



THE SQUARING OF THE CIRCLE USING A RULER AND A COMPASS AND THE BELLOW MOTION USED BY THE PHOTONS

By

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Abstract

This article is a continuation of 123=VECTORS , and concerns The simplified But Rigorous Proof of this Problem , *The Squaring of the Circle using a Ruler and a Compass* , as it was first Posed by the Ancient Greeks. The Photons Square their , Energy circle \equiv the **Herpolhode-SPIN** , to equal an *Energy Unit Square* , which Unit-Square they Promote , either as the *Speed of the Photon which is their Electric Field* , or they store it Perpendicularly to the motion in an equal area , *The Anti-Square which is their Magnetic Field* . Promotion is done at the **Birefringence angle** of 45° , and thus The **Bellow-motion** is their Torsional motion . From [40]--The Special Problems of Euclidean Geometry [47] consist the , *Moulds of Quantization* , of E - Geometry in it , to become \rightarrow Monad , through mould of Space – Anti-space in itself , *which is the material Dipole in inner monad Structure and which is identical with the Electromagnetic cycloidal field* \rightarrow Linearly through the mould of the Parallel Theorem [44- 45] , *which are the equal distances between Points of Parallel and line* \rightarrow In Plane , through mould of Squaring the circle [46] , *where the Two equal and Perpendicular Monad-Vectors consist a Plane acquiring The common Plane-meter, π , and in Space (volume) through mould of the Duplication of the Cube [46] , where any Two Unequal Perpendicular monads acquire the common Space-meter $^3\sqrt{2}$, to be twice each other* , as analytically all methods are Proved and explained . [44-47]
The Unification of \rightarrow Space and Energy \leftarrow becomes through [STPL] *Geometrical Mould Mechanism of Elements , the minimum Energy - Quanta , In monads \rightarrow Particles , Anti - Particles , Bosons , Gravity – Force , Gravity - Field , Photons , Dark Matter , and Dark - Energy , consisting the Material Dipoles in inner monad Structures , i.e. \rightarrow the innate*

Electromagnetic Cycloidal Field of monads ← [39-41]

Euclid's elements consist of assuming a small set of intuitively appealing axioms , Proving many other Propositions. Because no one until [9] succeeded to Prove the Parallel Postulate By means of Pure Geometric Logic , many self consistent non - Euclidean Geometries have been discovered , based on Definitions , Axioms or Postulates , in order that Non of them contradicts any of the other Postulates . It was Proved [39] , that the only Space - Energy Geometry is Euclidean , agreeing with the Physical Reality , on unit $AB \equiv \text{Segment} \equiv \text{Vector}$ which is The Electromagnetic field of the Quantized on \vec{AB} Energy Space Vector of Angular Momentum= Spin, on the contrary to the General Relativity of Space-time which is based on the Rays of the Non-Euclidean Geometries to the limited velocity of light in Planck's cavity . Euclidean Geometry elucidated the Definitions of its geometry - content , i.e. { [for Point , Segment , Straight Line , Plane , Volume , Space [S] , Anti-space [AS] , Sub - space [SS] , Cave , The Space-Anti-Space Mechanism of the Six-Triple-Points-Line , that Produces and transfers Points of Spaces , Anti-Spaces and Sub-Spaces in a Common Inertial Sub-Space , and a cylinder , in Gravity field [MFMF] Particles} and describes the Space-Energy vacuum beyond Plank's length level [Gravity's Length $3,969.10^{-62}$ m] , reaching the absolute Point $= L_v = e^{i(\frac{N\pi}{2})}_{b=10^{-35} \rightarrow N \rightarrow -\infty} m = 0$ m , which is Nothing , and the Absolute

Primary Neutral Space [PNS] = cave [$r = 10^{-35} \sim \sim 10^{-62}$ m [43-46] .

In Mechanics , The Gravity-cave *Energy Volume quantity* $|\bar{c}| \equiv [wr]$ is doubled , and is Quantized in Planck's- cave Space quantity $(h/2\pi) = \text{The Spin} = 2.[wr]^3 \rightarrow$ i.e. Energy Space quantity [wr] is Quantized , *doubled* , and becomes the Space quantity h/π following Euclidean Space-moulds of *Duplication of the cube*, in Sphere volume $V = (4\pi/3).[wr]^3$ and follows the *Squaring of the circle* π , and in Sub-Space-Sphere volume $^3\sqrt{2}$, as *Trisection* .

In article [123] , are given on the **2-Vectors , 3-Poles** Rotation Squares **Mechanism** , such the Geometrical as the Mechanical Proof , by using the **Conjugates circles** of **Polhode** and **Herpolhode** which consist the Spin of Photons and which is their motion . The frequency needed for the velocity vector \bar{c} **to rotate** , is used the Kepler's **Unit of Time** $k = f^2_e a^3$, where $a = \lambda / 2$, and which is **the clock** measuring the changes of motions .

Keywords : **The Quadrature of Electromagnetic Fields in Dual - Photon ,**
The Squaring of the circle , Using a Ruler and a Compass :

CONTENT :

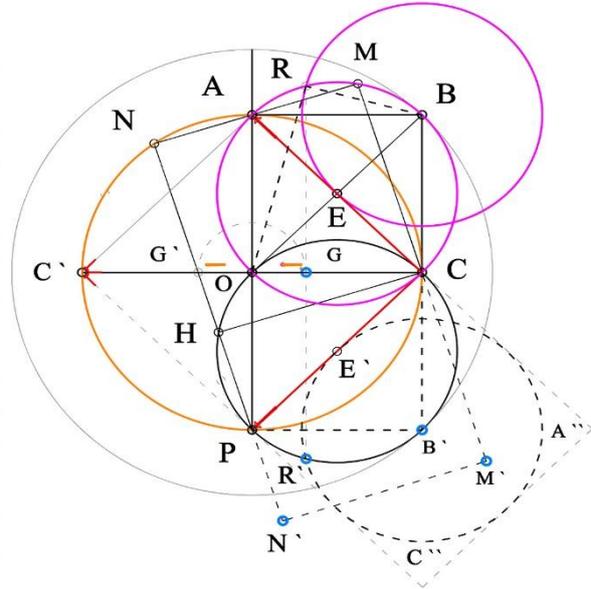
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A.. : THE MECHANISM OF THE QUADRATURE :

THE QUADRATURE OF CIRCLE | E , EO = AC/2 | USING --- A RULER AND A COMPASS ---

THE METHOD

- > LINE-Sector $CA = CP$ & $CA \perp CP$
- > CIRCLE [E, EC=EA] = Circle [E', E'C = E'P]
- > THE Conjugate-Circle [B, BE = EA] = Conjugate-Circle [B', B'E' = E'P]
- > THE Inscribed to Circles Squares [CBAO] + [CB'PO] = [CAC'P] = [CA'C''P]
- > THE Conjugate - Circle [B, BE=EA] CUTS Circle [E, EA] at Point R, AND so $RG \perp CO$ & $OG = OG'$, $CH \perp PG'$. PROJECTING PG' at N, NA at M THEN CMNH IS AN QUADRILATERAL.
- > SINCE Triangle AGO = AG'O = POG' & Triangle CAM=CPH THEN $CM = CH$ AND--- CMNH IS SQUARE = $\pi \cdot |CE|^2$ ---



THE ANGULAR MOMENTUM \bar{B} AS SPIN \bar{S} OF PHOTONS ON THE CONJUGATE CIRCLE [B, BE = EC] OF -- 2-Vectors 3-Poles R-Mechanism --

THE PROOF

- > FROM Relation $Spin=S = \bar{w} \cdot \bar{B} / 2 = \bar{c} \cdot \bar{B} / 2r$ Then $\bar{c} = |2 \cdot r \cdot \bar{S} / \bar{B}| = \sqrt{\bar{C}_T^2 + \bar{C}_R^2}$ AND AT POINT R, $\bar{C}_T = \bar{R}O = \sqrt{\bar{V}_x^2 + \bar{V}_y^2}$
- > AT Point R, $|\bar{C}_T = \bar{R}O| = \sqrt{\bar{V}_x^2 + \bar{V}_y^2}$ Tangential Velocity $\bar{R}O$, ACTS AT Point G', -- \bar{V}_x ON CC' Axis & $\bar{V}_y \perp$ ON CC' -- PUSHING CMNH, UNIT-Energy, SQUARE Forming THE TORSIONAL ANGLE $\Phi = \bar{r} \Phi = G' \bar{P}O = 2\pi / r^2$ Rads.
- > FOR Point G' AT C', Torsional Angle $\Phi = C' \bar{P}O = 2\pi / r^2 = 45^\circ$, which is The Bellow Motion of Photon, AND Energy-Square $CAC'P = CMNH \cdot CHH'M'$.

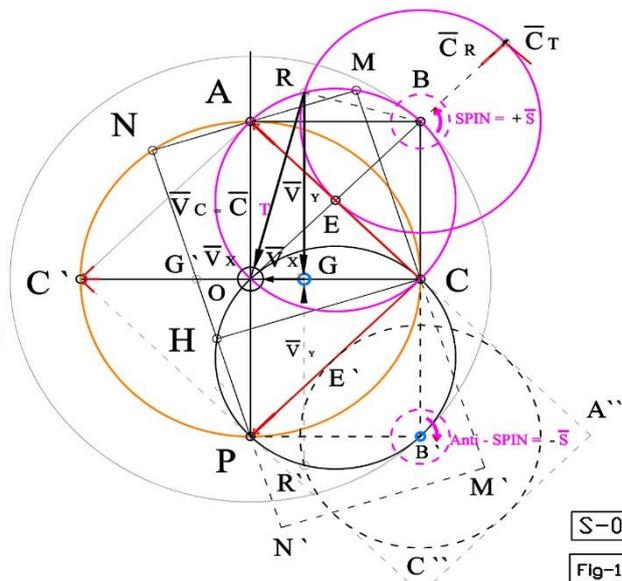


Figure -1- The 2-Vectors , 3-Poles Rotating Squares Mechanism . where The Straight line Segment , $CP = CA$, and $CP \perp CA$, and circles (E , EC = EP) . (E' , E'C = E'P) , on the centers of the Equal Diameters $CA = CP$, with Poles the C , A , P , O , Points .

1a.. IN Vibrating-Mechanism , masses carry motion as , **Eigenvectors** , at the Equilibrium

Positions , which are the **Eigenvectors** , at the Still-Positions . The Orthogonal Property of Normal-Modes for **Eigenvalues** and **Eigenvectors Moulds** is the Process of Equilibrium to the **2-Half-Area** Still-Positions as Fig-2- , $\pi.[OC]^2 \Rightarrow \pi.[BE]^2 + \pi.[B'E']^2$. and in MG-G

$$\rightarrow [Z = \oplus \rightarrow \ominus = D] \equiv \left\{ \uparrow Z + \left[\oplus \frac{\ddot{\cdot}}{2} + \ominus \frac{\ddot{\cdot}}{2} \right] D \right\} \equiv \left\{ \pm [\times] \frac{-\oplus/2}{+\ominus/2} + \downarrow \leftrightarrow \uparrow \right\} \leftarrow$$

→ **The Light-Velocity \bar{c} of Photons** , Becoming from the **Action** of G on Planck's Length when Act on a-cave , $r = \frac{h}{c.z_c} \neq L_P$ then originates the **Hydrogen-cave**. [99] . Energy is

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

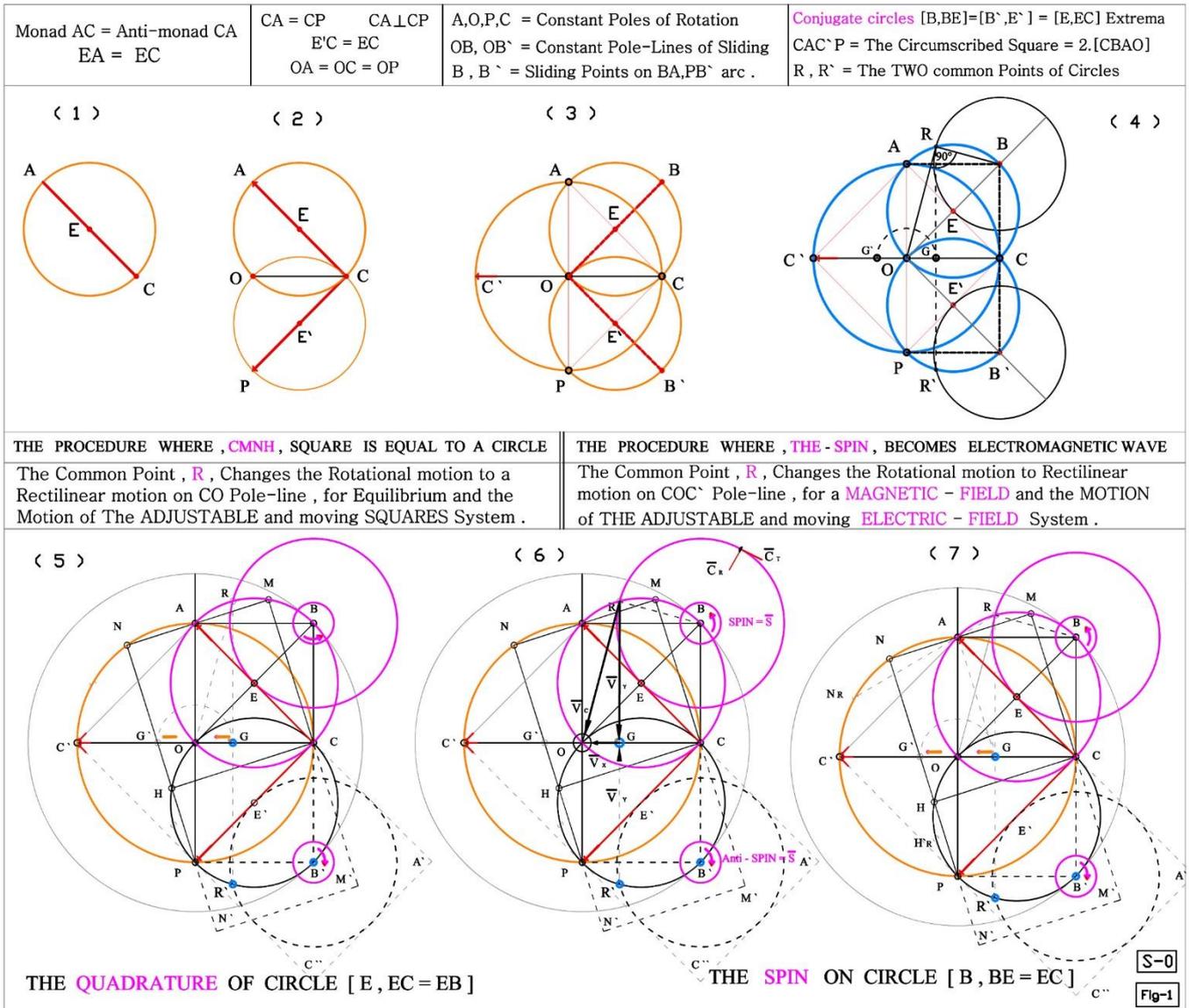


Figure -2- The Steps for Squaring the circles (E , EC = EA= EO = EB) , and (E' , E'C = E'P = E'B' = E'O) , Through Geometric - Requirements , Using < A Ruler and A Compass > as this was first Posed by the Ancient Greeks .

