale becoming from a M-Point and which is Under -Planck's - length region. Since also acceleration in a Material-Point (Centrifugal-Centripetal) becomes from the Principal Stresses  $\pm \sigma$ , therefore constant  $g_G \cong \pm \sigma = \frac{\text{Force}}{\text{Area}} = \frac{g \cdot \text{Mass}}{\text{Area}} = \frac{G}{k}$ , and for Unit- $G$  constant  $k$  becomes,  $k = \frac{\text{System Area}}{\text{System Mass}} G$  where  $\rightarrow \frac{1}{g} = \frac{k}{G} = \frac{\text{System Area}}{\text{System Mass}}$  and  $G = k g_G$ , and for the Earth  $G \equiv g \cdot \mathbf{k}_E \equiv g \cdot [g_L k_L] \equiv \left[ \frac{T_P^2}{a^3} \right] \cdot [g_L k_L] \equiv 9,808238 \cdot 6,8116 \cdot 10^{-12} \equiv 6,68056 \cdot 10^{-11} \frac{\text{m}^3}{\text{N.s}^2}$ . So,  $G$ , is The Pulling and Cohesive Force on all the Quantized-Energy-Structures which communicates with everything due to Periodic excitation on all Spaces.

From equation  $g = G / [g_L k_L]$ , is seen that  $g$  becomes from  $G$  under Local-laws, And also, Gravity  $g$ , is the Unit-Energy-Path, Quanta of Gravitation, due to M-Point Frequency  $f_g \cong \pm \sigma$  from the Revolving motion, and also the Unit-Energy-Stress per Surface and for the Force -  $G$ , is the Permitted Path, or the communication Conductor on all Energy Wave Structures, In and Out Planck's length.

### Remarks:

Gravitational Force,  $G$ , is the Pressure which every Object in the Universe Exerts on every other, whether small or big and is equal to  $F_{\text{grav}} = \frac{G \cdot M \cdot m}{d^2} = \frac{g \cdot R_E^2 M \cdot m}{M d^2} = \frac{g \cdot R_E^2 \cdot m}{d^2} = \frac{m g R_E^2}{d^2}$ , and  $G = \frac{g \cdot R_E^2 M \cdot m \cdot d^2}{M d^2} = \frac{g \cdot [R_E^2]}{M} = g \cdot \mathbf{k}_E$ , where  $\mathbf{k}_E = \frac{[R_E^2]}{M}$ , and  $g$  = The minimum Quantized work as

acceleration  $\equiv 9,8076941 \text{ m/s}^2$   $k_E$  = The Earth Local-coefficient between the two constants  $g, G$ . For Earth (E)  $\rightarrow k_E = r_E^2 / m_E$ , For Bodies (B)  $\rightarrow k_B = r_B^2 / m_B$ , For any Body  $\rightarrow$  Local Gravity  $g_L = k_E / k_L$ . From relation  $G = g k_E = 9,8076941.6,8116.10^{-12} = 6,68056.10^{-11} \text{ m}^3 / \text{N.s}^2$  and from relation  $1 = c \cdot r^3 \cdot f_P^2 \rightarrow f_P = \sqrt{1/cr^3}$  and from  $f = E/h$  then  $\frac{E}{h} = \sqrt{1/cr^3}$  or  $\rightarrow E = h \cdot \sqrt{1/cr^3}$ ,  $\frac{E^2}{h^2} = \frac{1}{cr^3} \rightarrow$  and,  $E^2 = \frac{h^2}{cr^3}$ , an Energy relation between  $c, r$ . Instances: [77]

For Earth-System mass  $M_E = 5,9723.10^{24} \text{ Kg}$  and for Area  $\rightarrow$  Radius  $6378,137 \text{ Km} = 6,378.10^6 \text{ m}$  then the Earth-constant  $k_E = \frac{[6,378.10^6]^2}{5,9723.10^{24}} = 6,811551810^{-12}$  and  $G = g k_E = 9,8076941 * 6,8115518.10^{-12} = 6,6805616 * 10^{-11} \text{ m}^3 / \text{Kg.s}^2$  i.e. Gravitational-constant  $G$  becomes from  $g, k_E$ , and issues  $G = 6,6805616.10^{-11} \text{ m}^3 / \text{N.s}^2$  .....(7)

For Black-Holes-System mass  $M_{BH} = 4,0.10^{52} \text{ Kg}$  and for the Area Radius  $3,08.10^{25} \text{ m}$ , then Black-Hole-constant  $k_{BH} = \frac{[3,08.10^{25}]^2}{4,0.10^{52}} = 2,3716.10^{-2}$   $g_{BH} = \frac{k_E}{k_{BH}} = 6,81155.10^{-12} / 2,3716.10^{-2} = 2,872.10^{-10} \cdot g_E \rightarrow$  i.e.

For Earth-Unit-coefficient  $k_E = 6,81155.10^{-12} \rightarrow$  Black-Hole -Unit-coefficient  $k_{BH} = 2,3716.10^{-2} \text{ m}^2/\text{Kg}$ , and Gravity acceleration of a Black-Hole is,  $g_{BH} = 2,872.10^{-10} \cdot g_E$ , an expected explanation.

For all Planes issues  $G = k_E g = g \cdot k_L g_L$ , and for Black-holes also where,  $G = g \cdot k_{BH} \cdot g_{BH} = 9,8076941 * 2,3716.10^{-2} * 2,872.10^{-10} = 6,6805616 * 10^{-11}$  Meaning that Gravitational constant is the Same for all Systems.

The Gravitational Force,  $G$ , is the Pressure which every Object in the Universe exerts on every other, whether Small or Big and from Newton are equal to  $\rightarrow F_{\text{grav}} = \frac{G \cdot M \cdot m}{d^2} = \frac{g \cdot R_E^2 \cdot M \cdot m}{M d^2} = \frac{g \cdot R_E^2 \cdot m}{d^2} = \frac{m g R_E^2}{d^2}$ ,  $G = \frac{g \cdot R_E^2 \cdot M \cdot m \cdot d^2}{M d^2} = \frac{g \cdot [R_E^2]}{M} = g \cdot k_E$  where  $k_E = \frac{g \cdot [R_E^2]}{M} = \frac{g \cdot M}{G} g$  =The minimum Quantized Work as change of velocity  $\rightarrow$  acceleration  $\equiv 9,8076941 \text{ m/s}^2$   $k_E$  = The Earth Local-coefficient between the two Constants,  $g, G$ , and  $k_E \cdot G = g \cdot M$ . For Earth (E)  $\rightarrow k_E = r_E^2 / m_E$ , For Bodies (B)  $\rightarrow k_B = r_B^2 / m_B$ , For any Body  $\rightarrow$  Local Gravity  $g_L = k_E / k_L$

- 2) Coulomb Electrical Force,  $F_{\text{electron}} = k_c \frac{Q_1 Q_2}{d^2} = \frac{[\oplus \rightarrow \ominus]}{d^2} = \frac{8}{\pi r(1+\sqrt{5})} \left[ \frac{B}{r^2} \right]$ , where Coulomb constant  $k_c = 9.10^9 \text{ Nm}^2/\text{C}^2$
- 3) The Work done by the Electric field to Rotate the Dipole is  $W = F_{\text{electron}} \cdot E_{\text{Field}}$ .
- 4) The Work done in Material Point needs a Path to exit from the Box  $f_R = [B_{PH}] \equiv [f_{1=N}, f_2, f_3, f_R = w_N^2] \equiv [E^2 + H^2]$ , and from where is Propagated. Resonance-Path happens as the Force, EM-Radiation in Two directions, which can travel in any closed System, and for solids through Cauchy-Stress-Tensor where the two Conveyers  $E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3$ , can carry the Energy Storage  $r$  in System  $[+ - 0]$  and Change the Inner-Structure of this System to another or Destroy it.

In [70], the Work Produced In Material-Point  $\overleftrightarrow{AB}$  is equal to  $\rightarrow W = 2L = \bar{B} \cdot \bar{w} = J \cdot w^2 \leftarrow$  consisting the First-Energy-Store which is a Stationary Wave with,  $n$  lobes as,  $W_{n(n+1)} =$

$[\frac{4\pi r^2 f_1}{3}] \cdot n \cdot (n+1)$  and wavelength  $\lambda_N = \frac{\sigma \cdot (1+\sqrt{5})}{4\pi r} = \frac{n \cdot \bar{B}}{4\pi r^2} = \frac{2n \cdot \bar{c}}{w}$  of  $r = \frac{m \cdot \bar{c}}{q \cdot B}$  related to M-Field B. In [75-B], The Permeable-Resonance-Path for M-Point is  $\rightarrow$  The Resonance-frequencies  $f_R$  [ $S \equiv f_{1=n}, f_2, f_R = w^2$ ] with  $f_n = [n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma \cdot \bar{B}}{8 r^2}]$  related to Spin  $\bar{B}$ , Stress  $\sigma$  and cave r.

Since frequency in Material-Point is  $\rightarrow f_n = (\frac{n\sigma}{8 r^2}) \cdot \bar{B} \equiv [\frac{1+\sqrt{5}}{2}] \frac{\sigma}{2\pi r} \equiv [\frac{n\sigma}{8 r^2}] \cdot \bar{B} \equiv [\frac{1+\sqrt{5}}{2}] \frac{\text{Stress}}{\text{Perimeter}} \equiv [\frac{1+\sqrt{5}}{2}] \frac{\text{Force [N]}}{\text{Area} \cdot L [\text{m}^3]} \equiv \frac{E}{h}$ , then it occupies the Property of the Golden-ratio Pattern  $\Phi$ , and equation defines that the Material Point of frequency  $f_n$ , when collide with another Material Point, or with any other Particle or Particles then Produces another monad as  $\rightarrow 1 \equiv$  A New Quaternion and the first continuous to be of the same Identity, frequency  $f_n$ , as before and from Euler's, Rigid Body Dynamics work  $\rightarrow W = 2L = \bar{B} \cdot \bar{w} = J \cdot w^2 \equiv h \cdot f_n \leftarrow$  i.e. The Frequency of Photon, is embodied with the  $\rightarrow$  Growing-Golden-ratio-Pattern  $\Phi$  and It Uses the Vibrating Physical Structures, or the same the Granular Material-Instruments, to Kick - Start all of them and everything in this world. The How In [75-B] Page 34.

Because of the Periodic excitation between, Space (+) and Anti-Space (-),  $[\oplus \rightarrow \leftarrow \ominus]$  exists only Collision of Opposite, where the inner acceleration is equal to zero Gravity g and this because of Material extreme-case of the Periodic acceleration  $\{[\rightarrow \leftarrow] = 0\}$ , and which is zero and the Net force vanishes, and in where issues The Coulomb Dipole-law and where acceleration g becomes from the Stationary constant Dipole moment  $\bar{p} \equiv \bar{B} \equiv$  momentum and which is the analogous in the Revolving motion in where then issues  $\rightarrow$  Gravitational force  $\Rightarrow G = g k = \mathbf{k}_E g = g \cdot \mathbf{k}_R g_R = \bar{p}, g_c = \sigma = \frac{\text{Force}}{\text{Area}} = \frac{g \cdot \text{Mass}}{\text{Area}}$

In Page-33, the Earth-constant  $\mathbf{k}_E = \frac{R_E^2}{M_E} = \frac{[6,378 \cdot 10^6]^2}{5,98 \cdot 10^{24}} = 6,811551810^{-12}$  and the Gravitational Force  $G = g \mathbf{k}_E = [9,8076941] \cdot 6,8116 \cdot 10^{-12} = 6,68056 \cdot 10^{-11} \text{ m}^3/\text{N} \cdot \text{s}^2$  becoming from g,  $\mathbf{k}_E$  only, i.e. G is a force which Pushes  $\rightarrow$  g as energy in  $\rightarrow \mathbf{k}_E$

From Gravity relation  $G = g \mathbf{k}_E = 9,8076941 \cdot 6,8116 \cdot 10^{-12} = 6,68056 \cdot 10^{-11} \text{ m}^3/\text{N} \cdot \text{s}^2$  and from Energy-loop relation  $1 = c \cdot r^3 \cdot \mathbf{f}_p^2 \rightarrow \mathbf{f}_p = \sqrt{1/cr^3}$ , from  $f = E/h$  then  $f = \frac{E}{h} = \sqrt{1/cr^3}$  or  $\rightarrow E = h \cdot \sqrt{1/c \cdot r^3}$ , and  $\frac{E^2}{h^2} = \frac{1}{cr^3} \rightarrow E^2 = \frac{h^2}{cr^3}$ , an Energy relation between the, c, r.

This relation is used for Black- Holes Energy where r, result to zero, [71] The Permissible - Permeable - Resonance - Paths is as below for the means,

1. Solids  $\rightarrow$  The Normal-mode-Vibration - System  $\{-w^2 [M] + [K] (X)\} = 0$
2. Liquids  $\rightarrow$  The Cauchy Stress-Tensor as Momentum equation  $\{\nabla \cdot \sigma = -\nabla p + \nabla \cdot \tau\}$
3. Gases  $\rightarrow$  The combined Avogadro's Pressure-law  $\{PV = n RT = n \cdot m v^2 / 3\}$
4. Crystals  $\rightarrow$  The Cauchy Ellipsoid-Stress-tensor where  $\{E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3\}$
5. Molecules  $\rightarrow$  The Lattice-Crystal-Arrangement with their Chemical Bonds relation
6. Atoms  $\rightarrow$  The Energy-Rims with Chemical Bonds, Ionic, Covalent, relation
7. Particles  $\rightarrow$  The Resultance of the One-Dimensional-Collision  $\bar{v}_{ij} = \bar{v}_j - \bar{v}_i = \bar{w}_{ij} \cdot \bar{r}_{ij}$



8. M-Points  $\rightarrow$  The Resonance-frequencies  $\mathbf{f_R}$  [ $S \equiv f_{1=n}, f_2, f_3, f_R=w^2$ ] =  $\mathbf{f_n} = [\oplus \leftrightarrow \ominus] = n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma\bar{B}}{8r^2} \rightarrow$  i.e. the Golden-ratio-Pattern, which is related to Spin.
9. Cave-Orbit  $\rightarrow$  The Relation  $c.L_s = L_v$ , Light-velocity  $3.10^8 \text{ m/s} \cdot 1.10^{-42} \text{ m}$  cave  $= 3.10^{-34} \text{ m}^2/\text{s}$  are the Cave-Energy-Plane-Rims in Atom's, Planet orbits.

In Vibrations of Systems, for Orbits issues  $\rightarrow W = 4\pi^2 \cdot \frac{r^3}{T^2} \cdot \bar{n} = 4\pi^2 \cdot r^3 \cdot \mathbf{f_p} \cdot \bar{n} \leftarrow$  which is the Energy in the Conic-Sections of Kepler's Unit - Orbits.

