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THE POLYNOMIALS [n.. Knots–FIGURES] EDGE - POINTS VIBRATION & M-GEOMETRY

BY

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Abstract

The Interactions :

One of the most important concept in Geometry is , **distance** , which is the Quanta in E-geometry , while in Material-Geometry the composition of Opposite , where the **Material - Point** 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 . In PNS Space , **The** Rolling of the 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* . **Quaternions** $[(+)\cup\cup(-)] \equiv \text{Box } \mathbf{B}_{R=AB}$ carries the Principal stress σ_A , σ_B between Points A(+), B(-) which σ , as **Centripetal-acceleration** is the minimum Energy becoming from the in-storage AB acceleration and is **equal to the Gravity Force** $\mathbf{g}$. [108 – 110] . Because of the *Revolving and Periodic* acceleration of Gravity $\mathbf{g} \equiv \pm \sigma$ exists as the First Energy-Box- $\mathbf{B}_R$, while in the Second Box $\mathbf{B}_P$ is followed **the Local-Extreme-case** where Gravity $\mathbf{g} \equiv \pm \sigma$, and is altered Locally by changing the Principal-stress σ with an Local-uniform-Pressure $\rightarrow \mathbf{g}_L \equiv \mathbf{g} \cdot \mathbf{k} = \mathbf{g}$. [Force/Area] = $G \leftarrow$ i.e. The minimum Local - Energy acceleration is the known , **Universal Gravitational-constant** $G = \mathbf{g} \cdot \mathbf{k} = \mathbf{k}_E \mathbf{g} = \mathbf{k}_L \sigma$, such for *Macrocosm and for Microcosm* , Obeying the Newton's Laws of motion . $G \perp \sigma$

This Energy in **Hydrogen-Cave** as **E-M , Conductor** $\equiv$ Edge Points Vibration $\equiv$ **The Pin of Atom** $\rightarrow$ **Plug Into their Sockets** , which are the **Orbit – Bracket–Hooks** $\equiv$ The Hands of Atoms $\leftarrow$ i.e. **The Atoms Plug with their Pins into the other Atoms-Drains = Holes** , and so Bond and carry Informations .

This **Resonance frequency of Hydrogen is Common to all Atoms** and to all Compounds in this Cosmos . The Energy-Quaternion $\overline{w}$, $\overline{B}$, Monad-Magnitudes exist as DUAL- Nature for Any $\{ \oplus, \ominus \}$, $\{ \text{Position, Motion} \}$, $\{ \text{Universe, Black-Holes} \}$, $\{ \text{Gravity, Antigravity} \}$, $\{ \text{Action} \rightarrow . \leftarrow \text{Reaction} \}$, Edge Points Vibration creating Electric = $[\oplus]$ and Magnetic = $[\ominus]$ Forces as $[\oplus \leftrightarrow \ominus]$, The Light and others .The STPL- Line Conductors on the [STPL]- **Mechanism** , are the **Physical-Rotors** for the Origination of the Cosmic –Particles which transfer Informations as the Signals - Spectrum .[110]

From Mechanics-Physics , *all Systems Possessing Elasticity $\equiv$ motion and Reaction to the motion* , the called mass , *are capable of free vibration or vibration $\equiv$ Periodic - motion taking Place in the Absence of External Excitation* .This Principle issues for Both Systems **Closed** {The Atoms Nucleus} **or Open** Systems {The Orbitals}. For instance , In order that shifting of an **u-d-Quarks** from an **Anti-Proton** into a Proton , the Spin-Pair requires extra input of Energy in (MeV) , so that would the **Proton Paired with a Neutron and be Stable**. transfer Informations as the Signals . **Vibration in a cave Δ , means the Wave Pattern .** **Cave-Spin- $\overline{S}$** of PNS Space is $\overline{S} = r m v$ and is the first **Monad** occupying **4-Spaces** , i.e.

From Number **n** , of the Equilibrium number of masses m_n in a System.

- a.. The **n** - Spaces of Monad $\overline{S}$ are the Polygons S^n with $n = 1 \approx \infty$ Knots ,
- b.. The **n** Anti-Spaces of Monad - $\overline{S}$ are the Polygons - S^n with $n = 1 \approx \infty$ Knots ,
- c.. Sub-Spaces of Monad $\equiv \pm \sqrt[n=1-\infty]{\overline{S}}$ are the Polygons with **n = 1 $\approx \infty$ Knots**

All n-Regular Polygons End to equations of n-degree Segment , by finding a suitable value of the Segment , x , That is we have in the general case to solve one or two equations of the form : $A . R^0 . x^n - B . R^2 . x^{n-2} + C . R^{n-6} . x^3 - D . R^{n-4} . x^2 + E . R^{n-2} . x^1 - F . R^n . x^0 = 0$

for **The Even Polygons** , and

$$A . R^2 . x^{n-2} - B . R^{n-2} . x^{n-3} + C . R^{2(n-4)} . x^3 - D . R^{2(n-3)} . x^2 + E . R^{2(n-2)} . x^1 - F . R^{2(n-1)} . x^0 = 0$$

for **The Odd Polygons** , where A , B , C , D are constants .

The Presented Geometrical method is the solution of the above equation in the general case . Because , the nth - degree - equations are $\rightarrow$ the Vertices (**n**) and the Sides ($\mathbf{a_n} = \lambda_n$) of the n-Polygon in circle $\leftarrow$ number , π , is their common Mould . [62] . The Natural Mechanism Continuously Originates the Elementary Particles and Compounds , Atoms and Molecules with the One Action from Opposite . Article [111] encloses many Paragraphs of [110] , in order to Distinguish and Prove the Way of Energy and the Stresses- Paths in the Spaces . For the Regular Polygons is given such the Geometrical Solution as well the Algebraic . [106] = Programming the Atoms and Compounds , is **an Program** which solves the Problem of the **n-Knots Figures** and gives the **Energy Spectrum** of any **Complex-Forced-Vector** . Article [114] an Way of Deceptioning the Cells is prepared .

Keywords : The Figure n-Knots , The Polynomials n-Knots , Spaces and Figure n-Knots , The Waves of Spaces .

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A... THE STRUCTURE OF THE EUCLIDEAN GEOMETRY . [6 -12]

a1.. Point is nothing , has not any Position and Dimension , and may be anywhere in the known Space *therefore* , the Primary point A , *being nothing also in no Space* , it is the Only - Point and no-where (*i.e. Primary Point is the Only Space and from this all the others*) . [6]

a2.. Straight line is 0 , Positive , Negative , consisted of $\pm \infty$ Points which are nothing , and since it is composed of infinite Points which are filling the line , *then nature of line is that of Point i.e. (the all is one for Lines and for Points)* .

a3.. Plane is Positive , Negative , $\pm$ Neutral lines and since Points are Imaginary lines it is composed of infinite Straight lines which are filling Plane , so then , *nature of Plane is that of Line and that of Points (i.e. the all is one for Planes , Lines and Points)* .

a4.. Space is + Positive , - Negative , $\pm$ Neutral Planes and since Points are Imaginary Planes it is composed of infinite Planes which are filling Space , so then , *nature of Space is that of Plane and that of Points (i.e. the all is one for Spaces , Planes , Lines and Points)* .

2a... THE FUNDAMENTAL PRINCIPLES OF E-GEOMETRY .

2a1.. The first dimensional Unit AB is of two Points A , B not coinciding which is the geometrical Shape that has as Position the Point of direction $\overrightarrow{AB}$, $\overleftarrow{BA}$, and as Magnitude (the length $|AB| = 0 \rightarrow N \rightarrow \infty$) . **|AB| is a straight line** through Points A , B . (F.1b) , [6]

$$\begin{array}{c} \downarrow \\ CA + CB = AB \end{array} \quad , \text{ where } \quad \begin{array}{ccccc} A & C & B & A & C & B \\ \square & \square & \square & \square & \square & \square \end{array} \quad \begin{array}{c} \text{F.1(a)} \\ \text{F.1(b)} \end{array}$$

ds = An Infinitely small increment of length AB in the direction $\overrightarrow{AB}$ or $\overleftarrow{BA}$.

∞ = An Infinitely great magnitude $|AB|$ in the directions $\overrightarrow{AB}$, $\overleftarrow{BA}$) . Any Point C is on Straight line AB , only when exists the equation $CA + CB = AB$, **i.e.**

The Whole AB is equal to the Parts CA and CB . (*as equation F 1.b*) .

In case that $CA + CB > AB$ then Point C is not on line AB , and this is the main difference between **Euclidean** and **Non-Euclidean** geometries . In Definition 2 (*a line AB is breathless length*) is altered as *for any Point C on line AB exists $CA + CB = AB$* .

Edge Points A , B not coinciding on Monad **AB** , keep the Properties of Complex numbers with Imaginary Part which differs between the infinite Point [11] – [13]

Unit AB creates Spaces with two basic Elements , **The Position** (which are the three directions $\overrightarrow{AB}$, $\overleftarrow{BA}$, $\overleftrightarrow{AB}$) and **the Dimension** (which is the Magnitude N such that $N = 0 \rightarrow |AB| \rightarrow \infty$) , and when exists ,

$A = B$ = The Principle of the Equality .

$A \neq B$ = The Principle of the Inequality .

$A \leftrightarrow \leftrightarrow \leftarrow B = \infty$ The Principle of Virtual Displacements . $\mathbf{W} = \int \mathbf{P} \cdot d\mathbf{s} = 0$, $d\mathbf{s} = \partial \mathbf{W} / \partial \mathbf{P}$

$\overrightarrow{PA} + \overrightarrow{PB} = 0$ The Principle of Stability

$\overrightarrow{PA} + \overrightarrow{PB} > < 0$ The Principle of Motion .

2a2.. The Monads = Quantum = $\overrightarrow{ds} = AB / (n = \infty \rightarrow 0) = [a \pm bi] = 0 \rightarrow \infty$, are simultaneously (*Actual Infinity*) and also (*Potential Infinity*) in Complex number form and this defines , infinity which exists between all Points which are not coinciding and where ($ds > 0$), and because **ds** comprises any two edge Points with Imaginary Part then this Property differs between the infinite Points. The Plank length is a Monad **ds** = **1,62 x 10⁻³⁵ m** , for the two Points A , B , and for the moment is accepted as the smallest possible size . Monad is also infinitely divided because edge Points A , B are not coinciding i.e. ... **ds** = **1x10^{-N}** < ∞ , where N is any number .

1.. Spaces of Unit-AB are (in Plane) the Infinite (+) **Circumscribed-Regular-Polygons** on the circles **with AB as Side** (repetition of Unit AB) the Nth Space , the Nth Unit Tensor of the N equal finite Elements **ds** , and for the ∞ Spaces , the line AB $\leftrightarrow$. (Fig-1)

The diameter of this circles extends to infinity (*it is of Potential nature*) . [11]

2.. Anti - Spaces of Unit AB are (in the three dimensional Space) the Symmetrically Infinite (-) **Circumscribed- Regular-Polygons** on the circles **or** (a Solid in Cube in Sphere **with AB as side** of the Solid) . The Harmonic Repetition of Unit BA , symmetrical to AB) is the Nth Anti-Space , the Nth Unit Tensor of the N equal finite Anti - Elements , and for the ∞ Spaces , the Sphere through line BA .The diameter of this Spheres extends to the infinity (*it is of Potential nature*) . [11]

3.. Sub- Spaces of Unit AB are (in Plane) the Infinite **Inscribed-Regular-Polygons** in the circle **with AB as diameter** (are the Harmonic Repetition of **the Roots** in Unit AB) and in Nth Sub-Space , the Nth Unit Tensor of the N finite Roots and in case of the ∞ Elements are the Points on the circle , *and for 3D-Space , the Points on Sphere N.AB*) . The Superposition of Spaces , Anti-Spaces and Sub-Space Layers of Unit AB is shown in Figure . **Remark** : (+) Spaces , (-) Anti -Spaces , ($\pm$) Sub-Spaces , of a Unit AB are between magnitude (Point = 0 = Nothing) and the Infinite magnitude ($\leftrightarrow = AB = \pm \infty =$ Infinite) which means that All Spaces exist in One Space only .

Because in Spaces and Anti-Spaces , the ∞ Spaces of **Unit AB** is Sector AB $\leftrightarrow$, and in Sub-Spaces the ∞ Sub-Spaces of **Unit AB** are the Points on the circle with AB as diameter , then this ordered continuum *for Points on the circle* of Unit AB and on *line AB* shows the correlation of Spaces in Unit AB . i.e.

Monads ds = 0 $\rightarrow$ ∞ are Simultaneously, Actual Infinity (because for $n = \infty$ then $ds = [AB / n = \infty] = 0$, or A Point) and , Potential Infinity , (because for $n = 0$ then $ds = [AB / n = 0] = \infty$ is the straight line through AB . Infinity exists between all Points

which are not coinciding , and because Monads ds comprises any two Edge-Points with Imaginary Part , then this Property is the difference between the infinite Points . [11]

4.. Neutral-Spaces of Unit-AB are (in Plane) the Infinite **Circles with AB as diameter** (the Harmonic Repetition of the Roots in Unit - AB) and in Nth Sub-Space , the Nth Unit Tensor of the N finite Roots , and in case of the ∞ Elements are the Points on the circle , *and for the 3D-Space , the Points on the Unit - Sphere AB*).

Since Spaces , Anti – Spaces and Sub-Spaces are created from Unit AB , and are Property of this Unit only , therefore these are a Restrained System (S) Presupposition for Unit $|AB| = ds$ (displacement ds) is Point A to move at the New Position B ($A \equiv B$) which means *an IMPULSE (P) transfers Point A to B* . Since in each Restrained System (S) the Work done (W) by Impulse (P) on

a Virtual displacement ($ds > 0$) is zero , or $W = \int_A^B P ds = 0$ **Therefore ,**

Each Unit $|AB| = |ds| > 0$ exists , by this Inner Impulse (P) which means that , *The Position and Dimension of all Points which are connected across the Universe and that of Spaces , exist because of this Static Inner Impulse P between A and B , on the contrary , should be one Point only* (Primary-Point = Black-Hole $\rightarrow ds = 0 \rightarrow P = \infty$)

Impulse $P = \infty$, and may be Vacuum , Momentum or Potential or Induced Potential and it is a Type of Effect of Push nature .

2a3..The Superposition of Plane Space , Anti-Space Layers and Sub-Space Layers

The simultaneously co-existence of Spaces , Anti-Spaces and Sub-Spaces of any Unit $|AB|$, **Unit $AB = 0 \rightarrow \infty$, ($A \equiv B$) i.e. ,** Euclidean , Elliptic , Spherical , Parabolic , Hyperbolic, Geodesics , Metric and Non-metric geometries , exist in Euclidean Model as an Sub-case within . The Interconnection of Homogeneous and Heterogeneous bounded Spaces Anti-Spaces and Subspaces of the Universe . The Unity of Opposites is also the *Quantized* Property of Euclidean geometry *< all is one >* as it is **Discrete** (for Monads AB) and **Continuous** (for Points A , B) . For Primary Point A it is the only Space [17]

The Unique Case where $P = 0$ and $As > 0 = AB \rightarrow \infty$ is the Primary Planck's Space [PS] *The Spherical connection of the same Points in PS , is related on the influence ($P = 0 \rightarrow \overrightarrow{AB} \rightarrow \infty$) of the infinite (∞) Equilibrium Primary-Spaces and Anti-Spaces .* For every Point in [PS] exist the three Spatial dimensions (x , y , z) and the infinite dimensions of the (i) Layers at this Point existing from the other Layers (at small scale using coordinate system) of Primary Anti-Space and Sub-Space where $i = 1 \rightarrow \infty$. It has been also shown that ,

Every Point **M** of Primary Planck's Space [PS] exists in this Space with a **deficit of Impulse $P = 0 \rightarrow \infty$,** due to the influence of the other Equilibrium Primary Spaces .

The Unique Case where $P = 0$ and $\Delta s = 0 \rightarrow 0$ is the Primary Neutral Space [PNS]
The $\oplus$ Material Point $\equiv$ The Space , continually Rotates around **The $\ominus$ Material Point** $\equiv$ The Anti-Space , on 2R circle . [PNS] Space is a

This Property of Points in Neutral Space is the cause of their Continuously Survive .
The Quantization of Points **becomes through Vector Unit $d\mathbf{s} = |\mathbf{AB}|$** , and for Energy is **done in bound States (loops)** which **withhold the diffusion (flow)** .The two fundamental dimensions (**Quanta of Points (ds)** and **Quanta of Energy (dP)** , are connected on $|\mathbf{AB}|$,
So at any Point M exist the Centripetal force of two **Opposite $[\oplus \cup \cup \ominus]$** .**All Points of [PNS] are Homogenous** (i.e. all Points of PNS Space are Equivalent $\equiv$) and **Isotropic** (i.e. all directions , $\Rightarrow$, of AB are Equivalent) $\rightarrow [\mathbf{A} \equiv \mathbf{A}]$, **For the Primary dipole** and for Any dipole A_i-B_i issues , The Position of Dipole in the equilibrium Space Anti-Space **creates charge = momentum** and **Angular momentum** (Spin = the **intrinsic twist of Space , Anti-Space**) which inextricably unify Geometry of Space and motion . [10]

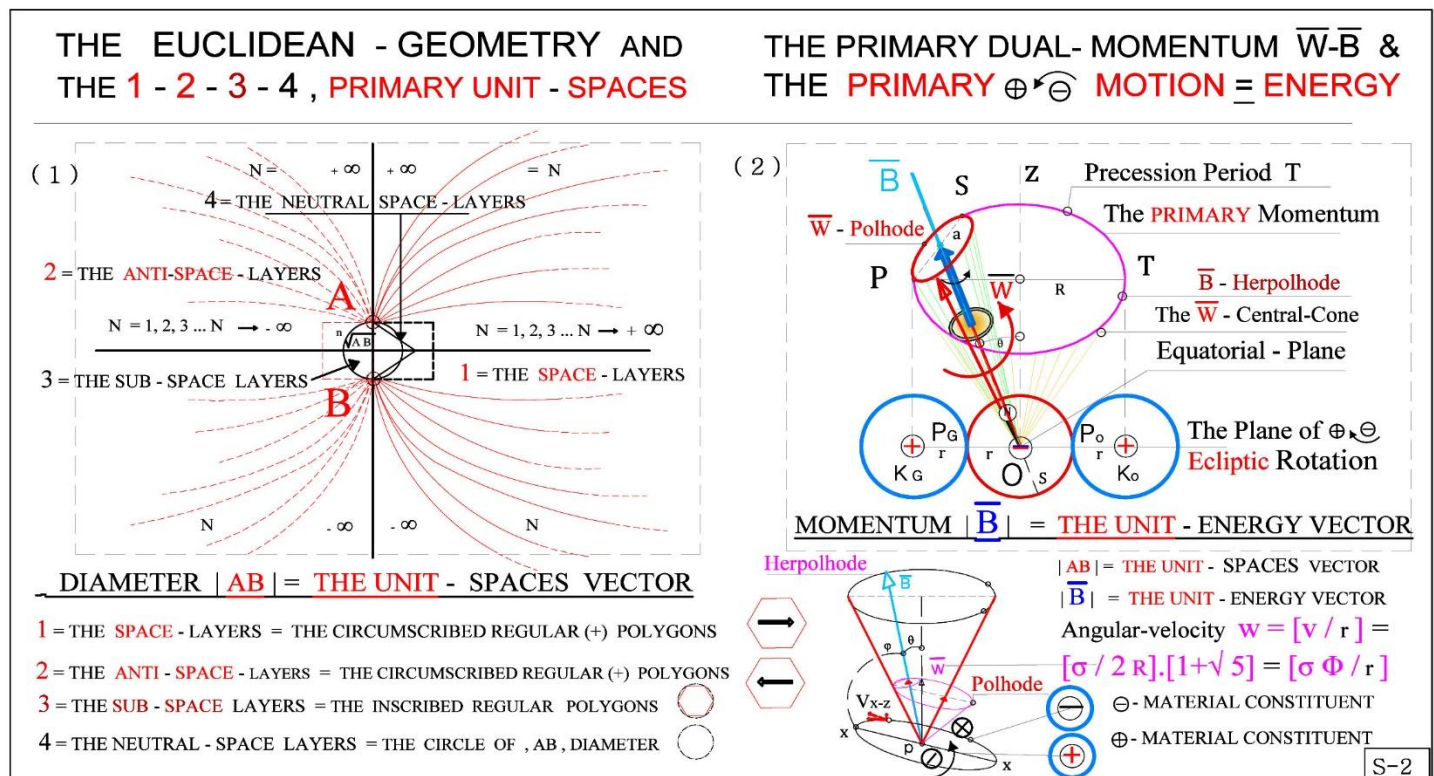


Figure – 1 . The 4-Primary-Spaces of Euclidean-Geometry and the Primary Rotational Quantized motion $\equiv$ The Unit-Angular-Momentum-Energy in PNS Spaces .

3a... THE QUANTIZATION OF THE $\rightarrow \{ \text{ENERGY - SPACE UNIVERSE} \} \leftarrow$

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 = $\mathbf{E}_K$ which is stored in

the **mass** by virtue of its velocity and Party Potential = 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 . Newton`s second law is the first basis for examining the motion of a Free – Vibration in a System . When the Deformation of a Spring in the Static - Equilibrium Position is Δ and the Spring force $k.\Delta$ equal to the gravitational force mg , then issues $k.\Delta = mg$ (a)

Applying Newton`s second law to the mass m , or mass can be replaced by a mass Moment of Inertia denoting the Resistance to motion Δ , and then $m \ddot{x} = -k x$ for an $x - x$ axis . The Natural – Period of the oscillation is established from relation $w_n T = 2 \pi$ where issues [7]

$$T = 2 \pi \sqrt{\frac{m}{k}} , f_n = 1 / T = \frac{1}{2\pi} \sqrt{\frac{k}{m}} , f_n = 1 / T = \frac{1}{2\pi} \sqrt{\frac{g}{\Delta}} \dots\dots(b)$$

i.e. The Kinetic Energy E_K is applicable in a Single - DOF System including Rotation .

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 = w_n and the

equation of motion is $\rightarrow \ddot{x} + w_n^2 x = 0 \leftarrow$ where $w_n^2 = \frac{k}{m}$, Gravitational force $G = mg$ }

i.e. Since the Hydrogen-cave System H , as **E-M Conductor** , Possesses mass m_H , and light-velocity c , then **vibrates** IN – OUT the Space-Positions (x, y, z) of all Universe

with its **Natural** frequency $w_H = \sqrt{\frac{k}{m_H}}$. or and frequency $f_H = \frac{w_H}{2\pi}$, and is a **Wave –**

function providing the complete Description of the **Physical Reality** .

From , Work = $W = \text{Force} - F_{i,j,k} \times \text{Displacement } ds_{i,j,k} = (F_{i,j,k} \times ds_{i,j,k}) = (F \times ds)$, 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** $\equiv \text{Force} \times \text{Velocity}$ or ($P = F \times \vec{v}$)

Remarks , from Mechanics - Physics :

1...Energy $E = \frac{1}{2} m_H . c^2$, or $\rightarrow 2E = m_H . c^2 \leftarrow$ and Velocity = The light-velocity c ,

2...Wave length $\lambda_H = \frac{2\pi c}{w_H}$, and Wave Amplitude $A_H = \frac{\lambda_H}{2\pi}$,

3...Hydrogen Power $P_H = 0,5 . m_H . [A_H]^2 . [c]^2$

4...The Hydrogen Stress-Vector σ_H is related to c as , $c = \Phi . \sigma_H$

5...Since Hydrogen cave is an **E-M Conductor** then it is a **Wave** with **Natural** frequency , and since occupies the Property of $\rightarrow \text{Atoms-Plug} \equiv \text{Pin}$ 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** the light velocity $\bar{c} = [\frac{G \Phi}{A}]$,

- and Precedes that of A-Momentum $\Rightarrow \vec{B} = r m \vec{c}$. Exists Vector $B \perp r-c$ Plane .
- 8...Since Angular-velocity $|\vec{\omega}|$, **a vector** , **Rotates** in one axis **k** with respect to one variable only and this happens **IN** {PNS-Space ,Atoms-Space ,Objective-Reality and in Universe} then **Quaternion - Momentum** , $\vec{B}$ & $\vec{\omega}$, and **W $\equiv$ Motion** are Stabilized in the **DUAL – TYPE** , such in **Microcosm** , as in **Macrocosm** , or Both as **Omnipresent** .
- 1...The **DUAL-Momentum** $\vec{B}$ & $\vec{\omega}$, as **Real $\equiv$ Existing-Universe** , **Imaginary $\equiv$ Black-Holes**
- 2...The **DUAL - Photon** , as **Real $\equiv$ Space $\equiv$ Particle** and, **Imaginary $\equiv$ { E $\Rightarrow$ M - Wave }**.
- 3...The **DUAL - Spin** $\vec{B}$, as **Real $\equiv$ Space $\equiv$ Gravity** and, **Imaginary $\equiv$ { Anti - Gravity }**.
- 4...The **DUAL – Matter** $\vec{B}$, as **Real $\equiv$ Space $\equiv$ Atoms** and, **Imaginary $\equiv$ { E $\Rightarrow$ M -Wave }**.
- 5...The **DUAL-Refracton of Energy** as **Real $\equiv$ The Space angle ϕ** , **Imaginary $\equiv$ $\vec{v}_1$, $\vec{v}_2$ { The Energy $\equiv$ W from the different velocities , $\vec{v}_1$, $\vec{v}_2$ }**.

The Results in Hydrogen - cave :

- 1...Hydrogen-Cave , IN – OUT Universe occupies **mass m_H** , **velocity $\vec{c}$** , and **Power 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 $\vec{B}$** and rotates according to equation $\frac{dB}{dt}$
- 3...The Stationary $\rightarrow$ **Tetrahedron , In-Sphere , Cube , Ex-Sphere** $\leftarrow$ construction
of **Atoms** Permits the **Space – coordinate - Structure** 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 any time
by the Bioelectronic-Spectrum of $\rightarrow$ { **Carrier-Modulating-Modulated , Demodulation**
Process Mechanism } $\leftarrow$ using Markos Program < **Programming Atoms-Bonding** and
Their Compounds > **SO** , Energy $\equiv$ motion is of **Wave nature** which enters the **Energy**
caves and becomes a **Particle or Wave or Both** . In case of **Photons** exists this **DUAL-**
Property , **Wave – Particle** . Thus The Historical Doubt of **Einstein - Podolsky - Rosen**
for the Q-Mechanics Completion **VANISHES** . [100,104] .
- 5... **The** Programming of Atoms Bonding is the Quantization of **Atoms -Wave -Energy** to all
Possible Equilibrium Positions of the $[\oplus \leftrightarrow \ominus]$ constitutes Reactions . The Wave-Energy
as Vibration travels at 75-90 % of the light speed **c** , while the Wave-Energy in Black
Holes is **n π c** times of the light speed . [100-101]
- 6... 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 → **Carrier–Modulating–Modulated–Demodulation Waves Process** ←

Some following Wave Properties that are Defined :

- 6a... The Equilibrium Mode – Shapes , Φ , Diagrams .
- 6b1..The Circular – Frequencies , $\mathbf{W}_R$, in 10^{15} Hz ,
- 6b2..The Natural – Frequencies , $\mathbf{f}_R$, in 10^{15} Hz ,
- 6c.. The Resultant Energy – State , $\mathbf{E}_R$, in e-Volt ,
- 6d...The Electric–Magnetic Field , $\mathbf{E}_R - \mathbf{M}_R$, in 10^{-12} Ampere - 10^{-6} Tesla ,
- 6e.. The Intensity of the λ -Electric–Field , $\mathbf{I}_\lambda$, in 10^{-12} Ampere ,
- 6f.. The Intensity of Magnetic–Field , $\mathbf{M}_\lambda$, in 10^{-6} Tesla ,
- 6g.. The Wavelength , λ , in 10^{-10} meters ,
- 6h.. The Wave Velocity , $\bar{\mathbf{v}}$, in 10^5 meters / s ,
- 6i1..The Resultant Voltage at Wavelength-sides , $\mathbf{V}_\lambda$, in Volt ,
- 6i2..The S-Bands Voltages at Wavelength-sides , $\mathbf{V}_\lambda$, in Volt ,
- 6j.. The Radius of the Helical motion , $\mathbf{r} = \mathbf{A}_R$ in 10^{-10} meter ,
- 6k.. The Total Carrier Power , $\mathbf{P}_{CT}$, in 10^{-20} Watt ,
- 6l.. The Total Side-Bands Power , $\mathbf{P}_T$, in 10^{-20} Watt ,
- 6m.. The Side-Bands Amplitude , $\mathbf{A}_B$, in 10^{-10} meter ,
- 6n.. The Side-Bands Coefficients , $\mathbf{a} - \mathbf{m}$, in n-n ,
- 6o.. The Modulating Phase Shift , ϕ , in Rad / 2π ,
- 6p.. The Modulating Factor , $\mathbf{m}$, in n-n ,
- 6q.. The Total Energy-Status , $\mathbf{a} - \mathbf{m}$, in H-W ,

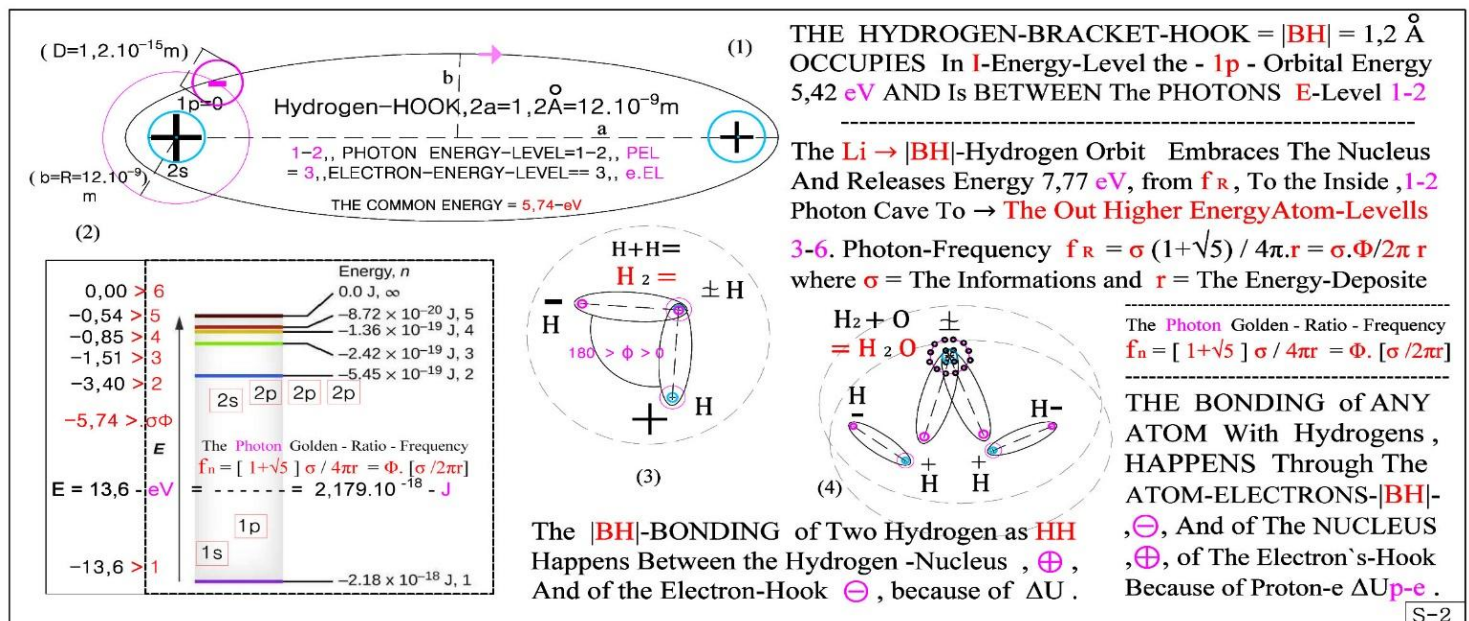


Figure-2.. The $\pm$ Energy in Hydrogen and Atoms exists from Hydrogen Common-Atom .

The two Hydrogen Bonding $\rightarrow H + H = H_1^1 + H_1^1 = H_1^{1-1} H_{1-1}^1 = H_1^0 + H_0^1 = H_2$
 Water $H_2O = O_1 H_2 = O_2^2 H_2^2 = T_4^4 = O_2^{2-2} H_{2-2}^2 = O_2^0 H_0^2 = ES_{2=T/2}^{2=T/2}$, Still. [102]

4a.. THE CORELATIONS OF SPACES AND THE PRIMARY MOTION .

Euclidean Geometry Spaces occupy **Position** (x , y , z) and **Dimension** $|\uparrow\downarrow|$ at any Point P, Cauchy Stress Tensor defines the **State of Stress** (σ , τ) to the **Traction-Vector** ($T^e = e. \sigma$)

The Position of Spaces is defined from any 3-dimension Coordinate (x , y , z) or from Angular-System (φ , θ , ω) or any other System with axis from any fixed Point O .

The Dimension of Spaces is defined as the distance between any two Points O , P , and from any fixed Point O the **magnitude** $|\mathbf{OP}| = \vec{n} |\mathbf{OP}|$, where $\vec{n}$ is **The Unit**

Line - length direction and is identified by vector $\vec{n} \equiv |\mathbf{AB}| = \mathbf{The Unity Monad}$.

In Fig-1-1 , On AB Diameter = 2R = The Monad of Neutral-circle exist the Spaces with their Sides $\lambda_n = 2\sqrt{R^2 - a_n^2}$, and their Critical-sides $a_n = \frac{1}{2}\sqrt{4R^2 - \lambda_n^2}$, as below

1... For Spaces , the Polygon Side is $\lambda_{n(S)} = 2 \cdot \sqrt{R^2 - a_{n(S)}^2}$,

2... For Anti-Spaces , the Polygon Side is $\lambda_{n(AS)} = 2 \cdot \sqrt{R^2 - a_{n(AS)}^2}$,

3... For Sub-Spaces , the Polygon Side is $\lambda_{n(SS)} = 2 \cdot \sqrt{R^2 - a_{n(SS)}^2}$,

4... **For Neutral - Spaces** , the Polygon Side is $\lambda_{n(NS)} = 0$, while in **Material-Geometry** becomes from the Centripetal Force $F_C = \sigma = \frac{m.v^3}{r} = J w^2 r$, where the Unity Monad r

$\equiv \text{monad } R = \frac{\sigma}{J.w^2} = \frac{\sigma}{B} = \frac{\text{Stress}}{\text{Angular-momentum}}$, and Polygon Side $\lambda_{n(NS)} = 2 \sqrt{R^2 - a_n^2}$,

All becoming from Pythagorean relation $[R]^2 = [a_n]^2 + [\frac{\lambda_n}{2}]^2$.

In Fig-3 , is shown the Geometrical construction of the Inscribed and the Circumscribed **n-Regular Polygons** . With 4 , 5 , 6 , different Vibrating masses for each Space and by using the Argand Diagram for a Vector of Amplitude $AB = 2R = \text{The Monad}$, then the 4 - Spaces are measured using the Euler equation for exponential functions as follows ,

On the SPACES , the **Vector of Amplitude** can be represented as the **Complex quantity**

on $\rightarrow S \Rightarrow Z_{+}^n = + 2R.e^{i.n\omega t} = + 2R^n.[\cos w.t + i.\sin w.t] = x + i.y$

on $\rightarrow AS \Rightarrow Z_{-}^n = - 2R.e^{i.n\omega t} = - 2R^n.[\cos w.t + i.\sin w.t] = x + i.y$

on $\rightarrow SS \Rightarrow Z_{\pm}^{1/n} = \pm 2R^{1/n}.e^{i.\theta/n} = \pm \sqrt[n]{2R} \cdot \sqrt[n]{[\cos w.t + i.\sin w.t]} = x + i.y$ where

The **Space Vector**–Amplitude $2R = \sqrt{\lambda_{n(S)}^2 - a_{n(S)}^2}$, for the n-masses .

The **Anti-Space Vector**–Amplitude $2R = \sqrt{\lambda_{n(AS)}^2 - a_{n(AS)}^2}$, for the n-masses .

The **Sub - Space Vector**–Amplitude $2R = \sqrt{\lambda_{n(SS)}^2 - a_{n(SS)}^2}$, for the n-masses .

Remarks :

- a...From Argand Diagram the Vector $Z_+^n = 2R \cdot e^{i.n\omega t} = +2R^n \cdot [\cos w \cdot t + i \cdot \sin w \cdot t] = x + i \cdot y$ meaning the **Wave Pattern of Spaces** in Planck's cave 10^{-35} m .The Vector Amplitude $\overline{AB} = 2R =$ The Monad ,is the Complex quantity $\overline{AB} \equiv \bar{z} \equiv x + i \cdot y$, where $x = 2R \rightarrow$ the **Geometry of PNS - Space** and $y = e^{i.n\omega t} \rightarrow$ the **motion in Planck's Space** .
- b...Since Anti-Space $Z_-^n \equiv - Z_+^n$, means the **Conjugate Space** to the Space Z_+^n .
- c...Since from **Wave-Action of Spaces** issues $Z_-^n \times Z_+^n = [2R]^n \cdot e^{i.2n\theta}$, this means that ,The **conservation of Energy = Work** , between the Spaces and the Anti-Spaces happens by doubling the number , **n** , of the Vertices of the Regular Polygon .
- d... The Natural frequency of an **x-x** linear vibration , $[\oplus \leftrightarrow \ominus]$, becomes from $w_n = 2\pi \cdot f_n$ meaning that the infinite frequencies f_n are stored in Subspaces by doubling the number , **n** , of the Vertices with $2n$ -Sides to a Regular Polygon of initial n -Sides .
- e... The Natural frequency of an Rotational $\cup r \cup$ DOF vibration System becomes from $\bar{B} = r \cdot m \cdot v_n = r \cdot m \cdot v_n = r \cdot m \cdot w_n \cdot r = m \cdot w_n \cdot r^2 = m \cdot r^2 \cdot w_n$, meaning the **Natural Identities of the ∞ Monads** in our Universe .

The Equations of motion in a Material Point related to the Inner motion was referred before where the In-between-magnitude Circumscribed – Inscribed Polygon , **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 Planck $E = h \cdot f_n \equiv \left[\frac{1+\sqrt{5}}{2} \right] \frac{h\sigma}{2\pi r} = \left[\frac{n\sigma}{8r^2} \right] \cdot \bar{B}$, $f_R \equiv [f_{1=N}, f_2, f_3, f_R = w^2_N]$,

Euler's $e^{-i.A\left(\frac{\pi}{2}+2k\pi\right).b} = e^{-i.A\left(\frac{\pi+4k\pi}{2}\right).b} = A \cdot \cos\left[\frac{\pi+4k\pi}{2}\right] \cdot b - i \cdot A \sin\left[\frac{\pi+4k\pi}{2}\right] \cdot b$, $L = [\bar{B}/2] \cdot w$,

so then $w = \sqrt{2\pi \cdot f_R} = 2L / \bar{B}$, and the Wave Equation is $y = 2A \cdot \sin\left(\frac{2\pi \cdot x}{\lambda}\right) \cdot \cos \cdot wt \dots(a)$

- f... The Natural frequency of the **Unit-Energy-Vectors** , $\bar{B} \cdot \bar{w} = m \cdot r^2 \cdot w_n^2 = m \cdot v_n^2 = KE$.

From Momentum $\bar{B} = r \cdot m \cdot v = m \cdot \tilde{w} \cdot r^2 = \pm \left[\frac{\pi \cdot r^2}{2} \right] \cdot \bar{c} \times \bar{r}$, $\bar{B} \cdot \bar{w} = \pm \left[\frac{\pi \cdot r^2}{2} \right] \cdot \bar{c}^2$, $\bar{c} = \sigma \Phi$, i.e.

The Primary Space is Originated from the Stress $\Rightarrow \sigma$, and from the Angular

Momentum $\Rightarrow \bar{w}$, $\bar{B}$, Produced from the Two - Opposite $[\oplus \leftrightarrow \ominus]$ components.

- g...Since Monads are Complex quantities as $\overline{AB} \equiv \bar{z} \equiv x + i \cdot y$, then are Quaternions where Material-Points $\equiv$ Quaternions , which **Carry the $\rightarrow$ Motion $\equiv$ Energy $\leftarrow$ from the two Edge-Points $[\bar{A} \leftrightarrow \bar{B}]$, as this is from Point A , to Point B circularly . Simultaneously On AB Conductor is created an **Electric Field E_F** between A–B Points and $\perp$ on AB axis directed to the motion , and an Transverse ($\perp AB$) **Magnetic Field** as , $\mathbf{M}_F \perp \overline{AB} \perp \mathbf{E}_F$.**

5a.. The Figure-eight Knot & The Figure $n = 1 \approx \infty$ Knots :

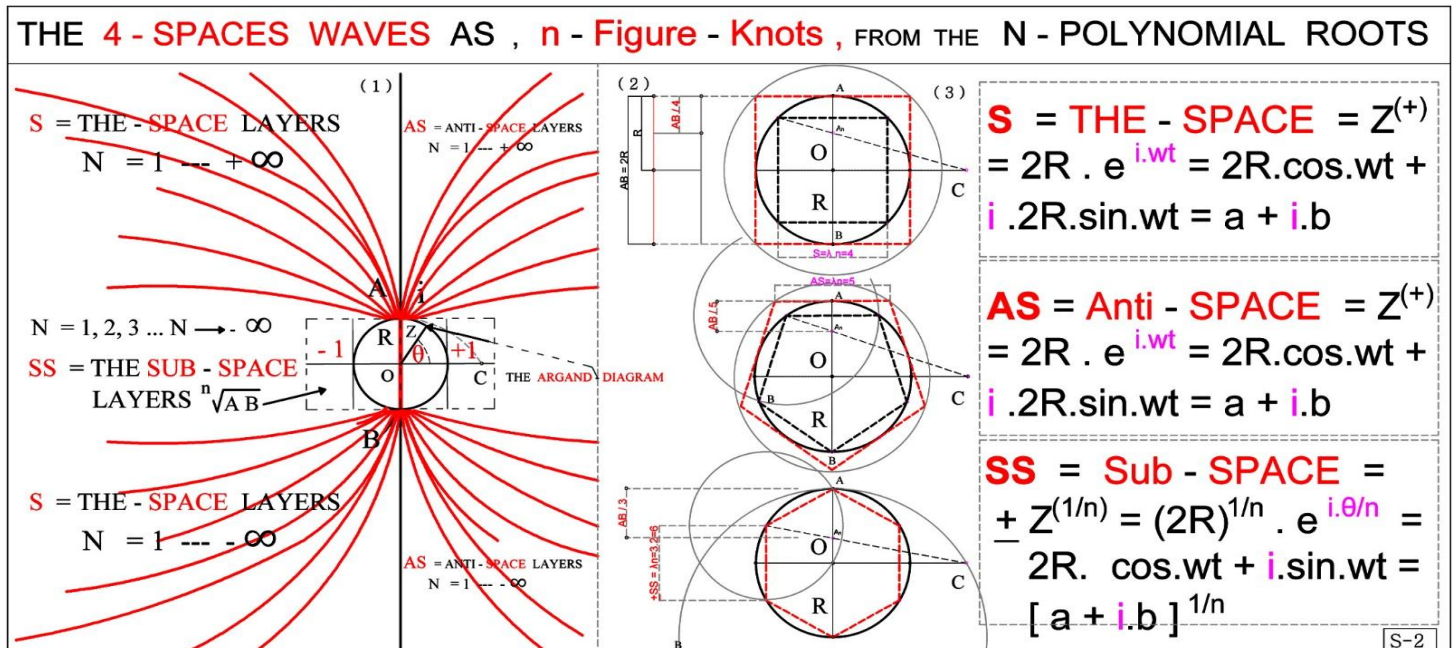


Figure -3- : The Geometrical construction of the 4-Spaces and the , Spaces Waves of PNS .

In Argand Diagram $AB = 2R \rightarrow x = -1, 0, +1, y = i$, exist the **Vector of Amplitude** $\bar{z} \equiv x + i \cdot y$, with angle $\theta^\circ = [Z - OC]^\circ$, $[i = \sqrt{-1}] \cdot x$. The **Wave's "strength"** and **"direction"**, where x is a number that represents the magnitude or length of the vector z , and from Definition of the **complex Vector Space**, is the **Set of Vectors of length** (the n Vertices which form the n Polygon Sides, or the Norm of the Complex-Vectors)

In (1), (2), are the 4-Geometrical Spaces consisting the **Geometrical - Mould**.

In (2), are the **Vectors of Amplitude** ON the 4 -Spaces consisting the **E-Form-Mould**.

It is constructed **in Space** $\rightarrow$ The Inscribed and the Circumscribed to the circle of diameter AB , the $\rightarrow$ **Regular Tetra Pleuron** $\leftarrow$

It is constructed **in Anti-Space** $\rightarrow$ The Inscribed and the Circumscribed to the circle of diameter AB , the $\rightarrow$ **Regular Penta Pleuron** $\leftarrow$

It is constructed **in Sub-Space** $\rightarrow$ The Inscribed and the Circumscribed to the circle of diameter AB , the $\rightarrow$ **Regular Hexa Pleuron** $\leftarrow$

In (3), are the **Norm** (magnitudes) of the 4 -Vectors consisting the **Strength -Mould**.

In Fig-3 The time-harmonic function $\bar{z}(t) \equiv \text{Wave}$, x is the amplitude, w the angular frequency, and Phase of $\bar{z}(t)$ to be determined by the number n , $n+1$ of Vertices. The **complex - Vector** $\pm \bar{z}(t)$ uses the **Norm** $|\bar{z}| = 2R$, and the number n , of the Space which Determines the Number of Knots and Sides of Regular Polygons as,

- 1...The Space is consisted of 4 masses [99] which Produce the **Space - Wave** = $2R.e^{i.n\omega t}$,
- 2...The Anti-Space is consisted of 5 masses Producing the **Anti-Space-Wave**= $- 2R.e^{i.n\omega t}$
- 3...Sub-Space is consisted of 6 masses Producing the **Sub-Space-Wave** = $\pm 2R^{1/n}.e^{i.\theta/n}$

5a1.. The Physical notion of the Regular Polygons : [62]

According to Archimedes , *Geometric means* , speaking of numbers , *whether solid or square* , observes that , Between Plane One - mean suffices , but to connect two solids two – means are necessary .This denotes that between two square numbers there is one mean proportional number and between two cubes there are two means proportional numbers .

It was Proved that Odd numbers become from any two consequent Even numbers , so the sum of two irrationals may be either rational or irrational . The *Cattle – Problem* of Archimedes may be further analyzed reaching to equations of any degree.

It was shown before that , all *n*-Regular Polygons End to equations of *n*-degree Segment , by finding a suitable value of the Segment , *x* , That is we have in the general case to solve one or two equations of the form :

$$A . R^0 . x^n - B . R^2 . x^{n-2} + C . R^{n-6} . x^3 - D . R^{n-4} . x^2 + E . R^{n-2} . x^1 - F . R^n . x^0 = 0$$

for The Even Polygons , and

$$A . R^2 . x^{n-2} - B . R^{n-2} . x^{n-3} + C . R^{2(n-4)} . x^3 - D . R^{2(n-3)} . x^2 + E . R^{2(n-2)} . x^1 - F . R^{2(n-1)} . x^0 = 0 \quad \text{for The Odd Polygons ,} \quad \text{where } A , B , C , D \text{ are constants .}$$

The Presented Geometrical method is the solution of the above equation in the general case . Because , the *n*th - degree - equations are $\rightarrow$ the Vertices (**n**) and the Sides (**a_n**) of the *n*-Polygon in circle $\leftarrow$ so number , π , is their Mould .

The Knot is a Closed – Curve in Space (*x* , *y* , *z*) , that does not intersect itself .

A simple Parametric representation of the Figure-eight Knot is as the Set of all (*x* , *y* , *z*)

Points where , $x = (2 + \cos 2t) . \cos(3t)$, $y = (2 + \cos 2t) . \sin(3t)$, $z = \sin(3t)$,

For the Cave-Spin , $\bar{S} = r m v$, which is a **Monad** and is consisted of **4-Spaces** exists

$\rightarrow$ ((The Spaces **n.S** Polygons , The Anti-Spaces - **n.S** Polygons ,

The Sub-Spaces $\pm \sqrt[n=1-\infty]{n.S}$ Polygons)) $\leftarrow$, with **n = 1 $\approx$ ∞ Knots**

It has been Proved [62] that , Projecting the vertices of the Regular *n*-Polygon on any tangent of the circle , then the Sum of the heights **y_n** is equal to , **n * R** .

This is a linear relation between Heights , *h* , and the radius of the circle , *the monad* .

This Property on the circle yields to the Geometrical construction (As Resemblance Ratio of Areas which is controlled) and the Algebraic measuring of the Regular Polygons as follows,

when : **R** = The radius of the circle , with a random diameter **IAB I** .

a_n = The side of the Regular **n**-Polygon inscribed in the circle

n = Number of Sides , *a* , and Knots of the *n*-Polygon , then exists :

$$n \cdot R = 2 \cdot R + 2 \cdot y_1 + 2 \cdot y_2 + 2 \cdot y_3 + \dots + 2 \cdot y_n \quad \dots (n)$$

The heights y_n are as follows $y_B = [2 \cdot R]$, $y_1 = [4 \cdot R^2 - a^2] / (2 \cdot R) \dots (y)$

Equation (y) is a Space-Wave depended on a_n , meaning n Informations on y_B Height.

$$y_2 = [4 \cdot R^4 - 4 \cdot R^2 \cdot a^2 + a^4] / (2 \cdot R^3)$$

$$y_3 = [8 \cdot R^6 - 10 \cdot R^4 \cdot a^2 + 6 \cdot R^2 \cdot a^4 - a^6] / (2 \cdot R^5) \quad \dots$$

$$y_n = [\dots] / 2 \cdot R^n$$

Figure – 3A-

In Fig-1-1, On AB Diameter = $2R$ = The Monad of Neutral-circle exist the Spaces with their Sides $\lambda_n = 2 \cdot \sqrt{R^2 - a_n^2}$, and their Critical-sides

$$a_n = \frac{1}{2} \sqrt{4R^2 - \lambda_n^2}, \text{ as below}$$

$$1 \dots \text{For Spaces, the Polygon Side is } \lambda_{n(S)} = 2 \cdot \sqrt{R^2 - a_{n(S)}^2},$$

$$2 \dots \text{For Anti-Spaces, the Polygon Side is } \lambda_{n(AS)} = 2 \cdot \sqrt{R^2 - a_{n(AS)}^2},$$

$$3 \dots \text{For Sub-Spaces, the Polygon Side is } \lambda_{n(SS)} = 2 \cdot \sqrt{R^2 - a_{n(SS)}^2},$$

4... For Neutral - Spaces, the Polygon Side is $\lambda_{n(NS)} = 0$, while in Material-Geometry becomes from the Centripetal Force $F_C = \sigma = \frac{m \cdot v^3}{r} = J \omega^2 r$, where the Unity Monad r

$$\equiv \text{monad } R = \frac{\sigma}{J \cdot \omega^2} = \frac{\sigma}{B} = \frac{\text{Stress}}{\text{Angular-momentum}}, \text{ and Polygon Side } \lambda_{n(NS)} = 2 \sqrt{R^2 - a_n^2},$$

$$\text{All becoming from Pythagorean relation } [R]^2 = [a_n]^2 + \left[\frac{\lambda_n}{2}\right]^2.$$

5a2 .. The General Equations of motion in a Polygon-Vector-Conductor d = Side $\lambda_{n(NS)}$

The Displacement at Point x of a Conductor d , is $x + dx$ and Strain will be $u + \left(\frac{\partial u}{\partial t}\right) \cdot dx$, and the Unit Strain is $\left(\frac{\partial u}{\partial x}\right)$. From Hook's law, $\sigma = E u$, The ratio of Unit-Stress to Unit-Strain is equal to the modulus of Elasticity E and A = the cross section area of the Conductor, then issues $\frac{\partial u}{\partial t} = \frac{\text{Force}}{A \cdot E} = \frac{F}{A \cdot E}$ and by differentiation becomes $\rightarrow A \cdot E \cdot \frac{\partial^2 u}{\partial x^2} = \frac{\partial E}{\partial x} \dots (1)$

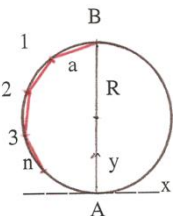
Applying Newton's law of motion for the element dx and equate the Unbalance-force $\frac{\partial P}{\partial x}$, to the Product of the mass and acceleration of the elements, and then $\frac{\partial E}{\partial x} dx = \rho A dx \frac{\partial^2 u}{\partial t^2} \dots (2)$

Eliminating $\frac{\partial u}{\partial x}$ then we have The Partial differential equation $\frac{\partial^2 u}{\partial t^2} = \left[\frac{E}{\rho}\right] \frac{\partial^2 u}{\partial x^2} \dots (3)$ and

$$\frac{\partial^2 u}{\partial x^2} = \left[\frac{\rho}{E}\right] \cdot \frac{\partial^2 u}{\partial t^2} \equiv \left[\frac{1}{c^2}\right] \cdot \frac{\partial^2 u}{\partial x^2} \dots (4) \text{ where } \bar{c} = \sqrt{\frac{E}{\rho}}, \text{ and it IS The velocity of Propagation of}$$

the Displacement dx , along the Conductor or $\rightarrow$ is The Stress-Wave $\leftarrow$

Applying equation (4) in an Conductor $[d \equiv \lambda_{n(NS)}]$ of Space Anti-Space Equilibrium formation of Polygon STPL line with both ends Free, then the Natural - frequencies must



be zero because charges $\oplus$, $\ominus$ interchange at both ends, A , K_A , and issues $\frac{\partial u}{\partial t} = 0$ such at $x = 0$, and as at $x = d = \lambda_{n(NS)} = AK_A$. The Two equations of the below (5) correspond to these, *Stretched* $\equiv$ *linear*, boundary conditions which are as follows,

$$\left\{ \frac{\partial U}{\partial x} \right\}_{x=0} = A \frac{1}{c} [C \sin wt + D \cos wt] = 0$$

$$\left\{ \frac{\partial U}{\partial x} \right\}_{x=0} = \frac{w}{c} \cdot [A \cos \left| \frac{w \cdot AK_A}{c} \right| - B \sin \left| \frac{w \cdot AK_A}{c} \right|] \cdot [C \sin wt + D \cos wt] \dots (5)$$

Equation (5) must be true for any time t , Therefore from the First equation $A = 0$. From the Second equation B must be finite in order to have vibration and is satisfied

$$\text{when, } \sin \left| \frac{w \cdot AK_A}{c} \right| = 0, \text{ or, } \left| \frac{w \cdot n \cdot AK_A}{c} \right| = \left| \frac{w \cdot n \cdot d}{c} \right| = \frac{2 \cdot n \cdot \bar{v}}{c} = \pi, 2\pi, 3\pi, \dots n\pi, \dots (6)$$

where, n = The order of the mode and the equation of motion In Conductor becomes $d = \lambda_{n(NS)} = AK_A$ which is an longitudinal-vibration $u = u_0 \cos \left[\frac{n\pi}{d} x \right] \sin \left[\frac{n\pi}{d} \cdot c \cdot t \right] \dots (7)$ a Cosine-Wave having n nodes in Pipe d .

The equation of motion for an **Longitudinal wave** in a Conductor $d = \lambda_{n(NS)} = AK_A$ is $\rightarrow y(x, t) = N \cdot \sin [kx - wt + \phi] \leftarrow \dots (8)$ where, c = the light velocity-vector, N = the amplitude, w = the angular velocity-vector, ϕ = The Phase angle, and $k = \frac{2\pi}{\lambda} = \frac{\pi}{r_L} =$

Propagating-Energy Constant = Wave-number, λ = The Wave length, $\bar{v} = \frac{w}{k} = \frac{\lambda}{T} = \sqrt{\frac{T}{m}} = \sqrt{\frac{E}{\rho}}$ = The light-velocity in Conductors.

The frequency of the Longitudinal wave is $\rightarrow f_L = [n] \frac{\bar{v}}{2\lambda} = 0, \frac{1 \cdot c}{2\lambda}, \frac{2 \cdot c}{2\lambda}, \frac{3 \cdot c}{2\lambda} \dots \dots \frac{n \cdot c}{2\lambda}$,

The equation of motion of a **Standing-Wave** in Conductor $d = \lambda_{n(NS)} = AK_A \equiv 2 |r_A - K_A| \equiv r_L \equiv \lambda$ is as, $y(x, t) = 2N \sin[kx] \cdot \cos[(w = 2\pi c/\lambda) t] \dots (9)$ where Longitudinal - frequency $f_L = (n + \frac{1}{2}) \frac{\bar{v}}{2\lambda}$. The Amplitudes become zero at $y = 0$ when $kx = 0$, which implies

$kx = n\pi$, $n = 0, 1, 2, 3, \dots n$. and Since the sine-function repeats itself after every 2π change in angle which is The Wavelength λ , of the Wave, and from equation

$$\rightarrow \sin[kx] \equiv \sin[kx + 2n\pi] \equiv \sin[k \cdot x + \frac{2n \cdot \pi}{k}] \leftarrow \text{then for } n=1,$$

$$\text{The wavelength } \lambda = \left[\frac{2 \cdot 1 \cdot \pi}{k} \right] = \frac{2\pi}{k}, \text{ and is } \text{The-Unit-Energy, The Quantum, } k = \frac{2\pi}{\lambda} \dots (10)$$

$$\text{and Wave-equation } \rightarrow \sin[kx] \equiv \sin[kx + 2n\pi] \equiv \sin[k \cdot x + \frac{2n \cdot \pi}{k}] \equiv \sin\left[\frac{2\pi}{\lambda}\right] \cdot [x + \lambda\pi] \dots (10a)$$

Since, $k\lambda = 2\pi$ constant and λ , is the displacement for $n=1$, then implies that k , is Force and because Force $\times$ Displacement = Work $\equiv$ Energy $\equiv$ motion, therefore $k\lambda \equiv E \equiv$ Constant $\equiv$ **The Unit-Energy $\equiv$ Energy- Quantum**.

In case of Energy Equilibrium, then Frequency in Conductor $d = AK_A = \lambda / 2$ and, $f_L = (n + \frac{1}{2}) \frac{\bar{v}}{2\lambda} \equiv \frac{0,5 \cdot c}{2\lambda}, \frac{1,5 \cdot c}{2\lambda}, \frac{2,5 \cdot c}{2\lambda}, \frac{3,5 \cdot c}{2\lambda}, \dots, \frac{(2n+1) \cdot c}{2 \cdot 2\lambda} = \frac{1}{2} \left[\frac{c}{2\lambda} \right], \frac{3}{2} \left[\frac{c}{2\lambda} \right], \frac{5}{2} \left[\frac{c}{2\lambda} \right], \dots, \frac{2n+1}{2} \left[\frac{c}{2\lambda} \right]$ The Wave is a Force $\vec{Q}_{AK_A} = F = |\oplus \Rightarrow AK_A|$, an Energy-Vector $|\oplus \vec{Q} \Rightarrow \vec{AK_A}| \equiv |\leftrightarrow|$ that Propagates from the Place where it was created, The Point A , so **when** is found an **Obstacle** at **End-Point K_A** then the Particles of the Conductor medium oscillate Perpendicular $|\updownarrow|$, because IT IS THE - ONLY - EXIT, to the direction of the **Wave - Propagation**, and by this Way the motion continues transverse as Longitudinal Wave in Conductor $d = AK_A$ as, $|\Rightarrow \updownarrow| \equiv \textcircled{R}$, or in Conductor $d = \lambda_{n(NS)} = AK_A$, The two Perpendicular Energy-Vectors, $|k_1 \times k_2| = k_{1+2} = k = \frac{2\pi}{\lambda} = \frac{2\pi f = w}{c}$ and Longitudinal Wave -Energy $\rightarrow c \{ k_1 \times k_2 \} = 2\pi \cdot f$, or $\left| \frac{k_1 \times k_2}{2\pi} \right| \cdot c = \frac{c}{\lambda} = f$. In Figure -3 - and -9-

The Obstacle at Edge K_A Point , is The Presentation of the , $\oplus$ constituent and The Lack of $\ominus$ constituent . The **Transverse - Propagating-Wave** , or the moving Energy -Vector $|\oplus Q \uparrow \overline{AK_A}| = |\uparrow|$ at node K_A , and with the Energy-Vector $|\oplus Q \Rightarrow \overline{AK_A}| \equiv |\leftrightarrow|$ at node A , consist The **Electromagnetic - Wave** in $d = AK_A = 2r$ Conductor . The Energy in this **Stationary Wave** of wavelength $\lambda = 2d$ is ,

$$E = h f_L = h \frac{2n+1}{2} \left| \frac{c}{2\lambda} \right| = \frac{2n+1}{2} \left| \frac{hc}{2\lambda} \right| = \left| \frac{3.h.c}{4\lambda} \right| \dots\dots\dots (11)$$

and from relation $\lambda = c T = \frac{c}{f} = \frac{2\pi}{k}$, Then $k = \frac{2\pi}{\lambda} = \frac{2\pi f}{c} = \frac{w}{c} = \left| \frac{\bar{v}}{c} \right| \cdot \left| \frac{1}{r} \right| = \left| \frac{\bar{v}}{c} \right| \cdot \left| \frac{2}{\lambda} \right|$, or the Propagating-Transverse-Wave carries the **Standing-Wave-Energy-Constant-magnitude**

$$\text{Constant-motion } k = \frac{2\pi}{\lambda} = \frac{2\pi f}{c} = \frac{w}{c} = \left| \frac{\bar{v}}{c} \right| \cdot \left[\frac{2}{r_{[A-K_A]}} \right] \dots\dots\dots (12)$$

The two Perpendicular **Energy-Vectors** , $|\mathbf{Q} \Rightarrow \overline{AK_A}| = |\leftrightarrow|$ and $|\mathbf{Q} \uparrow \overline{AK_A}| = |\uparrow|$,in Conductor d ,of this moving Energy FORM The **Energy-Square** , $\{|\leftrightarrow|, |\uparrow| \equiv |\mathbf{Q} \Rightarrow |\mathbf{Q} \uparrow|\} \equiv u_0$, on Conductors AK_A . with Conductors - Pivot-axis Propelled on their **Merging -Resultant -axis** of direction $|\Rightarrow \uparrow \equiv \nearrow|$.

In case of an **closed Conductor** above motion with Energy $= k = \frac{2\pi}{\lambda} = \frac{2\pi f}{c} = \frac{w}{c}$, and with

velocity $\bar{v} = \frac{w}{k} = \frac{\lambda}{T} = \sqrt{\frac{T}{m}} = \sqrt{\frac{E}{\rho}}$, consists the **Stationary-Energy-Storage** with fundamental frequency $f_1 = (n + \frac{1}{2}) \frac{\bar{v}}{2\lambda} \equiv \frac{3.\bar{v}}{4\lambda} \equiv \frac{3.\sigma \Phi}{4\lambda} \dots\dots\dots (13)$.