2.A.. = THE GEOMETRICAL WAY OF THE QUADRATURE :

THE - STEPS :

- 1.. Draw Straight line Segment , CA as diameter , and let E be the center of the circle (E , EC = EA) .
- 2.. Draw Straight line Segment , CP \perp CA , and as diameter , let E' be the center of the circle (E' , E'C = E'P) .
- 3.. From mid-Point O , of the Hypotenuse AP as center , Draw the circle (O , OA= OP = OC) and Complete the Squares , OCBA , OCB'P .
On Perpendicular diameters OB , OB' and from Points B , B' Draw *The Conjugate circles* , (B, BE=EC) , (B' , B'E'=E'C) rerspectively , intersecting the (E, EC) , (E' , E'P) circles at the Points R , R' , respectively,
- 4.. From Points R , R' , Draw the Perpendiculars , RG , R'G , on the Diameter COC' .
- 5.. From Point P Draw the Parallel to the AG line , intersecting CC' axis at Point G' as AG \parallel PG' , and the two circles (O , OA) , (E' , E'P) at Points N , H , respectively.
- 6.. Draw the line NA so that its extension intersects the circle (E , EA) at Point M and Draw Segments CM , CH . and Complete Quadrilateral CMNH , [*which was Proved to be a Square* and calling it , **The Space = The Circles - System**] .
Draw the line NP so that its extension intersects the circle (E' , E'P) at Point N' and Draw the Segments CM' , CH and Complete Quadrilateral CM'N'H , [*which is also a Square calling it , The Anti - Space = The-Idol = The Anti - System*] .
- 7.. Complete the Quadrilateral CAC'P , [*which is a Square*] ,
- 8.. Show that Quadrilaterals CMNH , CM'N'H are Squares , and that $CMNH = [CM]^2 = \pi.[EC]^2$ & $CM'N'H = [CM']^2 = \pi.[EC']^2$

THE - PROOF :

- a...Because the Point M is located on the circle (E , EC) of Diameter CA , therefore angle $\widehat{CMA} = 90^\circ$ and $CM \perp MA \perp MN$.
- b...Because the Point N is located on the circle (O , OA) of Diameter AP , therefore angle $\widehat{MNP} = 90^\circ$ and $PN \perp NA \perp NM$.
- c...Because the Point H is located on the circle (E' , E'C) of Diameter CP , therefore angle $\widehat{CHP} = 90^\circ$ and since angle $\widehat{CHN} = 180^\circ - 90^\circ = 90^\circ$ then $NH \perp HC$.
- d...Because on Quadrilateral CMNH , the angle $\widehat{MCH} = 360^\circ - 270^\circ = 90^\circ$, therefore Quadrilateral CMNH is an Orthogonal-Quadrilateral . Since also the Right-Triangles CMA , CHP on Equal Diameters CA , CP , have their Sides CM , CH Perpendicular each other are also Equals and Side $CM = CH$. **Since Quadrilateral CMNH is an Orthogonal - Quadrilateral with Equal Sides Therefore is SQUARE. o.ε.δ.**

Conclusions :

- 1...Any Point M on arc of (E , EC) circle , between the Points , B , A , forms a Square CMNH on **The Circles** → **System** , and the Square , CM`N`H , on **The-Idol** → **The Anti – System** Both on the → **2-Vectors , 3-Poles Rotating Squares Mechanism** ←
 Since squares CBAO , CAC`P , belong to circles (E, EC) , (O,OC = OA) , therefore This Mechanism carries the Area $\pi.[EC]^2$ of (E , EC) circle , to circle (O,OC = OA) .
 Since the inscribed circle to Square CAC`P is equal to the circle (E , EC) , therefore this Mechanism carries also all Properties of the circle from Point B to A .
 Since also square CAC`P = 2 . CBAO , then $\pi.[OC]^2 = 2. \pi.[EC]^2$. **i.e. The Mechanism carries circle (E , EC) to circle (O,OC = OA) of Double Area .**
- 2...The Circles Anti-circles System are Equal and Placed Symmetrical on Common axis .
- 3...The Rolling of Point M on circle (E , EC) means Point M is moving on the arc having → Radius of Curvature **ME** ⊥ **MT** the Tangent ← at Point M .
- 4.. It was Proved [44] and from Analysis , that when Point B is Rolling on the circumference of circle (E,EC)–[say **Point M**] and MA line extended at Point N of circle (O,OC= OA) by Joining PN which intersects the circle (E` , E`C) at Point H , **Then** the formed Square CMNH is in the circle (O,OC = OA) .
- 5.. When Point M is **on Point B** , common to circle (E, EC) and to center of circle (B, BE) , BA line extended at Point A of circle (O,OC= OA) and Joining PA and intersecting the circle (E` , E`C) at Point O , The formed Square CBAO is the square in circle (E , EC). **Since the Conjugate circle (B , BE) is constant and Unmovable and the Only motion is the Rotational-motion , Therefore This circle (B , BE) carries the Properties of this circle say the Area of circle $\pi.[EB]^2$ in the circle (E , EC) and issues $\pi.[EB]^2 = \pi.[EC]^2$.**
- 6.. When Point M is **on Point R** , common to circles (E , EC) , (B , BE) , **Then** C R N_R H_R is also a Square in the circle (O,OC = OA) .This **Conjugate circle** carries the Properties of circle (B, BE) say ,**The Inscribed Square CBAO** which is equal to that of circle and the **Area of circle = $\pi.[EC]^2$** in the circle (O,OC= OA), **But How ? ⇒ In–Reverse.←**
To Show that at Point R , , Common to circles (E , EC) , (B , BE) , , , , ⇒
The Conjugate circle (B , BE) , Stores its Properties to the Half of circle (O,OC= OA).
 Since OB is Diameter in circle (E , EO) and angle $\widehat{BRO} = 90^\circ$, **therefore** **RB** ⊥ **RO** .
 At this Point R the Radius of Curvature **RB** , is **Perpendicular to AT-tangent** → **RO** and Passes from Point O . Since Geometrical - **Vector RO** is analysed to **RG** ⊥ **COC`** and **GO** in **COC`** then the Right-Triangles **GAO** , **OG`P** are Equal because their interior alternate angles $\widehat{GAO} = \widehat{G`PO}$, and so existes **OG = OG`** .
 By Extending **PG`** on circles (E` , E`C) , (O,OC= OA) occupy the H , N , Points and then Extending **NA** to **M** Point on (E , EC) circle , **Then CMNH is Sqare . i.e.**
 The area of circle (B , BE) ≡ (E , EC) , is Transported to the Half of circle (O , OC), as

$$\pi . [EC]^2 \equiv CMNH = [CM]^2 \quad \& \quad \pi \equiv \frac{CMNH}{(EC)^2} \quad \dots\dots \text{o.ε.δ.}$$

- 7.. When Point M is **on Point A** , common to circles (E , EC) , (O , OC) , **Then** C AC `P is also a Square in rhe circle (O,OC = OA) . **At this Point A** the Radius of Curvature **AE** , is **Perpendicular** (\perp) to AC ` \rightarrow AT-tangent , which Passes from Point C ` , **i.e.** The area of circle (B , BE) \equiv (E , EC) , is Transported to the Halve of circle (O , OC) .
- 8...When we say that Point M is on the **Arc BA** of the circle (E , EC) , then according to the Principles of Euclidean Geometry , this Point is considered to be **Without Position** , and for a Straight-Line Segment , it is also **Without Direction** . This happens because in the Euclidian Geometry Between any Two adjacent Points exist Infinite , ∞ , Points . **The Position is Specified** Only by their **Common Point R** , of intersection of the Conjugate Circle (B , BE=EC) and (E , EC) , and **The Direction is Defined** by the Tangent **RO** , of the Conjugate Circle at their Common Point R . **This commitment Determines for us , The Unique Position of Common Point R of that Square CMNH on arc BA , which Area is Equal to that of the circle (E , EC) .**

3a... THE EXTREAMA METHOD OF SQUARING THE CIRCLE .

The Procedure method of , 2-Vectors 3-Poles Rotating Squares Mechanism :

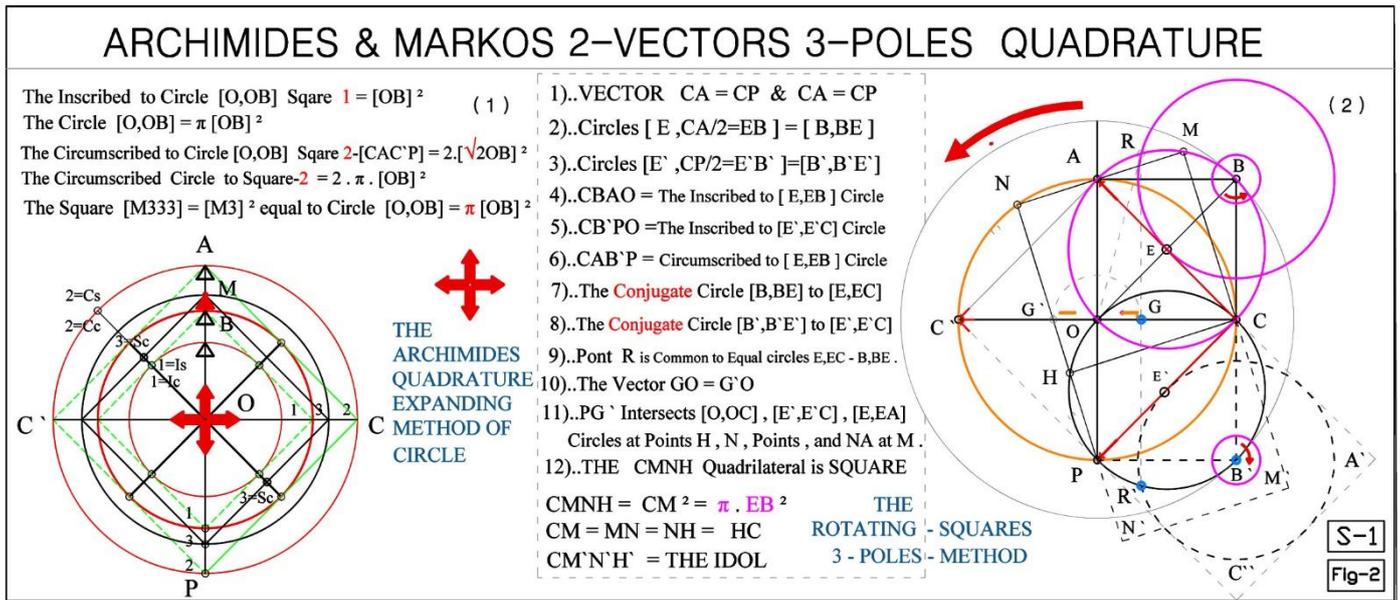


Figure-3-

In (1) , is the ARCHEMIDES Expanding method , of the Inscribed circle [O,O1] \rightarrow to circle [O, OM] and to the circumscribed [O , OA] ..

In (2) , is the 2-Vectors 3-Poles Rotating Squares Mechanism , on where all the Produced Squares are all Adjustable from the three Poles . There is only one Point R such that forms the Square CMNH equal to the circle .

It is shown Fig-4- that when **SPIN** of Photons $= \frac{1}{2}$, is on **B** Point of this Mechanism, then the Energy of the Conjugate circle is the **Electromagnetic Wave** Producing the Photons motion.

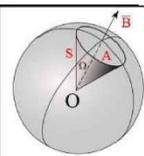
When the **SPIN** $\equiv \vec{B}$ of **Photons** is on this Mechanism , then **Polhode** is the Circle [B,BE] and **Herpolhode** is the circle [O,OA] , where on it the Energy \equiv Curl-motion $\equiv \bar{c} \cdot 2\pi \cdot [EC]^2$.

- a)... The equal CA , CP Vectors , where CA \perp CP and CA = CP
- b)... The equal circles , [E , $\frac{CA}{2} = EC = EA$] . [E' , $\frac{CP}{2} = E'C = E'P$] .