The Energy-Storages  $r = n \cdot [\frac{\lambda}{2}] \equiv W_{n(n+1)} = [\frac{4\pi r^2 f_1}{3}] \cdot n \cdot (n+1)$ , are travelling through Bodies and follow, Lamé Stress Ellipsoid  $n_1^2 + n_2^2 + n_3^2 = \frac{T_1^2}{\sigma_1^2} + \frac{T_2^2}{\sigma_2^2} + \frac{T_3^2}{\sigma_3^2} = 1$  on Principal Stresses  $\pm\sigma_1, \pm\sigma_2, \pm\sigma_3$ , which is the Passage through which Forces (The EM-Radiation) travel in any Solid either it is in Motion or is at Rest. Laplace's Orbital Angular-momentum  $e^{i.2\pi n} = 1$  and for  $n = 0, \pm 1, \pm 2, \pm 3, \dots, \pm n$ , consist the eigenvalues operator  $L_z$  which agree with prior Resonance-frequencies  $\mathbf{f_R}$  [ $S \equiv f_{1=N}, f_2, f_3, f_R = w^2$ ] as wavelengths  $\lambda \equiv [f_1, f_2 \dots f_n = w^2] \equiv$  the  $n$  lobes, or  $\rightarrow f_N = n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma\bar{B}}{8r^2}$ , as the Principal-Stresses  $\sigma$ , and Resonance-frequencies  $\mathbf{f_R}$  relation, which is Energy stored in the MP-lobes. [70]

Type - Particles at sites - Type of Bounding-Force - Properties - EM-Radiation

- Ionic:  $\oplus, \ominus$  Ions - Electrostatic  $\oplus \leftrightarrow \ominus$  - non-conductors - Infrared
- Molecular: Atoms or Molecules - Dipole Attraction - Repulsion - non-conductors - Chemical-Bonds.
- Covalent: Atoms - Network- Bonds between Atoms -non-conductors - EM-Spectrum
- Metallic: Atoms - Ions and Electrons Attraction - Conductors - E-conduction.

The Kinetic-Energy  $E_K$  of a moving Material-Point, as this is the Photon, is stored as motion in its Storage,  $r = [n \cdot \lambda/2]$ , with the  $n$  frequencies  $f_n = n \cdot f_1$ , with the  $n$  lobes, and with an fundamental frequency  $f_1$ . From above is seen the Passage and The-How EM-Radiation can travel in Crystals and which are the Cauchy-stress-Tensor, where exists  $E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3$ , in-where Energy Propagates along Directions without any Birefringence, and carries the Energy-Storage  $r$ , which radiation is The Conveyer.

Above procedure can be used in Cells, where cells are cases of an Birefringence material and the Resonance-Passage happens as the Force, an EM-Radiation in Two directions, can travel in Cell through Cauchy-stress-tensor where the two Conveyers  $E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3$ , and can carry the Energy-Storage,  $r$ , in Cell, and alter the Inner-Structure of Cell to another desirable Property. From Inner-velocity equation  $v = w \cdot r = (2\pi/T) \cdot r = 2\pi \cdot f_1 \cdot r$ , wavelength  $\lambda = cT = c / f_1$ , cave  $r = n \cdot [\lambda/2]$ , then  $r = n \cdot (c/2f_1)$  and  $v = 2\pi \cdot f_1 [n \cdot c/2f_1] = n \cdot \pi \cdot c$  or  $v = n \cdot \pi \cdot c \dots (4)$  showing that velocities in lobes are,  $n \cdot \pi$ , times that of light and for  $n = 1$  then  $v = \pi \cdot c$ , more than three times faster of light velocity.

Because of the above velocity  $v$ , an  $E$  field is produced, which produces the  $\partial \mathbf{D} / \partial t$  field, which in turn produces the  $H$  field which produces the  $\partial \mathbf{B} / \partial t$  field and which again produces the  $E$

field, i.e. the total EM-field regenerates itself as it rotates, and is a Phenomenon happening in a Propagating Plane-wave. Its Permeable - Resonance - Path is impossible in an three-times stronger EM-field.

### The United-Coulomb-Newton Law for Interactions

For a Stationary interaction the Coulomb-Law-Force is  $F_C = \frac{k[q_1 q_2]}{r^2}$ , and for Charges  $q_1, q_2$  where Constant  $k = 9, 0.10^9 \text{ N.m}^2/\text{C}^2$ , and  $r$ , is the distance between the Charges. For a Stationary interaction Newton Law for masses  $m_1, m_2$  is  $F_N = \frac{G[m_1 m_2]}{r^2}$ , and for  $\bar{v} = \bar{r}$  Conjugating Interaction, Energy  $E = \frac{v^2}{2}[m_1 + m_2] = \frac{r^2}{2} [\frac{F_1}{g} + \frac{F_2}{g}] = \frac{F.r^2}{2} [\frac{1}{g} + \frac{1}{g}] = \frac{F.r^2}{2} = \frac{F.r^2}{2} [\frac{2.g}{g^2}] = \frac{F_N.r^2}{g}$ , where  $F_N$  is Newton Force, and  $E$  is the Energy of the Field-System  $[\frac{g+g}{g \cdot g}]$ . Equating the two forces then  $\frac{k[q_1 q_2]}{r^2} = \frac{gE}{r^2}$ , or  $\Rightarrow k [q_1, q_2] = g.E \dots\dots(1)$  Equation (1) relates any two Charges  $q_1, q_2$ , with Field-Energy  $E$ , under vector  $\bar{v} = \bar{r} = \bar{c}$ .

### The Origination of Light Velocity $c$

Gravity  $g \equiv \frac{T^2}{a^3} \equiv \frac{1}{f^2_{n,a^3}} \equiv 9, 8076941 \rightarrow$  The minimum Granular Quantized Energy, The Forces Beyond-Planck-Length are  $\rightarrow F = \Phi^3 \cdot [\oplus \sigma \ominus] = \sigma \times \Phi^3 \leftarrow (1)\text{--}[87]$  Force  $G$  acts  $\rightarrow$  on Spinning  $M$ -Points on  $\bar{S}$  through  $\bar{g} \rightarrow$  on Planck's  $\bar{B} \rightarrow$  on  $g_G$ , through the Resonance frequency  $f_R$ . It was proved that  $G = \sigma \Phi^3$ , and  $\sigma = \frac{G}{\Phi^3} = \frac{G \cdot \sigma^3}{c^3}$ , or  $\rightarrow \sigma^2 G = c^3 \dots(2)$ , where  $\sigma$  is a Stress between the frequencies. From Force-relation  $F = \sigma A = (2\pi f r) \frac{A}{\Phi} = w r \frac{A}{\Phi} = \bar{v} \frac{A}{\Phi}$ , is seen that force  $G$  becomes a velocity  $\bar{v}$ . In the case of Planck's length this velocity is  $\bar{c} = w r = \frac{\sigma \cdot \Phi}{r} r_p = \sigma \times \Phi = \left| \frac{G L_P}{r \Phi^3} \right| \Phi = \left[ \frac{G L_P}{r \cdot \Phi^2} \right]$  and from Gravity relation  $G \equiv \sigma \times \Phi^3$ , then issues  $\rightarrow [\bar{c} = \frac{G L_P}{r \cdot \Phi^2}] = [\bar{c} = \frac{2 \cdot G L_P}{\lambda \cdot \Phi^2}]$  which is the Light-velocity vector.

Since  $r$ , becomes from the Beyond-Planck's-Region then  $\Rightarrow \bar{v} = \frac{F \cdot \Phi}{A} = \left[ \frac{G \cdot \Phi}{A} \right] \dots\dots(f)$  Equation (f) may be written as Force  $G = \bar{v} \frac{A}{\Phi}$ , which is a Viscus-Damping-Force where  $\frac{A}{\Phi}$  is a constant of Proportionality and the equation of motion is  $F_G = \left[ \frac{A}{\Phi} \right] \cdot \dot{x}$

Force  $G$  is applied in all Quantized-Universe  $A$  as Velocity  $\bar{c}$  and as Stress  $\sigma$  on Spaces Anti-spaces as Spaces-relation  $L_P = e^{i \cdot (\frac{\pi}{2} + 2k\pi) \cdot b}$ , where from Material-Geometry [24-58], Space  $\equiv 1$  and Anti-Space  $\equiv \sqrt{-1} = +1, -1$ , and  $\sqrt{-1} = i =$  The Imaginary Part into the  $\rightarrow$  Anti-Space + Space  $\equiv$  motion  $\equiv i \equiv \sqrt{-1} \equiv \sqrt[4]{-1} \equiv e^{-i \cdot (\frac{\pi}{4}) \cdot b} = 0, 707106781$ .  $b$ . The Base  $b$ , which for Natural logarithms issues  $\ll$  The Natural logarithm  $\ln(x)$  of a Magnitude  $x$ , is the Power to which,  $e$ , would have to be raised to equal  $x \gg$  and is Defining that  $\rightarrow \ln(x)$  is the Period-needed to Grow  $x$ , as this is in Integration  $\int x$ , so  $e^x$  is the Amount of Growth after Period  $x$  and the Possible-Repetitive-Permutations for moulds and elements in which issues **Mould** <sup>Elements</sup> = The -Growth-Periods i.e. when Mould = Elements then is succeeded maximum and for  $e$  is  $e^e$ , and any  $\log_x x$ .

For  $\log_x x$  and Base  $x = 10$  then  $\log_{10} 10 = 10^{10}$  and for the two elements  $[\oplus, \ominus]$  is  $10^{[10]^2} = 10^{20}$  Positions  $\equiv$  Distances  $\equiv r$  and since  $10^{-x} = \frac{1}{10^x}$  then  $b = 10^{-20}$ , and The Anti-Space + Space-Positions are,  $0, 707106781.10^{-20} = 1, 0707106781.10^{-19}$ .

In this Way The Non-Dimensional-number  $[0, 707106781 \cdot 10^{-1} = 0, 0707106781]$ , Is Quantized in cave,  $r$ , as distance and Becomes The-Dimensional-Space in the Decimal - System  $b = 10$  as cave  $r$ , and which cave is  $r = 1, 0707106781$  or,  $r = 1, 0707106781$  m, having Unit-Area  $\pi \cdot r^2 = 3.601588 \text{ m}^2$ , and the QUA-Universe is  $A = 3.601588 \cdot 10^{-19} \text{ m}^2/\text{s}$ , which are The Space + Anti-Space Positions in Universe...(i)

From (h), light-velocity  $\bar{v} = \left[ \frac{G \Phi}{A} \right] = \frac{6,673692 \cdot 10^{-11} \cdot 1,6180339887}{3,601588 \cdot 10^{-19}} = 2.99819938 \cdot 10^8 \text{ m/s}$  i.e. Gravity Force  $G \equiv$  motion, exists without mass and is Quantized  $\rightarrow$  Spread in {Space and Anti-Space} or  $\equiv$  QUA  $\equiv$  {is The Quantized-Units In-Area of Space and Anti-Space}, and as a Mould  $\Phi$  Golden-Ratio, exists in the Impedance  $b$ .

Impedance in Mechanics is the Friction Coefficient, where for Force  $G$  to be Proportional to the Light-velocity  $c = \bar{v}$ , then the Harmonic - Oscillation is an Dumped-Oscillator, and Can-Oscillate due to the excitation as,

- (a) With a frequency lower than in the Undamped case and an Amplitude Decreasing with time, the Under-Damped-Oscillator which Originates the Quantum of motion which is a limiting case between the oscillatory and Non-Oscillatory motion the Critical Damping, and which Originates the Light-velocity  $\bar{c}$ , [49]
- (b) With Undamped case frequency and Decay to the Equilibrium-Position without oscillation and The Over-Damped-Oscillator Originating the  $n$ -times velocity  $c$ . What is Quantization of motion and Impedance is analytically referred in [83]

A Parallel Solution becomes also from the Attendant Geometry logic,

- The Three Elements  $\equiv$  Digits of Material-Geometry are  $\rightarrow \{\oplus, [\oplus \leftrightarrow \ominus], \ominus\} \equiv [+ , 0, -] \leftarrow$
- The Permutation, arrangement of the Two-Elements  $P_1^2 = 2$ , i.e. are  $\rightarrow [\oplus, \ominus] - [\ominus, \oplus] \leftarrow$
- The Three-Elements in Space need  $P_1^3 = 3 \cdot (3-1) \cdot (3-2) = 6$  Positions and the same for
- Three-Elements in Anti-Space need  $P_1^3 = 3 \cdot (3-1) \cdot (3-2) = 6$  Positions, and Total Places  $\rightarrow$

$P_1^3 \cdot P_1^3 = 6 \times 6 = 36$  Positions for Spaces and Anti-Spaces as Impedance, and from Logs for  $\log_x x$  and Base  $x = 10$  then  $\log_{10} 10 = 10^{10}$  and for the two Elements  $[\oplus, \ominus]$  the Growth is  $10^{[10]^2} = 10^{20}$  Positions  $\equiv$  Distances  $\equiv r$ , and since issues  $10^{-x} = \frac{1}{10^x}$  then  $b = 36 \cdot 10^{-20}$ , and  $\Rightarrow$

$\bar{v} = \frac{F \Phi}{A} = \left[ \frac{G \Phi}{A} \right] = \left[ \frac{6,673692 \cdot 10^{-11} \cdot 1,6180339887}{36 \cdot 10^{-20}} \right] = 2.9795163 \cdot 10^8 \text{ m/s}$  i.e. The Ubiquity of Material-Geometry in Electromagnetism is Everywhere.

The Gravity constant  $g$ , is the Permeable Path for inner stress  $\sigma$ , to Pass the Material's Point a surface  $4\pi r^3/3$  and to expenditure its Energy. The same exists also to the Electromagnetic force which is associated with a fundamental Property of matter which is the Electric-Charge and which is a clue to the ubiquity of Electromagnetism.

From equation of Gravitation  $G = k_E g = g \cdot [k_R g_R]$  seems that the two constants are related i.e. act each other through Local-coefficients or through Field-lines, called the Medium or Permissible Path which are as  $\sigma = \frac{F}{A} = \frac{2\pi r f}{\Phi} = \frac{w r}{\Phi} = \frac{v}{\Phi}$ , velocity vector in a Unit-Space  $\Phi$ . It was shown that the first Path is Gravity,  $g$ , and Original Field-lines of Force,  $G$ , are distorted by these Charges, Local-coefficients, the Layers following Newton's laws.