The Obstacle at K_A Point is the $\oplus$ constituent which executes an **Coulomb force**

$F_{[+\leftrightarrow+]} = \frac{|\oplus \leftrightarrow \oplus|}{r^2} = \frac{[\sigma.\sigma]}{r^2} = \left| \frac{\sigma}{r} \right|^2 = \left| \frac{e}{r} \right|^2 = \left| \frac{2\pi f}{\Phi} \right|^2 = \left| \frac{w}{\Phi} \right|^2$. The Energy k at Point K_A is the Total mass M_T of Conductor $d = AK_A = r = \lambda_{n(NS)}$ equal to the Moment of Inertia $J_T = \frac{m.r^2}{3}$,where m is the stiffness per meter of Conductor r . The Impact of this mass at THE end-Point is the Energy $= J w$ and Impact $\rightarrow m v = J w r = \left[\frac{m.r^2}{3} \right] . w r$, or velocity after impact velocity $\rightarrow$

$v = \left[\frac{r^3}{3} \right] . 2\pi f = \left[\frac{2\pi f . r^3}{3} \right] \dots\dots\dots (14)$ **Coulomb force** with fundamental frequency becomes

$$F_{[+\leftrightarrow+]} = \left| \frac{2\pi f}{\Phi} \right|^2 = \left[\frac{2\pi}{\Phi} \left| \frac{3.\bar{v}}{4\lambda} \right| \right]^2 = \left| \frac{3\pi v}{2\lambda \Phi} \right|^2 \dots\dots\dots (15)$$

Placing velocity after Impact (14) in Equation (15) then the **concentrated Energy** at Point

K_A is $F_{[+\leftrightarrow+]} = \left\{ \frac{3\pi}{2\lambda \Phi} \left[\frac{2\pi f . r^3}{3} \right] \right\}^2 = \left| \frac{\pi^2 r^4 f}{\lambda r . \Phi} \right|^2 = \left| \frac{B = (\pi^2 r^4 f)}{\lambda r . \Phi} \right|^2 = \left| \frac{\bar{B}}{\lambda r . \Phi} \right|^2 \equiv \text{Angular-momentum} \equiv$

SPIN(16) In Short-distance **Conductor** $d = 6,195543.10^{-7}m$, the Magnetic-field

$$\bar{B} = \frac{m.v}{q r} = \frac{9.10^{-31}Kg.2,9979.10^8 m/s}{1,6.10^{-19}C.[6,195543.10^{-7}]}$$

$= 2,718088.10^{13}$ Telsa , which is Perpendicular ,
normal , to the Conductor's axis . $\Rightarrow$ i.e.

In a Closed Energy-Conductor $r_{[+\leftrightarrow+]}$, the fundamental frequency f_1 becomes the Spin.

The **Energy- Square - Prism** , $|AK_A| . \{ \mathbf{Q} \Rightarrow \overline{AK_A} \} . \{ \mathbf{Q} \uparrow \overline{AK_A} \} = |Q_x . Q_y| . |AK_A| = k_x . k_y . |AK_A| = |\leftrightarrow| . |\uparrow| . |AK_A| \dots\dots (17)$, where $|\leftrightarrow| = |k_x|$ the Conductor's **Axial-energy** , $|\uparrow| = |\mathcal{O}|$ the Conductor's Rotation-Energy = **SPIN** , and $|\leftrightarrow| . |\uparrow|$ the Conductor's Resultant-energy-Vector is an **Cruise-missile** . When a Conductor $d = AK_A = r = \lambda_{n(NS)}$ has a **Hole at an Point** A_E such that $AA_E = 2r$, $\{ A - 2r - A_E - r - K_A \} = d$ then The Energy k at Point A_E is the Total mass M_T of Conductor $AA_E = 2r$ equal to the Moment of Inertia $J_T = \left| \frac{m.4r^2}{3} \right|$, where m is

the stiffness per meter of Conductor $2r$.

From equation (15) Coulomb force $F_{[+ \leftrightarrow +]} = \left| \frac{2\pi f}{\Phi} \right|^2 = \left[\frac{2\pi}{\Phi} \left| \frac{3\bar{v}}{4\lambda} \right| \right]^2 = \left| \frac{3\pi v}{2\lambda\Phi} \right|^2$ becomes as

$F_{[+ \updownarrow \updownarrow +]} \equiv F_{[+ \leftrightarrow +]}$, equal and Perpendicular and $\{ \mathbf{Q} \rightrightarrows_{AA_E} \} = \{ \mathbf{Q} \upuparrows_{AA_E} \}$, $|Q_x| = |Q_y|$, $|k_x| = |k_y|$, $|\leftrightarrow| = |\updownarrow|$ (17a) Transverse motion $|\updownarrow|$, Presupposes an $|\leftarrow|$ Impact of the mass at end-Point A_E and is the Energy = - J w and because lack of Obstacle Impact $\rightarrow mv = - Jw^2 = \left[\frac{m.r^2}{3} \right].w^2$, or velocity after impact $\rightarrow v = - \left[\frac{2\pi f.r^3}{3} \right] = - \left[\frac{v.r^2}{3} \right]$..(14a). Placing velocity after

Impact (14a) in Equation (15a) then the **concentrated Energy** at Edge Point K_A is

$F_{[+ \leftrightarrow +]} = \left\{ \frac{3\pi w}{2\lambda\Phi} \left[\frac{-2\pi f.r^2}{3} \right] \right\}^2 = \left| \frac{w[\pi^2 r^4 f]}{r\lambda\Phi} \right|^2 = \left| \frac{w.B=(\pi^2 r^4 f)}{r\lambda\Phi} \right|^2 = w^2 \cdot \left| \frac{\bar{B}}{r\lambda\Phi} \right|^2 \equiv \left| \frac{2L=w.\bar{B}}{r\lambda\Phi} \right|^2$
 $\equiv$ The Total Energy $2L$ to the Twin circles squared , or to Angular- momentum $\equiv$ **SPIN** squared(16) $\Rightarrow$ i.e.

In an Energy - Slit - Conductor $r_{+ \{ A - 2r - A_E - r - K_A \} = d +}$, the fundamental frequency f_1 becomes the Spin , Or , The carrier of the Total-Energy $2L$ of the moving - System .

At A_E Point **Energy - Square-Prism** is $\rightarrow |AA_E|. \{ \mathbf{Q} \rightrightarrows_{AA_E} \} . \{ \mathbf{Q} \upuparrows_{AA_E} \} = |Q_x . Q_y| . |A_E K_A| = |k_x . k_y| . |A_E K_A| \equiv |\leftrightarrow| . |\updownarrow| . |A_E K_A|$ (18) , where $|\leftrightarrow| = |k_x|$ the Conductor's

Axial-energy , $|\updownarrow| = |k_y|$ the Conductor's . **Transverse - Energy** , $|\mathcal{O}|$ the Conductor's Rotational-Energy = **SPIN** , where $|k_x . k_y| = |\leftrightarrow| . |\updownarrow| \equiv \mathfrak{R} =$ **The Dot-Product** = Area of Vectors , which is a Scalar magnitude $\mathbf{A}_{x,y} = |k_x| . |k_y| . \cos \theta$, where θ , is the angle between the two vectors , k_x , k_y and , **The Cross-Product** = The Resultant-Vector $= \mathbb{R} =$

$\bar{\mathbf{R}} = \mathbf{k}_x \times \mathbf{k}_y$ which is Perpendicular to k_x, k_y vectors where , $r = \sqrt{k_x^2 + k_y^2}$, $x = r . \cos \theta$,

$y = r . \sin \theta$, $\theta = \tan^{-1} \left(\frac{y}{x} \right)$, and $\bar{\mathbf{R}} = \mathbf{k}_x \times \mathbf{k}_y = \frac{w}{c} = \frac{2\pi}{\lambda}$

The Conductor's Resultant-Energy-Vector , $\mathbb{R} = \bar{\mathbf{R}}$, is as an **Non-guided Cruise - missile** .

From Total Energy relation $2L = B w \equiv E_K + E_U \equiv |k_x| + |k_y|$ is seen that , k_x , k_y , consist the **2-Line , Plane-Launcher** of **{ Energy $\equiv$ motion- missile }** into $\rightarrow$ Two Perpendicular and Equal Conductors , with Conductors-Pivot-axis Propelled **ON** their **Merging-Resultant axis** of the two directions $\rightrightarrows \upuparrows \equiv \mathfrak{R}$. In One-Conductor , $k_x = \overline{ZA}$, $k_y = \overline{1,MM}$, Resultant $\bar{\mathbf{R}} = \overline{Z1M\mathcal{O}}$, while for (2) $\rightarrow$ In Two-Conductors , $k_x = \overline{ZB}$, $k_y = \overline{ZA}$, $\bar{\mathbf{R}} = \overline{Z,1_2_3,MO} \equiv \mathfrak{R}$
The Total Energy $2L = B w \equiv E_K + E_U \equiv |k_x| . |x| . |k_y| . |x| . |AK_A| \equiv |k_x| . |x| . |k_y| . |x| . |\lambda| \equiv$ An Propagating-Wave in λ , i.e. **Energy-Square-Prism** is a Moving-Energy-Volume and **Because** from Cauchy equations of Stresses in three dimensions , **The Energy Stress remains Flat ONLY WHEN the Plane - Section becomes a circle , And Because** from Mechanics the **Sphere** occupies the **Least - Resistance** to the motion , then the **Square - Prism** is altered to the Equivalent , **Energy-Sphere - Cone** $\rightarrow \mathbb{C} = k \pi r^3 \leftarrow$ Fig-9a , 9b , 9c.

where the **Cube** $|| \leftrightarrow || . |\updownarrow| . |AK_A| = x^3$ becomes an **Sphere-Cone** $\equiv \mathbf{Q} . \overrightarrow{AK_A} | \Rightarrow | \updownarrow | \rightarrow k \pi r^3 = x^3$. From the max-sin $\left| \frac{w . AK_A}{c} \right| = 1$, of equation (6) then

$u = [C \sin wt + D \cos wt] . \sin \left| \frac{w . AK_A}{c} \right|$ (14a)

The condition $u = y (AK_A , t) = 0$, leads to the equation $\rightarrow \sin \left| \frac{w . AK_A}{c} \right| = 0$, or to ... (14)

For the Duality-Photons issues , $\bar{v} . [\overline{f_n} + f_n] \equiv \left| \frac{v}{\pi^2 . r_n^4} \right| . [\overline{B_n}] + | \bar{c} | f_n$ (15a)

Or $\bar{v} . [\overline{f_n}] \equiv (n + \frac{1}{2}) \frac{\bar{c}}{2 . |AK_A|}] + [f_n \equiv n \frac{\bar{v}}{2\lambda}] \Rightarrow \bar{v} \{ \left| \frac{\bar{c}}{2\lambda} \right| (n + \frac{1}{2}) + \frac{n}{2\lambda} \}$ (15)

E-Vectors $|\mathbf{Q} \Rightarrow \overrightarrow{AK_A} = \leftrightarrow |x| |\mathbf{Q} \Uparrow \overrightarrow{AK_A} = \downarrow |x| |AK_A| \equiv |Q_x \cdot Q_y| \cdot |AK_A| \equiv |\leftrightarrow |x| \downarrow |y| \lambda| \equiv k \pi r^3$.

From Wave-Energy-constant $k = \frac{2\pi}{\lambda} = \frac{2\pi f}{c} = \frac{w}{c} = \left| \frac{\bar{v}}{c} \right| \cdot \left\{ \frac{1}{r} - \frac{2}{r|A-K_A|} \right\}$ so $c = \frac{w}{k} = \lambda f$, or $\left| \frac{\bar{c}}{2 \cdot |AK_A|} \right| \equiv f$

i.e. Frequency f_{AK_A} of Pipe $|AK_A|$ is the Stationary-Photon Energy-Storage $\left[\bar{f}_n \right] \equiv \left| \frac{\bar{c}}{2 \cdot |AK_A|} \right| \equiv \left| \frac{\bar{c}}{\lambda} \right| \dots (16)$ and Photon $\bar{v}$. $\left[\left[\bar{f}_n \right] + f_n \right] \equiv \bar{v} \cdot \left\{ \left| \frac{\bar{c}}{\lambda} \right| + f_n \right\}$ i.e., as **Particle** $\equiv \bar{v}$. $\left| \frac{\bar{c}}{\lambda} \right| \equiv E_U \equiv$ Potential Energy, and as **Wave** $\equiv \bar{v}$. $f_n \equiv E_K \equiv$ Kinetic Energy. Since Energy-Constant-magnitude, k , denotes the **Total motion** then needs a **Scalar -Magnitude** for measurements and a **Vector-Magnitude** for Directions.

In Conductor $D = |AK_A|$, $|\mathbf{D}| \equiv$ The Scalar Magnitude between Points, which gives also the direction of motion with Points, A , K_A , and $\overrightarrow{AK_A}$ vector the Direction which defines the

Vector $\overrightarrow{AK_A}$. The Total Energy $k = \left| \frac{\bar{v}}{c} \right| \cdot \left[\frac{2}{r|A-K_A|} \right]$ of Photon-wave is Split as, $E_U + E_K = k \equiv$

Potential + Kinetic Energy where

$E_U \equiv \bar{v} \cdot \left| \frac{\bar{c}}{\lambda} \right| \equiv \text{Particle} \equiv \bar{v} \cdot \left\{ \left| \frac{\bar{c}}{2\lambda} \right| \left(n + \frac{1}{2} \right) \right\} \equiv \left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot \left[\bar{B}_n \right] = \left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot r^2 \cdot q \cdot \bar{B}_M \equiv \left| \frac{q \cdot v}{\pi^2 \cdot r_n^4} \right| \times \bar{B}_M$

is the Stationary-Storage $\equiv$ Particle $\equiv$ Magnetic-field with velocity, v , in cave $\lambda = 2r = 2\pi / k$

and $E_K \equiv \bar{v} \cdot f_n \equiv \text{Wave} \equiv \text{Kinetic Energy} = \frac{2\pi}{\lambda} = \frac{q}{k \cdot A} = \frac{q}{k \cdot \pi r^2} = \frac{\sigma \cdot \Phi}{k \cdot 3r \bar{B}_M} = \left\{ \frac{\sigma \cdot \Phi}{k \cdot 3r} \right\} \frac{1}{\bar{B}_M} = \frac{c/E}{\bar{B}_M}$, and

$\bar{E}_E \equiv c \bar{B}_M$, and the moving Electromagnetic-wave is,

$\bar{E}_E = |\bar{E}_0| \cdot \text{sine}[kz - wt]$, $\bar{B}_M = |\bar{B}_0| \cdot \text{sine}[kz - wt]$, $k = \frac{2\pi}{\lambda}$,

Motion is kept in Caves as **Electric, Magnetic fields** and as frequencies and conserved in them when the **Space-Points** become Energy-Conductors. The in caves **Energy-Import** is shown in Figures.

Examples :

1.. In an Conductor $d = AK_A = 2r$, with $\oplus$ obstacle at K_A Point occupies zero velocity and $\oplus$ Charge is accelerated. The Initial light-velocity is accelerated as $v^2 = \bar{v}_0^2 + 2a \cdot r$, or

$a = \frac{-\bar{v}_0^2}{2 \cdot r} = \frac{[2,9979 \cdot 10^8]^2}{2 \cdot r} = \frac{8,9874044 \cdot 10^{16}}{2 \cdot r} \text{ m/s}^2$. For Conductors, $r = 10^{-16}, 10^0, 10^{16}$ then,

$a1 = \frac{-\bar{v}_0^2}{2 \cdot r} = \frac{8,9874 \cdot 10^{16}}{2 \cdot 10^{-16}} = 4,4937 \cdot 10^{32} \frac{\text{m}}{\text{s}^2}$, $a2 = \frac{-\bar{v}_0^2}{2 \cdot r} = \frac{8,9874044 \cdot 10^{16}}{2 \cdot 10^0} = 4,4937022 \cdot 10^{16} \text{ m/s}^2$,

$a3 = \frac{-\bar{v}_0^2}{2 \cdot r} = \frac{8,9874044 \cdot 10^{16}}{2 \cdot 10^{16}} = 4,4937022 \cdot 10^0 \text{ m/s}^2$.

Force on Charge becomes from the Electric field as $\bar{F}_K = m \cdot \bar{a}_x = q \cdot \bar{E}_F = +e \cdot \bar{E}_F$ and $\bar{E}_F = \frac{m \cdot a}{q = e}$,

or $\bar{E}_F = \frac{m \cdot a}{e} = \frac{m}{e} [a] = \frac{9 \cdot 10^{-31}}{1,6022 \cdot 10^{-19}} [4,4937022 \cdot 10^{32}] = 25,242366 \cdot 10^{20} \frac{\text{N}}{\text{C}}$

$\bar{E}_F = \frac{m \cdot a}{e} = \frac{m}{e} [a] = \frac{9 \cdot 10^{-31}}{1,6022 \cdot 10^{-19}} [4,4937022 \cdot 10^{16}] = 25,242366 \cdot 10^4 \frac{\text{N}}{\text{C}}$

$\bar{E}_F = \frac{m \cdot a}{e} = \frac{m}{e} [a] = \frac{9 \cdot 10^{-31}}{1,6022 \cdot 10^{-19}} [4,4937022 \cdot 10^0] = 25,242366 \cdot 10^{-12} \frac{\text{N}}{\text{C}}$

i.e. The $\oplus$ Charge is accelerated **Opposite to initial direction** of $\ominus$ Charge in an Electric-field $\bar{E}_F$. This Property of Acceleration, creates the Magnetic-Fields in Electric Conductors as Atoms are.

2.. Uniform circular motion of electron in Caves constitutes a current $I = \frac{e}{T} = e \cdot f$, and $T = \frac{2\pi r}{c}$,

$I = \frac{e \cdot c}{2\pi r} = \frac{1,6022 \cdot 10^{-19} \cdot 2,997910^8}{2\pi \cdot r} = 7,644811 \cdot 10^{-12} \cdot \left[\frac{1}{r} \right]$, and for $r = 10^{-16}, 10^0, 10^{16} \text{ m}$ then

$I = \frac{e \cdot c}{2\pi r} = 7,644811 \cdot 10^{-12} \cdot \left[\frac{1}{r = 10^{-16}} \right] = 7,644811 \cdot 10^4 - 7,644811 \cdot 10^{-12} -$ and

$7,644811 \cdot 10^{-28} \text{ Ampere}$.

- 3.. The Electric-Potential $V = \frac{q}{r} = 8,99.10^9 \frac{Nm^2}{C^2} [\frac{1,602.10^{-19}}{r = 10^{-16}}] = 14,4038.10^6 = 1,44038.10^7 \text{ Volt}$
 $V = \frac{q}{r} = 8,99.10^9 \frac{Nm^2}{C^2} [\frac{1,6022.10^{-19}}{r = 10^0,10^{16}}] = 14,403778.10^{-10} \text{ V} , 14,403778.10^{-26} \text{ V} ,$
- 4.. Electric-Field $\bar{E}_F = \frac{\Delta V}{d} = [\frac{14,403778.10^6}{r = 10^{-16},10^0,10^{16}}] = 14,403778.10^{22}, 14,403778.10^{-10} \text{ V}$
- 5.. Force on electron is $F = q \cdot \bar{E}_F = 1,6022.10^{-19} \cdot \{14,403778.10^{22}\} = 23,077733.10^3 \text{ N}$ and $F = q \cdot \bar{E}_F = 1,6022.10^{-19} \cdot \{14,403778.10^{-16}\} = 23,07.10^{-13} \text{ N}, 23,077733.10^{-35} \text{ N} ,$ and
- 6.. The Produced Work is $W = F.ds = F r = 23,077733.10^3 \cdot \{10^{-16}\} = 23,077733.10^{-13} \text{ J} .$
 $W = F.ds = F r = 23,077733.10^3 \cdot \{10^0,10^{16}\} = 23,077733.10^3, 23,077733.10^{19} \text{ J} . e_0$
- 7.. Intensity I_{E-r} is , $I_{E-r} = \frac{c.E^2}{2} = [\frac{2,998.10^8.1,602210^{-19}(14,4038.10^{22})^2}{2}] = 498,26077.10^{33} \text{ W/m}^2$
 $I_{E-2} = \frac{c.E^2}{2} = 498,261.10^{31} \text{ W} = 4,9826077.10^3 \text{ W}$ and $I_{E-3} = \frac{c.E^2}{2} = 4,9826077.10^{-29} \text{ W/m}^2$
- 8.. The Power $P_{E-r} = \frac{E^2}{Z = \pi r^2} = \frac{(14,403778.10^{22})^2}{\pi.(10^{-16})^2} = 6,60394.10^{77} \text{ W} , 6,60394.10^{57}, 6,604.10^{13} \text{ W}$
- 9.. Two-Capacitors Conductor of area **A** and Charge **q** Charge density is on Plates $\sigma = \frac{q}{A}$
and Electric field $E = \frac{\sigma}{e_0} = \frac{q}{A e_0}$ and from Potential difference $V = E d$ then $E = \frac{V}{e_0}$ and
 $\frac{V}{d} = \frac{q}{A e_0}$ or $V = q \cdot [\frac{d}{A \cdot e_0}] = \frac{q}{A} = E d$. From above $\rightarrow A = \frac{q.d}{V} = [\frac{1,602210^{-19}(10^{-16})}{14,403778.(r=10^6)}] = m^2$
 $1,11235.10^{-42}, 1,11235.10^{-26}, 1,11235.10^{-10} \text{ m}^2$, Stress $\sigma = \frac{q}{A} = 1,44038.10^{23,7,-9} \frac{T}{m^2}$

Remarks : 1.. The **Stress-Strain Relationship** , from **Static theory of Elasticity** solves the Problem of static **Indeterminacy**. That is , the Stress Parameters σ_x, σ_y , are bound in , (1) By the **Stereo static conditions** (2) and by the **Constraint** that the Strain accompanying the Stress s_x, s_y , remains **Geometrically Continuous** . This Property of the Stresses allows .the Transportation of the Informations on Knots to the Polygon-Sides.

2.. When a Body contains Potential Energy ,

During any Unloading it gives off Mechanical - Work , since the Points of application of the GRADUALLY - withdrawn Loads are Displaced.

If the Unloading is ABRUPT , then Kinetic Energy is converted into Potential and after is Kinetic , converted back into Kinetic and so on . That is , the body Performs an Oscillating motion until the Mechanical Energy is extinguished due to a State of Equilibrium or Alters .

3.. The Action of the Complex-Vectors create the Waves of Motion $\equiv$ Energy Waves ,

which are closed curves and Transported . The **Pattern** of Disturbances with the Informations , Propagates from the One-Edge-Point to the other Edge-Point of Conductors , **OR** is on the [Sub-Units] . Action of Vectors exist on Polygon-Conductor`s $d = \text{Side } \lambda_{n(NS)}$ of Polygons.

4.. Action of a SIGNAL which Strikes the Tetrahedron-Cube-Spheres Mechanism .

Unloading happens on the three Tetrahedron - Sides which withdrawn Loads are Displaced On the Anti-Parallel-Strand . If the Unloading is ABRUPT , then Kinetic Energy of 1-Strand is converted in the 2-Strand as Potential and so on . That is , CUBES Perform an Oscillating motion until the Mechanical Energy is extinguished to their Vertices , which are the stores of Information .

5.. The Harmonic displacement of Support-Points on a Regular Polygon vertices .

The Projections of Heights y_n of a Regular Polygon are as $2.y_n = n R$, which allows to the Vector- Force Polygon to follow the Space-Vector-Wave $= 2R.e^{i.nwt} = 2R.[\cos w t + i .\sin wt]$. i.e. Complex frequency Response , Happens on the Regular Polygon Vertices only .

6a.. THE ORIGINATION OF PRIMARY MOTION IN E - SPACES .

The Stress - State (σ, τ) **in Spaces** is defined from the **Cauchy Stress Tensor** where , Exists at any Point inside a material in the deformed State Placement or Configuration. The second order Tensor consists of nine components and relates a unit length direction vector $\vec{n}$ to the Traction-Vector $\vec{T}^{\vec{n}}$ across an **Imaginary Surface** (in M-Geometry is Φ) Perpendicular to $\vec{n}$, $\vec{T}^{\vec{n}} = \vec{n} \sigma$, or $T_j^{\vec{n}} = \sum \sigma_{ij} n_i$, obeying to the Tensor transformation law for Stress Analysis . A contact Force ΔF exerted at Point P of element area ΔA , the ratio $\Delta F/\Delta A$ becomes dF/dA and the couple stress vector ΔM vanishes and prior tensor becomes $T_j^{\vec{n}} = \lim_{\Delta S \rightarrow 0} \Delta F_i/\Delta S = \frac{dF_i}{dS}$. Equation means that the Stress-Tensor depends on the **Position** (location) in Body and the **orientation of the Plane** on which it is acting .

From Spaces (4) in **Material-Geometry** of **PNS -Space** (Fig-1-3) the eternal Rotation of the two **Opposite** [$\oplus \cup \ominus$] **constitutes** , and because of their in between **Stress** σ which is equal to the Centripetal-Force then issues $F_c = \sigma = \frac{m.v^3}{r} = J \omega^2 r = \bar{B} r$, where

the **monad** $r \equiv \text{monad } R = \frac{\sigma}{J.\omega^2} = \frac{\sigma}{\bar{B}}$ i.e. The **Stress** σ , which is created **between the Opposite** [$\oplus \leftrightarrow \ominus$] , and through the only Possible Rotational-motion , Originates the Angular-velocity $\vec{\omega} = \frac{\sigma.\Phi}{r} = 2\pi r.f$ and the Angular Momentum $\bar{B} = \frac{\sigma}{r} = \frac{\sigma}{R}$, which when **Placed on AB** Diameter = $2R = \text{The Monad}$ consist the **Neutral - Spaces - Energy**. The Planck's cave , 10^{-35} m , is **The Safety-Valve** $\equiv$ **The Critical State** for the **Stress Ellipsoids** , $\bar{B} \bar{\omega}$, Vectors in order that this Total-Energy to **Superflow** and be **Still** into Vacuum $\equiv [10^{-62} - 10^{-35} \text{ m}]$. This **Vacuum** between the [Gravity cave - Planck's cave] CONSISTS The **BLACK - HOLES - CHAOS** , as the Recycling-Energy into which

→ The { **Energy - Space - Monad** $|\bar{R}| \equiv |AB|$ } , **Decomposes** ← {Fig-14}

The Rolling of Polhode Unit-Space into the Herpolhode Space-monad Cone.

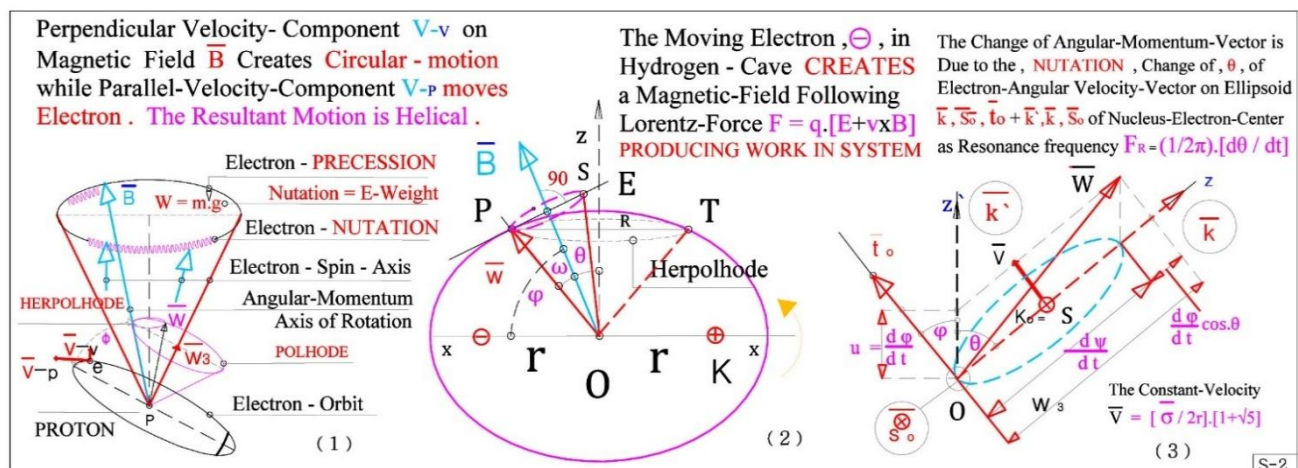


Figure -4- The Central Axial-Ellipsoid of $\oplus$ constituent Rotating through constant Point O .

In (1-2) **The $\oplus$ Material Point** OK , { $\oplus \equiv O, [OK = R] \equiv$ The Space }, continually Rotates around **The $\ominus$ Material Point** OK, { $\ominus \equiv O, [OK] \equiv$ The Anti-Space }, on $2R$ circle .

Their Common circle center , forms the material angle $\phi = \phi_P.t = \left(\frac{v_P}{\sqrt{c^2 - r^2}} \right).t$, which then

CREATES at any **contact Point P** the Centripetal Force $\mathbf{F}_C = \frac{mv^2}{r} = \frac{\pi r^2}{2r} [\omega^2 \cdot r^2] = \frac{\pi \cdot r^3}{2} [\omega^2]$. The vector $\tilde{\mathbf{w}}$ of Angular velocity ω , formulates the Polhode Cone of Base-radius $\mathbf{a}$, and of $OP = \mathbf{S}$ side forming the **w-angle** with z axis, while the vector $\tilde{\mathbf{B}}$ of Angular Momentum $\mathbf{B}$, formulates the Herpolhode Cone of Base-radius $\mathbf{r}$, of $OP = \mathbf{S}$ side and **θ -angle** with z axis. In (3), is the MPMP Space where Time is not existing $t = 0$, and the same for motion also. In **PNS-Space** the 3-dimension motion of the Primary constituents $[\oplus \cup \cup \ominus]$ the time is as Period $\mathbf{T}$, and **Momentum** is the Angular-velocity $\tilde{\mathbf{w}}$ and Angular Momentum $\tilde{\mathbf{B}}$, where the Momentum $\tilde{\mathbf{B}} = \mathbf{r} \cdot \mathbf{m} \cdot \mathbf{v} = \mathbf{m} \cdot \tilde{\mathbf{w}} \cdot \mathbf{r}^2 = \pm [\frac{\pi \cdot r^2}{2}] \cdot \tilde{\mathbf{c}} \times \mathbf{r}$ and $\pm [\frac{\pi \cdot r^2}{2}] \equiv$ the **Hemi - circle area**. The Polhode is of radius $\mathbf{a}$, and rotates with an angular velocity $\tilde{\omega} = 2\pi \cdot f_p$ in the Cone $\pi a^2 \cdot s$. The Herpolhode is of radius $\mathbf{r}$, and is the Stationary Cone $\pi r^2 \cdot s$ with an angular Momentum $\tilde{\mathbf{B}} = \mathbf{r} \cdot \mathbf{m} \cdot \mathbf{v} = \mathbf{r} \cdot \mathbf{m} \cdot (\omega \cdot \mathbf{r}) = \mathbf{m} \cdot \tilde{\mathbf{w}} \cdot \mathbf{r}^2$. The Polhode Cone is rolling on **OP** and **contact** common line, into the Herpolhode Cone without friction. i.e.

The motion in PNS-Space exists as the Rotation of Space Point P (+) on [O ,OK] circle Anti-Point P' (-) on [O ,OK] of Anti-circle and defines The Angular-momentum $\tilde{\mathbf{B}}$, so The Position of Spaces Points P (+) and Points P' (-) and Momentum are simultaneously Determined and measured, consisting a direct violation of the Uncertainty Principle. The Primary - Rigid -Body Analysis :

a.. The Position of the Herpolhode Cone is, Fig-4.

$\mathbf{x} = \mathbf{a} \cdot \sin \theta \cdot \cos \omega t$, $\mathbf{y} = \mathbf{a} \cdot \sin \theta \cdot \sin \omega t$, $\mathbf{z} = \mathbf{a} - \mathbf{a} \cdot \cos \theta = \mathbf{a} \cdot [1 - \cos \theta]$ where exists, $\mathbf{a}$ = The Polhode Cone Base-radius, $\mathbf{r}$ = The Herpolhode Cone Base-radius $[\mathbf{x}, \mathbf{y}, \mathbf{z}] =$ Coordinate System such that **z-axis** $\perp$ **[KOK] line**, and angle - θ between OP , Oz Axis.

b.. The Energies of the Polhode - Herpolhode Cones are from Lagrange's Principle where for any Particle, The Kinetic $\mathbf{E}_K$ and Potential $\mathbf{E}_U$ Energy are measured as below,

$$\mathbf{E}_K = \frac{1}{2} m \cdot [\dot{\mathbf{x}}^2 + \dot{\mathbf{y}}^2 + \dot{\mathbf{z}}^2] = \frac{1}{2} m a^2 \cdot [\dot{\theta}^2 + \omega^2 \cdot \sin^2 \theta], \text{ and } \mathbf{E}_U = m g z = - m g a \cdot \cos \theta$$

The Lagrangian $\mathbf{L}_{KU} = m \cdot a^2 \cdot [\frac{\dot{\theta}^2}{2} - V_{\text{EFFECTIVE}}]$, where the Effective Potential V_{EFFE} is

$$V_{\text{EFFE}} = - \frac{1}{m \cdot a^2} [m g a \cdot \cos \theta + \frac{1}{2} m a^2 \cdot \omega^2 \cdot \sin^2 \theta] = - [\frac{g \cdot \cos \theta}{a} + \frac{\omega^2 \cdot \sin^2 \theta}{a}] \dots (e)$$

The equation of motion for the Bead becomes from Lagrangian which is $\ddot{\theta} = [\frac{\partial V_{\text{EFFE}}}{\partial \theta}] \dots (b)$

Since θ is constant then issues $\dot{\theta} = \ddot{\theta} = 0$, and for the Bead-Herpolhode motion $\frac{\partial V_{\text{EFF}}}{\partial \theta} = 0 \dots (c)$

Equation (c) is Stationary at Positions which satisfy relation **$g \cdot \sin \theta = a \cdot \omega^2 \cdot \sin \theta \cdot \cos \theta$** ..(c1)

1...The Solutions of (c1) are at Position $\sin \theta = 0$ where issues **$\theta = 0$**

2...The Solutions of (c1) are at Position $\sin \theta \cdot \cos \theta = \sin 2\theta = 0$ and is **$\theta = \pi$ & $2\theta = 2\pi$**

3...The Solutions of (c1) are at Position $\cos \theta = \frac{g}{a \cdot \omega^2}$ and for $\theta = 0$ then **$\omega^2 = \frac{g}{a}$**

Remarks :

1... Solution (1) for $\theta = 0$ exists always and from Figure-4-(2) the velocity vector $\tilde{\mathbf{v}}$ is applied at the center of mass $\mathbf{K}_0$, Anti-clockwise Spinning. Fig-4-(3)

2... Solution (2) for $\theta = \pi$ exists always and from Figure-4-(2) the velocity vector $\tilde{\mathbf{v}}$ is

applied at the center of mass $\mathbf{K}_0$, Clockwise Spinning . Fig-4-(3)

3... Solution (3) where since $\theta = 0$ exist the Prior and from Figure-4-(2) velocity vector $\vec{v}$ is applied at the center of mass $\mathbf{K}_0$, and the $\pm$ Spinning is very fast from the center and is such that $w^2 \geq 0$, and happening when $\{from\ relation\ \frac{g}{a}\}$ the radius $a \Rightarrow 0$.

4...The Solution $w^2 \geq \frac{g}{a}$, Determines the Stability of the Polhode System .

The Solution $w^2 < \frac{g}{a}$ and $\theta = 0$, Determines Stability at Point O Position and $-V_{EFFE}$.

The Solution $w^2 < \frac{g}{a}$ and $\theta = \pi$, Determines Stability at Point O Position and $+V_{EFFE}$.

For Solution $w^2 > \frac{g}{a}$ and $\theta = 0$, The Position is Unstable at Point O with $-V_{EFFE}$.

For Solution $w^2 > \frac{g}{a}$ and $\theta = \pi$, The Position is Unstable at Point O with $+V_{EFFE}$.

Meaning the Black – Holes Origination .

From Solutions $w^2 = \frac{g}{a}$, the $\theta = 0 = \pi = 2\pi$ Positions are **Unstable and below Point O** with $+V_{EFFE}$. meaning an evolving and **Operational** Black-Hole Stable Origination.

5...All above Stable Solutions result to the determination of the two **Vector - magnitudes** that of Angular-velocity $\vec{\omega}$ and that of Angular Momentum $\vec{B}$, differently Black-Hole.

Both magnitudes define the **Unit-Energy Vectors** $\rightarrow \{ \text{Unit-E Vector } \mathbf{R} = \frac{\sigma}{j.w^2} = \frac{\sigma}{B} \} \leftarrow$

When the Unit-E.Vector R is Placed ON $[AB \equiv 2R \text{ S.Diameter}]$ of Spaces-Neutral-circle]

Then the Energy-Monad $|\bar{R}|$ exists on Space-Monad $|AB| \equiv |\bar{R}|$ as $\{E+S \text{ -Monad } |\bar{R}|\}$,

i.e. IS THE $\{ \text{Energy - Space - Monad } |\bar{R}| \}$, with the magnitudes ,

Spaces Sides $\lambda_n = 2\sqrt{R^2 - a_n^2}$, & , Quantum Critical-Side $a_n = \frac{1}{2}\sqrt{4R^2 - \lambda_n^2}$,

The Quantization of Energy in Spaces, happens when follow the *Archimedes formula* for

Doubling the Vertices n , $\lambda_{2n} = \sqrt{2R^2 - R\sqrt{4R^2 - \lambda_n^2}}$ & Critical-Sides $a_{2n} = \frac{1}{2}\sqrt{4R^2 - \lambda_{2n}^2}$

where then Energy is divided and spread on the double number of the Polygon Sides .

Monad $\mathbf{R} = \frac{\sigma}{j.w^2} = \frac{\sigma}{B}$ remains the same , while **Spaces Sides** change as above λ_{2n} , a_{2n} .

7a.. THE MECHANISMS & CHARGES, FOR DUAL - ORIGINATIONS ,

THE NATURAL - Spaces of **AB** Diameter is the $\{ \overline{AB} \text{ Unit Complex Vector } \}$.

1... Spaces $\equiv$ The Infinite (+) Circumscribed-Regular-Polygons in $\overline{AB}$. [Fig-1,3].

2...Anti - Spaces $\equiv$ The Infinite (-) Circumscribed-Regular-Polygons in $\overline{AB}$. [Fig-1,3].

3...Sub. - Spaces $\equiv$ The Infinite (+) Inscribed-Regular-Polygons on Diameter $\overline{AB}$. [Fig-1,3].

4...Neutral-Spaces $\equiv$ The Infinite Circles on Diameter $\overline{AB}$. (The Sphere on AB), [Fig-1,3].

5... $\{ \text{MFMF} \} \equiv$ The Gravity cave $= 10^{-62} \text{ m}$.

6... $\{ \text{PNS} \} \equiv$ The Planck's cave Length $= 10^{-35} \text{ m}$.

7...Vacuum $\equiv [10^{-62} \text{ -- } 10^{-35} \text{ m}] =$ The in-between distance $\Rightarrow$

THE Origination-Mechanisms in Spaces & the Origin of Charges.

8...Action-Spaces $\equiv$ The Infinite Quaternion - monads $\rightarrow \bar{z} \equiv (s + \bar{v}.i) \equiv \overline{AB} \equiv$

$\equiv \sqrt{s^2 + [\bar{v}.i]^2}$, or $\bar{z} \equiv x + i.y \equiv \overline{AB} \equiv$ moduli , r , is their magnitude

$[r = |r| = \sqrt{x^2 + y^2}]$, on Unit-Diameter $\overline{AB}$. The **[QMAS] . For Quaternion $v = s$**

$\bar{z} * \bar{z} = (s + \bar{v}.i)^2 = s^2 + [\bar{v}]^2 + 2.s\bar{v}.i = s^2 - \bar{v}^2 \pm 2.s\bar{v} = |s|^2 - |\bar{v}|^2 \pm 2.|s|.|\bar{v}|$, for $|\bar{v}| = s$.

8a.. THE Material - Geometry , E-Geometry , Physics AND Chemistry .

8..[a].. The { STPL } Mechanisms in Spaces , from Charges in Under-Planck's-Length $\equiv$ *The Six Triple Points Line Mechanism $\equiv$ The Complex Vector-Spaces Rotor* ,
It is a Mechanism on where the Charges of Opposites , $[\oplus \leftrightarrow \ominus]$, React as Centrifugal force F_c which in turn changes $\rightarrow$ (Action-Reaction $\equiv$ + Spin – Anti Spin) $\leftarrow$ of [MFMF] Space To Rotational motion Angular-velocity $= \bar{\omega}$ & Angular-Momentum $= \bar{B}$. [Fig-6].

8..[b].. The {TVPM} Mechanisms , from Charges on Two-Perpendicular-Vectors-Edges $\equiv$ *Markos Two - Vectors Three - Poles Mechanism* . [Fig-8a , 8b].

In Fig-8|4| , Vector $\overline{CP} \perp \overline{CA}$ Vector , which changes the **Energy $\equiv$ The Stress σ** of The $|\overline{CP} \times \overline{CA}|$ Square , to **2 - Halve $\pm$ Squares** on Vectors-axis for Equilibrium .

8..[c].. The { TCIC } Mechanisms , from Charges In Three-Vectors-Conductors-Edges $\equiv$ *Markos Tetrahedron Cube Inscribed-Circumscribed Circles Mechanism* . [Fig-27-29].
In Fig-6 , The Tetrahedron **Conductors** -Vectors $\overline{DA} \perp \overline{DB} \perp \overline{DC}$, **CARRY** Energy as **Electromagnetic-Fields** (Forces-Frequencies-Stresses-any motion) **TO** Inscribed Sphere (Nucleus of Atoms), **TO** Cube Vertices (Electrons-Position) , **TO** Circumscribed Sphere (The Electrons Orbits) for Equilibrium and for **transferring Information** and **Signals** .

8..[d].. The {TOBH} Mechanisms , from Charges In Two-Orbits-Pins & Drain.

Markos Atoms Bonding Bracket - Hook Mechanism . [Fig-2].

In Fig-9 , The $\ominus$ - Electron Precesses due to the Gravity and Produces Work which is stored in a second Orbit . This 2-Orbit equilibrium exists from the Existing $\ominus$ -Electron $\equiv$ DRAIN and from the New $\oplus$ -Nucleus $\equiv$ The PIN . The Second -Orbit called as the **Bracket – Hook -Mechanism** , with which Atoms and Compounds are Bonded .[99-104]

The { LNCS } Mechanisms , from **Spaces - Action** ON Quaternion - monads $\overline{AB}$ is the **Lagrange's Non Conservative Systems** for generalized coordinates , where the **System** is subjected to forces that do not have Potential or , $d(T + U) \equiv \delta W_{NPF} = 0$, as exists in the **Gravitational Force G** and from which are created $\rightarrow$ **The Elementary Particles** using the STPL – Mechanism , **and all Universe** using the ISTCCS – Mechanism $\leftarrow$ and **The DUAL $\rightarrow$ The Black - Holes $\leftarrow$** as equation $\delta W_{NPF} = \sum_{i=1}^N Q_i \cdot \delta q_i$, [Fig-3, 21 , 22].

8..[e].. MATERIAL-GEOMETRY & E-GEOMETRY IN PHYSICS and CHEMISTRY

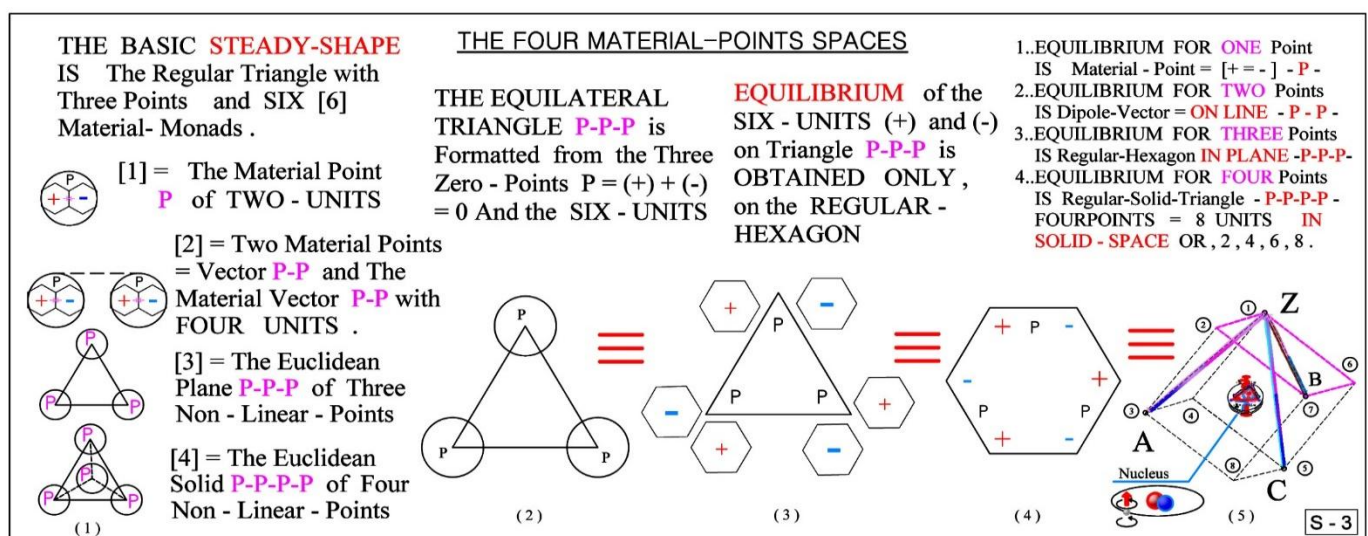


Figure – 5 - : The Relation between The [+] Spaces , [-] Anti-Spaces , [+ -] Sub-Spaces

of **Euclidean & Material-Geometry** in a circle (R,OA) of Three-Dimensions.
 In (1) , The Euclidean Geometry , E-G , is defined upon the **Number of Points**
 which can define the Specific Space **i.e.**
 The → **One-Point** in E-G is defining **One-Material-Point-Space** , the M-P-S .
 The → **Two-Points** are defining the **Line-Segment-Space** , the Line-M-P-S .
 The → **Three-Points** are defining the **Plane-Triangle-Space** , the Plane-M-P-S ..
 The → **Four-Points** are defining the **Volume Tetrahedron-Space** , the Volume-M-P-S .
 The → **Five-Points** are defining the Volume **Regular Pentahedron-Space** the SV-M-P-S.
 and so on , representing the **Steady-Stable-Regular** Geometrical-Formations.

The corresponding to the **Material-Geometry-Units** are for :

- 1.. One-Point → Two-Units , $[\oplus],[\ominus]$ with Dimension as , **the Material-Vector** $[\oplus \rightarrow \ominus]$
- 2.. Two-Points → Four-Units , $[\oplus],[\ominus]$ with One Dimension as , **the Material-Line**
- 3.. Three-Points → Six-Units , $[\oplus],[\ominus]$ with Two Dimension as , **the Material-Plane**
- 4.. Four-Points → Eight-Units , $[\oplus],[\ominus]$ with Three Dimension as **the Material-Volume**

Keeping **the Property of Edge-Points** to be the Vector $\oplus \rightarrow \ominus$ then **Bond is the Potential** to the **Unique-Steady-Stable-Regular** Material-Geometry-Formations.

In (2-3-4-5). All Units in Vectors follow Quaternion $q = [s + \bar{v}.i] = \overline{AB}$ Properties **i.e.**

$[\oplus] \rightarrow$ the Positive constituent of Quaternion at , Point A .

$[\ominus] \rightarrow$ the Negative constituent of Quaternion at , Point B .

$$\text{Pythagorean relation } [R]^2 = [a_n]^2 + \left[\frac{\lambda_n}{2}\right]^2 .$$

In Euclidean-Geometry E-vector $\overline{AB}$ carries **Point A to Point B** as , Vector $A \rightarrow B$

In Material-Geometry M-vector $\overline{AB}$ carries **Energy** , $\oplus$, from **Point A** to $\ominus$,

Energy of Point B as , $\oplus$ moves to $\ominus$, which is as **The Periodic - Pattern** .

Velocity $\bar{v}$ = The rate of change (m / s) in AB , **Therefore Units are Formatted**

according to the **Steady-Material-Geometry-Formations** which are :

The **Line-Vector in cave** , r ,which is the Simplest with **Double number of 4-Units**

The **Plane-Regular-Triangle in Orbits** , is the most Stable Shape of **6-Plane-Units**

The **Volume-Regular-Tetrahedron in Space** is the most Stable Shape of **8-Volume Units** , **the Cube** , which are the Crystals . The Regular n-Hedron are for all others .

This is the Why The Glue-Bond , **Bond is the Potential** , between the 6-Units formulates the **Regular-Hexagon** as the First **Steady - Plane - Formulation** in nature as in Fig-18-
Remark :

The **Constraint** , that Strain accompanying the Stresses s_x , s_y remains **Geometrically Continuous** is , because the Material Point is consisted of the two Units $\oplus$, $\ominus$.only

8..[a].. The { STPL } Physical Mechanisms : *The Six Triple Points Line Mechanism* .

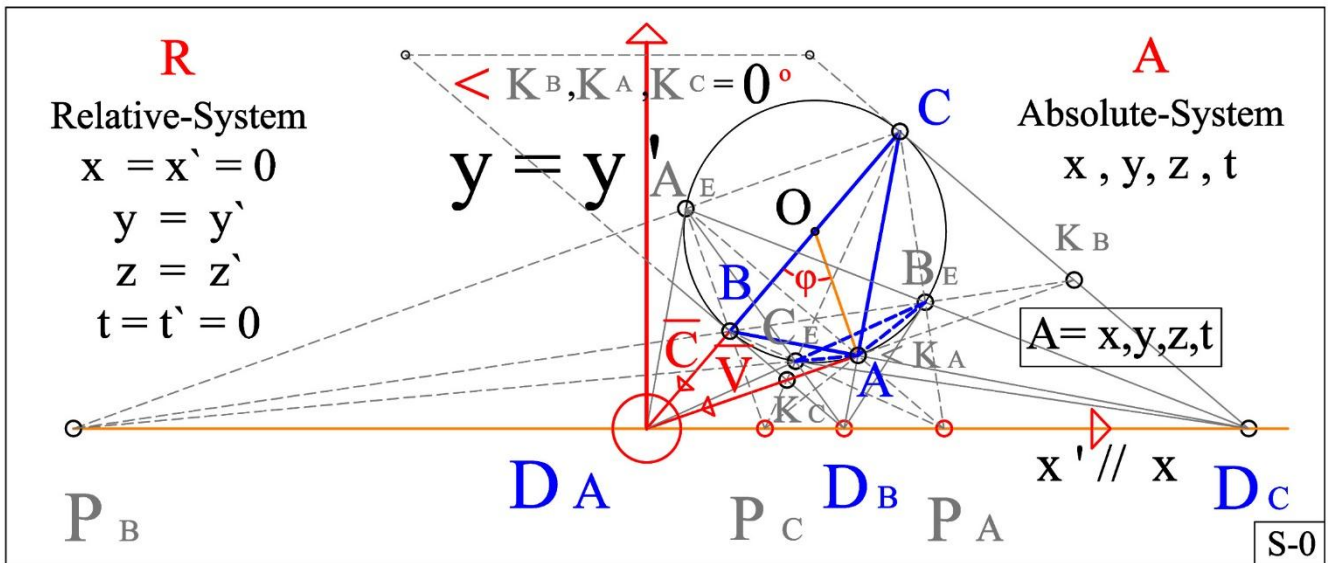


Figure -6- : The Physical Three – Phase - Mechanism , Producing The Fundamental Particles and the Primary Forces IN Absolute System $A \equiv R \cdot \gamma = R \cdot \sec \varphi$. [97]

In –Fig. ABC is any Right-angled Triangle at , $A = (\text{The-Space})$, $K_A K_B K_C = \text{Triangle}$ is the (Anti-Space) , $A_E B_E C_E = \text{Triangle}$ is the (Sub-Space) respectively. The Instantaneous Pole P of Rotation is off the Circle of diameter $|BC|$. The Poles of Rotation lie on $\{D_A - P_A\}$ Reference System .The **Reference System** $\{D_A - P_A\} \equiv [R]$ (x' , y' , z' , t') moves with velocity $\bar{v}$, Parallel to , $x - x'$, Axis with respect to the Fixed and Absolute System $\{D_A - O\} \equiv [S]$ -(x , y , z , t) .

The Geometrical expression of Lorentz factor $\gamma = \frac{c}{v}$, is the **$\sec \varphi = \gamma = OD_A : AD_A = \pm 1 / [\sqrt{1 - (v/c)^2}] = c / [\sqrt{c^2 - v^2}]$** , which is the Conchoidal of Nicomedes $\{s = a + b \cdot \sec \varphi\}$

and which acquires the material Angle , $\varphi = \frac{v}{\sqrt{c^2 - v^2}}$, i.e. issues $|A| \equiv |R| \cdot \gamma$

[a]-1...The [STPL] line is an Extreme - Spaces–Physical -Originating-Wave Pattern .

Extreme-Spaces (are the Extreme **Space-Triangles** $ABC \equiv \oplus$) meet **Anti-Spaces** (Extreme **Anti-Space-Triangles** , $K_A K_B K_C \equiv \ominus$) through The **Only-Gateway** which is the Circularly Charged + , 0 , - , or $[\oplus \oslash \ominus]$, $[\ominus \oslash \oplus]$, $[\oplus \ominus \oslash]$ Formulation which is a **Physical Geometrical formation - Mechanism called The [STPL] line** . Figures-[6 , 7]

→ **The [STPL] - line is a Physical – Mechanism as** , In-circle $\Rightarrow$ Triangle $\Rightarrow$ Ex-circle $\Rightarrow$ Ex - Triangle consisted from The Three Spaces , On which the Three Breakages $[s^2 = \oplus$, $2s^2 = \oslash$, $-s^2 = \ominus]$ are **Circularly- Charged** On the **Three – Extreme - Triangles** $\{A B C\}$, $\{K_A K_B K_C\}$, $\{A_E B_E C_E\} \leftarrow$ Producing The Energy-Quantities $\pm Q_{p-p}$. **This Circular-Charge from Breakages**

On The-Three -Triangles is the THRUST upon The Energy-Quantity Produced ,
for Each needed Circular Charge , **To Shake Off Quantity Q_{p-p} . The 3-Circular**
Charges correspond to the 3-Phase Rotors Produce the **3-Phase Physical-Current ,**
Since Common Circle exists on their Common - Sphere , THEN the Infinite
Straight- lines , Launch The E - Quantity Q_{p-p} OFF the Fundamental
Particles to all Universe and INTO The Planck`s Confinement Only .

i.e.

The Physical-Three-Phase- STPL Mechanism is the only **Absolute-System** [A] On which
circularly exist the **Relative-System** [R] $\equiv [\oplus \oslash \ominus] \cup [\ominus \oslash \oplus] \cup [\oplus \ominus \oslash]$ of
The three constituents $[\oplus \oslash \ominus]$, which Produces The Fundamental Particles and The
Existing Objectivity as $[A] \equiv [R] \cdot \gamma$, where $\gamma = \sec \varphi = \left[\frac{OD_A}{AD_A} \right] = \pm \left[\frac{1}{\sqrt{1-(v/c)^2}} \right] = \left[\frac{c}{\sqrt{c^2-v^2}} \right]$

The material Angle $\varphi = \frac{v}{\sqrt{c^2-v^2}}$, and $\{A \equiv D_A - O\} \equiv \{R \equiv D_A - P_A\} \cdot \gamma$, or $|A| \equiv |R| \cdot \gamma$

The Euclidean Geometry is the SPRING , for the Geometrical Relative -Velocities .
When the Points [A , B , C] , $[A_E, B_E, C_E]$, $[K_A, K_B, K_C]$ are Applied on the three lines
 $(K_A K_B, K_B K_C, K_C K_A)$, then the SIX Pairs of the corresponding lines , extended are
concurrent at Points P_A, P_B, P_C for the Triple Pairs of lines (The Pascal`s Perspectivity of
Points in Euclidean Geometry) , $[AA_E, BC_E, CB_E]$, $[BB_E, CA_E, AC_E]$, $[CC_E, AB_E, BA_E]$ and
at Points D_A, D_B, D_C for the Triple Pairs of Lines $[K_B K_C, BC, B_E C_E]$, $[K_A K_C, AC, A_E C_E]$
and $[K_A K_B, AB, A_E B_E]$, (Desargues`s Perspectivity of Points in Euclidean Geometry) and
all the 18 common Points lie on a Straight line The $\Rightarrow$ STPL Mechanism

This Mechanism Stabilizes the Nucleus Forces for the $\{\oplus - \text{Space} [A B C]\}$ and for
the $\{\ominus - \text{Anti-Space} [K_A K_B K_C]\}$ and this succeeded by **The Pascal`s** –launched caves
r through the **STPL Circuit** of the **Ptolemy`s** and the **Ceba`s Geometry theorem** for
The Complex Vector - Forces which are , **Circularly** and **Diagonally Equilibrium** i.e.

$\rightarrow$ STPL is The In-Sphere , Tetrahedron-Cube , Out-Sphere Physical Mechanism $\leftarrow$

For its 27-Conductors $\equiv$ Electric - Magnetic Fields , Space-Energy CPT is invariant .

8..[a]-2...The Explanation of The Absolute and Relative Motion. . Fig – 6

Because Properties In and On [STPL] line , are relative to the only one Equilibrium and also
Absolute System $\pm \Lambda = r \cdot m \bar{v} = r \cdot m \cdot \bar{\omega} \cdot r = m r^2 \cdot \bar{\omega}$, so exists that what is called Relativity.

Absolute System let it be the $[A] \equiv \{D_A - O\} \equiv$ The STPL mechanism , and as

Relative System (Reference , Affine) $[R] \equiv \{D_A - O\}$

The Absolute motion happens on $[A] \equiv \{D_A - O\}$ and on $[R] \equiv \{D_A - P_A\}$ of the two Systems .
It was shown , that in $\{D_A - O\}$, (x, y, z, t) , System $\bar{c}, \bar{v}$, vectors are isochrones i.e. Period
 $T = L / V = 2\pi R / V = 2\pi / [c/r_c] = 2\pi / [v/r_v] \rightarrow c/r_c = v/r_v \rightarrow c \cdot r_v = v \cdot r_c$, where r_v, r_c are the
radius of their intrinsic rolling circles . This relation is Geometrically expressed as ,

$$\sec \varphi = OD_A : AD_A = \gamma = \frac{c}{v} = \pm 1 / [\sqrt{1-(v/c)^2}] = c / [\sqrt{c^2 - v^2}] , \text{ and it is a}$$

Geometrical Cycloid Property equal to Lorentz's γ factor. The Newton's laws are true into the Reference System $[R] \equiv \{D_A - P_A\}$ as follows Proof,

Considering $\{D_A - O\}, (x, y, z, t)$, as the **Fixed frame** $[A]$ of the coordinate System in the Gravity cave ($d = 2r$), and Point $A = (x, y, z)$ is **fixed on circle (O, OA)** which is Rotating with a velocity $\bar{v} = \bar{\omega} r$, of angular velocity $\bar{\omega} = 2\pi/T = 2\pi f$, in where Period of Rotation T , **is then also constant**.

Since the acceleration, a , for a Quaternion $z = (s + \bar{v} \cdot i)$ is $a = [d^2z/dt^2] = (ds/dt \cdot \bar{v} \cdot i) + s \cdot d(\bar{v} \cdot i)/dt = 0 + s \cdot d(\bar{\omega} r)/dt = 0 + 0$, and this because $\bar{\omega}$ is constant for both therefore **velocity $\bar{v} = \text{constant}$ also, i.e. $\rightarrow$**

The Centrifugal velocity of the Absolute System $[A]$ is any constant, $\bar{c}$, and this because Angular velocity, $\bar{\omega}$, is constant also and thus, is not needed to accept A priori this constancy of velocity $\bar{c} = 0 \rightarrow \bar{v} \rightarrow \infty$ on circle (O, OA) and to exist In Frame, (It has been Proved that this velocity $\bar{v} \equiv \pm \sigma \Phi$) so,

Automatically is defined the conversion factor $t = \text{time}$, between the conventional time units (second) and the length units (meter = $A \cdot D_A$) or as $\bar{c} \cdot r_v = \bar{v} \cdot r_c$, $\rightarrow \bar{c}(v)(T/2\pi) = \bar{v}(c)(T/2\pi) \rightarrow \bar{c}(v)/\bar{v} = \bar{v}(c)/\bar{v}$, which is happening with the same $\bar{v}$, without setting any restrictions, in contradiction to the General Relativity which is an axiom a priori. Additional,

This is the why that the conversion factor, $t = \text{time}$, has not any essence in all universe but it is only a meter of changes in all Relative Systems. STPL Mechanism is the only Absolute System On which circularly exist $[\oplus \otimes \ominus], [\ominus \otimes \oplus], [\oplus \ominus \otimes]$, the three constituents, $[\oplus \otimes \ominus]$, and Originates this Existing - Objective - Cosmos.

This **circularity** of the constitutes exist because of their Natural frequency of vibrations.

Because [STPL] line of the fixed frame becomes from this System $[A]$, then this relative Frame $[R]$ is common to the fixed one (common D_A) and let it be $[R] \equiv (x', y', z', t')$.

From figure, $\sin \phi = (\bar{v} / \bar{c})$, meaning that the Relative System, $[R] \equiv (x', y', z', t')$, (the Affine Frame) is the Projection of Absolute Frame $[A] \equiv \{D_A - O\} - (x, y, z, t)$ where exists as the Simultaneity for all motions where issues,

$$[R] \equiv \{D_A - A\} \equiv [(x', y', z', t')],$$

$$[A] \equiv \{D_A - O\} \equiv (x, y, z, t) = [R] \cdot \gamma \equiv (x', y', z', t') \cdot \gamma$$

Considering Point D_A as the common center and [STPL] as the x-x axis of the two Systems, then becomes $D_A (x, y=y', z=z', t)$ and for all linear Systems $D_A (x', y'=y, z'=z, t')$

This Specific state of constancy, i.e., the Centrifugal velocity of Absolute System $[A]$ to be a constant $\bar{c}$, and the rectilinear motion with respect to one another defines the natural Inertial frames, and because of uniformity of Space and motion, therefore occupies the same meter for their changes, (i.e. the Time).

Since also Points O, A remove to Point D_A isochrones by their intrinsic Property motion which are $\rightarrow$ their wavelengths are a Stationary wave in cycloid $\leftarrow$ following Lorentz's factor γ , then this following happens also to all Frames which make this motion, and so issues for all the System relations $\{D_A - O\} = \gamma \cdot \{D_A - A\}$. Fig-6

On this Relative System $D_A (x', y'=y, z'=z, t')$ are conveyed, the Breakages $[\pm (wr)^2, 2(wr)^2]$ of (O, OA) circle after the colliding with the rotating velocity $\bar{v} = \bar{\omega} \cdot r$ of the $[A]$ System, and are the Fundamental Particles, Fermions and Bosons, or by escaping consisting the Rest Field and Gravity, or Dark matter and Dark Energy as analytically was shown. [39]

The Angular-Momentum Ellipsoid Nibs on $\rightarrow \{ \text{Herpolhode and Polhode Ellipsoids} \}$. **In any Rotational motion**, $\bar{B}x\bar{w}$ are Constants and **The Angular-velocity-vector** $\bar{w}$, describes the Ellipsoid of Angular Velocity and its nib describes a Cone of which Plane-Base is Fixed . Simultaneously **The Angular-Momentum** $\bar{B}$ describes the Ellipsoid of Angular Momentum and its nib describes a Cone also of which Plane-Base is also Fixed . **The Nib of Angular - velocity-vector**, $\bar{w}$, describes on the Tangential-Plane of the Angular-Momentum Ellipsoid, **the Polhode**, while **The Nib of Angular-Momentum** $\bar{B}$, describes on the Tangential-Plane, of the Angular – Velocity - Ellipsoid, **the Herpolhode** . or **The Fixed Tangential-Planes on $\bar{w}$, $\bar{B}$ nibs** which are alternately Perpendicular to $\bar{B}$, and $\bar{w}$, common Central Axes of Rotation, **or The Angular-Momentum Ellipsoid Nibs, in Herpolhode and on Polhode Ellipsoids** as $\rightarrow$ **Electro magnetic Fields** $\leftarrow$ and which are Space-Energy CPT invariants .

The moving Energy-Vector is $|\oplus Q \uparrow \overline{AK_A}| = |\downarrow| \rightarrow \{ \text{The Electron-Unit-Charge} \}$, and

since Charges correspond to the 3-Phase Rotors is, **The Unit-Charge Complex-Vector**.