THE DUAL MOMENTUM , \vec{B} & \vec{w} , As REAL \equiv THE - EXISTING - UNIVERSE IN PNS-SPACE AND , As IMAGINARY \equiv THE - BLACK - HOLES

Angular Momentum $\vec{B} = J \cdot \omega^2$

$D = 2 \cdot r$



Polhode - Cone.
Black - Hole.
Polar - Cone.

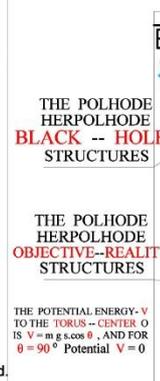
THE PROPERTY OF THE - RECYCLING UNIVERSE AS OBJECTIVE REALITY & THE BLACK - HOLES -

The Quaternion Angular velocity $\vec{w} = s \pm \sqrt{v} \cdot i$

The 4-Solutions of Angular velocity \vec{w} & Momentum \vec{B}

$$\vec{w} = \frac{1}{2} (J_3 \omega_3 / 2J_1 \cos\theta) \pm \sqrt{[-s \cdot Q / J_1 \cos\theta] \pm [J_3 \omega_3 / 2J_1 \cos\theta]^2}$$

- 1.. Angular Momentum $\vec{B}_{BH} = \frac{1}{2} \cdot \pi^2 \cdot r^4 \cdot f_{BH} \cdot i$
- 2.. Angular Velocity $\vec{w}_{BH} = [s \pm v \cdot i] = \sqrt{F_C / M \cdot r}$
- 3.. CHARGE = The Centripetal Force $F_C = M \cdot \omega^2 \cdot r$
- 4.. The Black-Holes Velocities $\vec{v}_{BH} = n \cdot \pi \cdot c = n\pi(\sigma \cdot \Phi)$
- 5.. The Polhode Energy-Cone $= \frac{3}{2} \pi^2 (c/\omega)^2 \sqrt{w^2 - (\pi \cdot c)^2} m^2$
- 6.. The HerPolhode Energy-Cone $= \frac{1}{2} [\pi \cdot r^2] \sqrt{w^2 - r^2} m^3$
- 7.. The Polhode Frequency $f_c = s \cdot Q / [2\pi J_2 \omega]$ Hz
- 8.. The Herpolhode-Vertical-Force = $[\pi \cdot c^2 \cdot \Phi^2] / 4 \cdot R \cdot N$
- 9.. The Polhode-Vertical-Force = $\frac{1}{2} [\pi \cdot r^3 \cdot \omega^2]$ Newton
- 10.. The Herpolhode Material - Angle $\theta = \vec{v}_{BH} \sqrt{[c^2 - w^2]}$ Rad.



THE POLHODE HERPOLHODE BLACK -- HOLES STRUCTURES

THE POLHODE HERPOLHODE OBJECTIVE-REALITY STRUCTURES

Newton's - Action - Reaction

The Universe Polar - Cone.

THE POTENTIAL ENERGY-V TO THE TORUS-CENTER O IS $V = m \cdot g \cdot s \cdot \cos \theta$, AND FOR $\theta = 90^\circ$ Potential $V = 0$

S-2 Fig-3

Figure-4- The Total Energy $2 \cdot E = \text{Spin} = \check{S} = \vec{w} \cdot \vec{B} = \frac{\check{c}}{r} \cdot \vec{B} = \check{c} \cdot \left| \frac{\vec{B}}{r} \right|$, and $\check{c} = \bar{c}_P = \left| \frac{2 \cdot r \cdot \vec{E}}{\vec{B}} \right|$

The Velocity of Photon \bar{c}_P is analyzed to Centripetal $\bar{c}_K \equiv \vec{R}\vec{B}$, Tangential $\bar{c}_T \equiv \vec{R}\vec{O}$

4.A.. = THE MECHANICAL WAY OF THE QUADRATURE , & THE BELLOW MOTION OF DUAL - PHOTONS .

THE - STEPS : Follow the Geometrical - Method of the 2-Vectors 3-Poles and Rotating Squares Mechanism .The **SPIN** $\equiv \vec{B}$ of **Photons** is on this **Mechanism** at the constant Point **B** , as **Herpolhode** the Circle [B , BE] and as **Polhode** the circle [O , OA] , where **On B Point** exists only the **SPIN** $\equiv \vec{B} \equiv \bar{c} \cdot \pi \cdot [EC]^2$. This Quantity of Energy in **Herpolhode** is Stored in [O ,OA] Half circle of the **Total Energy** \equiv The Curl-motion $\equiv \bar{c}_T \cdot 2\pi \cdot [EC]^2$.

It was shown [79] [109] that , The Central Axial-Ellipsoid and \oplus constituent are Rotating through a constant Point O . and the 3-dimension motion of $[\ominus \cup \cup \oplus]$ in **PNS-Space** is the Angular Momentum \vec{B} . The **Material Point KOK** as {The two circles $\ominus \equiv O$, [OK] and $\oplus \equiv O$, [OK] } where Space Point K (+) and Anti-Point K (-) is rotating through Point O which is the center of Common circle and form the **material angle** $\varphi = \varphi_A \cdot t = \left(\frac{v_A}{\sqrt{c^2 - r^2}} \right) \cdot t$, **CREATE** the Cardioid Envelope curves generated by the above Vibrating -Velocity- Energy- Geometry - Segment , KOK on K , [OK] , rolling circle . **In case of Photons , , The Rotation of Space Point K (+) and Anti-Point K (-) through Point O , defines**

Angular momentum \vec{B} , so the Position of Spaces , Point K (+) and Point K (-) , and Momentum are Simultaneously Determined , which is a direct **violation** of **The Uncertainty Principle** . Is was shown also the Rotation with angular-velocity $\vec{\omega}$ for 45° , to the instaneous material axis $OA \equiv [\oplus \leftrightarrow \ominus]$ of rotation where Point A is the , **Nib** , of Angular-velocity vector $\vec{\omega}$, and Sweeps - Out at OA slant height of the Central , **POT - Cone** , with $\vec{\omega} = \frac{v}{R} = 2\pi f$, { Fig-6- } . From above ,

The Velocity of Photon \vec{c}_p On the circumference of the Conjugate Circle (B , BE=EC) is Analyzed to the **Centripetal velocity** $\vec{c}_K \equiv \vec{RB}$, and to **Tangential** $\vec{c}_T \equiv \vec{RO}$, as in Fig.-6- .

Conclusions :

In Fig-4- are shown the **Polhode** circle [PT] , **Herpolhode** circle [2.a] in Plane E . The Polhode Cone-POT is rolling on the Fixed- Herpolhode-Cone **POS** , with a constant Centripetal velocity $\vec{c}_T \equiv \vec{RO} \equiv |\vec{v}| = \frac{\sigma}{2} [1 + \sqrt{5}] \equiv \sigma \cdot \Phi$, dependent on the Pressure σ , of the two material constituents $[\oplus , \ominus]$. Photons motion exists on their **Polhode** and **Herpolhode Conjugates circles** . The Integrated Equations of motion Become Not from the Center of mass O (Fig-1-) , **But** from the center G' . Since motion of \oplus constituent Becomes from Stress , σ , only , then the constant coordinate System is taken at O , with z' axis Perpendicular to the Unit-vector \vec{k} , $[z' \perp \vec{k}]$ which is on OG' axis , (is x axis) . **In PNS - Space** , Momentum \vec{B} is created from the Eternal Rotation of the two Opposite constituents $[\oplus , \ominus]$ with the constant Centripetal velocity $|\vec{v}| \equiv \sigma \cdot \Phi$, **where the Curl of the velocity Vector-Field** is with the ON-Axis Torque $\nabla \vec{v}$, where $\dot{x} = 0$, $\dot{y} = 0$, $\dot{z} = 0$. **In PNS - Space** , time exists only as **Period T** from the Rotating constituents $[\oplus , \ominus]$.

THE MECHANICAL LOGIC & PROOF OF THE BELLOW MOTION :

- 1.. It was Proved [123] and from Analysis that on the **2-Vectors , 3-Poles Rotating Squares Mechanism** , when a Point **M** on arc **BA** is Rolling on the circumference of circle (E,EC) and MA line extended at Point **N** of circle (O,OC= OA) by Joining PN , which intersects the circle |E',E'C| at Point **H** , **Then** the formed **Square CMNH** is in circle |O,OC= OA| **WHEN SPIN $\equiv \vec{B}$ of Photons is on Mechanism at the constant Point B** , then **Herpolhode** is the Circle [B , BE] and **Polhode** is the circle [O , OA] , where on B Point the motion is only the SPINNING $\equiv \vec{B} \equiv \vec{c} \cdot \pi \cdot [EC]^2$. This Quantity of Energy in **Herpolhode** is Stored in the [O , OA] Half circle of the **Total Energy \equiv The Curl-motion $\equiv \vec{c} \cdot 2\pi \cdot [EC]^2$** .
- 2..The Rolling of Point **B** on (E, EC) circle means \rightarrow Radius of Curvature **BE \perp BA \leftarrow tang.** where , \vec{c}_R , \vec{c}_T , are the two constitues of light velocity vector \vec{c} . **i.e. $\vec{c} = \vec{B} / \pi \cdot [EC]^2 = \vec{c}_p = \left| \frac{2 \cdot r \cdot \vec{E}}{B} \right|$** . When Spin \vec{B} is on Point B , common to circle (E, EC) and at the center of circle (B, BE) , BA line extended at Point A of circle (O,OC= OA) , and Joining PA intersects the circle (E' , E'C) at Point O , then the formed square CBAO , is the square in circle (E , EC) . **Since the Conjugate circle (B , BE) is constant and Unmovable and The Only motion is the Rotational-motion SPIN $\equiv \vec{B} \equiv \vec{c} \cdot \pi \cdot [EC]^2$., Therefore The circle**

- (B , BE) carries the motion $\bar{c} \cdot \pi \cdot [EB]^2$ in the circle (E , EC) , where from relation $|\vec{C}_R| \equiv \sigma\Phi$ on AB and from relation $|\vec{C}_T| \equiv \sigma\Phi$ on CO squares issues $\Rightarrow \bar{c} \cdot \pi \cdot [EC]^2 \equiv \bar{c} \cdot \pi \cdot [EB]^2$
- 3.. When we say that velocity Vector \bar{c} is on the Arc \widehat{BA} of the circle (E, EC) , then Any Point is considered to be in **Position** say M , and **Direction** the Tangential-Velocity \vec{C}_T . In order to transfer the Properties of Herpolhode , of the Conjugate circle (B,BE) to the circle (E , EC) , the existence of at least One Common Point between them is required . **The Position is Specified** Only by their **Common Point R** , of intersection of the Conjugate Circle (B , BE=EC) and (E, EC) , and **The Direction is Defined** by the Tangential-Velocity $\vec{C}_T \equiv$ Tangent **RO** , of the Conjugate Circle at Common Point R .
- 4.. At Common Point R , motion of circle (E , EC) becomes from the Tangential velocity $\vec{C}_T = \bar{c} = RO$ which Passes from Point O . The tangential velocity $\vec{C}_T = RO$, on the circular Path is Balanced and Maintained by the Centripetal component \vec{C}_R . The Tangential velocity Vector $\vec{C}_T = \vec{RO}$ is analyzed to the Horizontal and to the Vertical velocities \vec{V}_x, \vec{V}_y . Because of Geometrical Asymmetry of circles [B,BE] , [O,OA] , the Birefringence of \vec{RO} in Axis CC' is the **Path at Point G'** for both $\vec{V}_x, \vec{V}_y = \vec{RG}$ acting Perpendicularly so that $(RG) = (R'G) \perp CC'$. **Since GO = OG' motion is transferred at Point G' , OR**
- The Velocity Vector $\vec{C}_T \equiv \vec{RO}$ Strikes at Point O , ACTS at Point G' , of the axis , within the Axis CC' , as \vec{V}_x , And Perpendicular , as \vec{V}_y , to This Axis with the Rotation Angle $G' \hat{P} O = 2\pi / r^2$ radians $\Rightarrow C' \hat{P} O = 45^\circ$**
- 5.. Extending P G' so as to intersect the Circles (O , OA) , (E' , E'P) at the Points N , H respectively , the Square CMNH and its Symmetrical CM'N'H' are both formed . The Square CMNH is Pushed by the Velocity-component $(OG' = \vec{V}_x)$ towards the Double Area Square CAC'P , At the same time it is Twisted Perpendicularly Pushed [**The Bellow Motion**] towards the Double Area Anti-square CA'C''P , carries Energy into NCMH = CMNH Squares which Areas is the carried Energy $= \bar{c} \cdot \pi \cdot [EC]^2$. The velocity Vector $[\vec{V}_x = OG']$ continuously acting At Point G' , carries Energy in Point C' of the Square C'P CA = 2.CBAO and the Area $\bar{c} \cdot \pi \cdot [OA]^2 \equiv \bar{c} \cdot 2\pi \cdot [EC]^2$, and the **Twisted angle APC' = 45°** . The velocity Vector $[\vec{V}_y = G'P]$ continuously acting on Axis COC' carries Energy in the Symmetrically Square COPB' . The Vector $[\vec{V}_y = G'P]$ continuously acting on Point G' carries Energy in the Point C'' of Anti-Square CA''C''P = 2.CB'PO and of Area $\bar{c} \cdot \pi \cdot [OP]^2 \equiv \bar{c} \cdot 2\pi \cdot [E'C]^2$.
- 6..With above Bellow-Motion , Photon carries the **Herpolhode Energy** $= \bar{c} \cdot \pi \cdot [EC]^2$ into **Polhode** Half-Circle Energy Store , and into the **Anti-Polhode** Half-Circle Energy Store . **The Vector $[\vec{V}_x = OG'] = \text{Polhode} = \bar{c} \cdot \pi \cdot [EC]^2$, carries the Twisted Energy in axis COC' , and creates the Bellow motion of the Axis , denoting the Electric – Field E . The Vector $[\vec{V}_y = G'P] = \text{Anti-Polhode} = \bar{c} \cdot \pi \cdot [E'C]^2$, carries the Pushed Energy on CM'N'H' - Square and creates the Storage , denoting the Magnetic – Field M , of the Electromagnetic Waves E ,M . and thus is Photon Electromagnetic - Waves , $E \perp M$,**

B.. THE IN GREEK METHOD OF SQUARING THE CIRCLE :

1b.. Η ΕΝΕΡΓΕΙΑΚΗ ΚΙΝΗΣΗ ΤΟΥ ΦΩΤΟΝΙΟΥ .