The Original Field-lines terminate at the surface on one side of the Medium, and new field lines originate from the other side of it. It was shown that the Momentum vector,  $\bar{B}$ , is equal to spin  $S$ , because it is following the Stationary - Wave - Nodes - Principle in the Material-Point creates the minimum quantized Energy which is conserved in lobes. This Property is extended also to the Number of lobes as well as to,  $\pi$ , number as velocity  $\{v = n \cdot \pi \cdot c\}$  which is the minimum Number relating Lines and Surfaces.

Analogous happens in equation when  $v = c$ , and  $\rightarrow r = c$ . From Inner-velocity equation  $v = w \cdot r = (2\pi / T) \cdot r = 2\pi \cdot f_1 \cdot r$ , of fundamental frequency  $f_1$ , of wavelength  $\lambda = c \cdot T = c / f_1$ , and cave  $r = n \cdot [\lambda/2]$ , then  $r = n \cdot (c / 2f_1)$  and  $v = 2\pi \cdot f_1 \cdot [n \cdot c / 2f_1] = n \cdot \pi \cdot c$  or  $v = n \cdot \pi \cdot c \dots\dots\dots(\pi)$

Equation  $(\pi)$  shows that velocities in lobes are,  $n \cdot \pi$  times that of light, following,  $\pi$ , number in circle, i.e. in Material-Points exist velocities multi-times that of light and the minimum Surface-constant, Unit  $\pi$ , or the Growth of the velocity-vectors occurs in lobes by following the logarithm laws of Energy-constant  $c$  which is acting on Space constant  $\pi$ .

From velocity,  $v = n \cdot \pi \cdot c$ , is seen that light-velocity is the Quantum of Unit-velocity in Planck's length. The Why velocity  $c$  and  $\pi$ , is such in [42-51-63]

Kepler's Laws  $\rightarrow$  Explain How the Planets move around the Sun But NOT the WHY.

Newton's Laws  $\rightarrow$  Explain the WHY by filling this Gap by a Force  $F = G \cdot m_1 \cdot m_2 / r^2$ . acting instantly between the bodies that are moving around each other But NOT their Nature and NOT the HOW Force is Acting.

Markos-Spaces  $\rightarrow$  Explain the WHY by filling the Gap with a Double-Ocean of the Pointy-Spinning- Material-Points, becoming from the Stationary- Material-Points, Photons or Electrons, and from the moving-Energy- Storages, the Photons, which Orientate and Re-orientate the Stationary-Spins, The A-Momentum, and explain the HOW and the WHY all motions follow the ubiquity of the Electromagnetism starting from the Primary- Material-Points, Photons, which through the Golden-Ratio-frequency Growth effect and conserve the Whole of the Natural-World from microcosm to macrocosm.

Gravitational-Force  $G$ , Acting in the Beyond - Planck - Cave, and on the light Velocity Vector  $\bar{c}$ , creates Electron-Charge  $\bar{q}_{\text{Electron}} = \frac{G}{c\sqrt{2}} = 1, 574 \cdot 10^{-19} \text{ C.}$  which agrees with that of Coulomb's charge  $\bar{q}$ , and the Material-Points  $\bar{q}_{\text{Photon}} = \frac{G}{\sqrt{2} \cdot f}$  while by effecting on the Whole-Planck-Cave  $\mathbf{L}_p \equiv e \cdot i \cdot (-5\pi/2) \cdot 10$ , creates the Pointy-Gravity Force as this is the Ocean of Spins  $\bar{g}$ , and which Oriented-Spins, Originate Gravity  $\bar{g} = [\downarrow = \cup]$ , and Antigravity -  $g = [\uparrow = \cap]$

as Electron  $\bar{e}$  [72]. The Light-Velocity  $\bar{c}$  of Photons becoming from the Action of G on Planck's Length, when act on a-cave,  $r = \frac{h}{c \cdot Z_c} \neq L_P$  then originates the Hydrogen-cave. [99]

$E = h f_m$ , because Angular-Momentum  $\bar{B} = \frac{2L}{\bar{w}} = \frac{2L}{2\pi f} = \left[\frac{2L}{2\pi}\right] \cdot \left[\frac{1}{f}\right] = \frac{\text{Constant}}{2\pi} \left[\frac{1}{f_m}\right] = \text{SPIN}$  [70]. The Four Energy-Space Constants in Nature are,  $L_P \equiv e^{-i \cdot (\frac{\pi}{2} + 2k\pi) \cdot b} \equiv e^{i \cdot (-5\pi/2) \cdot 10} \equiv e^{i \cdot (-5\pi/2) \cdot 10} \equiv \{\sqrt{3} \cdot \pi \cdot 1, 616199 \cdot 10^{-35} \text{ m}\} \rightarrow$  and is The Planck's length cave,  $g \equiv \frac{T^2}{a^3} \equiv \frac{1}{f_n^2 \cdot a^3} \equiv 9, 8076941 \rightarrow$  The minimum Granular Quantized Energy, from the gravity frequency  $f_g$ , representing the Bedding-Quantum-Raw-material of force G, on all Energy structures.

$G \equiv g \cdot k_E \equiv g \cdot [g_L k_L] \equiv \left[\frac{T_P^2}{a^3}\right] \cdot [g_L k_L] \equiv 9, 8076941 \cdot 6, 8116 \cdot 10^{-12} \equiv 6, 68056 \cdot 10^{-11} \text{ m}^3 / \text{N} \cdot \text{s}^2$   
The Pulling and Cohesive Bond, of all the Quantized-Energy-Structures in all Spaces.  $f_n \equiv \{[S \equiv B_P \equiv \text{EM-R} \equiv f_{1=N}, f_2, f_3, f_D, f_n] \equiv n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma \cdot \bar{B}}{8r^2}$  and from cave  $\lambda_N = \frac{4\pi \cdot r \cdot c}{n\sigma \cdot (1+\sqrt{5})} = \frac{\pi^2 \cdot r^4 \cdot c}{n \cdot \bar{B}}\}$ , The Amount of Energy, the unit meter of motion, in the Torsional and Resonance-Augmented-Golden-Ratio-Pattern  $\Phi$ , and  $\bar{v} = \bar{c} = \sigma \cdot \Phi = \frac{F}{A} \Phi = \left[\frac{G \cdot \Phi}{A}\right] = \left[\frac{6,673692 \cdot 10^{-11} \cdot 1,6180339887}{36 \cdot 10^{-20}}\right] = 2.9985163 \cdot 10^8 \text{ m}$ . Caves-Total-Energy  $\rightarrow E_T = E_R + E_K = \frac{\pi c^2}{8} r^3 + \frac{1}{2} m \cdot v^2 = 3, 535 \cdot 10^{16} \cdot r^3 + \frac{1}{2} m \cdot v^2$

### The Origination of Electron-charge $\bar{e} \equiv \bar{q}$

From relation  $G \equiv g \cdot k_E \equiv g \cdot [g_L k_L] \equiv \left[\frac{T_P^2}{a^3}\right] \cdot [g_L k_L] = g \cdot k$ , is seen that Gravitational-Force G, is The Spring-like central-force from a fix Point, the Source, on an attached, probe, mass as  $\rightarrow F = -k r = -k r \cdot \bar{r}$ , as the 1-DOF equation,  $\ddot{r} + \omega^2 r = 0$ , where  $k = \text{The Unit-Spring-Force} \equiv [\text{meter of area}] \cdot [\text{meter of force} \equiv \text{stress}] \equiv \pi g \equiv$  with a general solution  $r = A \sin \omega_n t + B \cos \omega_n t$ , where A, B are constants and evaluated from the initial velocity-conditions which become  $r = [\dot{x}(0) / \omega_n] \cdot \sin \omega_n t + x(0) \cdot \cos \omega_n t$ .

Above equation represents the Natural-frequency of the Celestial-Structures, and for Planck's length the only one Primary-Particle occupying the less frequency and Negative-charge, which is the electron equation and with the solution as,  $\frac{\omega_n}{2\pi} = f_e = \frac{1}{2\pi} \sqrt{\frac{k}{m}}$ , or  $4 \pi^2 f_e^2 \cdot m_e = k = \pi g$  and or  $\rightarrow m_e = \frac{g}{4 \pi f_e^2}$ .

From Planck's min-equation  $f_e = E / h = [-13, 6 \times 1, 6 \cdot 10^{-19} = 2, 176 \cdot 10^{-16} \text{ Joule}] / [6, 6262 \cdot 10^{-34} \text{ J} \cdot \text{s}] = 3, 283998 \cdot 10^{16} / \text{s}$ , where in Hydrogen atom energy  $E = h f = -13, 6 \text{ eV}$  Substituting all the minimum-meters of Planck's scale then, Electron mass is,  $m_e = \frac{g}{4 \pi f_e^2} = \frac{9,808238}{4 \cdot \pi \cdot [3,28399 \cdot 10^{16}]^2} = -7, 2373149 \cdot 10^{-30} \text{ kg} \dots\dots\dots (4b)$

$f_e = 3, 283998 \cdot 10^{16} / \text{s}$ , and Loop  $L_e = 2, 3762992 \cdot 10^{-16} \text{ m} \dots\dots (4c)$

Relation  $4\pi^2 f_e^2 \cdot m_e = k = \pi g$ , denotes that Electric-field generated by an electron has both, a component oscillating at the Electron's - Compton - frequency  $f_e$ , which is The Energy-Part, and the Non-oscillating component, the Electric-field-lines as the Energy-Conductor, The Space-Part, which is connecting Gravity with Electric-field.

So, Electron, is the minimum-Energy massive Particle in Hydrogen-cave  $\{-13, 6 \text{ eV}\}$ , becoming from Material-Point In Planck's-length, minimum-cave, occupying the less Unit frequency in Planck's - Length, with Negative-charge  $\{f_e = 3, 283998.10^{16} / \text{s}\}$ .

Because of the Negative-Energy in Hydrogen-cave, and the less-Negative Energy of Rims which consist the Plane-traces-Conductors or the Paths in-where electrons roll so Energy Rims consist the Energy-minimum-Paths in Hydrogen-cave-Potentials, as  $E_n - E_{n-1} = [m_e \cdot v^2] \cdot [2n-1]$ , where the electrons, the Electric-Charges, roll.

Electron Charge  $\bar{q}$  Becomes from Magnetic Field  $M$  which creates the Electric-Field  $E$ , which is acting on Charge  $q$ , and the acting Force per second creates Work which is conserved and coincide with the Planck's constant  $h$ . This is because  $h \rightarrow \text{J s} = \text{N m s} = \text{Power}$ , where from, Energy = Power x Time, issues the Beyond Planck's length  $L_P$ , and The Voltage  $V$  as  $\rightarrow \bar{q} \equiv \frac{K_E}{V_P = 1} = \frac{m_e c^2}{2} = \frac{g c^2}{8\pi f^2 \cdot 1}$ , and  $\bar{V} \equiv V_P \equiv \frac{c \cdot \text{Charge}}{\text{Total-Energy} = h} = \frac{c \cdot \bar{q}}{h} \dots (1)$

Using the two Energy-equations for Linear-motion  $\rightarrow f_n = \frac{1}{2\pi} \sqrt{\frac{k}{m}}$  and Orbital-motion  $a = \sqrt[3]{\frac{1}{k \cdot f^2}}$ , for Unit-Energy-Space-frequency  $k = g$ ,  $a = \pi$ , then  $\rightarrow g \cdot f^2 \cdot \pi^3 = 1 \dots (2)$

Frequency  $f_n = \sqrt[2]{\frac{1}{g \cdot \pi^3}} = \sqrt[2]{\frac{1}{9,808238 \cdot \pi^3}} = 1, 8133418.10^{-3}$ , i.e. The Unit-Charge-Cave,  $\bar{q}$  into Hydrogen cave  $[a = 1, 82043047.10^{-12} \text{m}] \cdot [1, 813342.10^{-3} / \text{s}] = 3, 3010625.10^{-15} \text{C}$  From equations Charge and Voltage is the Self-Growing Property of frequency  $f_n$  in Material-Point, therefore and for Hydrogen-cave is equal to  $\rightarrow \bar{q} \cdot \Phi$ , Because Gravitational Force is equal to  $\rightarrow$  the Geometric-Resultant of light-velocity  $c$ , acting on Electron-Unit-Charge  $\bar{q} \leftarrow$  or,  $G = c \sqrt{2} \bar{q}$ , then Electron-Charge is,  $\bar{q} = \frac{G}{c \sqrt{2}} = \frac{6,680561.10^{-11}}{1,41429 \cdot [2,9979346.10^8]} = 1, 58.10^{-19} \text{Coulomb}$ , the known Coulomb's charge quantity, From  $g_L, k_L$  Universal constants the Newton's Gravitational constant Force is,  $G \equiv g \cdot k_E \equiv g \cdot [g_L k_L] \equiv [\frac{T_P^2}{a^3}] \cdot [g_L k_L] \equiv 9, 808238 * 6, 8116.10^{-12} \equiv 6, 68056.10^{-11} \frac{\text{m}^3}{\text{Ns}^2}$ .