Remarks :

Material Point A $\equiv \pm |(\bar{w}.r)^2|$ of the Fixed System $\{D_A - O\}$ travels with velocity $\bar{v}$ at Point D_A , so geometrical distance $A.D_A$ in the Relative System $[R] \equiv \{D_A - P_A\}$ is $A.D_A = x' + \bar{v} t'$, and because of the **Isochrones motion** in the **Fixed System** $[A] \equiv \{D_A - O\}$, then holds ,

$$x = (x' + \bar{v}.t') . \gamma \text{ or } x = (x' + \bar{v}.t') . \gamma \equiv [x' + \bar{v}.t'] / [\sqrt{1 - (v/c)^2}] \dots\dots (a)$$

Inversely, by using (a), where $[A] \equiv \{D_A - A\} \equiv \{D_A - O\} / \gamma$, then if Material Point A of the Fixed - System $\{D_A - O\}$ travels with velocity $\bar{v}$ at Point D_A , where then the geometrical distance AD_A in the Fixed System is ,

$[A] \equiv \{D_A - O\}$ is $\rightarrow A.D_A = x - \bar{v}.t$ and in the Relative System ,

$[R] \equiv \{D_A - P_A\}$ is $\rightarrow x' = (x - v t) . \gamma = [x - v t] : [\sqrt{1 - (v/c)^2}] \dots\dots (b)$ Fig-6

An application to Gravity [72] and Photon [95] ,

Because Gravitational Force is equal to $\rightarrow$ the Geometric-Resultant of the light-velocity c , acting on **Electron-Unit-Charge** $\bar{q} \leftarrow$ or is , $G = c \sqrt{2} \bar{q}$, then Electron - Charge is ,

$$\bar{q} = \frac{G}{c \sqrt{2}} = \frac{6,680561.10^{-11}}{1,41429.[2,9979346.10^8]} = 1,58.10^{-19} \text{ Coulomb , which is the known Coulomb's}$$

charge Quantity . From g_L, k_L Universal constants the Newton's Gravitational constant

$$\text{Force } G \equiv g.k_E \equiv g.[g_L k_L] \equiv \left[\frac{T^2 P}{a^3} \right]. [g_L k_L] \equiv 9,808238 * 6,8116.10^{-12} \equiv 6,68056.10^{-11} \frac{m^3}{Ns^2}$$

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 $\equiv \left(\frac{v}{2\pi r} \right) . [\sigma + \sigma \Phi] =$

$$\bar{v} . \left[\frac{\sigma}{2\pi r} + \frac{\sigma \Phi}{2\pi r} \right] \equiv \bar{v} . \left[\bar{f}_n \right] + f_n \equiv \text{Moving - Storage} \rightarrow [\bar{v} . \bar{f}_n] \leftarrow + \text{Moving-Frequency}$$

$\rightarrow [\bar{v}.f_n] \leftarrow \equiv$ The Material-Point . i.e.

The Energy Produced in **Photon-Cave** is consisted of **Two-moving-Storages**, that travel as

Wave $[\bar{v}.f_n] \rightarrow [\bar{v} . \bar{f}_n] \rightarrow [\bar{v} = \bar{c} = \lambda \frac{f}{\phi}] \rightarrow [S \equiv EM-R \equiv f_{1=N}, f_2, f_3, f_D, f_n = w^2]$, and as

Particle $\rightarrow [f_1 = (E^2 + H^2) = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{n\bar{B}}{\pi^2 r^4}] \rightarrow \{W \equiv EM-R \equiv [\epsilon E^2 + \mu B^2] = 2.\lambda c.\sin.2\phi\}$ and is

The Duality of the **Energy-Storage** $S \equiv \{ [\oplus \leftarrow r \rightarrow \ominus] + \text{Motion } M . [87-89] \}$. The three

elements $[\Sigma = n . h] \Rightarrow [s^2 = \oplus, 2s^2 = \emptyset, -s^2 = \ominus]$ of This **{STPL}-Mechanism** formulate the **3-Knots Figures** ($n = 3$) and determinates the **Elementary-Particles Vector Mould** .

8.[a]-3..The circularly existing Unit-Charge **Complex-Vector** $[\oplus \oslash \ominus], [\ominus \oslash \oplus], [\oplus \ominus \oslash]$,

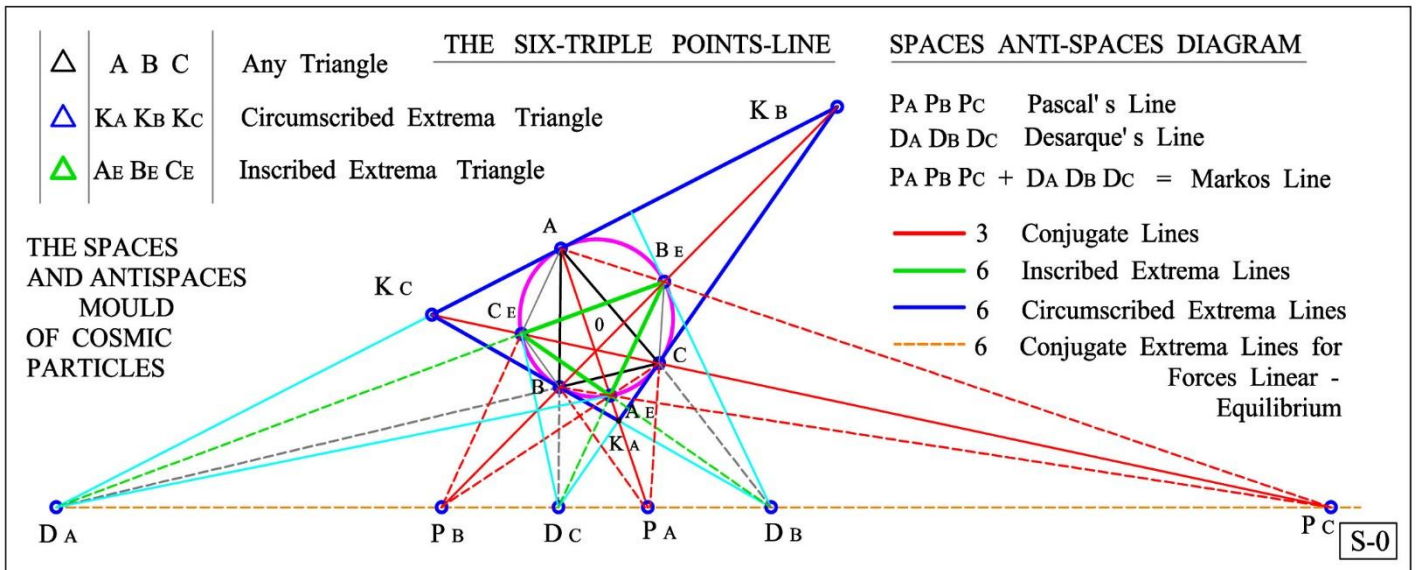


Figure - 7 - : The , STPL , Mechanism is the Generator of the Cosmic-Particles .

The Unit-Charge is as **Complex-Vector Velocity Thrust** ($\bar{v} = \bar{w}.r$) ,

with and from the **Breakages** $\rightarrow \bar{z} * \bar{z} = (s + \bar{v}.i)^2 = s^2 + [\bar{v}]^2 + 2.s\bar{v}.i$.

7-a = The Positive Breakage Quantity $Q \equiv [\oplus \oslash \ominus]$, for Leptons and Quarks .

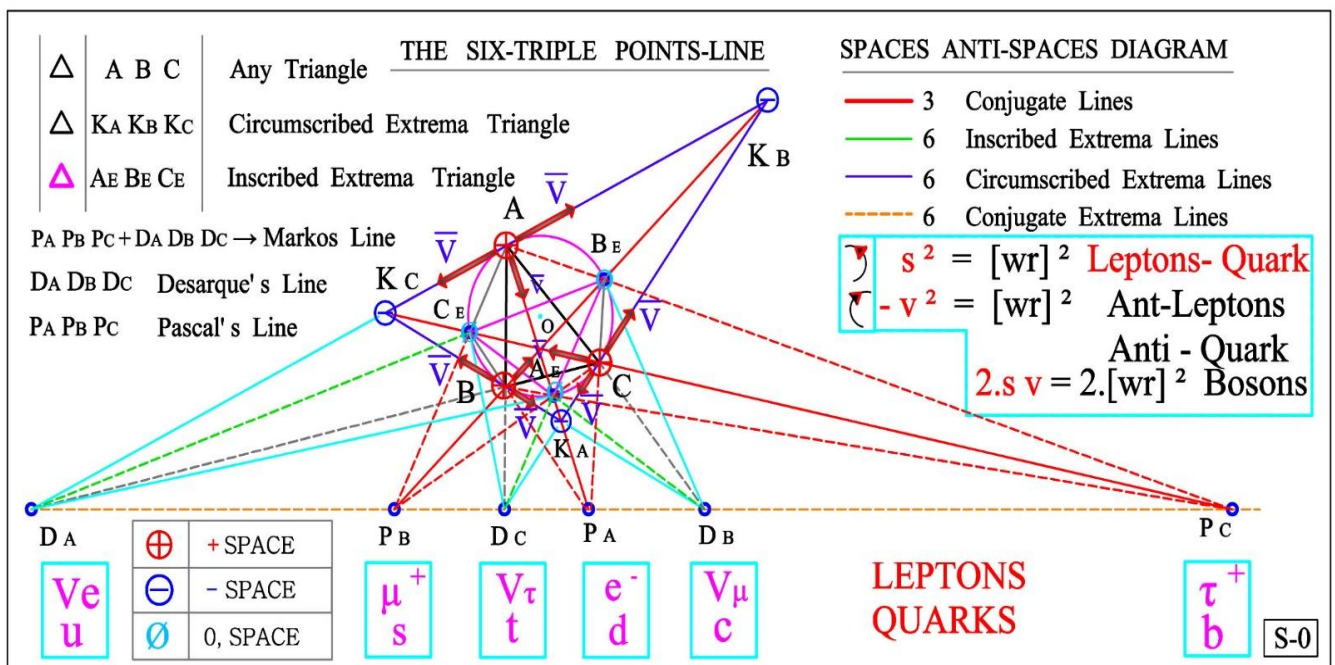


Figure -7- a : The , STPL , Mechanism is the Generator of the Cosmic-Particles .

The Unit-Charge is as **Complex-Vector Velocity Thrust** ($\bar{v} = \bar{w}.r$) , with

and from the **Breakages** $\rightarrow \bar{z} * \bar{z} = (s + \bar{v}.i)^2 = s^2 + [\bar{v}]^2 + 2.s\bar{v}.i$. **V-Trust** $\equiv [\oplus \oslash \ominus]$

7-b = The Positive Breakage Quantity $Q \equiv [\ominus \oslash \oplus]$, for Anti-Leptons , Anti-Quarks .

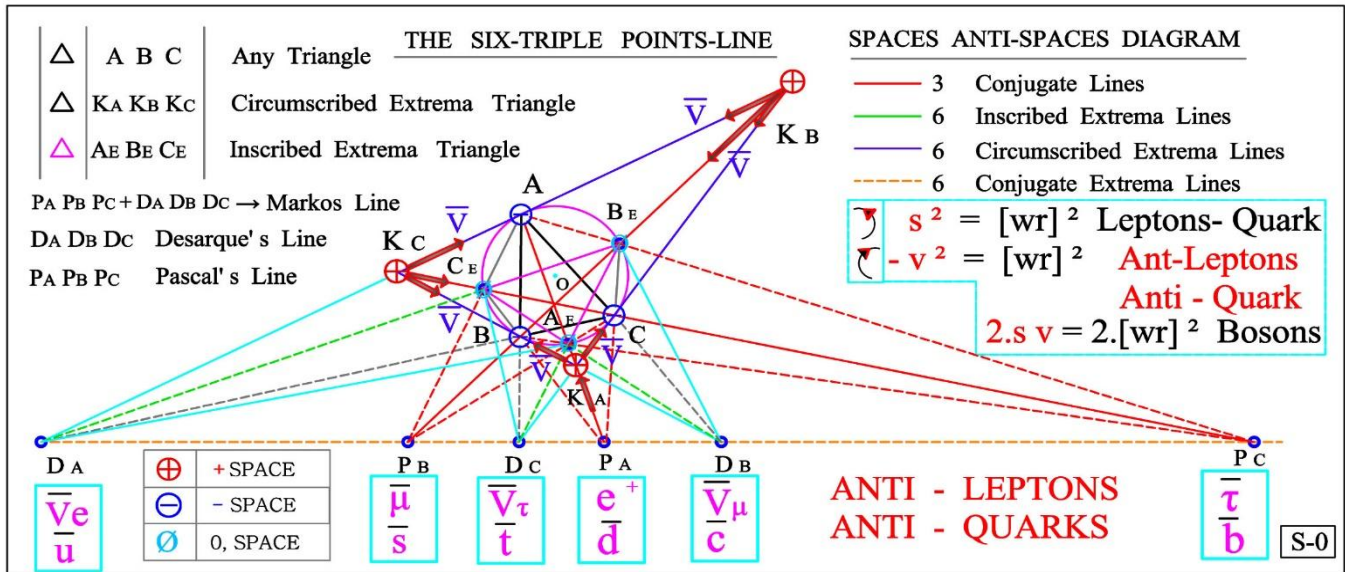


Figure -7- b : The , STPL , Mechanism is the Generator of the Cosmic-Particles .

The Unit-Charge is as Complex-Vector Velocity Thrust ($\bar{v} = \bar{w}.r$) , with

and from the Breakages $\rightarrow \vec{z} * \vec{z} = (s + \bar{v}.i)^2 = s^2 + [\bar{v}]^2 + 2.s\bar{v}.i$. **V - Trust** $\equiv [\ominus \oslash \oplus]$

7-c = The Positive Breakage Quantity $Q \equiv [\oplus \ominus \oslash]$, for Bosons Origination .

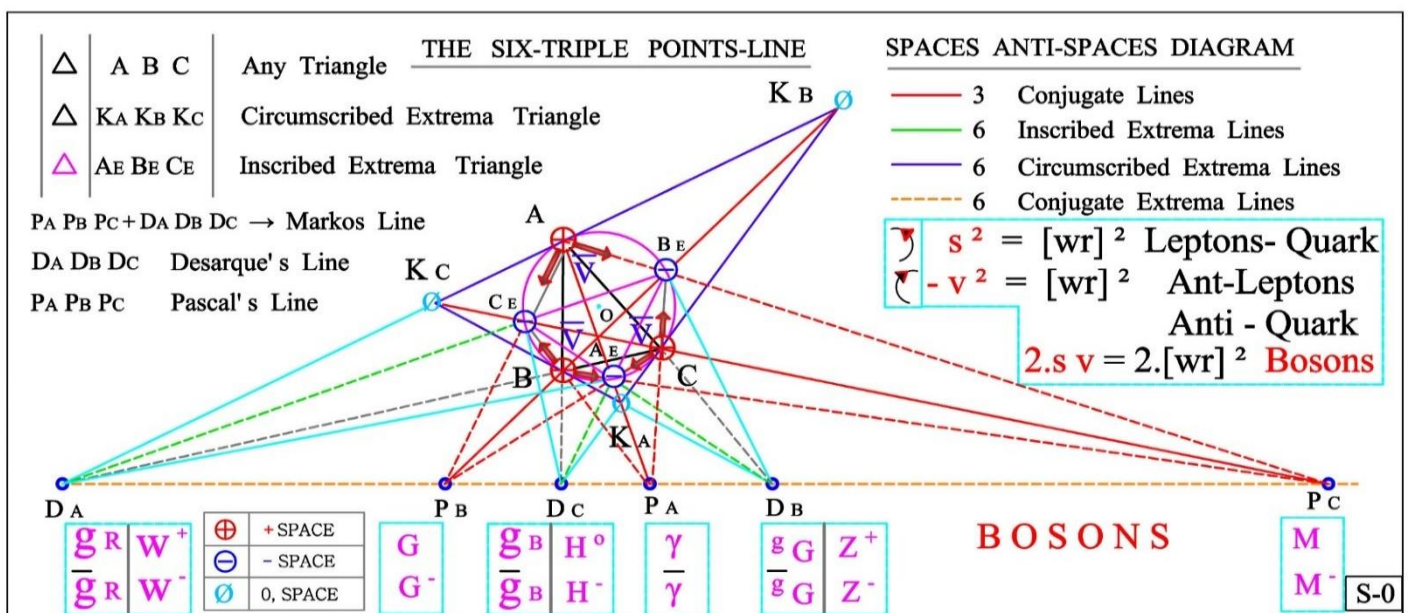


Figure -7- c : The , STPL , Mechanism is the Generator of the Cosmic-Particles .

The Unit-Charge is as Complex-Vector Velocity Thrust ($\bar{v} = \bar{w}.r$) , with

and from the Breakages $\rightarrow \vec{z} * \vec{z} = (s + \bar{v}.i)^2 = s^2 + [\bar{v}]^2 + 2.s\bar{v}.i$. **V - Trust** $\equiv [\oplus \ominus \oslash]$,

Since the Primary motion $\equiv [PM]$ exist from the three Breakages only , and STPL is the $n=3$ Mechanism creating Elementary Particles $\Rightarrow [n\text{-Knots}=3]$ in $V_{GRA} = 7,593.10^{35} V$.

8..[b].. The { TVPM } Physical Mechanisms : Two - Vectors Three - Poles Mechanism .

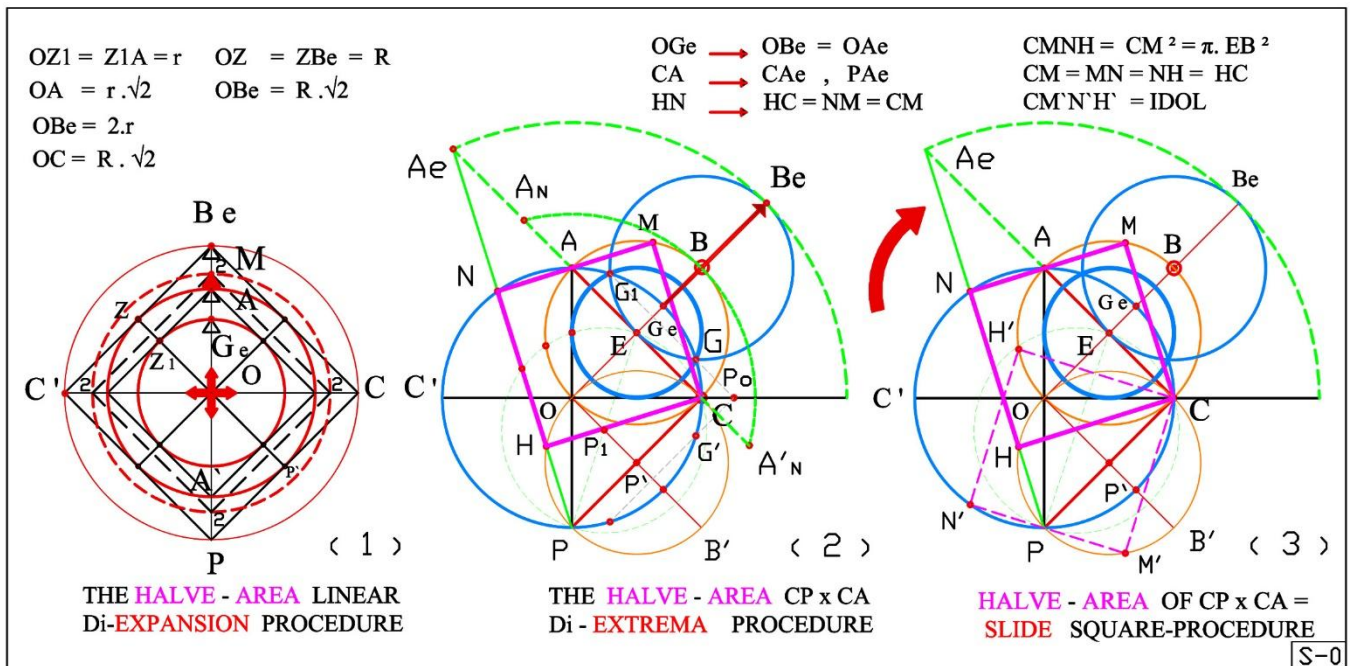


Figure -8- a : The Two-Perpendicular Complex-Vectors , $CA \perp CP$, Slide on (O,OA) circle , and through the Three Poles , A, C, P , carry the Stress σ , of Square , $ACPC'$, to the Two Equal and Opposite Squares $|COAB|, |COPB'|$ for **Halve Area - Stress - Conservation**

b-1... The Conservation of Energy IN Geometry - Mechanism : [62]

In(1)...On AA' diameter circle (O,OA) exists the Inscribed -Square $OA \times OA = OA^2$, and the Circumscribed Square $CP \times CP = CP^2$. Since Vector $CP = [OC = OA] \cdot \sqrt{2}$, therefore the Inscribed Square is **Halve** the Circumscribed . The same to the Circles $\pi \left[\frac{CP}{\sqrt{2}} \right]^2 = \pi [CP]^2 = \pi [OA \cdot \sqrt{2}]^2 = 2 \cdot \pi [OA]^2$. **This Linear Expansion** of Archimedes-Circles and Squares Passes from a Point M , such that $\pi r^2 = CMNH$ Square . [47 - 51]

In(2)... On Two-Perpendicular Vectors , $CA \perp CP$, Point C' Slides on $(O,OA = OP)$ circle forming the $CAC'P$ to $CMNH$ to $CBAO$ Squares with Prior of (1) Properties . This **Sliding-Rotating Method** Is the **Markos { 2 - Vectors 3 - Poles Mechanism }** which Circles and Squares as Areas Pass from the Point M determined by the Position A_e , such that $\pi r^2 = CMNH$ Square .

The Squaring of the circle $\pi \left[\frac{CA}{\sqrt{2}} \right]^2 = CM^2$. [47 - 51 - 98A]

In(3)... If the Two-Perpendicular Vectors **Are Conductors** with Prior Properties then Square $CAC'P$ to $CMNH$ to $CBAO$ Square , are a **Rotating and Changing-Squares-System** , $CP^2 \uparrow = |::|, \cup, \rightarrow$ To **2-Half** and Equal Area Squares $CB^2 = \otimes = \left[\oplus \frac{::}{2} + \ominus \frac{::}{2} \right] CB'^2$, by turns in $OABC \perp OPB'C$ Planes , which Equilibrium and Consist , The Neutral-Space . Placing **Stress** in Squares becomes the Physical World as , **Physics Mechanics** and **Chemistry** , by **Conservation of Energy** as **Stresses in Areas** .

As in Electricity , The flow of a current in an Conductor , $CA = d$, Represents the created around the Conductor by the Circular-Lines of Forces , **Magnetic field** , **The flow of $\oplus \rightarrow \ominus$ -Charge in d**

Conductor , is the Torsional Force $\vec{T}_F = \vec{v}.r = \vec{w}.r^2 = 2\pi f. r^2 = \sigma \Phi r \dots\dots(1)$. Since edge-velocities $\bar{v}_C = \bar{v}_A = 0$, therefore $CA = d = \frac{1}{2} (aT^2)$ and **Acceleration** , $a = 2d / T^2 = 2d.f^2$, and then the velocities

diagram is Energy-Triangle $\rightarrow v. [\Delta-CAP] = v. [\frac{1}{2} (2d. |\vec{v}|)] = v. [d w r] = v d. 2\pi f. r = v. [\sigma \Phi d] \dots(2)$

The Current flow in Electric-Field $\vec{E}_{CAP}$ of CAP Plane is transported into the Perpendicular to CA

axis Opposite Magnetic-Field $\vec{M}_{PA}$ in PA-Plane due to the **Force** $\vec{T}_F = \vec{v}.r = I = \frac{2\pi r}{\mu} \vec{M}_{PA} = \sigma \Phi r \dots(3)$

Stress $\sigma = \frac{\text{Force}}{\text{Area}} = \frac{G}{v.v} = \frac{G}{\sqrt{2}.c} = \text{The } \bar{q} \text{ Electron Charge} = \frac{G}{\sqrt{2}.c} = \frac{6,6736923.10^{-11}}{1,41429.2,9979346.10^8} = 1,574.10^{-19} \text{ C}$

The Spin of cave , r , is Equal to the Angular-momentum-Vector $\rightarrow \text{Spin} \equiv |\vec{B}| \equiv r \sigma \Phi \leftarrow$
which contains and it is the Golden-Radius-frequency Φ as Pressure , σ , in cave r .

i.e. [a] The Forces are Spread on Surfaces as Stresses σ , and in case of Area = 0 then are

Spread on the Velocity – square – Surfaces , and for the light c , on Resultant $\sqrt{2}.c$.

b-2... For Conductor-Case which is an **Screw-motion** where a Torque is created in Perpendicular

Plane of Con-axis . Markos $\{ \text{2-Vector 3-Poles Rotating Mechanism} \}, \{ \begin{matrix} -A & \vdots & \cup \\ +C \uparrow & [\oplus \frac{\ddot{\cdot}}{2} + \ominus \frac{\ddot{\cdot}}{2}] P \end{matrix} \}$
carries motion $(+) \rightarrow (-)$ from **Point A through an Perpendicular-Conductor CA** , to **Point B** , into
an Changeable and Rotating-Squares-System , $PA \uparrow = |\ddot{\cdot}|, \cup, \rightarrow$ To 2-Half and equal Area Squares
 $CB = \mathbb{X} = [\oplus \frac{\ddot{\cdot}}{2} + \ominus \frac{\ddot{\cdot}}{2}] CB'$, by turns in $OABC \perp OPB'C$ Planes which Equilibrium $[\oplus \frac{\ddot{\cdot}}{2} + \ominus \frac{\ddot{\cdot}}{2}] = 0$
(The Neutral-Space) .

b-3..For the motion of the $\oplus \rightarrow \ominus$ -Charge of any Conductor $d = CA$ becomes **Stress - σ** in length d

Motion is created in Conductors $d \equiv [\oplus \leftarrow 2r \rightarrow \ominus]$ following the $[\oplus \leftrightarrow \ominus]$ Interactions . This
Motion is Conserved and kept in Caves as **Electric and Magnetic fields** and as frequencies which
are conserved in them when the **Space-Points** become Energy-Conductors and Energy $k = \frac{2\pi}{\lambda} = \frac{2\pi}{d}$.

b-4...The in caves Energy Imports are in Squares which equilibrium through $MPM \equiv$ Markos
of $\ominus$ **Charge** in an Electric-field $\vec{E}_F$. For Velocity-Vectors at Point C issues , $\vec{CP} = \vec{CA}$ and $\vec{CP} \perp$
 $\vec{CA}$ and the **Resultant is the Velocity-Vector** $\vec{CC}_{AP}$, Electric-Vector $= \frac{\pi\sigma\Phi}{4}[d]^2$, Magnetic-Vector $=$
 $\frac{\pi\sigma\Phi}{4}[d]^2$. **Similarly** on Material Vector $\vec{CP}$ carries the **Maximum Conjugate-Force** $CC' = \vec{CK}_A$ from
E-Square CP^2 to two Equal and Opposite squares – $CB'PO$, $+CBAO$ from $CAC'P \equiv \frac{+COAB}{-COPB}[\mathbb{X}]$ which
Rest in the Circumscribed circle $\pi.OA^2 = 2\pi(\frac{OA}{\sqrt{2}})^2$, to the **Screwdriver** Inscribed to , $\vec{CA}$, $\vec{CD}$ circles ,
 $\pi[\frac{CA^2}{4}]$, $\pi[\frac{CP^2}{4}]$. Motion to Rest , Before the Halve areas , circles Pass through the equal to **CMNH**

Square where exist Quadrature at **Position M** and to Half-Area circle $\pi[\frac{OB}{\sqrt{2}}]^2 = \pi[\frac{OB^2}{2}]$ at **Position M**

b-5..This Property of Any Two Equal and Perpendicular Vectors at Point C , issues for any Point
 N , which has a **Screwdriver –Material - Vector- CN** .

The Quantization of E-Geometry to its Dimensional-moulds :

The- One , Two , Three Vectors and Three - Poles Mechanism .

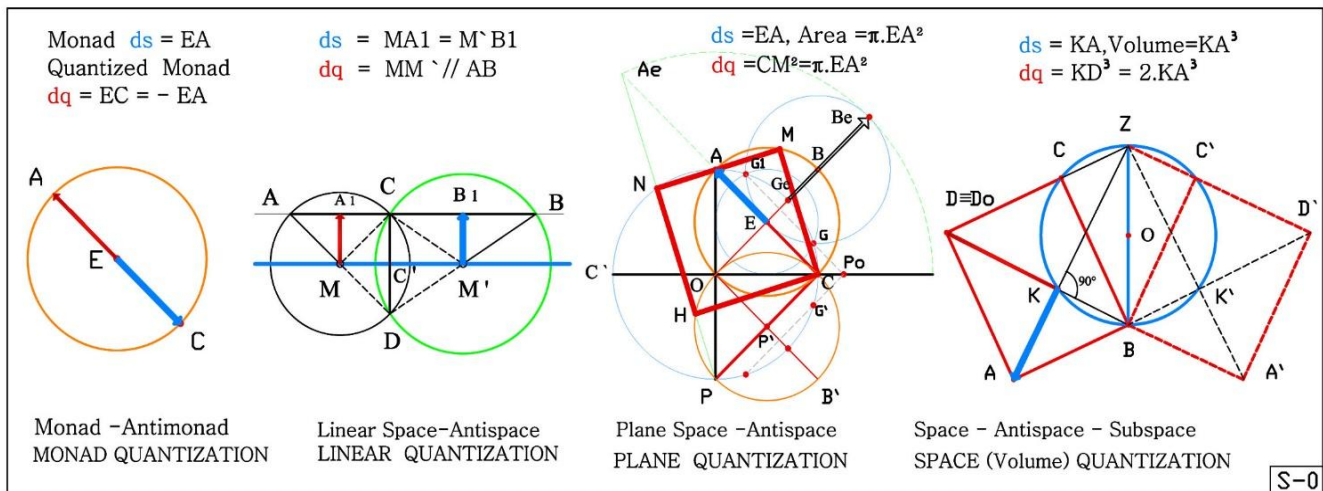


Figure -8 - b : The Quantization of E-Geometry to its moulds , The Point , the Linear , the Plane , the Space (volume) Mould for E-geometry Quantization , to Opposite.

b-6...For (1) monad EA , to Antimonad EC-For (2) AB line to Parallel line MM' - For (3) CE Radius to the CM Square Segment - For (4) KA Segment to the KD Cube Segment . From (3) the Two-Perpendicular Vectors , $CA \perp CP$, Slide on (O,OA) circle and through the Three Poles , A , C , P , carry the Stress σ , of Square ACPC , To the Two Equal and Opposite Squares $|COAB|$, $|COPB'|$ for still to the **Halve Area - Stress - Conservation** .

For the **Rotating Square CMNH** exist as **Upper-Still-State** the Square **CAC'P** and as **Lower - Still-State** the Square **CBAO** , related $[CAC'P] = 2.[CBAO]$.

In(3)..On Two-Perpendicular Vectors , $CA \perp CP$, Point C' Slides on (O,OA = OP) circle forming the CAC'P to CMNH to CBAO Squares with Prior of (1) Properties .This **Sliding Rotating Method** is **Markos { 2-Vectors 3-Poles Mechanism }** which Circles and Squares as Areas Pass from the Point **M** determined by Position **A_e** , such that issues $\pi r^2 = CMNH$ Square .The Squaring of the circle is $\pi \left[\frac{CA}{\sqrt{2}}\right]^2 = CM^2 = |CM'|^2$, Fig-15, [47-51] , [62]

Remarks :

- 1... The **Two - Vectors Three - Poles Mechanism** is a Mechanism from Two $\perp$ Vectors in Geometry , where the Action of Energy on their Vectors Square and is **Conserved** .
- 2... The Mechanism is a **Rotating and Changing-Squares System** , on a Circle which changes The Inscribed to the circle Square , changes to 2 -Halve Opposite and equal Squares .The same Procedure issues for the **Inscribed and Circumscribed circles** to the Circle .
- 3... Since from **Wave-Action of Spaces** issues $Z_-^n \times Z_+^n = [2R]^{2n} \cdot e^{i.2n\theta}$, this means that ,The **conservation of Energy = Work** , between the Spaces and the Anti-Spaces happens by **Doubling the number n** , of the Vertices of the Regular Polygon . i.e. The Surplus energy is stored in 2.n vertices , and on $\lambda_{2n} = \sqrt{2R^2 - R\sqrt{4R^2 - \lambda_n^2}}$ Sides , where then Energy is divided and spread on the double number of the Polygon Sides.

8..[c].. The { TCIC } Mechanism : The *Tetrahedron , the Cube , and the Inscribed – Circumscribed to the Circle Mechanism* .

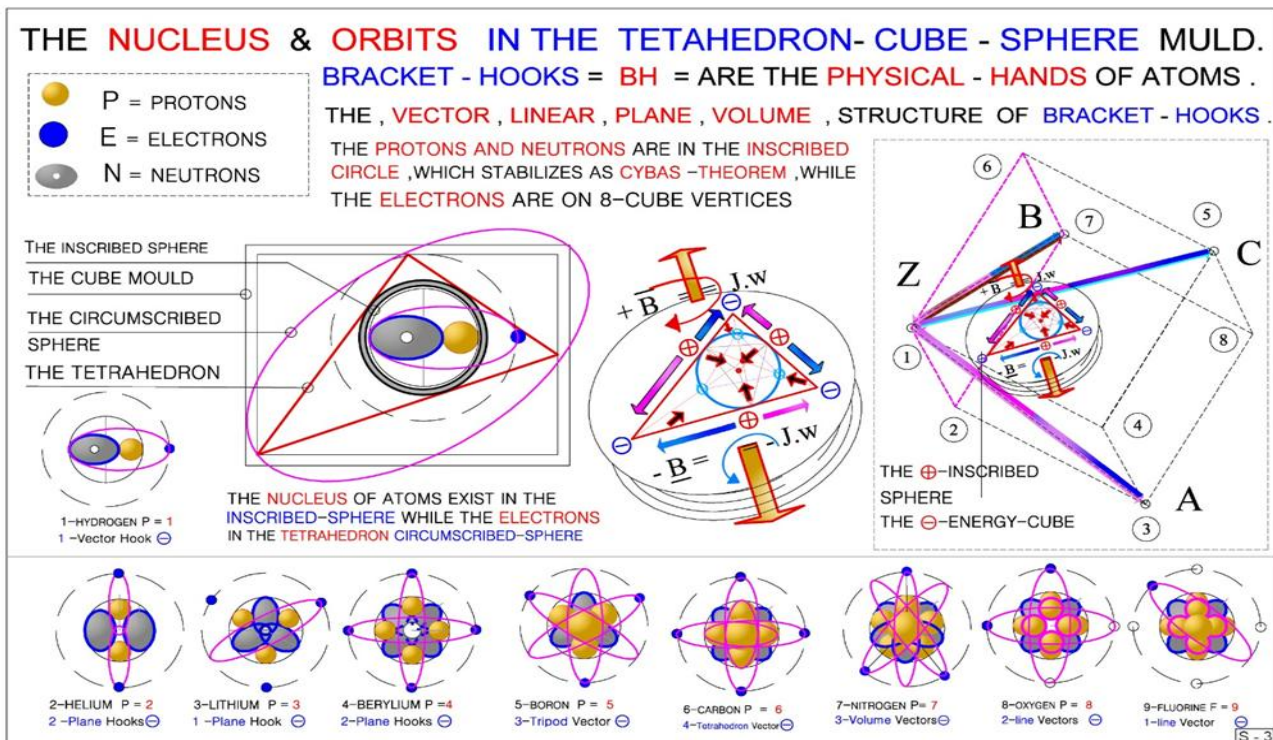


Figure - 9- : The Active-Conductors of Elements and The Space , Anti-Space formation .

In Figure **ZA , ZB , ZC** , are the three **Conductors** on the Three Diagonals of Cube with 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , Vertices . At Point **Z** is Acting a **Complex-Vector $\bar{Z}$** and which transform the Vibration to the three conductors in **Space Pattern** . It was shown [61] that The Stresses of Complex-Vectors are Spread in Surfaces only for Still states.

The number of Moulds of Stationary-States are $\rightarrow 2^{n=1-4} \text{ Points} \equiv 2, 4, 8, 16 \equiv 4\text{-Types} \leftarrow$
 (2) = For the Proton = Nucleus , (4) = Tetrahedron , (8) = Cube = The Neutral-caves , (16) = The Double Number of Vertices for the 8-Stationary Neutral-caves and called **TCIC-Pattern**

$\rightarrow \{ \text{The Sphere - IN TETRAHEDRON - IN Cube , IN External Sphere} \} \leftarrow$

The Active-Conductors of Elements and The Space , Anti-Space formation .

Point , in E-geometry is considered nothing , without Position and direction while in , **MG $\equiv$ Material - Geometry** [1 Positive $\oplus$ and 1 Negative $\ominus$] . From Nothing (i.e. the Point **Z**) to Existence (i.e. to be another Spherical Point **P**) issues the **Zero Virtual work law** ,where zero Work is the equilibrium of two Equal and Opposite forces on Points and is [$\oplus - d - \ominus$] . Thus Space [**S**] is **Z-Point $\oplus$** , Anti-space **P-Point $\ominus$** , and **d = ZP** = The Conductor of Points Since ,**The Position and the Number of Points**, create the Spaces so the Only Three elements are $\rightarrow \{ \oplus , [\oplus \leftrightarrow \ominus] , \ominus \} \equiv [+ , 0 , -] \leftarrow$ for **Material Geometry exist linearly** in moulds .

The Stresses of Complex-Vectors **Act** on a Surface , **A circle of Sphere** , between the Sub Units **Axially** and **Rotationally** following Ptolemy's and Cebas Theorem of Equilibrium. The Space Anti-Space and , Neutral-Space Conductors are self-Sustaining .

Stability :

The number of Moulds of **Stationary-States** are as $\rightarrow 2^{n=1-4 \text{ Points}} \equiv 2, 4, 8, 16 \equiv \mathbf{4\text{-Types}}$ ←
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 Atoms Structure, follows the
Sustainability of the Spaces and Anti-spaces. Since Space-Energy Structures follow the
M-Geometry Stability these follow the Mould of Spaces $2^{n=3} = 8$ Elements which is
The-Cube as shown before . Instances ,

- 1.. In the constant , **Hydrogen Conservative-Cave-System** , which creates only closed Orbit
shapes as Circles , Ellipses and Eight-shape , ∞ , are Placed the above elements , $\pi g \equiv$
Energy $\equiv [\text{meter of area} * \text{meter of force}] \equiv \text{Electrons on Orbits}$, and also the
Unit-Space $\equiv \text{Massive-Complex-Unit-Space} \equiv \rightarrow [+ \vec{v}.s^2] \leftarrow$ jointed through the Neutral
Material-Points [(+) $\leftrightarrow$ (-)] with the **Strong-force** $\rightarrow S_F = h . f_n \equiv h . \{ [S \equiv B_p \equiv$

$$\mathbf{EM-R} \equiv f_{1=N}, f_2, f_3, f_D, f_n \equiv h.n \frac{(1+\sqrt{5})\sigma}{2\pi r} \equiv h \left[\frac{n.B}{4\pi^2 . r^4} \right] \dots (\mathbf{mg})$$

Equations (m) , (mg) are the **Energy-Space-constituents** in Hydrogen-System .

c-1.. The Protons and the Nucleus Structure :

From above MP $\equiv [(+)\leftrightarrow(-)] \equiv \text{Neutral} = \mathbf{n}$, then

a.. For 1 Proton $[(+)\leftrightarrow(-)] \leftrightarrow (+) \equiv \text{Neutral} \rightarrow n = 1 \quad p = 1$

b.. For 2 Proton $(+)\leftrightarrow[(-)\leftrightarrow(+)] [(+)\leftrightarrow(-)] \leftrightarrow (+) \equiv \text{Neutral} \rightarrow \begin{matrix} p & n \\ n & p \end{matrix}$

c.. For 3 Proton $(+)\leftrightarrow[(-)(+)](+) [(-)(+)](+) [(-)(+)] \equiv \text{Neutral} \rightarrow \begin{bmatrix} 0 & 0 & 0 \\ 0 & \vec{2} & 0 \\ 1e & 0 & 0 \end{bmatrix}$

d.. For 4 Proton $(+)\leftrightarrow[(-)(+)](+) [(-)(+)](+) [(-)(+)](+) [(-)(+)] \rightarrow \begin{bmatrix} 0 & 0 & 0 \\ 0 & \vec{2} & 0 \\ 1e & 1e & 0 \end{bmatrix}$

e.. For k Proton $(\mathbf{k1}) \leftrightarrow [(-)(+)](\mathbf{k2}) [(-)(+)](+) [(-)(+)](+) [(-)(\mathbf{h_k})] \rightarrow \begin{bmatrix} ke & ke & ke \\ ke & \overline{k : 8 - 18} & ke \\ ke & ke & ke \end{bmatrix}$

f.. The Inscribed to the **Tetrahedron-Sphere** consists the Nucleus $\equiv$ The $\oplus$ **Space** , and in
Circumscribed to the Tetrahedron-Cube Sphere consists the Orbitals $\equiv$ The $\ominus$ **Space** .

c-2.. The Annihilation of the Fundamental Particles .

Considering the , **Matter Antimatter** , with the classical known theory of Annihilation as
the common Constant Energy then issue for a **Force** $\leftrightarrow$ **Anti Force** , **Action** $\leftrightarrow$ **Reaction**
Electron $= e^- = \ominus \rightarrow$ mass $\mathbf{m_e} = 9,11.10^{-31}$ Kg $\rightarrow$ Charge $\mathbf{C_e} = 1,602.10^{-19}$ eV $\rightarrow$
Cave a $= 5,0.10^{-17}$ m

1.. **Electron - Positron** $\Rightarrow e^- \rightarrow e^+ \equiv 2 \gamma \neq 0$

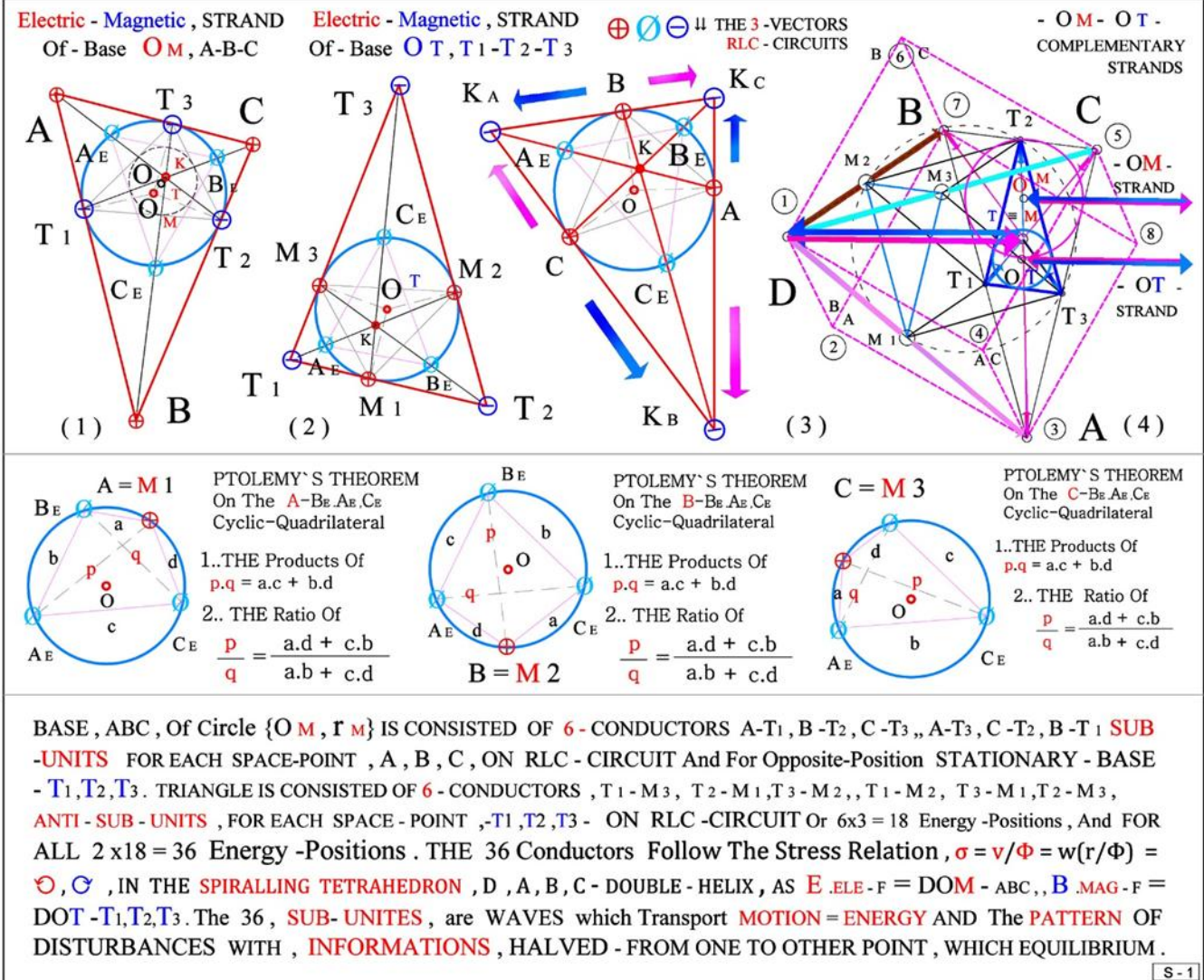
The Common $M_{e \rightarrow p}$ is from relation $\frac{1}{M_T} = \frac{1}{m_e} + \frac{1}{m_p} = \frac{1}{m_e} + \frac{1}{m_e} = \frac{2}{m_e} = \frac{2}{9,11.10^{-31}} = \frac{1}{4,555.10^{-31}}$

From energy equation $E = \frac{1}{2} M_{e \rightarrow p} c^2 = \frac{1}{2} [4,555. 10^{-31}].[2,998. 10^8]^2 = 6,827945. 10^{-15}$ J
 $= J / (1,6022.10^{-19} \text{ eV}) = 4,2616059. 10^4 \text{ eV} = 42,616059 .\text{KeV}$

The common frequency is $f_{e \rightarrow p} = \frac{E}{h} = \frac{6,827945.10^{-15} \text{ J}}{6,62607.10^{-34} \text{ Js}} = 1,0304667. 10^{19} \text{ H} \Rightarrow \text{i.e. } \mathbf{f_\gamma}$

c-3.. The Equilibrium of the Three-Spaces , The Space Anti-Space , Neutral-Space The Stability of Elementary Particles , Conductors and the Atoms -Nucleus : [60]

THE , 2-STRANDS **ELECTRIC & MAGNETIC** FIELDS , EQUILIBRIUM FROM Markos **2-Vectors,3-POLES-MECHANISM,ON,[A,B,C],[T₁,T₂,T₃]** BASE-TRIANGLES



Figure– 9a- : The Electric and Magnetic Field of 3 Conductors On 2 Anti-Parallel-Strands

The Waves - Motion $\equiv$ Energy , is Transported and , The **Pattern** of Disturbances with Informations , Propagates from the One-Edge-Point to the other Edge-Point of Conductors , OR is on [Sub-Units] . **To Prove the Stability of the System** , The **Equations of motion become everywhere** from any **Opposite Space** $\equiv \oplus$, Anti-space $\equiv \ominus$. During these motions as , **ds** . is Done a Constant-Work , **k** , or and from their velocities $\bar{v}$ and this Work may be **Positive** or **Negative** for Equilibrium . In F-23 Cycloid Anti-cycloid motion is as , D. The Origination of Gravity **g** , Antigravity [- **g**] In Fig-9a , Conductor D = d = AK_A where $\oplus$ constituent attacks $\ominus$ by a Hook's law force as Stress $\sigma = E u$, and an Coulomb force $F_{[\oplus \leftrightarrow \ominus]} = \frac{[\oplus \leftrightarrow \ominus]}{r^2} = \frac{[2 \sigma]}{r^2}$, creating Work $\equiv$ motion

as was shown It was shown that , **The Stability of Nucleus Forces** , is succeeded through **The Pascal's - Ceba's** triangle launched caves **r** , while Leptons from their **Anti - Leptons** existence in the same launched Pascal's - caves **r** . [58] The Equilibrium of the Three-Spaces is Done on the three Cyclic-Quadrilaterals $(AB_EA_EC_E)$, $(BC_EB_EA_E)$, $(CA_EC_EB_E)$, of the 6 Conductors each for , $[a, b, c, d, p, q] \times [3-ABC] = 18$ Conductors . The Stability is

1..Linearly through **the Products** of the Diagonal - connectors **as** , $\rightarrow \rightarrow \rightarrow$

$$[AA_E].[B_EC_E] = [AC_E].[A_EB_E] + [AB_E].[A_EC_E] , [BB_E].[C_EA_E] = [BA_E].[B_EC_E] + [BC_E].[B_EA_E] , [CC_E].[A_EB_E] = [CA_E].[B_EC_E] + [CB_E].[C_EA_E] \text{ and ,}$$

2..Rotationally through **the Ratio** of the Diagonals $\equiv$ The Conductors $|\frac{AK_B}{AK_C}|x|\frac{BK_C}{BK_A}|x|\frac{CK_A}{CK_B}| = 1$ or $\pm$ **Rotational-Equilibrium** as , $[AK_B].[CK_A].[BK_C] = [AK_C].[BK_A].[CK_B]$, of all Opposites $\Rightarrow$ **Tangential-Electromotive Forces** .

3.. From Mechanics-Physics , **all Systems Possessing Elasticity $\equiv$ motion and Reaction to motion** , the called mass , **are capable of free vibration or vibration taking Place in the Absence of External Excitation** [7] .This Principle issues for Both Closed or Open Systems.

i.e. Either for **the Nucleus** where issues **The Pascal's - Ceba's** triangle Stability , or for **the Orbitals** where issues the **Tetrahedron-Cube -Sphere-Mould .A Signal** as the Electric and Magnetic Field **IN 3-Conductors** Is transformed **On the 2 Anti-Parallel – Strands** .

c-4... The Natural Electromagnetic Energy-Tetrahedron and , The 3- Conductors Into The Energy - Cube and Spheres : [102]

In Fig- 9c - The Electric - Magnetic Field of 3-Conductors which lie on the DABC occurs **INTO the $\{\ominus 8\text{-Anti-Space Cube}$, $[DA_1A D_1, B B_1CC_1]$** , and The Positive $\rightarrow$ **$\{\oplus 8\text{-Space - Cube}$, $[DA_1A D_1, B B_1CC_1]$** , **INTO The $\{\ominus 16\text{-Anti-Space}$ [1 ,2 ,3 ,4 5 , 6 ,7 , 8 - 9 ,10 ,11 ,12 , 13 ,14 , 15 , 16] } Sphere Cube on Vertices.** = Point [The Point **16** $\equiv |\Rightarrow|Z|]$ consists the **Navel-String** Gate into the **Triangle-Circle-System** $\{Z-(\Delta D, ABC), \Delta[T_1T_2 T_3]\}$ of the Stationary Bases which Results on the **2 -Anti-Parallel-Strands** .

The Dual Photon $\bar{v} [\frac{\sigma\Phi}{2\pi r} + \frac{\sigma}{2\pi r}] \equiv \bar{v} . [\bar{f}_n] + f_n$, occupies Stresses = σ and velocities $\bar{v}$, in

The Tiny-caves **r** . The **Colours** in light , are the **Still-Sub-Units** in Storage $\rightarrow [\bar{v} . \bar{f}_n] \leftarrow$ and exist as Frequencies of $\rightarrow$ Violet , Blue , Green , with their Complementary Colours Yellow , Orange , Red $\leftarrow$

Every 8-electrons are vibrations on Atoms-Cube-Structure {A Tetrahedron in Cube in a Sphere} whether it be **Sound** or **Light** . Above Structure is followed by all Compounds. The Molecules are Systems consisted of **The PERIFERAL $\equiv$ Skeleton M_{16}** and **The CENTRAL $\equiv$ Fittings M_8** , and the **ACCESSORIES $\equiv M_4$ or M_2, M_1** . This Property of Atoms and of the Compounds is **The Critical - Valve of Switching the motion** as this happens in the Electro-magnetic Solenoid Valves with High or low Pressure and flow rates directly or Not .

Remarks : Work of Elastic Deformation .

Elastic Deformation requires (1) That every New Stress that is applied to a New infinite Element is always added to the existing one .(2) Be always Unity Work of Deformation.

When a Body contains Potential Energy ,

During any Unloading it gives off Mechanical - Work , since the Points of application of the GRADUALLY - withdrawn Loads are Displaced.

If the Unloading is ABRUPT , then Kinetic Energy is converted into Potential and after is Kinetic , converted back into Kinetic and so on . That is, the body Performs an Oscillating motion until the Mechanical Energy is extinguished due to a State of Equilibrium or Alters .

THE **EXTENDED** , 2-WOUND STRANDS **ELECTRIC & MAGNETIC** FIELDS , CONSIST THE **NAVEL-STRING** BETWEEN THE 1-ST CUBE-SPACE AND TO THE 2-ND CUBE ANTI-SPACE.

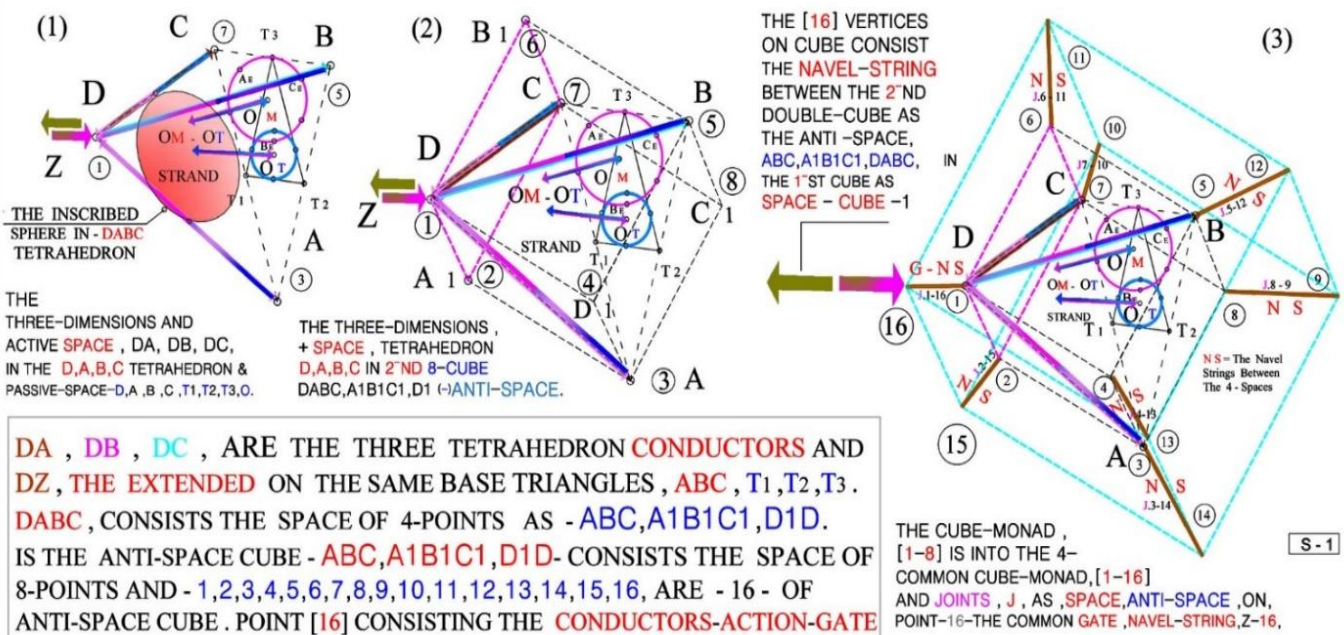


Figure – 9b- : The Electric - Magnetic Field of 3 - Conductors Results on 2 -Anti-Parallel - Strands .The Stability of $\rightarrow \{ \oplus 4\text{-Space } [D A B C] \}$ Regular - *Tetrahedron* , IN $\{ \ominus 8\text{-Anti-Space Cube } , [D A_1 B D_1 , C C_1 A B_1] \}$, and The $\rightarrow \{ \oplus 8\text{-Space } [D A_1 B D_1 , C C_1 A B_1] \}$ *Cube*, INTO The $\{ \ominus 16\text{-Anti-Space } [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16] \}$ *Sphere Cube Vertices* . The Point [16 $\equiv$ | $\Rightarrow$ |Z|] consists the **Navel - String** Gate in System . and are $\{ Z - (\Delta D , ABC) , \Delta [T1 T2 T3] \}$ Stationary Bases . The Stability Analysis in [88]

c-5.. : The Mater Antimatter 3-D Origination Mechanism [$\oplus \leftrightarrow \ominus$]

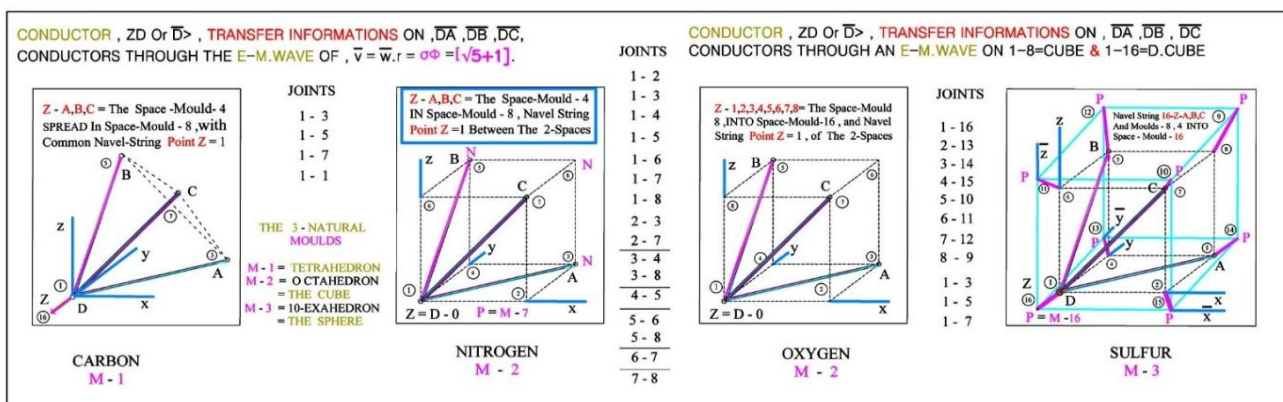


Figure – 9c- : The 4-Dimensional Spinning , Tetrahedron - Cube – Spheres - Mould .

The Stationary-States are $\rightarrow 2^{n=1-4} \text{ Points } \equiv 2, 4, 8, 16 \equiv 4\text{-Types} \leftarrow$

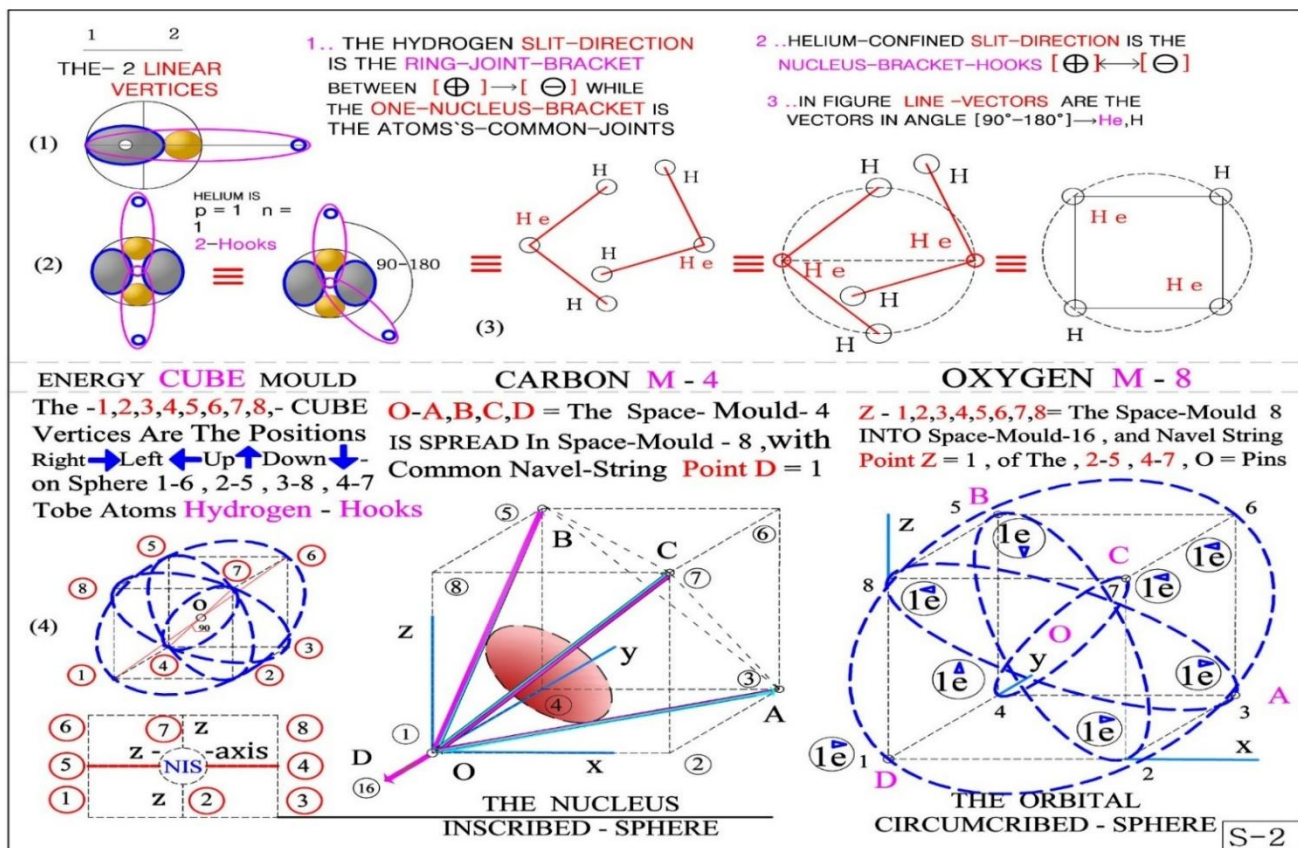


Figure – 9d.. :The Hydrogen , Carbon , Oxygen , Atoms-Conductors Into the Sphere-Cube-Mould . Deka hexahedron , Octahedron $\equiv$ Cube , Tetrahedron $\equiv$ 4-Points , Triangle .

The Nucleus $\equiv$ (In-Sphere) , **Tetrahedron** $\equiv$ (D - A.B.C) ,

Cube $\equiv$ (O,2,A,4,B,6,C,8) , **Orbitals** $\equiv$ (Ex-Sphere) , **Mould** .

When Vector $\equiv$ 2-Points $\equiv$ The Closed-Conductor , 1-Point $\equiv$ The Opened -Conductor $\equiv$

The Bracket-Hook . Oxygen is the Element which fills 8 - 2 = 6 vertices of Cube as EL $\rightarrow$

$$\begin{Bmatrix} 1e & 0e & 1e \\ 1e & 2 & 0e \\ 1e & 1e & 1e \end{Bmatrix} \equiv (\pm \frac{2}{2}) , \text{ where } \textcircled{0} \text{ is the first , Zero-Acting Cube filled with } 1e ,$$

therefore is the only Steady element which occupies the first Energy-Level $\textcircled{1}$

with 2 Electron-Positions as $\textcircled{1} = 2e = \vec{2}$ Positions at $\vec{1}, \vec{1}$

The Electron being in the Hydrogen Precesses because of the different axis of Rotation and Nutation's , from the continuous and immense-communication to the effect of gravity $\mathbf{g}$.

Since Electron is continually oscillating , with the Nutation-frequency $\mathbf{f}_N$, so Produces a continuous and oscillating Magnetic-field -M- which in turn is the source of an oscillating Electric-field - E - which implies the **Regeneration of each other** , i.e. it is a **Propagating Electromagnetic-Wave** where $E = B c$, and with a quantum-Energy $E = h f_N$ or $E = 2\mu.B$, This Energy E consists the Hydrogen Bracket **Hook** $[\text{HBH}]$, or $[\overline{\text{BH}}]$ and it is the only **free monad** which can **Bond** to all Energy Structures .

The **Spheres-Cube-Structure of Atoms** In Sphere Center –O- allows **The Stability** of the System, Per–Two electrons in Dipole Positions , $1 \leftrightarrow 6$, $2 \leftrightarrow 5$, $3 \leftrightarrow 8$, $4 \leftrightarrow 7$, consisting The-Positive Dipole- $[\overrightarrow{BH}]$, to be able to move $\rightarrow$ Into-In- Outside it $\leftarrow$ and allow the Atoms-Bonding as this in Energy levels . **The Cube-Structure of Atoms and Orbits in the Out-Sphere** formulates $+\overrightarrow{BH}$ to those **Dipole Positions which lack of one electron** and so can **PLUG-In** the **LOOP** of the others . The Atoms with Zero Stable State are ,

The Hydrogen Bracket-Hook **Into the Carbon** encloses the Inscribed Sphere for the Nucleus , **Into the Oxygen** for the Orbitals , **Into the Sulfur** enclosed into the Circumscribed Sphere for the Atoms-Conductors Sustains .