Από τον τύπο Κίνησης των Ουρανίων Σωμάτων $Work = 4\pi^2 \frac{r^3}{T^2} \cdot \bar{n} = 4\pi^2 \cdot r^3 \cdot f^2 \cdot \bar{n}$,

Από Αντοχή των Υλικών (Κ,Γεωργικόπουλου 1963)

Σελίς-19 , τύπος [18] $\rightarrow Cauchy$, $\sigma_1 / 2 = \pm (\frac{1}{2}) \cdot \sqrt{\sigma_1^2 + 4 \cdot \sigma_1^2} = \sigma_1 \cdot [1 \pm (\sqrt{5})] / 2$,

Πού είναι The **Golden-ratio-Pattern** Φ ,

Από Τεχνική Μηχανική των Στερεων Σωμάτων (Κ,Γεωργικόπουλου 1952)

Σελίς-73 , Επίπεδος Κεντρική κίνηση , το Καλυπτόμενο Εμβαδό από την ακτίνα , r ,

είναι Σταθερό όπως ο τύπος του Κεπλέρου , Kepler second Planetary-law as equation ,

$$4 \pi^2 m f^2_o = k , \text{ and from constant law of Areas } 1 = k \cdot \mathbf{f}^2_o \cdot \mathbf{a}^3 .$$

Σελίς-124-125 , τύπος [15] \rightarrow Η Κινητική Ενέργεια είναι $W = 2E = B w = J \cdot w^2 = B \cdot 2\pi f$

ως Μεταφορική και Περιστροφική Ενέργεια $2E = \Sigma (\mathbf{m}_j) \cdot \mathbf{v}^2 + J_e \cdot w^2$.[17]

Σελίς-254-256 , Σχήμα [178] Το Ελλειψοειδές Αδράνειας και Γωνιακής ταχύτητας είναι

Σταθερά και Κάθετα μεταξύ των $J_1 w_1^2 + J_2 w_2^2 + J_3 w_3^2 = 2E = \text{Σταθερό} .$

Σελίς-266 , Σχήμα [181] \rightarrow Στην περίπτωση μηδενικής Ροπής στο Σημείο Στήριξης O ,

η κύλιση Στεραιού είναι η Κύλιση τού Ελλειψοειδούς της Γωνιακής

ταχύτητας , $\bar{\omega}$, επί τού Στεραιού Επιπέδου . είτε της Πολικής ΕΠΙ τής

Αντιπολικής Επιφάνειας .

ΔΗΛΑΔΗ

Επειδή τό Φωτόνιο πού έχει $\frac{1}{2} SPIN = \bar{\omega} \cdot \bar{B}$, ήτοι Ενέργεια Μεταφορική και Περιστροφική , καθώς και Μηδενική Ροπή ως προς το σημείο Στήριξης του , Συμπεραίνεται ότι η Κίνηση του είναι η Κύλιση τού Ελλειψοειδούς τής γωνιακής ταχύτητας $\bar{\omega}$, ΕΠΙ τού Στεραιού Επιπέδου E είτε η Κύλιση τής Πολικής Επιφάνειας ΕΠΙ τής Αντιπολικής Επιφάνειας . Η εκάστοτε Κοινή Γενέτειρα OP των Κωνικών τούτων Επιφανειών ΕΙΝΑΙ ο Στιγμιαίος Άξων περιστροφής .

Βάσει των Ανωτέρω αναφερθέντων Νά Αποδειχθεί ,

1...Ο Μηχανισμός [Markos , 2-Vectors 3-Poles R-Mechanism] είναι η Μέθοδος τού

Τετραγωνισμού παντός Κύκλου Χρησιμοποιώντας Χάρακα και Διαβήτη .

Η Γεωμετρική Αοριστεία τής Συνέχειας των Σημείων επί τού Κύκλου (E , EC) ,

εκλείπει **MONO** στο Κοινό τους Σημείο **R** τού Συζυγούς Κύκλου (B , $BE=EC$).

2...Όταν ένα Διάνυσμα ταχύτητας , \bar{c} , εφαρμόζεται επί τής Περιφέρειας τού Συζυγούς

Κύκλου τού ΜΗΧΑΝΙΣΜΟΥ , [Markos , 2-Vectors 3-Poles R-Mechanism] , ΤΟΤΕ

Εντός αυτού Σχηματίζεται ΕΝΑ Μοναδιαίο Τετράγωνο πού ΙΣΟΥΤΑΙ μέ το Εμβαδό

τού Συζυγούς Κύκλου. Αυτή η ΜΟΝΑΔΑ \equiv ΤΕΤΡΑΓΩΝΟ είναι η Μονάδα μέτρησης

τής Κίνησης των Χωροενεργειακών Στοιχείων τού Φωτονίου πού είναι \rightarrow η Ταχυτης

του \bar{c} , τό Ηλεκτρικό του Πεδίο E , το Μαγνητικό Πεδίο M , και η Στροφή του $2/r^2 \leftarrow$

3...Η Κίνηση τού Φωτονίου μεταφέρει τά Χωροενεργειακά Στοιχεία του , εντός ενός

Μοναδιαίου Τετραγώνου Εμβαδού ίσου με το Εμβαδό τού Ενεργειακού Κύκλου τής

Αντιπολικής . Στο Σχήμα -4- η Αντιπολική ,2a, εντός τής Πολικής τής Μαύρης τρύπας $2r$.

Η ΓΕΩΜΕΤΡΙΚΗ ΚΑΤΑΣΚΕΥΗ ΤΟΥ ΜΗΧΑΝΙΣΜΟΥ

2b.. [Markos , 2- Vectors 3-Poles R-Mechanism] , Σχήμα -1 -

ΒΗΜΑ-1 . Τραβάτε τὰ Ευθύγραμμα και ΙΣΑ Τμήματα CA , CP , ώστε , $CP \perp CA$, και Χαράξετε τούς ίσους κύκλους $(E, EC = EA)$, $(E', E'C = E'P)$ από τὰ μέσα , E , E' , τών Τμημάτων αντίστοιχα.

ΒΗΜΑ-2 . Από τό μέσο O , τής Υποτεινούσης AP ως κέντρο Χαράξετε τον κύκλο $(O, OA=OP=OC)$ και φέρατε την διάμετρο COC'

ΒΗΜΑ-3 . Συμπληρώστε τὰ τετράγωνα , $OCBA$, $OCB'P$, τών ίσων κύκλων , από δέ των Σημείων , B , B' , Χαράξετε τούς Συζυγείς κύκλους , $(B, BE=EC)$, $(B', B'E'=E'C)$ ώστε νά κόβουν τούς ίσους κύκλους (E, EC) , (E', OP) στά σημεία $[R, R']$ αντίστοιχα .

ΒΗΜΑ-4 . Τραβάτε την RG κάθετο από των Συμμετρικών σημείων , R , R' , πρὸς την Διάμετρο COC' , καί φέρτε το συμμετρικό σημείο G' ως προς το Κέντρο O .

ΒΗΜΑ-5 . Επεκτείνετε τήν PG' ώστε να κόβει τούς Κύκλους (O, OA) , $(E', E'P)$ στά σημεία $N - H$, αντίστοιχα . Επεκτείνετε από τού Σημείου N τήν NA ώστε να κόβει τον κύκλο (E, EA) στο Σημείο M , φέρτε τὰς CM , CH και συμπληρώσατε τὰ Τετράπλευρα $CMNH$, $CM'N'H$, αντίστοιχα .

ΒΗΜΑ-6 . Νά Αποδειχθεί ότι τὰ Τετράπλευρα $CMNH$, $CM'N'H$, είναι Τετράγωνα και ισχύει $CMNH = [CM]^2 = \pi \cdot [EC]^2$ & $CM'N'H = [CM']^2 = \pi \cdot [EC]^2$.

ΑΠΟΔΕΙΞΗ .

α).. Το Σημείο M τού κύκλου (E, EC) σχηματίζει την ορθή γωνία $C\hat{M}A$, διότι κείται επί τής διαμέτρου CA τού κύκλου .

β).. Το Σημείο N τού κύκλου (O, OA) σχηματίζει την ορθή γωνία $M\hat{N}P$, διότι κείται επί τής διαμέτρου AP τού κύκλου .

γ).. Το Σημείο H τού κύκλου $(E', E'C)$ σχηματίζει την ορθή γωνία $C\hat{H}P$, διότι κείται επί τής διαμέτρου CP τού κύκλου , και επειδή η γωνία $C\hat{H}N = 180^\circ - 90^\circ = 90^\circ$, επομένως και η γωνία $C\hat{H}N = 90^\circ$

δ).. Το Σημείο C τού κύκλου (O, OC) σχηματίζει την ορθή γωνία $M\hat{C}H = 360^\circ - 270^\circ = 90^\circ$ επομένως το Τετράπλευρο $CMNH$ είναι Ορθογώνιο . Επειδή δε τὰ Ορθογώνια τρίγωνα $CAM - CPH$ έχουν τὰς πλευρές τους καθέτας αλλήλων άρα αι γωνία

των $C\hat{A}M$, $C\hat{P}H$ είναι ίσαι, και επειδή ισχύει η ισότης των τριών τριγώνων AGO
 $AG'O$, POG' , συνεπώς αί πλευραί $CM = CH$,

ε).. Επειδή το Τετράπλευρο $CMNH$ είναι Ορθογώνιο και έχει τίς παρακείμενες
 πλευρές του CM , CH , ίσες μεταξύ των $CM = CH$, ΑΡΑ είναι Τετράγωνο .

στ).. Η Γεωμετρική Αοριστεία τής Συνέχειας των Σημείων επί τού Κύκλου (E, EC) ,
 εκλείπει ΜΟΝΟ στο Κοινό Σημείο R μετά τού Συζυγούς Κύκλου $(B, BE=EC)$.

ΣΥΜΠΕΡΑΣΜΑ :

- 1... Το Τυχόν Σημείο M επί τού τόξου τού κύκλου (E, EC) και μεταξύ των σημείων
 B, A , Σχηματίζει εντός τού Συστήματος των Κύκλων, τό Τετράγωνο $CMNH$
 και το Συμμετρικό του, $CM'N'H'$. Η Γεωμετρική Αοριστεία τής Συνέχειας των
 Σημείων επί τού Κύκλου (E, EC) , εκλείπει ΜΟΝΟ όταν ληφθεί < **Το Τυχόν**
Σημείο M > να είναι το Συγκεκριμένο Κοινό Σημείο τομής R τού Συζυγούς
 Κύκλου $(B, BE=EC)$ και τού κύκλου (E, EC) **ώστε οι Γεωμετρικές των και**
άλλες Ιδιότητες τους να είναι οι Ίδιες μεταξύ των, ως κάτωθι Αναλυτικά „„
- 2... **Εάν** από τού Σημείου B { Σημείο τής Διαμέτρου OB τού Κύκλου (E, EC) }
 Προεκτείνουμε την BA ώστε να κόβει τον Κύκλο (O, OA) στο σημείο $N_A \equiv A$,
 τήν PA ώστε να κόβει τον Κύκλο $(E', E'P)$ στο σημείο H_A , $H_A \equiv O$ και Φέρω
 την CO τότε το σχήμα $CBAO$ είναι Τετράγωνο, όπως τούτο έγινε εξ' αρχής
 Εγγεγραμμένο τού κύκλου.

Όταν το ληφθέν Σημείο είναι ΤΥΧΟΝ, τότε σύμφωνα με τίς Αρχές
 τής Ευκλείδειας Γεωμετρίας θεωρείται το Σημείο ότι είναι Χωρίς
 Θέση, και Ένα Ευθύγραμμο-Τμήμα είναι Χωρίς Κατεύθυνση. Η Θέση
 Συγκεκριμενοποιείται με το Κοινό Σημείο τομής των R τού Συζυγούς
 Κύκλου $(B, BE=EC)$ και τού (E, EC) , η Δέ Κατεύθυνση Ορίζεται η
 Εφαπτομένη τού Συζυγούς Κύκλου στο Κοινό τους Σημείο R .

Όταν από τού Τυχόν Σημείου M Προεκτείνουμε την MA ώστε να κόβει τον Κύκλο
 (O, OA) στο σημείο N_M , τήν PN_M ώστε να κόβει τον Κύκλο $(E', E'P)$ στο σημείο
 H_M και Φέρω την CH_M , τότε το σχήμα $CMN_M H_M$, είναι Τετράγωνο όπως αυτό
 έχει Αποδειχθεί προηγουμένως.