The in-depth Position of electrons allows to the Work Produced in Prior Phase-Areas as Golden Ratio Pattern, to be Stored in the Next. Energy = motion /  $T \equiv (\frac{v}{2\pi r})$ .  $[\sigma + \sigma \Phi] = \bar{v}$ .  $[\frac{\sigma}{2\pi r} + \frac{\sigma \Phi}{2\pi r}] \equiv \bar{v} \cdot [\bar{f}_n] + f_n \equiv \text{Moving - Storage} \rightarrow [\bar{v} \cdot \bar{f}_n] \leftarrow + \text{Moving-Frequency} \rightarrow [\bar{v} \cdot f_n] \leftarrow \equiv$  Material-Point i.e. The Energy produced in Photon-Cave is consisted of Two-moving-Storages, that travel as Wave  $[\bar{v} \cdot f_n] \rightarrow [\bar{v} \cdot \bar{f}_n] \rightarrow [\bar{v} = \bar{c} = \lambda \frac{f}{\Phi}] \rightarrow [S \equiv \text{EM-R} \equiv f_{1=N}, f_2, f_3, f_D, f_n = w^2]$ , and

as Particle  $\rightarrow [f_1 = (E^2 + H^2)] = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{nB}{\pi^2 r^4} \rightarrow \{W \equiv EM - R \equiv [\epsilon E^2 + \mu B^2] = 2.\lambda c.\sin.2\varphi\}$  and is  
The Duality of an Energy-Storage  $S \equiv \{[\oplus \leftarrow r \rightarrow \ominus]\} + \text{Motion M. [87-89]}$

### The Origination of Hydrogen Cave H: [99]

From Kepler third law, the Energy-Closed-Space equation and Newton's Laws of motion  
Constant  $k = v^2 \cdot r = (w r)^2 \cdot r = \left[\frac{2\pi}{T} r\right]^2 \cdot r = \frac{4\pi^2 r^2}{T^2} \cdot r = \frac{4\pi^2 r^3}{T^2} = 4\pi^2 \cdot \frac{r^3}{T^2} = 4\pi^2 \cdot r^3 \cdot f_p^2 \dots (k)$  Because (k)  
is constant,  $r^3 \cdot f_p^2$ , is also a Constant multiplication of cave, r, and the frequency f, and the  
Work  $\equiv$  motion are conserved in cave, r, as the, n, frequencies  $f_N = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{nB}{\pi^2 r^4}$ , and for a  
Damping-cave  $\rightarrow r(t) = r(t + w) \leftarrow$  as Planck's scale is with min-Damping = 1 and Unit-Energy-  
Quantity  $W_u$ , (the critical-energy-unit in min, r), is this Unit-Stress-Gravity g, as  $k = E = \frac{T^2}{a^3} = g =$   
 $\frac{1}{f^2 \cdot a^3}$ , i.e.  $\rightarrow$  Stress  $\bar{g}$ , when is entering into the minimum cave, a, of a minimum Surface, then  
from the Period of Rotation T on the Perimeter, is created in Surface the minimum Quantity of  
Energy-cave and is the Hydrogen-Atom, where  $g f^2 \equiv$  the Energy-Part embodied with stress  
 $\bar{g}$ , and the cave  $a^3$ , is the Space-Part, in 3-DOF Space as  $\rightarrow T^2 = g a^3 = 9, 808238.[2,$   
 $1145016.10^{-11}]^3 = 9, 2728158.10^{-32}$  s, and from Period  $T = 3, 04513.10^{-16}$  s, the frequency  $f$   
 $= 3, 2839982.10^{15} / \text{s}$ . From equation  $E = h f = 6.62607.10^{-34} \cdot 3, 2839982.10^{15} = 2,$   
 $175999. 10^{-18} \text{ J} / (1, 6022. 10^{-19}) = 13, 59999 \text{ eV}$

Above Quantized Energy of 13, 6 eV, corresponds to the Hydrogen-Atom-Cave. i.e. The  
Kepler's Planets second law for Areas  $\rightarrow T^2 = g a^3 \leftarrow$  Is the meter  $\equiv$  Monad The Quantum, of  
Energy in Hydrogen cave. Above equal constant is  $g a^3 f^2 = 1$ . which relates Energy  $\equiv f^2$ , Space  
 $\equiv a^3$  through Neutral-Space g.

It was shown that in Conservative Systems of a Central-Force, the Total energy E is conserved  
and at Periapsis, energy  $E = \frac{G.Mm}{2a}$  and  $e = \sqrt{1 + 2EL^2/G^2M^2m^3}$  and for  $e = 0$  then  $\rightarrow E = -\frac{G^2M^2m^3}{2L^2}$ ,  
i.e. Energy is always Negative.

Hydrogen cave constant is  $k = E = \frac{T^2}{a^3} = g = \left[\frac{4\pi^2}{GM}\right]$  therefore  $GM = \frac{4\pi^2 a}{g}$  and from Newton Total-  
energy  $E = -\frac{GMm}{2a}$ , Rotational-Momentum  $L = \sqrt{(1 - e^2) \cdot GMm^2 \cdot a}$  Eccentricity  $e = 0$ ,  $G M m = -$   
 $2a.E$ , and then  $\rightarrow L^2 = GMm^2 \cdot a = -2aE[a] = -2a^2E$ . i.e. Equation  $L^2 = -2a^2E$ , denotes that  
Angular -Momentum L, in Orbit - Rims is always Negative and equal to,  $L = -a\sqrt{2 \cdot aE}$ .

So, Hydrogen-Atom, is the minimum-Energy-cave In Planck's-Length, occupying the minimum  
Negative-Energy in Rims  $\equiv$  Caves, the Space, where Quantum-Energy-Rims are the Plane  
Traces-Conductors in where can roll the  $\ominus$  charged Electrons.

In Hydrogen-cave, the Resonance Frequency of an Electron  $\ominus$ , and a Proton  $\oplus$ , happens from  
the Stationary Unit-Cave of a System of Kepler second Planetary-law as equation,  $4 \pi^2 m f_o^2 =$

k, and from constant law of Areas  $1 = k.f^2.o.a^3$ . Their common Constant-Energy k, is  $\rightarrow k = 4\pi^2$   
 $m f^2_p = \frac{1}{f^2_p a^3}$  or,  $f^4_p = \frac{1}{4\pi^2 m a^3}$  and  $f_p = \sqrt[4]{\frac{1}{4\pi^2 m a^3}}$ .

A loop in Planck's length  $2a = L_p = \pi.1, 616199.10^{-35}$  m with frequency  $f = \frac{c}{\lambda}$ , where then  
 issues  $f^4_p = \frac{1}{4\pi^2 m a^3} = [\frac{c}{\lambda}]^4 = [\frac{1}{\lambda}]^4 \cdot \{c^4 = \frac{1}{[4\pi a^3] m \pi a}\}$ , and for the Unit Intensity  $I = \frac{\text{Energy}}{\text{Area}} = \frac{E = hf}{A = 4\pi a^3} =$   
 $\frac{1KW}{A} = \frac{1}{[4\pi a^3]} = \frac{1}{\lambda^4} \{mc^4 \cdot \pi a\} =$  The Energy-Intension as  $\frac{1}{\lambda^4} \{1\}$ . 80, 760865.  $10^{32}$ . (3, 14).0,  
 $8080995.10^{-35} = 0, 5865. \{\frac{1}{\lambda^4}\}$ ,  $\rightarrow I = 0, 5865. \{\frac{1}{\lambda^4}\} \leftarrow$  which is the Rayleigh Scattering, i.e.

The Quanta of Energy, Passing through a Unit-Surface or Volume, which becomes from the Kepler's Second and third law Mechanism, is Inversely Proportional to the fourth Power of the wavelength  $\lambda$ .

In Outer Electromagnetic fields, frequency, w, is that of inner motion  $\rightarrow w = \frac{2\pi}{T} = 2\pi.f_N \equiv$   
 $[\frac{1+\sqrt{5}}{2}] \frac{\sigma}{2\pi r} = \frac{\sigma \cdot \Phi}{r}$ , which continuous to follow the Growth-Golden-Ratio-Pattern. Photon occupies  
 such the Property of Material Point as the Growth-Pattern. With this way Photon's frequency  
 $\rightarrow f_p = 1 / T_p$ , Kicks-Start everything found on its-way. From the Resonance constant  $k = \frac{1}{f^2_n \cdot a^3}$   
 $\rightarrow$  or  $1 = k.f^2_n \cdot a^3 \leftarrow$  and from Kepler's laws and Newton's Lagrange laws for Orbits the cave-  
 Semi-major-axis is  $a = \sqrt[3]{T^2 / k} = \sqrt[3]{\frac{1}{g.f^2}} = \sqrt[3]{\frac{4 \cdot \pi^2 \cdot r^2}{g \cdot \sigma^2 \cdot \Phi^2}} = \sqrt[3]{\frac{[4\pi^2] \cdot x r^2}{[g \cdot \Phi^2] \cdot x \sigma^2}}$ , and the Resonance frequency is  
 $f_R = \frac{w_R}{2\pi} = \sqrt[2]{\frac{k=1}{g \cdot a^3}} = \sqrt[2]{\frac{\sigma}{g \cdot \Phi^2 \cdot a^3}} \equiv \sqrt{\frac{k}{md}} \text{ eV } \dots\dots(a)$  i.e. It is the Resonance-frequency  $f_R$ , in Photons  
 loop, and which is the Energy-Space Quanta, following the Growth-Golden Ratio-Pattern,  
 which travels in all Cosmos.

1. It was shown that when two Photons strike each other,  $\vec{c} = \vec{c}$ , or reflect on a wall, then  $c = 0$  and so their fundamental frequency  $f_1 = n. [\frac{\vec{v}}{2r}] x [\frac{1}{4}] = n. [\frac{\vec{v}}{8.r}]$  which for  $n = [\frac{8 \cdot \pi r c}{v \cdot \lambda}]$  increases to  $\frac{\lambda}{c}$ , therefore for  $n = N. [\frac{8 \cdot \pi r c}{v \cdot \lambda}] = N. [\frac{c}{\lambda}]$ , and for  $N \rightarrow \infty$  then  $f_1 = E / h = \infty$ . (b). In Dual Photon  $\vec{v} [\frac{\sigma \Phi}{2\pi r} + \frac{\sigma}{2\pi r}] \equiv \vec{v}. [\vec{f}_n] + f_n$ , Colours are Still-Sub-Units of Storage  $[\vec{v}. [\vec{f}_n]]$  and exist as the Frequencies, Violet, Blue, Green, which Stabilize with their Complementary colors Yellow, Orange, Red, of wavelength  $d = \lambda \rightarrow \lambda_{\min} \approx \lambda_{\max} = 3.10^{-7} \text{ m} \approx 3 \cdot \sqrt{3} \cdot 10^{-7} \text{ m}$ .
2. The Quanta of Energy Intension, Passing through a Unit-Surface or Volume is Inversely Proportional to the fourth Power of the wavelength  $\lambda$  and Intension is  $I = 0, 5865. \{\frac{1}{\lambda^4}\}$ , meaning that, When  $f_{BE} = E / h = \infty$  then the Energy-Intension Increases and the wavelength  $\lambda$  Decreases and for  $f_{BE} = \infty$  then  $\lambda = 0$ .

This is what happens in Black-Holes where  $d = \lambda = 0$ , and in where  $E = f_{BE} = \infty$ . Hydrogen-Energy  $E = h.f_p = [6, 6262.10^{-34} \text{ J.s}]. [3, 28393.10^{15} / \text{s}] = 2, 176.10^{-18} \text{ J}$  and in eV  $\rightarrow [2, 176.10^{-18}] / [1, 6.10^{-19}] = 13, 6 \text{ eV}$ , Above Quantity of Energy consist the Hydrogen minimum



Energy-Rim, becoming from equation  $a = \sqrt[3]{T^2/g} = \sqrt[3]{\frac{[3,04513 \cdot 10^{-16}]^2}{9,80769411}} = 2,1145016 \cdot 10^{-11} \text{ m}$ , for the Unit energy cave.

## THE ORIGATION OF ANTI - GRAVITY - STRESS - g

### The Nature of Gravity g

- (a) The light velocity  $c$  is constant. Since  $c$  is constant then is analyzed to,  $(c_x, c_y)$  in any two directions  $x, y$  where  $x \perp y$  and  $y$  to be the gravity direction on where gravity is acting. In figure (8) are seen the 4-Point Positions, at where Velocity Phase changes and the Work done in each Phase of Photon's inner motion. The 4-Phases correspond to the Wavelength,  $\lambda$ , as  $\lambda / 4$ . in distance with  $90^\circ = \frac{\pi}{2}$  to be the change of Phase. This means that the Produced Work in the Prior Phase-Area is as the Golden - Ratio Pattern which is Stored in the Next and Perpendicular Phase-Area. Light velocity,  $\bar{c}$ , changes Phase every  $90^\circ$  and the created Work  $W = c_y \times [\text{Quarter circle } 1-0-4]$  is Symmetrically Stored from  $0^\circ \rightarrow 90^\circ$  alternately  $+, -, -, +$ , in [Quarter circle 1-0-4] in the [Quarter circle 4-0-2] into [Quarter circle 2-0-3] into [Quarter circle 3-0-1] from Momentum  $\equiv$  Spin  $\equiv \bar{B} \equiv r \cdot m \cdot v = [\frac{\pi \cdot r^2}{4}] \cdot \bar{c} \times \bar{r}$  where  $\pm [\frac{\pi \cdot r^2}{4}] =$  The Quarter circle. The Quarter circle,  $+, +$ , consist the  $+$  Spin  $\equiv \bar{B}$  which is the Gravity Force, and the Quarter circle,  $-, -$ , consist the  $-$  Spin  $\equiv \bar{B}$  which is the Gravity Force from Total,  $+, -, -, +$ , When  $r \rightarrow 0$  Or when  $\bar{c}$  doesn't act on the Quarter circle then happens Black-Hole. In [108] is determined the when Newton's Gravitational Force  $\bar{G}$ , Stops Acting thrusting, on The Light velocity Vector  $\bar{c}$ , and happen the Black-Holes.

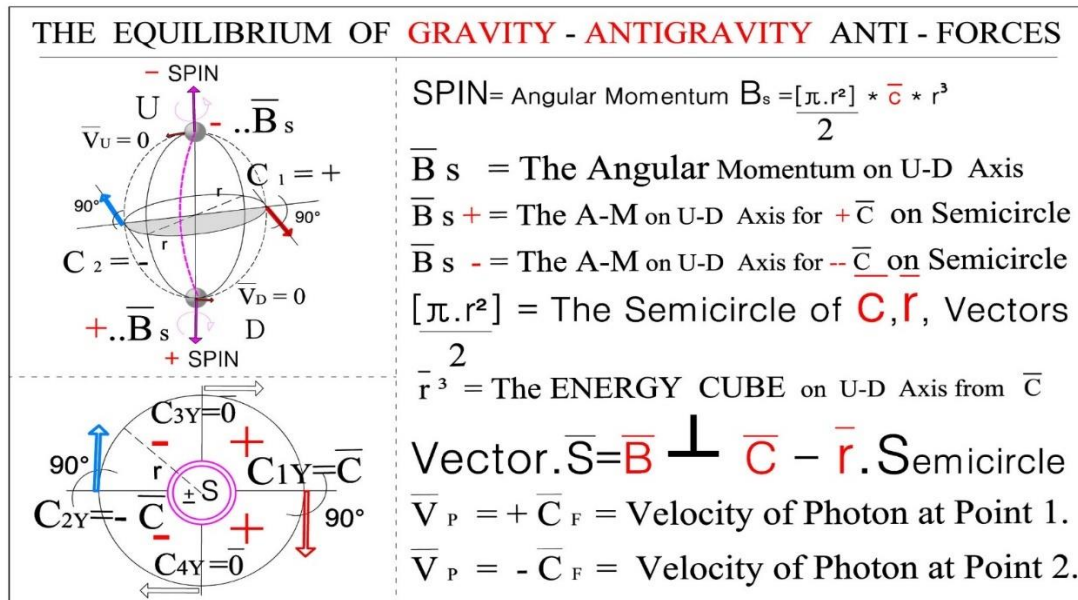


Figure 8: The Stability of  $\pm$  SPIN as an Electromagnetic Wave of Two frequencies 0, c.