- The First 4-Dimentional Spinning ,**Tetrahedron-Cube-Sphere-Mould** are , $9c--2$
- 1... **O-1-3-5-7 -** $\rightarrow$ **The First Solid Tetrahedron Structure in Nature** ,
 - 2... **O-1-2-3-4-5-6-7-8** $\rightarrow$ **The First Cube with max. Positions $e = 2.n^2 = 8$** ,
 - 3... **R - [O , A , B , C]** $\rightarrow$ **NUCLEUS IS IN the First Inscribed Sphere into Tetrahedron.**
 - 4... **R-O-1, 2, 3, 4, 5, 6, 7, 8** $\rightarrow$ **ORBITS ARE IN Enveloped Cube-Sphere of Tetrahedron.**

Deka Hexahedron , Octahedron $\equiv$ Cubes , Tetrahedron $\equiv$ 4-Points , Triangle $\equiv$ 3-Points , Vector $\equiv$ 2-Points $\equiv$ The Closed-Conductor , 1-Point $\equiv$ The Opened -Conductor $\equiv$ The Bracket-Hook .

The Hydrogen **Nucleus** is kept in the Inscribed to the **Tetrahedron-Cube-System** where exist the Protons and Neutrons , while The Electrons of Hydrogen **Orbits** are kept into the Circumscribed , to the **Tetrahedron-Cube-System** . Both Equilibrium by following the Menelaus - Ceba`s Principles . [70]

Any Two Perpendicular **Energy-Vectors** , $|\mathbf{Q} \rightrightarrows \overrightarrow{AK_A}| = |\leftrightarrow|$, $|\mathbf{Q} \uparrow \overrightarrow{AK_A}| = |\downarrow|$ of this Propagating Energy , FORM The **Energy-Square** , $|\leftrightarrow| \cdot |\downarrow| \equiv |\mathbf{Q} \rightrightarrows| \cdot |\mathbf{Q} \uparrow| \equiv q_0$, on Conductor AK_A and **Then** Energy-Circular-Prism $= |\mathbf{Q} \rightrightarrows \overrightarrow{AK_A}| \cdot \{ \mathbf{Q} \rightrightarrows \overrightarrow{AK_A} \} \cdot \{ \mathbf{Q} \uparrow \overrightarrow{AK_A} \} \equiv [\overrightarrow{Q}_x \overrightarrow{Q}_y] \cdot |\mathbf{Q} \rightrightarrows \overrightarrow{AK_A}| = |\leftrightarrow| \cdot |\downarrow| \cdot |\mathbf{Q} \rightrightarrows \overrightarrow{AK_A}|$, **i.e.**

An Energy-Circular-Cone which is a Moving Energy -Volume , and **Because** from Cauchy equations of Stresses are of three Dimensions , **then The Energy Stresses** remains Flat **ONLY- WHEN** the Plane-Section is a circle $[E_2]$ and

The Square becomes circle, **Anti-Quadrature..**

Because from Mechanics , the Hydrogen **Nucleus** is kept in the Inscribed to the **Tetrahedron-Cube-System** where exist the Protons and Neutrons , while The Electrons of Hydrogen **Orbits** are kept into the Circumscribed , to the **Tetrahedron-Cube-System** . Both Equilibrium by following the Menelaus-Cebas Principles .

Oxygen is the Element which fills $8 - 2 = 6$ vertices of Cube and for Neon $10 - 2 = 8$, as

$$\mathbf{Ox} \rightarrow \left\{ \begin{array}{ccc} 1e & 0| & 0/ \\ 1e & \overrightarrow{2}| & 1e \end{array} \right\} \equiv \left(\begin{array}{c} +2 \\ -2 \end{array} \right) , \quad (2) \equiv \mathbf{Ne} \overrightarrow{2}_{1x8} = \overrightarrow{2} + 8 = 10 \rightarrow \left\{ \begin{array}{ccc} 1 & 1 & 1 \\ 1 & \overrightarrow{2} & 1 \end{array} \right\} ,$$

$$\begin{array}{ccc} 1e/ & 1e| & 1e \\ & & 1 & 1 & 1 \end{array}$$

The Possible Orbits of Oxygen are two as , $\rightarrow 1e /-- \overrightarrow{2}/-- / 0 \leftarrow$ and $\rightarrow 1e /-- \overrightarrow{2}/-- 0| \leftarrow$ for all the 8-Cube Positions . (0) is the first , **Zero-Acting Cube** and is filled with 1e , therefore is the only Steady element which occupies the first Energy-Level (1) with 2 Electron-Positions as (1) = 2e Positions at $\overrightarrow{1}$, $\overleftarrow{1}$. In the same way (1) is the first **One-Acting Cube** and is filled

with $2e$, and so on , The Electron being in the Hydrogen -cave Precesses because of the different axis of Rotation and Nutation's , from the continuous and immense-communication to the gravity g . Since Electron is continually oscillating with the Nutation-frequency f_N so Produces a continuous and oscillating Magnetic-field $-M-$ which in turn is the source of an oscillating Electric-field $-E-$ which implies the **Regeneration of each other** , i.e. it is a **Propagating Electromagnetic-Wave** where $E = B c$ and with a quantum-Energy $E = h f_N$ or $E = 2\mu.B$, This Energy E consists the Hydrogen Bracket **Hook HBH** , or $[\overline{BH}]$ and it is the only **free monad** which can **Bond** to all Energy Structures .

The **Sphere-Cube-Tetrahedron Structure of Atoms** In Sphere Center $-O-$ allows to issue The **Ceba's Theorem for 6-Stresses** on the Inscribed Tetrahedron which Secure **The Stability** for the Nucleus-System , and for the Outer Electron-System the Stability is Obtained Per-Two electrons the Dipole Positions $1 \leftrightarrow 6$, $2 \leftrightarrow 5$, $3 \leftrightarrow 8$, $4 \leftrightarrow 7$, consisting The-Positive Dipole- $[\overline{BH}]$, to be able to move $\rightarrow$ Into-In- Outside it $\leftarrow$ and allow the Atoms-Bonding as this in Energy levels .

The Cube-Structure of Atoms and Orbits in the Out-Sphere formulates the $+\overline{[BH]}$ to those Dipole Positions which lack of one electron and so can **PLUG-In** the **LOOP** of the others.

Conclusion :

- 1... The Forces of Atom's NUCLEUS , are Holded from $\rightarrow$ The Inscribed Sphere In the Tetrahedron , which follows the Ptolemy's and Ceba's Vectors Structure .
- 2... The Forces of Atom's ORBITALS , are Holded from $\rightarrow$ The Into the Cube , Circumscribed-Sphere Complex Vectors Structure .
- 3... The Forces of Atom's POSITIONS , are Holded from $\rightarrow$ The on Cube Inscribed Tetrahedron Complex Vectors Structure .
- 4... The Stability of the {TCIC} Mechanism follows the Ptolemy's & Ceba's Complex Vectors Structure [62]

The Action of the Complex-Vectors create the Waves of Motion $\equiv$ **Energy Waves** which are closed curves and Transported . The **Pattern** of Disturbances with the Informations Propagates from the One-Edge-Point to the other Edge-Point of Conductors , **OR** is on the [Sub-Units] .

Coulomb force $[\oplus \rightarrow \ominus] = F_{[+ \leftrightarrow -]} = \frac{[\oplus \ominus]}{r^2} = \frac{[2\sigma]}{r^2} = F = \sigma . A = \left[\frac{2\pi r f}{\Phi} \right] . A = w r . \left[\frac{A}{\Phi} \right] = v . \left[\frac{A}{\Phi} \right]$, and Acts on a Surface , A , between the Sub-Units **Axially** and **Rotationally** following Ptolemy's and Cebas Theorem of Equilibrium . **Figure -9e-**

Remarks : The Work of Elastic Deformation On the { TCIC } Mechanism :

Every New Stress that is Applied to D - Element is always added to the existing And the Unity Work of Deformation is transformed to three Tetrahedron Sides.

When a SIGNAL Strikes the TCIC – Cube's Mechanism .

The Signal is **Energy-Wave carrying motion** . Unloading happens on the three **Still-Spaces** in Tetrahedron - Sides which withdrawn Loads are Displaced On the Anti-Parallel-Strand . If the Unloading is ABRUPT, then Kinetic Energy of 1-Strand is converted in the 2-Strand as Potential and so on . That is , CUBES Perform an Oscillating motion until the Mechanical Energy is extinguished to their Vertices , which are the stores of Information .

Anti-Parallel-Strand is the **Body containing the Potential Energy** , During any Unloading on CUBES , it gives off **Mechanical-Work** , since the Points of application of the Gradually - withdrawn Loads are Displaced . The Stability of Kinetic – Potential Energy is continues .

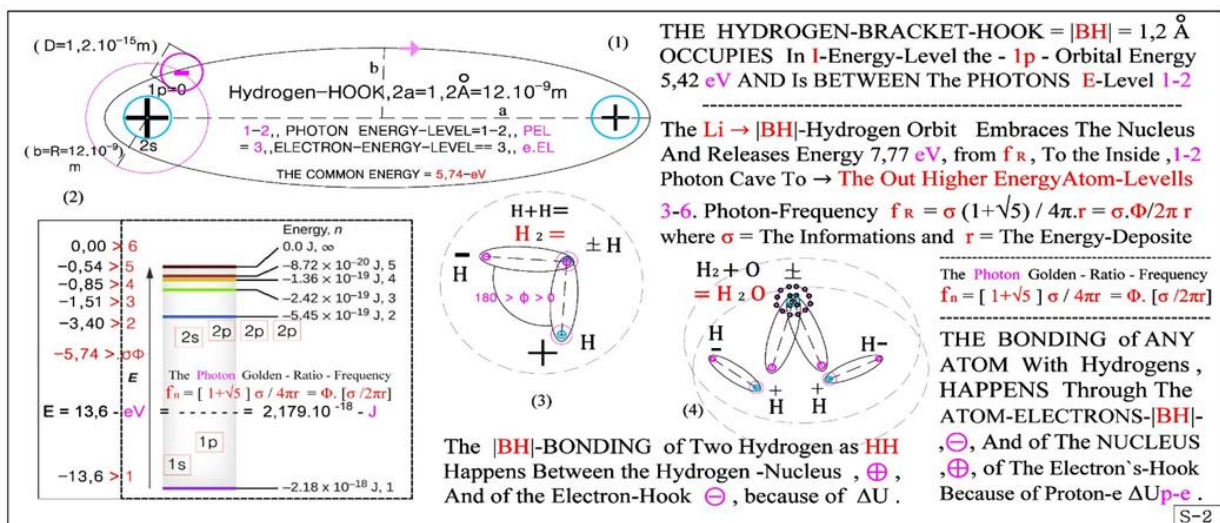


Figure -10- The Hydrogen BRACKET – HOOK of 2 = Orbitals $\Rightarrow [(+) [\leftrightarrow] (-)]$

Stationary-State happens as $\rightarrow [\ominus] \equiv \text{ORBIT-1} \leftrightarrow [\oplus] \equiv \text{ORBIT-2} \leftarrow$

8..[d].. The { TOBH } Mechanisms *Atoms Bonding Bracket - Hook Mechanism* .

d-1.. : The Precession and Nutation of Electron :

Gravitational constant G , is The Pulling and the Cohesive Force on all the Quantized Energy Structures which communicates with everything due to the *Periodic excitation* on all Spaces.[84] The Newton's laws issues for the masses and also the same to Electrons in caves as below ,

$$\mathbf{G} \equiv \mathbf{g} \cdot \mathbf{g}_E \equiv \mathbf{g} \cdot [\mathbf{g}_L \mathbf{k}_L] \equiv [\frac{T_p^2}{a^3}] \cdot [\mathbf{g}_L \mathbf{k}_L] \equiv 9,8078925 * 6,8116.10^{-12} \equiv 6,68056.10^{-11} \frac{\text{m}^3}{\text{Ns}^2}$$

The Electron being in Hydrogen-cave **Precesses** because of the different axis of **Rotation**

and **Nutation's** , from the continuous and immense-communication to the gravity , g .

Electron-Spin is the Angular-momentum-vector $\vec{B}$ and rotates according to equation $\frac{d\vec{B}}{dt} = [\vec{u}\vec{B}] = u \cdot B \cdot [\vec{k}\vec{k}']$ in Gravitational Potential $U_g = [mg] \cdot s \cdot \cos \theta = -s \cdot Q \cdot [\vec{k}\vec{k}']$ so the change of angular momentum $\vec{B}$ is $\rightarrow \frac{d\vec{B}}{dt} = \vec{u} = \frac{s \cdot Q}{B} = \frac{s \cdot Q}{J_3 \cdot \omega_3} \leftarrow$ and from the 1-degree equation of motion $\vec{u}$, become

$$\ddot{\mathbf{u}} + \mathbf{w}^2 \mathbf{u} = \mathbf{0}, \text{ with solution a Period of Nutation } T = \frac{2\pi}{\omega} = \frac{2\pi J_3 w}{sQ}, \text{ and its natural Frequency}$$

$$f_N = \frac{sQ}{2\pi I_2 w} \dots (1) \text{ with Total Energy of Nutation } E_N = \frac{J_1}{2} [w_1^2 + w_2^2] + \frac{J_3}{2} w_3^2 \dots (2) [70].$$

For Material-Points , the chains of Spins due to Periodic excitation $[\leftrightarrow]$ is created in *Orbit a* **Magnetic field** due to LRC-circuit and which is tuning to the critical Quantum critical-State $\mathbf{g}_g$.

The Light velocity vector $\bar{v} = \bar{c}$, by Acting on cave , $r = L_p$, finds the Impedance m_g , and becomes the Centrifugal-Force F_g of Cave equal to Gravity g . The chains of Spins for the ,

ONE-WAY Pointy vibrating , is the Resonance – Frequency $f_R = \frac{(1+\sqrt{5}) \cdot \sigma}{4\pi r} = \frac{\sigma \phi}{2\pi r}$ of vectors $\bar{v}$ and $\bar{B}$, of the-Stationary-Photon-cave , where $\bar{B} \equiv \bar{S} \equiv \text{Spin}$, **i.e.** The f_R is common to both .

The Moving Electron in Orbit of charge $\bar{q} \equiv \ominus$, energy E with the **Orbit -Velocity - Vector**

$$\bar{\mathbf{v}} = \sqrt{\frac{2}{m} [E - \{ \frac{k}{r} + \frac{L^2}{2mr^2} \}]} \text{ which creates IN Orbit , } r, \text{ the Varying and Perpendicular Magnetic}$$

Field $\vec{B}$, which in time-turn **Creates** an Electric-field $\vec{E} \perp \vec{B}$, with the Resultant force $\vec{F}$ acting on Electron Velocity $\vec{v}$ and which is composed of the $\vec{V}_p$, Perpendicular to the Magnetic-circles $\vec{O} \perp \vec{B}$, and $\vec{V}_v$, Parallel to the Magnetic-field-Vector $|\vec{B}|$, is tending in such way that $L \equiv S \equiv \text{Spin}$. The resulting motion of Electron in trajectory is the **Helical motion** and **Work Produced** during this motion. The **Conservation of Energy exist in Orbit** between Protons and Electrons $[p \leftrightarrow e]$ therefore Energy as frequency exists in **Orbit only**, and **differs of those of Energy- levels**.

Since frequency $f_N = f_R = 2,839845 \cdot 10^{10} \text{ s}^{-1}$ and exists in all Atoms, **due to the Hydrogen first cave**, then this f_N is the **Resonance - frequency f_R** between all **Atoms and Molecules**.

It was proved that $\rightarrow$ **Since** $f_R = \frac{\sigma \Phi}{2\pi r}$ and related to Hydrogen cave r and **Stress σ** only $\leftarrow$

It is the Unique Common and Neutral-Monad, in all Chemistry structures and Composites.

d-2..Energy from equation $E = h \cdot f_N = 6.62607 \cdot 10^{-34} \cdot 2,8398447 \cdot 10^{10} = 18,817009 \cdot 10^{-24} \text{ J} / (1,6022 \cdot 10^{-19}) = 1,174463 \cdot 10^{-4} \text{ eV}$, and conserved as **Thermal-Energy E_T** in kilo Cal and which is continually increasing as, $E_T = 18,817009 \cdot 10^{-24} \text{ J} / [(4,19 \cdot 10^3) = \text{kcal}] = 4,49093 \cdot 10^{-27} \text{ kcal}$. Since $1 \text{ eV} = 96,363636 \text{ kJ/mol}$ thermal energy $E_T = 4,49093 \cdot 10^{-27} \text{ kcal} / [96,363636 \text{ kcal/mol} = 1 \text{ eV}] = E_T = 4,660399 \cdot 10^{-29} \text{ eV}$. This happens because of the closed Energy - Orbit-Rims r , constant light velocity c , and from **Spin** equation $S = r m c$.

Taking into consideration the Thermal - Energy of a Photon when it is Pressing the surface of

1 m² for 60s then, $E_P = 20 \text{ kcal} = 20 \cdot (4,19 \cdot 10^3) = 8,3777 \cdot 10^4 \text{ J}$, and the ratio, $[E_T / E_P] =$

$4,49093 \cdot 10^{-27} / 20 = 2,24546 \cdot 10^{-28}$, which is a Quantity **Not - detected**. The Hydrogen caves

created in the Sun **1 Million Years-ago** $= 10^6 \cdot 365 \cdot 24 \cdot 3600 = 3,1536 \cdot 10^{13} \text{ sec}$, is accumulated a

Thermal-Energy of a magnitude $E_{\text{Therm}} = 3,1536 \cdot 10^{13} \cdot 4,49093 \cdot 10^{-27} = 1,41626 \cdot 10^{-13} \text{ kcal}$, i.e.

The Stationary Hydrogen-wave-cave needs 1- Quadrillion years to conserve 1-kcal Thermal-Energy.

For Half-frequency $f_R / 2 = 1,4199223 \cdot 10^{10} \text{ s}^{-1}$, the Kinetic Energy is Zero and the Potential-Energy

is $U = E = h \cdot f = 6,62606957 \cdot 10^{-34} \cdot 1,4199223 \cdot 10^{10} = 9,4085039 \cdot 10^{-24} \text{ J} / (1,6022 \cdot 10^{-19} \text{ eV}) =$

$5,8722405 \cdot 10^{-6} \text{ eV}$, which agree with the **Bohr-Magneton**.

Remarks :

1.. The Real Shear - Stress that exists in the Force – Carriers .

From the Static Theory of Equivalent Tension (Moore's cycle) is (1) =

$$\sigma = \sqrt{(\sigma_1 - \sigma_2)^2 + 4 \tau_{12}^2}, \text{ and } \sigma_{1,2} = (\sigma_1 + \sigma_2) / 2 \pm (1/2) \sqrt{(\sigma_1 - \sigma_2)^2 + 4 \tau_{yz}^2},$$

instead of the classical case which is $\sigma = 2 \cdot \tau_{\max} = \sqrt{\sigma_1^2 + 4 \cdot \tau^2}$, . (2) . Because

nature always follows the uniform tension so it follows the (1) case. where exist the

$$\text{equation } \sigma = \sqrt{(\sigma_1 - \sigma_2)^2 + 4 \tau_{12}^2}, \text{ and } \sigma_{1,2} = (\sigma_1 + \sigma_2) / 2 \pm (1/2) \sqrt{(\sigma_1 - \sigma_2)^2 + 4 \tau_{yz}^2} =$$

$$\frac{\sigma}{2} [\sqrt{5} + 1] = \sigma \cdot \left[\frac{\sqrt{5} + 1}{2} \right], \text{ which is the } \textbf{Golden ratio for stresses}.$$

2.. The Bernoulli Astute about Stresses-Linear-Distribution is equally True for Bending too.

3.. In the case of concentrated Stresses (such as Closed or Open Conductors), the Doubling of the main Stresses Observation is True, **and this because of the Golden ratio Pattern**.

1d.. The Spaces and the Energy States :

In Articles [87-89] is Elucidated the Duality-Photon as Particle and as Wave .

The Photon`s Charge  $\bar{q}_{\text{Photon}} = \frac{v \cdot \sigma \Phi}{2\pi r}$  , Transfers Information`s and Energy-Storage

in Nature . In Articles [87-88-89-90] are Elucidated The Gravitational constant $\mathbf{G}$, The Stresses $\boldsymbol{\sigma}$, The Light-velocity $\bar{c}$, The Gravity $\bar{\mathbf{g}}$, The Hydrogen cave $\mathbf{H}$, The electron - $\bar{e}$, The electron-charge $\bar{q}_e$, The Weak-Forces $\bar{\mathbf{B}}_F$, The Strong – Forces $\mathbf{Q}_T$, and The Uniform-Resonance - Frequencies $\mathbf{f}_R$, for Atoms Structure . In Articles [91] is Shown **How** ,The **Three Circularly-Placed Physical-Charged-Breakages** on The-Three Spaces $[\oplus - \emptyset - \ominus]$, **Or** on the **3-Extreme -Triangles of STPL- Mechanism** which is **The -Thrust** for The-Origination of all the Cosmic-Particles in **Linear & Rotational Conductors Frequencies** , either into the Atoms or to their Compounds [91] .

9a.. THE FLOW - PLAN OF THE $\rightarrow$ SPACE - ENERGY $\leftarrow$ UNIVERSE .

1.. It was shown in [9-18] what is **Primary-Neutral-Space [PNS]** as well as what is Infinity [15] , and **Rotational Energy $\equiv \Lambda \equiv \text{Torque} \equiv \text{momentum}$** [22] so $[\text{PNS}] \rightarrow [\mathbf{A} \mathbf{P}_A \leftrightarrow \mathbf{P}_B \mathbf{B}] \equiv \text{Work } W = |\mathbf{EP}| = [|\Lambda| \cdot \bar{\Delta} + \Lambda \times \bar{\Delta}] \rightarrow W = \int \mathbf{P} \cdot d\mathbf{s} = 0 \rightarrow$ and so exists **Time $\mathbf{T} = d\mathbf{s} / v = 0$** .

The Cause is , because **Primary Point , A** , is nothing and then **is Quantized as $\rightarrow$ an Point B** (which is following the Principle of Virtual Displacements $W = \int \mathbf{P} \cdot d\mathbf{s} = 0 = \text{Force} \times \text{Displacement} = \text{Energy} \times \text{Space}$, and according to the ancient Greek Philosopher Anaximander [**The non-existent (i.e. the Point A) , Exist when is Done , it occurs as (Point B) i.e. $\equiv [\text{To μη Ον , Ον γίγνεσθαι}] = [\text{To Τίποτα υπάρχει Όταν αυτό Γίνεται}]$** **Time is Not existing** because $ds = \infty \cdot 0 = \text{constant}$ [21-22] . The relative Range is the Displacement $\mathbf{AB} \rightarrow$ which is The **Monad-Space** as $\mathbf{AB} = \mathbf{0} \rightarrow \mathbf{k} \rightarrow$ The Infinity **Anti-space**.

2.. [PNS] **The Energy-Quaternion** $[|\Lambda| \cdot \bar{\Delta} + \Lambda \times \bar{\Delta}] \equiv \bar{\mathbf{z}} \equiv [\lambda \pm \Lambda \times \bar{\Delta}] \equiv |\bar{\mathbf{z}}\mathbf{o}|^w \cdot \mathbf{e}^{\wedge} \{ [\bar{\Lambda} \bar{\Delta} i / \sqrt{\Lambda'} \bar{\Lambda}] \cdot [\text{Arc Cos } (w|\lambda|/2 \cdot |\sqrt{\bar{\mathbf{z}}}\mathbf{o} \cdot \bar{\mathbf{z}}\mathbf{o})] \}$ which is the Beyond-gravity Forced - field . [25] . As in case (1) $\rightarrow$ there is No change of $ds \rightarrow$ so Time $\mathbf{T} = d\mathbf{s} / v = 0$. The Cause is the Lever arm moment of the Primary Forces and is Quantised as the Torque , < The Torque modelling of microscopic description > , and later the Momentum [19] .

The relative Range of the Infinite Points is the Displacement $\mathbf{AB} = \bar{\mathbf{z}}$ to Infinity ∞ .

3.. [PNS] $\rightarrow$ **The Temperature-Quaternion** $[\lambda , \pm \Lambda \times \bar{\Delta}] = \mathbf{z}_o = \Lambda = n.R.T / V (\lambda = C) \rightarrow$ The Gas equation $\rightarrow$ No change of $ds \rightarrow$ so Time $\mathbf{T} = 0$. The Cause is the Heat causing

vibration on molecules and is Quantised as $\rightarrow$ Intensity (Pressure $\sigma = \frac{2\pi r \cdot f}{\Phi} = \frac{2\pi r \cdot c}{\Phi \cdot \lambda} =$

$\frac{2\pi r \sigma}{\lambda}$) between them . The relative Range of the Infinite Points in Displacement is

$AB = \lambda = 2\pi r$ which is the wavelength λ .

3.a $\rightarrow k1 \equiv z = |z_0| \cdot e^{-i \cdot (9\pi/2) \cdot 10} = \text{The Energy Under Planck length}$, The Tank Cavity of Gravity where $\bar{v}_E = 0$ and $ET = \Lambda \cdot v B + \Lambda \times v \cdot \bar{B}$ and is the accelerating removing , Rotating energy Λ to $v\bar{B}$, $m = 0$ and $ET = \Lambda \cdot v \cdot B + \Lambda \times v \cdot \bar{B}$ and it is the linearly removing , Energy Λ towards $v B$, so No change of $ds \rightarrow$ therefore Time $T = 0$. The Cause is the High Heat Conservational Balanced Tank of gravity and is Quantised as The Fundamental Particles (**Bosons and Fermions**) . [30]

The relative Range is of the Infinite Points in Displacement $|AB|$ to Infinity .

3.b $\rightarrow k2 \equiv z = |z_0| \cdot e^{-i \cdot (\frac{5\pi}{2}) \cdot 10} = \text{The Energy In Planck length} \rightarrow \infty$ changes of $ds \rightarrow$

so Time $T = t$. Cause are the Infinite changes of Space and is Quantised as $\rightarrow$ Matter , Energy and the Existent as caves . The Material-Points occupy a relative Range in Planck's length as In Fig-1-

3.c. $\rightarrow k3 \equiv z = |z_0| \cdot \Lambda \cdot e^{-i \cdot (\pi/2) \cdot 10} = \text{The Black Hole Temperature}$, Balanced Tank Energy length , where $PV = n \cdot R \cdot T$ and $(PA = Wd = \sigma \cdot T^4) \rightarrow$ No change of $ds \rightarrow$ so Time is $T = \text{Constant}$. Cause is the Very high Heat causing vibration on molecules and is Quantized as $\rightarrow$ Intensity = (Pressure = $Fd = C \cdot \bar{x} = \pm Co \cdot w \cdot [\sqrt{A^2 - x^2}]$) i.e.

Cause $\rightarrow$ (Constant Co) $\rightarrow$ Quantized as New monad and relative Range is Infinity , or The meter of **Space-Energy- changes** is time T , which exists in $k2$ Quantized-Region only. From Quaternion equation $\bar{z} = [s \pm \bar{v} \cdot \bar{v}i] = [s^2 \pm \bar{v} \cdot s^2] = [\bar{A} \leftrightarrow \bar{B}] = [+|\bar{s}|^2 \leftrightarrow -|\bar{s}|^2]$ is seen

that motion , $+|\bar{s}|^2$ at Point A , is transferred as motion $-|\bar{s}|^2$ at Point B . This issues

from Quaternion equation $\bar{z} = [s \pm \bar{v} \cdot \bar{v}i] = [s^2 \pm \bar{v} \cdot s^2] = [\bar{A} \leftrightarrow \bar{B}] = [+|\bar{s}|^2 \leftrightarrow -|\bar{s}|^2]$. Fig -1-

i.e. The **Vectors-Sum** of , **n** , Vectors , either On The Same Linear-Direction Or , On Non Linear-Directions Results on **The – Resultant - Vector $\vec{R}$** of the Linear-Vibration and between the Quaternion Edge-Points $[\bar{A} \leftrightarrow \bar{B}]$.

Conclusions –1- : Energy In Primary-Neutral-Space [PNS] and , In Under Planck's length $\equiv$ The Tank Cavity of Gravity is an **Standing Wave** with NO-Time existing as $T = ds / v = 0$.

Conclusions –2- : Since In Primary-Neutral-Space [PNS] and , In Under Planck's length $\equiv$ The Tank Cavity of Gravity existing as $T = ds / v = 0$. the only meter of changes is the Period of Rotation of the $[\ominus \cup \oplus]$ as in the next Figure-11 .

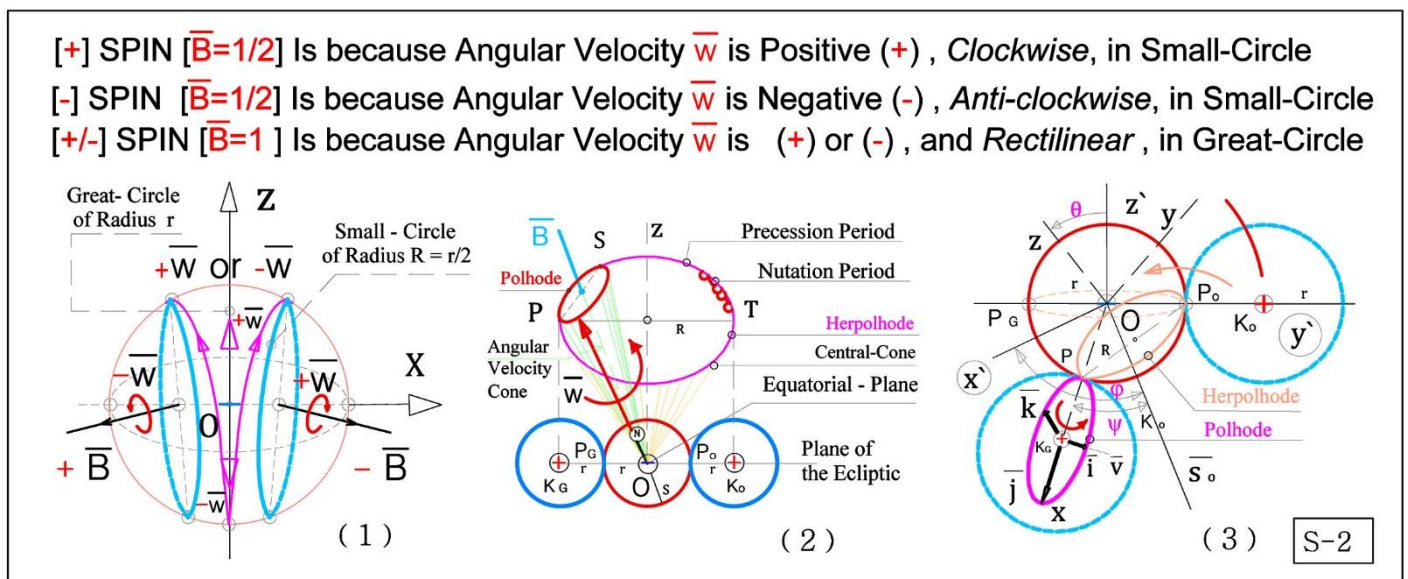


Figure –11-The Rotation of Opposites $[\ominus \cup \oplus]$ and the How and Why Spin is equal to $1, \frac{1}{2}$

In (1). The Glue-Bond-Pair of Opposites $[\ominus \sigma \oplus]$ of the **Rectilinear motion for both $\rightarrow$ Great circles and the Small circles , creates on the Stress-common-curve Rotation** of circle of radius r , the velocity $\bar{v} = w.r = \frac{2\pi}{T}.r = 2\pi r$. $f = [\frac{\sigma}{2}].(1+\sqrt{5}) = \pm \sigma.\Phi$, and the frequency $f = \frac{(1+\sqrt{5}).\sigma}{4\pi r} = \frac{\sigma.\Phi}{2\pi r}$, of a **Period** $T = \frac{4\pi r}{\sigma(1+\sqrt{5})} = \frac{2\pi r}{\sigma.\Phi}$ and , $\pm \sigma$, where then exist two equal and Opposite Forces , $\rightarrow$ the Centripetal , F_p , and the Centrifugal , F_f force . The Produced work as Energy is $\rightarrow E = h f = \bar{B} = \text{Momentum} = r m v = r [\frac{\pi r^2}{2}] w r = [\frac{\pi r^4}{2}] w = [\frac{\pi r^4}{2}] 2\pi f = \pi^2 . r^4 . f = \bar{B}$, where $f = \frac{(1+\sqrt{5}).\sigma}{4\pi r} = \frac{\sigma.\Phi}{2\pi r}$, meaning that the **Stress - Pointy Rotation** creates the **Angular – Momentum and momentum** as , $\bar{B}$, $\bar{w}$, in the **Zero Wave-note** . [70]

The Glue-Bond Pair of Opposites $[\ominus - \oplus]$ in the $\rightarrow$ **Left Direction of Small circles creates a Rotation** on circle of radius , R , with velocity $v = w.2r = \frac{2\pi}{T}.2r = 4\pi r$. $f = [\frac{\sigma}{2}].(1+\sqrt{5})$, where **frequency** $f = \frac{(1+\sqrt{5}).\sigma}{8\pi r} = \frac{\sigma.\Phi}{2\pi r}$, **Period** $T = \frac{8\pi r}{\sigma(1+\sqrt{5})} = \frac{2\pi(2r)}{\sigma.\Phi}$, where $\pm \sigma$ are the two equal and opposite Centripetal , F_p , Centrifugal , F_f force , with Energy $\rightarrow E = h.f = \frac{h.\sigma.\Phi}{2\pi r}$, in **One Wave- note** . The Glue-Bond Pair of Opposites $[\ominus - \oplus]$ in the $\rightarrow$ **Right Direction of Small circles creates a Rotation** on circle of radius , $R = 2 r$, with velocity $v = w.2r = \frac{2\pi}{T}.2r = 4\pi r$. $f = [\frac{\sigma}{2}].(1+\sqrt{5})$, where **frequency** $f = \frac{(1+\sqrt{5}).\sigma}{8\pi r} = \frac{\sigma.\Phi}{2\pi r}$, **Period** $T = \frac{8\pi r}{\sigma(1+\sqrt{5})} = \frac{4\pi r}{\sigma.\Phi}$ and the $\pm \sigma$ are the two equal and Opposite Stresses , Or Centripetal , F_p , Centrifugal , F_f force .

Energy is $\rightarrow E = h f = \frac{(1+\sqrt{5}).\sigma h}{8\pi r} = \frac{\sigma.\Phi h}{4\pi r}$, in the **One Wave - note** .

In (2) The hollow-Cone of 90° , between Angular-momentum-vector $\bar{B}$ and Angular-velocity-vector $\bar{w}$ when illuminated by a circularly Polarized light beam , then any changes in Spin

$\equiv \bar{\mathbf{B}}$ of the Polhode Cone POT and the exchange of Linear and Angular Momentum between **Electromagnetic fields and the material Media** are shown as the **Profiles** of the Phase and the Angular-velocity-vector in the POT- **cone cross-sectional Plane** , i.e.

The Space can be eternally twisted but cannot disappear . [70]

Measurements of Physical-Properties such as Position , Momentum , Spin and Polarization , performed on Entanglement Particles gives rise to seemingly Paradoxical effects considering Systems as a whole and the ERP Paradox . The answer is given in Figure 1-(the right-2) where is shown each Property of the Material-Point . **The Spins** $[\ominus \cup \oplus]$ Presuppose $[\ominus, \oplus]$ **Material-Points** which are **The caves in PNS Space** .

Conclusions -

The Energy in Spins , Presuppose that the **Caves to be in** [PNS] Space and in the Under Planck's length . The $\pm$ **Spin is created from the** Opposite Centripetal , $\mathbf{F}_p$, Centrifugal , $\mathbf{F}_f$, forces . The Energy E is initially absorbed in [PNS] and in all quantized regions , either as momentum ($\mathbf{mv}$) or as Rotational Momentum ($\Lambda = \mathbf{r} \cdot \mathbf{mv}$) . From momentum

relation $\bar{\mathbf{B}} = m r v = m r^2 w = m r^2 (2\pi f) = \frac{I \cdot w}{2} = \left[\frac{\pi r^4}{4} \right] \cdot [2\pi f] = \frac{\pi^2 r^4 f}{2}$, then the Mass of the

elementary Particles is $\rightarrow \mathbf{m} = \frac{2\pi^3 r^4 f^2}{r^2 2\pi f} = \frac{\pi^2 r^2}{1} \mathbf{f} = \left[\frac{\pi r \cdot v}{2} \right] \mathbf{v}$, Or $\mathbf{m}_{EP} = \frac{\pi \cdot r^2}{4} = \frac{\pi \cdot (1,07 \cdot 10^{-7})^2}{4} =$

$8,992023 \cdot 10^{-15}$ Kg , in the min Planck's cave $\mathbf{d}_{pc} = 1,07 \cdot 10^{-7}$ m $\rightarrow$ which agree with the

Diffraction Energy mechanism for all Space Levels of quantization and which are the

Energy Particles only , where for base $\mathbf{e} = 2,71828$ and $k = 0 \rightarrow \mathbf{L}_v = \mathbf{e}^{\wedge} \mathbf{i} \cdot (\pm \pi/2) \cdot \mathbf{b}$

the Space is $\mathbf{e}^{\wedge} (-15,7079) = 1,78118 \cdot 10^{-7}$ m

Since velocity $v = s / t = \text{distance} / \text{time}$ then for constant s , then v is also constant and

$t = T$, the Period of vibration and for any constant momentum $\Lambda = \lambda_2 m_2 v_2^2 / 2 =$

$\lambda_2 m_2 [w \lambda_2]^2 = 4\pi^2 \cdot m_2 \cdot \lambda_2^3 \cdot f^2 = [4\pi^2 \cdot m_2 \cdot \lambda_2^3] \mathbf{f}^2 = \mathbf{Co} \cdot \mathbf{f}^2 = \Lambda$, i.e.

In all Rotational Systems time T is constant and equal to the Period of Rotation which is the meter of changes . For monads in $\mathbf{k2} \equiv \text{PNS region}$

$$E_T = [\Lambda \mathbf{\hat{z}} + \Lambda \mathbf{x} \mathbf{\hat{z}}] = [\Lambda \cdot M + \Lambda x M] = \sqrt{m \cdot v_E^2 + [\Lambda \cdot v_B + \Lambda x v_B]^2} = \sqrt{m \cdot v_E^2 + [\Lambda \cdot v_B + S^2]^2} = h \cdot f = h / T = h \cdot v / \lambda , \quad \text{i.e.}$$

In every monad issues $\lambda \cdot mv/2 = hf = \lambda \Lambda$ and Kinetic-energy $\Lambda = hf / \lambda = C_o \cdot f$ where the

constant $\mathbf{C}_o = E / \mathbf{f}^2$ a gauge magnitude depended on the angular velocity $\bar{\mathbf{w}}$, the velocity $\bar{\mathbf{v}}$,

and then wavelength λ is conserved as momentum (mv) or angular momentum ($\Lambda = r \cdot m\bar{v} = m \cdot w\lambda^2/4$) or both . Considering oscillatory motion as the simplest case of Energy

dissipation , *and this because any other motion is not differently conserved* , then The

Work embodied in Dipole is an < Spring-mass System with viscous dumping >

with co variants , energy E , mass m , velocity $\bar{\mathbf{v}} = \bar{\mathbf{v}}_E = \dot{x}$ wavelength λ , and then Energy

dissipation is the damping force equal $F_d = C \dot{x}$ where C is a constant and $\dot{x}$ the velocity.

Following the steady-state of displacement and velocity then $\rightarrow x = A. \sin(\omega t - \theta) \leftarrow$ and $\dot{x} = \omega A. \cos(\omega t - \theta) = \omega x$, where the Energy dissipated per cycle is the executed work which is, $W_d = \oint F dx = \oint C \bar{x} dx = \oint C \bar{x} \dot{x} dt = \pi C \omega A^2 = (\pi/4) C \omega \lambda^2 =$

$[\pi^2/2] C. f. \lambda^2 \rightarrow$ The Energy **dissipated per Cycle** W_d by the damping Force F_d , is mapped by writing velocity $\dot{x}$ in the form $\dot{x} = \omega A. \cos(\omega t - \theta) = \pm \omega A. [\sqrt{1 - \sin^2(\omega t - \theta)}]$
 $= \pm \omega. [\sqrt{A^2 - x^2}]$ where then the Dumping force $F_d = C. \dot{x} = \pm C_o. \omega. [\sqrt{A^2 - x^2}]$ and by rearranging $[\cos^2(\omega t - \theta) + \sin^2(\omega t - \theta) = 1]$ then is $F_d^2 / [C_o. \omega. A]^2 + x^2 / A^2 = 1$, i.e.

Energy = motion is mapped as an Ellipse with F_d, x mapped along the vertical and horizontal axes respectively and the Energy Dissipated Per - Cycle is given by the area enclosed by the above ellipse.

The **Total Energy** $E = \lambda_2. \Lambda$ which is embodied in monad $\overline{AB}$ is moving as an Ellipsoid in the Configuration of co variants $\lambda, m, v = \bar{v}_E$, as **Kinetic** (Energy of motion $\bar{\Omega}$) and **Potential Energy** (The Stored Energy in λ, m, v) by Rotation and Displacement, on the Principal axis (through the centre of monad), which is mapped out, as in Solid material configuration by the nib of the Rotational-Vector ($\bar{\Omega}$) = $\delta \bar{r} c$) = $[\bar{v} \bar{\Omega} c + \bar{w}. \bar{r} n] . \delta t$, as the Inertia-ellipsoid [The Poinso's - Ellipsoid of construction] in an Absolute Frame which instantaneously Rotates around vector axis $\bar{w}, \theta$, with the constant Polar distance $\bar{w}. F_d / |F_d|$ and the constant angles ϑ_s, ϑ_b , traced on Reference - Cone [Body Frame] and on [Absolute Frame] cone, which are rolling around the common axis of $\bar{w}$ vector, without slipping, and if ($\bar{\Omega}$) = F_e , is the Diagonal of the Energy Cuboid with the three dimensions $\bar{a}, \bar{b}, \bar{c}$ then follow Pythagoras conservation law, with the three magnitudes $[J, E, B]$ of Energy-State following $\rightarrow$ Cuboidal, Plane, or the Linear Diagonal direction. [25 - 26].

The Transportation of Energy on Edge - Points happens in **Material Geometry**, while the **Transportation of** the Edge-Points as, **Positions**, exists in **Vector Geometry** only. Since in Vibrations the **Deformation of the Spring is an equilibrium Position in Δ** , and the Spring-Force $k \Delta = w = m g$ = Gravitational force w acting on mass m , then exists $\rightarrow m \ddot{x} = \Sigma F = w = k [\Delta + x] \dots (1)$, and because $k \Delta = w$ we obtain $w^2_n = k/m \dots (2)$ and (1) becomes $\rightarrow \ddot{x} + w^2_n = 0 \dots (3) \leftarrow$ i.e. **The Transportation of Energy is a Harmonic - Vibration in cave Δ , means the Wave Pattern**.

It is shown [92] that in **PNS-Space** the two equal and Opposite Stresses $\pm \sigma$, are the Two Centripetal, F_p , Centrifugal, F_f force where Energy is $\rightarrow E = h f = \frac{(1 + \sqrt{5}) . \sigma h}{8 \pi r} = \frac{\sigma \Phi h}{4 \pi r}$, in the **One Wave** - note and the frequency $f = \frac{(1 + \sqrt{5}) . \sigma}{8 \pi r}$, **Period** $T = \frac{8 \pi r}{\sigma(1 + \sqrt{5})} = \frac{4 \pi r}{\sigma . \Phi}$.

10.a.. The E-Spaces and the Energy Regular - Polygons .

a. THE GEOMETRICAL SOLUTION :

a.. The Even and Odd n-Polygons [80] :

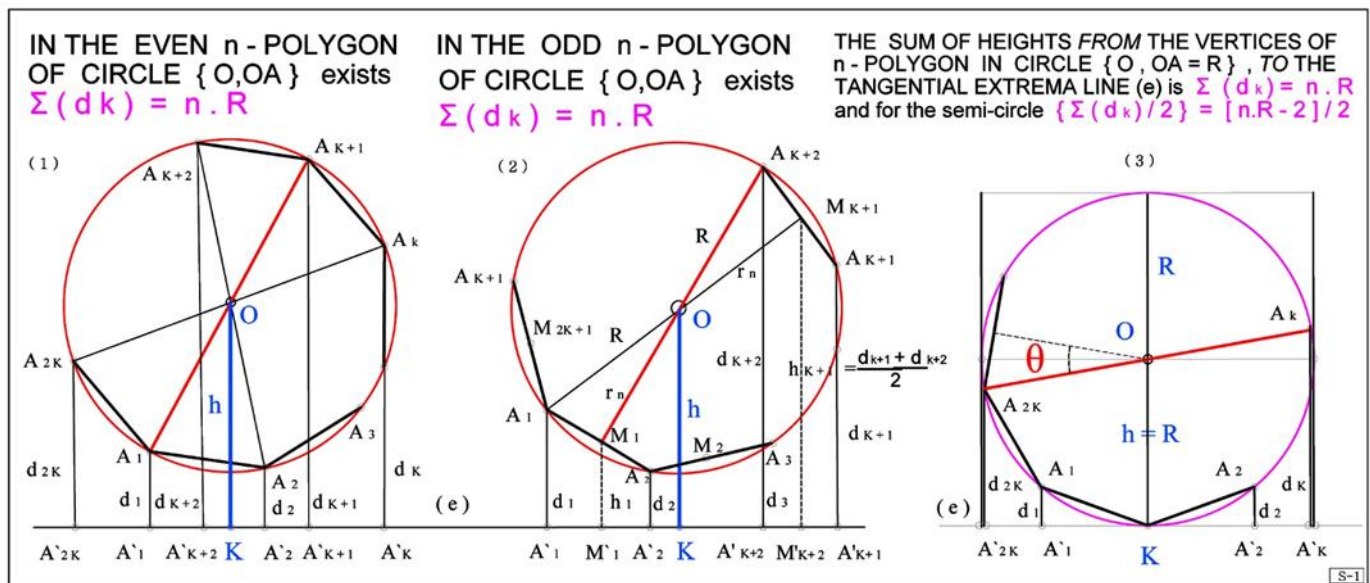


Figure –12a- An Even and an Odd n -Polygon in circle O, OA with diameters, $A_k A_{2k}$, Passing from Point A_{2k} , as Vertex (apex) of the Polygone, and diameters, $A_{k+2} M_1$ To be Perpendicular to Side $A_1 A_2$. *The Projections of the Heights h_n .*

Let be the n -Polygon $A_1, A_2, A_3, A_k, A_{k+1}, A_{k+2}, A_{2k}$, in circle (O, OA_1) ,
(e) a straight line not intersecting the circle

d_1, d_2, d_{2k} , The heights of the vertices to (e) line,

h_1, h_2, h_{2k+1} , The heights of the midpoints $M_k M_{k+1}$ of the sides to (e) line

$\varphi_{h-\lambda}$, The Angle of the vertices and the ($\perp$) Semi -Sides, and

$OK = h$, The height from the center O to (e) line. **To Proof :**

In any n - Polygon, The Sum, $\Sigma = \Sigma(h)$, of the Heights, d_1, d_2, d_{2k} , of the Vertices $A_1, A_2, A_3, A_k, A_{k+1}, A_{k+2}, A_{2k}$, where $n = 2k$, from any straight line (e) is equal to

$$\Sigma = \Sigma(h) = n \cdot OK = n \cdot h. \text{ The Geometrical Proof in [80]}$$

Remarks :

1.. In the System of Regular - Polygons the, *Interior angles (w) and Gradient (φ), Heights (h) and their differences, Δh , – Summation and Subtraction of Heights are Interconnected and Intertwined at the Common Circle $[A, \Delta h = h_A - h_B]$ Producing the Common ($n+1$), Odd – Regular - Polygon . This Property allows*

to refer the Regular - Polygons to the Tangents of any Triangle A,B,C, as it is the

8..[a] $\Rightarrow$ { STPL } Mechanisms : The Six Triple Points Line Mechanism . i.e.

The Fundamental Particles Origination happens from The Electric and Magnetic Field of the 3 Conductors On 2 Anti-Parallel-Strands, Fig– 9a-

2.. $\sin \varphi = \left(\frac{h_\varphi}{\lambda_\varphi} \right)$, is the Harmonic - Mean between $[h_A - h_B]$, $\left[\frac{1}{2(r_a - r_b)} \right]$

The Force Harmonic Vibration & The Unbalance Vibration System :

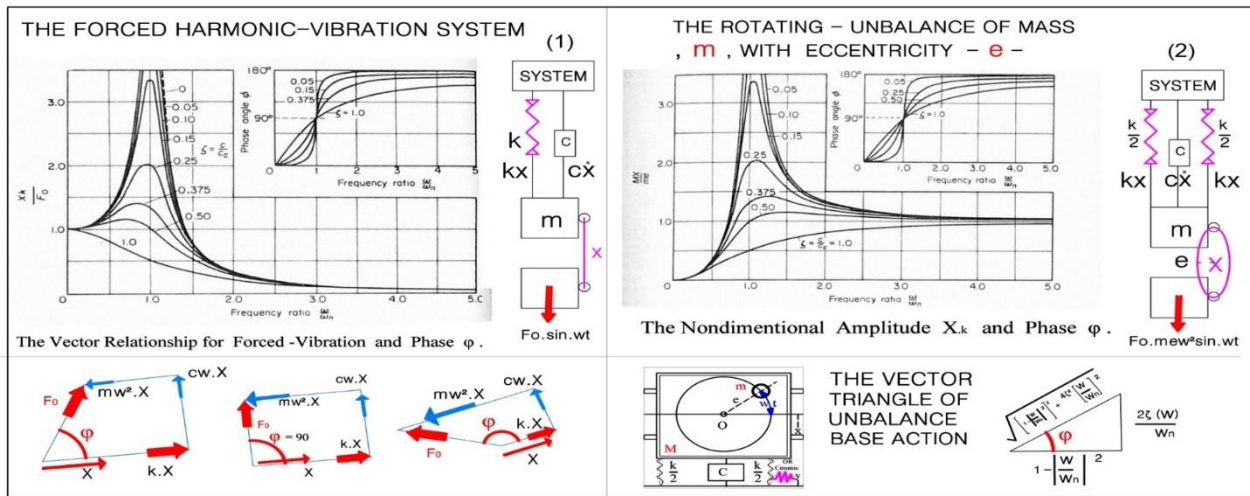


Figure –12b- The Complex Frequency Response from the **Vector-Force-Polygon** is seen that the terms of the **Forced Harmonic Vibration** , ($m \ddot{x} + c \dot{x} + k x$) = $F_0 . \sin(w t)$, are Perpendicular to the y-y axis .When the force changes to = $F_0 . \cos(w t)$, then the terms are Perpendicular to the x-x axis , i.e. **Vector-Force** is $F_0 . [\cos(w t) + \sin(w t)] = F_0 . e^{i.[w t]}$

The Rotation Unbalance Vibration System :

For an Unbalance-Rotational System , the Source of vibration excitation IS considered an Spring mass System constrained to move in the vertical dirtection and is excited by an Unbalanced rotation. The Unbalance is represented by an eccentric mass m ,with eccentricity e , and Rotates with angular velocity w , on the Nonrotating mass $M - m$, with displacement $x + \frac{e}{\sqrt{2(n)}}$, The equation of motion is , $[M-m] \ddot{x} + m \frac{d^2}{dt^2} [x + \frac{e}{\sqrt{2(n)}}] + c \dot{x} + kx = 0$, which can be rearranged to $\rightarrow M \ddot{x} + c \dot{x} + k x = m \frac{e}{\sqrt{2(n)}} \leftarrow \dots\dots (c-2)$. as in Fig-12b-2.

By tuning the System to the frequency of the exciting force $F_0 = 1$ such that $w^2 = \frac{k_2}{m_2}$, then System acts as an Vibrator-Absorber and reduces the motion of the main mass $M \equiv m_{16} \equiv m_1$ and $m_{8,4,2} \equiv m_2 \equiv m$, to Zero . Making the Substitution , $w_{11}^2 = \frac{k_1}{m_1}$, $w_{22}^2 = \frac{k_2}{m_2}$, and assuming the motion to be Harmonic , then the Steady-State solution is ,

$$X_S = \frac{m \frac{e}{\sqrt{2(n)}} w^2}{\sqrt{(k-Mw^2)^2 + [cw]^2}} , \text{ and } \tan \varphi = \frac{cw}{k-Mw^2} \text{ and so the reduced to Non-dimensional form}$$

$$\text{equation for amplitudes is , } X_S = \left| \frac{m e}{M \sqrt{2(n)}} \right| \cdot \frac{\left[\frac{w}{w_n} \right]^2}{\sqrt{\left(1 - \left[\frac{w}{w_n} \right]^2 \right)^2 + \left[2 \zeta \frac{w}{w_n} \right]^2}} , \text{ and } \tan \varphi = \frac{2 \zeta \cdot \left[\frac{w}{w_n} \right]}{1 - \left(\frac{w}{w_n} \right)^2}$$

..... (c-3) which is identical with , $m \ddot{x} + c \dot{x} + k x = F_0 . \sin wt$ (b-4) for Steady-State solution . The Resonance frequency $f_1 = \frac{w_1}{2\pi} = \frac{1}{2\pi} \sqrt{\frac{k}{m} - \frac{x_1^2}{2m^2}}$, From (c-3) ,

a). Choosing the Damping factor-values ζ and the eccentric weight exciter e , is Possible to define the Resonant amplitude $X = \frac{1}{2\zeta} \left[\frac{m e}{M} \right]$, and by altering the eccentric mass- m the Prober $X = \frac{m e}{M}$.

- b). Above Un balance happens in Rotating machines or wheels , which can be repaired by Adding or Detaching $\pm$ masses , or the opposite $\mp$ Detaching – Adding masses.
- 1). For small values of $\frac{w}{w_n} \ll 1$, both the Inertia $m.w^2.X$, and Damping forces $c.w.X$, are small which results in a small Phase angle ϕ . The magnitude of the impressed force F_0 , is then nearly equal to the Spring-Force , $k.X$, as in Fig.12.b-2
 - 2). For value $\frac{w}{w_n} = 1$, the Phase angle $\phi = 90^\circ$, as in diagram .The Inertia Force mw^2X , is larger and balanced by the Spring force $k.X$. whereas the impressed force F_0 is $\gg$ the Damping force . The Amplitude at Resonance is $X = \frac{F_0}{c.w_n} = \frac{F_0}{2\zeta k}$, or from diagram.
 - 3). For large values $\frac{w}{w_n} \gg 1$, the Phase angle approaches $\phi = 180^\circ$, and the impressed force F_0 , is expended almost in overcoming the large Inertia force , mw^2X .

a. THE NATURAL ANALOGOUS OF THE ENERGY MOTION THROUGH THE PATHS .

The Propagation Path of Vibrations & The Vibration-Absorber .

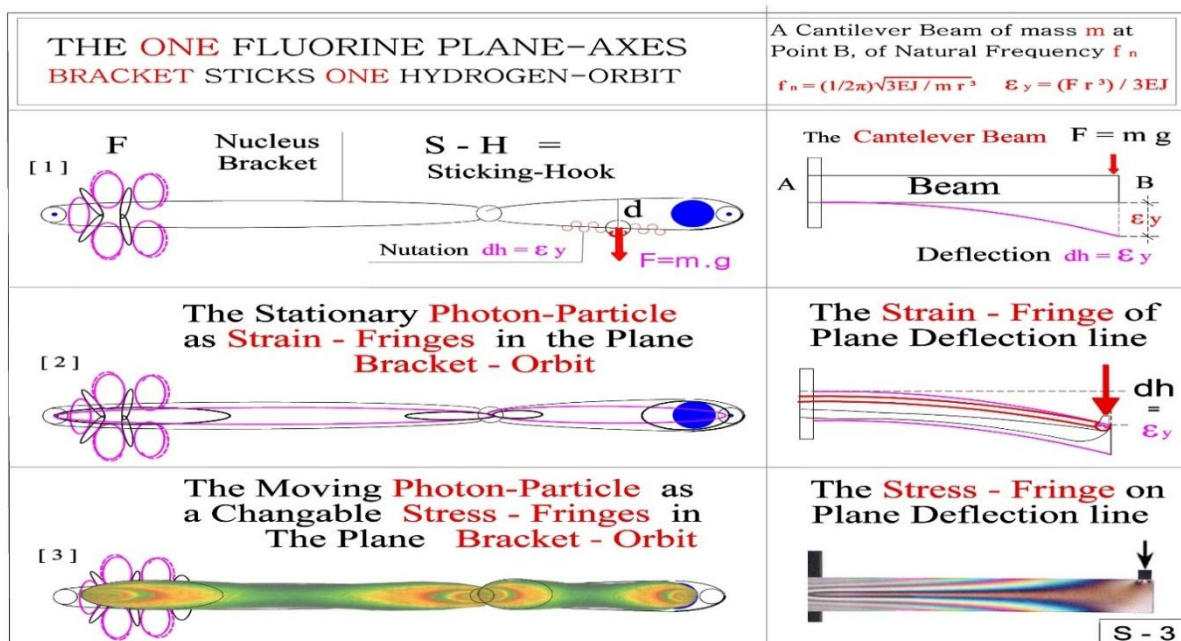


Figure –12c- The Electromagnetic-Wave $\{\bar{c}.\bar{f}_n\} + \bar{c}.\bar{f}_n$ } into the Atoms-Bracket-axes-Hook.

The Process of the Photo elastic Fringe – Pattern [96A]

In-1- The Unloaded Beam ($F = 0$) is the Length $\overline{AB}$.

In-2- The Loaded Beam ($F = F$) is the Deflection-Curve $\overline{AB}$, the **Strain** , where exist ,
 dh

a.. The Shape of the Beam is *the Space* , the **Strain** , the **Figure** of the System ,

b.. The Shape of the **Line-Stresses** is *the Figure-Fringe* the Path of Energy .

c.. The Colure of the **Figure-Fringe** . is *the motion = the Energy* the Forced Vector.

In-3- The **Loaded and Deflected-Beam** are *the Spaces = the Figures* of System.

The Loaded and Deflected-Beam **Strain-Lines-Fringes** , are the *Path of motion* ,

The Loaded and Deflected-Beam **Colure - Fringes** , are the *kind of Forced Vector* ,

The Complex Force – Vector Harmonic - Vibration & The Vibration-Absorber .

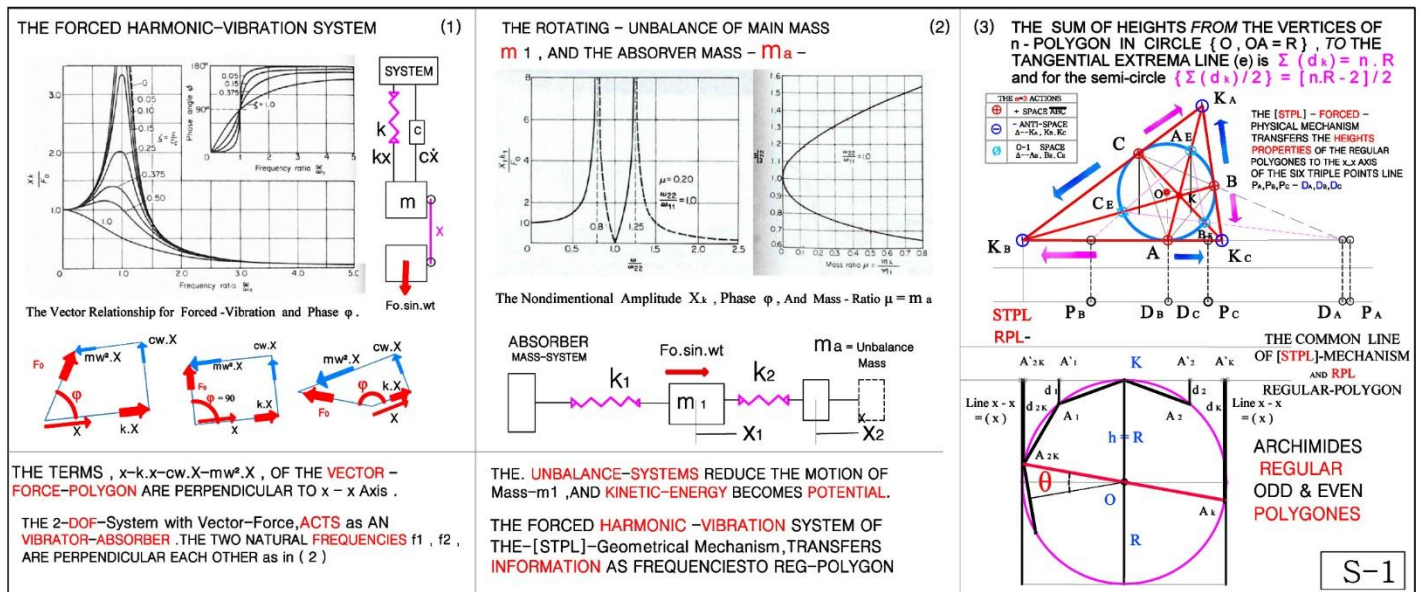


Figure -12d- The Complex -Force -Vector is $F_0 \cdot [\cos(\omega t) + \sin(\omega t)] = F_0 \cdot e^{i[\omega t]}$.

In-1- The Terms $(m\ddot{x}, c\dot{x}, kx)$, of Vector Force Polygon are Perpendicular to y-y axis.

In Case of Complex -Force -Vector the Polygon becomes an **Absorber** which Reduces the motion from Kinetic Energy to **Potential Energy** (a Magnetic Field) .

In-2- The 2-DOF System with Vector Force such that , $\omega_{11}^2 = \frac{k_1}{m_1}$, $\omega_{22}^2 = \frac{k_2}{m_2}$, acts as an **Vibrator Absorber** , and reduces the motion of the mass m_1 to zero .The two **Natural Frequencies** , f_1 , f_2 , are Perpendicular $[\perp]$ **each other** as the Diagrams. This happens for every action on the **8.[a , b , c , d] Physical - Mechanisms** .

In-3- The{ STPL } - Six Triple Points Line Mechanism is formed from **Three Tangents** from A ,B ,C Spaces on 2R - Circle . Since **Pascal-Desargues** lines meet on Markos STPL Mechanism lines ,Then transfer the **Properties & Information** (f_1 , f_2 , , f_n) From The **Complex-Vector-Absorber $= 2\overline{R}$** , to The **Vector-Force-Polygons**

Remarks :

- The n-Knots** Figures is any N-DOF System , which **Characteristic equation** results to an Algebraic equation of 3-n Degree , with main equation of motion $[\lambda.M + K] X = 0$
- The n-Knots** Figures exist in Figures where the **Vector -Force - Polygons** have the same number **n** , as the in Figures . In (3) The Circularly- **Charged Breakages** are the three- **3** elements $[\Sigma = n \cdot h] \Rightarrow [s^2 = \oplus , 2s^2 = \emptyset , -s^2 = \ominus]$ which formulate the **3-Knots** Figures. This {STPL}-Mechanism of 3 elements ($n=3$) determinates the Mould which denotes the number **n** , of the Spaces for **Elementary-Particles Vector**.
- The case of {TCIC}** $\equiv [\Sigma = n \cdot h] \Rightarrow 8 \times \textcircled{1}$ which is the **Physical Mechanism** , gives the **n-masses** of Atom`s &Compounds determining the **Atoms Complex-Vector-Response**.

B... GENERAL :

1.b. The Spaces and the Energy States .

- 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 the Vibration Type $\leftarrow$** [52]
- 4..The Electron-Nutation in Hydrogen cave Produces Energy due to **g** effect , as an minimum frequency $f_n \equiv 2,8398447 \cdot 10^{10}$ 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 the Bonding of Atoms .
- 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 New- 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 all 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 $[\oplus \leftrightarrow \ominus] = [p \leftrightarrow e] = [\text{Atom-Plug} = + \text{Electric Vector} \leftrightarrow - \text{Magnetic Vector} \equiv \text{Drain} \equiv \text{Hole}]$, 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 Energy - Space 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 → a) The **Nucleus IN-Sphere** b) The **Dynamic Electro-Magnetic -Tetrahedron** , c) The **N-Outer- Cube** , d) The **Orbitals in EX-Sphere**.