Όταν από τού Σημείου R { Σημείο τομής των δύο Κύκλων $(E, EC), (B, BE=EC)$ }
 φέρουμε την RG κάθετο προς την Διάμετρο COC' και τό σημείο G' συμμετρικό

Τού G ως προς το Κέντρο O , Προεκτείνοντας την P G` ώστε να κόβει τον Κύκλο (O , OA) στο σημείο N , από δέ τού Σημείου N τήν NA ώστε να κόβει τον κύκλο (E , EA) στο Σημείο M , και ενώσουμε τās C M , CH τότε το Σχήμα CMNH είναι Τετράγωνο και είναι ίσον με το Εμβαδό τού κύκλου (E , EA) . Επειδή δε το Σημείο R ανήκει και στους δύο κύκλους , (E , EC) , (B , BE =EC) , επομένως οι Γεωμετρικές των και άλλες Ιδιότητες τους είναι οι Ίδιες μεταξύ των,

Δηλαδή ισχύει και είναι $CMNH \equiv \pi \cdot [CE]^2$. **όέδ.**

Όταν από τού Σημείου A { Σημείο τομής των δύο Κύκλων (E , EC) , (O , OA)} , φέρομεν την AG κάθετο πρόσ την Διάμετρο COC` τότε τό σημείο G $\equiv O \equiv G'$ συμμετρικό τού G ως προς το Κέντρο O , Προεκτείνοντας την P G` $\equiv PO$ ώστε να κόβει τον Κύκλο (O,OA) στο σημείο N $\equiv A$, από δε τού Σημείου A την AA ώστε να εφάπτεται τού κύκλου (E , EA) στο Σημείο A και να κόβει τον κύκλο (O , OA) στο Σημείο C` , και ενώσουμε τās C A , C P , τότε το σχήμα CAC`P είναι Τετράγωνο και Διπλάσιου Εμβαδού , τού Εμβαδού τού κύκλου (E , EA) .

Δηλαδή είναι $CAC`P \equiv 2 \cdot \pi \cdot [EC]^2$. **όέδ.**

Η ΜΗΧΑΝΙΚΗ ΚΙΝΗΣΗ ΤΟΥ ΦΩΤΟΝΙΟΥ ΛΟΓΩ SPIN = $\bar{\omega} \cdot \bar{B} / 2 =$

$$\bar{c} \cdot \bar{B} / 2r = E = \frac{\bar{c}}{2 \cdot r} \bar{B} , \& \rightarrow \bar{c} = \frac{2r \cdot E}{\bar{B}} \leftarrow \text{ΕΠΙ ΤΟΥ ΜΗΧΑΝΙΣΜΟΥ,}$$

[Markos , 2- Vectors 3-Poles Rotational - Mechanism] , Σχήμα -1-2-3-

Το Διάνυσμα \bar{c} , τής ταχύτητας των Φωτονίων , ευρισκόμενο επί τού Συζυγούς Κύκλου (B , BE = EC) τού Μηχανισμού- Markos , Δηλώνει Μάζα m

Υποκείμενη σέ Κεντρομόλο Δύναμη Κινητικής Ενέργειας $E_K = \frac{m \cdot \bar{c}^2}{r} = \text{SPIN}$

Το Διάνυσμα τής ταχύτητας $\bar{c} \equiv \text{ENA}$ Ευθύγραμμο Τμήμα , αναλύεται σέ 2 Συνιστώσες \bar{c}_K , \bar{c}_T , Τήν Κεντρομόλο ταχύτητα πού διέρχεται από το Κέντρο Στροφής τού Κύκλου και Την Εφαπτομένη τής κυκλικής Τροχιάς. Εφαρμόζεται δέ τούτο **ΕΠΙ των Σημείων** τής Περιφέρειας τού Συζυγούς κύκλου (B , BE) .

Όταν το ληφθέν **Σημείο** είναι ΤΥΧΟΝ τότε σύμφωνα με τις Αρχές τής

Ευκλείδειας Γεωμετρίας θεωρείται χωρίς Μέγεθος και Κατεύθυνση , Αυτή η Γεωμετρική Αοριστία τής Συνέχειας των Σημείων επί τού Κύκλου (E , EC)

Εκλείπει ΜΟΝΟ στο Κοινό Σημείο **R** μέ τόν Συζυγή Κύκλο (B , BE = EC).

Επομένως Το Διάνυσμα \bar{c} , τής ταχύτητας τού Φωτονίου Εφαρμόζεται ΕΠΙ τού

Κοινού Σημείου R , των κύκλων (E, EC) , $(B, BE = EC)$. Στο Σχήμα 1, 2, 3 .

ΣΤΟ Σημείο R ,

α). Η Κεντρομόλος $\vec{c}_K \equiv \vec{RB}$ περνά από το Σταθερό Σημείο B τού κύκλου (E, EC) η δε Εφαπτομένη $\vec{c}_T \equiv \vec{RO}$ περνά από το Σταθερό Κέντρο O τού κύκλου (O, OA) , **Διότι** στο Ορθογώνιο τρίγωνο $[BRO]$ η γωνία $\angle ORB$, βαίνει επί τής διαμέτρου OB τού κύκλου και Ισχύει $RB \perp RO$, Το Διάνυσμα \vec{c}_K **Διατηρεί** το Διάνυσμα \vec{c}_T , στην περιφέρεια τού κύκλου (E, EC) μέχρι τού Σημείου R όπου το \vec{c}_T **Επενεργεί** .

β). Η Εφαπτομένη Συνιστώσα \vec{c}_T , **Επενεργεί στο Κέντρο O** , καί αναλύεται σε 2-συνιστώσες την , $\vec{OG} = \vec{GO}$, **ΝΑ** Ενεργεί στο Σημείο G' Επί τού Άξονος CC' , και την $\vec{RG} = \vec{R'G}$, **ΝΑ** Ενεργεί Καθέτως ώστε $\vec{RG} \perp CC'$. **Δηλαδή στο ίδιο Σημείο G' Το Διάνυσμα τής ταχύτητας $\vec{c}_T \equiv \vec{RO}$, Ενεργεί Εντός τού Άξονος $C-C'$, και Καθέτως αυτού τού Άξονα με γωνία Στροφής $G'PO = 2\pi / r^2$ ακτίνια .**

γ). Επεκτείνοντας την PG' ώστε να κόβει τούς Κύκλους (O, OA) , $(E, E'P)$ στα σημεία $N-H$, αντίστοιχα σχηματίζεται τό Τετράγωνο $CMNH$ και το Συμμετρικό του $CM'N'H'$. Το Τετράγωνο $CMNH$ **Ωθείται** από την Συνιστώσα \vec{OG} προς το Διπλάσιου Εμβαδού Τετράγωνο $CAC'P$, Συγχρόνως δέ **Ωθείται** Καθέτως Συστρεφόμενο προς το Διπλάσιου Εμβαδού Αντιτετράγωνο $CA'C''P$,

δ). Η ταυτόχρονη Επενέργεια τού Διανύσματος \vec{c}_T στό Κέντρο O , και η Στροφή στο Σημείο G' , **Μεταφέρει τις Γεωμετρικές και Ενεργειακές Ιδιότητες του** στο **Εντός Αυτού Σχηματιζόμενο ΕΝΑ και Μοναδιαίο Τετράγωνο** πού ΙΣΟΥΤΑΙ μέ το Εμβαδό τού Συζυγούς Κύκλου . Αυτή η ΜΟΝΑΔΑ \equiv ΤΕΤΡΑΓΩΝΟ είναι η Μονάδα μέτρησης τής Κίνησης των Χωροενεργειακών Στοιχείων τού Φωτονίου πού είναι \rightarrow η Ταχύτης του \vec{c} , τό Ηλεκτρικό του Πεδίο E , το Μαγνητικό Πεδίο M , και η Στροφή του $2/r^2 \leftarrow$ **όέδ.** Μάρκος 13 / 3 / 2026 .

Συμπεράσματα :

1-**F1**-Αυτό το άρθρο αποτελεί συνέχεια του 123=ΔΙΑΝΥΣΜΑΤΑ και αφορά την απλοποιημένη Αυστηρή Απόδειξη του προβλήματος < **τού Τετραγωνισμού του κύκλου χρησιμοποιώντας Χάρακα και Διαβήτη** > όπως τέθηκε για πρώτη φορά από τους Αρχαίους Έλληνες. Τα Φωτόνια τετραγωνίζουν τον κύκλο Ενεργειάς τους \equiv **Περιστροφή της Αντιπολικής των** , ώστε να ισούται με ένα **Τετράγωνο Μονάδας-Ενεργειας** , το οποίο τετράγωνο προωθούν, είτε ως η ταχύτητα του Φωτονίου που είναι το **Ηλεκτρικό τους πεδίο** , είτε το αποθηκεύουν κάθετα στην κίνηση σε μια ίση περιοχή, το **Αντιτετράγωνο** που είναι το **Μαγνητικό τους πεδίο** . Η προώθηση γίνεται στο σημείο G' υπό γωνία 45° λόγω τής Διπλής Διάθλασης τού Διανύσματος τής ταχύτητας $\vec{c}_T \equiv \vec{RO}$, και έτσι η κίνηση **Φυσητήρα** είναι η Στρεπτική τους κίνηση.

2-**F8**-Από οποιοδήποτε Σημείο M υπάρχει μόνο Μία Παράλληλη προς τυχουσα Ευθεία $A-B$, Από το Σημείο M , υπάρχει μόνο Μία Παράλληλη προς την , $A-B$, **πρός** \rightarrow **το ∞** , Ευθεία.

Από το Σημείο M , υπάρχει μόνο Μία Παράλληλη προς την , $B-A$, **πρός** \rightarrow **το ∞** , Ευθεία.

3.. **Οι ακτίνες τού Φωτός** και κατά συνέπεια τα **Φωτόνια** ταξιδεύουν σε Ευθείες γραμμές , δηλαδή ακολουθούν την **Ευκλείδεια Γεωμετρία και Καμία άλλη** .

4.. **Ο Χρόνος** είναι το μέτρο, για μέτρηση των αλλαγών στην Ενεργεια , και **ΟΧΙ** άλλη ουσία. Η ουσία του Σύμπαντος είναι \rightarrow **Χώρος \equiv ($\oplus \leftarrow r \rightarrow \ominus$)** , **Ενεργεια \equiv ($\oplus \sigma \ominus$) \leftarrow**

5.. Η Βαρυτική δύναμη G , προκαλεί την κάμψη των Φωτεινών Ακτίνων και **ΟΧΙ** τη **Στρέβλωση του Χωροχρόνου** , Έννοια πού Δεν Υφίσταται και πού ποτέ Διευκρινίστηκε .

THE ELECTRON AND PHOTON CHARGES :

3b.. The Moving and the Stationary Charge of Photon .

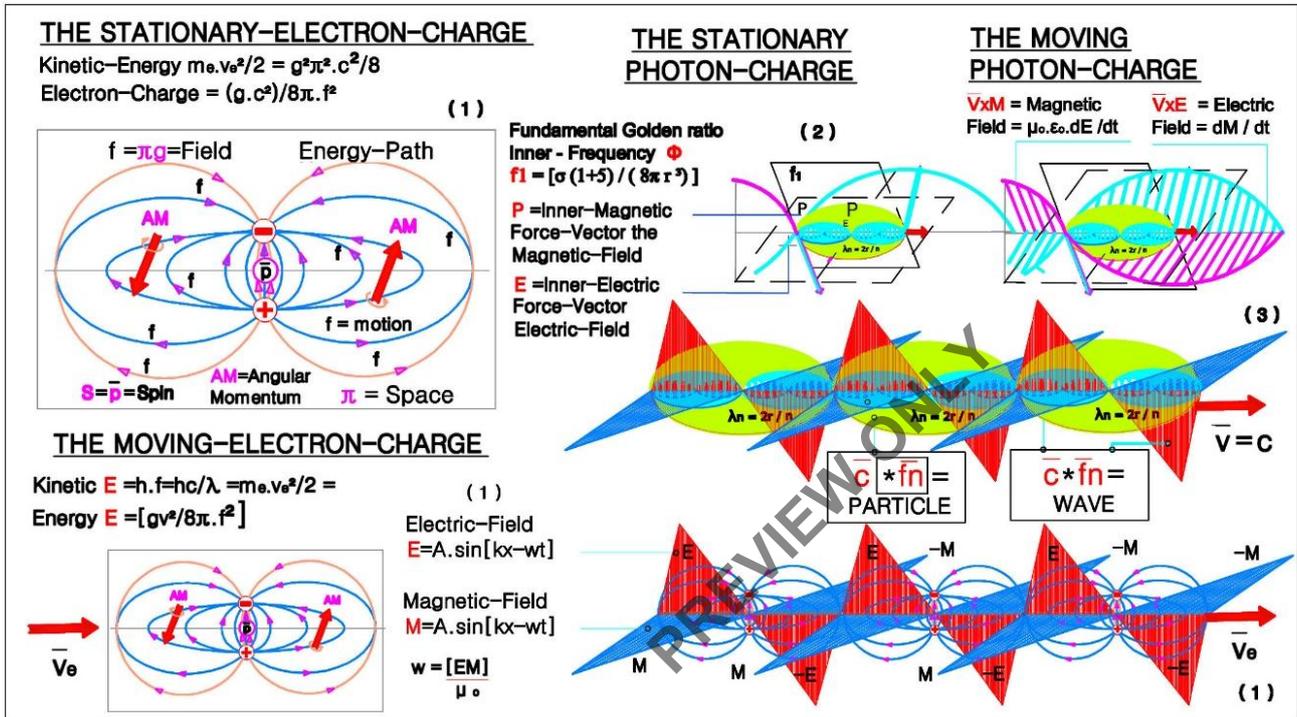


Figure 5. Conservation of motion \equiv Energy in the Primary-Material-Point-Field-lines :

$$\text{Photon} \equiv \text{Energy} \equiv \text{motion} / T \equiv \left(\frac{v}{2\pi r}\right) \cdot [\sigma + \sigma \Phi] = \vec{v} \cdot \left[\frac{\sigma}{2\pi r} + \frac{\sigma \Phi}{2\pi r}\right] \equiv \vec{v} \cdot \left[\vec{f}_n\right] + f_n \equiv$$

$$\text{Moving - Storage} \rightarrow [\vec{v} \cdot \vec{f}_n] \leftarrow + \text{Moving-Frequency} \rightarrow [v \cdot f_n] \leftarrow \equiv \text{Material-Point i.e.}$$

The Energy Produced in Photon-Cave is consisted of **Two-moving-Storages**, which travel. The Stationary-Charged-Particle is from equation, $g.f^2.\pi^3 = 1$, where π is the Closed Space, πg is the Stationary-Electric-Lines, and $f_1 = \sqrt[2]{g^{-1}\pi^{-3}}$, the motion = Energy = **the Stress** in the Two and Opposite-Spaces, $[\{+\} \rightarrow \{-\}]$, or in the consisted Poles, with Infinite Points and Parallel-lines such as \vec{G} which is as An - Uniform-Pointy-Force. Electrons can be Spinning clockwise or anti-clockwise and Propagate on a Spiral trajectory. A true definition of what is Electric-Charge and Electricity based on above follows.