- (b) The Dual Property of the Simultaneously existing Spin as Electric and as Magnetic Field in wavelengths,  $\lambda_x, \lambda_y$ , as Effective Range, is thrusts through the Light velocity  $\bar{c}$ , and finally is from the Newton's Gravitational Force  $\bar{G}$ . In Planck's length  $r_p = 1$ ,

$616255.10^{-35}$  m the created Work of  $\bar{c}$ , from 1-4 Position is stored in the [1-0-4] Quarter-circle surface and at Phase-4 where  $c = 0$  is then stored in the [4-0-2] Quarter circle surface. At Phase-2 where  $\bar{c} = -c$  motion is stored in the [2-0-3] Quarter circle surface, and At Phase-3 where  $\bar{c} = 0$  motion is stored in the [3-0-1] Quarter circle surface, i.e. is alternately repeated the  $+\left[\frac{\pi.r^2}{4}\right]$  =The +Quarter circle [1-0-4], and the  $-\left[\frac{\pi.r^2}{4}\right]$  =The - Quarter circle [4-0-2] both in the same Plane-surface [1-4-2-3] of motion. The Surface [1 - 4 - 2 - 3] is  $\perp$  on the SPIN Axis  $\rightarrow$  U - D. From  $f_n = \frac{\sigma}{2\pi r} \Phi$  and  $\bar{c} = \bar{w}.r = 2\pi f_n.r = 2\pi r.f_n = \sigma \Phi$ , are frequencies, 0, c, relation. At  $c = 0$  exist minima or maxima where is the change of two Energy-Semicircles.

- (c) The origination of Spin in cave H. From Orbit vibration  $f_n = \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{\sigma}{2\pi r} \Phi$  and from relation  $g.a^3.f_n^2 = 1$ ,  $f_n^2 = \frac{\sigma^2}{4\pi^2 r^2} \Phi^2 = \frac{1}{g.a^3}$  then  $g.a^3.\Phi^2 = \frac{4\pi^2 a^2}{\sigma^2}$ , or 1).  $a = \frac{1}{g} \left[\frac{2\pi}{\sigma \Phi}\right]^2$ , and from Work  $W = 2E = B.w = J.w^2$ , or  $2E = 2\pi.f$  and  $\bar{B}f = \frac{E}{\pi}$  then 2). The Energy in Planck-scale-cave  $2E = \bar{B}f_n = \left[\frac{(1+\sqrt{5})\sigma}{4\pi r}\right].\bar{B} = \left[\frac{\sigma}{2\pi r}\right].\bar{B} \Phi$ , or  $E = \left[\Phi \frac{\sigma}{4\pi r}\right].\bar{B}$  i.e. The Energy in Planck-cave-Particles is Dependent on their Spin only, and for Electron  $r = a_e \rightarrow E = \left[\Phi \frac{\sigma}{4\pi r}\right].\bar{B} = 1,6180339 \left[\frac{1}{4\pi.1,6840307.10^{-17}}\right] \times 2,845976.10^{-17} = \frac{21,76.10^{-19}}{1,6.10^{-19}} = 13,6$  eV, which is the min-Voltage in Hydrogen cave.

- (d) The Angular Momentum in cave  $\bar{c} - r$ ,

In cave, r, The Energy-Vector  $\bar{r}$  is Positive for  $\overrightarrow{O3}, \overrightarrow{O1}, \overrightarrow{O4}$ , Directions while, The Energy-Vector  $\bar{r}$  is Negative for  $\overrightarrow{O3}, \overrightarrow{O2}, \overrightarrow{O4}$ , Directions.

Since Total-Energy  $L = B.w = \frac{J.w}{2} w = \frac{J.w^2}{2}$  then  $2L = J.w^2$ , then Angular Momentum relation  $\bar{B} = r.m.v = r \left[\frac{\pi.r^4}{2}\right].2\pi f r = \pi^2.r^6.f$  and  $B = J.w$  i.e. Angular Momentum  $\bar{B} = r.m.v = \frac{J.w}{2} = \left[\frac{\pi.r^4}{4}\right] \frac{c}{r} = \left[\frac{\pi.r^3}{4}\right].\bar{c} = \left[\frac{\pi.r^2}{4}\right].\bar{c} \times \bar{r} \dots (a)$

For  $\bar{r} = \pm \bar{r}$ , then  $+\bar{B} = +$  Gravity - Spin  $= + \left[\frac{\pi.r^2}{4}\right].\bar{c} \times \bar{r}$ , The + Gravity Force  $-\bar{B} = -$  Gravity - Spin  $= - \left[\frac{\pi.r^2}{4}\right].\bar{c} \times \bar{r}$ , The -Antigravity Force.

From Momentum relation  $\bar{B} = m.r.v = m.r^2.w = m.r^2(2\pi f) = \frac{J.w}{2} = \left[\frac{\pi.r^4}{2}\right].[2\pi f]$  then Spin  $S \equiv$  Angular-Momentum  $\bar{B} \equiv \bar{S} = \frac{J.w}{2} = \frac{\pi.r^4}{4}[2\pi f] = \pi^2.r^4.[f] = \frac{\pi.r^3.\Phi.\sigma}{2} \equiv \frac{[1+\sqrt{5}].\sigma.\pi.r^3}{4} = \frac{\pi.r^3.\sigma.\Phi}{2} \dots (b).$

For  $\bar{r} = \pm \bar{r}$ , then  $+\bar{S} = +$  Gravity - Spin  $= + \frac{\pi.r^3.\sigma.\Phi}{2}$ , The Gravity Spin  $-\bar{S} = -$  Gravity - Spin  $= - \frac{\pi.r^3.\sigma.\Phi}{2}$ , The Antigravity Spin

From Spin-Momentum relation  $S = \bar{B} = \frac{E}{w} = \frac{E}{2\pi f} = \frac{Er}{\sigma \Phi} = \frac{rG}{\sigma \Phi}$ , and  $\bar{B}^2 = \frac{J^2 \sigma^2}{r^2} \Phi^2$ , so  $\rightarrow [\bar{B}]^2 = \left[\frac{\Phi J \sigma}{r}\right]^2 \leftarrow$  while from Gravity-force  $F_G \equiv m_G g = g.\nabla[\sigma c].r = m_G \frac{c}{r} = Jw^2.g_G = \frac{v^2}{r} \left[\frac{\pi.r^4}{2}\right] \frac{v^2}{r^2} = \frac{\pi r v^4}{2}$ , and Gravity-Acceleration  $\pm g_G = \left[\frac{\pi r v^4}{2}\right].e^3$ , Geometry Growth

$$\left[ \frac{\pi r v^4}{2} \right] = \left[ \frac{3,1415926 ([\sqrt{5}+1] \cdot \sqrt[4]{2} \cdot 10^{-35}) \cdot (2,99793458 \cdot 10^8)^4}{2} \right] \cdot e^3 = 6,044981 \cdot 10^{-35} \cdot 80,773378 \cdot 10^{32} \cdot 20,085536 = \mathbf{g_G} = \pm 9,8076925.$$

i.e. Gravity +  $\mathbf{g_G} = +9,807692 = \frac{\partial r \bar{c}}{\partial t} = +\bar{\mathbf{S}}$ , and Antigravity =  $-\mathbf{g_G} = -9,807692 = \frac{\partial r \bar{c}}{\partial t} = -\bar{\mathbf{S}}$  are the Two Opposite Forces as Spin and for the Stability of the Spin -  $\bar{\mathbf{S}}$ , Equilibrium. For  $c = 0$  exist minima or maxima and thus SPIN is equal to the Negative Gradient of the Potential Energy in the two Interchange Energy Semi circles.

### The Stability of Equilibrium

In the Conservative System, of cave  $\bar{\mathbf{c}} - r$ , the Total Energy  $\mathbf{E_T}$  remains constant and the Total-Energy is  $\mathbf{E_T} = \mathbf{E_K} + \mathbf{E_U} = \frac{1}{2} [\dot{\mathbf{x}}]^2 + U(\mathbf{x}) = \text{constant} \dots (1)$  where  $\mathbf{E_K}$  = The Kinetic Energy and  $\mathbf{E_U}$  = The Potential Energy. For  $y = \dot{\mathbf{x}}$  then,  $y = \dot{\mathbf{x}} = \pm \sqrt{2 \cdot [\mathbf{E} - \mathbf{U}(\mathbf{x})]}$  ... (2)

The differential equation of motion in cave  $\bar{\mathbf{c}} - r$ , for Conservative Systems is  $\ddot{\mathbf{x}} = f(\mathbf{x})$  and Because  $\ddot{\mathbf{x}} = \dot{\mathbf{x}} (d\dot{\mathbf{x}}/d\mathbf{x})$  then  $\dot{\mathbf{x}} \cdot d\dot{\mathbf{x}} = f(\mathbf{x}) d\mathbf{x} = 0 \dots (3)$  By Integrating then  $\frac{\dot{\mathbf{x}}^2}{2} - \int_0^{\mathbf{x}} f(\mathbf{x}) d\mathbf{x} = \mathbf{E}$ , and by comparison to Priors then  $\rightarrow U(\mathbf{x}) = - \int_0^{\mathbf{x}} f(\mathbf{x}) d\mathbf{x}$  or  $f(\mathbf{x}) = - \frac{dU}{d\mathbf{x}} = \ddot{\mathbf{x}} \dots (4)$

i.e. For the Conservative System, of cave  $\bar{\mathbf{c}} - r$ , the force =  $\bar{\mathbf{B}} = r m \bar{\mathbf{c}} = \frac{J \cdot w^2}{2} = \left[ \frac{\pi r^2}{2} \right] \cdot \bar{\mathbf{c}}^2$  is Equal to the Negative Gradient of the Potential Energy Into 2-Energy Semi-circles.

For  $y = \dot{\mathbf{x}}$  then (3) becomes  $\frac{dy}{dx} = \frac{f(\mathbf{x})}{y} = \Phi(\mathbf{x}, y)$ , and the Singular Points correspond to  $f(\mathbf{x}) = 0$ , and  $y = \dot{\mathbf{x}} = 0$  and hence are the Equilibrium Points. For every Point  $x, y$  in the Phase-Plane for which  $\Phi(\mathbf{x}, y)$  is not indeterminate exists a unique slope of the trajectory.

When the velocity vector is at Points 1, 2 then  $y = 0$  and  $f(\mathbf{x}, y) = C \neq 0$  then the Slope of the trajectory is infinite and angle  $\varphi = 90^\circ$ . Since motion in cave  $\bar{\mathbf{c}} - r$ , is a single-DOF oscillator, then motion equation is  $\ddot{\mathbf{x}} + w^2 \mathbf{x} = 0$ . Equation indicates that at the Equilibrium Singular Points, 3, 4, the Slope of the Potential Energy curve  $U(\mathbf{x})$  must be zero, meaning minima or maxima, and which is the  $\pm$  change of direction for the Four Energy- Quarter circles [1-0-4], [4-0-2], [2-0-3], [3-0-1] in  $(c_x, c_y)$  where  $\bar{\mathbf{c}}_y = \bar{\mathbf{c}}$  = Spin Direction.

### Conclusions

1. From A-Momentum  $\bar{\mathbf{B}} = r m \bar{\mathbf{c}} = \frac{J \cdot w^2}{2} = \frac{1}{2} [\dot{\mathbf{x}}]^2 + U(\mathbf{x}) = \frac{1}{2} [y]^2 + \frac{1}{2} k x^2 = \text{constant}$ , then Spin  $\mathbf{S} \equiv \bar{\mathbf{B}} = \frac{1}{2} [y]^2 + \frac{1}{2} k x^2 = [y]^2 + w^2 x^2 = C = \text{Constant}$ , or  $\rightarrow y^2 + w^2 x^2 = C \leftarrow \dots (a)$  Equation (a) is a series of Ellipses determined by  $C$ , and in case of  $y/w = y$  then reduce to circles  $y^2 + x^2 = C$ , in  $\bar{\mathbf{c}} - r$  Plane and Perpendicular to  $\mathbf{S}$  as,  $[\bar{\mathbf{c}} - r] \perp \bar{\mathbf{S}}$ .
2. In the Conservative System of cave  $\bar{\mathbf{c}} - r$ , where  $\bar{\mathbf{c}}$  = Light-Velocity =  $2.9985163 \cdot 10^8$  m/s,  $r$  = Planck's -Length =  $\sqrt[4]{2} \cdot 10^{-35}$  m, motion in cave is an single-DOF oscillator as equation  $\ddot{\mathbf{x}} + w^2 \mathbf{x} = 0$ . Equation of motion is a circle on where exist the 2-Singular Points 3, 4, meaning minima or maxima, where issues  $\frac{dy}{dx} = \frac{f(\mathbf{x})}{y} = \Phi(\mathbf{x}, y)$ , and are in the

Mode-Shapes at the Points of Equilibrium. At Singular Points 3, 4, Velocity  $\overline{c}_y = \bar{c} = 0$  and Spin  $\bar{S} = \text{Gravity} = 0$ , and since  $\frac{dy}{dx} < 0$ , then Spin  $\bar{S}$  changes Direction becoming  $-\bar{S} = \text{Antigravity} = 0$ , meaning that at Singular Points Gravity & Antigravity are Zero.