10..In the New-Atom-Structure , the **Master-Keys - Resonances** are the Communications-

11.. Article [110] is the completion of [72-82] and of Physical interpretation of the three constants of nature , that of Planck constant L_p , Newton's Gravitational constant G , and the Gravity Constant g ,with a rigorous Geometrical and Mechanical logic .

It was shown [33-36] that Un-clashed Fragments through the center , O , consist the Medium-Field Material-Fragment → $[\pm s^2] = [MFMF] \equiv \text{The Chaos}$, the Base for all motions ← and Gravity which is a force $[\bar{g}i]$ while the clashed with the constant velocity , $\bar{c}$, consist the Dark matter $[\pm \bar{c}.s]$ and the Dark Energy $[\bar{c}.\bar{g}i]$, **so declaring that** → Antimatter-Galaxies and Antimatter-Asteroids can exist only as Dark-matter or and Dark-Energy and **Not as Antimatter light** , - **c** . From the velocity Breakages $[\pm s^2 = \pm (w r)^2]$, $[\bar{g}i = 2(w r)^2]$ and the between instress σ , become the Waves $\{The distance ds = r = |AA_E| \text{ which is the Work embedded in monads and it is what is vibrated as frequency } f\}$ of the Material-Point with their Vibrating equations of motion and after to become the Waves .

A → The Particles with Inherent Vibration occupying the Distances $r = ds = \text{Positions } |AA_E|$ the $\{\text{Monad} = OK_0 = R\} \equiv \text{Energy In Vacuum Spaces}$ are the Fundamental Particles , as $[\pm \bar{v}.s^2] \rightarrow \text{Fermions , Quarks and Leptons}$, and $\rightarrow [\pm \bar{v}.\bar{g}i] \rightarrow \text{the Bosons}$,

B → The Gravity-Antigravity Field-Energy g without Vibration being a Stationary-Rotating Spinning Material Point M-P. $[\pm s^2] \rightarrow \text{The [MFMF] Neutral Field} \equiv \text{The Energy Chaos}$, and their *Negative Energy* Binder - Field $[\bar{g}i] \rightarrow \text{as } \pm \text{Positions}$,

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

$$- \bar{S} = - \text{Gravity} - \text{Spin} = - \frac{\pi.r^3.\sigma.\Phi}{2} \Rightarrow \text{The Antigravity Spin}$$

C → The Dark-matter and the Dark-Energy constituents are as below ,

$[\pm \bar{c}.s^2] \rightarrow \text{The Dark-matter}$, and the Binder Gravity-Force $\bar{g} \equiv [\bar{g}i]$,

$[\bar{c}.\bar{g}i] \rightarrow \text{The Expanding Dark -Energy , Positive-Energy}$, which both are moving with light - velocity , $\bar{c}$, causing the Universe to Grow.

From above in , A , and , C , case → Energy as Velocity , $\bar{v}$, and , $\bar{c}$, exists in the Discrete monads , $\pm \bar{v}.s^2$, and , $\pm \bar{c}.s^2$ only .

2 , The Case of Transportation of Energy , from Chaos to Stationary-Material-Points .

Dark Energy DE $\equiv [\bar{c}.\bar{g}i]$ (©) , Acting $\Rightarrow \text{Positive-Energy}$, on the Five Constituents

$\{ [(\bar{g}i) , (+s^2) , (-s^2) , (+cs^2) , (-cs^2)] \}$ then Produces ,

$[\pm s^2] \rightarrow \text{The [MFMF] Field } [\pm \bar{c}.s^2] \rightarrow \text{DM-DE Field of , DM = Dark matter , and DF = Anti matter = Dark Energy .}$

$[\pm \bar{v}.s^2] \rightarrow \text{The PNS Space , Particles Fermions}$, and $[\bar{g}i] \rightarrow G_f \equiv \text{Gravity-Force in DM-DE Stationary Rotating = Field .}$

$[\bar{v}.\bar{g}i] \rightarrow \text{The Bosons}$,

$[\bar{c}.\bar{g}i] \equiv \text{The DE} \rightarrow \text{Dark Energy} \rightarrow \text{The Travelling-Energy with , } \bar{c} , \text{ velocity.}$

$\vec{c} \times (\text{©}) [\bar{g}i] \equiv G_f \rightarrow \text{The Gravity Force .}$

In all above issue Kepler - laws , denoting that **Macrocosm and Microcosm** Obey the Newton`s Laws of motion , in all Scales , as was Proofed .

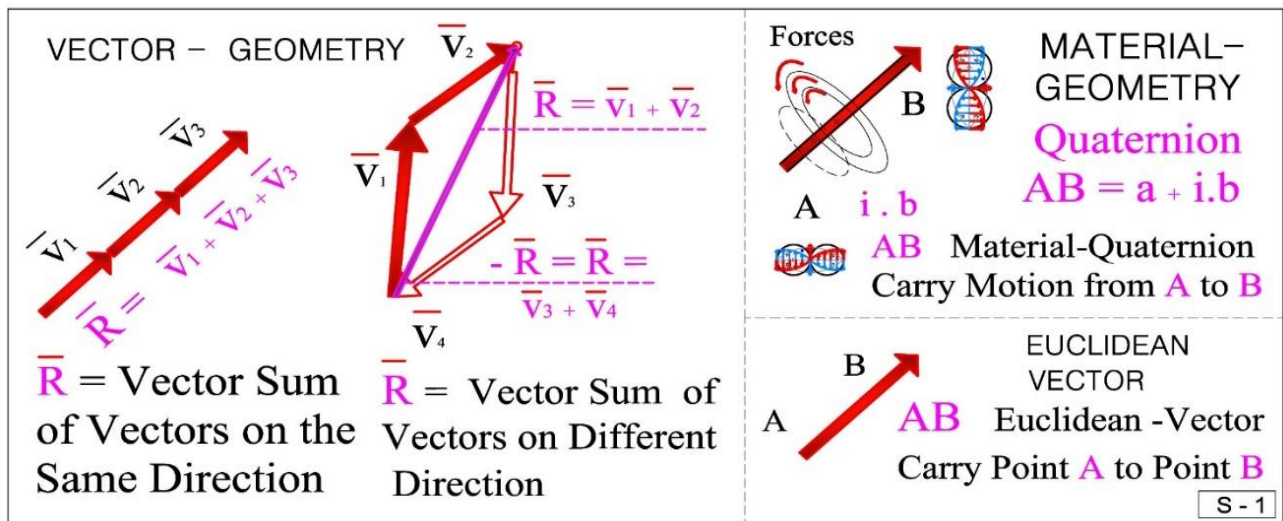


Figure - 13 - Vector-Geometry follows the Geometry rules as the left figure. Euclidean Vector Carry Point A to Point B as , AB , following the Geometry rules , while The Material – Points $\equiv$ Quaternions , **Carry the Motion $\equiv$ Energy , from Point A , to the Point , B , linearly** . In both cases the Points are nothing Possessing Zero-magnitude and Infinite-directions . The **Two Points** in E-Geometry consist the Straight-line-Segment Possessing $|AB|$ - magnitude and the $|A \rightarrow B|$ Directions while the **Two-Points** in Material-Geometry denote Two-Elements as one (+) and one (-) Performing the **Space $\equiv |AB|$ of motion = Energy $\equiv [A \leftrightarrow B]$** in $|AB|$ Space .The above comparison can be seen in Figure-1- also .
Conclusions – 3 - :

From above Analysis is Seen the Path which Energy as motion follows to Propagate . This Path is the Resultant of the Vector-Sum , or the Quaternion as Material-Point . The Vector-Sum-length as a Geometrical-Resultant-Vector is the Quaternion`s Edge Points Energy-vibration which transfers the motion from the vibrating-Edge-Points .

Thus **Stress $\rightarrow \sigma = [\frac{2\pi r}{\phi^2}] \cdot f_n \leftarrow$ is the Way of Information and Storage** in Nature .

Extending above to all Planetary Systems and to Universe is seen that **BIG - BANG** . has Never been existed , **Inversely Energy $\equiv$ Motion $\equiv$ Matter** followed the (+) **Stress-Storage** , $\pm \sigma = [\frac{2\pi r}{\phi^2}] \cdot f_n$, and **Anti-Matter** followed the (-) **Stress-Storage and Material-Geometry**.

2.b. The Complex Numbers & Quaternion .

1... De Moivre`s formula for complex numbers states that the multiplication of any two Complex numbers say z_1, z_2 , or $[z_1 = x_1 + i.y_1, z_2 = x_2 + i.y_2]$ where $x = \text{Real}[z]$

the Real-Part and $y = \text{Imaginary}[z]$. the Imaginary Part of z , is the multiplication of their moduli r_1, r_2 , where the moduli r , is the magnitude $[r = |r| = \sqrt{x^2 + y^2}]$ and the addition of their angles φ_1, φ_2 , where $\varphi = \arg(z) = \text{atan2}(y, x)$ and so $z_1 * z_2 = (x_1 + i.y_1) \cdot (x_2 + i.y_2) = r_1 \cdot r_2 [\cos(\varphi_1 + \varphi_2) + i \cdot \sin(\varphi_1 + \varphi_2)]$ and when $z_1 = z_2 = z$, and $\varphi_1 = \varphi_2 = \varphi$, then $z = x + i.y$ and $z \cdot z = z^2 = r^2 [\cos 2\varphi + i \cdot \sin 2\varphi]$ and for w , complex numbers becomes the Euler's, $z^w = r^w \cdot [\cos(w\varphi) + i \cdot \sin(w\varphi)]$ and so for $r = 1$ then $\rightarrow z^w = 1^w \cdot [\cos \varphi + i \cdot \sin \varphi]^w = [\cos(w\varphi) + i \cdot \sin(w\varphi)]$. The n -th root of any number z , is a number b $[\sqrt[n]{z} = b]$ such that $b^n = z$ and when z is a Point on the **Unit circle** $r = 1$, the first vertex of the Polygon where $\varphi = 0$ is $[b = (\cos \varphi + i \sin \varphi)]^n = b^n = z = \cos(n\varphi) + i \cdot \sin(n\varphi) = [\cos(360/n) + i \cdot \sin(360/n)]^n = \cos 360^\circ + i \cdot \sin 360^\circ = 1 + 0 \cdot i = 1$ **i.e.**

The **w-Spaces** which are the repetition of any Unit complex number z (multiplication by itself) is equivalent to the addition of their angle and the mapping of the Regular Polygons on circles with unit sides, while the **n Spaces** which are the different roots of unit 1 and are represented by the Unit circle and have Points $z = 1$ as one of their vertices, are mapped as these Regular Polygons *inscribed the unit circle*, Figure-1- (1)

Since also $z^w = z^{-n}$ and $z^{-n} = z^{-1/n} = z^{+n}$ therefore complex numbers are even and odd functions, **i.e.** are Symmetrical about y , axis (mirror) and also about the origin. Euler's rotation in 3D Space is represented by an axis (vector) and an angle of Rotation which is a Property of complex number and defined as $\bar{z} = [s \pm \bar{v} \cdot i]$ where $s, \bar{v}$ are real numbers and i the imaginary Part such that $i^2 = -1$. Extending imaginary Part to three dimensions, $\mathbf{v}_1, i, \mathbf{v}_2, j, \mathbf{v}_3, k \rightarrow \bar{v} \cdot i$ becomes Quaternion which has $1 + 3 = 4$ degrees of freedom **i.e.** $[dx - dy - dz - df] \equiv \text{The Space - Energy- Mode}$.

2... De Moivre's formula for the n -th roots of quaternion, where $q = k \cdot [\cos \varphi + [i] \cdot \sin \varphi]$ is for $w = 1/n$, $q^w = k^w \cdot [\cos w\varphi + \varepsilon \cdot \sin w\varphi]$ where $q = z = \pm (x + y \cdot i)$ decomposed into its scalar (x) and vector Part $[y \cdot i]$ and this because all the inscribed regular Polygons in the Unit circle have this first vertex at points, 1, or at -1 , (for real part $\varphi = 0, \varphi = 2\pi$) and all others at imaginary Part where $k = \mathbf{T}_z = \text{Tensor (the length) of vector } z$, in Euclidean

coordinates which is $k = \mathbf{T}_z = \sqrt{x^2 + y_1^2 + y_2^2 + y_n^2}$ and for imaginary Unit vector $\bar{a} (a_1, a_2, a_3, a_n, w)$ the Unit vector ε , of imaginary Part is $\rightarrow \varepsilon = (y \cdot i / \mathbf{T}_y) = [y \cdot i] / [\mathbf{T}_y] = \pm (y_1 \cdot a_1 + y_2 \cdot a_2) / \sqrt{y_1^2 + y_2^2 + y_n^2}$, the rotation angle $0 \leq \varphi < 2\pi$, $\varphi = \pm \sin^{-1} (\mathbf{T}_y / \mathbf{T}_z)$, $\cos \varphi = x / \mathbf{T}_z$, which follow Pythagoras theorem for them and for their reciprocal quaternions $\bar{a} [\bar{a} \cdot \bar{a} = 1]$.

Since also the directional derivative of the scalar field relation $y (y_1, y_2, \dots, y_n, \dots)$ in the direction i , is $\rightarrow i (y_1, y_2, \dots, y_n) = i_1 \cdot y_1 + i_2 \cdot y_2 + i_n \cdot y_n$ and is defined as $\rightarrow i \cdot \text{grad } y = i_1 \cdot (\frac{\partial y}{\partial x_1}) + i_2 \cdot (\frac{\partial y}{\partial x_2}) + \dots = [i \cdot \nabla] \cdot y$, **which gives the change of field** y , in the direction $\rightarrow i$,

and $[i.\bar{z}]$ is the **single coherent Unit** , Therefore coexistence between Spaces ,Antispaces and **Sub-Spaces** of Any monad $\rightarrow \bar{z} = x + y .i = \overline{AB}$, is happening through the general equation which follows

$$\begin{aligned} m^{\pm[s+v\bar{z}]} &= q^w = (T_q) \bar{z} . [\cos.w\varphi + \varepsilon .\sin.w\varphi] \quad , \quad \text{where} \quad , \\ m &= \lim(1 + 1/w)^w \quad \text{for} \quad w = 1 \rightarrow \infty \quad , \quad q = z = \pm (x+y.i) \\ \sin\varphi &= y / \sqrt{x^2 + y^2} \quad , \quad \cos.\varphi = x / \sqrt{x^2 + y^2} \quad , \quad |z| = \sqrt{x^2 + y^2} \\ T_q &= \sqrt{x^2 + y_1^2 + y_2^2 + \dots y_n^2} \quad , \quad T_y = \sqrt{y_1^2 + y_2^2 + \dots y_n^2} \quad , \\ \varepsilon &= (y.i / T_y) = [y.\bar{z} i] / [T_y] = \pm (y_1.a_1 + y_2.a_2) / \sqrt{y_1^2 + y_2^2 + \dots y_n^2} \quad \text{i.e.} \end{aligned}$$

The Spaces , Antispaces and Sub-Spaces of Any monad $\rightarrow \bar{z} = x + y.i = \overline{AB}$ follows the **Euclidean Geometry** (2a) and the **Energy** flow (2b) , as in Figure -1-3-21.

The Vectors-Sum of Vectors , Either on Points on The Same - Linear-Direction of Vectors , Or on Non-Linear-Directions , Results onto The-Resultant-Vector $\bar{R}$, of all System-vectors and becomes **A Linear-Vibration between Quaternion-Edge-Points**.

This Remark denotes that Quaternions which are composed of Real (+charge) and of Imaginary Part (- charge) act only on the **Resultant-Direction End-Points** carry Energy from One - Edge to another- Edge as in Fig – 6 - The Above Property of Imaginary-Part $\equiv$ Energy shows The How Elementary Particles are Originated from the three Charges (of The Spaces $[\oplus - \emptyset - \ominus]$) , Circularly-Placed on The-Three-Triangles of STPL- Mechanism . [93]
From Planck's **Energy** $E = h.f_p = [6,6262.10^{-34} \text{ J.s}] \times [3,28393.10^{15} / \text{s}] = 2,176.10^{-18} \text{ J}$, and in eV becomes $\rightarrow [2,176.10^{-18}] / [1,6.10^{-19}] = 13,6 \text{ eV}$ or ,
Energy in Gravity-Layer $g \Rightarrow 13,6 \text{ eV} = hf = h / T = h / \sqrt{g.a^3}$.

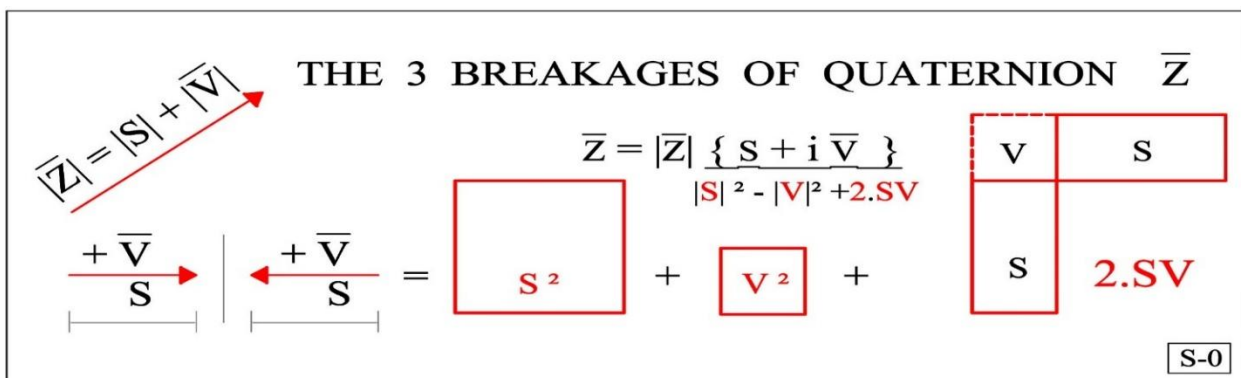


Figure - 14 - : The Action of quaternion $\bar{z} . \bar{z} = [s + \bar{v}.\bar{z}i]^2 \equiv s^2 - |\bar{v}|^2 + [2.\bar{w}].|s r|.\bar{z}i \equiv s^2 - s^2 + 2.S^2$ and follows Pythagoras theorem of the Euclidean Geometry.

3b...: The Stability of Space - Anti-Space , IN the Neutral-Space

The number of Moulds of **Stationary-States** are as , $2^{n-1-4 \text{ Points}} \equiv 2, 4, 8, 16 \equiv 4\text{-Types}$ 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 these follow the **Mould of Spaces** $2^n = 3 = 8$ Elements which is **The-Cube** as was shown before for the Atoms structure Fig-5-28 .

The Atoms-Bonding follows $\rightarrow$ **Space $\equiv$ Electric-field & Anti-Space $\equiv$ Magnetic-field** $\leftarrow$

4b... 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 , [101]-3c.P-21.

The Problem is to determine the expression of the **Power** developed by **Gravitational Force**.

From Dual-Photon-equation , $\bar{v} \cdot [\bar{f}_n] + f_n \equiv |\frac{v}{\pi^2 \cdot r_n^4}| \cdot [\bar{B}_n] + |\bar{c}| f_n$,when $\mathbf{c} = \mathbf{0}$ or $\bar{c} = \bar{c}$, then

Photon motion becomes $\rightarrow |\frac{v}{\pi^2 \cdot r_n^4}| \cdot [\bar{B}_n] \leftarrow \equiv$ **Spin** . i.e. **The Stationary Photons exist as their Spin only**. This **Rest-Space** is the Part $|\frac{v}{\pi^2 \cdot r_n^4}| \cdot [\bar{B}_n]$ and its Communication Code to be the term $|\frac{v}{\pi^2 \cdot r_n^4}| = |\frac{w r}{\pi^2 \cdot r^4}| = |\frac{2 v}{2\pi^3 r^4}|$,**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 one Force which effects on the Rest-Space in Torsional motion , and Onto the light velocity vector $\bar{c}$, is the gravity force g only.

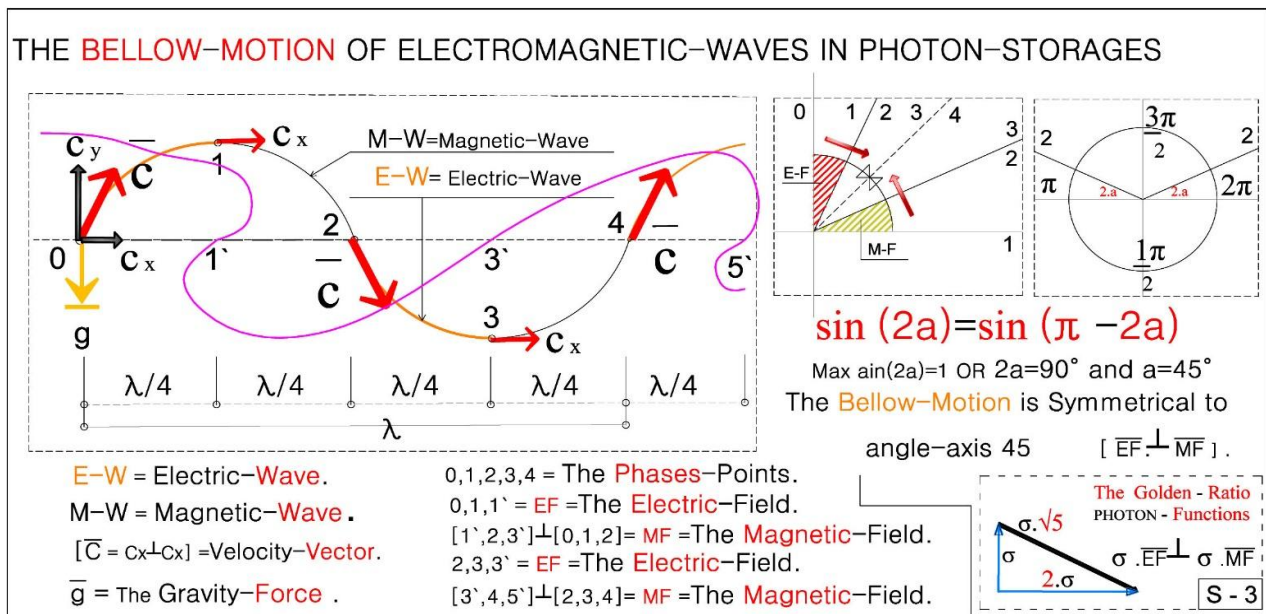


Figure - 15-The Stability of {⊕- Space [Electric Wave], {⊖-Anti-Space [Magnetic Wave] of Sub-Space { [⊕↔⊖] ≡ ds ≡ [⊕←ds→⊖] – or –The Neutral-Space [A_E, B_E, C_E]} :

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 $0-1$, may be 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 λ , as $\lambda / 4$. distance with $90^\circ = \frac{\pi}{2}$ to be the change

of Phase . **This means that the Produced Work in 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 λ , in total Period T as $\lambda = c_x T =$

$$c \cdot \cos a \cdot T \text{ or } \lambda = c \cdot \cos a \cdot \frac{2(c \sin at)}{g} = \left[\frac{2c^2}{g}\right] \sin a \cdot \cos a = \left[\frac{c^2}{g}\right] \sin 2a , \dots\dots(1)$$

since from trigonometry exists , $\sin 2a = 2 \sin a \cdot \cos a$.

The maximum wavelength λ happens when **$\sin 2a = 1$** or $2a = 90^\circ$ and $a = 45^\circ$, i.e. $\rightarrow$ **The Total motion in the Wavelength , λ , 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° Type simultaneously oscillate to its

45° 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 .

$$\lambda = c \cos a \frac{2(c \sin at)}{g} = \left[\frac{2c^2}{g}\right] \sin a \cdot \cos a = \left[\frac{c^2}{g}\right] \sin 2a = \left[\frac{c^2}{g}\right] \cdot \sin(\pi - 2a) =$$

$$\left[\frac{c^2}{g}\right] \cdot \sin\left(\frac{\pi}{2} - a\right) \dots(2) \text{ since } \sin 2a = \sin(180 - 2a) = \sin(\pi - 2a) , \text{ and also}$$

$$\sin 2a = \sin(180 - 2a) = \sin\left(\frac{\pi}{2} - a\right) \dots\dots(1a)$$

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 $\left| \frac{v}{\pi^2 \cdot r_n^4} \right| = \left| \frac{n \cdot \pi c}{\pi^2 \cdot r_n^4} \right| = \left| \frac{n \cdot c}{\pi \cdot r_n^4} \right| = \left| \frac{w r}{\pi^2 \cdot r_n^4} \right| = \left| \frac{2 \pi \cdot f}{\pi^2 r^3} \right| = \left| \frac{2 \cdot f}{(\pi r^3)} \right|$ with Electromagnetic

Radiation the in monads frequency- f , which is satisfied by the relation $\left| \frac{2rw}{2v} \right| = \pi/2 , \pi , 3\pi/2$

..., $n \cdot [\pi/2]$, 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 $f_1 = n \cdot \left[\frac{\bar{v}}{2r} \right] \times \left[\frac{1}{4} \right] =$

$n \cdot \left[\frac{\bar{v}}{8r} \right]$ 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 , (1) – (1a) , with the same Period T of the two Waves [92-E}.

The effective-Range of the Wavelength λ , 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 φ = 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 = $2 \cdot t$ 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 , λ_x , λ_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 $E_x = g$,

$$\text{then } \rightarrow \lambda_x = \left\{ \frac{c^2}{g} \right\} \cdot \sin(\pi - 2\varphi), \lambda_y = \left\{ \frac{c^2}{g} \right\} \cdot \sin\left(\frac{\pi}{2} - \varphi\right) \leftarrow \dots\dots(4)$$

Since Monads are Complex quantities as $\mathbf{AB} \equiv \bar{\mathbf{z}} \equiv \mathbf{x} + \mathbf{i} \cdot \mathbf{y}$, then are Quaternions where Material-Points $\equiv$ Quaternions, which **Carry the $\rightarrow$ Motion $\equiv$ Energy $\leftarrow$ from the two Edge-Points $[\bar{\mathbf{A}} \leftrightarrow \bar{\mathbf{B}}]$, as this is from Point A, to Point B circularly.**

Since $\lambda_x \perp \lambda_y$, then issues $\lambda_y = [i = \sqrt{-1}] * \lambda_x$, or equivalent to multiplying the quantities along the $x - x$ axis, by $i = \sqrt{-1}$.

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

C.: THE ORIGATION OF THE PHYSICAL LOOPS $\equiv$ CAVES

1c.. The Gravitation Force G, and the Kick - Start : [78-79]

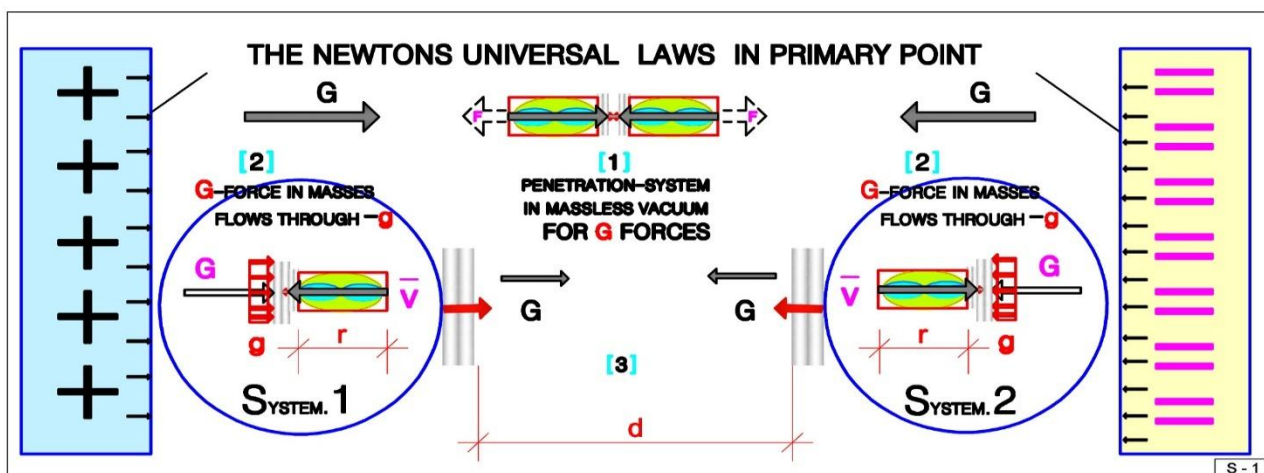


Figure – 16. The Newton's Universal Laws in **Primary-Material-Point**,

Above, is consisted of the Two-Primary-Opposite-Spaces, $\{+\} \{-\}$, Poles, with infinite Points and Parallel-lines such that $\mathbf{G}$ is a Uniform-Pointy-Force.

From where $\mathbf{G}$, 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- $\mathbf{B_P}$, **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 issues 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 this is the **Growing-Golden-ratio-Pattern Φ** . Because of this **Stress-Layer g**, **all the Energy-Structures Present** $\rightarrow$ Reaction to any motion $\leftarrow$ i.e. **mass**. The Gravity acceleration **g**, produced from the in Material-Points acceleration is equal to the Pressure **σ** , and is the Conductor to all Waves as,

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

From Figure -15(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 an 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, $1 = g \cdot f_n^2 \cdot a^3 = \left[\frac{4\pi^2}{GM} \right] \cdot f_n^2 \cdot a^3$, where $g = \left[\frac{4\pi^2}{GM} \right]$ as this was shown in [79] for Unit-Monad-relation.

An Energy-Rim = Cave is a Plane - Surface, *an orbit*, representing an 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 equation $1 = k \cdot f_n^2 \cdot r_p^3$. The **Stationary Energy** is spread in one Plane as this happens for the 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 as Fig-15. 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, *the 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 = 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 $(4/3) \cdot \pi \cdot r^3 = 3,96 \cdot 10^{-32}$ m³, and then the Energy in this Planck's loop is the minimum quantized. From Planck's **Energy E** = $h \cdot f_p = [6,6262 \cdot 10^{-34} \text{ J.s}] \times [3,28393 \cdot 10^{15} / \text{s}] =$

$2,176.10^{-18}$ J , and in eV becomes $\rightarrow [2,176.10^{-18}] / [1,6.10^{-19}] = 13,6$ eV or ,

Energy in Gravity-Layer $g \Rightarrow 13,6$ eV = $h f = h / T = h / \sqrt{g \cdot a^3}$.

The above quantity of Energy consist the **Hydrogen minimum Energy-Rim** , which becomes

from Loop-equation $a = \sqrt[3]{T^2/g} = \sqrt[3]{\frac{[3,04513.10^{-16}]^2}{9,80769251}} = 2,1145016.10^{-16}$ 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** $\leftarrow$

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 $G = g \cdot [g_L k_L] \equiv g \cdot [1*1] \equiv$

$\rightarrow g \leftarrow$ 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 $\lambda = c T = c / f_p$ which EM-Radiation , *carries* the Box B_R .

Universal Gravitational constant $G = g k$ 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 ,

$$F = k_c [q_1 \cdot q_2 / r^2] = k_c [\oplus \rightarrow \leftarrow \ominus] / r^2 = \frac{8}{\pi r(1+\sqrt{5})} \left[\frac{B}{r^2} \right] , \text{ and Coulomb constant}$$

$$k_c = 9.10^9 \text{ Nm}^2/\text{C}^2 , \text{ i.e.}$$

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 $\bar{p} \equiv \bar{B} \equiv$ as momentum which is the analogous in the Revolving motion

where **then issues** $\rightarrow G = g k = k_E g = g \cdot k_R g_R = \bar{p} , g_c = \sigma = \frac{\text{Force}}{\text{Area}} = \frac{g \cdot \text{Mass}}{\text{Area}}$

For Earth-System mass $M_E = 5,9723.10^{24}$ Kg and Radius $R_E = 6378,137$ Km

$= 6,378.10^6$ m , then Earth-constant $k_E = \frac{R_E^2}{M_E} = \frac{[6,378.10^6]^2}{5,98.10^{24}} = 6,811551810^{-12}$ and

G = g k_E = [9,8076941] . 6,8116.10⁻¹² = 6 , 68056.10⁻¹¹ m³/ N.s² becoming

from **g , k_E** only , i.e. **G** as force Pushes $\rightarrow$ **g** as Stress energy in $\rightarrow$ **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 $\mathbf{a}$, 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 σ , where issues only Rotational Energy $E_R = \bar{B} \cdot \bar{w} = 2L = J \cdot \omega^2$, and $2E = B f$, or $\rightarrow 2 \cdot (0,5 \cdot m \cdot c^2) = m \cdot c^2 = 0,5 \cdot \pi \cdot r^4 \cdot c^2 / 4$, then $4 \cdot \bar{B} \cdot f = c^2 \cdot r^4$, where the Golden ratio frequencies $\rightarrow f_n = \left[\frac{n \cdot \sigma \cdot \Phi}{2 \cdot \pi \cdot r} \right] \equiv \frac{n \cdot (1 + \sqrt{5}) \cdot \sigma}{2 \cdot \pi \cdot r} =$
 $= c^2 \cdot r^4 / 4 \cdot \bar{B} = \frac{E}{h} \leftarrow$ 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 $n c^2 = n \cdot c c$, becomes the **Gravity** $\mathbf{g}$, 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

$$G \equiv g \cdot k_E \equiv g \cdot [g_L k_L] \equiv \left[\frac{T_P^2}{a^3} \right] \cdot [g_L k_L] = 9,808238 * 6,8116 \cdot 10^{-12} \equiv 6,68056 \cdot 10^{-11} \frac{\text{m}^3}{\text{Ns}^2}$$

So $\mathbf{G}$, 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 $\mathbf{g}$, 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 - $\mathbf{G}$, is the **Permitted Path**, or the communication Conductor on all Energy Wave Structures, **In and Out Planck's length**.

Remarks: Gravitational Force $\mathbf{G}$, is the Pressure which every Object in the Universe

Exerts on every other, *whether Small or Big* and is equal to $F_{\text{grav}} = \frac{G \cdot M \cdot m}{d^2} = \frac{g \cdot R_E^2 M \cdot m}{M d^2} =$

$$\frac{g \cdot R_E^2 \cdot m}{d^2} = \frac{m g \cdot R_E^2}{d^2}, \text{ and } G = \frac{g \cdot R_E^2 M \cdot m \cdot d^2}{M d^2} = \frac{g \cdot [R_E^2]}{M} = g \cdot k_E, \text{ where } k_E = \frac{[R_E^2]}{M}, \text{ and}$$

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 $g_L = k_E / k_L$

$$\text{From relation } \mathbf{G} = g k_E = 9,8076941 \cdot 6,8116 \cdot 10^{-12} = \mathbf{6,68056 \cdot 10^{-11} \text{ m}^3 / \text{N} \cdot \text{s}^2}$$

and from relation $\mathbf{1} = c \cdot r^3 \cdot f_P^2 \rightarrow f_P = \sqrt{1/c r^3}$ and from $f = E/h$ then $\frac{E}{h} = \sqrt{1/c r^3}$ or $\rightarrow$

$$E = h \cdot \sqrt{1/c \cdot r^3}, \frac{E^2}{h^2} = \frac{1}{c r^3} \rightarrow \text{and, } E^2 = \frac{h^2}{c r^3}, \text{ is an Energy relation between } c, r.$$

Instances: [77]

1.. **For Earth-System** mass $M_E = 5,9723 \cdot 10^{24} \text{ Kg}$ and for Area $\rightarrow$ Radius $6378,137 \text{ Km}$
 $= 6,378 \cdot 10^6 \text{ m}$ then the Earth-constant $k_E = \frac{[6,378 \cdot 10^6]^2}{5,9723 \cdot 10^{24}} = 6,811551810^{-12}$ and

$$\mathbf{G} \equiv \sigma \cdot \Phi^3 = g k_E = 9,8076941 * 6,8115518 \cdot 10^{-12} = \mathbf{6,6805616 * 10^{-11} \text{ m}^3 / \text{Kg} \cdot \text{s}^2}$$

i.e. **Gravitational-constant $\mathbf{G}$ becomes from g, k_E** , and issues

$$G = 6,6805616 \cdot 10^{-11} \text{ m}^3 / \text{N} \cdot \text{s}^2 \dots \dots \dots (7)$$

For Black-Holes-System mass $M_{BH} = 4,0 \cdot 10^{52} \text{ Kg}$ and for the Area

Radius $3,08.10^{25}$ m , then Black-Hole-constant $k_{BH} = \frac{[3,08.10^{25}]^2}{4,0.10^{52}} = 2,3716.10^{-2}$
 $g_{BH} = \frac{k_E}{k_{BH}} = 6,81155.10^{-12} / 2,3716.10^{-2} = 2,872.10^{-10} . g_E \rightarrow$ i.e.

For Earth-Unit-coefficient $k_E = 6,81155.10^{-12} \rightarrow$ Black-Hole –Unit-coefficient
 $k_{BH} = 2,3716.10^{-2}$ m²/Kg , and **Gravity acceleration of a Black-Hole** is ,
 $g_{BH} = 2,872.10^{-10} . g_E$, an expected explanation .

For all Planes issues $G = k_E g = g . k_L g_L$, and for Black-holes also where ,
 $G = g . k_{BH} . g_{BH} = 9,8076941 * 2,3716.10^{-2} * 2,872.10^{-10} = 6,6805616 * 10^{-11}$
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 $\rightarrow F_{grav} = \frac{G.M.m}{d^2} =$

$\frac{g.R_E^2 M.m}{Md^2} = \frac{g.R_E^2 .m}{d^2} = \frac{mg.R_E^2}{d^2}$, $G = \frac{g.R_E^2 M.m.d^2}{Md^2} = \frac{g.[R_E^2]}{M} = g . k_E$ where $k_E = \frac{g.[R_E^2]}{M} = \frac{g.M}{G}$
 g =The minimum Quantized Work as change of velocity $\rightarrow$ acceleration $\equiv 9,807694$ m/s²
 k_E = The Earth Local-coefficient between the two Constants , g , G , and $k_E.G = g . M$
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 , $F_{electron} = k_C \frac{Q_1.Q_2}{d^2} = \frac{[\oplus \rightarrow \ominus]}{d^2} = \frac{8}{\pi r(1+\sqrt{5})} \left[\frac{B}{r^2} \right]$, where

Coulomb constant $k_C = 9.10^9$ Nm²/C²

3.. The Work done by the Electric field to Rotate the Dipole is $W = F_{electron} . E_{Field} .$

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 $\rightarrow W = 2L = \bar{B} . \bar{w} = J.w^2 \leftarrow$
consisting the First-Energy-Store which is a Stationary Wave with , n lobes as , $W_{n(n+1)} =$

$\left[\frac{4\pi r^2 f_1}{3} \right] . n.(n+1)$ and wavelength $\lambda_N = \frac{\sigma.(1+\sqrt{5})}{4\pi r} = \frac{n . \bar{B}}{4\pi r^2} = \frac{2n . \bar{c}}{w}$ of $r = \frac{m . \bar{c}}{q.B}$ 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 $f_n = \left[n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma.\bar{B}}{8r^2} \right]$ related to Spin $\bar{B}$, Stress σ and cave r .

Since the frequency in Material-Point is $\rightarrow$

$$\mathbf{f}_n = \left(\frac{n\sigma}{8r^2} \right) \cdot \bar{\mathbf{B}} \equiv \left[\frac{1+\sqrt{5}}{2} \right] \frac{\sigma}{2\pi r} \equiv \left[\frac{n\sigma}{8r^2} \right] \cdot \bar{\mathbf{B}} \equiv \left[\frac{1+\sqrt{5}}{2} \right] \frac{\text{Stress}}{\text{Perimeter}} \equiv \left[\frac{1+\sqrt{5}}{2} \right] \frac{\text{Force [N]}}{\text{Area} \cdot L[\text{m}^3]} \equiv \frac{\mathbf{E}}{\mathbf{h}}, \text{ Then}$$

it occupies the Property of the Golden-ratio Pattern Φ , and equation defines that the Material Point of frequency $\mathbf{f}_n$, 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 $\mathbf{f}_n$, as before and from Euler's, Rigid Body Dynamics work $\rightarrow W = 2L = \bar{\mathbf{B}} \cdot \bar{\mathbf{w}} = \mathbf{J} \cdot \mathbf{w}^2 \equiv \mathbf{h} \cdot \mathbf{f}_n \leftarrow$ i.e. The Frequency of Photon, is embodied with the $\rightarrow$ Growing-Golden-ratio-Pattern Φ 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 $\mathbf{g}$ 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 $\mathbf{g}$ becomes from the Stationary constant Dipole moment $\bar{\mathbf{p}} \equiv \bar{\mathbf{B}} \equiv$ momentum and which is the analogous in the Revolving motion in where then issues $\rightarrow$

$$\text{Gravitational force} \Rightarrow \mathbf{G} = \mathbf{g} \mathbf{k} = \mathbf{k}_E \mathbf{g} = \mathbf{g} \cdot \mathbf{k}_R \mathbf{g}_R = \bar{\mathbf{p}} \cdot \mathbf{g}_c = \boldsymbol{\sigma} = \frac{\text{Force}}{\text{Area}} = \frac{\text{Mass}}{\text{Area}} \mathbf{g}$$

In Page-33 [77], the Earth-constant $\mathbf{k}_E = \frac{R_E^2}{M_E} = \frac{[6,378.10^6]^2}{5,98.10^{24}} = 6,811551810^{-12}$ and the

Gravitational Force $\mathbf{G} = \mathbf{g} \mathbf{k}_E = [9,8076941] \cdot 6,8116.10^{-12} = 6,68056.10^{-11} \text{ m}^3/\text{N.s}^2$ becoming from $\mathbf{g}$, $\mathbf{k}_E$ only, i.e. $\mathbf{G}$ is a force which Pushes $\rightarrow \mathbf{g}$ as energy in $\rightarrow \mathbf{k}_E$ From Gravity relation $\mathbf{G} = \mathbf{g} \mathbf{k}_E = 9,8076941.6,8116.10^{-12} = 6,68056.10^{-11} \text{ m}^3/\text{N.s}^2$ and from Energy-loop relation $1 = \mathbf{c} \cdot \mathbf{r}^3 \cdot \mathbf{f}_p^2 \rightarrow \mathbf{f}_p = \sqrt{1/\mathbf{c}\mathbf{r}^3}$, from $\mathbf{f} = \mathbf{E} / \mathbf{h}$ then $\mathbf{f} = \frac{\mathbf{E}}{\mathbf{h}} = \sqrt{1/\mathbf{c}\mathbf{r}^3}$

or $\rightarrow \mathbf{E} = \mathbf{h} \cdot \sqrt{1/\mathbf{c}\mathbf{r}^3}$, and $\frac{\mathbf{E}^2}{\mathbf{h}^2} = \frac{1}{\mathbf{c}\mathbf{r}^3} \rightarrow \mathbf{E}^2 = \frac{\mathbf{h}^2}{\mathbf{c}\mathbf{r}^3}$, an Energy relation between the, $\mathbf{c}$, $\mathbf{r}$.

This relation is used for **Black- Holes Energy** where $\mathbf{r}$, result to zero, [71]

The Permissible - Permeable - Resonance - Paths for the means, is as below.

- 1) Solids $\rightarrow$ The Normal-mode-Vibration - System $\{ -\mathbf{w}^2 [\mathbf{M}] + [\mathbf{K}] (\mathbf{X}) \} = 0$
- 2) Liquids $\rightarrow$ The Cauchy Stress-Tensor as Momentum equation $\{ \nabla \cdot \boldsymbol{\sigma} = -\nabla \mathbf{p} + \nabla \cdot \boldsymbol{\tau} \}$
- 3) Gases $\rightarrow$ The combined Avogadro's Pressure - law $\{ \mathbf{P}\mathbf{V} = \mathbf{n} \mathbf{R}\mathbf{T} = \mathbf{n} \cdot \mathbf{m}\mathbf{v}^2/3 \}$
- 4) Crystals $\rightarrow$ The Cauchy Ellipsoid-Stress-tensor where $\{ \mathbf{E} \perp \mathbf{B} \perp \mathbf{r} \equiv \boldsymbol{\sigma}_1 \perp \boldsymbol{\sigma}_2 \perp \boldsymbol{\sigma}_3 \}$
- 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 $\bar{\mathbf{v}}_{ij} = \bar{\mathbf{v}}_j - \bar{\mathbf{v}}_i = \bar{\mathbf{w}}_{ij} \cdot \bar{\mathbf{r}}_{ij}$

8) M-Points $\rightarrow$ The Resonance-frequencies $\mathbf{f_R} [S \equiv f_{1=n}, f_2, f_3, f_R = w^2] = \mathbf{f_n} = [\oplus \leftrightarrow \ominus]$

$$= n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n \cdot \sigma \cdot \bar{B}}{8 r^2} \rightarrow \text{i.e. the Golden-ratio-Pattern, which is related to Spin.}$$

9) Cave-Orbit $\rightarrow$ The Relation $c \cdot L_s = L_v$, Light-velocity $3 \cdot 10^8 \text{ m/s} \cdot 1.10^{-42} \text{ m}$
cave $= 3 \cdot 10^{-34} \text{ m}^2/\text{s}$ are the Cave-Energy-Plane-Rims in Atom's, Planet orbits.

$$\text{In Vibrations of Systems, for Orbits issues} \rightarrow W = 4\pi^2 \cdot \frac{r^3}{T^2} \cdot \bar{n} = 4\pi^2 \cdot r^3 \cdot \mathbf{f_p^2} \cdot \bar{n} \leftarrow$$

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, **Lame 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 $e^{i \cdot 2\pi n} = 1$ and for $n = 0, \pm 1, \pm 2, \pm 3, \pm n$, 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 $\rightarrow f_N = n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n \cdot \sigma \cdot \bar{B}}{8 r^2}$, as the Principal-Stresses σ , 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 $r=n.[\lambda/2]$, then $r=n.(c/2f_1)$ and $v=2\pi.f_1[n.c/2f_1]=n.\pi.c$ or $v=n.\pi.c$ (4) showing that velocities in lobes are , $n.\pi$,times that of light and for $n=1$ then $v=\pi.c$, more than three times faster of light velocity.

Because of the above velocity v , an **E field is produced** , which produces the $\partial D/\partial t$ field , which in turn produces the H field which produces the $\partial B/\partial t$ 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 because issues ... (4)

2c.. The United-Coulomb-Newton Law for Interactions :

For a Stationary interaction the **Coulomb-Law-Force** is $F_C=\frac{k[q_1q_2]}{r^2}$, and for Charges q_1, q_2 where Constant $k=9.0.10^9$ N.m²/C² , and r , is the distance between the Charges.

For a Stationary interaction **Newton Law for masses** m_1, m_2 is $F_N=\frac{G[m_1m_2]}{r^2}$, 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. $[\frac{g+g}{g*g}]$

Equating the **two forces** then $\frac{k[q_1q_2]}{r^2}=\frac{gE}{r^2}$, or $\Rightarrow k[q_1, q_2]=g.E$ (1)

Equation (1) relates any two Charges q_1, q_2 , with Field-Energy **E** , under vector $\bar{v}=\bar{r}=\bar{c}$

3c.. 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 $\rightarrow F=\Phi^3. [\oplus \sigma \ominus] = \sigma \times \Phi^3 \leftarrow (1)$ -[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 $\sigma=\frac{G}{\Phi^3}=\frac{G.\sigma^3}{c^3}$, or $\rightarrow \sigma^2 G=c^3$...(2) , where σ 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 $\bar{c}=w r=\frac{\sigma.\Phi}{r} r_p=\sigma \times \Phi=\frac{G.L_p}{r.\Phi^3}|\Phi=[\frac{G.L_p}{r.\Phi^2}]$ and from Gravity relation $G \equiv \sigma \times \Phi^3$, then issues $\rightarrow [\bar{c}=\frac{G.L_p}{r.\Phi^2}]=[\bar{c}=\frac{2.G.L_p}{\lambda.\Phi^2}]$ which is the **Light-velocity vector** .

Since r , becomes from the Beyond-Planck's-Region then $\Rightarrow \bar{v}=\frac{F.\Phi}{A}=[\frac{G.\Phi}{A}]$ (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 $F_G=[\frac{A}{\Phi}].\dot{x}$ Force **G** is applied in all **Quantized-Universe A** as Velocity $\bar{c}$ and as Stress σ on Spaces Anti-spaces as Spaces-relation $L_p=e^{i.(\frac{\pi}{2}+2k\pi).b}$, 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 $\equiv i \equiv \sqrt{-1} \equiv \sqrt[4]{-1} \equiv e^{-i.(\frac{\pi}{4}).b} = 0,707106781 . b$** .

The Base **b** , which for Natural logarithms issues << The Natural logarithm $\ln(x)$ of a Magnitude x , is the Power to which , e , would have to be raised to equal x >> 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 Elements = 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 monad $r = 1,0707106781$ or , $r = 1,0707106781$ m , having **Unit-Area** $\pi.r^2 = 3.601588$ m² , and the **QUA-Universe** is **A = 3.601588 . 10⁻¹⁹ m²/s** , which are The Space +Anti-Space Positions in Universe ...(i)

From (h) , light-velocity $\bar{v} = \left[\frac{G \Phi}{A} \right] = \frac{6,673692.10^{-11} \cdot 1,6180339887}{3,601588.10^{-19}} = 2.99819938.10^8$ 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 Φ **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 $P_1^3 = 3.(3-1).(3-2) = 6$ Positions and the same for Three-Elements in Anti-Space need $P_1^3 = 3.(3-1).(3-2) = 6$ Positions , and Total Places $\rightarrow P_1^3 \cdot P_1^3 = 6 \times 6 = 36$ Positions = A , for Spaces and Anti-Spaces as Impedance and as before 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 $b = 36.10^{-20}$, and $\Rightarrow \bar{v} = \frac{F \Phi}{A} = \left[\frac{G \Phi}{A} \right] = \left[\frac{6,673692.10^{-11} \cdot 1,6180339887}{36.10^{-20}} \right] = 2.9795163.10^8$ m/s

i.e. **The Ubiquity of Material - Geometry in Electromagnetism** is Everywhere . The Gravity constant **g** , is the Permeable Path for inner stress σ , 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 $G = k_E g = g. [k_R g_R]$ 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 Φ .

It was shown that the first Path is Gravity , $\mathbf{g}$, and Original Field-lines of Force , $\mathbf{G}$, 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 , $\bar{\mathbf{B}}$, is equal to spin $\mathbf{S}$, *because it is following the Stationary - Wave - Nodes - Principle in the Material-Points* creating the minimum quantized Energy which is conserved in lobes . This Property is extended also to the Number of lobes as well as to , π , number as velocity $\{ v = n.\pi.c \}$ which is the minimum Number relating Lines and Surfaces .

Analogous happens in equation when $v = c$, and $\rightarrow r = c$.

From Inner-velocity equation $v = w.r = (2\pi / T).r = 2\pi.f_1 . r$, of fundamental

frequency f_1 , of wavelength $\lambda = c.T = c / f_1$, and cave $r = n.[\lambda/2]$, then

$r = n.(c/2f_1)$ and $v = 2\pi.f_1 . [n.c / 2f_1] = n.\pi.c$ or $v = n . \pi . c \dots\dots(\pi)$

Equation (π) shows that velocities in lobes are , $n.\pi$ times that of light , following , π , number in circle , *i.e. In Material-Points exist velocities multi-times that of light* and the minimum *Surface-constant, Unit π* , or the *Growth of the velocity-vectors* occurs in lobes by following the logarithm laws of Energy-constant c which acts on Space constant π . From velocity , $v = n.\pi.c$, is seen that *light-velocity is the Quantum of Unit-velocity in Planck's length* . The Why velocity c and π , 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 $F = G.m_1.m_2/r^2$. 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 , 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 Natural-World from microcosm to macrocosm .

- In Vacuum $\equiv [10^{-62}-10^{-35}m]$, The **{Energy-Space-Monad $|\bar{\mathbf{R}}| \equiv |\mathbf{AB}|$, Vanishes.**
- In Vacuum** exists only **Pointy vibrating** (The circular motion only) between the Opposite Dipole $[\oplus \cup \ominus]$ generating the , $\mathbf{w}$, $\mathbf{B}$, momentum.
- As **Unit-Energy Vectors $\bar{\mathbf{R}} = \sigma / \bar{\mathbf{B}} \rightarrow$** exists **ON {Unit-Space-Monad $|\mathbf{AB}| \equiv |\bar{\mathbf{R}}| \leftarrow$**
And Then $\rightarrow$ **{The Energy-Space - Monad $|\bar{\mathbf{R}}| \equiv |\mathbf{AB}| \equiv$ The Existing Universe}**
- STPL-Line-Machine is the **Physical - Rotor** for the Cosmic-Particles origination .

The Gravitational-Force $\mathbf{G}$, Acting in the **Beyond-Planck- Cave** , and on the light Velocity **Vector $\bar{\mathbf{c}}$** , creates Electron-Charge $\bar{\mathbf{q}}_{\text{Electron}} = \frac{G}{c\sqrt{2}} = 1,574.10^{-19} \text{ C}$. which agrees with that of Coulomb's charge $\bar{q}$, and the Material-Points $\bar{\mathbf{q}}_{\text{Photon}} = \frac{G}{\sqrt{2}.f}$, while by effecting on the **Whole-Planck-Cave $\mathbf{L}_P \equiv e^{i.(-5\pi/2)}.10$** , creates the Pointy-Gravity Force as this is the **Ocean of Spins $\bar{\mathbf{g}}$** , and which Oriented-Spins , **Originate Gravity $\bar{\mathbf{g}} = [\downarrow = \cup]$** , and Antigravity - $\mathbf{g} = [\uparrow = \cup]$ as Electron $\bar{e}$ [72] . **The Light-Velocity $\bar{\mathbf{c}}$ of Photons** becoming from the **Action** of $\mathbf{G}$ on Planck's Length , when act on a-cave , $\mathbf{r} = \frac{h}{c.z_c} \neq \mathbf{L}_P$ then originates the **Hydrogen-cave**

$E = h f_m$, because **Angular-Momentum $\bar{\mathbf{B}} = \frac{2L}{\bar{w}} = \frac{2L}{2\pi f} = [\frac{2L}{2\pi}].[\frac{1}{f}] = \frac{\text{Constant}}{2\pi} [\frac{1}{f_m}] = \text{SPIN}$ [70].**

The Four Energy-Space Constants in Nature are , [99]

$$L_P \equiv e^{-i \cdot (\frac{\pi}{2} + 2k\pi) \cdot b} \equiv e^{i \cdot (-5\pi/2) \cdot 10} \equiv e^{i \cdot (-5\pi/2) \cdot 10} \equiv \{ \sqrt{3} \cdot \pi \cdot 1,616199 \cdot 10^{-35} \text{ m} \} \rightarrow$$

and is The Planck's length cave ,

$$g \equiv \frac{T^2}{a^3} \equiv \frac{1}{f_n^2 \cdot a^3} \equiv 9,8076941 \rightarrow \text{The minimum Granular Quantized Energy ,}$$

from the gravity frequency f_g , representing the **Bedding-Quantum-Raw-material** of force **G** , on all Energy structures .

$$G \equiv \sigma \cdot \Phi^3 \equiv g \cdot k_E \equiv g \cdot [g_L k_L] \equiv [\frac{T_P^2}{a^3}] \cdot [g_L k_L] \equiv 9,8076941 \cdot 6,8116 \cdot 10^{-12} \equiv$$

$6,68056 \cdot 10^{-11} \text{ m}^3 / \text{N} \cdot \text{s}^2$ The Pulling and Cohesive Bond , of all the Quantized-Energy-Structures in all Spaces .

$$f_n \equiv \{ [S \equiv B_P \equiv EM-R \equiv f_{1=N}, f_2, f_3, f_D, f_n] \equiv n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma \cdot \bar{B}}{2r^2} \text{ and from cave}$$

$$\lambda_N = \frac{4\pi \cdot r \cdot c}{n\sigma \cdot (1+\sqrt{5})} = \frac{\pi^2 \cdot r^4 \cdot c}{n \cdot \bar{B}}] \} , \text{ The Amount of Energy , the unit meter of motion ,}$$

in the Torsional and **Resonance-Augmented-Golden-Ratio-Pattern** Φ , and

$$\bar{v} = \bar{c} = \sigma \cdot \Phi = \frac{F}{A} \Phi = [\frac{G \Phi}{A}] = [\frac{6,673692 \cdot 10^{-11} \cdot 1,6180339887}{36 \cdot 10^{-20}}] = 2.9985163 \cdot 10^8 \text{ m} .$$

4c.. The Origination of Electron-charge $\bar{e} \equiv \bar{q}$:

From relation $G \equiv g \cdot k_E \equiv g \cdot [g_L k_L] \equiv [\frac{T_P^2}{a^3}] \cdot [g_L k_L] = g k$, 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 , $\ddot{r} + w^2 r = 0$,

where **k** = The Unit-Spring-Force $\equiv$ [**meter** of area].[**meter** of force $\equiv$ **stress**] $\equiv \pi g \equiv$ with a general solution $r = A \sin w_n t + B \cos w_n t$, where A , B are constants and evaluated from the initial velocity-conditions which become $r = [\dot{x}(0) / w_n] \cdot \sin w_n t + x(0) \cdot \cos w_n t$.

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 ,

$$\frac{w_n}{2\pi} = f_e = \frac{1}{2\pi} \sqrt{\frac{k}{m}} , \text{ or } 4\pi^2 f_e^2 \cdot m_e = k = \pi g \text{ and or } \rightarrow m_e = \frac{g}{4\pi f_e^2}$$

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** ,

$$m_e = \frac{g}{4\pi f_e^2} = \frac{9,808238}{4 \cdot \pi \cdot [3,28399 \cdot 10^{16}]^2} = -7,2373149 \cdot 10^{-30} \text{ kg} \dots\dots\dots (4b)$$

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

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** $\{f_e = 3,283998.10^{16} /s\}$. 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 $E_n - E_{n-1} = [m_e.v^2] . [2n-1]$, 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  $h \rightarrow J s = N m s = \text{Power}$  ,where from, *Energy = Power x Time* , issues the Beyond Planck`s length **L_P** , and The Voltage **V** is $\rightarrow \bar{q} \equiv \frac{K_E}{V_P=1} = \frac{m_e c^2}{2} = \frac{g c^2}{8\pi f^2 . 1}$, and $\bar{V} \equiv V_P \equiv \frac{c . \text{Charge}}{\text{Total-Energy} = h} = \frac{c . \bar{q}}{h} \dots (1)$

Using the two Energy-equations for **Linear-motion** $\rightarrow f_n = \frac{1}{2\pi} \sqrt{\frac{k}{m}}$ and **Orbital-motion**

$a = \sqrt[3]{\frac{1}{k . f^2}}$, for **Unit-Energy-Space-frequency** $k = g$, $a = \pi$, then $\rightarrow g . f^2 . \pi^3 = 1 \dots (2)$

Frequency $f_n = \sqrt[2]{\frac{1}{g . \pi^3}} = \sqrt[2]{\frac{1}{9,808238 . \pi^3}} = 1,8133418.10^{-3}$, i.e. **The Unit-Charge-Cave** , $\bar{q}$ into Hydrogen cave $[a = 1,82043047.10^{-12}m] . [1,813342.10^{-3}/s] = 3,3010625.10^{-15} \text{ C}$

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 $\rightarrow \bar{q} . \Phi$,

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 ,

$\bar{q} = \frac{G}{c \sqrt{2}} = \frac{6,680561 . 10^{-11}}{1,41429 . [2,9979346 . 10^8]} = 1,58.10^{-19} \text{ Coulomb}$, the known Coulomb`s **charge**

quantity, From g_L, k_L Universal constants the Newton`s Gravitational constant Force is , $G \equiv g . k_E \equiv g . [g_L k_L] \equiv [\frac{T^2 P}{a^3}] . [g_L k_L] \equiv 9,808238 * 6,8116.10^{-12} \equiv 6,68056.10^{-11} \frac{m^3}{Ns^2}$

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 . $\text{Energy} = \text{motion} / T \equiv (\frac{v}{2\pi r}) . [\sigma + \sigma \Phi] =$

$\bar{v} . [\frac{\sigma}{2\pi r} + \frac{\sigma \Phi}{2\pi r}] \equiv \bar{v} . [\bar{f}_n] + f_n \equiv \text{Moving - Storage} \rightarrow [\bar{v} . \bar{f}_n] \leftarrow + \text{Moving-Frequency}$
 $\rightarrow [\bar{v} . f_n] \leftarrow \equiv \text{Material-Point i.e.}$

The Energy produced in **Photon-Cave** is consisted of **Two-moving-Storages** , that travel as **Wave** $[\bar{v} . f_n] \rightarrow [\bar{v} . \bar{f}_n] \rightarrow [\bar{v} = \bar{c} = \lambda \frac{f}{\Phi}] \rightarrow [S \equiv EM-R \equiv f_{1=N}, f_2, f_3, f_D, f_n = w^2]$, and **as**

Particle $\rightarrow [f_1 = (E^2 + H^2) = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{n\bar{B}}{\pi^2 r^4}] \rightarrow \{W \equiv EM-R \equiv [\epsilon E^2 + \mu B^2] = 2 . \lambda c . \sin . 2\varphi\}$ and is

The Duality of an **Energy-Storage** $S \equiv \{ [\oplus \leftarrow r \rightarrow \ominus] + \text{Motion } M . [87-89]$

5c.. The Origination of Hydrogen Cave H : [99]

From Kepler third law , the Energy-Closed-Space equation and Newton`s Laws of motion

Constant $k = v^2 . r = (w r)^2 . r = [\frac{2\pi}{T} r]^2 . r = \frac{4\pi^2 r^2}{T^2} . r = \frac{4\pi^2 r^3}{T^2} = 4\pi^2 . \frac{r^3}{T^2} = 4\pi^2 . r^3 . f_p^2 \dots\dots\dots (k)$

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 $gf^2 \equiv$ the Energy-Part embodied with stress $\bar{g}$, and the cave a^3 , is the **Space-Part**, in 3-DOF Space as $\rightarrow T^2 = g a^3 = 9,808238 \cdot [2,1145016 \cdot 10^{-11}]^3 = 9,2728158 \cdot 10^{-32}$ s, and Period $T = 3,04513 \cdot 10^{-16}$ s, or frequency $f = 3,2839982 \cdot 10^{15}$ / s. From equation $E = hf = 6.62607 \cdot 10^{-34} \cdot 3,2839982 \cdot 10^{15} = 2,175999 \cdot 10^{-18}$ J / $(1,6022 \cdot 10^{-19}) = 13,59999$ eV **Above Quantized Energy of 13,6 eV, corresponds to the Hydrogen-Atom-Cave.**

It was shown that *in Conservative Systems* of a Central-Force, the Total energy E is conserved and at Periapsis, energy $E = \frac{G \cdot Mm}{2a}$ 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 $e = 0$, $G Mm = -2a \cdot E$, 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 $l = k \cdot f_o^2 \cdot a^3$. Their common

Constant-Energy k , is $\rightarrow k = 4\pi^2 m f_p^2 = \frac{1}{f_p^2 a^3}$ or, $f_p^4 = \frac{1}{4\pi^2 m a^3}$ and $f_p = \sqrt[4]{\frac{1}{4\pi^2 m a^3}}$.

A loop in Planck's length $2a = L_p = \pi \cdot 1,616199 \cdot 10^{-35}$ m with frequency $f = \frac{c}{\lambda}$, where then issues $f_p^4 = \frac{1}{4\pi^2 m a^3} = \left[\frac{c}{\lambda}\right]^4 = \left[\frac{1}{\lambda}\right]^4 \cdot \{c^4 = \frac{1}{[4\pi a^3]m\pi a}\}$, and for the Unit Intensity $I = \frac{\text{Energy}}{\text{Area}} = \frac{E = hf}{A = 4\pi a^3} = \frac{1KW}{A} = \frac{1}{[4\pi a^3]} = \frac{1}{\lambda^4} \{mc^4 \cdot \pi a\} = \frac{1}{\lambda^4} \{1\} \cdot 80,760865 \cdot 10^{32} \cdot (3,14) \cdot 0,8081 \cdot 10^{-35} = 0,5865 \cdot \left\{\frac{1}{\lambda^4}\right\}$, and E-Intension is $\rightarrow I = 0,5865 \cdot \left\{\frac{1}{\lambda^4}\right\} \leftarrow$ or, 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 λ .