In [1] The-Stationary-Electron-Charge

$$\text{Becomes from Energy - equation } \bar{q} \equiv \frac{m_e c^2}{2} = \frac{g}{4\pi f^2_e} \left[\frac{c^2}{2}\right] = \frac{g c^2}{8\pi f^2}$$

while for Photon is directly from $G = F = \sigma A = (2\pi f r) \frac{A}{\Phi} = wr \frac{A}{\Phi} = \vec{v} \frac{A}{\Phi} = \sigma \Phi^3$, which is a straight-line-Voltage. Since Energy is Produced from motion, which is the continuous removal of $[\{+\} \rightarrow \{-\}]$ and because it occurs in Closed-loops, *The Electric-Field-lines are Straight-lines, in Space Φ and Energy-Field σ* and when these Pass from \vec{g} ocean then continue to be *Straight-lines*, and this because Total-work $W = F.s = [F \perp s] = 0 = h f = 0$.

The Geometry of cave (Tack-Geometry) *controls the Electric-field* and the Stability from \vec{g} while equilibrium from, $g f^2 \pi^3 = 1$, and created from the two opposite Angular Momentum vectors, M_u, M_d , at distance, r , and thus is created the **E-Spin** as $2S = M_u \times [\{+\} \rightarrow \{-\}]$, and is acting on $[\{+\} \rightarrow \{-\}]$ axis . i.e.

The Stationary- Electron - Charge is the Storage of $\mathbf{r} \equiv L_p$, cave in-where the *Space* and *Anti-space*, as $\pi \mathbf{g}$, and as Stationary-Electric-Lines are creating Potential-Energy P_E , with such Geometry that, **to exist from the linear-motion are stored in the form of Dipole - Rotation with a changing-Spin, S , and of frequency $f = 1/T$ in the min-cave**. Here is cleared that frequency $f_e = B / (\pi^2 r^4)$ of Electron is Energy as angular velocity vector motion in \mathbf{r} cave, and this is because in cave exists **the Natural-Frequency $f_n = \sqrt[2]{g^{-1}\pi^{-3}}$** of cave in Electric-Field-lines $\mathbf{E} = g \pi$. Photon Frequency becomes from the

Isochronous motion $w = \frac{2\pi}{T} = \frac{g}{4r} = 2\pi f$ which **Amplitude is Independent of motion**,

and its velocity $\bar{v} = [\frac{G \Phi}{A}]$, is **Dependent on Impedance Z_p** of Space-Anti Space A.

In [2] the Electrostatic Unit of Charge \bar{q}_p , the Quantum of All, which when concentrated at Point $\{+\}$ and placed at a unit distance from an equal and Opposite concentrated quantity $\{-\}$ Is the Pulling with a Unit - force. Mass m_e is the reaction to this Inner motion of $\{+\} \rightarrow \{-\}$ and consists the **Granular- Storage of Energy motion**, which is vibration in a closed loop, and it is a measurable Physical-quantity denoting the Geometry of Electron in \mathbf{r} cave, and Periodic motion. The Geometry of the Periodic motion issues the same such as for and for Material Point with different cave and one-frequency as equation

$$f_e = \frac{(1 + \sqrt{5}) \sigma}{4\pi r} = \frac{\sigma \Phi}{2\pi r} = \frac{\bar{B}}{\pi^2 \cdot r^4}$$

Electric-current is then The flow of the Electric-Charges and which is the moving-quantity of Charges. Since *Electrons* and *Electric Charges* exists in, $\mathbf{g} \pi$ loop-level, therefore IS the Property that controls all interactions between Bodies through these **Electrical-forces**.

In [2] The-Stationary-Photon-Charge is the case of Material Point with **Periodic Orbital motion** where issues the **Tack-Geometry** i.e. the tracks of the Electric-lines Pattern are closed loops and not straight-lines, and also because of the Voltage between the ends, is created the motion as an **Eternal rotation** of the $[\oplus]$ constituent towards $[\ominus]$ constituent, [The opposite issues for Rotational motion where in the **Moving-Photon-Tank** and because of Stress, σ , is created the Centrifugal-Force F_f]. and velocity $\bar{v} = [\frac{G \Phi}{A}]$.

Because $f_n = \frac{\bar{B}}{\pi^2 \cdot r^4} = \frac{\sigma^2 \cdot \Phi^2}{4 \cdot \bar{B}}$ so, the Stress $\sigma = 0 \rightarrow \sigma$, and $\bar{B} = \text{Angular-Momentum} = \text{AM}$ independent of $\sigma \rightarrow \text{AM}$, and Spin is equal to $\text{AM} / \text{Unit-Area} = \text{AM} / \pi$, and because of the Closed **One-way loops**, **Spin is either Positive or Negative** and it is \rightarrow Electric-Charge $\bar{E} = \pm \text{AM} / \pi = \text{E-Spin} = \text{The } \pm \text{ Electron}$. Above Spin disappears the ERP Paradox because is extended and actually is filling up the entire universe. These Stationary-Particles are permanently entangled, with Wave packets becoming from M-P-Photons, which Orientate and Re-orientate their Spins.

In [3] the The-Moving-Photon-Charge Is consisted of the above **Energy-Storage**, the g in **min-cave**, occupying **All Properties of the Stationary-Electron-Charge** and **additionally** the Kinetic-energy $E = \frac{m_e v^2}{2} = g \cdot v_e^2 / 8\pi f_e^2 = \bar{q}_e V = h \cdot f_e$, and $g \cdot v_e^2 = 8\pi h \cdot f_e^3$, or $[v_e^2 / f_e^3] = 8\pi h / g = \text{constant}$, or $v_e^2 / f_e^3 = k$, and $v_e^2 \cdot T_e^3 = k$, and $f^3 (\lambda \cdot f)^2 = f^5 \cdot [\lambda]^2 = k$, **the Kepler Unit of time** i.e. The **Electron-velocity squared** to the **Electron's - cube Frequency** is constant following the Orbit-Unit-Energy equation $k = f_e^2 a^3$, and equal to the Inverse **f squared** to the **Electron's-cube Frequency** in wavelength λ interchanged and keeping light-velocity \bar{c} without any other Force acting on them.

This Kinetic-Energy creates Angular velocity $w = 2E/B = \frac{m_e v^2}{B}$ and the Inwards transverse

Electromagnetic-Waves , $\mathbf{E} \perp \mathbf{M}$, travelling with v_e , inner velocity as equation , $E = A \cdot \sin[kx-wt]$ and as $M = A \cdot \sin[kx-wt]$, and $E = M = A \cdot [1 - \sin wt]$, since $\sin kx = 0$.

i.e. The Moving-Electron-Charge is The Electromagnetic-Wave , $\mathbf{E} \perp \mathbf{M}$, which carries the Stationary-Electron-Charge, and which is The STORAGE of \mathbf{g} , in min-cave inwhere the Potential-Energy P_E , as linear-motion in $\mathbf{g} \equiv \mathbf{r}$ cave is stored in the form of Dipole rotation , *Angular-momentum due to curved motion* , with Spin , \mathbf{S} , is directed from $\{-\} \rightarrow \{+\}$ and to \mathbf{G} - Primary-Direction of frequency $\mathbf{f} = \mathbf{1} / \mathbf{T}$, and which is the Source in cave \mathbf{r} .

The Kepler Unit of time $\mathbf{k} = \mathbf{f}^2_e \mathbf{a}^3$ where $a = \lambda / 2$, consists **the Clock in Nature** and Measures the changes of motions .

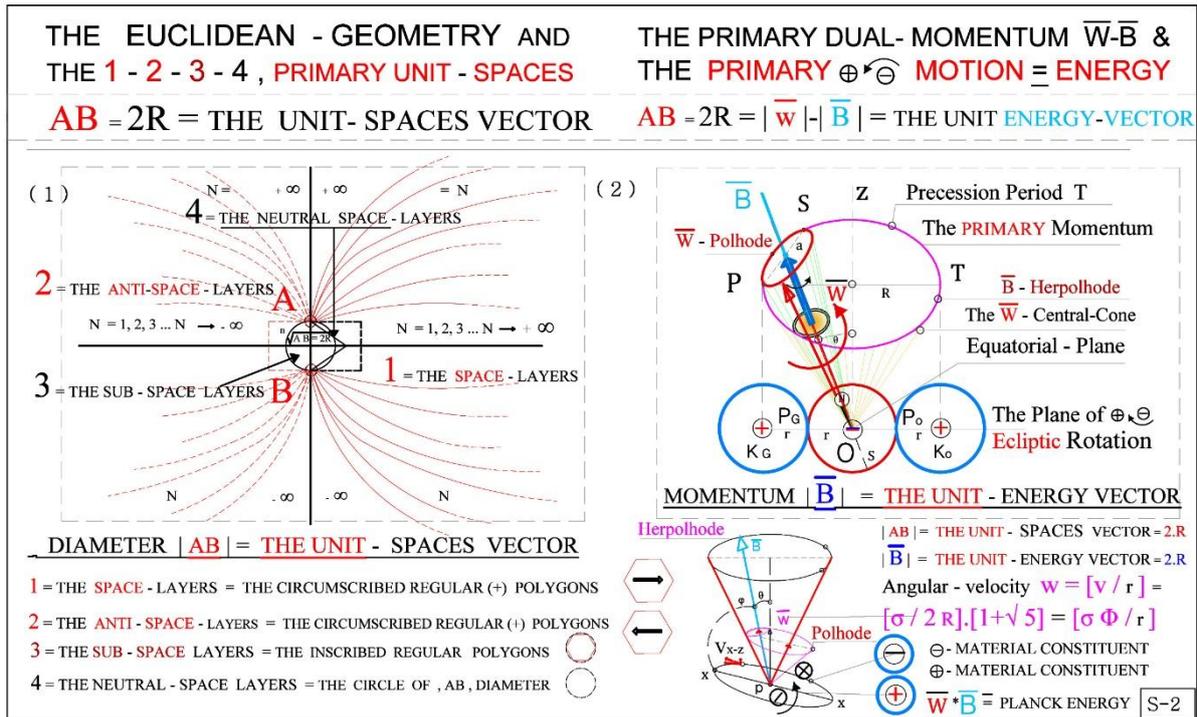


Figure – 6 . The 4-Primary-Spaces of Euclidean-Geometry and the Primary Rotational Quantized motion \equiv The Unit-Angular-Momentum-Energy in PNS Spaces .

4b.. The Bellow motion of Duality-Photon & EM-Quantum Interference :

Quantum Interference is the Phenomenon when , a Photon Interferes with itself .[92E] This Proposition is Right when Photon is considered having a twin-existence , which is [101]-3c.P-21.. The Problem is to determine the expression of the Power developed by Gravitational . From Dual-Photon-equation , $\bar{v} \cdot [\bar{f}_n] + f_n] \equiv | \frac{v}{\pi^2 \cdot r^4_n} | \cdot [\bar{B}_n] + | \bar{c} | f_n$,

When $\mathbf{c} = \mathbf{0}$ or $\bar{c} = \bar{c}$, then Photon motion becomes $\rightarrow | \frac{v}{\pi^2 \cdot r^4_n} | \cdot [\bar{B}_n] \leftarrow \equiv \mathbf{Spin}$.

i.e. The Stationary Photons exist as their Spin only .

This **Rest-Space** is the Part $| \frac{v}{\pi^2 \cdot r^4_n} | \cdot [\bar{B}_n]$, and its Communication Code to be the term $| \frac{v}{\pi^2 \cdot r^4_n} | = | \frac{w r}{\pi^2 \cdot r^4} | = | \frac{2 v}{2 \pi^3 r^4} |$, 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

Is the Torsional motion , and on the light Velocity - Vector \bar{c} , is the gravity g only .