3. At Point 1, Velocity  $\overline{c}_y = +\bar{c}$  because of  $\overline{c}_y$ ,  $+\downarrow$  direction, and corresponds the Spin  $\bar{S} = \text{Gravity} = \bar{B} = r \text{ m } \bar{c}$  which is Constant and equal to Work  $= \overline{c}_y \times [\text{Quarter circle 1-0-4}]$  At Point 2, Velocity  $\overline{c}_y = -\bar{c}$  because of  $\overline{c}_y$ ,  $-\uparrow$  direction and corresponds the Spin  $\bar{S} = \text{Gravity} = \bar{B} = r \text{ m } \bar{c}$  which is Constant and equal to Work  $= \overline{c}_y \times [\text{Quarter circle 2-0-3}]$  where the  $[\text{Semicircle 4-1-3}] = +\bar{B} \equiv \text{The Gravity}$ , and  $[\text{Semicircle 4-2-3}] \equiv -\bar{B} = \text{The Antigravity}$ . The produced Work from the eternal Rotation is store in the Semicircles as, (+) Total Work  $= [\text{Semicircle 4-1-3}] = +\bar{S}$  and (-) Total Work  $= [\text{Semicircle 4-2-3}] = -\bar{S}$
4. From Newton's law of Universal Gravitation  $m \text{ r. } \bar{w}^2 = G \frac{m.M}{r^2}$ , and when  $m = 1$ , issues  $\bar{w}^2 = \frac{G.M}{r^3}$ , and  $B = J \text{ w}$ , therefore angular velocity  $\bar{w} = \pm \sqrt{\frac{GM}{r^3}} = \sqrt{\frac{G\pi.r^4}{2.r^3}} = \sqrt{\frac{\pi.Gr}{2}}$ . This Angular - momentum is identical with Spin, which is trapped in caves's loops which are in Phase with each other. The amplitude of Oscillation varies from Zero at Nodes to maxima at Antinodes. Since Frequency  $\equiv f_n = (\frac{n\sigma}{8r^2}).\bar{B}$ , so Energy-caves are Stationary Wave-Fringes
5. The Total-Energy,  $E_T$ , in Caves, [70]
  - (a)  $\rightarrow$  In any Moving System  $E_T = E_R + E_K = \frac{\pi c^2}{8} r^3 + \frac{1}{2} m.v^2 = 3,535.10^{16}.r^3 + \frac{1}{2} m.v^2$ ,
  - (b)  $\rightarrow$  Light-Velocity  $\bar{c}$  of Photons becomes from the Action of G on Plancks Length  $L_P = r_P = 1,6162.10^{-35} \text{ m}$  cave r, and when cave  $r = \frac{h}{c.Z_c} \neq L_P$  originates Hydrogen-cave. It is shown later that when the G action Area - Resistance  $\equiv$  Gravitational-Impedance  $Z_{G-I} = 6,344907.10^{-35} \text{ Kg}$  differs for any reason then Black-Holes happen.
  - (c)  $\rightarrow$  Euler's Rotating Rigid Body. The D-Work is  $W = 2L = \bar{B}. \bar{w} = J.w^2 \equiv h.f_n$ , and for m mass  $W = h f_m$ , Angular-Momentum  $\bar{B} = \frac{2L}{\bar{w}} = \frac{2L}{2\pi f} = [\frac{2L}{2\pi}].[\frac{1}{f}] = \frac{\text{Constant}}{2\pi} [\frac{1}{f_m}] = \text{SPIN}$
  - (d)  $\rightarrow$  In Central-motion, Kepler constant  $k = 4\pi^2. r^3. f_P^2$ , or  $1 = [\frac{4\pi^2}{k}] r^3. f_P^2$ ,  $1 = c. r^3. f_P^2$  where for  $\rightarrow r \rightarrow 0$  then  $f_P \rightarrow \infty \leftarrow$ , a case of a Black-Hole in any Central motion.
  - (e)  $\rightarrow$  The Vibrations in Orbit-Systems are as  $\rightarrow W = 4\pi^2. [\frac{r^3}{T^2}]. \bar{n} = 4\pi^2. r^3. f_P^2. \bar{n} \leftarrow$
  - (f)  $\rightarrow$  In [PNS] Neutral Space, Dumping force is  $F_d = C. \dot{r} = \pm C_0. w. [\sqrt{A^2 - r^2}]$  and  $F_d^2 / [C_0. w. A]^2 + r^2 / A^2 = 1$ , i.e. Energy  $\equiv$  motion is mapped as an Ellipse with axis,  $F_d$ , x, and Energy Dissipated Per - Cycle, the Area enclosed by ellipse.
  - (g)  $\rightarrow$  The Energy in [PNS], is either as momentum (mv) or as Rotational Momentum ( $\Lambda = r.mv$ ). Velocity  $\dot{x}$ , in form  $\dot{x} = w A \cos.(wt - \theta) = \pm wA. [\sqrt{1 - \sin^2(wt - \theta)}] = \pm w. [\sqrt{A^2 - x^2}]$  where momentum relation  $\bar{B} = m r v = m r^2 w = m r^2 (2\pi f) = \frac{J.w}{2} = [\frac{\pi r^4}{4}]. [2\pi f] = \frac{\pi^2 r^4 f}{2}$ , and Mass of Elementary-Particles is  $m = \frac{\pi^2 r^4 f}{2w.r^2} = \frac{\pi^2 r^3}{2v} f = \frac{\pi^1 r^2}{4}$ , or The repeated Quarter circle  $[\frac{\pi.r^2}{4}]$  Surface of the  $\pm$  Spin Dual Property In Planck's length

and area,  $A_{QC} = [\frac{\pi r^2}{4}] = \frac{3,1415926 \cdot (\sqrt[4]{2} \cdot 10^{-35})^2}{4} = 1,1107206 \cdot 10^{-70} \text{ m}^2$ . Since issues the monad of mass to be  $[\frac{eV}{c^2}] = 1,782662 \cdot 10^{-36} \text{ Kg}$ , then Energy Dissipated Per -  $A_{QC} = E_{QC} = (1,1107206 \cdot 10^{-70} \text{ m}^2 / 1,782662 \cdot 10^{-36} = 6,230715 \cdot 10^{-35} \text{ Kg}$ , Or from the G action Area - Resistance  $\equiv$  Gravitational-Impedance  $Z_{IQC}$ , exists  $Z_{IQC} = \sqrt{2} c^3 A_{QC} / G$ , and  $m_{PNS} \equiv Z_{IQC} = \sqrt{2} \cdot c^3 A_{QC} / G = \frac{1,4143 \cdot (27 \cdot 10^{24}) \cdot 1,1107206 \cdot 10^{-70}}{6,680056 \cdot 10^{-11}} = 6,344907 \cdot 10^{-35} \text{ Kg}$ . The result agree with Prior because in [PNS] Dipole of Space exists the Impedance  $Z_{IQC}$ , which Doesn't exist in [MFMF] Space. [22-26]

(h)  $\rightarrow$  In [MFMF] Space, Work = motion = Energy is zero as  $W = \int_B^A P \cdot ds = 0$ , and this because  $ds = \vec{v} = 0$  and Time is not existing and  $\vec{v} = 0$  as relation,  $s = \vec{v} \cdot T$ . Each Unit  $\overrightarrow{AB} = ds > 0$  exists by this Inner Impulse (P) and so  $P_A + P_B = 0$ . i.e. The Position and Dimension of all Points which are connected across Universe and that of Spaces exists because of this Static Inner Impulse, on the contrary should be one Point only or, Primary Point A = Black Hole  $\rightarrow ds = 0$  and  $P = \infty$ . Since Impulse is  $\infty$  then may be  $\rightarrow$  Vacuum, Momentum or Potential or Induced Potential and it is a Type of Effect, to Push the nature  $\rightarrow$  (Impulse  $\equiv$  Motion  $\equiv$  Energy)  $\leftarrow$

### The Nature of Antigravity - g.

From Mechanics in case that, in an Axisymmetric Rotating Body, with constant Angular-Velocity,  $w$ , the moment of Inertia,  $J_x = J_y$ , is equal about the two of the three Principal axis, and then,

1. The Angular - velocity - vector,  $\vec{w}$ , describes the Ellipsoid of Angular Velocity and its nib describes a Cone of which Plane-Base is Fixed Simultaneously,
2. The Angular-Momentum,  $\vec{B}$ , describes the Ellipsoid of Angular-Momentum and its nib describes a Cone also of which Plane-Base is also Fixed.
3. The Nib of Angular - velocity - vector,  $\vec{w}$ , describes on the Tangential-Plane of the Angular-Momentum-Ellipsoid, the Herpolhode, while,
4. The Nib of Angular-Momentum,  $\vec{B}$ , describes on the Tangential-Plane, of the Angular-Velocity-Ellipsoid, the Polhode.
5. The Fixed - Tangential-Planes on,  $\vec{w}$ , and,  $\vec{B}$ , nib are alternately Perpendicular to,  $\vec{B}$ , and,  $\vec{w}$ , common Central Axes of Rotation. From Newton's law of Universal Gravitation  $[\vec{w}]^2 \cdot r^3 = GM = 6,68 \cdot 10^{-11} \text{ x } 2,17643 \cdot 10^{-8} = 14,538726 \cdot 10^{-19}$  and from Planck's cave  $r_P = 1,6162 \cdot 10^{-35} \text{ m}$  in case of Energy Superflow still happens in Sub-Spaces which is PNS-Space as,  $f_{PNS} = \sqrt[3]{\frac{14,538726 \cdot 10^{-19}}{4 \cdot \pi^2 \cdot [1,6162 \cdot 10^{-35}]^3}} = 8,934121 \cdot 10^{44} \text{ Hz}$  and  $\sqrt[2]{f_{PNS}} = \sqrt[2]{8,93412 \cdot 10^{44}} = 2,9897 \cdot 10^{22}$  which is  $\gamma$ -Ray frequency in Black-Holes.
6. The Kinetic Rotational - Energy of monad, which is the Work in monad, is the Scalar quantity, L, The Vector Angular Momentum quantity is,  $\vec{B}$ , and the Vector Angular-Velocity quantity is,  $\vec{w}$ , which Three monads are related as  $\vec{B} \cdot \vec{w} = 2L = J \cdot w^2$  where  $J =$  The moment of inertia around the axis of rotation  $= \mathbb{J}$
7. All above happen in, Material-Point, where the Positive  $\oplus$  constituent, The  $+\vec{c}$ , is Eternally self - rolling on the Negative  $\ominus$  constituent, The  $-\vec{c}$ , with Angular-Velocity  $w$ , in Infinite Spherical traces, either at Great-circles  $[+ \text{ or } -]$ , or Small-circles,  $[+]$  where is

the Clockwise Left direction, and [-] where is Anti-Clockwise Right direction or any other close Spherical-curve, and Applying all laws of Mechanics into this Energy Chaos, is thus created the → First-Discrete – Energy-monad, the Material Point ← i.e. The Angular Momentum  $\vec{B}$ , is the Quantum of Physics and is, for all the Energy –Space- Universe. The Energy E dissipated per cycle is equal to the Work  $W_d \rightarrow E = h f = \frac{h(1+\sqrt{5})}{4\pi} \cdot \left[\frac{\sigma}{r}\right] = 8.k\zeta(\pi r^2)$ , and is Stored in monad, which is a Stationary Wave with and - in, n, loops as  $\mathbf{W}_n = \left[\frac{4\pi r^2}{3}\right] \cdot \mathbf{f}_n = \left[\frac{4\pi r^2}{3}\right] \cdot n \mathbf{f}_1 = n \frac{(1+\sqrt{5})\sigma r}{3} = n \frac{[\sigma \Phi, r]}{1,5}$ .

8. Geometry has as Monad, The discrete continuity  $\overrightarrow{AB}$ -length becoming from the Zero Point  $\equiv 0$ , and Mechanics-Physics the Recent-Acquisition of the Material - Geometry, where Zero-Point,  $0 = \emptyset = \{\oplus + \ominus\} =$  The Material-Point = The Quantum of Space, as, The Positive Space and The Negative Anti-Space. [58] In Fig-8, The Light velocity vector  $\vec{c} = 2,9979.10^8$  m/s Rotates In the Planck's length Perimeter  $r_P = 1,616255.10^{-35}$  m, and is thrustured through The Newton's –Gravitational Force  $\vec{G}$ , During Rotation is created Work which is stored in the circle Surface as Angular - Momentum  $\vec{B} = r m v = \frac{J.w}{2} = \left[\frac{\pi.r^4}{4}\right] \frac{c}{r} = \left[\frac{\pi.r^3}{4}\right] \cdot \vec{c} = \left[\frac{\pi.r^2}{4}\right] \cdot \vec{c} \times \vec{r}$ , in
9. Semi circle  $\{+[4-1-3]\}$ , and Semi circle  $\{-[4-2-3]\}$ , for the Stability of Equilibrium. i.e.
  - Gravity + g  $\equiv$  The Vector of Angular-Momentum  $\vec{B} \equiv +$  Spin  $\equiv \downarrow \cup \equiv$  The Work stored in the  $[4-1-3]$  Semi circle of the,  $\vec{r} - \vec{c}$  Vectors circle-Surface, Produced from the Gravitational-Force, G, as ACTING into the -Planck- Cave, AND on the light Velocity Vector of, +  $\downarrow \vec{c}$  Direction.
  - Antigravity - g  $\equiv$  The Vector of Angular -Momentum  $\vec{B} \equiv -$  Spin  $\equiv \uparrow \cup \equiv$  The Work stored in the complementary  $[4-2-3]$  Semi circle of the,  $\vec{r} - \vec{c}$  Vectors circle-Surface which is Produced from the Gravitational-Force, G, as ACTING into the - Planck-Cave, AND on the light Velocity Vector of The, -  $\uparrow \vec{c}$  Direction.

### The Conservation of Energy in → Velocity $\vec{c}$ and Gravity $\vec{g}$ Caves ←

Since Gravity-  $\vec{g}$  is the Energy  $\equiv$  The Angular-Momentum  $\{\vec{B} = r m v\}$  in Planck's length  $r_P$ , and it is a Stationary-Wave or an Electromagnetic Wave-Signal which transmits Information's Then follows the Waves-Frequency-Signal-Spectrum. The Gravitational Constant G is the Active force on light velocity  $\vec{c}$  and consequently on  $\vec{g}$  also.

From Waves theory → Position  $x = A \sin wt$  and Acceleration  $\ddot{x} = A w^2 \leftarrow$  where the Signal-Spectrum is consisted of the Amplitude  $A_c$  and of the Angular frequency  $\vec{w}$ , from where all other Properties follow. Since  $\ddot{x}$  is the acceleration Force of Position x, then for Planck's length issues  $\ddot{x} = G = A_G^2 \cdot w^2$ , or  $\vec{w} = \sqrt{G/A^2} = \sqrt{6,68.10^{-11}/[2,6262.10^{-35}]^2}$  and Gravity-frequency  $\rightarrow \vec{w} = 0,5057.10^{30}$  H and Gravity-Wave-frequency  $f_{GW} = 8,05.10^{28}$  H ← THE GRAVITATIONAL FORCE ACTION:  $[[G]] \rightarrow \{[\vec{c}] \pm \mathbf{E}_n\} \equiv \vec{g} \equiv \mathbf{E}_n + \{[G] \pm [\vec{c}]\} \rightarrow \mathbf{E}_R = \mathbf{E}_G + \mathbf{E}_c \leftarrow$  where,

$[[G]] = [\text{Gravitational Constant } G] \equiv \text{The Signalling. (W c)} \rightarrow \text{The Carrier - Wave}$

$[[\vec{c}]] = \text{Any Action of } [G - \text{ON- } \vec{v}] \equiv \text{Any Signalling. } (\vec{v}) \text{ Modulating Velocity-Wave}$

$[[\vec{g}]] = \text{The New Modulated } [G \leftrightarrow \vec{v}] \text{ Signal} \equiv f \frac{\vec{v} m + wc}{2} + f \frac{\vec{v} m - wc}{2} \equiv [\text{MAS}] \text{ COMPOUND} = \text{The Demodulated } [\text{MAS}] \equiv f \frac{w+2wc}{2} + f \frac{w-2wc}{2} \equiv [\text{DMAS}]. \vec{v} \text{ m as } [G = \text{The CARRIER}] \rightarrow [\vec{c} = \text{The}$

MODULATOR]→[G+ $\bar{c}$  = The MODULATED] and [G+ $\bar{c}$ ] +  $\bar{g} \leftrightarrow$  [DM = ANTIDOTES] = The DEMODULATION] i.e. The Communications–Frequencies In Planck's Cave, are the Wave Resonances which consist the Master-Keys of these wave - caves.