In Outer Electromagnetic fields , frequency , w , is that of inner motion $\rightarrow w = \frac{2\pi}{T} = 2\pi \cdot f_N \equiv \left[\frac{1+\sqrt{5}}{2}\right] \frac{\sigma}{2\pi r} = \frac{\sigma \cdot \Phi}{r}$, 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 $k = \frac{1}{f_n^2 \cdot a^3} \rightarrow$ or $1 = k \cdot f_n^2 \cdot a^3 \leftarrow$ and from

Kepler's laws and Newton's Lagrange laws for Orbits , the cave-Semi-major-axis is as ,

$$a = \sqrt[3]{T^2 / k} = \sqrt[3]{\frac{1}{g \cdot f^2}} = \sqrt[3]{\frac{4 \cdot \pi^2 \cdot r^2}{g \cdot \sigma^2 \cdot \Phi^2}} = \sqrt[3]{\frac{[4\pi^2] \cdot x \cdot r^2}{[g \cdot \Phi^2] \cdot x \cdot \sigma^2}} , \text{ and}$$

$$f_R = \frac{w_R}{2\pi} = \sqrt[2]{\frac{k=1}{g \cdot a^3}} = \sqrt[2]{\frac{\sigma}{g \cdot \Phi^2 \cdot a^3}} \equiv \sqrt{\frac{k}{md}} \text{ eV} \dots(a)$$

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.

a)... 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 $f_1 = n \cdot \left[\frac{\bar{v}}{2r}\right] x \left[\frac{1}{4}\right] = n \cdot \left[\frac{\bar{v}}{8 \cdot r}\right]$ which for $n = \left[\frac{8 \cdot \pi r c}{v \cdot \lambda}\right]$ increases to $\frac{\lambda}{c}$, therefore for $n = N \cdot \left[\frac{8 \cdot \pi r c}{v \cdot \lambda}\right] = N \cdot \left[\frac{c}{\lambda}\right]$ and for $N \rightarrow \infty$ then $f_1 = E / h = \infty \dots(b)$

In Dual Photon $\bar{v} \left[\frac{\sigma \Phi}{2\pi r} + \frac{\sigma}{2\pi r}\right] \equiv \bar{v} \cdot \left[\frac{\bar{f}_n}{\bar{f}_n} + f_n\right]$, **Colours** are the **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 $d = \lambda \rightarrow \lambda_{\min} \approx \lambda_{\max} = 3 \cdot 10^{-7} \text{ m} \approx 3 \cdot \sqrt{3} \cdot 10^{-7} \text{ m}$.

b)... **The Quanta of Energy** , Passing through a Unit-Surface or **Volume** is **Inversely Proportional** to the **fourth Power** of the wavelength λ 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** λ **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 $E = h \cdot f_p = [6,6262 \cdot 10^{-34} \text{ J.s}] \cdot [3,28393 \cdot 10^{15} / \text{s}] = 2,176 \cdot 10^{-18} \text{ J}$ and in $\text{eV} \rightarrow [2,176 \cdot 10^{-18}] / [1,6 \cdot 10^{-19}] = 13,6 \text{ eV}$,

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 Unit energy cave .

From Angular-Momentum $B = r \cdot mv = r \left[\frac{\pi r v}{2}\right] v = \frac{\pi r^2}{2} v^2 = \frac{\pi r^2}{2} v^2 = \frac{\pi r^3}{2} [n \cdot \pi \cdot c]^2 = \frac{\pi^3 r^3}{2} c^2$, or **Black-Hole-Energy** $\rightarrow B_E = 2 \cdot \pi^5 \cdot r^3 \cdot f^2 = (\pi r)^3 \cdot w^2 \leftarrow$ i.e. **Velocity in Black-Holes is Related to Cave** , r^3 , and **Energy** w^2 times of light velocity.

c)... Since the Primary motion $\equiv [\text{PM}]$ exist from the three **Breakages** only , and **STPL** is the $n=3$ Mechanism creating Elementary Particles $\Rightarrow [n\text{-Knots}=3]$ in $V_{\text{GRA}} = 7,593 \cdot 10^{35} \text{ V}$.

Explanations :

The Action-Spaces $\equiv$ The Infinite **Quaternion - monads** $\rightarrow \bar{z} \equiv (s + \bar{v}.i) \equiv \overline{AB} \equiv$
 $\equiv \sqrt{s^2 + [\bar{v}.i]^2}$, or $\bar{z} \equiv x + i.y \equiv \overline{AB} \equiv$ moduli , r , is their magnitude

$[r = |r| = \sqrt{x^2 + y^2}]$, on Unit-Diameter $\overline{AB}$. The [QMAS] . For Quaternion $|\bar{v}| = s$
Breakages $\bar{z} * \bar{z} = (s + \bar{v}.i)^2 = s^2 + [\bar{v}]^2 + 2.s\bar{v}.i = s^2 - \bar{v}^2 \pm 2.s\bar{v} = |s|^2 - |\bar{s}|^2 \pm 2.|s|.|\bar{s}|$, i.e.

In Figure -3- the **Vector of Amplitude** is Quaternion $\bar{z} \equiv x + i.y$, with vector $\bar{z}$, to
be from Definition of the **Complex Vector Space** , the **Set of Vectors of length** (the n
Vertices which form the n - Polygon Sides , or the **Norm** of the Complex - Vectors)

a...The **4-Geometrical Spaces** , [**Space , Anti-Space , Neutral-Space , Sub-Space**]
consist $\rightarrow$ The **Geometrical - Mould of $\overline{AB}$ - Monad** $\equiv$ [PM-2R-M] $\leftarrow$

b...The **Vectors of Amplitude** $z = 2R$, ON $\overline{AB}$ **Monad** , consist The **Energy-Mould** .
of **2R-Form** .The **Physical -Mechanisms** $\rightarrow$ [**Physical Mould of 2R- Monad**] $\equiv$
[GM-AB-M] $\leftarrow$ are such and dependent on the n - **Number of Accessories** they use .

A... The **Gravity Force** $G \equiv$ motion $\equiv \sigma.\Phi^3$, exists without mass and is **Quantized**
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 Φ **Golden-Ratio** , exists as **Impedance** b .

Placing [Physical Mould of 2R- Monad] ON [Geometrical - Mould of $\overline{AB}$ - Monad]
[PM-2R-M] $\rightarrow \updownarrow \leftarrow$ [GM-AB-M]

THEN $\rightarrow$ **Gravitational-Force** $G \equiv [\Sigma = n.h]$, and $n-NA = 1 \Rightarrow$ **Creates & Constructs** ,

For $n=1$ $ABM = [\Sigma = n.h] \Rightarrow G/c =$ **Charge** $\bar{q} = \frac{G}{c\sqrt{2}} = 1,58.10^{-19}$ Coulomb .

1).. $\rightarrow g \leftarrow G \equiv \sigma.\Phi^3 \equiv g.k_E \equiv g.[g_L k_L] \equiv [\frac{T_p^2}{a^3}].[g_L k_L]$, and $g = \frac{G}{k_E} = [\frac{6,673692.10^{-11}}{6,8116.10^{-12}}]$

$\equiv 9,8076941$. Gravity-Acceleration in Black-holes $g_G = [\frac{\pi r v^4}{2}].e^3 = 9,808238$ m/s .

For $b = 36.10^{-20}$, $\bar{v} = \frac{F\Phi}{A} = [\frac{G\Phi}{A}] = [\frac{6,673692.10^{-11}.1,6180339887}{36.10^{-20}}] = 2,9895163.10^8$ m/s

2).. $\rightarrow \bar{c} \leftarrow \bar{v} = \bar{c} = \sigma.\Phi = \frac{F}{A}\Phi = [\frac{G\Phi}{A}] = [\frac{6,673692.10^{-11}.1,6180339887}{36.10^{-20}}] = 2,9985163.10^8$ m .

3).. $\rightarrow \bar{q} \leftarrow$ from $G = c\sqrt{2}\bar{q}$, Electron-Charge is , $\bar{q} = \frac{G}{c\sqrt{2}} = 1,58.10^{-19}$ Coulomb ,

B... The{TVPM} Mechanisms , from **Charges** on Two-Perpendicular-Vectors-Edges $\equiv$
Markos Two-Vectors Three-Poles Mechanism is case {QUA} $\equiv [\Sigma = n.h] \Rightarrow \infty \times \Phi$
which is the **Physical Mechanism** , and gives the ∞ - **Impedance** b , determining the
Objective Reality which is the **existing Universe** . The two $\perp$ Vectors Produce the ∞
Squares ∞ , $\overline{AB}$ **Monad** $\equiv \infty$ - [GM-AB-M] with ∞ , **2R-Form** [PM-2R-M] and
 $n \equiv \infty$ **Number of Accessories** , as from monad $R = \frac{\sigma}{J.w^2} = \frac{\sigma}{B}$ and velocity $\bar{v} \equiv \pm \sigma\Phi$.

C...Primary motion $\equiv$ [PM] exist from the three Breakages only $[s^2 = \oplus, 2s^2 = \emptyset, -s^2 = \ominus]$,
on Triangle 3-Knots with $n \equiv 3$ **Number of Accessories** , therefore [STPL] Mechanism
is the $n = 3$ Accessories-Mechanism creating the Elementary Particles , [n-Knots=3] in
the Gravity Voltage $\Rightarrow V_{GRA} = 7,593.10^{35}$ V. **This Physical Mechanism** creates the
Elementary Particles their $n = 1 - \infty$, **masses** of Atom`s & Compounds determining
their **Atoms Complex-Vector-Response** .These sparse Particles exist in all of the

universe in the sense that they are uniformly distributed .

D...The { TCIC } Mechanisms $\equiv [\Sigma = n \cdot h] \Rightarrow 8 \times \textcircled{1}$ is the Physical Mechanism , from **Charges In Three-Vectors-Conductors-Edges $\equiv$ Markos Tetrahedron Cube Inscribed – Circumscribed Circles** .The Tetrahedron **Conductors** -Vectors $\overline{DA} \perp \overline{DB} \perp \overline{DC}$ Curry Energy as **Electromagnetic-Fields** (Forces-Frequencies-Stresses-any motion) **TO** the Inscribed Sphere (Nucleus of Atoms), **TO** Cube Vertices (Electrons-Position) ,**TO** the Circumscribed Sphere (The Electrons Orbits) for Equilibrium and for **transferring Information** and **Signals** . **a.. The Protons and the Nucleus Structure :**

From above $[GM-AB-M] \equiv 8 \times [(+)[\leftrightarrow](-)] \equiv \text{Neutral} = n$, then

a... For **1 Proton** $[(+)[\leftrightarrow](-)] \leftrightarrow (+) \equiv \text{Neutral} \rightarrow n = 1 \quad p = 1$

b... For **2 Proton** $(+)\leftrightarrow[(-)\leftrightarrow(+)] [(+)\leftrightarrow(-)] \leftrightarrow (+) \equiv \text{Neutral} \rightarrow \begin{matrix} p & n \\ n & p \end{matrix}$

c... For **3 Proton** $(+)\leftrightarrow[(-)(+)] (+)[(-)(+)] (+)[(-)(+)] \equiv \text{Neutral} \rightarrow \begin{matrix} n & p & n \\ p & n & p \end{matrix}$

d... For **4 Proton** $(+)\leftrightarrow[(-)(+)] (+)[(-)(+)] (+)[(-)(+)] (+)[(-)(+)] \rightarrow \begin{matrix} p & n & p \\ n & 0 & n \\ p & n & p \end{matrix}$

h... For **k Proton** $(k1)\leftrightarrow[(-)(+)] (k2)[(-)(+)] (+)[(-)(+)] (+)[(-)(h_k)] \rightarrow \begin{matrix} kp & kn & kp \\ kn & 0 & kn \\ kp & kn & kp \end{matrix}$

where $n-NA \equiv k \equiv$ **The Number of Accessories of {TCIC} Mechanisms $\equiv [\Sigma = n \cdot h]$**
 $\begin{matrix} kp & kn & kp \\ kn & 0 & kn \\ kp & kn & kp \end{matrix}$

On $\rightarrow$ $\begin{matrix} kn & 0 & kn \\ kp & kn & kp \end{matrix}$ **k - Space [GM-AB-M] .**

From above is seen the Way of Atoms Construction. (**Geometrical-Mould of $\overline{AB}$ -Monad**).

E...From Energy = motion / T $\equiv (\frac{v}{2\pi r}) \cdot [\sigma + \sigma \Phi] = \bar{v} \cdot [\frac{\sigma}{2\pi r} + \frac{\sigma \Phi}{2\pi r}] \equiv \bar{v} \cdot [\bar{f}_n] + f_n \equiv$ Moving

Storage $\rightarrow [\bar{v} \cdot \bar{f}_n] \equiv [GM-AB-M] \leftarrow +$ Moving-Frequency $\rightarrow [\bar{v} \cdot f_n] \equiv [PM-2R-M] \leftarrow \equiv$

$[\Sigma = n \cdot h]$, and $n-NA = 1 \Rightarrow$ Material-Point **i.e.** The Energy produced in Photon-Cave is consisted of Two-moving-Storages that travel as Wave $[\bar{v} \cdot f_n] \rightarrow [\bar{v} \cdot \bar{f}_n] \rightarrow [\bar{v} = \bar{c} = \lambda \frac{f}{\Phi}] \rightarrow$

$[S \equiv EM-R \equiv f_{1=N}]$ & as Particle $\rightarrow [f_1 = (E^2 + H^2) = n \frac{(1+\sqrt{5})\sigma}{2\pi r} = \frac{nB}{\pi^2 r^4}] \rightarrow \{W \equiv EM-R \equiv [\epsilon E^2 + \mu B^2]$

$= 2 \cdot \lambda c \cdot \sin 2\phi\}$ and The Duality of an **Energy-Storage** $\equiv \{[GM-AB-M] \equiv S = [\oplus \leftarrow r \rightarrow \ominus]$

+ Motion $\equiv [PM-2R-M] \equiv M \equiv [\bar{v} - \text{Vector}]$, issuing $[PM-2R-M] = \sqrt{-1} \cdot [GM-AB-M]$,
Therefore $\rightarrow$ Photon-Mechanism is for Both travelling as Particle and as Wave ,

6c.. THE EPILOGUES OF PRIOR .

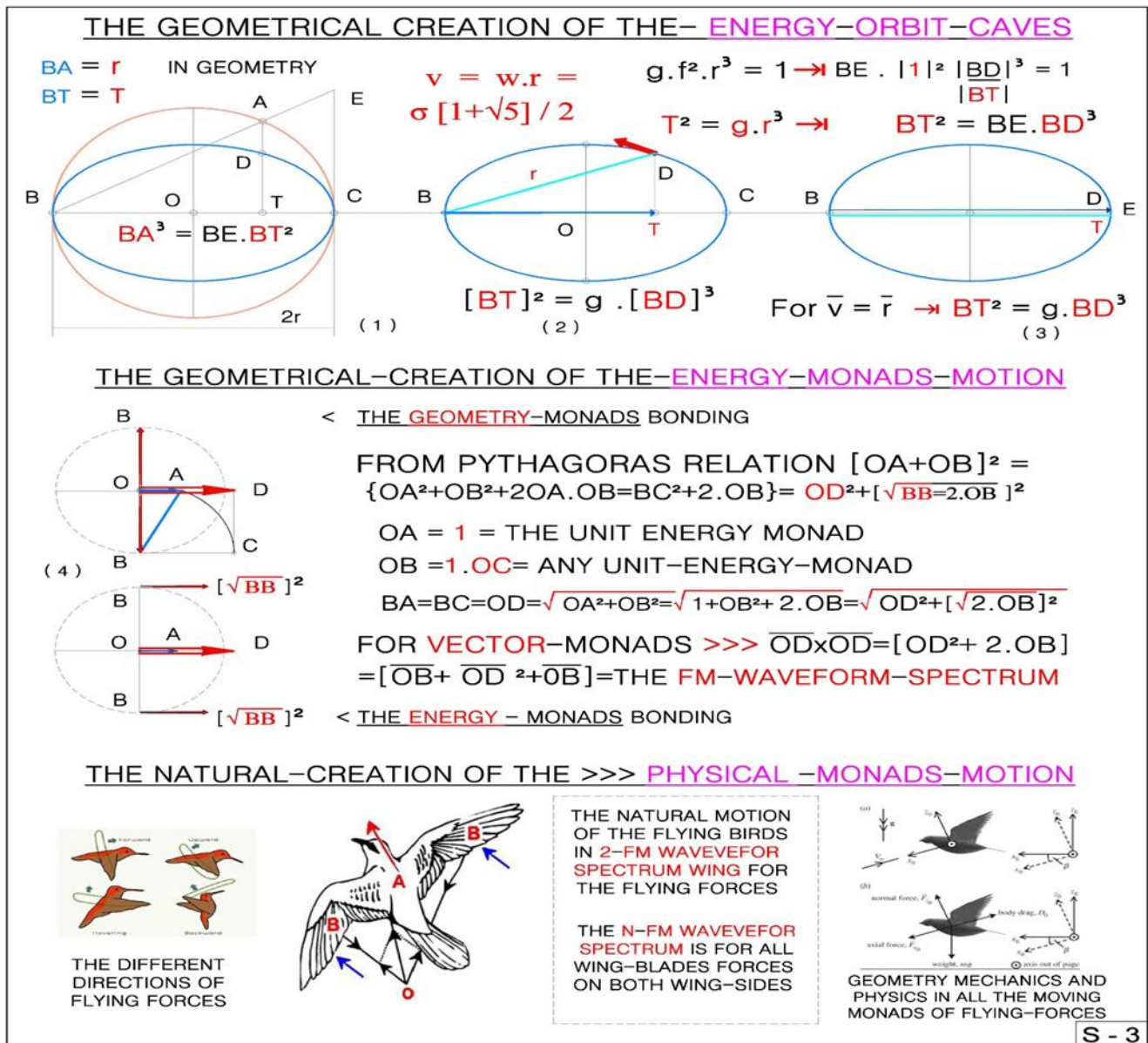


Figure – 17 : The Periodic motion in Caves follows Material - Geometry rules .

In (1). Is shown the Geometrical Expose of , Dynamic-Space-Energy relation $g . r^3 . f_p^2 = 1$

In (2). Is shown the Mechanical Impress of the , Orbit-Space-Energy relation $g . r^3 . f_p^2 = 1$

In (3). Is shown the Extreme Design of the , Dynamic-Space-Energy relation $g . r^3 . f_p^2 = 1$

In (4). Is shown the Geometrical Creation of The Energy-monads-motion & The Physical Monads - motion from their Unit - relation $g . r^3 . f_p^2 = 1$

THE ORIGATION OF ANTI - GRAVITY - STRESS - g :

6c1.. The Origination & The Nature of Gravity g .

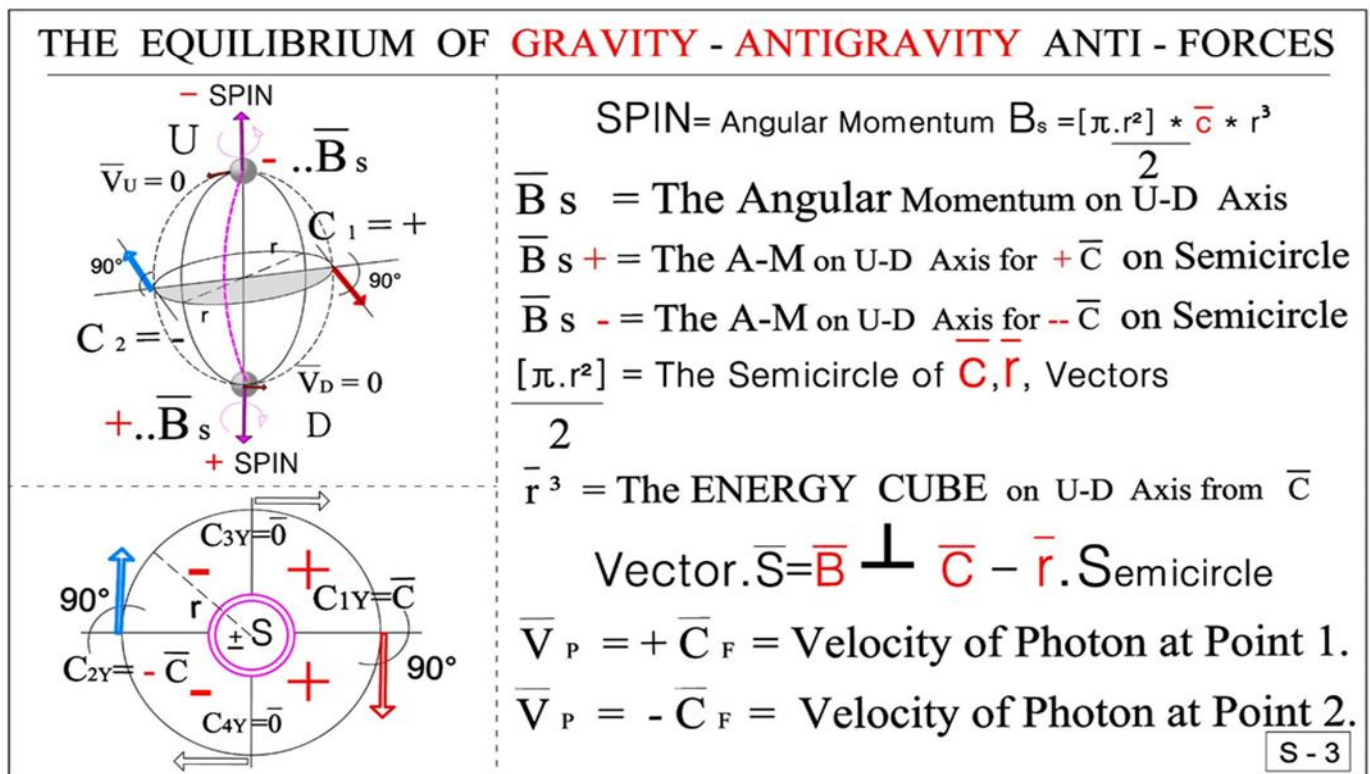


Figure -17a:-The Stability of $\pm$ SPIN as an Electromagnetic Wave of Two frequencies ,0, c

From relation Angular Velocity $c = \omega r = 2\pi f_n \cdot r = 2\pi r \cdot f_n = \sigma \Phi$. Since light-velocity is created from G beyond the Planck's length $r_P = 1,61626 \cdot 10^{-35}$ m , therefore issues $c = \omega r = \omega r_P = 2\pi r_P \cdot f_n = \sigma \Phi$, and from the light-velocity Properties becomes ,

- 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 . λ , 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 . The Light velocity $\bar{c}$, **changes**

Phase every 90° and the **created Work** { $W = c_y \times [\text{Quarter circle 1-O-4}]$ } is Symmetrically **Stored** from $0^\circ \rightarrow 90^\circ$ alternately + , - , - , + , in [Quarter circle 1-O-4] in the [Quarter circle 4-O-2] into [Quarter circle 2-O-3] into [Quarter circle 3-O-1]

The Momentum $\equiv \text{Spin} \equiv \bar{B} \equiv r m v = [\frac{\pi \cdot r^2}{4}] \cdot \bar{c} \times \bar{r}$ 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 .

- b)..**The Dual Property of the Simultaneously existing Spin as Electric and as Magnetic**

Field in wavelengths, λ_x, λ_y , as Effective Range, is thrust through the Light velocity $\bar{c}$, and finally is from the **Newton's Gravitational Force** $\bar{G}$. In Planck's length $r_p = 1,616255 \cdot 10^{-35}$ m the created Work from $\bar{c}$, on 1-4 Position is stored in the [1-O-4] Quarter-circle surface and at Phase-4 where $c = 0$ is then stored in the [4-O-2] Quarter circle surface. At Phase-2 where $\bar{c} = -\bar{c}$ motion is stored in the [2-O-3] Quarter circle surface, and At Phase-3 where $\bar{c} = 0$ motion is stored in the [3-O-1] Quarter circle surface, **i.e.** is alternately repeated the $+ [\frac{\pi r^2}{4}] = \text{The +Quarter circle [1-O-4]}$, and the

$- [\frac{\pi r^2}{4}] = \text{The - Quarter circle [4-O-2]}$ 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

$$f_n = \frac{\sigma}{2\pi r} \Phi \text{ and } \bar{c} = \bar{w} \cdot r = 2\pi f_n \cdot r = 2\pi r \cdot f_n = \sigma \Phi, \text{ are frequencies, } 0, c, \text{ relation.}$$

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 $g \cdot a^3 \cdot f_n^2 = 1$, $f_n^2 = \frac{\sigma^2}{4\pi^2 r^2} \Phi^2 = \frac{1}{g \cdot a^3}$ then $g \cdot a^3 \cdot \Phi^2 = \frac{4\pi^2 a^2}{\sigma^2}$, or 1). $a = \frac{1}{g} [\frac{2\pi}{\sigma \Phi}]^2$, and from Work $W = 2E = B w = J \cdot w^2$, or $2E = 2\pi \cdot f$ and $\bar{B} f = \frac{E}{\pi}$ then 2). The Energy in Planck-scale-cave $2E = \bar{B} f_n = [\frac{(1+\sqrt{5})\sigma}{4\pi r}] \cdot \bar{B} = [\frac{\sigma}{2\pi r}] \cdot \bar{B} \Phi$, or $E = [\Phi \frac{\sigma}{4\pi r}] \cdot \bar{B}$ i.e. The **Energy in Planck-cave-Particles** is Dependent on

their **Spin only**, and for Electron $r = a_e \rightarrow E = [\Phi \frac{\sigma}{4\pi r}] \cdot \bar{B} = 1,6180339 [\frac{1}{4\pi \cdot 1,6840307 \cdot 10^{-17}}] \times 2,845976 \cdot 10^{-17} = \frac{21,76 \cdot 10^{-19}}{1,6 \cdot 10^{-19}} = \mathbf{13,6 \text{ eV}}$, 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 $\overrightarrow{03}$, $\overrightarrow{01}$, $\overrightarrow{04}$, Directions while,
The Energy-Vector $\bar{r}$ is **Negative** for $\overrightarrow{03}$, $\overrightarrow{02}$, $\overrightarrow{04}$, Directions.

Since Total-Energy $L = B w = \frac{J \cdot w}{2} w = \frac{J \cdot w^2}{2}$ then $2L = J \cdot w^2$, then Angular Momentum relation

$$\bar{B} = r \cdot m v = r [\frac{\pi r^4}{2}]. 2\pi f r = \pi^2 \cdot r^6 \cdot f. \text{ and } B = J w \quad \text{i.e.}$$

$$\text{Angular Momentum } \bar{B} = r m v = \frac{J \cdot w}{2} = [\frac{\pi r^4}{4}] \frac{c}{r} = [\frac{\pi r^3}{4}]. \bar{c} = [\frac{\pi r^2}{4}]. \bar{c} \times \bar{r} \quad \dots (a)$$

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

$-\bar{\mathbf{B}} = - \text{Gravity} - \text{Spin} = - \left[\frac{\pi r^2}{4} \right] \cdot \bar{\mathbf{c}} \times \bar{\mathbf{r}}$, The **-Antigravity Force**

From Momentum relation $\bar{\mathbf{B}} = m \mathbf{r} \mathbf{v} = m r^2 \omega = m r^2 (2\pi f) = \frac{J \cdot \omega}{2} = \left[\frac{\pi r^4}{2} \right] \cdot [2\pi f]$ then Spin $S \equiv$

Angular-Momentum $\bar{\mathbf{B}} \equiv \bar{\mathbf{S}} = \frac{J \cdot \omega}{2} = \frac{\pi r^4}{4} [2\pi f] = \pi^2 \cdot r^4 \cdot [f] = \frac{\pi \cdot r^3 \Phi \cdot \sigma}{2} \equiv \frac{[1+\sqrt{5}] \cdot \sigma \cdot \pi \cdot r^3}{4} = \frac{\pi r^3 \sigma \Phi}{2} \dots (b)$

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

$-\bar{\mathbf{S}} = - \text{Gravity} - \text{Spin} = - \frac{\pi r^3 \sigma \Phi}{2}$, The **Antigravity Spin**

From Spin-Momentum relation $S = \bar{\mathbf{B}} = \frac{\mathbf{E}}{\omega} = \frac{\mathbf{E}}{2\pi f} = \frac{\mathbf{E} \mathbf{r}}{\sigma \Phi} = \frac{\mathbf{r} \mathbf{G}}{\sigma \Phi}$, and $\bar{\mathbf{B}}^2 = \frac{J^2 \sigma^2}{r^2} \Phi^2$, so $\rightarrow [\bar{\mathbf{B}}]^2 =$

$\left[\frac{\Phi \sigma}{r} \right]^2 \leftarrow$ while from Gravity-force $\mathbf{F}_G \equiv \mathbf{m}_G \mathbf{g} = g \cdot [\sigma \mathbf{c}] \cdot \mathbf{r} = \mathbf{m}_G \frac{\mathbf{c}^2}{r} = J \omega^2 \cdot \mathbf{g}_G = \frac{\mathbf{v}^2}{r} \cdot \left[\frac{\pi r^4}{2} \right] \frac{\mathbf{v}^2}{r^2} =$

$\frac{\pi r v^4}{2}$, and Gravity-Acceleration $\pm \mathbf{g}_G = \left[\frac{\pi r v^4}{2} \right] \cdot \mathbf{e}^3$, **Geometry Growth**

$$\left[\frac{\pi r v^4}{2} \right] = \left[\frac{3,1415926 \left([\sqrt{5}+1] \cdot \sqrt{2} \cdot 10^{-35} \right) \cdot (2,99793458 \cdot 10^8)^4}{2} \right] \cdot \mathbf{e}^3 =$$

$$= 6,044981 \cdot 10^{-35} \cdot 80,773378 \cdot 10^{32} \cdot 20,085536 = \mathbf{g}_G = \pm \mathbf{9,8076925} .$$

i.e. Gravity $+\mathbf{g}_G = + 9,8076925 = \frac{\partial r \bar{\mathbf{c}}}{\partial t} = + \bar{\mathbf{S}}$, and Antigravity $= - \mathbf{g}_G = - 9,8076925 = \frac{\partial r \bar{\mathbf{c}}}{\partial t} = - \bar{\mathbf{S}}$

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** . **Centripetal force**

Originates the Two-Momentum $\pm \bar{\mathbf{w}}$, $\bar{\mathbf{B}} = \mathbf{r} \mathbf{m} \mathbf{v} = \left[\frac{\pi r^3 \sigma \Phi}{2} \right] \equiv \text{Gravity} - \text{Antigravity} - \text{Spin}$.

6c2.. The Stability of Equilibrium :

In the Conservative System , of cave $\bar{\mathbf{c}} - \mathbf{r}$, the Total Energy $\mathbf{E}_T$ remains constant and the

Total-Energy is $\mathbf{E}_T = \mathbf{E}_K + \mathbf{E}_U = \frac{1}{2} [\dot{\mathbf{x}}]^2 + U(x) = \text{constant} \dots (1)$ where $\mathbf{E}_K$ = The Kinetic

Energy and $\mathbf{E}_U$ = The Potential Energy . For $y = \dot{\mathbf{x}}$ then , $y = \dot{\mathbf{x}} = \pm \sqrt{2 \cdot [\mathbf{E} - \mathbf{U}(x)]} \dots (2)$

The differential equation of motion in cave $\bar{\mathbf{c}} - \mathbf{r}$, for Conservative Systems is $\ddot{\mathbf{x}} = f(x)$ and

Because $\ddot{\mathbf{x}} = \dot{\mathbf{x}} \left(\frac{d\dot{\mathbf{x}}}{dx} \right)$ then $\dot{\mathbf{x}} \cdot d\dot{\mathbf{x}} = f(x) dx = 0 \dots (3)$ By Integrating then $\frac{\dot{\mathbf{x}}^2}{2} - \int_0^x f(x) dx =$

E , and by comparison to Priors then $\rightarrow U(x) = - \int_0^x f(x)dx$ or $f(x) = - \frac{dU}{dx} = \ddot{x} \dots(4)$

i.e. For the Conservative System , of cave $\bar{c} - r$, the force = $\bar{B} = r m \bar{c} = \frac{J.w^2}{2} = \left[\frac{\pi.r^2}{2} \right].\bar{c}^2$ is

Equal to the Negative Gradient of the Potential Energy Into 2-Energy Semi-circles.

For $y = \dot{x}$ then (3) becomes $\frac{dy}{dx} = \frac{f(x)}{y} = \Phi(x, y)$, and the Singular Points correspond to

$f(x) = 0$, and $y = \dot{x} = 0$ and hence are the Equilibrium Points . For every Point x, y in the Phase-Plane for which $\Phi(x, y)$ is not indeterminate exists a unique slope of the trajectory. When the velocity vector is at Points 1,2 then $y = 0$ and $f(x, y) = C \neq 0$ then the Slope of the trajectory is infinite and angle $\varphi = 90^\circ$. Since motion in cave $\bar{c} - r$, is a **single-DOF oscillator** , then motion equation is $\ddot{x} + w^2 x = 0$.Equation indicates that at the Equilibrium Singular Points , 3 , 4 , the Slope of the Potential **Energy curve U(x)** must be zero, meaning **minima or maxima** , and which is the $\pm$ **change** of direction for the Four Energy- Quarter circles [1-O-4] , [4-O-2] , [2-O-3] , [3-O-1] in (c_x, c_y) where $\overline{c_y} = \bar{c}$ = Spin Direction ,

Conclusions :

1... From A-Momentum $\bar{B} = r m \bar{c} = \frac{J.w^2}{2} = \frac{1}{2} [\dot{x}]^2 + U(x) = \frac{1}{2} [y]^2 + \frac{1}{2} k x^2 = \text{constant}$, then

Spin $S \equiv \bar{B} = \frac{1}{2} [y]^2 + \frac{1}{2} k x^2 = [y]^2 + w^2 x^2 = C = \text{Constant}$, or $\rightarrow y^2 + w^2 x^2 = C \leftarrow \dots(a)$

Equation (a) is a series of Ellipses determined by C , and **for w = 1** $y/w = y$ then reduce to circles $y^2 + x^2 = C$, in $\bar{c} - r$ Plane and Perpendicular to S since , $[\bar{c} - r] \perp \bar{S}$.

2... In the Conservative System of cave $\bar{c} - r$, where $\bar{c}$ = 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 $\ddot{x} + w^2 x = 0$. Equation of motion is a circle on where exist the 2-Singular Points

3 , 4 , meaning **minima or maxima** , where issues $\frac{dy}{dx} = \frac{f(x)}{y} = \Phi(x, y)$, 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 $\bar{S} = \text{Gravity} = \bar{B} = r m \bar{c}$ which is Constant and equal to Work = $\overline{c_y} \times$ [Quarter circle 1-O-4] At Point 2 , Velocity $\overline{c_y} = - \bar{c}$ because of $\overline{c_y}$, $-\uparrow$ direction and corresponds the Spin $\bar{S} = \text{Gravity} = \bar{B} = r m \bar{c}$ which is Constant and equal to Work = $\overline{c_y} \times$ [Quarter circle 2-O-3] where the [Semicircle 4-1-3] = $+ \bar{B} \equiv$ The Gravity , **and** [Semicircle 4-2-3] $\equiv - \bar{B} =$ The

Antigravity .The produced Work from the eternal Rotation is store in the Semicircles as ,
(+) Total Work = [Semicircle 4-1-3] = + $\bar{S}$ and **(-) Total Work** =[Semicircle 4-2-3] = - $\bar{S}$

4...From Newton`s law of Universal Gravitation $m \cdot r \cdot \bar{w}^2 = G \frac{m \cdot M}{r^2}$, and when $m = 1$, issues

$$\bar{w}^2 = \frac{G \cdot M}{r^3} , \text{ and } B = J \cdot w , \text{ therefore angular velocity } \bar{w} = \pm \sqrt{\frac{GM}{r^3}} = \sqrt{\frac{G \cdot \pi \cdot r^4}{2 \cdot r^3}} = \sqrt{\frac{\pi \cdot G \cdot r}{2}} .$$

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** $\equiv f_n = \left(\frac{n\sigma}{8r^2}\right) \cdot \bar{B}$, so Energy-caves are Stationary Wave-Fringes

5... **The Total-Energy** , E_T , in Caves , [70]

a... $\rightarrow$ **In any Moving System** $E_T = E_R + E_K = \frac{\pi c^2}{8} r^3 + \frac{1}{2} m \cdot v^2 = 3,535 \cdot 10^{16} \cdot r^3 + \frac{1}{2} m \cdot v^2$,

b... $\rightarrow$ **Light-Velocity** $\bar{c}$ of Photons becomes from the **Action** of G on Plancks Length $L_p = r_p = 1,6162 \cdot 10^{-35} \text{ m}$ cave r, and when cave $r = \frac{h}{c \cdot Z_c} \neq L_p$ originates Hydrogen-cave.

It is shown later that when the **G action Area - Resistance** $\equiv$ Gravitational-Impedance $Z_{G-I} = 6,344907 \cdot 10^{-35} \text{ Kg}$ differs for any reason then Black-Holes happen.

c... $\rightarrow$ **Euler`s Rotating Rigid Body** .The D-Work is $W = 2L = \bar{B} \cdot \bar{w} = J \cdot w^2 \equiv h \cdot f_n$, and for m mass $W = h \cdot f_m$,Angular-Momentum $\bar{B} = \frac{2L}{\bar{w}} = \frac{2L}{2\pi f} = \left[\frac{2L}{2\pi}\right] \cdot \left[\frac{1}{f}\right] = \frac{\text{Constant}}{2\pi} \left[\frac{1}{f_m}\right] = \text{SPIN}$

d... $\rightarrow$ **In Central-motion** ,Kepler constant $k = 4\pi^2 \cdot r^3 \cdot f_p^2$, or $1 = \left[\frac{4\pi^2}{k}\right] r^3 \cdot f_p^2$, $1 = c \cdot r^3 \cdot f_p^2$ 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 $\rightarrow W = 4\pi^2 \cdot \left[\frac{r^3}{T^2}\right] \cdot \bar{n} = 4\pi^2 \cdot r^3 \cdot f_p^2 \cdot \bar{n} \leftarrow$

f... $\rightarrow$ **In [PNS] Neutral Space** , Dumping force is $F_d = C \cdot \dot{r} = \pm C_o \cdot w \cdot [\sqrt{A^2 - r^2}]$

and $F_d^2 / [C_o \cdot w \cdot A]^2 + r^2 / A^2 = 1$, 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 ($m \cdot v$) or as Rotational Momentum ($\Lambda = r \cdot m \cdot v$) . Velocity $\dot{x}$, in form $\dot{x} = w A \cos.(wt - \theta) = \pm w A \cdot [\sqrt{1 - \sin^2(wt - \theta)}] = \pm w \cdot [\sqrt{A^2 - x^2}]$ where momentum relation $\bar{B} = m \cdot r \cdot v = m \cdot r^2 \cdot w = m \cdot r^2 (2\pi f) = \frac{J \cdot w}{2} = \left[\frac{\pi r^4}{4}\right] \cdot [2\pi f] = \frac{\pi^2 r^4 f}{2}$,and Mass of Elementary-Particles is $m = \frac{\pi^2 r^4 f}{2w \cdot r^2} = \frac{\pi^2 r^3}{2v} f = \frac{\pi^1 r^2}{4}$, or

The repeated **Quarter circle** $\left[\frac{\pi \cdot r^2}{4}\right]$ Surface of the $\pm$ **Spin Dual Property** In Planck`s

length and area , $A_{QC} = \left[\frac{\pi \cdot r^2}{4}\right] = \frac{3,1415926 \cdot (\sqrt[4]{2} \cdot 10^{-35})^2}{4} = 1,1107206 \cdot 10^{-70} \text{ m}^2$. Since

issues the **monad of mass** to be $\left[\frac{eV}{c^2}\right] = 1,782662 \cdot 10^{-36} \text{ Kg}$, 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... → In [MFMF] Space , **Work = motion = Energy** is zero as $\mathbf{W} = \int_B^A \mathbf{P} \cdot d\mathbf{s} = 0$, and this because $d\mathbf{s} = \vec{\mathbf{v}} = 0$ and Time is not existing and $\vec{\mathbf{v}} = 0$ as relation , $\mathbf{s} = \vec{\mathbf{v}} \cdot \mathbf{T}$. Each Unit $\overline{\mathbf{AB}} = d\mathbf{s} > 0$ exists by this Inner Impulse (P) and so $\mathbf{P}_A + \mathbf{P}_B = 0$. **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 → $d\mathbf{s} = 0$ and $\mathbf{P} = \infty$. Since Impulse is ∞ then may be → Vacuum , Momentum or Potential or Induced Potential and it is a Type of Effect , to Push the nature → (Impulse $\equiv$ Motion $\equiv$ Energy) ←

6c3.. The Nature of Antigravity (- g) .

From Mechanics in case that , in an Axisymmetric Rotating Body , with constant Angular-Velocity , $\mathbf{w}$, the moment of Inertia , $\mathbf{J}_x = \mathbf{J}_y$, is equal about the two of the three Principal axis , and then ,

- 1.. **The Angular – velocity - vector , $\bar{\mathbf{w}}$, describes the Ellipsoid of Angular Velocity and its nib describes a Cone of which Plane-Base is Fixed *Simultaneously* ,**
- 2.. **The Angular-Momentum , $\bar{\mathbf{B}}$, 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 , $\bar{\mathbf{w}}$, describes on the Tangential-Plane of the Angular-Momentum-Ellipsoid , the Herpolhode , while ,**
- 4.. **The Nib of Angular-Momentum , $\bar{\mathbf{B}}$, describes on the Tangential-Plane , of the Angular-Velocity-Ellipsoid , the Polhode .**
- 5.. **The Fixed-Tangential-Planes on , $\bar{\mathbf{w}}$, and , $\bar{\mathbf{B}}$, nib are alternately Perpendicular to , $\bar{\mathbf{B}}$, and , $\bar{\mathbf{w}}$, common Central Axes of Rotation .**
- 6.. **The Kinetic Rotational – Energy of monad , which is the Work in monad , is the Scalar quantity , L , The Vector Angular Momentum quantity is , $\bar{\mathbf{B}}$, and the Vector of Angular-Velocity quantity is , $\bar{\mathbf{w}}$, which Three monads are related as $\bar{\mathbf{B}} \cdot \bar{\mathbf{w}} = 2\mathbf{L} = \mathbf{J} \cdot \mathbf{w}^2$ where $\mathbf{J}$ = The moment of inertia around the axis of rotation = $\uparrow \downarrow$**
- 7.. **All above happen in , Material-Point , where the Positive $\oplus$ constituent The + $\bar{\mathbf{c}}$, is Eternally self - rolling on the Negative $\ominus$ constituent , The - $\bar{\mathbf{c}}$, with Angular-Velocity $\mathbf{w}$, in Infinite Spherical traces , either at Great-circles [+ 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 $\bar{\mathbf{B}}$, the Material Point ← **i.e.** The Angular Momentum $\bar{\mathbf{B}}$, is the Quantum of Physics and is , for all the Energy – Space-Universe . The Energy = E dissipated per cycle is equal to the Work $\mathbf{W}_d = \mathbf{E} = h f = \frac{h(1+\sqrt{5})}{4\pi} \cdot \left[\frac{\sigma}{r} \right] = 8.k\zeta(\pi^2)$ and is **Stored in monad** , which is a Stationary Wave with and - in , n , loops as $\mathbf{W}_n = \left[\frac{4\pi r^2}{3} \right] \cdot \mathbf{f}_n = \left[\frac{4\pi r^2}{3} \right] \cdot \mathbf{n} \mathbf{f}_1 = n \frac{(1+\sqrt{5})\sigma r}{3} = n \frac{[\sigma \Phi \cdot r]}{1,5}$.**
- 8.. **Geometry has as Monad , The discrete continuity $\overline{\mathbf{AB}}$ -length becoming from the Zero**

Point $\equiv 0$, and **Mechanics-Physics** the Recent-Acquisition of the **Material - Geometry**, where **Zero-Point** , $0 = \emptyset = \{\oplus + \ominus\} = \text{The Material-Point} = \text{The Quantum of Space}$, as , The **Positive Space** and The **Negative Anti-Space** . [58]

In Fig-8 , The Light velocity vector $\bar{c} = 2,9979.10^8 \text{ m/s}$ Rotates In the Planck's length Perimeter $\underline{r_p} = 1,616255.10^{-35} \text{ m}$, and is thrust through The Newton's – Gravitational Force $\bar{G}$, During Rotation is created Work which is stored in the circle

Surface as Angular - Momentum $\bar{B} = r m v = \frac{J.w}{2} = \left[\frac{\pi.r^4}{4}\right] \frac{c}{r} = \left[\frac{\pi.r^3}{4}\right].\bar{c} = \left[\frac{\pi.r^2}{4}\right].\bar{c} \times \bar{r}$, in 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 $\bar{B} \equiv + \text{Spin} \equiv \downarrow \cup \equiv$ 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 in , $+\downarrow \bar{c}$ Direction . **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 in The , $-\uparrow \bar{c}$ Direction .

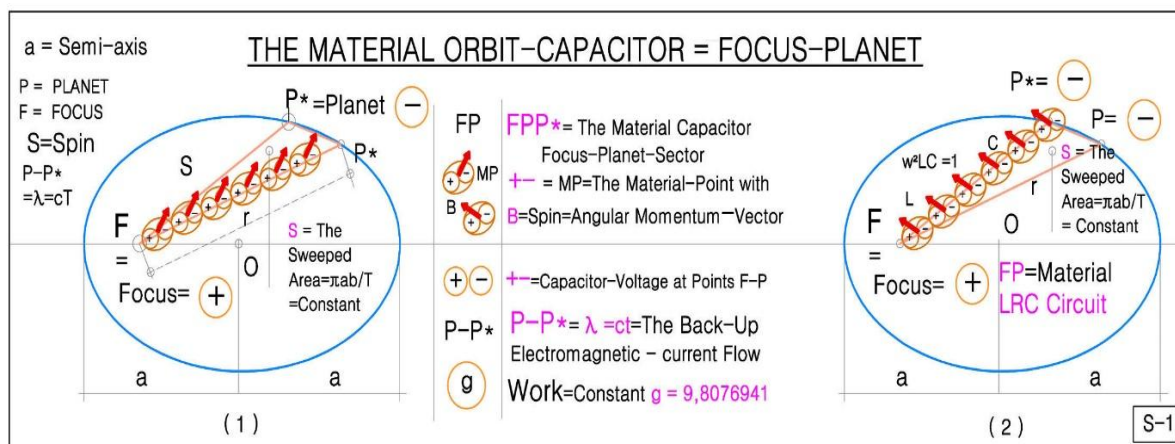


Figure – 17b - The Material , LRC Circuit on Orbit , on Focus-Planet-Sector [F↔P]
In (1). Force g , as Wave , is directed to the center of rotation F , and is proportional to the distance $PF \equiv \text{Focus - Planet}$.The Gravitational Potential-Energy $g_G = 9, 8076925$ is stored in $\rightarrow \text{Focus-Planet-Sector} \equiv FP \leftarrow$ which is the Material Capacitor Stores charge as that of Material-LRC-circuit , and Inductors .
 Because of the chains of Spins and of their Periodic excitation $[\leftrightarrow]$, is thus created a Magnetic field due to the LRC-circuit and which is tuning to the critical Quantum and critical-State g_G . The chains of Spins are Pointy - vibrating with their characteristic

frequencies $f = \frac{(1+\sqrt{5}) \cdot \sigma}{4\pi r} \bar{B}$, and **filling up** the entire universe . Since 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 on stresses** 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 $\dot{x} = w \cdot r \rightarrow w = \dot{x}/r$ then **Golden ratio Damping-Force** is the Work produced with Unit Damping-ratio $\zeta=1$.Since also $\dot{x} = v$ 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 is dependent on Glue-bond σ , 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 Glue-bond . This may be considered as a Type which happens in **Black holes** as this happens in algebra inverse fractions also .

In (2) is Presented the Back-Up Electromagnetic current flowing in Opposite direction FP , by changing the **Spin Direction** of the Sector-Material-Points such that work $W = g$. From Kepler's 2nd law the , **Area S** , swept by any **Focus-Planet-Sector** $\equiv$ **FP** is the constant k , and equal to,

$$S^2 = \frac{L^2 T^2}{4m^2} = \pi^2 a^2 \cdot [b = \pi a (\frac{L^2}{2mE})] , \text{ or } \frac{T^2}{a^2} = \frac{4\pi^2 m}{2E} = \frac{4\pi^2}{2E/m} = \frac{4\pi^2 a}{GM} \text{ and } \rightarrow \frac{T^2}{a^3} = \frac{4\pi^2}{GM} = k$$

$$\text{and } k = \frac{1}{f_n^2 \cdot a^3} , \text{ from which issues } \rightarrow 1 = k \cdot f_n^2 \cdot a^3 \text{ and } , k = \frac{4\pi^2}{GM} \text{ where}$$

Is seen that , **Resonance between Focus-Planet** exists through Space a and Energy f .

From the Second-order differential equation excited by a Harmonic external force ,

$F_t \cdot \sin wt$, and is as , $m \frac{d^2x}{dt^2} + c \frac{dx}{dt} + k \cdot x = F_t \cdot \sin wt$, corresponds Physically to the free damped vibration , where x = the displacement , dx/dt = the velocity and , d^2x/dt^2 = the acceleration of monad , m, c, k constants , with the general solution given by the equation $x = A \cdot e^{s1 \cdot t} + B \cdot e^{s2 \cdot t} + X \sin(wt - \phi) \dots\dots(1)$

The Equation $\rightarrow L \frac{d^2q}{dt^2} + R \frac{dq}{dt} + \frac{1}{C} q = E_t \cdot \sin wt$.Corresponds Physically to the free damped vibration , where **Charge q** = is the Physical Property of matter that causes it to experience a force which can be Positive or Negative , dq/dt = the least quantized amount of charge , and d^2q/dt^2 = the Space distribution of charge , and L, R, C Inductance , Resistance , Elasticity constants with general solution given by the equation

$$q = A \cdot e^{s1 \cdot t} + B \cdot e^{s2 \cdot t} + X \sin(wt - \phi) \dots\dots(2)$$

Equations (1) , (2) give the analogic relation of the **Classical mechanics** [Space Position x] and the **Electromagnetism** [Quanta of Energy , q] of **Storing and Removing of energy in Energy-Space** cosmos .Distributed forces $L_1 - L_2 = L (di/dt)$, $R_1 - R_2 = R \cdot i$, $C_1 - C_2 = q/C$ respectively , showing the **Identification** of the **Mechanical** and **Physical laws** .

The way that **Potential-Energy is stored** , is that of **Material - LRC- Circuit** , which is for the Gravitational-Potential-Energy the **Material-Capacitor** or the $\rightarrow$ **Focus-Planet-Sector – Stores-Change** $\leftarrow$ which develop a Voltage in response to that charge .The coil of wire is the infinite **Stationary-Dipole-Spinning Material-Points** of this $\rightarrow$ **Focus – Planet - Sector** $\leftarrow$ which develops the Back-Electromagnetic-force ,when current through them changes .

In-Cave-Box exist two motions ,**Revolving and Periodic**, the acceleration of Gravity $g \equiv \pm \sigma$ exists for the First Box-**B_R** , while **Local-Extreme-case** for the Second Box-**B_P** . In this Gravity $g \equiv \pm \sigma$, is Locally altering **S** , by changing the Principal-stress σ with Local uniform Pressure $g_L \equiv g k_E = g * [\text{Force/Area}] = G$, i.e. is Proved that the minimum Local-Energy acceleration is the known **Universal Gravitational-constant** $G = g k = k_E g = k_L \sigma = g g_L k_L$ such for **Macrocosm as for Microcosm** , and both cases Obeying Newton`s Laws of motion .

4.. Since Electron is rotating in Orbits so Electromagnetic Wave is also rotating , therefore is needed a **Proper-Stationary-Magnet** on which Rotation becomes Oscillation in order to succeed a clear 3-dimensioned , Φ^3 , Magnetic-Resonance-Imaging [The MRI] and the other Systems use this Property of **Bottom-Information** . This Property of Spin in all depths of Energy - caves allows the Granularity of Energy in Energy- loops , and after to be Bonded .This Property of Electron may be used for **Cancer Chromosomes** .

6c4.. The Conservation of Energy in $\rightarrow$ velocity $\bar{c}$ and in gravity $\bar{g}$ Caves $\leftarrow$

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

From Waves theory $\rightarrow$ **Position** $x = A \cdot \sin wt$ and **Acceleration** $\ddot{x} = A w^2 \leftarrow$ where the Signal-Spectrum is consisted of the Amplitude **A_c** and of the Angular frequency $\bar{w}$, from where all other Properties follow. Since $\ddot{x}$ is the **acceleration Force** of Position x , then for Planck`s length issues $\ddot{x} = G = A^2_G \cdot w^2$, or $\bar{w} = \sqrt{G/A^2} = \sqrt{6,68 \cdot 10^{-11} / [2,6262 \cdot 10^{-35}]^2}$ so Gravity-frequency $\rightarrow \bar{w} = 0,5057 \cdot 10^{30}$ H and Gravity-Wave-frequency $f_{GW} = 8,05 \cdot 10^{28}$ H $\leftarrow$

THE GRAVITATIONAL FORCE ACTION : $[[G]] \rightarrow \{[\bar{c}] \pm E_n\} \equiv \bar{g} \equiv E_n + \{[G] \pm [\bar{c}]\}$

and $\rightarrow E_R = E_G + E_{\bar{c}} \leftarrow$ where ,

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

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

$[[\bar{g}]] = \text{The New Modulated } [G \leftrightarrow \bar{v}] \text{ Signal} \equiv f \frac{\bar{v} m + wc}{2} + f \frac{\bar{v} m - wc}{2} \equiv [\text{MAS}]$

COMPOUND = The Demodulated $[\text{MAS}] \equiv f \frac{w + 2wc}{2} + f \frac{w - 2wc}{2} \equiv [\text{DMAS}] \cdot \bar{v}$, since

$[G = \text{The CARRIER}] \rightarrow [\bar{c} = \text{The MODULATOR}] \rightarrow [G + \bar{c} = \text{The MODULATED}]$

and $[G + \bar{c}] + \bar{g} \leftrightarrow [\text{DM} = \text{ANTIDOTES}] = \text{The DEMODULATION}]$

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 : $[[A]] \rightarrow \{[B] \pm \mathbf{E}_n\} \equiv C \equiv \mathbf{E}_n + \{[A] \pm [B]\} \rightarrow \mathbf{E}_n = \mathbf{E}_C + \mathbf{E}_A \leftarrow$
and where

$[[A]] = [\text{Atom OR Compound}] \equiv \text{The Signalling.}(W_c) \rightarrow \text{The Carrier - Wave}$

$[[B]] = \text{Any}[A\text{-OR-}C] \equiv \text{Any Signalling.}(w) \text{ Wave} = \text{The Modulating - Wave}$

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

ANTIDOTE = The **Demodulated** $[\text{MAS}] \equiv f \frac{w+2w_c}{2} + f \frac{w-2w_c}{2} \equiv [\text{DMAS}] , \bar{w}$, as

The Atoms Action (1) ... $[A] \rightarrow \{[B] \pm \mathbf{E}_n\} \equiv [C] \equiv \pm \mathbf{E}_n + \{[B] + [A]\} , , [A] \equiv [C] + \{ \mathbf{X}_n \}$

$[A] = \text{The Initial} , [C] = \text{The Final} , [\mathbf{X}_n] = \{[B] \pm [\mathbf{E}_n]\} \equiv \text{The Antidote} .$

The Atoms Action (2) $[A] \rightarrow [\pm \mathbf{E}_n] \equiv [C] \equiv \pm \mathbf{E}_n + [A] , , , [A] \equiv [C] + [\mathbf{E}_n]$

$[A] = \text{The Initial} , [C] = \text{The Final} , [\mathbf{E}_n] \equiv \text{The Antidote} , \text{The Circular-Signal-Action is}$

as , $I \rightarrow F = [I + F]$ and $[I + F] \leftrightarrow [DM] \equiv \text{Antidote} , \text{or Still-Actions}$

$[I = \text{CARRIER}] \rightarrow [F = \text{MODULATOR}] \rightarrow [I+F = \text{MODULATED}] \rightarrow$

$\rightarrow [I+F] + M \leftrightarrow [DM = \text{ANTIDOTES}] = \text{THE DEMODULATION}$

The Communications –Frequencies In Atoms - Caves , are their **Wave**

Resonances which consist the Master-Keys of all the **wave - caves** .

6c5.. The Energy - Superflow in MFMP-PNS Space-Levels for Black-Holes Origination.

1)..It was Prior Proved that Angular-Momentum of the Primary-motion in PNS Space

is a **Quaternion of dimension Power** $(s + \bar{v} \bar{v} i)^{1/d} = \sqrt[d]{(s + \bar{v} \bar{v} i)}$, which follows that of Spaces Origination .

2)- It was Prior Proved [70] that in PNS - Space the inner **Forces of a System** , are the two equilibrium **Centripetal** and **Centrifugal Forces** due to the Eternal , $\pm \sigma$, Stresses

of Opposites $[\oplus \leftrightarrow \ominus]$ Originate motion **u** , as $\mathbf{J}_1 . \mathbf{u}^2 \cos \vartheta - \mathbf{J}_3 \mathbf{w}_3 . \mathbf{u} + \mathbf{s} . \mathbf{Q} = 0$.

This Quadratic equation has **4 - Solutions** where the Angular velocity Complex number

$$\mathbf{u} = |\bar{\mathbf{w}}| = \frac{s \mathbf{Q}}{B} = \frac{s \mathbf{Q}}{J_3 w} = |\bar{\mathbf{w}}| = \frac{d\varphi}{dt} = \left[\frac{J_3 . w_3}{2 J_1 . \cos \vartheta} \right] \pm \left[\frac{k_{PNS}}{2 J_1 . \cos \vartheta} \right] . i = s \pm v i , \text{ or}$$

$$\rightarrow \text{Angular-velocity } |\bar{\mathbf{w}}| = \frac{J_3 . w_3}{2 J_1 . \cos \vartheta} \pm \sqrt{-\frac{s \mathbf{Q}}{J_1 . \cos \vartheta} + \left(\frac{J_3 . w_3}{2 J_1 . \cos \vartheta} \right)^2} = s \pm \{ \sqrt{\bar{\mathbf{D}}} \} . i \leftarrow$$

$$\text{where } s = \left[\frac{J_3 . w_3}{2 J_1 . \cos \vartheta} \right] , \bar{\mathbf{D}} = \left[\frac{k_{PNS}}{2 J_1 . \cos \vartheta} \right] , k_{PNS} = \sqrt{[J_3 . w_3]^2 - 4 . s \mathbf{Q} . J_1 \cos \vartheta}$$

The constant Work exists on the **common Central Axes of Rotation** which is Fixed to

the Tangential-Planes of $\bar{\mathbf{w}}$ & $\bar{\mathbf{B}}$ nib , being alternately Perpendicular to , $\bar{\mathbf{B}}$, and , $\bar{\mathbf{w}}$,

and found to be as $\bar{\mathbf{B}} . \bar{\mathbf{w}} = 2L = \mathbf{J} . \mathbf{w}^2$. **The frequency monad** of rotation in the **PNS**

Space is as $\rightarrow \mathbf{f}_{PNS} = \frac{s \mathbf{Q}}{2\pi J_2 . w} \leftarrow$ with the following 4 - Solutions for $|\bar{\mathbf{w}}|$,

Solution-1 $\Rightarrow |w_1| = [s] + [\sqrt{\bar{\mathbf{D}}}] \rightarrow \text{Real Root} \equiv \text{Huge Minerals at Edge of Universe.}$

Solution-2 $\Rightarrow |w_2| = [s] - [\sqrt{\bar{\mathbf{D}}}] \rightarrow \text{Real Root} \equiv \text{Atoms \& Compounds into Structures.}$

Solution-3 $\Rightarrow |w_3| = [s] + [\sqrt{\bar{\mathbf{D}}}] . i \rightarrow \text{Imaginary Root} \equiv \text{Huge BH at centres of Galaxies.}$

Solution-4 $\Rightarrow |w_4| = [s] - [\sqrt{D}] \cdot i \rightarrow$ Imaginary Root $\equiv$ Micro **BH** at centre of Molecules.
where **BH** = Black Hole . From 4-above issues ,

$$\text{A-Velocity } |\overline{w_1}| = \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} \pm \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2} \equiv \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} + \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2}$$

$$\text{A-Velocity } |\overline{w_2}| = \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} \pm \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2} \equiv \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} - \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2}$$

$$\text{A-Velocity } |\overline{w_3}| = \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} \pm \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2} \equiv \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} + \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2} \cdot i$$

$$\text{A-Velocity } |\overline{w_4}| = \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} \pm \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2} \equiv \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} - \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2} \cdot i$$

Angular-velocity $\overline{w}$ is a vector , and **Rotates** in one axis **k** with respect to variable $\overline{B}$ Momentum and , the Ellipsoid of $|\overline{w}| \equiv$ Quaternion of dimension Power $(s \pm \overline{v} \otimes i)^{1/d}$
The Inertia **J-Ellipsoid** of $|\overline{w}|$ gives two Anti-Symmetrical Inertial Ellipsoids , a Real and an Imaginary in their Polhode and Herpolhode Cones as below,

$\Rightarrow$ The-Real $\overline{w} \equiv \{ \text{Polhode} \equiv \text{Cone OPS} , \text{Herpolhode} \equiv \text{Cone OPT} , [\cup \text{Rolling}] \text{ on the the Ellipsoid axis} , \downarrow \text{Normal ON the Unmovable \& Attitude-Plane of the [PSPT] Truncated-Polar-Cone} \} .$

$\Rightarrow$ The-Imaginary $\overline{w} \equiv \{ \text{Polhode} = \text{Cone OPS} , \text{Herpolhode} = \text{Cone OPT} [\cup \text{Rolling}] \text{ on the Anti-Symmetrically-Ellipsoid-axis} , \uparrow \text{Normal ON the Unmovable \& Attitude-Plane of the [PSPT] Truncated-Polar-Cone} \} .$

It has been Proved that $\overline{B} , \overline{w}$ Vectors exist as , **E** = Energy =motion , **S** = Space =Length

Both magnitudes define the **Unit-Energy Vectors** $\rightarrow \{ \text{Unit-E Vector } \underline{R} = \frac{\sigma}{J \cdot w^2} = \frac{\sigma}{B} \} \leftarrow$

When the Unit-E.Vector R is Placed ON [AB $\equiv$ 2R S.Diameter of Spaces-Neutral-circle] Then Energy-Monad $|\overline{R}|$, exists on , Space-Monad $|AB| \equiv |\overline{R}|$ and is {E+S -Monad $|\overline{R}|$ }

Or is The { **Energy – Space - Monad $|\overline{R}| \equiv |AB|$ } , where the magnitudes, Spaces Sides $\lambda_n = 2 \cdot \sqrt{R^2 - a_n^2}$, & the Quantum Critical-Side $a_n = \frac{1}{2} \sqrt{4R^2 - \lambda_n^2}$, Every=Monad occupies $AB = 2|R|$ Diameter = Space & Unit-E-Vector $R = \frac{\sigma}{J \cdot w^2} = \frac{\sigma}{B} =$ motion**

The Quantization of Energy in Spaces happens by following the Archimedes formula for

Duplication of Sides as $\lambda_{2n} = \sqrt{2R^2 - R \sqrt{4R^2 - \lambda_n^2}}$ & Critical-Sides $a_{2n} = \frac{1}{2} \sqrt{4R^2 - \lambda_{2n}^2}$

The Energy-Monad $|\overline{R}| = \frac{\sigma}{J \cdot w^2} = \frac{\sigma}{B}$ remains the same in PNS - Space while

The Spaces Sides change as λ_{2n} , a_{2n} , when the Monad $|\overline{R}|$ enters the $2n$.

The 4 - Solution for Real and Imaginary Root is as below ,

The $|\overline{w_1}|$ Solution is the Real -Root giving the Strongest in Amplitude Energy-Structions.

The $|\overline{w_2}|$ Solution is the Real -Root giving the Weakest in Amplitude Energy-Structions.