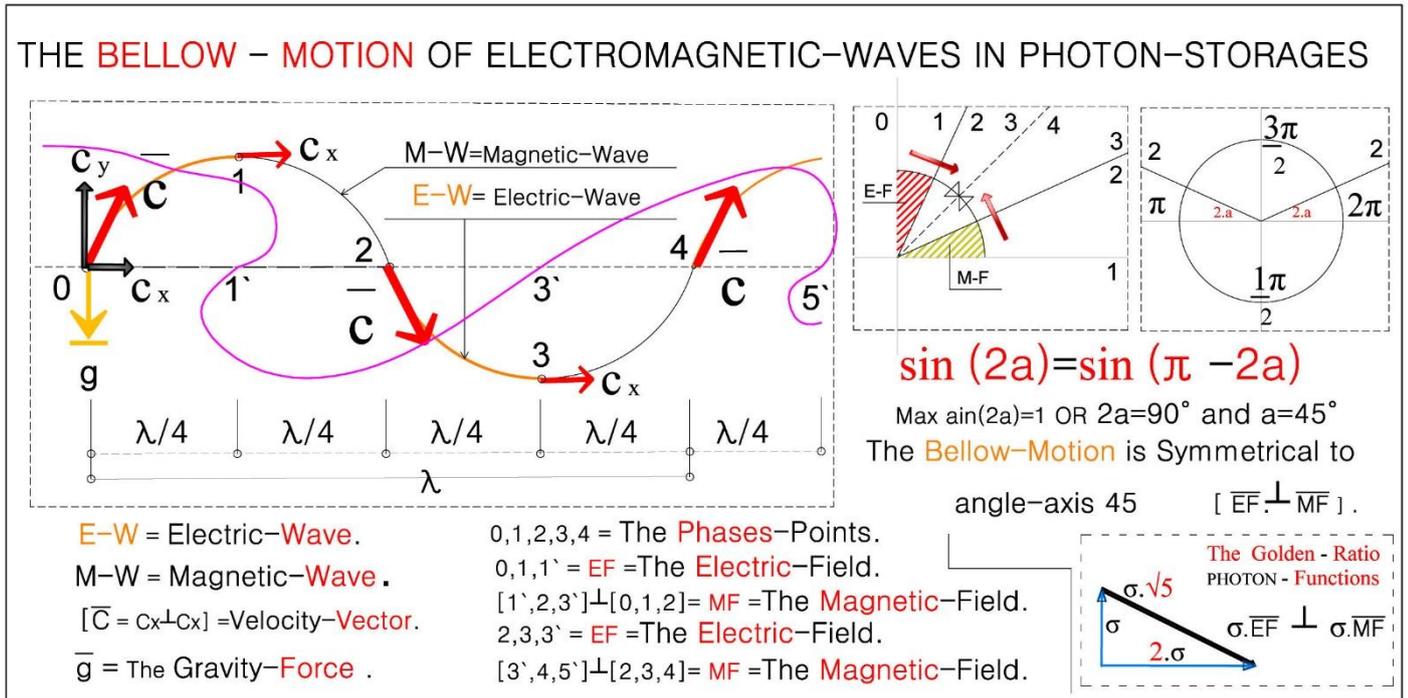


Figure - 7- : The Stability of $\rightarrow \{ \oplus - \text{Space [Electric Wave] } , \{ \ominus - \text{Anti-Space [Magnetic Wave] of the Sub-Space } \{ [\oplus \leftrightarrow \ominus] \equiv ds \equiv [\oplus \leftarrow ds \rightarrow \ominus] - \text{or -The Neutral-Space } [A_E, B_E, C_E]\}$, is succeeded through the Bellow motion :

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 $S_{\max-y} = c_y^2 / 2g = \frac{(c \sin at)^2}{2g} = [\frac{c^2}{2g}] \sin^2 a$, happening at angle $a = 90^\circ$ and where $\sin^2 a = 1$. Since at Point (1) the velocity $v_y = 0$, the motion in 0-1 , maybe considered as falling in linear motion and so issues $v_y = g t$ or time $t = \frac{v_y}{g} = \frac{(c \sin at)}{g}$, as halve Period with total Period $\rightarrow T = \frac{2(c \sin at)}{g}$.

In figure are seen the 4-Point Positions , at where change the Phase and the Work done in each Phase of Photon's inner motion . The 4-Phases correspond to the Wavelength 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 Golden - Ratio Pattern is Stored in the Next and Perpendicular Phase-Area .**

The Total distance for doing Work is the Wavelength λ , in Period T as $\lambda = c_x T = c \cdot \cos a \cdot T$ or $\lambda = c \cdot \cos a \cdot \frac{2(c \sin at)}{g} = [\frac{2c^2}{g}] \sin a$, $\cos a = [\frac{c}{g}] \sin 2a$ (1) since from trigonometry exists , $\sin 2a = 2 \sin a$, $\cos a$.

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° → 45° , the **created Work** $W = c_y g$, and is Symmetrically **Stored** from 0° → 45°

The created Work in [0-1] is in → $\lambda / 4$ 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 → $\lambda / 4$ 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 → $\lambda / 4$ 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 → $\lambda / 4$ of transverse surface and is stored in the Horizontal and Perpendicular surface [3` -4] = $\lambda / 4$. Surface [3 -4 -2] = \perp Surface [4` -5` -4] .

Since from Trigonometry issues $\sin 2\pi = \sin(180 - 2a) = \sin 2(90 - a)$ then (1) becomes,

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

since $\sin 2a = \sin(180 - 2a) = \sin(\pi - 2a)$, and also $\sin 2a = \sin(180 - 2a) = \sin\left(\frac{\pi}{2} - a\right)$

From Dual-Photon-equation , $\bar{v} \cdot \left[\overline{f_n} + f_n \right] \equiv \left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot \overline{B_n} + |\bar{c}| f_n$, when $c = 0$ or $\bar{c} = \bar{c}$, then **Photon motion** becomes → $\left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot \overline{B_n} \leftarrow \equiv \text{Spin}$. i.e. **The Stationary Photons exist as their Spin only** . The **Rest-Space** is the Part $\left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot \overline{B_n}$ where $v = n \cdot \pi \cdot c$, and Communication Code to be the term , $\left| \frac{v}{\pi^2 \cdot r_n^4} \right| = \left| \frac{n \cdot \pi \cdot c}{\pi^2 \cdot r_n^4} \right| = \left| \frac{n \cdot c}{\pi \cdot r^4} \right| = \left| \frac{w r}{\pi^2 \cdot r^4} \right| = \left| \frac{2 \pi \cdot f}{\pi^2 \cdot r^3} \right| = \left| \frac{2 \cdot f}{(\pi r^3)} \right|$ with **Electromagnetic–Radiation** the in monads **frequency-f** , which is satisfied by the relation $\left| \frac{2(rw)}{2v} \right| = \pi / 2 , \pi , 3\pi / 2 , \dots , n \cdot [\pi / 2]$, and $w = n \cdot \left[\frac{\bar{v}}{2r} \right] \times \left[\frac{\pi}{2} \right]$,

where $n = 1 \rightarrow \infty$. **When two Photons** strike each other , $\bar{c} = \bar{c}$, or reflect on a wall , then

$c = 0$, and from **Spin** $\bar{S} = \bar{B} = \pi^2 \cdot r^4 \cdot f_1$ its angular velocity $w = n \cdot \left[\frac{\bar{v}}{2r} \right] \times \left[\frac{\pi}{2} \right] = 2\pi \cdot f_1$,

where then its fundamental frequency $f_1 = n \cdot \left[\frac{\bar{v}}{2r} \right] \times \left[\frac{1}{4} \right] = n \cdot \left[\frac{\bar{v}}{8 \cdot r} \right]$ which for $n = \left[\frac{16 \cdot r^2}{v \cdot c} \right]$ increases

to $\frac{\lambda}{c} \cdot r^3$, and Photon-motion becomes → $\left| \frac{v}{\pi^2 \cdot r_n^4} \right| \cdot \overline{B_n} \leftarrow \equiv \text{Spin}$, i.e. **The Stationary Photons are Spin only and consist an Stationary-Harmonic-Vibration with the same**

Period T of the two Waves [92-E}.

The effective-Range of the Wavelength 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 $\lambda_x = \frac{v^2 y}{2 E_y}$ and since

$v_y = c \cdot \sin(\varphi)$ $\lambda_y = \frac{c^2 \cdot \sin^2(\varphi)}{2 E_y}$ 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, $\lambda_x = v_x T = c \cdot \cos(\varphi) \left\{ \frac{2c \cdot \sin(\varphi)}{E_x} \right\} = \lambda_x = \left\{ \frac{2c^2}{E_x} \right\} \cdot \sin(\varphi) \cdot \cos(\varphi) = \left\{ \frac{c^2}{E_x} \right\} \cdot \sin(2 \cdot \varphi)$ (3)

Since in trigonometry issues, $\sin(2\varphi) = \sin(\pi - 2\varphi) = \sin\left(\frac{\pi}{2} - \varphi\right)$ and in Physics $E_x = g$, then

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

- 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 the Way to Fly**,
 - 6.. **The Transverse E-M- Waves are \perp to Propagation - Direction**,
 - 7.. **The Electric Effective Range is thrust through G only.** [Fig-7].
 - 8.. **With the same initial velocity is succeeded the same Length-Range with Two complementary angles.**

Remarks :

- 1.. The Produced-Work happens at $\lambda / 4$. wavelength in 4-Phases and it is Quantised .
- 2.. The Quantised-Work in $\lambda / 4$. wavelength is the $\frac{1}{2}$ of the first lobe of the Sinusoidal Wave .
- 3.. Photons follow the Aeroplanes Bellow motion to fly as (thrust - drag , weight - lift) .
- 4.. It was shown that when **Two Photons** strike each other $\vec{c} = \vec{c}$ or reflect on a wall **then** $c = 0$ and the produced energy enters the cave r . **The fundamental frequency of the Stationary-cave is** $f_1 = n \frac{\sigma\Phi}{2\pi r} = n \cdot \left[\frac{\bar{v}}{2r} \right] \times \left[\frac{1}{4\pi} \right] = n \cdot \left[\frac{\bar{v}}{8\pi \cdot r} \right]$ which for $n = \left[\frac{8\pi r c}{v \cdot \lambda} \right]$ increases to $\frac{\lambda}{c}$, therefore for $n = N \cdot \left[\frac{8\pi r c}{v \cdot \lambda} \right] = N \cdot \left[\frac{8\pi r}{\lambda} \right]$, and for $N \rightarrow \infty$ then $f_1 = E / h = \infty$ (b)

In Dual Photon $\bar{v} \left[\frac{\sigma\Phi}{2\pi r} + \frac{\sigma}{2\pi r} \right] \equiv \bar{v} \cdot \left[\boxed{\bar{f}_n} + f_n \right]$, **Colours are Still-Sub-Units** of Storage $\left[\bar{v} \cdot \boxed{\bar{f}_n} \right]$, and exist as **Frequencies**, Violet, Blue, Green, which Stabilize with their Complementary colors Yellow, Orange, Red, of wavelength $d = \lambda \rightarrow \lambda_{\min} \approx \lambda_{\max} = 3 \cdot 10^{-7} \text{m} \approx 3 \cdot \sqrt{3} \cdot 10^{-7} \text{m}$

- 4-1.. **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 to Photons in the **Black-Holes** where $d = \lambda = 0$ and in where Energy $E = f_{BE} = \infty$.

- 4-2.. **The Proton Total- Harmonic- Charge** $\rightarrow Q_T \equiv 2 \cdot q_u + q_d$, and from $d = \lambda$ then $f_p = \sqrt{\frac{k}{m\lambda}}$

Applying the above to **White light** , which is composed of all colours of **visible light** with different wavelengths ,when it passes through our atmosphere the tiny molecules cause it to scatter . Scattering or the redirectioning , increases as the wavelength of the light decreases .Violet , Blue , Green , have **Shortest** wavelength and **more Scattering** , while Yellow , Red , Dark-Red have **Longest** wavelength and **Shortest Scattering** , as is the Raylight-scattering . Atoms have a common way for Recognizing the **In-Between Electromagnetic Pattern** , and which is through the , **Resonance of tone** \equiv The **Resonance frequency** ,
 $f_R = \sqrt[2]{\frac{k}{M}}$, where k = Their Stiffness and M = The **Harmonic-mass of their Compound** .

In Mechanics , the Kinetic Energy is equal to Potential $E_K = E_P$, and Total Energy $E_T = 2.E_K = 2.E_P$ or $\rightarrow \frac{1}{2} m v_i^2 = \frac{1}{2} k d = \frac{1}{2} m (w r_i)^2$, and for stability issues , $k d = m w^2 \cdot d^2$, or $w^2 = \frac{k}{m} [\frac{1}{d}]$, or $\bar{w} = \sqrt{\frac{k}{m} [\frac{1}{d}]} = 2\pi \cdot f$, and $f = \frac{1}{2\pi} \sqrt{\frac{k}{m d}}$. From Energy equation $E = h f = \frac{h}{2\pi} \sqrt{\frac{k}{m}} = \frac{6,6260696 \cdot 10^{-34}}{2\pi} \sqrt{\frac{k}{m \cdot d}} = 1,054572 \cdot 10^{-34} \sqrt{\frac{k}{m d}}$. $J = 1,0545717 \cdot 10^{-34} \sqrt{\frac{k}{m}} / (1,602 \cdot 10^{-19} \text{ eV}) = 6,582022 \cdot 10^{-16} \sqrt{\frac{k}{m}}$. $\text{eV} = E_K + E_P$, **i.e.** In Mechanics , The equality of the Two

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

Above Procedure and because of their **common Inertia of Atoms-masses** alllows us to accept the **angular- velocities of each Atom separately** , This Property also exists in Atoms Bonding .

5b.. The Parallel Postulate Photons and Relativity : [38]

AB is a straight line through Points A, B and M any other Point . When $MA+MB > AB$ then Point M is not on AB .(differently if $MA+MB = AB$, then this answers the question of why any line contains at least two Points , **i.e.** for any Point M on line AB where is holding $MA + MB = AB$, meaning that lines MA , MB coincide on AB / is thus Proved from the other axioms and so definition D2 is not an axiom) .