### The Conservation of Energy in Caves and in Atoms Compounds. [106]

THE ATOMS – ACTIONS: [[A]] → {[B]± $E_N$ } ≡ C ≡  $E_N$  + {[A] ± [B]}, →  $E_N = E_C + E_A \leftarrow$

where

[[A]] = [Atom OR Compound] ≡ The Signalling. (Wc) → The Carrier - Wave

[[B]] = Any[A-OR-C] ≡ Any Signalling. (w) Wave = The Modulating - Wave

[[C]] = The New Modulated Wave [A] Signal ≡  $f \frac{w+wc}{2} + f \frac{w-wc}{2} \equiv$  [MAS]

ANTIDOTE = The Demodulated [MAS] ≡  $f \frac{w+2wc}{2} + f \frac{w-2wc}{2} \equiv$  [DMAS]

The Atoms Action (1)... [A] → {[B]± $E_N$ } ≡ [C] ≡ ±  $E_N$  + {[B] + [A]}, [A] ≡ [C] + { $X_N$ }

[A] = The Initial, [C] = The Final, [ $X_N$ ] = {[B] ± [ $E_N$ ]} ≡ The Antidote.

The Atoms Action (2) ... [A] → [±  $E_N$ ] ≡ [C] ≡ ±  $E_N$  + [A], , , , [A] ≡ [C] + [ $E_N$ ]

[A] = The Initial, [C] = The Final, [ $E_N$ ] ≡ The Antidote, The Circular-Signal-Action is as, I → F = [I + F] and [I + F] ↔ [DM] ≡ Antidote, or [I = CARRIER] → [F = MODULATOR]→[I+F = MODULATED] → → [I+F] + M ↔ [DM = ANTIDOTES] = THE DEMODULATION] The Communications –Frequencies In Atoms - Caves, are their Wave Resonances which consist the Master-Keys of all the wave - caves.

### The Caves and the Black Holes [72-73]

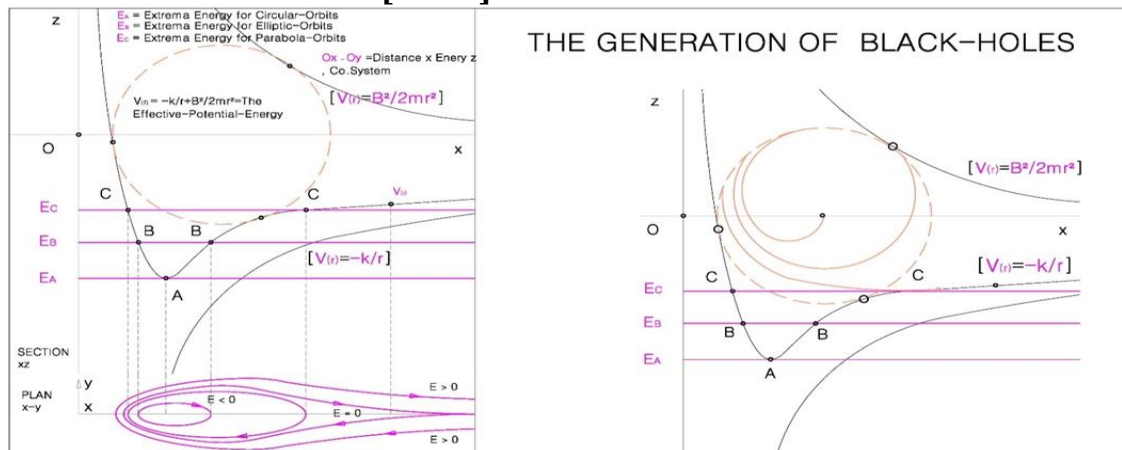


Figure - 9- The Energy in Orbits and the Conditions for Black-Hole [ $\bar{v} = n\pi\bar{c} = \lambda.n\pi f$ ]

1. In (1) is the Graph of Effective-Potential-Energy-Orbits in a Central-motion becoming from Kepler constant  $k = 4\pi^2 \cdot r^3 \cdot f_p^2$ , or  $1 = \left[\frac{4\pi^2}{k}\right] r^3 \cdot f_p^2 \rightarrow 1 = c \cdot r^3 \cdot f_p^2$ , ..., (6a) where for  $\rightarrow r \rightarrow 0$  then  $f_p \rightarrow \infty \leftarrow$
2. Because of the Golden-ratio-frequency relation  $f_n = \left[\frac{(1+\sqrt{5})}{2}\right] \frac{n \cdot \sigma}{2\pi r}$ , and from  $\bar{v} = n\pi\bar{c} = \lambda.n\pi f$ , then  $v = \lambda.n\pi \cdot \left[\frac{(1+\sqrt{5})}{2}\right] \frac{n \cdot \sigma}{2\pi r} = \frac{\lambda \cdot n^2 \cdot \sigma}{2r} = n^2 \cdot \sigma$ , Predicts the Ubiquity of the Golden- ratio

in Nature from the microcosm to the macrocosm, the macro scale, and the when velocity  $\bar{v}$  can enter a cave  $r$ .

Instead of it, Momentum  $B$ , Rotates into the Angular - Velocity - Cone, i.e. From equalities, acceleration  $g = \frac{2\pi v}{T}$  and velocity  $v = \frac{2\pi r}{T}$  then  $g = \frac{4\pi^2 r}{T^2}$ , Period  $T = 2\pi \sqrt{\frac{r}{g}}$  or frequency  $f_1 = \sqrt{\frac{g}{4\pi^2 r}}$ , (6b) or from acceleration on orbits  $a = \frac{2\pi v}{T} = \frac{v}{r} v = \frac{v^2}{r}$  and from force  $P = m \frac{d\bar{v}}{dt} = \frac{d(m\bar{v})}{dt} = m \cdot \bar{a}$ . From constant  $C r^3 \cdot f_p^2 = 1$ , when cave  $r$ , tends to zero then frequency  $f_1$  is tending to infinite  $\infty$ , and constant  $C = \frac{4\pi^2}{GM_s} = 5, 9188 \cdot 10^{11} \text{ Kg}^2/\text{Nm}^2 M_s$ . Photon exists as an Angular-Momentum  $B_{PH}$  rotating in the Angular-velocity-Cone as an Stationary wave  $[B_P \equiv f_{1=N}, f_2, f_3, f_R] \equiv [E^2 + H^2] = 2(2r) \cdot \bar{c} \cdot \sin 2\varphi \dots\dots(6c)$

### The Planar and Atoms - Black - Holes

From (6a), (6b) and  $f_1$  when cave,  $r$ , tends to zero, 0, then frequency  $f_1$ , is tending to infinite  $\infty$ , while from (6c) is the opposite, and when  $f_1$  tends to  $\infty$  then,  $r$  tends to zero i.e. Both are the cases of an Planar  $[ \rightarrow r \rightarrow 0 \text{ then } f_P \rightarrow \infty \leftarrow ]$  and fur an Atom - Black - Hole,  $[ \rightarrow f_P \rightarrow 0 \text{ then } r \rightarrow \infty \leftarrow ]$  The How and When a Black-hole is formulated, in [73].

The Work in  $n = 1$  loop is  $W = [\frac{4\pi r^2}{3}] \cdot f_1 = [\frac{4\pi r^2}{3}] \frac{(1+\sqrt{5}) \cdot \sigma}{4\pi r} = \frac{(1+\sqrt{5}) r \cdot \sigma}{3} = \frac{r \cdot \sigma \Phi}{6}$ , which is dependent only on the cave,  $r$ , and Glue-Bond,  $\sigma$ , and for  $n = n$  loops  $W = [\frac{r \cdot \sigma \Phi}{6}] \cdot n$ .

Above equation defines the HOW, conservation law of Energy in Photon is working, and it is an Index for Future Energy-Sources-Technology attempt.

It was proved that Energy of wave is  $\rightarrow E = m \cdot \dot{y}^2 / 2 = (m/2) \cdot (-w)^2 \cdot A_0$ , and  $m = \frac{2 \cdot E}{r \cdot w^2}$ , i.e. Mass of cave  $r$ , is  $\rightarrow m = \frac{2 \cdot E}{r \cdot w^2} = \frac{2 \cdot \bar{E}}{r \cdot w^2} = \frac{W}{r \cdot w^2} = \frac{(1+\sqrt{5}) \cdot 4r^2 \sigma}{6r\sigma^2 (1+\sqrt{5})^2} = \frac{2r}{3\sigma \cdot \Phi} = [\frac{4\pi r^2}{3}] \cdot f_1 \dots (p)$

Since mass is equal to  $m = \frac{2}{c^2} (wr)^3 = \frac{2hf}{c^2} = \frac{h \cdot w}{\pi \cdot c^2}$ , i.e. analogous to Energy  $w$  only, then mass is a factor measuring the Energy magnitude only, The Photon's min frequency from the light velocity  $\bar{c} = 2\pi r \cdot f$  is  $f_{PH} = \frac{E=14,6 \text{ eV}}{h=6,62607 \cdot 10^{-34}} = 3, 53 \cdot 10^{15} \text{ Hz}$ , in  $r = 13, 52 \cdot 10^{-9} \text{ m}$  and Photon max. mass  $m_{PH} = 4\pi \cdot r^2 \cdot [\frac{2\pi r f}{\Phi}] = [\frac{8\pi r^3}{\Phi}] \cdot f_P = 13, 55 \cdot 10^{-8} \text{ Kg}$ . All these from constant relations  $\bar{c} = 2\pi r f$  and  $g r^3 \cdot f_p^2 = 1$  i.e. Photon has a frequency  $f_{PH} = 3, 53 \cdot 10^{15} \text{ Hz}$  and mass  $m_{PH} = 13, 55 \cdot 10^{-8} \text{ Kg}$ .

In a few words Energy  $\equiv$  Motion  $\equiv$  is Quantized in constant-Quantity in Energy-lobes as the loops, and Exists because of Opposition of Charge. It is trapped in Energy-caves in case of Circular-motion  $\equiv$  {Stationary Waves  $\equiv$  The monads}, and Is getting Out the cave in case of the Skin-effect  $\equiv$  {Formulated in the three Moulds of  $\rightarrow$  [Space -Anti space - Kinetic Energy]}, Never vanishes, But continuously changes to above three Moulds, formulating the Primary and Compound elements of this cosmos.



## How and Why exist the Black-holes?

- A. Two Physical-Systems are in Thermal-Equilibrium if there is no net flow of Thermal-Energy between them, when they are connected by a Path Permeable to Heat. Thermal equilibrium obeys the zeroth law of Thermodynamics, where the temperature within the System is, Flowing Spatially and Temporally Uniform.
- B. Two Physical - Systems are in Mechanical-Equilibrium, and it is the condition of the Systems when neither their State of motion nor their Internal Energy - State tends to change with time and motion. Equilibrium is so established and if the Gradient of the Potential-Energy with respect to the generalized coordinates is zero then  $\rightarrow$
- C. The two existing Physical-Systems, that of Gravity-force  $\nabla i$ , and that of all others  $\{[\nabla i].[\pm \bar{v}.s^2]\}$ , is the condition of the two Systems, either Stationary or in motion, to react continuously either Internal or external and their State of motion either the Internal Energy-State or their External Energy-State, which tends to change between them, to be connected by a Path Permeable to a common motion. All stars are under the pressure of Gravity. This force is created from the continuous internal acceleration  $a = v^2/r$  of Material-points  $[\oplus s^2 \cup \ominus s^2]$  in MFMF Gravity-field. The continuous pressure between them reach a Point that they cannot be compressed any further, and so the electrons degenerate the Pressure on a Neutron Star-breaks-down under the force of Gravity and then, Black holes are created. In this way a NEW System just the opposite to [STPL] is generated and all {Regular Matter and Antimatter, Dark Matter, Energy, Degenerate this matter, Stationary and travelling Gravity-force} are annihilated following, The Permeable Resonance - Path of Gravity-Material-Point from the eternal motion of the Opposites.
- D. Following Kepler laws then, On any moving Particle when is Tangentially-colliding or is under any angle  $\varphi$  with a Material-Point executing Circular motion then the Total Energy  $E$  is Negative, and the Particle follows constant Elliptical-Energy-Orbits on the same semi major axis  $a$ ,  $k = 1/c = f_n^2 \cdot a^3$ , and of the same constant Energy. Semi major axis  $a$ , is related to energy as  $\rightarrow a = GMm / 2E$ , i.e. for very large Energies semi major axis tends to a Negative-Energy-Point, which is the beginning of the Black hole in microcosm and macrocosm. For axis  $a \rightarrow 0$ , then  $f_n \rightarrow \infty$ , i.e. for very small semi major axis  $a$ , the frequency becomes infinite and Infinite-Negative-Energy also, which is the Black-hole. or For Energy  $E \rightarrow \infty$ , the frequency becomes Infinite-Negative Energy also and then axis  $a \rightarrow 0$ , i.e. it is the Black-hole. Resonance-Path happens as the Force, EM-Radiation in Two directions, can travel in any closed System through Cauchy-stress-tensor where the two Conveyers  $E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3$ , can carry the Energy Storage  $r$ , in System, and change the Inner-Structure of the System to another Primary-Energy-System. From Inner-velocity equation  $\rightarrow v = wr = (2\pi/T)r = 2\pi.f_1 r$ , wavelength  $\lambda = cT = c / f_1$ , cave  $r = n.[\lambda/2]$  and  $\rightarrow r = n.(c / 2f_1)$  also  $v = 2\pi.f_1 [n.c/2f_1] = n.\pi.c$  or  $\rightarrow v = n.\pi.c \leftarrow$  and thus showing, velocities in lobes are,  $n.\pi$  times that of light, and for  $n = 1$  then  $v = \pi.c$  i.e. more than 3 times the light velocity. The answer to the question < Why is the speed of light constant and magnitude  $c$ ? and not, it just does, is because as prior referred, the Centrifugal velocity,  $\bar{v} = \bar{w}.r$ , is always the constant  $\bar{c}$ , and this because acceleration  $[d\bar{v}/dt = d(\bar{w}r/dt) = 0]$  is zero and since  $\bar{w}$  is constant. [39]. In Chemical reactions, in order to take place a Resonance-Path between an Energy-Storage and a Particle, is that the Reactants must collide,  $[\oplus s^2 \leftrightarrow \ominus s^2]$ , which need enough Kinetic

Energy, while in Sub atomic and Crystal region motion can happen through Propagation and energy as EM-Radiation which exists in waves.