The $|\overline{w_3}|$ Solution is the Imaginary-Root giving the Mega Tapered-Amplitude E-Structions.

The $|\overline{w_4}|$ Solution is the Imaginary-Root giving the Micro Black-Holes Structions .

From Gravity relation $G = g \mathbf{k_E} = 9,8076941.6,8116.10^{-12} = 6,68056.10^{-11} \text{ m}^3 / \text{N.s}^2$ from

Energy-loop relation $1 = c \cdot r^3 \cdot \mathbf{f_p}^2 \rightarrow \mathbf{f_p} = \sqrt{1/cr^3}$, and 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 $\frac{E^2}{h^2} = \frac{1}{c r^3}$ or $E^2 = \frac{h^2}{c r^3}$, an Energy relation between the c, r .

This relation is used for Black- Holes Energy where r , result to zero ,

The Permissible-Permeable-Resonance-Paths for their means are for ,

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) Particles $\rightarrow$ The Cauchy Ellipsoid-Stress-tensor where $\{ \bar{w} \perp \bar{B} \perp \bar{r} \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3 \}$

9) M-Points $\rightarrow$ The Resonance-frequencies $\mathbf{f_R} [S \equiv f_1 = n, f_2, f_3, f_R = w^2] = \mathbf{f_n} = [\oplus \leftrightarrow \ominus]$

$$= n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n \cdot \sigma \cdot \bar{B}}{8 r^2} \rightarrow \text{i.e. The Golden-ratio-Pattern, which is related to Spin.}$$

From Solution-3 the magnitude $\mathbf{D}$ becomes maximum when $\frac{sQ}{J_1 \cdot \cos \theta} \equiv \text{maximum}$ or ,when $|\theta \bar{r}|$ axis is $\perp \bar{B}$ and Cone-angle $\theta \Rightarrow 90$. From Energy relation $E = W = 2L = \bar{B} \cdot \bar{w} = J \cdot w^2$
Angular-Momentum $\bar{B} = [3,3770539 \cdot 10^{-96} \text{J}] \cdot [5,613308 \cdot 10^{45} \text{Hz}] = \mathbf{1,895644 \cdot 10^{-50} \text{J/s}}$,
i.e. The Planck's cave, 10^{-35}m , is **The Safety-Valve** $\equiv$ **The Critical State** for the **Stress Ellipsoids**, $\bar{B} \bar{w}$, Vectors in order that this Total-Energy to **Superflow** and be **Still** into Vacuum $\equiv [10^{-62} - 10^{-35} \text{m}]$. This **Vacuum** between the |Gravity cave - Planck's cave| CONSISTS The **BLACK - HOLES - CHAOS**, as the Recycling-Energy into which $\rightarrow$ **The { Energy - Space - Monad } $|\bar{R}| \equiv |\mathbf{AB}|$, Vanishes $\equiv$ Decomposes $\leftarrow$**

In Physics exist ,Two different **Potential-Energies** between Planck Spaces and Gravity Spaces as U_{PLANCK} and U_{GRAVITY} . The difference $\Delta U = U_{\text{GRAVITY}} - U_{\text{PLANCK}}$ is the **Flow-Energy** between the Two Energy Levels $L_{\text{PLANCK}} = 6,6262 \cdot 10^{-34} \text{m}$, and $L_{\text{GRAVITY}} = 1,777 \cdot 10^{-62} \text{m}$,

$$\text{From cave } L_{\text{PLANCK}} = 6,6262 \cdot 10^{-34} \text{m} \text{ and } f_p = \sqrt{\frac{g}{a^3}} = \sqrt{\frac{9,8078}{(6,6262 \cdot 10^{-34})^3}} = 1,83585 \cdot 10^{50} \text{H}$$

$$\text{then } \rightarrow E_{\text{PLANCK}} = h \cdot f_p = 6.62607 \cdot 10^{-34} \cdot 1,83585 \cdot 10^{50} = 1,216447 \cdot 10^{17} \text{J}$$

$$\text{The minimum Charge in Planck's cave } \rightarrow q_{\text{PLANCK}} = \mathbf{1Cb} = 1,6 \cdot 10^{-19} \text{eV},$$

$$\text{From Voltage relation } \Delta U = \frac{\text{Energy}}{\text{Charge}} \text{ issues, } 1 \text{Volt} = \frac{1 \text{Joule}}{1 \text{Culomb}} \text{ or } \mathbf{1V} = \frac{1 \text{J}}{1 \text{C}} \dots (\text{v})$$

In order that 1Cb may overflow and **Flow from** Planck's cave **To** the Gravity cave , then must exist a Voltage $\Delta U \geq 7,593 \cdot 10^{35} \text{eV}$, and be as $\dots (\text{v})$

$$\mathbf{V_{GRA} = \frac{h \cdot f_p}{1Cb} = \frac{1,216447 \cdot 10^{17} \text{J}}{1,6022 \cdot 10^{-19} \text{eV}} = 7,593 \cdot 10^{35} \text{V}, \text{ i.e.}}$$

$\rightarrow$ When the Energy in **Planck's cave** L_{PLANCK} , **Increases** to an Voltage $\geq 7,593 \cdot 10^{35} \text{V}$ then the **motion** $\equiv$ **Energy** between the Two Opposite elements of MP-Dipole $[\oplus \leftrightarrow \ominus]$ Becomes a **Stationary Flow** $[\oplus, \ominus] \equiv$ **Charges** $[\oplus - \ominus]$ in Gravity Cave L_{GRAVITY} .
So Energy $\equiv$ **motion**, exists in L_{GRAVITY} as an $\rightarrow$ **Pointy Rotational Centripetal Force** $\leftarrow$

→ When the Energy in **Planck's cave** L_{PLA} , **Decreases** to an Voltage $= < 7,593.10^{35} \text{ V}$ then **motion** $\equiv$ **Energy** between the Two Opposite elements of M-P-Dipole $[\oplus \cup \ominus]$ Creates the A-velocity-vector $\bar{w}$ which **Rotates** in the **axis k** with respect to variable $\bar{B}$.

So when **Unit-Energy Vectors** $\bar{R} = \sigma / \bar{B}$ exists on the **Unit-Space-Monad** $|AB| \equiv |\bar{R}|$,

Then is → {The **Energy –Space - Monad** $|\bar{R}| \equiv |AB| \equiv$ **The Existing Universe**} ←

For The Chaos - Motion → **Angular – Momentum** $\equiv$ The Rotational Energy $\bar{B}$ ←

For The PNS – Spaces → **Angular – Momentum** $\equiv$ The Rotational Energy $\bar{A}$ ←

From Fig-13 and Solution-3 , magnitude **D** becomes maximum when $\frac{sQ}{I_1 \cdot \cos \theta} \equiv$ **maximum**

or , when $|\theta \bar{r}|$ axis is $\perp \bar{B}$ and Cone-angle $\theta \Rightarrow 90$, where Energy $E = W = 2L = \bar{B} \cdot \bar{w} = J \cdot w^2$

Angular-Momentum $\bar{B} = [3,3770539.10^{-96} \text{J}] \cdot [1,15346.10^{51} \text{Hz}] = 3,895312.10^{-45} \text{ J/s}$,

i.e. The Planck's cave , 10^{-35} m , is **The Safety-Valve** $\equiv$ **The Critical State** for the **Stress**

Ellipsoids $\bar{B} \bar{w}$, Vectors in order that this Total-Energy to **Superflow** and be **Still** into

Vacuum $\equiv [10^{-62} - 10^{-35} \text{m}]$. This **Vacuum** between the |Gravity cave - Planck's cave|

CONSISTS The **BLACK - HOLES - CHAOS** , as the Recycling-Energy into which

→ The { **Energy – Space - Monad** $|\bar{R}| \equiv |AB|$ } , **Decomposes** ← {Fig-13}

IN FIGURE , THE HERPOLHODE- CONE PLANE IS A CIRCLE WHERE VECTOR $\bar{B}$

ROTATES , AND WHEN $\theta \Rightarrow 90$. THEN **CONE BECOMES** A CIRCLE , where

Energy follows $[\oplus \oslash \ominus]$ mode as → + when $\theta = 0 = < 90$, and - when $\theta = 90 - 180$ ←

It was shown that , the **Energy from Chaos** $[\oplus - \oslash - \ominus]$ becomes **Momentum** $\bar{w}$, $\bar{B}$,

and is **Composed** $\equiv$ Quantized through the **Physical-[STPL]-line-Mechanism** , In-circle

$\Rightarrow$ Triangles $\Rightarrow$ Ex-circle $\Rightarrow$ Ex-Triangles consisted with the three Spaces . On this **PM**

exist the Three Breakages $[s^2 = \oplus , 2s^2 = \oslash , -s^2 = \ominus]$ which **Circularly-Charge** ON

the **Three – Extreme - Triangles** $\{A B C\}$, $\{K_A K_B K_C\}$, $\{A_E B_E C_E\}$ and thus **launch**

The Energy-Quantity $\pm Q_{p-p} = [\frac{c \cdot S}{r}] \equiv$ **Centripetal-Force** from Chaos to PNS Space ,

On the **Pascal's -Desargues** Points-Line through the **STPL Circuit** caves r , and from

the **Ptolemy's & Ceba's** Still-mechanism . {Fig-24}

Remark .

1.. **Electron** , e , $m_e = 0,511 \text{MeV} = 0,511.10^{-6} \text{ eV} \cdot [1,80.10^{-27}] = 9,198.10^{-34} \text{ Kg}$

$a_e = 5,0.10^{-18} \text{ m}$, Charge $C_e = 1,602.10^{-19} \text{ C}$, Spin $S_e = \frac{S}{2} = 2,845976.10^{-34} \{ \text{Kg/m/s} \}$,

Using $E_{eK} = \frac{k}{r} + \frac{cS^2}{2m \cdot r^2} = \frac{36.10^{-20}}{7,10^{-18}} + \frac{3.10^8 (5,691952.10^{-34})^2}{2,9,198.10^{-34} [5,10^{-18}]^2} = 51,428 \text{ eV} + 2,111843.10^{10} \text{ J}$

$= 51,43 \text{ eV} + 1,32.10^{29} \text{ eV}$, i.e. The Energy Increases inverse analogous to the cave .

2...Since Primary motion $\equiv$ [PM] exist from the Three Breakages only **STPL** is the $n = 3$

Mechanism creating Elementary Particles as [**n-Knots=3**] in $V_{GRA} = 7,593.10^{35} \text{ V}$.

The Unit-Space -Vectors , $\bar{\mathbf{B}}.\bar{\mathbf{w}}$, & The Unit-Energy-Vectors , $\bar{\mathbf{B}}.\bar{\mathbf{w}}$, Ellipsoids .

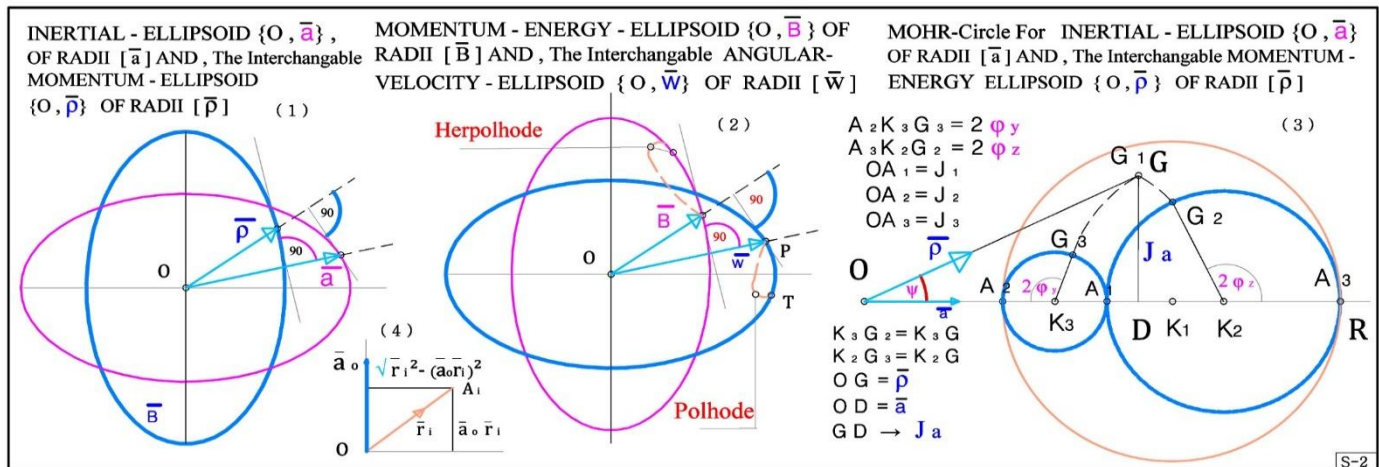


Figure.17c .. Shown the Geometrical-meaning of $\overline{a_0} \overline{r_1}$, $\sqrt{r_1^2 - (\overline{a_0} \overline{r_1})^2}$ terms of radius OA_i

In (1) is shown the ***Inertial - Ellipsoid*** (O , $\bar{a}$) of Radii , $\bar{a}$, and the Interchangeable **Momentum–Ellipsoid** (O , $\bar{\rho}$) of Radii , $\bar{\rho}$. (O , $\bar{\rho}$) . The same for $\{\bar{B} , (O, \bar{B})\}$

In (2) is shown the **Momentum - Energy - Ellipsoid** (O, $\bar{B}$) of Radii , $\bar{B}$, and the Interchangeable Angular Velocity – Ellipsoid (O, $\bar{\omega}$) of Radii , $\bar{\omega}$. **S** = Space

In (3) is shown in Mohr-method, the Geometrical construction from the two Interchangeable Ellipsoids $\rightarrow$ *The Energy-Rotational Momentum-Ellipsoid* (O, $\bar{\rho}$), where { **Work** } = The Angular-Velocity-vector -Unit-sphere, S = *The Inertial- Ellipsoid* (O, $\bar{a}$), { **Force** } = The reaction to the velocity-change-motion, S = *The Mass - Ellipsoid* { **Mass** } = (GD = $J_a \equiv \bar{M}$), and Between the Types of Ellipsoids issues $\bar{\rho} \cdot \bar{a} = J_a$..(12)

The above Property of the two Interchangeable-Ellipsoids defines the deep relation between ,
The **Angular-velocity-Ellipsoid** $\rightarrow J_1 w_1^2 + J_2 w_2^2 + J_3 w_3^2 = 2L = C = J_a \bar{w}^2 \dots(13)$ and
The **Momentum-Energy-Ellipsoid** $\rightarrow \frac{1}{I_1} B_1^2 + \frac{1}{I_2} B_2^2 + \frac{1}{I_3} B_3^2 = 2L = C = J_a \bar{w}^2 \dots(13a)$

Conclusions :

1..From the generated Radius $\bar{a}$ = *The INERTIAL-Ellipsoid* of a Solid Fig-17-1 corresponds another Radius $\bar{B}$, Fig-17-2 *Momentum –ENERGY– Ellipsoid* , to the Common-Point O of Rotation .The Radius $\bar{B}$ is Perpendicular to the Tangential-Plane at the Nib of the $\bar{w}$ Angular Velocity-Ellipsoid . Similarly the Radius $\bar{B}$ is Perpendicular to the Tangential-Plane at the Nib of the $\bar{B}$ of the Angular-Momentum-Ellipsoid . Relation $\bar{\rho} \cdot \bar{a} = J_a = \text{a constant}$, means $\bar{\rho} \perp \bar{a} \equiv \text{Space} + \text{Anti-Space} \equiv \text{motion} \Rightarrow \bar{w} \equiv [i \equiv \sqrt{-1}] * \bar{\rho} \equiv \text{The Argand-Diagram}$. **From** relation (12) , the vertical-Projection of the radius , $\bar{\rho}$, at the corresponding conjugate radius $\bar{a}$, of the Unit Sphere , denotes the meter to the Solid last Angular momentum .

Because the Unit-Energy-Vectors, $\bar{\mathbf{B}} \cdot \bar{\mathbf{w}}$, are related as $\bar{\mathbf{R}} = \mathbf{A}\mathbf{B} = \sigma / \bar{\mathbf{B}} = \sigma / \mathbf{J} \cdot \mathbf{w}^2$, i.e. the common velocity vector $\mathbf{c} = \mathbf{w} \mathbf{r} = 2 \cdot \mathbf{B} / \pi \mathbf{r}^3$, therefore issues and for all the 5-Spaces.

2..Inversely The Unit-Energy-Vectors , $\bar{\mathbf{B}}.\bar{\mathbf{w}}$, Decompose when $B_{\text{crit}}=J w = \frac{\pi r^3}{2}[c/r] = [\frac{\pi r^2}{2}]c$
Or when $\bar{\mathbf{w}}$ becomes maximum , **i.e.** for **Gravity and Antigravity** happens when $|\theta\bar{\mathbf{r}}|$ axis is Perpendicular ($\perp$) to $\bar{\mathbf{B}}$ and the Cone-angle $\theta \Rightarrow 90$, **and** Energy $E=W=2L=\bar{\mathbf{B}}.\bar{\mathbf{w}}=J.w^2$.
From the $\bar{\mathbf{c}}$ Physical -Magnet , $\bar{\mathbf{w}}$ is **Quantized** to the 2-Constitutes $\oplus \rightleftharpoons \ominus$ as the Prior .

6c6.. The De-Quantization of Energy from , PNS $\Rightarrow$ MFMF , $\equiv$ Empty Space .

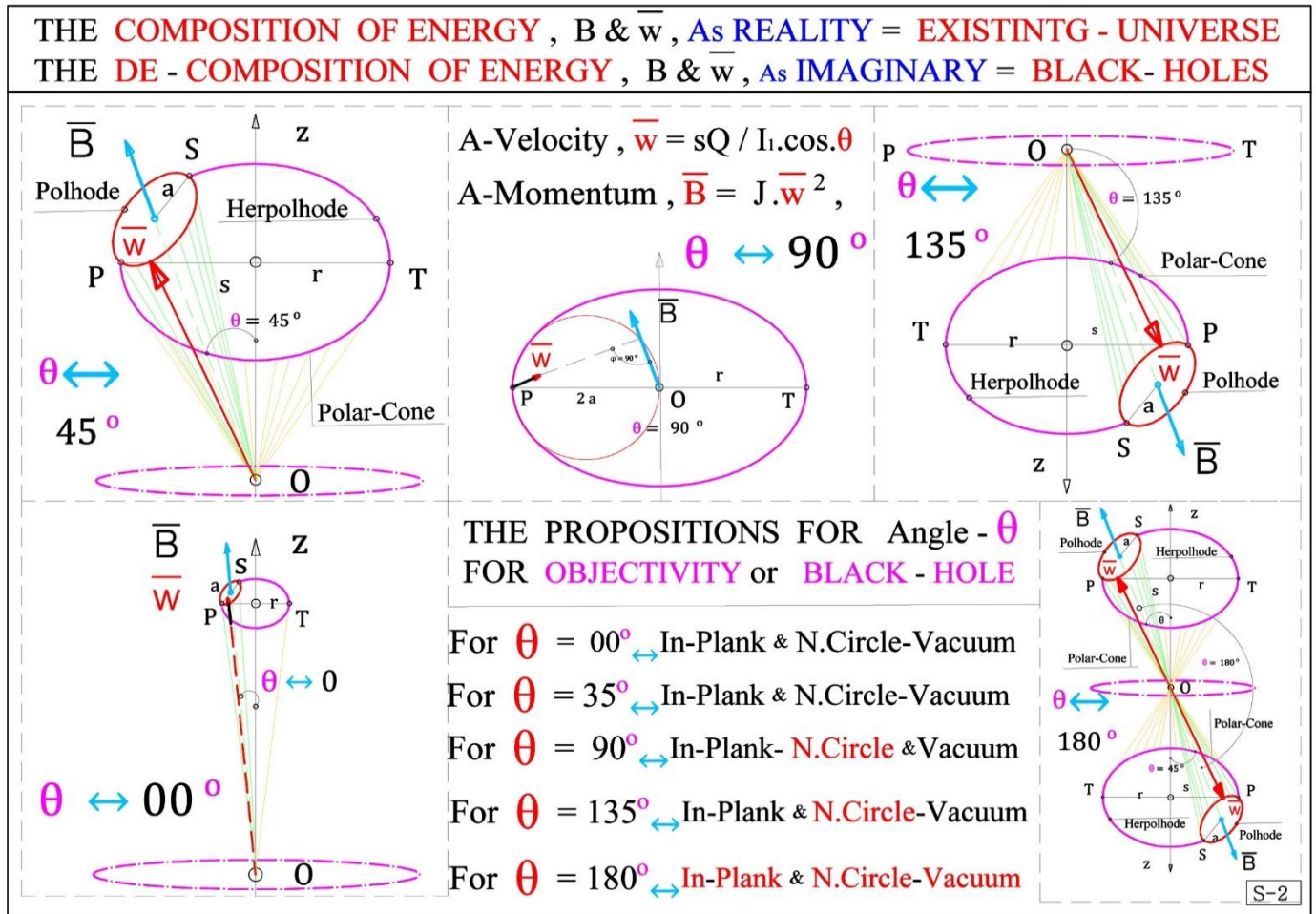


Figure.17d.. The **Angular-velocity** $|\bar{w}| = \frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta} \pm \sqrt{-\frac{sQ}{J_1 \cdot \cos \vartheta} + \left(\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right)^2} = s \pm \{\sqrt{\bar{D}}\} \cdot i$

$\Rightarrow |w_3| = [s] + [\sqrt{\bar{D}}] \cdot i$, $s = \left[\frac{J_3 \cdot w_3}{2 J_1 \cdot \cos \vartheta}\right]$, $\bar{D} = \left[\frac{k_{PNS}}{2 J_1 \cdot \cos \vartheta}\right]$, $k_{PNS} = \sqrt{[J_3 \cdot w_3]^2 - 4 \cdot sQ \cdot J_1 \cos \vartheta}$

From 10.c, the Unit-Energy-Vectors , $\bar{B} \cdot \bar{w}$, $f_p = 1,836 \cdot 10^{45} \text{ Hz}$ in PNS-Space become

1).. From relation $\bar{w} = 2\pi \cdot f_{PNS}$, then $w_{PNS} = 56,13308 \cdot 10^{44} \text{ Hz} = 5,613308 \cdot 10^{45} \text{ Hz}$,

2).. From Centripetal Force in **MFMF Space** $F_c = \sigma = \frac{m \cdot v^3}{r} = J w^2 r = \bar{B} w r$, then $\bar{B} = J w$, or

$\bar{B} = J w = \left[\frac{\pi \cdot r^4}{2}\right] \cdot w = \frac{\pi [1,6162 \cdot 10^{-35}]^4 (5,613308 \cdot 10^{45})}{2} = 3,3770539 \cdot 10^{-96} \text{ J}$ and for eV ,

$\bar{B} = 3,3770539 \cdot 10^{-96} \text{ J} / 1,6022 \cdot 10^{-19} \text{ C} = 3,754935 \cdot 10^{-76} \text{ eV}$.

3).. From Sol -3 the magnitude **D** becomes maximum when $\frac{sQ}{J_1 \cdot \cos \vartheta} \equiv$ maximum or , when

$|\theta r|$ axis $\perp \bar{B}$ and Cone-angle $\theta \Rightarrow 90^\circ$. From Energy relation $E = W = 2L = \bar{B} \cdot \bar{w} = J \cdot w^2$
Angular-Momentum $\bar{B} = [3,3770539 \cdot 10^{-96} \text{ J}] \cdot [5,613308 \cdot 10^{45} \text{ Hz}] = 1,895644 \cdot 10^{-50} \text{ J/s}$,

i.e. The Planck's cave , 10^{-35} m , is **The Safety-Valve** $\equiv$ **The Critical State** for the **Stress**

Ellipsoids $\bar{B} \bar{w}$, Vectors in order that this Total-Energy to **Superflow** and be **Still** into Vacuum $\equiv [10^{-62} - 10^{-35} \text{ m}]$. This **Vacuum** between the [Gravity cave - Planck's cave]

CONSISTS the BLACK - HOLES - CHAOS , as the Recycling–Energy , into which

→ **The { Energy – Space - Monad $|\bar{R}| \equiv |AB|$ } , Vanishes $\equiv$ Decomposes** ←

- **In Physics exist** , Two different **Potential-Energies** between Planck Spaces and Gravity Spaces as U_{PLANC} and U_{GRAVITY} .The difference $\Delta U = U_{\text{GRA}} - U_{\text{PLA}}$ is the **Flow-Energy** between the Two Energy Levels $L_{\text{PLA}} = 6,6262.10^{-34} \text{ m}$, and $L_{\text{GRA}} = 1,777.10^{-62} \text{ m}$, The Total Energy in Planck's cave is → $E_{\text{PLA}} = 1,216447. 10^{17} \text{ J}$, and The minimum Charge in Planck's cave → $q_{\text{PLA}} = 1\text{Cb} = 1,6. 10^{-19} \text{ eV}$,

From Voltage relation $\Delta U = \frac{\text{Energy}}{\text{Charge}}$ issues , $1\text{Volt} = \frac{1\text{-Joule}}{1\text{-Culomb}}$ or $1\text{V} = \frac{1\text{J}}{1\text{C}} \dots(\text{v})$

In order that 1Cb may **Overflow and Flow** from Planck's cave **To** the Gravity cave , then must exist a Voltage $\Delta U >= 7,592354. 10^{35} \text{ eV}$, and be as(v)

$$V_{\text{GRA}} = \frac{h.f_p}{1\text{Cb}} = \frac{1,216447.10^{17} \text{ J}}{1,6022.10^{-19} \text{ eV}} = 7,593.10^{35} \text{ V} , \text{ i.e.}$$

- ⇒ When the Energy in **Planck's cave** $= L_{\text{PLA}}$, **Increases** to an Voltage $= 7,593.10^{35} \text{ V}$ then the **motion** $\equiv$ **Energy** between the Two Opposite elements of MP-Dipole $[\oplus \leftrightarrow \ominus]$ Becomes a **Stationary Flow** $[\oplus, \ominus] \equiv$ **Charges** $[\oplus - \emptyset - \ominus]$ in Gravity Cave L_{GRA} . **So** Energy $\equiv$ motion , exists in L_{GRA} as an → **Pointy Rotational Centripetal Force** ←
- ⇒ When the Energy in **Planck's cave** L_{PLA} , **Increases** to an Voltage $V_{\text{CR}} > 7,593.10^{35} \text{ V}$ then **motion** $\equiv \rightleftharpoons \equiv$ **Energy** between the Two Opposite elements of M-P-Dipole $[\oplus \cup \cup \ominus]$ Creates the Negative-Angular -velocity-vector $\bar{w} \downarrow$, which **Rotates** in the Symmetrical to Neutral circle **axis** $k = \downarrow$ with respect to the Interchangable variable $\bar{B} \downarrow$.
- This is the Case of The Black-Holes - Origination .
- ⇒ When the Energy in **Planck's cave** L_{PLA} , **Decreases** to an Voltage $= < 3,695.10^{30} \text{ V}$ then **motion** $\equiv \rightleftharpoons \equiv$ **Energy** between the Two Opposite elements of M-P-Dipole $[\oplus \cup \cup \ominus]$ Creates the Positive-Angular -velocity-vector $\bar{w} \uparrow$, which **Rotates** in the Symmetrical to Neutral circle **axis** $k = \uparrow$ with respect to the Interchangable variable $\bar{B} \uparrow$.

This is the Case of The Universe - Origination .

So thus , are defined the **Unit-Energy - Vectors** , $\bar{R} = \sigma / \bar{B} = \sigma / J.w^2$,

which Exist ON the **Unit – Space – Monad** $|AB| \equiv |\bar{R}|$, and which is

{ The Energy – Space – Monad $|\bar{R}| \equiv |AB| \equiv$ The Existing Universe } .

In Fig-14 are shown the 5-States for angle → $\theta \Rightarrow 0^\circ, 45^\circ, 90^\circ, 135^\circ, 180^\circ$.

- 1.. For angle → $\theta \Rightarrow 00^\circ$, $\bar{w} \equiv \bar{B}$, Voltage $= 7,593.10^{35} \text{ V}$, $\uparrow$ On Neutral – Circle
 - 2.. For angle → $\theta \Rightarrow 45^\circ$, $\bar{w} / \bar{B}$, Voltage $< 7,593.10^{35} \text{ V}$, $< \neq$ Neutral – Circle
 - 3.. For angle → $\theta \Rightarrow 90^\circ$, $\bar{w} \perp \bar{B}$, Voltage $\equiv 7,593.10^{35} \text{ V}$, $\Rightarrow$ In Neutral - Circle
 - 4.. For angle → $\theta \Rightarrow 135^\circ$, $\bar{w} \setminus \bar{B}$, Voltage $> 7,593.10^{35} \text{ V}$, $\neq >$ Neutral – Circle
 - 5.. For angle → $\theta \Rightarrow 180^\circ$, $\bar{w} \perp \bar{B}$, Voltage $\geq 7,593.10^{35} \text{ V}$, $\Downarrow$ Off Neutral-Circle
- 4).. **From Solution-4** , The {Energy-Space-Monad $|\bar{R}| \equiv |AB|$ } **Vanishes** in **BH-Chaos** , where Energy **Increases** to an Voltage $\gg 7,593.10^{35} \text{ V}$ and then **motion** $\equiv$ **Energy** between the Two Opposite elements **collides them** to the MP-Dipole $[\oplus \leftrightarrow \ominus]$.

5).. From Solution-5 , The {Energy-Space-Monad $|\bar{R}| \equiv |AB|\}$ Vanishes in BH-Chaos ,
& Energy is **Quantized** to the 2-Constitutes from the $\bar{c}$, Physical-Magnet $\oplus \Rightarrow \ominus$.

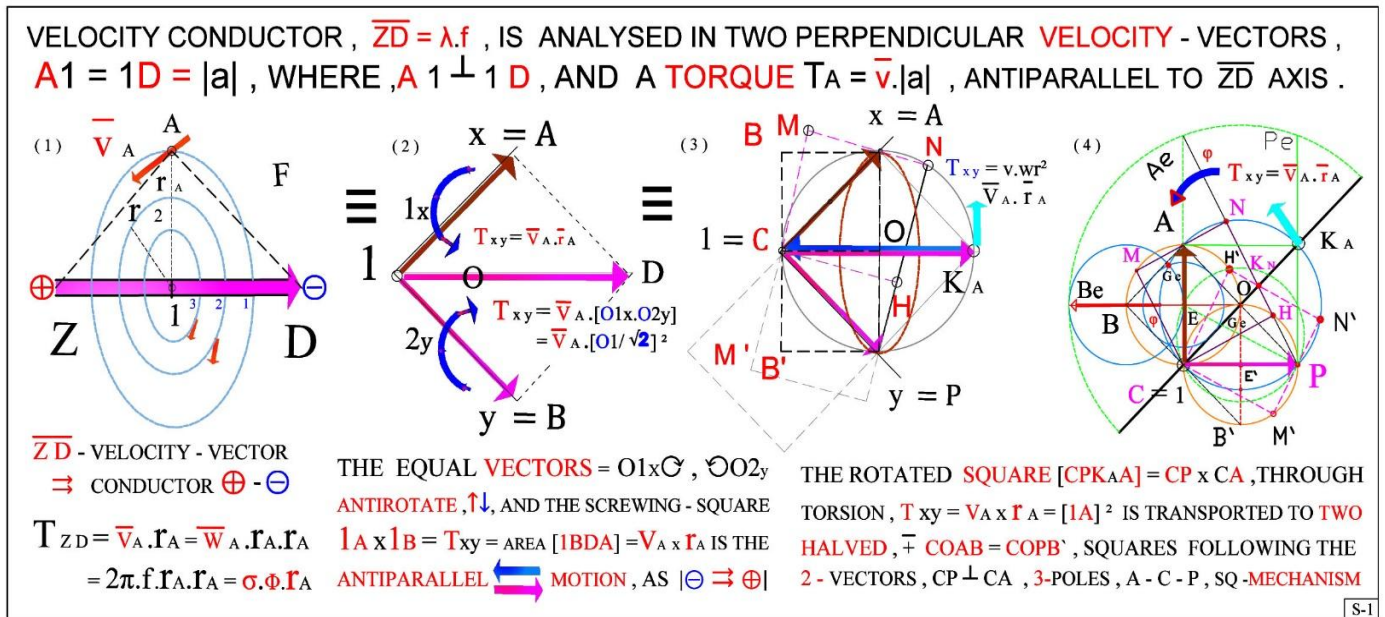


Figure.17e..The Stability of Photon as Electromagnetic Wave with the Two frequencies .

The Dual Property of The **Simultaneous existence** as Electric and as Magnetic Fields
in wavelengths , λ_x , λ_y , as **Effective Range** .which is thrusts through the Newton's
Gravitational Force G only , becoming from the **Trigonometry relations** [The Space] ,

$$\sin(2\varphi) = \sin(\pi - 2\varphi) = \sin\left(\frac{\pi}{2} - \varphi\right) , \text{ and from } \textbf{Physics} \text{ [Energy]} E_x = g ,$$

Maxwel Electric Displacement current $\partial D / \partial t$ is created from the (c_x, c_y) Vectors
motion happening from gravity continuous action , and Producing the Work $W = c_y g$
For Photon { Markos Rotating Method of { 2-Vectors 3-Poles Mechanism } which Circles
and Squares as Areas Pass from the Point M determined by the Position A_e , and where is
such that issues $\pi r^2 = CMNH$ Square then .The **Squaring of the circle** becomes at the
equilibrium - Positions which are from relation $\rightarrow \pi \left[\frac{CA}{\sqrt{2}}\right]^2 = CM^2 = |CM'|^2 \leftarrow$ namely

The square $|CMNH| = \text{square } |CM'N'H'|$. **Because of the Bellow motion then** ,
The Total motion in the Wavelength , λ , corresponds to the angle $a = 45^\circ$, meaning
that the motion of Space $\equiv$ **The Electric-field** , and Anti-Space $\equiv$ **The Magnetic-field**
equilibrium as an Bellow . The two Wings in 90° Type simultaneously oscillate to
its 45° Bisector -axis , and the Produced Work from **The Electric-field-area** is Stored
into **the Conjugate Magnetic-field-area** . The common axis of the two Perpendicular
fields , carry the **Golden-Ratio Energy-Surfaces** , and Runs with the same velocity $\bar{c}$
to the direction of the inner motion .

The EPILOGUS in [89 - 96]

IT WAS PROVED and ELUCIDATED THAT ,

a.. Monad is Quaternion $[x + i y] = \bar{\lambda}$ type , and its Energy is Vector as $\bar{Q} = \{\lambda\} \cdot X$, where
 X = The Displacement . Since $1 = c \cdot r^3 \cdot f_p^2 = \text{constant}$, so $\rightarrow r^3 \cdot f_p^2 = \text{constant}$. Since also

- $\lambda = 2r$ then $r^3 \cdot f_p^2 = \lambda^3 \cdot f_p^2 = c$, and Energy becomes $\rightarrow$ Vector $\vec{Q} = \{\lambda\} \cdot \sqrt[3]{c/f_p^2} \leftarrow [E_1]$
- b..** In Mechanics an **Energy-Vector** is an **Conductor** $\overrightarrow{AK_A} = |\vec{Q}|_{\pm}$, and is The Quaternion in Material-Geometry where **Zero-Point** $0 \equiv \emptyset \equiv \{\oplus + \ominus\}$ on where motion $|\vec{Q}|_{\pm} \equiv \vec{Q}_x$ as an Electric field on AK_A axis and as $|\vec{Q}|_{\pm} \equiv \vec{Q}_y$ $\equiv$ Magnetic field $\perp AK_A$, is Transferred from One Edge Point A , to the Other Edge Point K_A as $\rightarrow \vec{Q}, \vec{Q}_x, \vec{Q}_y \leftarrow [E_2]$
- c..** Energy is the Work , The motion , Produced in Energy-monads and for Photon is Equal to $W = 2L = \vec{B} \cdot \vec{w} = r m v = [r \cdot p] = J w^2 \equiv [\vec{k}_x \perp \vec{k}_y]$ where $\vec{k}_x = \vec{k}_y$, in the Conductor $\overrightarrow{AK_A} = 2.r \equiv \lambda$ where , λ Is -The -Wavelength and $p = m c =$ The Momentum . **[E₃]**
- d..** It was Prooved That $\rightarrow$ Any **Diameter D** of a circle in the **STPL – Circuit** , the **Three – Poles –Squares-Rotational - System** is an **Conductor** where $\vec{D} = \overrightarrow{AK_A} = |\vec{Q}|_{\pm} = |\frac{c \cdot \vec{S}}{r^2}| = \vec{I}_E$
- The - **Electric**-Wave-Intensity , And $\vec{A} \uparrow K_A \equiv \vec{I}_M$ is The - **Magnetic**–Wave Intensity.
- Their **Square -Vectors – Area** $= [\overrightarrow{AK_A}] \times [\vec{A} \uparrow K_A] = [\vec{Q}_x \vec{Q}_y] =$ The **Energy - Square**
- $\equiv \vec{CM} \times \vec{CM} = \vec{CMNH}$ square = on circle (E , EA) , and from relation $\vec{v} = \sigma \cdot \Phi = \frac{F}{A} \Phi$
- area $A = F / \sigma = |\vec{CM}|^2 / \sigma$, **i.e. Plane-force $F = \sigma \cdot |\vec{CM}|^2$** , and in Space **Volume-Force**
- $F = \sigma \cdot |\vec{CM}|^3 \equiv [E_4]$ or $[\overrightarrow{AK_A}] \times [\vec{A} \uparrow K_A] \times [D] = \vec{CMNH} \times \vec{Q} \times \vec{Q} = \vec{CMNH} \times \vec{Q} \times \vec{Q}$,
- where $|\vec{Q} \times \vec{Q}| \equiv \vec{q}$** , which is the Energy-Quantum In The Propagating Electromagnetic Wave where $|\vec{I}_E \perp \vec{I}_M|$. Since motions $\vec{B} \times \vec{w}$, are Constants from (b) and from Poinso't's solution $w_1^2 + J_2 w_2^2 = a^2$, then Angular velocity-Ellipsoid Polar-Paths are the **Parallel circles** and Perpendicular to the Angular-Momentum Ellipsoid Nibs.. **[E₅]** , [70]
- e..** When is found an **Obstacle at Point K_A** , Then The Particles of Conductor medium **Oscillate** Perpendicular . This Obstacle at K_A Point , is The Presentation of the , $\oplus$ constituent and the Absent of $\ominus$ constituent **and so $\pm$** , Transverse- Propagating-Wave , Or moving Energy-Vector $|\oplus \vec{Q} \uparrow \overrightarrow{AK_A}| = |\uparrow|$ at Node K_A **Is Equal** to E-Vector $|\oplus \vec{Q} \rightarrow \overrightarrow{AK_A}| \equiv |\leftrightarrow|$ at Node A , **and** Energy Volume is Doubled as , $2L = \vec{B} \cdot \vec{w}$, in $\overrightarrow{K_A A}$ Conductor meaning that **the meter of Volume is the Duplication of Total Energy L** .The Reaction to the motion of Squares $\{|\vec{Q}_{X=CO} \rightarrow| \times |\vec{Q}_{Y=CB} \uparrow|\} \equiv |\vec{Q} \times \vec{Q}| \equiv |\frac{c \cdot \vec{S}}{r^2}| \cdot |\vec{Q} \rightarrow|$ is equal to Quantum $\vec{q}$. **[E₆]**
- f..** Any Two Perpendicular **Energy-Vectors** , $|\vec{Q} \rightarrow \overrightarrow{AK_A}| = |\leftrightarrow|$, $|\vec{Q} \uparrow \overrightarrow{AK_A}| = |\uparrow|$ of this Propagating Energy , FORM The **Energy-Square** , $|\leftrightarrow| \cdot |\uparrow| \equiv |\vec{Q} \rightarrow| \cdot |\vec{Q} \uparrow| \equiv q_0$, on Conductor AK_A and **Then** Energy-Circular-Prism $= |\vec{AK_A}| \cdot \{|\vec{Q} \rightarrow \overrightarrow{AK_A}|\} \cdot \{|\vec{Q} \uparrow \overrightarrow{AK_A}|\} \equiv |\vec{Q}_x \vec{Q}_y| \cdot |\vec{AK_A}| = |\leftrightarrow| \cdot |\uparrow| \cdot |\vec{AK_A}|$, **i.e. An Energy-Circular-Cone** which is a Moving Energy -Volume and **Because** from Cauchy equations of Stresses in three Dimensions , **The Energy Stress** remains Flat ONLY- WHEN the Plane-Section is a circle **[E₂]** and The Square becomes circle ,**Anti-Quadrature**. Because from Mechanics , The **Sphere** occupies The **Least-Resistance** to motion where the Geometrical **Square–Cone** $[\vec{CM} \times \vec{CH} \times [\vec{CO} \uparrow]$

is altered to **Equivalent Energy- Circular - Cone** $[\pi.(\frac{CM}{2})^2 (x) [\overline{CO} \uparrow]]$ and

To the **Energy Unit -Volume** $CO^3.[\overline{Q} \Rightarrow] \equiv 2 .\text{Sphere } \frac{4\pi}{3} r^3$ And To **Energy-Sphere Cone** $\mathbb{C} = k \pi r^3$, where The **Geometry- Cube** $[\leftrightarrow].[\updownarrow].|AK_A| = x^3$ so becomes The **Energy -Sphere – Cone** as $\rightarrow k \pi r^3 = x^3 \leftarrow [E_7]$

- g.. Since Frequencies f_n are **The Quantum of Energy**, and Electromagnetic Vectors are always Perpendicular between them as $|\mathbf{F}_E \perp \mathbf{F}_M|$, so are everywhere in nature from microcosm to macrocosm . Because Gravitational Force exists Beyond Planck's length therefore the **Propagating-Plane-force** $\mathbf{F}_P = \sigma . |CM|^2$, is continually Perpendicular to the two Perpendicular constituents of Electromagnetic Vectors as $|\mathbf{F}_P \perp \mathbf{F}_E \perp \mathbf{F}_M|$.

Distance is the *Quantum of E-Geometry*, while **Material-Point** is the **Quantum** in **Physics** and in **Material – Geometry** which is the composition of Opposites and are The Elements in **Chemistry and Physics**.

As in Algebra Zero ,0, is the **Master-key** number for all Positive and Negative numbers because their Sum and multiplication is Zero , and the same on coordinate - System , $\pm$, axes pass from zero . $[E_8]$

The Rolling of Positive $\oplus$, constituent on the Negative $\ominus$, constituent, creates the Neutral Material Point which Equilibrium . **Spin $\bar{B}$** , is Its Angular momentum and also the **First -Discrete-Energy-monad** which occupies *Discrete-Value and Direction*, in contradiction to the Point which is nothing , *Dimensionless* and *without any Direction*. Point-caves Are the Energy-Magnets from which the Quantum of Energy are Generated .

- h.. The **Space** is **Quantized as Energy-Caves** under the effect of Gravitational-force G , as well in **Conductors** and this **Energy or motion is Quantized as Frequency in Energy-Caves**, Or in **Conductors**, following the **Kepler's First-law of Equal Areas** where in equal intervals and in Conductors, is the Electricity or Electromagnetic - Waves . $[E_9]$

Quaternion $[(+)\cup\cup(-)]$ is a **Quantum-Mould** for Space $[(+)(-)]$ and Energy $\equiv$ motion $\equiv$ Force $\times$ Displacement as $[\cup\cup$ or $\uparrow\leftrightarrow\downarrow] \equiv$ Standing Box $\mathbf{B}_Q \equiv$ An Material Point which carries the Principal Stress σ between Positions A (+), B (-), and σ , is the **Centripetal - acceleration** of minimum Energy becoming from the in-Storage AB acceleration and which is equal to the Gravity g . From Quaternion Quantum Mould $[r + \bar{v} \bar{v} i]^{1/w} = e^{-i.(\pi/2+2k\pi).w}$ is created the **min-Space** $\equiv$ cave $r = 1, 07.10^{-7}$ m and the **min-Energy** $\equiv \bar{v} = w r = 2\pi r f$, as frequency $f_m = 2,839844 . 10^{10}$ H . G Pushes the $\rightarrow$ min-Quantum-Energy $\equiv$ motion σ_E , into the Inscribed-Cave $\pi.(\frac{CM}{2})^2 \equiv \pi.EA^2$. Gravitational-force G effecting on light velocity $\bar{c}$ creates the Electron-charge $\bar{q}$ and Electron $\bar{e}$, while acting on Planck's-cave on the Gravity $g \equiv \pm \sigma$, as $G = g k = k_E g = k_L \sigma = g.g_L k_L$, and $\bar{c}$ effecting on the min-Planck-cave in L_p formulates Hydrogen-cave H with its electron as H_e . $[E_{10}]$, [109]

- i.. The Physical-Notion of The Duplication of the Cube, in The Quadrature Physical Energy Mould **Shows** that Nature follows the Geometry-Rules in Order to Exist as Space and as Energy, which is motion of The ,+, Constituent to The , - , Constituent . This motion is conserved by Propagating in caves either for Standing $\equiv |\frac{v}{\pi^2.r^4_n}|.|\bar{B}_n|$ or for moving caves as this is the Duality-Photon $\rightarrow \bar{v} . [|\bar{f}_n| + f_n] \equiv |\frac{v}{\pi^2.r^4_n}|.|\bar{B}_n| + |\bar{c}| f_n$. **Material-Geometry** meters for **Quantum-length** is the Quaternion $\equiv$ Dipole $\equiv$ The Two-Points joint with motion between them ,while for The **Quantum-Surface** is The Unit circle $\pi.r^2 = \pi$, and is $r = \text{Unit } 1$.

For the **Quantum-Volumes** , is the. Unit Volume Sphere $\frac{4}{3}\pi.r^3 = [\frac{4.r}{3}] (\pi.r^2) = \frac{4\pi}{3}$, for $r =$ Unit 1 . The Unit-Volume is formulated from The Inscribed-Square of Unit Circle-Side $CO = CB = 1/\sqrt{2}$, and when Placed The-Unit-Energy-magnitude OC on Square $CO \times CO$ then is Unit-Volume $[CO \times CO \times \overrightarrow{CO} \uparrow]$. This Unit-Volume when Placed in , **The Three -Poles -Squares-Rotating-System** ,Then at Point K_N , Unit Volume $[CO \times CO \times \overrightarrow{CO} \uparrow]$ becomes $[CM \times CH] \times \overrightarrow{CH} \uparrow =$ Circular-Cone $[\pi.(\frac{CB}{\sqrt{2}})^2] \cdot [\overrightarrow{CO} \uparrow] =$ **Unit - Sphere** $\frac{4\pi}{3}r^3$, Equal to **Quantum** of Energy . Because Physical-Magnet $\oplus \Rightarrow \ominus$ compels Force $\overrightarrow{Q} \Rightarrow \overrightarrow{AK_A}$, Between A and K_A Points and Then **Unit-Sphere** $\frac{4\pi}{3}r^3$ becomes The **Double - Unit-Sphere** $2.\{\frac{4\pi}{3}r^3\}$ and because the Energy Square $[CAK_AP]$ is Double that the Unit Square $[CB \times CO]$, then Force $\overrightarrow{Q} \Rightarrow \overrightarrow{AK_A}$ is **The Pivot** of Spinning indicating $\pm \overrightarrow{B} \equiv \overrightarrow{S}$, in all Energy monads . $[E_{11}]$

j.. Gravity and Antigravity are the two **Halve - Spins** from the Angular Momentum $\overrightarrow{B} \equiv \pm$

Work created from the velocity vector $\overrightarrow{c}$ by Rotating $\overrightarrow{U}$ on Planck's Cave Diameter. $[E_{12}]$

This Property , $\pm \overrightarrow{B} \equiv \overrightarrow{S}$, is in all Energy monads and when **Applied on Initial** , $\oplus \Rightarrow \ominus$, **Answers to the 3D-Stability** of All **Elementary-Particles** and **Cosmology Equilibrium** .

Gravity + g $\equiv$ The Vector of Angular-Momentum $\overrightarrow{B} \equiv +$ **Spin** $\equiv \downarrow \overrightarrow{U} \equiv$ The Work stored in the $[4-1-3]$ Semi circle of the , $\overrightarrow{r} - \overrightarrow{c}$ Vectors circle-Surface ,Produced from the Gravitational-Force , G , as ACTING into the -Planck- Cave , AND on the light Velocity Vector of , $+ \downarrow \overrightarrow{c}$ **Direction** . $[107]$

Antigravity - g $\equiv$ The Vector of Angular -Momentum $\overrightarrow{B} \equiv -$ **Spin** $\equiv \uparrow \overrightarrow{U} \equiv$ The Work stored in the complementary $[4-2-3]$ Semi circle of the , $\overrightarrow{r} - \overrightarrow{c}$ 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 , $- \uparrow \overrightarrow{c}$ **Direction** .

k.. The Black-Holes exist as Parallel origination either as $\Rightarrow$ **Planar Black-Holes** or $\Rightarrow$ **Atoms - Black - Holes** , when G - Force is ACTING On the -Planck - Cave . $[E_{13}]$

Momentum $\overrightarrow{B}$ & $\overrightarrow{w}$, as **Real** $\equiv$ The **EXISTING - UNIVERSE** as is the Real Objective Reality $|\overrightarrow{s}| \equiv$ The Numeric Vector-value of The Material-Point $[\oplus, r, \ominus]$ in $[PNS] \equiv$ The Work stored in POLHODE - CONE of the $|\overrightarrow{OS}|$ Rolling Nib -Vector Produced from the Eternal **CENTRIPETAL - FORCE** , F_C **AS THE** Newton's **ACTION** in the Planck's - Cave, AND from the $\overrightarrow{B}$ Angular Momentum in the , $+ \downarrow \overrightarrow{B}$, **Direction** . The Real Type is applied on all different Monads and their Compounds Monads . $[109]$

Momentum $\overrightarrow{B}$ & $\overrightarrow{w}$, as **Imaginary** $\equiv$ The **BLACK - HOLES** as is their Real Objective Reality $\pm \overrightarrow{D}.i \equiv s \Rightarrow$ The Numeric Amplitude-Vector-value of Material-Point $[\oplus, r, \ominus]$ in $[PNS]$ and The **Imaginary** - $\overrightarrow{D}.i \equiv$ **CENTRIPETAL - FORCE** $F_C \equiv$ The Wave Amplitude -value $\equiv$ The Work stored in the HERPOLHODE CONE of the $|\overrightarrow{OB}|$ Rotating $\overrightarrow{B}$ -Vector and also Produced from the Eternal **CENTRIPETAL - FORCE** F_C , **AS THE** Newton's **REACTION** into the Planck's - Cave AND from the $\overrightarrow{B}$ Angular Momentum in , $- \uparrow \overrightarrow{B}$ **Direction** .

1.. In case of Points A , B , C being on a Sphere then [STPL] becomes a **Cylinder** as this is the **Angular-Momentum** $\bar{B} = \frac{2L}{\bar{w}} = \frac{2L}{2\pi f} = \left[\frac{2L}{2\pi}\right] \cdot \left[\frac{1}{f}\right] = \frac{\text{Constant}}{2\pi} \left[\frac{1}{f_m}\right] = \text{SPIN}$ [89]

D... THE ORIGINATION OF THE FUNDAMENTAL PARTICLES

1d... The Balancing of the Space and Anti-Space . [64]

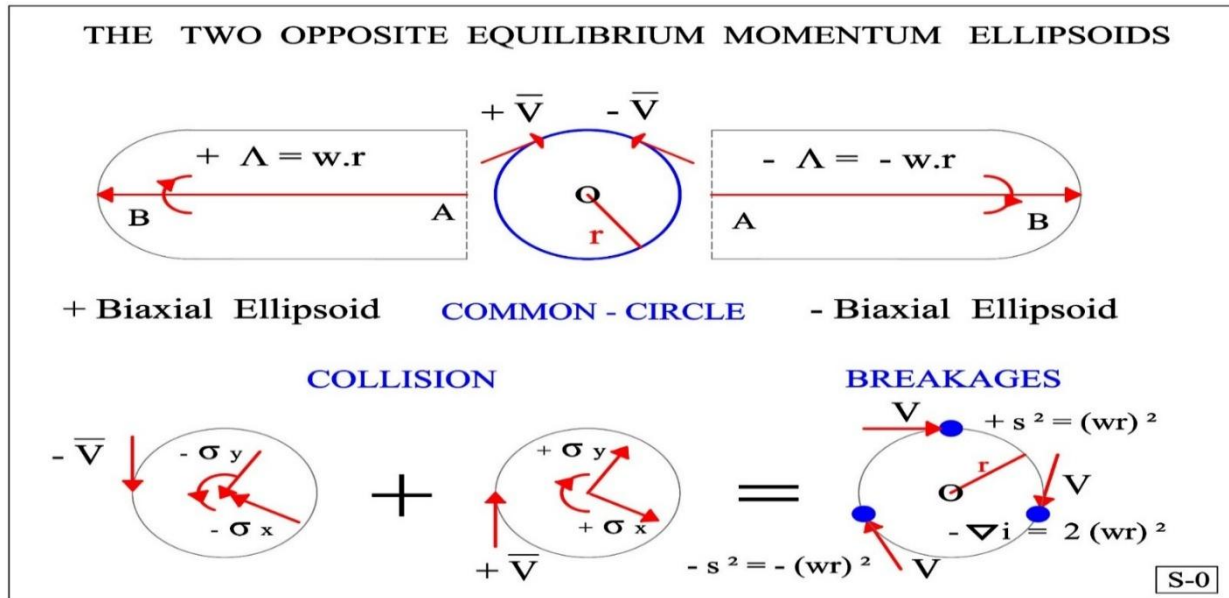

 $\cup \cup$
 $\cup \cup$
 $\rightarrow$
 $\cup \cup + \cup + \cup$

Figure -18- : The work W , of Two-Quaternion-monads $\bar{z} = (s + \bar{v} \cdot \bar{\Omega} i) \equiv \overline{AB} \equiv \bar{w}$ is the **Action** Of any two Tangential & Opposite Equilibrium-Dipole $[\oplus \leftrightarrow \ominus]$ with $v = \bar{w} \cdot r$.

For Quaternion **Actions** exists the square law for both **Real** and **Imaginary Part** , as $\bar{z} * \bar{z} = (s + \bar{v} \cdot \bar{\Omega} i)^2 = s^2 + [\bar{v} \cdot \bar{\Omega}]^2 + 2.s \bar{v} \cdot \bar{\Omega} i = s^2 - \bar{v}^2 \pm 2.s \bar{v} = |s|^2 - |\bar{v}|^2 \pm 2 \cdot |s| \cdot |\bar{v}|$, for $|\bar{v}| = s$

Vorticities $\pm \Lambda$ (Rotating Energy) , Becomes from the Collision on Common-circle and from the Thrust on the Velocity-Breakages .The work is , $W = [n \cdot P] = [\lambda \cdot \Lambda]$, where λ = Displacement of A to B and it is a scalar magnitude called wavelength of dipole AB. Λ = the amount of Rotation on Dipole AB (this is Angular Momentum and it is a vector) . Momentum $\pm \bar{\Lambda} = r.m.v = r m wr = mr^2 \cdot \bar{w}$, where $\bar{w}$ is the angular velocity (Spin) which maps velocity vector $\bar{v}$ on the Perpendicular to $\pm \bar{\Lambda}$ Plane with two components $\bar{v}_E \perp \bar{v}_B$. The Tangential velocity $\bar{v}_E = wr$, is the quaternion $\bar{v}_E = w r = \bar{z} = [s + \bar{v} \cdot \bar{\Omega} i]$ where $s = \bar{v}_E = |r \cdot \bar{w}|$ and $\bar{v} \cdot \bar{\Omega} i = |\bar{w} \times \bar{r}|$. In a Spherical cave the Biaxial Ellipsoid ($\sigma_x = \sigma_y$) exists as momentum $+\Lambda$ on caves of diameter $2r$ with parallel circles $\rightarrow 0$.The Biaxial Anti-Ellipsoid ($-\sigma_x = -\sigma_y$) exists as equal and Opposite momentum $-\Lambda$ on the same diameter $2r$ with Anti Parallel circles $\rightarrow 0$. **Equilibrium** of the Two Ellipsoids $\pm \Lambda$, Presupposes a **Stabilizer-System** attached to Ellipsoids such that Opposite Momentum is distributed to the Center of Mass of the Total - System , recover equilibrium , which is the center of the Spherical cave.

The Biaxial - Ellipsoid and Anti-Ellipsoid are inversely directed and Rotated in the same circle, so the two velocity vectors, $\bar{v}$, $-\bar{v}$, collide. This collision of the two Opposite Velocity-Vectors is the Physical-Action (Thrust) of the Two-Quaternion and their Action is,

$$(s + \bar{v} \cdot \bar{v}i)(s + \bar{v} \cdot \bar{v}i) = [s + \bar{v} \cdot \bar{v}i]^2 = s^2 + |\bar{v}|^2 \cdot \bar{v}i^2 + 2|s| \cdot |\bar{v}| \cdot \bar{v}i = s^2 - |\bar{v}|^2 + 2|s| \cdot |\bar{v}| \cdot \bar{v}i$$

$$= s^2 - |\bar{v}|^2 + [2\bar{w}] \cdot |s| \cdot |\bar{v}| \cdot \bar{v}i, \text{ where } s^2 = (r \cdot w)^2 \rightarrow \text{Is the Real-Part of the New-Quaternion,}$$

$$-|\bar{v}|^2 = |\bar{w} \times \bar{r}|^2 = -(w \cdot r)^2 \rightarrow \text{The always Negative-Anti-Space (a vector } \perp \text{ to } w \cdot r \text{ Plane),}$$

$$[2\bar{w}] \cdot |s| \cdot |\bar{v}| \cdot \bar{v}i = 2w \cdot (sr) \cdot \bar{v}i \rightarrow \text{The double Angular-velocity-Term, and for the PNS Space}$$

where $|s| = |\bar{v}|^2$ then $s^2 = (w \cdot r)^2 \equiv \oplus \equiv s^2 = + \text{ Charge}$

$$-|\bar{v}|^2 = |\bar{w} \times \bar{r}|^2 = -(w \cdot r)^2 \equiv \ominus \equiv -s^2 = - \text{ Charge}$$

$$[2\bar{w}] \cdot |\bar{v}| \cdot \bar{v}i = 2|\bar{v}|^2 = 2(w \cdot r) \equiv 2[\oplus \leftrightarrow \ominus] \equiv 2s^2 = 0 \text{ Charge}$$

i.e. For the **Equilibrium-Recovery** (maybe a surface cylinder with $2r$ diameter), Fig-16-17

2d.. The Vibration of Particles in all Levels [54].

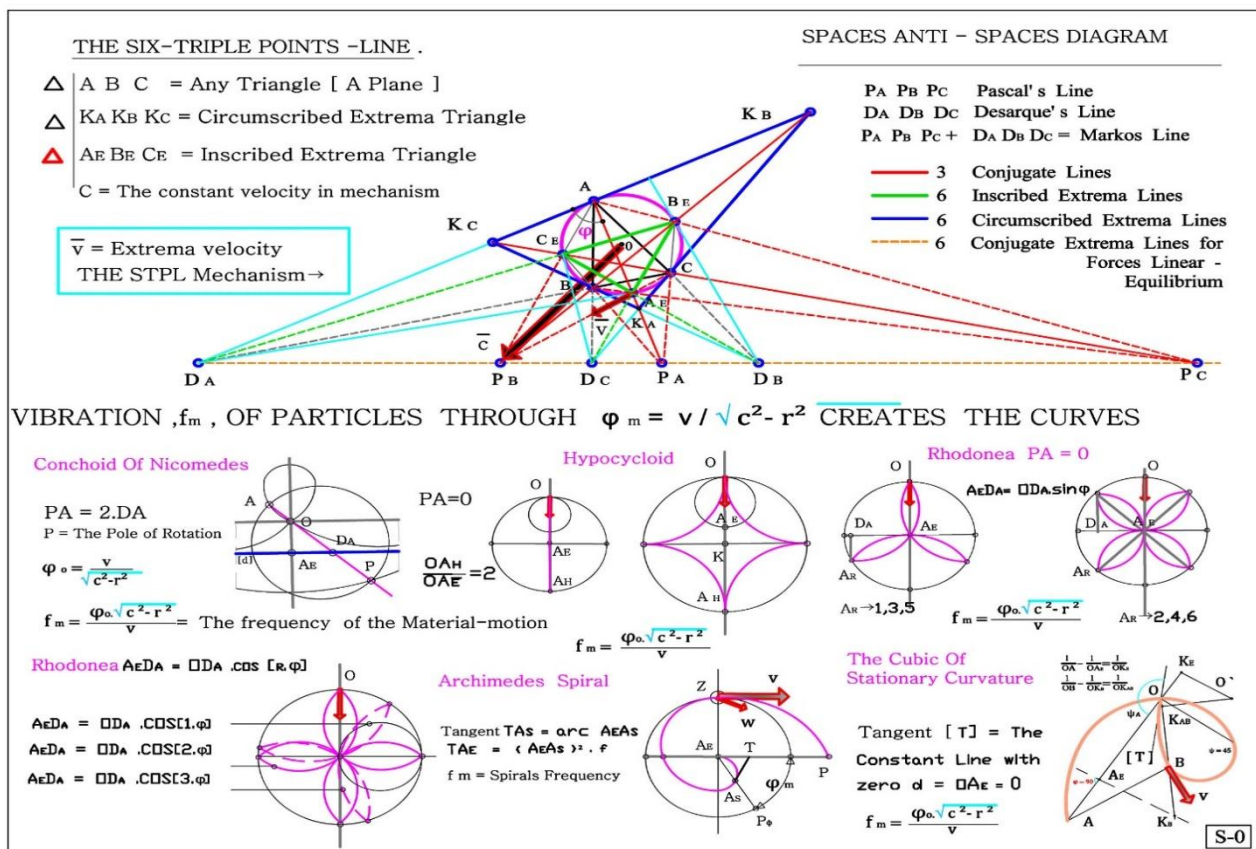


Figure - 19- : The Glue-Bond Electrons of Nucleus Rotor, form Rhodonea-like - Curves. Curves created by Rotor's electron are such that they keep a continuous Pressure on Protons.

- 1.. The Continuous action of Negative $\ominus$, on **One** Positive $\oplus$, is equivalent to a Circular motion of the $\ominus$, $\oplus$, with velocity $v = \sqrt{F \cdot r / m}$, and this because exists $l = r = \text{constant}$.
- 2.. The Continuous action of Negative $\ominus$, on **Two** Positive $\oplus \oplus$ of glued Bond, is equal to a Circular - and Other of one-step longer motion of $\ominus$ to $\oplus \oplus$, or Circular motion on

the Common-length, l , in Polar equations is, $l = a \cdot \cos(c\theta)$ or $l = a \cdot \sin(c\theta)$ where a = the length of the base $= 2r + 2r = 4r$, c = Rim's number which Produce a **c-Petaled rose**, If c is odd or $2c$ -Petaled Rose and if c is even number. The Period of both $\cos(c\theta)$, $\sin(c\theta)$ is $2\pi/c$, and the number of petals for the period is $[0, 2\pi/c]$ will be c or $2c$, according to as c is odd or c is even, so the degree of the Cartesian equation of the curve is, $c + 1$ for odd- c , and $2(c+1)$ for even- c .

3.. The Continuous action of Negative $\ominus$, on **Three** Positive $\oplus\oplus\oplus$ of glued Bond, is equivalent to a Circular-and Other of two-step longer motion of $\ominus$ to $\oplus\oplus\oplus$, or Circular motion on the Common-length. **Length**, l , in Polar equations is, $l = a \cdot \cos(c\theta)$ or $l = a \cdot \sin(c\theta)$, where a is the length of the base $= 2r + 2r + 2r = 6r$, c = Rim's number which produce a c -petaled rose, where c is odd or $2c$ - petaled rose number. This is seen and from equations issuing in Figure.21-2 $\rightarrow r = r_D \cdot \sin \phi$ and $R = R_D \cdot \sin \phi$ where a , are the equal radius of Point A of Polar path. Rhodonea curves follow the Odd or and Even number of Protons in Nucleus by changing their Rolling-length $a = (2r)$, and the Polar - length $l = a \cdot \cos(c\theta)$ depending on θ , as above.

The common bonding Point of the Negative circle and the Positive line of the Rolling circle obliges that Point to follow the Cycloid motion in maximum degree and thus executing Hypocycloid motion. Particles Vibration in all Levels of Material-Geometry.

4.. **The n-Knots** Figures exist in Figures where the **Vector -Force - Polygons** have the same number n , as the in Figures. For The **Circularly- Charged Breakages** the 3-elements $[\Sigma = n \cdot h] \Rightarrow [s^2 = \oplus, 2s^2 = \emptyset, -s^2 = \ominus]$ formulate the **Primary-Particles 3-K**, Figures. Since $n = 3$, the only Shape in Spaces is the **Regular Triangle**, and from this $n < 4 \rightarrow n$ there are vast regions of space that are very nearly empty of them,

5.. **The case of {TCIC}** $\equiv [\Sigma = n \cdot h] \Rightarrow 8 \times \textcircled{1}$ which is the **Physical Mechanism**, gives the **n-masses** of Atom's & Compounds determining the **Atoms Complex-Vector-Response**. These Particles exist in all of the universe in the sense that they are uniformly distributed throughout space and consist the **Objective Reality** which is the **existing Universe**

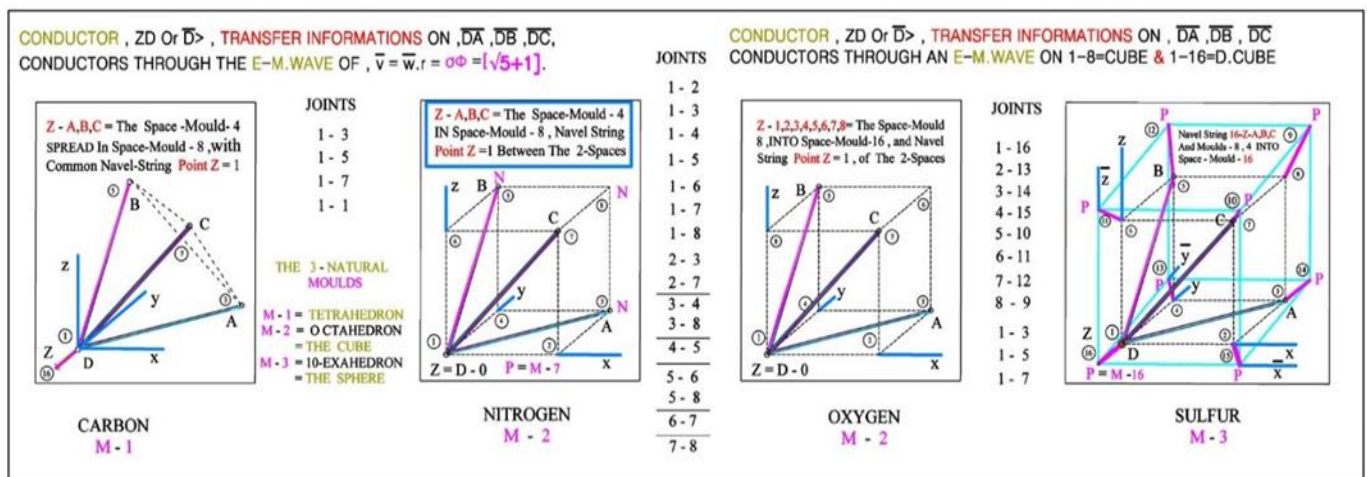
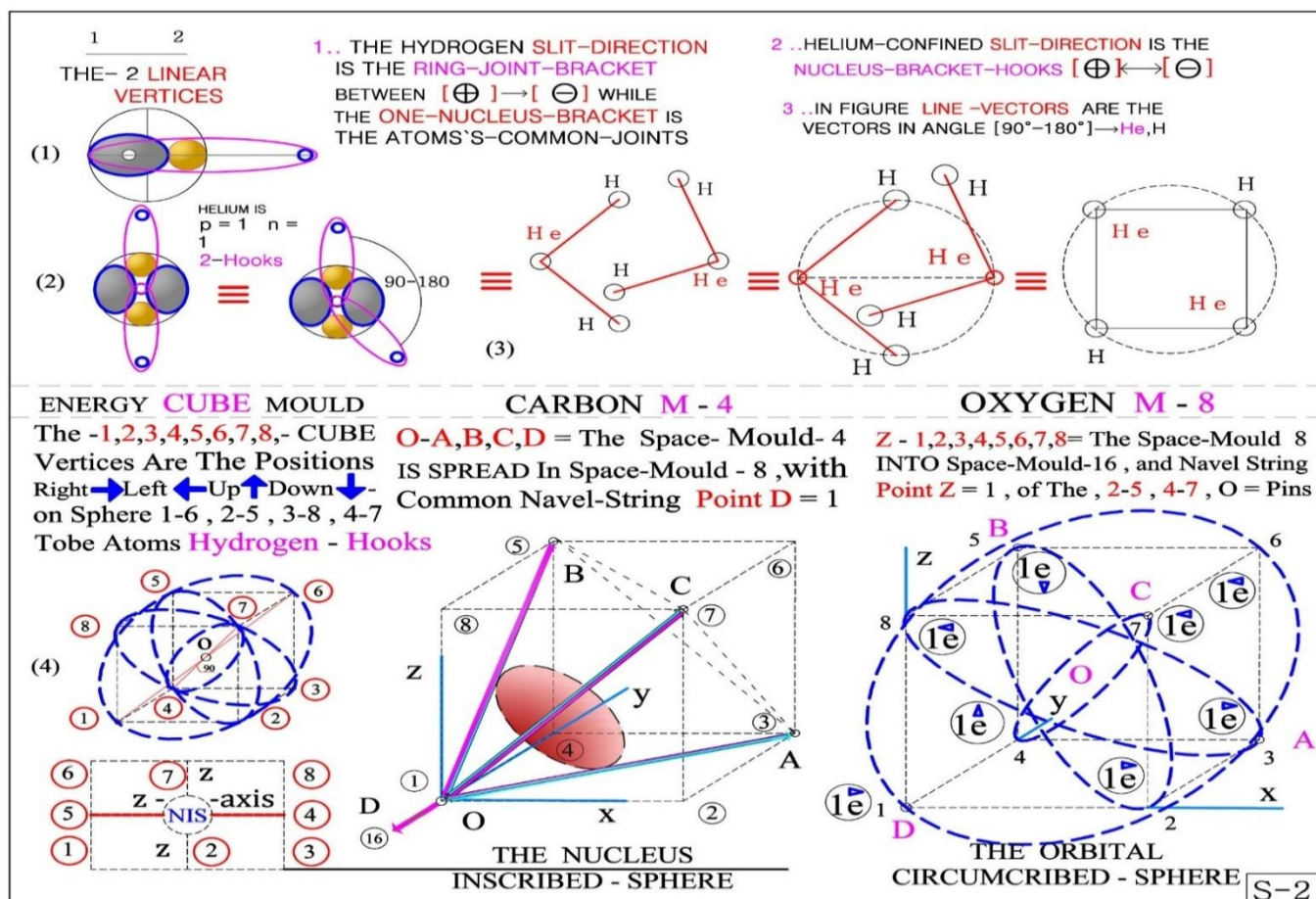


Figure – 20- : The Carbon , Nitrogen , Oxygen , Sulfur , Atoms-Conductors Sustains Into the First 4-Dimentional Spinning , Tetrahedron - Cube – Sphere - Mould .



Figure– 20a- :The Hydrogen , Carbon , Oxygen , Atoms-Conductors Into the Sphere-Cube-Mould . Deka hexahedron , Octahedron $\equiv$ Cube , Tetrahedron $\equiv$ 4-Points , Triangle $\equiv$ 3-Points , Vector $\equiv$ 2-Points $\equiv$ The Closed-Conductor , 1-Point $\equiv$ The Opened -Conductor $\equiv$ The Bracket-Hook . Oxygen is the Element which fills 8 - 2 = 6 vertices of Cube as EL $\rightarrow$

$$\begin{pmatrix} 1e & 0e & 1e \\ 1e & 2e & 0e \\ 1e & 1e & 1e \end{pmatrix} \equiv (\pm \frac{2}{2})$$
, where ① is the first , **Zero-Acting Cube** filled with 1e ,

therefore is the only Steady element which occupies the first Energy-Level ① with 2 Electron-Positions as ① = 2e = $\vec{2}$ Positions at $\vec{1}, \vec{1}$

The Electron being in the Hydrogen-cave Precesses because of the different axis of Rotation And Nutation's , from the continuous and immense-communication to the effect of gravity g . Since Electron is continually oscillating , with the Nutation-frequency f_N , so Produces a continuous and oscillating Magnetic-field -M- which in turn is the source of an oscillating Electric-field - E - which implies the **Regeneration of each other** , i.e. it is a **Propagating Electromagnetic-Wave** where $E = Bc$, and with a quantum-Energy $E = hf_N$ or $E = 2\mu.B$, This Energy E consists the Hydrogen Bracket **Hook HBH** , or $[BH]$ and it is the only **free monad** which can **Bond** to all Energy structures .

5d.. The Natural Electromagnetic Energy-Tetrahedron and , The 3- Conductors Into The Energy - Cube and Spheres : [102]

Figure – 20.a- The Dynamic Loading of $\rightarrow$ Tetrahedron – Cube - Sphere $\leftarrow$ Atom –Structure. Material Geometry uses the Only-Three Elements for the **Origination** of Primary - Particles , as Weak , W^-Z^0 and Strong $W^+Z^{+0,-}$ Forces , Spin $\bar{B} = \bar{S}$, Hydrogen cave , r_H , and Electron e^- . where $[0] \equiv \emptyset \equiv$ The **Rest-Energy** $\equiv [\oplus \leftrightarrow \ominus] \rightarrow [\oplus \frac{\ddot{}}{2} + \ominus \frac{\ddot{}}{2}]$, Split into Two . and , $[0] \equiv \bar{ZD} \equiv$ The **Rest Space** $\equiv$ Conductor $\begin{matrix} +Z\bar{E} \rightarrow \\ -DM \leftarrow \end{matrix}$, from relation $[\oplus \leftarrow ds \rightarrow \ominus]$, where their **Properties** and **Corelations** are all **motions** into their Spaces , from Energy.

In Fig-20b The Electric - Magnetic Field of 3-Conductors which lie on the DABC **Tetrahedron** .The **Stability** of the $\rightarrow \{ \oplus 4\text{-Space } [D A B C] \}$ Regular – **Tetrahedron** , occurs **INTO** the $\{ \ominus 8\text{-Anti-Space } \textit{Cube} , [DA_1A D_1 , B B_1CC_1] \}$, and The Positive $\rightarrow \{ \oplus 8\text{-Space} - \textit{Cube} , [DA_1A D_1 , B B_1CC_1] \}$, **INTO** The $\{ \ominus 16\text{-Anti-Space } [1, 2, 3, 4, 5, 6, 7, 8 - 9, 10, 11, 12, 13, 14, 15, 16] \}$ **Sphere Cube on Vertices** . = Point [The Point 16 $\equiv |\rightarrow|Z|$] consists the **Navel-String** Gate into the **Triangle-Circle-System** $\{Z-(\Delta D, ABC) , \Delta[T_1T_2 T_3]\}$ of the Stationary Bases which Results on the **2 -Anti-Parallel-Strands** . The Dual Photon $\bar{v} [\frac{\sigma\Phi}{2\pi r} + \frac{\sigma}{2\pi r}] \equiv \bar{v} . [\bar{f}_n] + f_n$, occupies Stresses = σ and velocities $\bar{v}$, in The Tiny-caves r . The **Colours** in light , are the **Still-Sub-Units** in Storage $\rightarrow [\bar{v} . \bar{f}_n] \leftarrow$ and exist as Frequencies of $\rightarrow$ Violet , Blue , Green , with their Complementary Yellow , Orange , Red $\leftarrow$

Every 8-electrons are vibrations on Atoms-Cube-Structure {A Tetrahedron in Cube in a Sphere } whether it be **Sound** or **Light** . Above Structure is followed by all Compounds . Molecules are Systems consisted of The **PERIFERAL** $\equiv$ **Skeleton** M_{16} and The **CENTRAL** $\equiv$ **Fittings** M_8 , and the **ACCESSORIES** $\equiv M_4$ or M_2, M_1 . This Property of Atoms and of the Compounds is **The Critical-Valve of Switching the motion** as this happens in the Electro-magnetic Solenoid Valves with High or low Pressure and flow rates directly or Not .

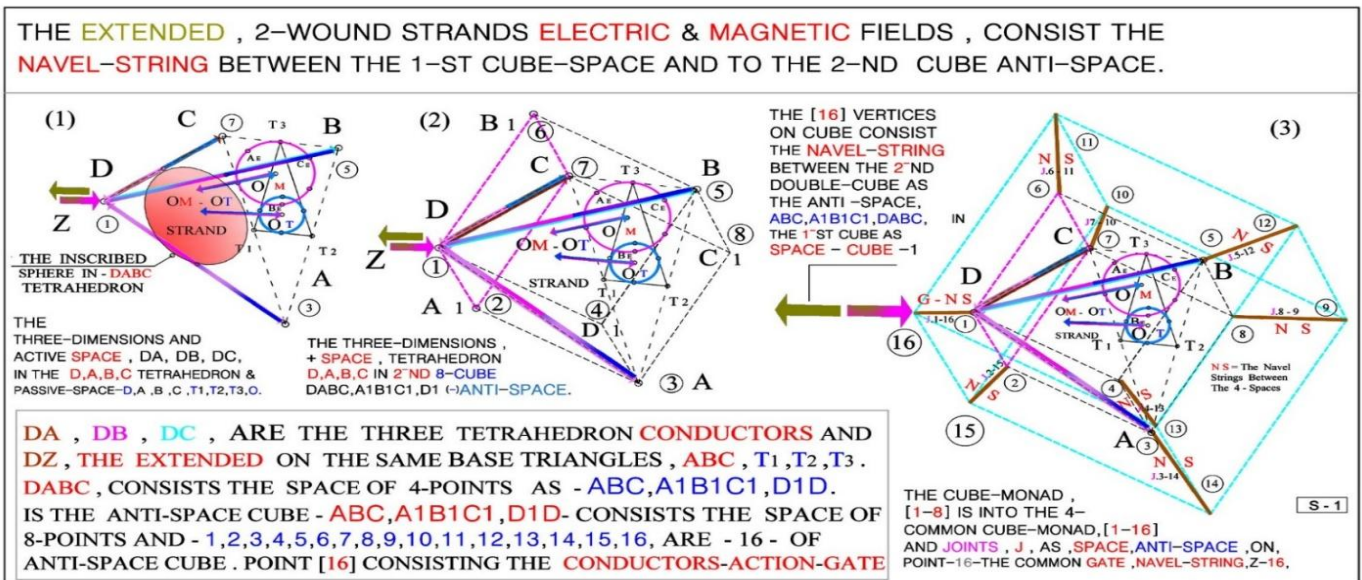


Figure – 20.b- :The Electric - Magnetic Field of 3, Conductors Results on 2 -Anti-Parallel-Strands .The **Stability of $\rightarrow \{ \oplus 4\text{-Space } [D A B C] \}$ Regular - **Tetrahedron** , IN $\{ \ominus 8\text{-Anti-Space } \textit{Cube} , [DA_1B D_1 , C C_1AB_1] \}$, and The $\rightarrow \{ \oplus 8\text{-Space } [DA_1BD_1 , CC_1AB_1] \}$ **Cube** , **INTO** The $\{ \ominus 16\text{-Anti-Space } [1, 2, 3, 4, 5, 6, 7, 8 - 9, 10, 11, 12, 13, 14, 15, 16] \}$ **Sphere****

Cube Vertices . Point [16 $\equiv |\Rightarrow|Z|$] consists the **Navel-String** Gate in $\{Z-(\Delta D, ABC), \Delta[T_1 T_2 T_3]\}$ Stationary Bases . Stability Analysis in [88]

DATA :

A.. The Atoms Cube Coordinate-System :

The relation of a Cube of Side a ,inscribed in a Sphere of Diameter $d=2r$, is in their Volumes

$$\text{as } V_{\text{Sphere}} = \frac{4\pi r^3}{3} = \frac{\pi d^3}{6}, \quad V_{\text{Cube}} = a^3 \text{ and since } d^2 = 2a^2 + a^2 = 3a^2, \text{ then } a = \frac{d}{\sqrt{3}} = \frac{d\sqrt{3}}{3}$$

$$= \frac{\sqrt{3}d}{3} = \frac{2\sqrt{3}r}{3}, \text{ and the Coordinates of the 8-Cube-Vertices are for Center O}$$

$$\rightarrow X_0 = 0, Y_0 = 0, Z_0 = 0 \leftarrow X_1 = \frac{-a}{2}, Y_1 = \frac{-a}{2}, Z_1 = \frac{-a}{2}, X_2 = \frac{+a}{2}, Y_2 = \frac{-a}{2},$$

$$Z_2 = \frac{-a}{2}, X_3 = \frac{+a}{2}, Y_3 = \frac{+a}{2}, Z_3 = \frac{-a}{2}, X_4 = \frac{-a}{2}, Y_4 = \frac{+a}{2}, Z_4 = \frac{-a}{2}, X_5 = \frac{-a}{2},$$

$$Y_5 = \frac{+a}{2}, Z_5 = \frac{+a}{2}, X_6 = \frac{-a}{2}, Y_6 = \frac{-a}{2}, Z_6 = \frac{+a}{2},$$

$$X_7 = \frac{+a}{2}, Y_7 = \frac{-a}{2}, Z_7 = \frac{+a}{2}, X_8 = \frac{+a}{2}, Y_8 = \frac{+a}{2}, Z_8 = \frac{+a}{2},$$

Since **Tetrahedron** in Cube is formed in three Equal-Diagonals $d_{1-3} = a\sqrt{2}$, $d_{1-5} = a\sqrt{2}$, $d_{1-7} = a\sqrt{2}$ of the Perpendicular 3-Planes , $P_{X-Y} = P_{Y-Z} = P_{Z-X} = a^2$, and since issues $d_{1-3} \perp d_{1-5} \perp d_{1-7}$, these consist **The-Scanning Vectors-Plotting for all Systems** . Since the Cube's Outer-Sphere diameter d , is equal to the Cube-Diagonals [1-8] , [2-5] , [3-6] , [4-7] , therefore consist 4-Big circles on Sphere and Perpendicular between them , in Contradiction to the 3 circles in the 3-Planes which consist the Small circles .

The Geometrical Matric of **Tetrahedron-Cube-Sphere Mould** = (STCS) where ,

P1 P2 P3

P5 P6 P4 P_0 = The Coordinates X_0, Y_0, Z_0 of the Common Center of 2-Spheres .

P6 P7 P8

P_1 = The Coordinates X_1, Y_1, Z_1 of the Tetrahedron- Cube Point -1

P_2 = The Coordinates X_2, Y_2, Z_2 of the Sphere - Cube Point - 2

P_3 = The Coordinates X_3, Y_3, Z_3 of the Tetrahedron- Cube Point -3

P_4 = The Coordinates X_4, Y_4, Z_4 of the Sphere - Cube Point - 4

P_5 = The Coordinates X_5, Y_5, Z_5 of the Tetrahedron- Cube Point -5

P_6 = The Coordinates X_6, Y_6, Z_6 of the Sphere - Cube Point - 6

P_7 = The Coordinates X_7, Y_7, Z_7 of the Tetrahedron- Cube Point -7

P_8 = The Coordinates X_8, Y_8, Z_8 of the Sphere - Cube Point - 8

On the above Geometrical Coordinates SYSTEM are Placed the 4-Spaces from the $OZ = OD$ - EXTENDED CONDUCTOR and equal to Monads .

For the Cave-Spin , $\bar{S} = r m v$ which is a **Monad** , exist the **4-Spaces** as **Fig-1**

$$\rightarrow ((\text{The } n \text{ - Spaces of Spin } \bar{S} \text{ are the Polygons } S^n ,$$

$$\text{The } n \text{ Anti-Spaces of Spin - } \bar{S} \text{ are the Polygons - } S^n)) \leftarrow$$

The Sub-Spaces $\pm \sqrt[n=1-\infty]{\bar{S}}$ are the Polygons with $n = 1 \approx \infty$ **Knots**

Since **Knots** are the Degrees of the Polynomials of each **Monad** then ,

The **OZ Monad** Determines the Number of **Knots** beginning from Number 3 ,

- 3 $\Rightarrow$ is the Figure of Regular Triangle in Poly-3rd Degree . The - 3 and $\pm \sqrt[n=3]{OZ}$
- 4 $\Rightarrow$ is the Figure of Regular Square in Poly-4rd Degree . The - 4 and $\pm \sqrt[n=4]{OZ}$
- 5 $\Rightarrow$ is the Figure of Regular Pentagon in Poly-5rd Degree . The - 5 and $\pm \sqrt[n=5]{OZ}$
- 6 $\Rightarrow$ is the Figure of Regular Hexagon in Poly-6rd Degree . The - 6 and $\pm \sqrt[n=6]{OZ}$
- 7 $\Rightarrow$ is the Figure of Regular Heptagon in Poly-7rd Degree . The - 7 and $\pm \sqrt[n=7]{OZ}$
- 8 $\Rightarrow$ is the Figure of Regular Octagon in Poly-8rd Degree . The - 8 and $\pm \sqrt[n=8]{OZ}$
- 9 $\Rightarrow$ is the Figure of Regular Eniagon in Poly-9rd Degree . The - 9 and $\pm \sqrt[n=9]{OZ}$
- N $\Rightarrow$ is the Figure of Regular N-gone in Poly-Nrd Degree . The - N and $\pm \sqrt[n=N]{OZ}$

Remarks :

- 1... 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 Φ *Golden-Ratio* , exists in the *Impedance* b .
- 2...The case of {QUA} $\equiv [\Sigma = n \cdot h] \Rightarrow \infty \times \Phi$ which is the Physical Mechanism , gives the ∞ - *Impedance* b determining the *Objective Reality* which is the existing Universe.
For $n=2$ then $[\Sigma = n \cdot h] \Rightarrow 2 \times G / \Phi$, IS the light-velocity $\bar{v} = [\frac{G \cdot \Phi}{A}] = 2.9982.10^8$ m/s.
For $n=1$ then $[\Sigma = n \cdot h] \Rightarrow G / c = \text{Charge } \bar{q} = \frac{G}{c\sqrt{2}} = 1,58.10^{-19}$ Coulomb .
- 3... For $n=3$ is STPL Mechanism which creates the Elementary Particles , [n -Knots = 3] in Gravity-Voltage $V_{GRA} = 7,593.10^{35}$ V. This is because the Primary motion $\equiv$ [PM] exist from the three - 3 Breakages elements $[\Sigma = n \cdot h] \Rightarrow [s^2 = \oplus , 2s^2 = \emptyset , -s^2 = \ominus]$

B.. The Atoms-Elements Mass , Stiffness - Flexibility [101]

6d..The Dimensioning of the [STPL] – Mechanism

Defining the lengths , $a = K_B K_C$, $b = K_C K_A$, $c = K_A K_B$, $d = [\frac{a+b+c}{2}]$ =The semi-perimeter then the Inscribe radius $r = \frac{\sqrt{d(d-a)(d-b)(d-c)}}{d} = |OA|$, The Coordinates for the Point $K=D_A$ are $[\frac{bc}{b+c-a}] : [\frac{ca}{c+a-b}] : [\frac{ab}{a+b-c}]$, while for Point O are $[\frac{b+c-a}{a}] : [\frac{c+a-b}{b}] : [\frac{a+b-c}{c}]$. Fig-17
The STPL Mechanism is the Mould consisted from any Common circle $O, OA=[OA' \equiv OA_E]$, $O, OB=[OB' \equiv OB_E]$, $O, OC=[OC' \equiv OC_E]$, and the Common lines D_A-P_A , D_B-P_B , D_C-P_C all on a line of STPL . On the infinite Sectors AD_A-AP_A , BD_B-BP_B , CD_C-CP_C vibrate , the

Breakages $[\pm s^2 = \pm (w r)^2]$ and $[\bar{z}i = 2(w r)^2]$ forming all families of curves and the Euler - Savary Coupler - curves of the Cubic-Of-Stationary - Curvature Mechanism of Spaces , Anti-spaces Vibrating the End-curves . The Dimensioning of the Mechanism is Possible by using the analytical geometry. [91] The Dimensioning of Proton – Neutron In Fig-26 , and others with Compounds In Fig-27 .The Dimensioning of Hydrogen and Atoms In Fig-28-30,

The Linear-Vibrations $[\ddot{x} + w^2 x = 0]$ of **Three-masses , Occur on Two-Line-Vectors Perpendicular each other** , vibrating on Straight-line , $\ddot{y} + w^2 y = 0$, of $x \perp y$ Plane and follow the Lissajous Shapes , [83] , where for ,

a.. Difference of Phase $d_\varphi = 90^\circ$ emission is $\rightarrow$ The Eight-Shapes ∞ .

b.. Difference of Phase $d_\varphi = 0^\circ$ emission is $\rightarrow$ The Ellipse-Shapes $\propto$.

c.. Difference of Phase $d_\varphi = 45^\circ$ emission is $\rightarrow$ The Double-Saddle-Shapes . $\mathfrak{S}$, $\mathfrak{G}$.

For Planck length [73] P-49, was shown that **the Rotated Energy case** , when $s = 0$ and

$\cos \varphi = 0$, exists for angle $\varphi = \pi/2$ and Quaternion $(s + \bar{v} \bar{z}i)^{1/w} = e^{-i.(\pi/2+2k\pi).w} \dots (1)$

the dimension power $\rightarrow w = b \leftarrow$ **and for** $k = 1$ then (1) becomes , [84] -P.74

$$e^{-i.(\pi/2+2k\pi).w} = e^{-i.(\pi/2+2k\pi).b} = e^{-i.(5\pi/2).b} = e^{-i.(5\pi/2).10} \quad [86] \dots (2)$$

Equation (2) fits , **as minimum cave** , in the Planck length and is $L_p = e^{-i.(5\pi/2).10} \dots (3)$

Equation (3) is the smallest **Energy-Unit of Space** , and this because is for $s = 0$ and $k = 1$.

It was shown [31] that Space and Energy is quantized and measured on the two Constant and

Natural numbers e, π , where for base the natural logarithm , e , and exponent the decimal

base , $b = 10$. From $\rightarrow z^{1/w} = (s + \bar{v} \bar{z}i)^{1/w} = |zo|^{-w} . [\cos.(\varphi + k\pi)/w + i.\sin.(\varphi + k\pi)/w]$

$= |zo|^{-w} . e^{-i.(\varphi+k\pi).w}$ for $\cos.(\varphi+k\pi)/w = 0$ then exists only the **Imaginary part** of monad

$(\bar{v} \bar{z}i) \neq 0$, where $\varphi = \pi/2$ and then , $z^{1/w} = |zo|^{-w} . e^{i.(\varphi+k\pi)/w} = e^{-i.(\frac{\pi}{2}+k\pi).10}$ which is the

Diffraction Energy mechanism for all Space Levels of quantization which are the **Energy**

Particles only i.e. The Energy particles in **Stationary caves** are $z^{1/w} = |zo|^{-w}$. $L_v = E$ -Monad.

Extending quantization of Energy according to exponential formula $\rightarrow L_v = e^{-i.(5\pi/2).10}$ then

L_v on the decimal base $b = 10$ and for $k = \pm 0 \rightarrow \pm \infty$, are the **Energy caves** as ,

For base $e = 2,71828$ and base $b = 10$ then $e^{-(13,8155)} = 1.10^{-6} \text{ m}$

For base $e = 2,71828$ and $k = 0$ $L_v = e^{i.(\pm \pi/2).b}$ then $e^{(-15,7079)} = 1,78118.10^{-7} \text{ m}$

For base $e = 2,71828$ and base $b = 10$ then $e^{-(16,1181)} = 1.10^{-7}$ or $r = 1,07.10^{-7} \text{ m}$.

Placing r , in the Dynamic-Space-Energy relation when $g = 1$ then $r^3.f_p^2 = 1$ and $f_p^2 = \frac{1}{r^3}$
 $= 8,0647139.10^{20} \text{ m}$ and occurs the , **minimum frequency** $f_{\min} = 2,839844.10^{10} \text{ H} \dots (4)$

7d.. The Cosmic Particles in The Cycloid , Anti-cycloid Evolute :

The moving monads in Cycloid Equilibrium in the Anti - Cycloid (Evolute).

The equilibrium of the Resultant forces is obtained by the above Cycloid , Anti-cycloid

Evolute Forces , or by the Rotor and Spin in one Rim , as was shown.

In Rims is possible the forming velocities greater than that of light , and this because of different , r , and the Tangential velocities are kept with the same angular velocity , *the Spinning* , unless Spinning changes in such way to keep light-velocity constant .

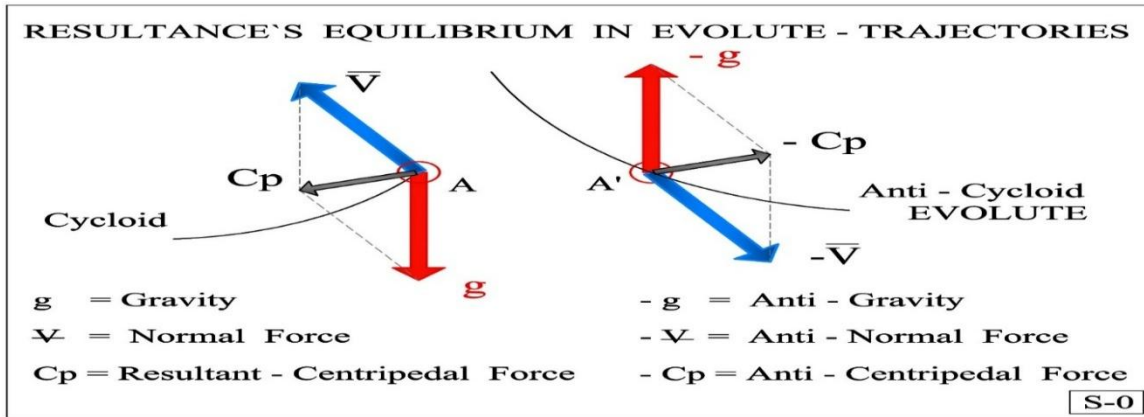


Figure 25 The Equilibrium of the Resultant Forces , in the Cycloid and for motion Wavelength , and of any other Removal Monad . The Intrinsic Space is (Wavelength = $[\lambda]$) , as the Energy Quanta .

The Equilibrium of the Three-Spaces , The Space Anti-Space , Neutral-Space : [60]

The Stability of Elementary Particles , Conductors and the Atoms -Nucleus Fig-24

The **Equations of motion become everywhere** from any **Opposite Space** $\equiv \oplus$, Anti-space $\equiv \ominus$. During these motions as , ds . is Done a Constant-Work , k , or and from their velocities $\bar{v}$ and this Work may be **Positive** or **Negative** for Equilibrium . In F-23 Cycloid Anti-cycloid motion is as , D. The Origination of Gravity g , Antigravity $[-g]$ In Fig-20.b , Conductor $D = d = AK_A$ where $\oplus$ constituent attacks $\ominus$ by a Hook's law force as Stress $\sigma = E u$, and an Coulomb force $F_{[+ \leftrightarrow -]} = \frac{[\oplus \leftrightarrow \ominus]}{r^2} = \frac{[2 \sigma]}{r^2}$, creating Work $\equiv$ motion as was shown It was shown that , **The Stability of Nucleus Forces** , is succeeded through **The Pascal's - Ceba's** triangle launched caves r , while Leptons from their **Anti - Leptons** existence in the same launched Pascal's - caves r . [58]

The Equilibrium of the Three-Spaces is Done on the three Cyclic-Quadrilaterals ($AB_E A_E C_E$) ($BC_E B_E A_E$) , ($CA_E C_E B_E$) of the 6 Conductors each for , $[a, b, c, d, p, q] \times [3-ABC] = 18$ Conductors . **Linearly** is through *the Products* of the Diagonal - connectors *as* , $\rightarrow \rightarrow \rightarrow$ $[AA_E] \cdot [B_E C_E] = [AC_E] \cdot [A_E B_E] + [AB_E] \cdot [A_E C_E]$, $[BB_E] \cdot [C_E A_E] = [BA_E] \cdot [B_E C_E] + [BC_E] \cdot [B_E A_E]$, $[CC_E] \cdot [A_E B_E] = [CA_E] \cdot [B_E C_E] + [CB_E] \cdot [C_E A_E]$ and , **Rotationally** through *the Ratio* of the Diagonals $\equiv$ The Conductors $\left| \frac{AK_B}{AK_C} \right| \left| \frac{BK_C}{BK_A} \right| \left| \frac{CK_A}{CK_B} \right| = 1$ or $\pm$ **Rotational-Equilibrium** as , $[AK_B] \cdot [CK_A] \cdot [BK_C] = [AK_C] \cdot [BK_A] \cdot [CK_B]$, of all Opposites $\Rightarrow$ **Tangential-Electromotive Forces** . From Mechanics-Physics , *all Systems Possessing Elasticity $\equiv$ motion and Reaction to motion* , the called mass , *are capable of free vibration or vibration taking Place in the Absence of External Excitation* [7] . This Principle issues for Both Closed or Open Systems.

i.e. either for the Nucleus where issues **The Pascal's - Ceba's** triangle Stability , or for the Orbitals where issues the **Tetrahedron - Cube - Sphere - Mould** .

8d.. The Stability of the Cosmic Particles Conductors and Atoms – Nucleus .

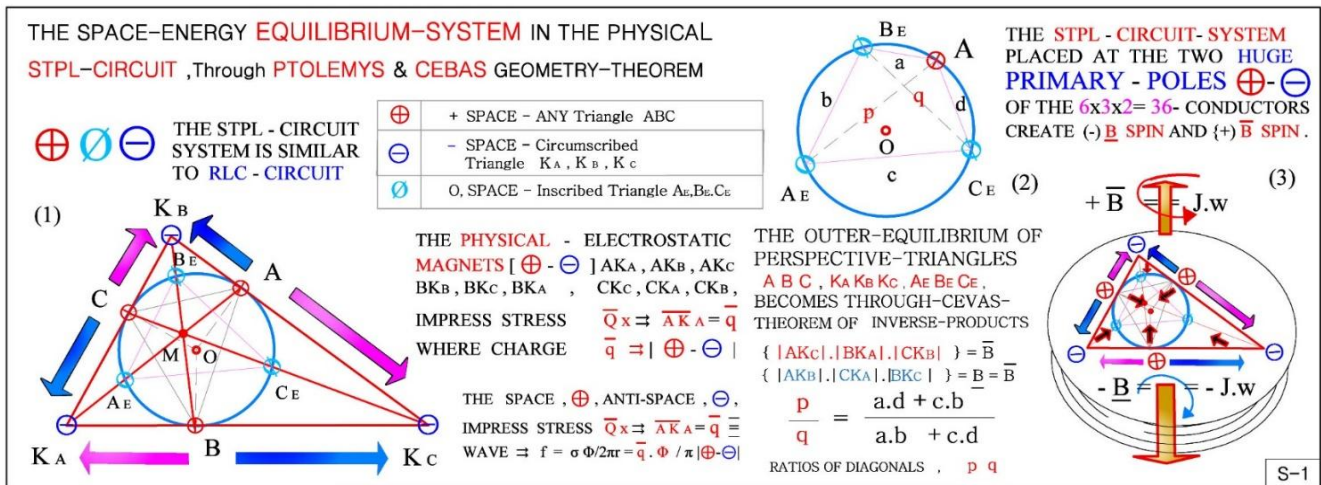


Figure -26- : The Stability of $\rightarrow \{ \oplus - \text{Space } [A B C] \}, \{ \ominus - \text{Anti-Space } [K_A K_B K_C] \}$, of The Sub-Space $[A_E, B_E, C_E]$, and Neutral-Space $\{ [\oplus \leftrightarrow \ominus] \equiv ds \equiv [\oplus \leftarrow ds \rightarrow \ominus] \}$.

Since , Energy of the first Wheel-Rim or Orbital is distributed to the couple of (2e)

Electrons of the Orbital , then this is a Cycloid - Anti-cycloid - Stability System .

This Still Systems of Space –Anti space DOES NOT mean Matter–Antimatter but

The State of Equilibrium in Caves $\equiv$ The Ceba's Energy triangle .

a...The Space Anti-Space and , Neutral-Space Conductors : [60]

The Equations of motion become everywhere from any Opposite , Space $\equiv \oplus$, and Anti-space $\equiv \ominus$. During these motions as , ds . is done a Constant-Work , k , or and from their velocities $\bar{v}$. In Figure Conductor $D = d = AK_A$ where $\oplus$ constituent attacks

$\ominus$ by a Hook's law force as Stress $\sigma = E u$, and an Coulomb force $F_{[\oplus \leftrightarrow \ominus]} = \frac{[\oplus \leftrightarrow \ominus]}{r^2} = \frac{[2 \sigma]}{r^2}$, creating Work $\equiv$ motion as was shown . [58]

It was shown that , The Stability of Forces is succeeded in The Pascal's - launched caves r while Leptons , from their Anti - Leptons existence in the same launched Pascal's-caves r . The Equilibrium of the Three-Spaces is succeeded on the three Cyclic - Quadrilaterals $\rightarrow (AB_E A_E C_E), (BC_E B_E A_E), (CA_E C_E B_E)$ of 6 Conductors each $[a, b, c, d, p, q] \times [3-ABC] = 18$ Conductors .

Linearly is through the Products of the Diagonal - connectors as , $\rightarrow \rightarrow \rightarrow [AA_E] \cdot [B_E C_E] = [AC_E] \cdot [A_E B_E] + [AB_E] \cdot [A_E C_E]$, $[BB_E] \cdot [C_E A_E] = [BA_E] \cdot [B_E C_E] + [BC_E] \cdot [B_E A_E]$, $[CC_E] \cdot [A_E B_E] = [CA_E] \cdot [B_E C_E] + [CB_E] \cdot [C_E A_E]$ and , Rotationally through the Ratio of Diagonals $\equiv$ The Conductors $\left| \frac{AK_B}{AK_C} \right| \times \left| \frac{BK_C}{BK_A} \right| \times \left| \frac{CK_A}{CK_B} \right| = 1$ or the $\pm$ Rotational-Equilibrium $[AK_B] \cdot [BK_C] \cdot [CK_A] = [AK_C] \cdot [BK_A] \cdot [CK_B]$, of all above Opposites $\rightarrow$ Tangential-Electromotive-Forces $\leftarrow$ From Mechanics , all Systems Possessing Elasticity $\equiv$ motion and Reaction to motion , called mass , are capable of free vibration or vibration taking place in the Absence of External Excitation . [7] From Lorentz-Force , $F = \bar{q} \bar{v} \times \bar{B}_F$, where , $\bar{q} \equiv$ Charge , $\bar{v} \equiv$ The velocity of Charge , $\bar{B}_F \equiv$ The Strength of Magnetic field and Centrifugal Force , $F_{CF} = m \cdot \omega^2 R \cdot r$.

From Cave-Spin , $\bar{\mathbf{S}} = \mathbf{r} \mathbf{m} \mathbf{v}$ then mass $m = (\frac{S}{r.v})$.Equating equations then , $F \equiv F_C F \equiv \bar{\mathbf{q}} \bar{\mathbf{v}} \times \bar{\mathbf{B}}_F$, and $\mathbf{Q}_{\pm} = m.w^2_R.r = (\frac{S}{r.v}).w^2.r = \frac{S.w^2}{v} = \frac{S.v^2}{r^2.v} \equiv |\frac{\mathbf{v}.\bar{\mathbf{S}}}{r^2}| \dots(\mathbf{EMF})$ where exists $r_{\min} = \sqrt[2]{\pi b^{-n}}$, [95] , [96BB] .

Electromotive-Forces , $\mathbf{F} = \bar{\mathbf{q}} \bar{\mathbf{v}} \times \bar{\mathbf{B}}_F = \mathbf{Q}_{\pm} = \frac{\mathbf{v}.\bar{\mathbf{S}}}{r^2} \equiv |\frac{\mathbf{c}.\bar{\mathbf{S}}}{r^2}|$, **are The Elementary-Particles** {F, L, Q} . From Electromotive-Force in min-cave $r = 1,7724538.10^{-3}$ m. exists Electron-Force-Charge $\bar{\mathbf{q}}_e$ as $\mathbf{Q}_{\pm} = |\frac{\mathbf{c}.\bar{\mathbf{S}}}{r^2}| = \frac{[2,998.10^8].[1,0546.10^{-34}]}{(1,7724538.10^{-3})^2} = 1,6022.10^{-19}$ eV , which is the

Electron-Force-Charge and also from the Gravitational-Stress-Charge $\bar{\mathbf{q}}_{\text{Electron}} = \frac{G}{c\sqrt{2}} = \frac{6,6736923.10^{-11}}{1,41429.2,9979346.10^8} = 1,574.10^{-19}$ C . Electromotive-Force in the min-cave $e^{-15,572707} = r = 1,7252787.10^{-7}$ m , and the Gravitational-Force G becomes also as ,

$\mathbf{Q}_{\pm} = |\frac{\mathbf{c}.\bar{\mathbf{S}}}{r^2}| = \frac{[2,998.10^8].[6,62606957.10^{-34}]}{(1,7252787.10^{-7})^2} = 6,673692.10^{-11}$, which is the G - Physical-Force-Charge. When the Heap of the Elementary Particles on D_A - P_A line , is compressed and gets out the line then is a reason for Black Hole creation .

b...The relation of the n , Degree of Polynomials and Electromotive-Forces Vibration .

The Transportation of Energy on Edge-Points happens in **Material Geometry** , while the **Transportation of** the Edge-Points as , **Positions** , exists in **Vector Geometry** only.

Since in Vibrations the **Deformation of the Spring is an equilibrium Position in Δ** , and the Spring-Force $k \Delta = w = m g =$ Gravitational force w acting on mass m , then exists $\rightarrow m \ddot{x} = \Sigma F = w = k [\Delta + x] \dots(1)$, and because $k \Delta = w$ we obtain $w^2_n = k/m..$ (2) and (1) becomes $\rightarrow \ddot{x} + w^2_n = 0 , \dots(3) \leftarrow$ i.e. **The Transportation of Energy is a Harmonic - Vibration in cave Δ , meaning the Wave Pattern . From before the Cave-Spin , $\bar{\mathbf{S}} = \mathbf{r} \mathbf{m} \mathbf{v}$ is a Monad** , and occupies the **4-Spaces** as the **Fig-1** . i.e.

$\rightarrow (($ The n - Spaces of Spin $\bar{\mathbf{S}}$ are the Polygons $\mathbf{S}^n$,
The n Anti-Spaces of Spin - $\bar{\mathbf{S}}$ are the Polygons - $\mathbf{S}^n$)) $\leftarrow$

The Sub-Spaces $\pm \sqrt[n=1-\infty]{\bar{\mathbf{S}}}$ are the Polygons with $n = 1 \approx \infty$ **Knots**

Since the number of **Knots n** , are the Degrees **N** of the Polynomials of each Monad and Since the n - masses - Spring m_n is an equilibrium Position in Δ , of the equation of motion $\rightarrow \ddot{x} + w^2_n = 0 \leftarrow$ then the **4-Spaces of Monad are the Polygons of n-Knots and equal to the N Degrees Roots of the Polynomials** .

THE PROCESS OF ACTIONS IN THE 4=SPACES

- 1...A Heap of n -masses Vibrates and Equilibrium .
- 2...A Heap of n -masses Equilibrium at the n -Mode Shapes Waveform .
- 3...A Heap of n -masses of n -Mode Shapes occupies the Resultant E-Spectrum
- 4...Each-One of the n -masses *occupies* n -Mode Shapes , n -Element .Spectrum ,
4-P.Spaces , 4.n.. Regular-Polygons of n -Degree , with 4.n..Knots and Roots .
- 5...Each-One of the n -masses is an E -Monad occupying **4-Primary-Spaces** , and

Forms **4.n..** Regular-Polygons of the **n**-Degree , and with **4.n..**Knots as Roots ..
6...Each-One of the **n**-masses is an E-MONAD occupying all above Properties (Signals).

9d.. The Origination of Proton and Neutron Cosmic Particles .

The Elements in the Proton & Neutral-caves $\rightarrow$ { Masses – Charges - Forces } [89]

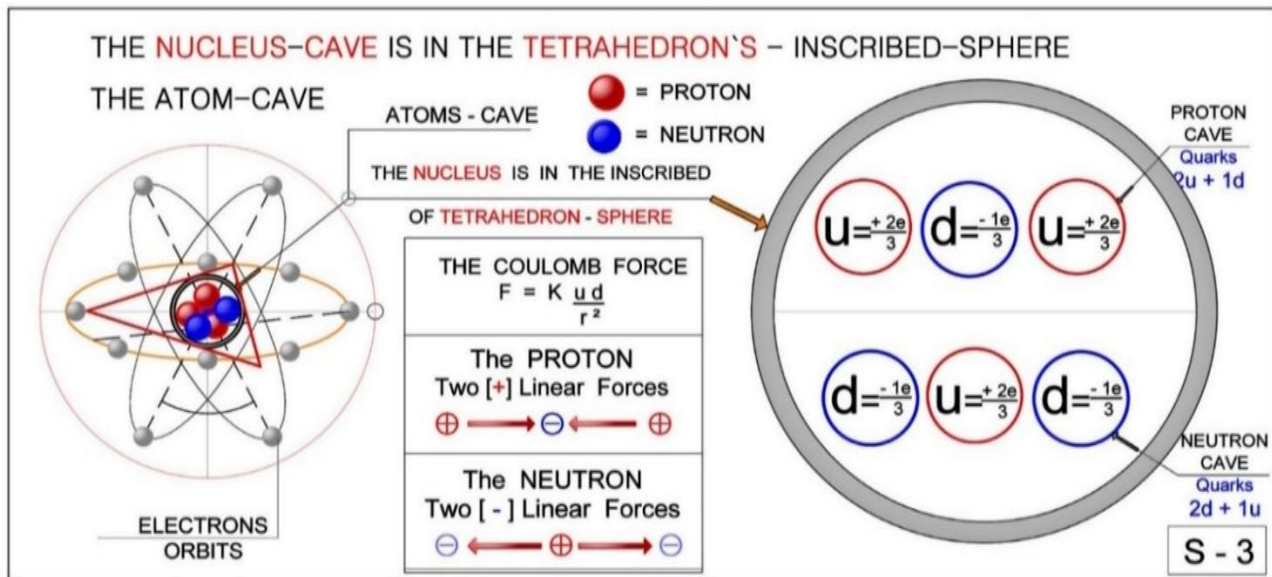


Figure-27 : The Sphere-Structure of the **Hydrogen-Nucleus** , $\oplus$ Proton , $[\oplus \leftrightarrow \ominus]$ =Neutron

Proton is consisted of Three-Primary-Opposite-Spaces $\oplus$, $\ominus$, $[\oplus \leftrightarrow \ominus]$, having masses m_p , Charges $\bar{q}_p$, and caves $a_p = r$.

The Nucleus's Cave r , exists in the Inscribed to the Tetrahedron Sphere .

The **elements in Proton** are the Two **u**-Quarks and One **d**-Quark .

The **Hydrogen-Nucleus** is in the Inscribed Sphere from the

{ **Inscribed Sphere -Tetrahedron – Cube - Circumscribed Sphere - System** } .

In order to shift the **u-d**-Quarks of an **Anti-Proton** into a Proton Spin-Pair require an extra input of Energy-(MeV) , so would **Proton Paired with a Neutron be Stable** .

The Total mass M_T in Proton follows , The Parallel Connections Resistors inverse

law , where The Proton Total-Harmonic mass $\equiv M_T$ is $\rightarrow \frac{1}{M_T} = \frac{1}{m_u} + \frac{1}{m_u} + \frac{1}{m_d}$,

The System Total- Harmonic-Charge $\equiv Q_T \equiv 2.q_u + q_d = 2.(2/3).e - (1/3).e = +\frac{3}{3}.e =$

$+1,6022.10^{-19} \text{ C}$, and the System-Resonance-Charge $Q_T = +1,6022.10^{-19} \text{ C} \dots(2)$

The Proton Total- Harmonic- Charge $\rightarrow Q_T \equiv 2.q_u + q_d$,and for the Resonance Frequency of the Unit-Cave is the Stationary-System becoming from Kepler second Planetary-law as equation , $4\pi^2 m f^2_o = k$, and constant law of Areas $1 = k .f^2_o .a^3$. Their common k , is the

$$\text{Constant-Energy} \rightarrow k = 4 \pi^2 m f_p^2 = \frac{1}{f_p^2 a^3} \quad \text{or,} \quad f_p^4 = \frac{1}{4\pi^2 m a^3} \quad \text{and} \quad f_p = \sqrt[4]{\frac{1}{4\pi^2 m a^3}}.$$

The measured magnitudes are as follows ,

$$\mathbf{a-Proton} \oplus \rightarrow \text{mass } \mathbf{m_p} = 1,672.10^{-27} \text{ Kg} \rightarrow \text{Charge } \mathbf{C_p} = 1,602.10^{-19} \text{ C} \rightarrow a = 8,4.10^{-16} \text{ m}$$

$$\mathbf{b-Electron} \ominus \rightarrow \text{mass } \mathbf{m_e} = 9,11.10^{-31} \text{ Kg} \rightarrow \text{Charge } \mathbf{C_e} = 1,602.10^{-19} \text{ C} \rightarrow a = 5,0.10^{-17} \text{ m}$$

$$\mathbf{c-Neutron} [\oplus \leftrightarrow \ominus] \rightarrow \text{mass } \mathbf{m_n} = 1,672.10^{-27} \text{ Kg} \rightarrow \text{Charge } \mathbf{C_n} = 0,0 \text{ C} \rightarrow a = 1,7.10^{-15} \text{ m}$$

$$\mathbf{d-u-Quark} \rightarrow \text{from equal masses } m_p = 2.m_u + m_d = 3.m_u = 1,672.10^{-27} \text{ Kg} \text{ and Quark masses}$$

$$\mathbf{m_u} = \mathbf{m_d} = m_p / 3 = 5,573.10^{-28} \text{ Kg} , \text{ and } \frac{1}{M_T} = \frac{1}{m_u} + \frac{1}{m_u} + \frac{1}{m_d} = \frac{3}{m_p} + \frac{2.3}{m_p} = \frac{9}{m_p} \text{ and Proton}$$

$$\mathbf{Resonance mass } M_T = \frac{m_p}{9} = 1,857777.10^{-28} \text{ Kg} \approx 16,7267 \text{ m Ev}/c^2 \dots\dots(m)$$

$$\text{For Proton issues } q_p = 2.q_u + q_d = 2.\frac{2}{3}e - \frac{1}{3}e = e , \text{ and the Stability of forces is axial .}$$

$$\mathbf{Electron-Charge } \mathbf{C_e} = 1,602.10^{-19} \text{ C} , \text{ while } \mathbf{C_{qu}} = \frac{2}{3}e = +\frac{2}{3}1,602.10^{-19} \text{ C}$$

$$\mathbf{C_{qd}} = -\frac{1}{3}e = -\frac{1}{3}1,602.10^{-19} \text{ C} , \text{ and from}$$

$$Q_T \equiv 2.q_u + q_d , \text{ then Proton Resonance charge } Q_T = \frac{3.q_p}{3} = 1,602.10^{-19} \text{ C} \dots\dots\dots(c)$$

$$\text{Proton-Resonance frequency } f_p = \sqrt[4]{\frac{1}{4\pi^2 m a^3}} = \sqrt[4]{\frac{1}{4\pi^2 5,573.10^{-28} (8,4.10^{-16})^3}} = 5,26241.10^{17} \text{ H}$$

$$\text{Using the United Newton-Coulomb Electro-Mechanical Equation, } q \bar{B}_L = 2\pi.m f , \text{ the Proton}$$

$$\text{Magnetic-field } \bar{B}_F = \frac{|2\pi.m_T|}{Q_T} f = \frac{2\pi.1,857777.10^{-28} 5,262409.10^{17}}{1,6022.10^{-19}} (\text{Kg/Cs}) = 3,83389.10^9 \text{ Tesla}$$

which is the Strength of a Magnetar , **i.e.** A type of Neutron-Star having an extremely Powerful Magnetic-field , and Electric-Forces to be over Ten-Thousands-Newton .

The Electric Force between the u-Quarks and d-Quarks in Proton is from Coulomb law

$$\mathbf{F_{ud-p}} = C \frac{q_1.q_2}{r^2} = 8,9875.10^9 (\text{Nm}^2/\text{c}^2) . \frac{2}{9} [1,602.10^{-19} \text{ C}]^2 \frac{1}{(10^{-16})^2} = 1,997222.10^6 \text{ N} \dots(F_p)$$

and The Electric Force between the u-Quarks and d-Quarks in Neutron is

$$\mathbf{F_{ud-n}} = C \frac{q_1.q_2}{r^2} = 8,9875.10^9 (\text{Nm}^2/\text{c}^2) . \frac{2}{9} [1,602.10^{-19} \text{ C}]^2 \frac{1}{(10^{-16})^2} = -1,997222.10^6 \text{ N} \dots(F_n)$$

i.e. Forces between the Opposites **Equilibrium-Linearly** $\leftarrow [d-u-d] \rightarrow$ **or** $\rightarrow [u-d-u] \leftarrow$

$$\text{For the Neutral-cave issues } q_n = 2.q_d + q_u = -2.\frac{1}{3}e + \frac{2}{3}e = 0.e , \text{ and the Stability of forces}$$

is axial as in Proton and this because the Dynamic-Strip-Polygon doesn't close . For ,

- 1.. Neutrinos , ν , mass $m = (3,11 \cdot 10^{-6}) \text{ MeV}/c^2 \times 1,8 \cdot 10^{-28} = 5,598 \cdot 10^{-34} \text{ Kg}$
The Spin is , $S_\nu = 5,691952 \cdot 10^{-34} \{ \text{Kg/m/s} \}$, $a_\nu = 7,0 \cdot 10^{-21} \text{ m}$, $f_\nu = [E_{\nu K} = mc^2] / h = 5,6 \cdot 10^{-34} [10^{17}] \cdot 1,6022 \cdot 10^{-19} = 8,96912 \cdot 10^{-36} \text{ J} / [6,626 \cdot 10^{-34} \text{ Js} = 13,536244 \cdot 10^{17} / \text{s}$
From cave $r = 7 \cdot 10^{-21} \text{ m}$ then $f = \sqrt[2]{\frac{1}{g \cdot a^3}} = \sqrt[2]{\frac{1}{9,81(7 \cdot 10^{-21})^3}} = 5,347345 \cdot 10^{30} \text{ H}$ and exists ,
 $E_{\nu K} = h f_\nu = 6,62607 \cdot 10^{-34} \text{ J s} \cdot [5,347 \cdot 10^{30}] / (1,6022 \cdot 10^{-19} \text{ eV}) = 2,2114518 \cdot 10^{14} \text{ eV}$
Using $E_{\nu K} = \frac{k}{r} + \frac{cS^2}{2m \cdot r^2} = \frac{36 \cdot 10^{-20}}{7,10^{-21}} + \frac{3 \cdot 10^8 (5,691952 \cdot 10^{-34})^2}{2 \cdot 3,922 \cdot 10^{-36} [7,0 \cdot 10^{-21}]^2} = 51,428 \text{ eV} + 2,528774 \cdot 10^{17} \text{ eV}$
 $= 252,8774, [10^{15}] \text{ TeV} \rightarrow$ The Total Energy of the Sun striking Earth-face per second.
2...Electron , e , $m_e = 0,511 \text{ MeV} = 0,511 \cdot 10^{-5} \text{ eV} \cdot [1,80 \cdot 10^{-27}] = 9,198 \cdot 10^{-31} \text{ Kg}$

$$a_e = 5,0 \cdot 10^{-18} \text{ m} , \text{Charge } C_e = 1,602 \cdot 10^{-19} \text{ C} , \text{Spin } S_e = \frac{S}{2} = 2,845976 \cdot 10^{-34} \{ \text{Kg/m/s} \} ,$$

$$\text{From cave } r = 5 \cdot 10^{-18} \text{ m then } f = \sqrt[2]{\frac{g}{a^3}} = \sqrt[2]{\frac{9,8078}{(5 \cdot 10^{-18})^3}} = 2,801114 \cdot 10^{26} \text{ H} , \text{ and by}$$

$$\text{Using } E_{eK} = \frac{k}{r} + \frac{cS^2}{2m \cdot r^2} = \frac{36 \cdot 10^{-20}}{7,10^{-18}} + \frac{3 \cdot 10^8 (5,691952 \cdot 10^{-34})^2}{2 \cdot 9,198 \cdot 10^{-34} [5 \cdot 10^{-18}]^2} = 51,428 \text{ eV} + 2,111843 \cdot 10^{10} \text{ J}$$

$$= 51,43 \text{ eV} + 1,32 \cdot 10^{29} \text{ eV} \rightarrow \text{The Energy of 133 gr to fall 1 meter against gravity.}$$

Remarks :

- 1.. Gravitational force $\rightarrow G \equiv \sigma A \equiv [\frac{2\pi r f}{\Phi}] A \equiv \bar{v} [\frac{A}{\Phi}] \equiv \sigma \cdot \Phi^3 \equiv \Phi^2 \cdot [\{\sigma \Phi\}] \equiv$
 $G \equiv \Phi^2 \cdot [\{\sigma \Phi\}] \equiv 2\pi f_p r \equiv w r \equiv \bar{v} \equiv m g = \bar{c} = [\frac{2 \cdot B}{\pi r^3}] \rightarrow$ i.e. **G** is related **To**
 $\rightarrow$ motion $\equiv$ work W , Spaces r , Anti-Spaces $1/r$, Stresses σ , Areas A , Caves a ,
 $\rightarrow$ Periods T , Frequencies f , Angular-waves w , Angular-Momentum B ,
 $\rightarrow$ Spin $B \equiv S$, velocities v , Light-velocity c , Impedances Z_n , Masses m ,
 $\rightarrow$ Gravity $\bar{g}$, Charges , $\bar{q}$, Electromagnetic – Fields , $\bar{E}$, $\bar{M}$, Hydrogen H ,
 $\rightarrow$ Atoms , Molecules , Golden-Ratio Φ , i.e. All-Universe . Markos 9/4/2020.

By Sweeping the Φ Surface through Stresses $\sigma \equiv [\frac{2\pi r f}{\Phi}]$, and scanning frequencies f ,

Explanation :

The Action-Spaces $\equiv$ The Infinite Quaternion - monads $\rightarrow \bar{z} \equiv (s + \bar{v} \cdot i) \equiv \overline{AB} \equiv$
 $\equiv \sqrt{s^2 + [\bar{v} \cdot i]^2}$, or $\bar{z} \equiv x + i \cdot y \equiv \overline{AB} \equiv$ moduli , r , is their magnitude

$[r = |r| = \sqrt{x^2 + y^2}]$, on Unit-Diameter $\overline{AB}$. The [QMAS] . For Quaternion $|\bar{v}| = s$

Breakages $\bar{z} * \bar{z} = (s + \bar{v} \cdot i)^2 = s^2 + [\bar{v}]^2 + 2 \cdot s \bar{v} \cdot i = s^2 - \bar{v}^2 \pm 2 \cdot s \bar{v} = |s|^2 - |\bar{s}|^2 \pm 2 \cdot |s| \cdot |\bar{s}|$, i.e.

In Figure -3- the Vector of Amplitude is Quaternion $\bar{z} \equiv x + i \cdot y$, with vector $\bar{z}$, to be from Definition of the Complex Vector Space , the Set of Vectors of length (the n Vertices which form the n - Polygon Sides , or the Norm of the Complex - Vectors)

a...The **4-Geometrical Spaces** , [**Space , Anti-Space , Neutral-Space , Sub-Space**] consist $\rightarrow$ The **Geometrical - Mould of $\overline{AB}$ - Monad $\equiv [PM-2R-M]$ $\leftarrow$**

b...The **Vectors of Amplitude $z = 2R$, ON $\overline{AB}$ Monad** , consist The **Energy-Mould of 2R-Form .The Physical -Mechanisms $\rightarrow$ [Physical Mould of 2R- Monad] $\equiv$ [GM-AB-M] $\leftarrow$ are such and dependent on the n - Number of Accessories they use .**

A... The **Gravity Force** $G \equiv \text{motion} \equiv \sigma \cdot \Phi^3$, exists without mass and is **Quantized** Spread in {Space and Anti-Space Or $\equiv \text{QUA} \equiv \{\text{is The Quantized-Units In-Area of Space and Anti-Space}\}$, and as a Mould Φ **Golden-Ratio**, exists as **Impedance** b .

Placing [**Physical Mould of 2R- Monad**] ON [**Geometrical - Mould of $\overline{AB}$ - Monad**]

[**PM-2R-M**] $\rightarrow \updownarrow \leftarrow$ [**GM-AB-M**]

THEN $\rightarrow$ **Gravitational-Force** $G \equiv [\Sigma = n \cdot h]$, and $n \cdot NA = 1 \Rightarrow$ **Creates & Constructs**,

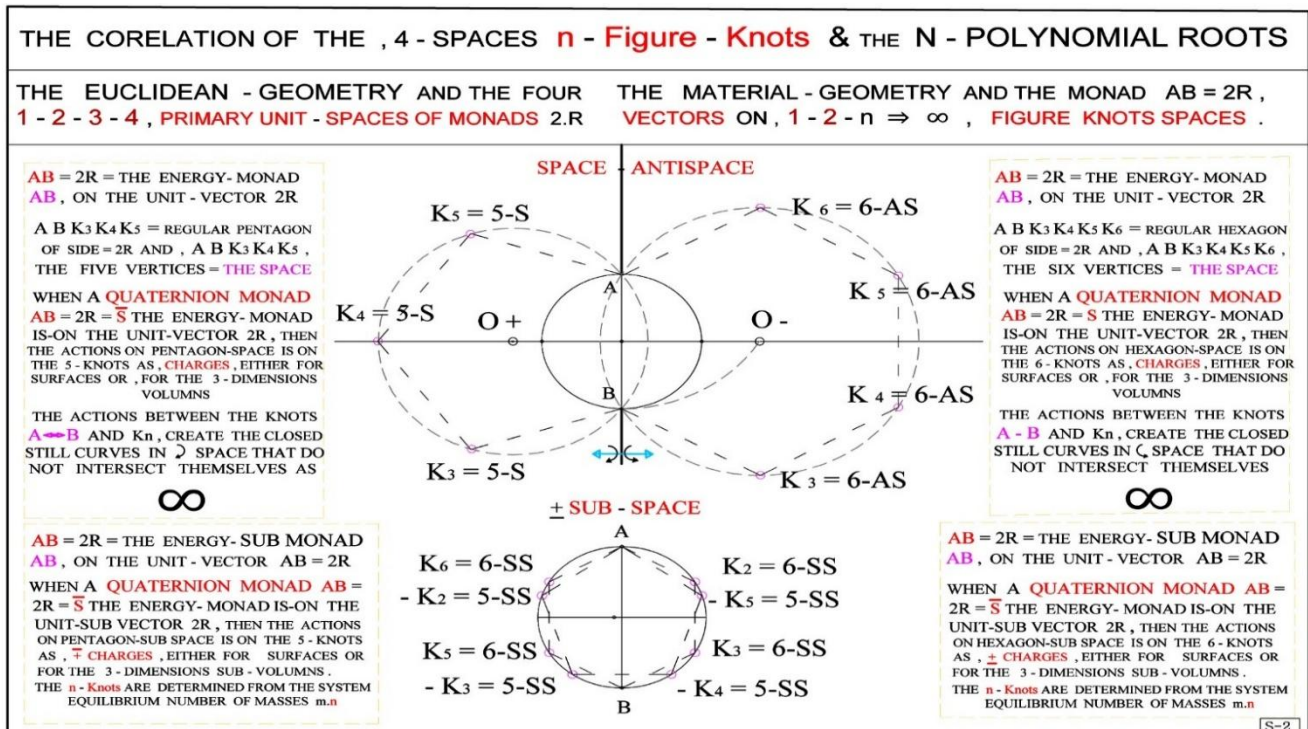


Figure -28- : On any Energy - Monad $A \leftrightarrow B$, exist the 4-Primary Spaces which are the Roots of the Nth Degree Polynomial , Becoming from the equation of motion .

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