- E. From relation  $\rightarrow G = k_E g = g \cdot k_L g_L \leftarrow$  The Gravitational Constant.  $G \equiv$  The Pulling and simultaneously Cohesive Bond on all Quantized - Energy Structures either in or Outer Planck's cave  $P_{PC}$ , following the first Newton's law.  $f_n \equiv$  The Amount of motion-meter in the Augmented-Golden-Pattern  $\Phi$ . Gravity +  $g \equiv$  The Vector of Angular-Momentum  $\bar{B} \equiv + \text{Spin} \equiv \downarrow \cup \equiv$  The Work stored in the [4-1-3] Semi circle of the,  $\bar{r} - \bar{c}$  Vectors circle-Surface, Produced from the Gravitational-Force,  $G$ , as ACTING into the -Planck-Cave, AND on the light Velocity Vector of,  $+ \downarrow \bar{c}$  Direction. IS  $\rightarrow$  The minimum Granular-Quantized-Energy,  $\bar{B}$ , from the Gravitational Force  $G$ , when is acting into The -Planck-Cave, and represents the Basic Acting Quantum-Raw-material, for All the Energy structures. Antigravity -  $g \equiv$  The Vector of Angular -Momentum  $\bar{B} \equiv - \text{Spin} \equiv \uparrow \cup \equiv$  The Work stored in the complementary [4-2-3] Semi circle of the,  $\bar{r} - \bar{c}$  Vectors circle-Surface which is Produced from the Gravitational-Force,  $G$ , as ACTING into the - Planck- Cave, AND on the light Velocity Vector of The,  $- \uparrow \bar{c}$  Direction. IS  $\rightarrow$  The minimum Granular-Quantized-Energy -  $\bar{B}$ , from the Gravitational Force  $G$ , when is acting into The -Planck- Cave, and represents the Basic Equilibrium Quantum-Raw-material, for All the Energy structures.

### The Linear and Rotational Motion in All Displacements R: [77]

The Minimum-Work  $\rightarrow W = 4\pi^2 \frac{r^3}{T^2} \cdot \bar{n} = 4\pi^2 \cdot r^3 \cdot f_p^2 \cdot \bar{n} \leftarrow$  in an Negative - Elliptic-Energy-field-Disk as this is PNS, which is stored as a Voltage  $[N \equiv \oplus \leftrightarrow \ominus \equiv P]$  across the Disk between the rotating Planet  $P$ , and Nucleus  $N$ , Produced from the Pressure,  $\sigma$ , of the frequency  $f_p$  and of the semi-major axis  $a_p$  of the Planet. Motion is Kept, is quantized as Unit-work  $W = 1 = k \equiv [\nabla i] \cdot [\pm s^2] \equiv [\text{MFMF}]$  Field, In the Orbit-area,  $\pi a b$ , upon the Spin  $\bar{B}$  Orientation of the Pointy-Material-Points  $[\pm s^2]$ . Orientation of Spin (Angular Momentum) becomes from the Energy in the sinusoidal in orbit gravity-fields, created by the motion of oscillation of the material Points  $[\oplus \cup \cup \ominus]$ .

Any Interaction between this Oriented-Energy Disk-Rim and a Body-Planet creates disturbances in Disk and Reorientation of Spin  $\bar{B} \equiv$  motion  $\equiv$  work  $\equiv k = \text{constant} = \text{quanta}$  and transformed as, The Gravity-Force in Disk, and which Energy is equal to the Gravity acceleration  $g$ , and this because  $g = \text{force}$ , as equation  $g = F/m$ .

Bodies Produce Gravity {the change of Spin-direction of M-P-Dipole  $[\oplus s^2 \cup \cup \ominus s^2]$  in MFMF field} from stationary force  $[\nabla i] = \pm s^2$ , and because Gravity  $\equiv$  acceleration and not change of velocity vector, it is by changing the Direction of the above dipole. It is later seen that Gravitation as an external force  $G$  to masses, is affecting bodies through this Gravity-bedding-Layer,  $g$ , created by the velocity of Photon on Bodies.

It was shown before that, since Motion presupposes velocity vector  $\bar{v}$  which, when it is in motion collides with other velocity vectors and creates Constant work,  $k$ . and then Motion may be Linear or Rotational for any displacement,  $r$ , where then is created the Constant-Work

$$\Rightarrow W = k = \bar{\mathbf{v}} \times \bar{\mathbf{v}}. \bar{\mathbf{r}} = v^2 \cdot r. \bar{\mathbf{n}}. \dots (a) \text{ i.e. Constant-Work} = k = v^2 \cdot r = (wr)^2. r = \left[\frac{2\pi}{T}\right]^2 \cdot r = \frac{4\pi^2 r^3}{T^2}. r = \frac{4\pi^2 r^3}{T^2} = 4\pi^2 \cdot \frac{r^3}{T^2} = 4\pi^2 \cdot r^3 \cdot f_p^2$$

Because Gravity-Force  $F_G$  becomes from the in-storages acceleration  $a = v^2/r$  of the infinite-material-Points in MFMF field, and force  $[\nabla i]$  is stationary because from the Pointy Rotation  $[-s^2 \cup s^2]$  of MP-Spin, then for Planck length issues, Gravity force  $[\nabla i] \equiv F_G \equiv m_G g = g \cdot \nabla \left[\frac{\sigma}{c^2}\right]^2 \cdot r = m_G \frac{v^2}{r} = Jw^2 \cdot g_G = \left[\frac{\pi r^4}{2}\right] w^2 \cdot \frac{v^2}{r} = \frac{v^2}{r} \left[\frac{\pi r^4}{2}\right] \frac{v^2}{r^2} = \left[\frac{\pi r v^4}{2}\right] \dots (b)$  and from relation, Spin  $S = \bar{\mathbf{B}} = \frac{h\sqrt{3}}{4\pi}$  then, Gravity-force  $\rightarrow F_G \equiv \left[\frac{\pi v^4}{2}\right] \frac{n\pi}{2h(1+\sqrt{5})} \bar{\mathbf{B}} = \left[\frac{n\pi^2}{4h(1+\sqrt{5})}\right] \bar{\mathbf{B}} v^4$  and so is  $F_G \equiv \frac{n\pi\sqrt{3}}{16(1+\sqrt{5})} v^4 = \frac{n\sqrt{3}\pi}{(1+\sqrt{5})} \left(\frac{v}{2}\right)^4$ , which is the Black-hole-gravity-equation and, is related to the Inner velocity  $v$ , and to its  $n$  lobes.

Gravity-Acceleration is  $g_G = s \left[\frac{\pi r v^4}{2}\right] = \left[\frac{3,1415926([\sqrt{5}+1] \cdot \sqrt[4]{2} \cdot 10^{-35}) \cdot (299793458)^4}{2}\right] \cdot e^3 = 6,044981 \cdot 10^{-35} \cdot 80,776078 \cdot 10^{32} \cdot 20,085536 = g_G = 9,8075633 \dots (c)$ , where  $1/m_G = s = \text{mass-coefficient} [\sqrt{5}+1] \cdot \sqrt[4]{2} \cdot e^3$ , because the constant Tensor  $T_z$  is the length of the vector,  $z \equiv m$ , in Euclidean coordinates and which magnitude is  $k = T_z = \sqrt{y_1^2 + y_2^2 + y_3^2 + y_n^2}$ , denoting the Energy-Space relation.

From above the dimensionless coefficient of work  $W$  is  $[\sqrt{5}+1]$ , which is the Golden Ratio constant for any Material cave,  $r$ , a coefficient for the Unity-Plane - Quaternion equal to  $\sqrt[2]{\sqrt{2}} = \sqrt[4]{2}$ , or the same  $i \perp j \equiv \sqrt{2} + k \perp \sqrt{2} \equiv \sqrt[2]{\sqrt{2}} = \sqrt[4]{2}$  and for the Three dimensions Euler Rotation System the number  $i$  e. e.  $e = e^3$ .

As in Binary system  $[1, 0]$ , where one kilobyte  $= 2.8^3 = 1024$  bytes is eight times than a Kilobit  $= 2.4^3 = 128$  bytes  $[1\text{byte} = 2^3 = 8 \text{ bits}, 1\text{bit} = a = 1 \text{ or } 0]$  similarly are above dimensions as Units mass.

Bodies Produce Gravity, which is Pressure happening from, the change of the Spins Direction on Stationary M-P-Dipole  $[\oplus \leftrightarrow \ominus]$  due from Stationary forces  $[\nabla i] = \pm s^2$ , as dipole and because of Gravity  $\equiv$  acceleration, this happens not by the change of the velocity vector But, by the changing of Direction of above dipole  $[\oplus s^2 \cup s^2 \ominus s^2]$ .

This Work  $\equiv$  Gravity  $\equiv$  Energy  $\equiv$  a Constant, which becomes from the eternal-motion of Opposites in Material-Point either on the Orbit of any Planet either on the Focus of the Planetary-Systems such in microcosm as in macrocosm. of MFMF field.

The chains of Spin are of Pointy vibrating with their characteristic frequencies  $f = \frac{(1+\sqrt{5}) \cdot \sigma}{4\pi r} B = \frac{\phi \cdot \sigma}{2\pi r}$ , and since the Inner-stresses  $\sigma_{1,2} = \sigma_1/2 \pm (\frac{1}{2})\sqrt{\sigma_1^2 + 4 \cdot \sigma_1^2} = \sigma_1/2 [1 \pm \sqrt{5}]$  follow the Golden ratio Pattern on Stresses, and then this Quantum-energy  $g_G$  produced, is the State causing them to Magnetically- Resonate. In Material-Point-chain of caves  $r = \lambda/2$ , and since is  $\dot{x} = w \cdot r \rightarrow w = \dot{x}/r$  then Golden ratio Damping-Force is the Work produced with Unit Damping-

ratio  $\zeta=1$ . Since  $\dot{x} = v = c$  then exists,  $F_d = c \cdot \dot{x} = 1m \cdot w_n \cdot \dot{x} = 1 \cdot [(\pi r^2/2) v^2] \cdot \frac{\dot{x}^2}{r} = [\frac{\pi r v^4}{2}] = g = \frac{2}{r} [\sigma (1+\sqrt{5})]^2 = \frac{4\sigma^2}{r} [3+\sqrt{5}]$ .

This dissipation of Energy is determined under conditions of Cyclic Oscillations, and dependent on Glue-bond  $\sigma$ , and  $r$ , cave. Since  $r$ , is in denominator then for the very small caves, the under Planck's caves, Damping-Force becomes infinite independently of the Glue-bond. This may be considered as a Type which happens in Black holes and as this happens in algebra inverse fractions also.

### Remarks

1. SINCE Antigravity IS The minimum Granular-Quantized-Energy -  $\bar{B}$ , becoming from the Gravitational Force  $G$ , when is acting into The -Planck- Cave, represents the Basic Equilibrium Quantum-Raw-material, for All the Energy structures i.e. the Hydrogen cave Atoms caves and Compounds, Molecules and Crystal, or everything the Material. In the Absence of (Equilibrium Quantum-Raw-Energy) which may happen to the semi major axis,  $k = 1/c = f_n^2 \cdot a^3$ , of the Big Planets Mass THEN Energy becomes as  $\rightarrow E = GMm/2a$ .
2. SINCE Dual Photon [Particle and Wave] Precedes the Dual Planck's SPIN  $\equiv \bar{B}$ , as is [Gravity and Antigravity] and this because velocity  $\Rightarrow \bar{c} = [\frac{G\Phi}{A}]$  Precedes Spin  $\Rightarrow \bar{B} = r m \bar{c}$ , Photon's velocity  $\bar{c}$  is NOT Affected from the (Equilibrium Quantum Raw-Energy), in contradiction to the Spin cave  $r$  which is affected.
3. SINCE Light velocity,  $\bar{c}$ , changes Phase every  $90^\circ$  and the created Work  $W = c_y \times$  [Quarter circle 1-0-4] is Symmetrically Stored from  $0^\circ \rightarrow 90^\circ$  alternately  $+$ ,  $-$ ,  $-$ ,  $+$ , in [Quarter circle 1-0-4], in [Quarter circle 4-0-2] in [Quarter circle 3-0-1], Momentum  $\bar{B} = r m v = \pm [\frac{\pi r^2}{4}] \cdot \bar{c} \times \bar{r}$  from  $\pm [\frac{\pi r^2}{4}] =$  The Quarter circle. Where  $+\bar{B} =$  The Gravity - Matter and  $-\bar{B} =$  The Antigravity-Antimatter.
4. SINCE The Energy in Black Holes is  $\Rightarrow B_{BHE} = 2 \cdot \pi^5 \cdot r^3 \cdot f^2 = (\pi r)^3 \cdot w^2 = (\pi r)^3 \cdot [2\pi f]^2$  i.e. Velocity in Black-Holes is Related to Cave,  $r^3$ , and Energy  $w^2$  times of light velocity then cave  $r$  again is Affected from the (Equilibrium Quantum Raw-Energy). This Property of  $G$ , means that the only one Force which effects on the Rest-Space in Torsional motion, and from to light velocity vector  $\bar{c}$ , is the gravity  $g$  only. Always issues that, The Stability of Space - Anti-Space, occurs IN the Neutral-Space.  $G$  Affection is for all Planes because this issue and for the Black Holes  $G = \mathbf{k}_E g = \mathbf{g} \cdot \mathbf{k}_L \mathbf{g}_L = \mathbf{k}_{BH} \cdot \mathbf{g}_{BH}$ .
5. SINCE from Kepler constant  $k = 4\pi^2 \cdot r^3 \cdot f_p^2$ , or  $1 = c \cdot r^3 \cdot f_p^2$ , acceleration  $g = \frac{2\pi v}{T}$  and from velocity  $v = \frac{2\pi r}{T} \rightarrow$  frequency  $f_1 = \sqrt{\frac{g}{4\pi^2 r}}$  in Stationary Photon  $[B_p \equiv f_{1=N}, f_2, f_3, f_R] \equiv [E^2 + H^2] = 2(2r) \cdot \bar{c} \cdot \sin 2\phi$ , Then for Both  $\Rightarrow$  Planar  $[\rightarrow r \rightarrow 0 \text{ then } f_p \rightarrow \infty \leftarrow]$  and for Atoms-Black-Hole  $[\rightarrow f_p \rightarrow 0 \text{ then } r \rightarrow \infty \leftarrow]$  Exist all above for Energy in Black-Holes

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