To Prove that , One and Only One line MM' can be drawn Parallel to AB.

Because the Gravitational force G , causes the Bending of the light rays (of Photons) , **and Not The warping of Spacetime as this is shown by the Theory of Relativity** , which meaning is Not existing **Because this Concept has never been Clarified** .

To Prove the above Axiom is necessary to show :

1...The Parallel to AB is the locus of all Points at a constant distance h from the line AB , and for Point M is MA,

2...The locus of all these Points is a straight line.

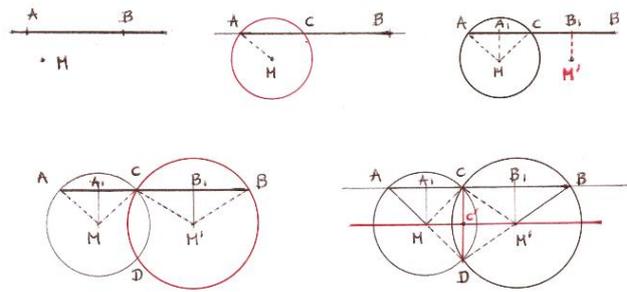
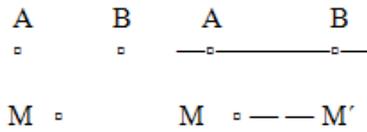


Figure – 8 - : The Three Points .

Step 1

Draw the circle (M, MA) be joined meeting line AB in C. Since $MA = MC$, Point M is on mid-Perpendicular of AC. Let A_1 be the midpoint of AC, (it is $A_1A + A_1C = AC$ because A_1 is on the straight line AC. Triangles MAA_1, MCA_1 are equal because the three sides are equal, therefore angle $\angle MA_1A = \angle MA_1C$ (CN₁) and since the sum of the two angles $\angle MA_1A + \angle MA_1C = 180^\circ$ (CN₂, 6D) then angle $\angle MA_1A = \angle MA_1C = 90^\circ$.(P4) so, MA_1 is the minimum fixed distance h of Point M to AC. A_1

Step 2 .

Let B_1 be the midpoint of CB,(it is $B_1C + B_1B = CB$ because B_1 is on the straight line CB) and draw $B_1M' = h$ equal to A_1M on the mid-perpendicular from Point B_1 to CB. Draw the circle (M', M'B = M'C) intersecting the circle (M, MA = MC) at Point D.(P3) Since $M'C = M'B$, Point M' lies on mid-Perpendicular of CB. (CN₁)

Since $M'C = M'D$, Point M' lies on mid-perpendicular of CD. (CN₁) Since $MC = MD$, Point M lies on mid-perpendicular of CD. (CB₁) Because Points M and M' lie on the same mid-perpendicular (This mid-perpendicular is drawn from point C' to CD and it is the mid Point of CD) and because only one line MM' passes through points M , M' then line MM' coincides with this mid-perpendicular (CN₄)

Step 3

Draw the Perpendicular of CD at Point C'. (P3, P1)

- Because $MA_1 \perp AC$ and also $MC' \perp CD$ then angle $\angle A_1MC' = \angle A_1CC' \dots$ (Cn 2,Cn3,E.I.15)
- Because $M'B_1 \perp CB$ and also $M'C' \perp CD$ then angle $\angle B_1M'C' = \angle B_1CC' \dots$ (Cn2, Cn3, E.I.15)
- The sum of angles $\angle A_1CC' + \angle B_1CC' = 180^\circ = \angle A_1MC' + \angle B_1M'C'$. (6.D), and since Point C' lies on straight line MM' , therefore the sum of angles in shape $A_1B_1M'M$ are $\angle MA_1B_1 + \angle A_1B_1M' + [\angle B_1M'M + \angle M'MA_1] = 90^\circ + 90^\circ + 180^\circ = 360^\circ$ (Cn2), i.e.The sum of angles in a Quadrilateral is 360° and in Rectangle all equal to 90° . (m)
- The right-angled triangles $MA_1B_1, M'B_1A_1$ are equal because $A_1M = B_1M'$ and A_1B_1 common, therefore side $A_1M' = B_1M$ (Cn1). Triangles $A_1MM', B_1M'M$ are equal because have the three sides equal each other, therefore angle $\angle A_1MM' = \angle B_1M'M$, and since their sum is 180° as before (6D), so angle $\angle A_1MM' = \angle B_1M'M = 90^\circ$ (Cn2).
- Since angle $\angle A_1MM' = \angle B_1CC'$ and also angle $\angle B_1M'M = \angle B_1CC'$ (P4), therefore quadrilaterals $A_1CC'M, B_1CC'M', A_1B_1M'M$ are Rectangles (CN3). From the above three

Bosons which combine from above Three-States just by Adding their Spins [36] .

From Cauchy-Stress-Tensor under Plane-Stress conditions the **Equation of Principal-Stresses**

$\sigma_{1,2}$, is $\sigma_1 / 2 = \pm \pm (\frac{1}{2}) . \sqrt{\sigma_1^2 + 4 . \sigma_2^2} = \sigma_1 . [1 \pm (\sqrt{5})] / 2 = \sigma . \Phi$, which is the **Golden-ratio-Pattern** of the Material Point as Type of a vanishing Shear due to layers laterally shifted .

Equilibrium of , ABCD , ABFE , CDEF Quadrilaterals is through Ptolemy`s and Ceba`s Equilibrium - relations , Fig-14 [123] .

The above Material Point is the Energy-Structure of Photon which is Quantized and Equilibrium. **Stability of Photon`s** construction of , ABCD , Rectangle issues through

Ptolemy`s -Theorem for **Inner - Connectors** [AC.BD = AB.CD + AD.CB] , and the

Ceba`s Theorem for the three **Outer Connectors** of , ABCD , CDEF , Rectangles

as \rightarrow [CD.AE.FB = CB.FE.AD] , BDEF , Rectangle

as \rightarrow [BD.AE.GF = BF.GE.AD] , AEFC , Rectangle

as \rightarrow [AE.GF.BC = AC.BF.GE] .

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

This minimum quantized Energy σ , was Proved that is going out the Material Point , *because of Skin effect* , as acceleration and creates the Stationary gravity g as f_n , acting on Spin as

$\mathbf{S_{PA}} . r^4$. The Centripetal Force and equal to Stress σ , is $F_c = mv^2 / r = \frac{d^2s}{dt^2} = - g . \frac{s}{4r}$ **or**

$\{ \ddot{s} = - w^2 \dot{s} \cdot 1 . (wr)^2 / r = w^2 . r = \pm \sigma = (2\pi . f_1)^2 . r = \sigma_1 . [1 \pm (\sqrt{5})] / 2 = \Phi . \sigma$, and since mass is

$m = \frac{\sigma}{w^2 . r} = \frac{\sigma}{w . c} = \frac{\bar{B}}{r . c}$ then , $\pm \sigma = \frac{c . \bar{B}}{r^2}$ which is a relation between Stress Momentum and light-velocity c . It was shown in [70-P32] that in a Cycloid , the area between the curve and the straight line is $A = 3\pi r^2$ and the arc length $l = 8r$. For the motion on cycloid , we consider a Weight Q , at a point A , moving with free motion.

Since reaction N is vertically acting , doesn`t give any Tangential component therefore the only one becomes from Q , which is equal to $AT = g . \sin \varphi$ and since $\sin \varphi = \frac{s}{4r}$ and then $AT = g . \frac{s}{4r}$.

Since acceleration $a = \frac{d^2s}{dt^2} = \frac{dv}{dt} = \frac{d}{dt} (\frac{ds}{dt}) = - g . \frac{s}{4r}$ then *where* $w = \frac{2\pi}{T} = \frac{g}{4r}$ } ... (a) which (a) is a Harmonic Oscillatory motion showing that Acceleration is proportional to displacement

and is directed towards the origin with a Period $T = \frac{2\pi}{w} = 2\pi . \sqrt{\frac{4r}{g}} = 4\pi . \sqrt{\frac{r}{g}}$, or and $w^2 = [\frac{g}{4r}]^2$,

where ,

$w = 2\pi f$. **Origination of Frequency , or Period** , happens from above Property where

$w = [\frac{g}{4r}] = 2\pi f$. In Material-Point the Cycloidal-acceleration g_{cyc} is transformed as

Centrifugal acceleration $g_{cyc} = | \frac{(v)^2}{R} | = \frac{g}{4r}$, where r = the Radius of the Cycloidal-circle and R = the radius of curvature . In Cycloid velocity-vector $\bar{v} \equiv \bar{\sigma}$, and it is the Glue-Bond-Stress

between the Opposites \oplus , \ominus so velocity $\bar{v} = \bar{w} . r = 2\pi . \bar{f} . r = \bar{\sigma} = \sigma \Phi$, the Frequency

$\bar{f} = | \frac{\bar{\sigma} = [\sigma \Phi]}{2\pi r} |$ and the Total-Energy $2L = J . w^2 = 4\pi^2 . f^2$. The Circular frequency is $w^2 = \frac{(\sigma \Phi)^2}{r^2} =$

$[2\pi f]^2$, and the **Frequency of Photon** is $\rightarrow f_p = | \frac{\sigma \Phi}{2\pi r} | = \frac{[1 + \sqrt{5}] \sigma}{4\pi r} = \frac{\sigma . \Phi}{2\pi r}$ (a) **i.e.**

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

Since Total-Energy $L = B w = \frac{J . w}{2} w = \frac{J . w^2}{2}$ then $2L = J . w^2$, and $\bar{B} = r . mv = r \frac{\pi . r^4}{2} 2\pi f r = \pi^2 . r^4 . f$.

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

Frequency of Photon is $f_n = \frac{[(1+\sqrt{5})\sigma]}{4\pi r} = \frac{\sigma\Phi}{2\pi r}$, where $\Phi = \frac{(1+\sqrt{5})}{2} = 1,6180339887$ and, $2r$ is The Diameter of Energy-Cave $AB = 2r$ of circle $(O,OA) = \text{Monad} \rightarrow \oplus \leftrightarrow \ominus \equiv 1 + \Phi$ and $BC = |\sigma| =$ The **Glue-Bond-Vector**, $\oplus \leftrightarrow \ominus$, from the main-Stresses magnitude .
 $ABCD = |\sigma|.|\Phi+1| =$ The **Energy-Space** Rectangular Parallelogram in Plane ABC .
 $ABFE = -|\sigma|.|\Phi+1| =$ The **Energy-Anti-Space** Rectangular Parallelogram in Plane ABC
 $BF = |\Phi.\sigma| =$ The **Anti-Space-Vector**, and $FG = |\Phi| =$ The **Space-Vector** magnitude .

In circle of AB diameter is created the Stress $\sigma = BC$ and both the Resultant-monad $BD = AC$.
 From Kepler 2nd Orbit laws the Unit-Quantized-Area, or Unit Quantized Energy is that per /sec $\rightarrow r . d\varphi$, following equation $1 = k . f_u^2 r^3$, and expresses the area of triangles in Fig-9- .

In Figure \rightarrow Triangle 2(ABC) = BC.BA = $\sigma.|\Phi+1| \equiv \sigma.\Phi + \sigma =$ [**Stress-In-Storage- Φ**] + [**Moving-Stress**] Or **Storage S** \equiv [$\oplus \leftarrow r \equiv \Phi \rightarrow \ominus$] + **Motion M** \equiv [$\bar{v} - \text{Vector}$]

and from Figure -3- where Stress σ is the motion and $\sigma\Phi$ the Storage, issues Geometry, Triangle 2(BFG) = FB.FG = $\sigma.\Phi[\Phi] = \sigma.\Phi^2 = \sigma.|\Phi+1| \equiv \sigma.\Phi + \sigma \equiv S_{\text{storage}} + M_{\text{motion}}$
 Triangle 2(DEG) = EG.ED = $\sigma + \sigma\Phi = \sigma.[1 + \Phi] \equiv \sigma.\Phi + \sigma \equiv S_{\text{storage}} + M_{\text{motion}}$, and since Energy = motion / T $\equiv \left(\frac{v}{2\pi r}\right) . [\sigma + \sigma\Phi] = \bar{v} . \left[\frac{\sigma}{2\pi r} + \frac{\sigma\Phi}{2\pi r}\right] \equiv \bar{v} . \left[\bar{f}_n + f_n\right] \equiv$

Moving - Storage $\rightarrow [\bar{v} . \bar{f}_n]$ \leftarrow + Moving-Frequency $\rightarrow [\bar{v} . f_n] \leftarrow \equiv$ Material-Point i.e.

The Energy produced in Photon-Cave is consisted of **Two-moving-Storages**, that travel **as Wave** $[\bar{v}.f_n] \rightarrow [\bar{v} . \bar{f}_n] \rightarrow [\bar{v} = \bar{c} = \lambda \frac{f}{\Phi}] \rightarrow [S \equiv EM-R \equiv f_{1=N}, f_2, f_3, f_D, f_n = w^2]$ 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 **The Duality** of an **Energy-Storage S** $\equiv \{ [\oplus \leftarrow r \rightarrow \ominus] + \text{Motion M} \equiv [\bar{v} - \text{Vector}] \}$,

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

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

3.b.. The moving Storages of Photons and The Stability of Dual-frequency f_{photon} :

Photon is a Material-Point in cave r , where its **Inner** is **The Stationary - Standing-Wave** **From** Electromagnetic-Wave $[E^2+H^2] = 2(2r).c.\sin 2\varphi$ with n Lobes representing the **Normal mode vibration** with frequencies $f_n = n.f_1 = \frac{E}{h} = \frac{n.v}{4r} = \frac{n\sigma}{8r} [1+\sqrt{5}]$, and its **Outward** is **as the Propagating Electromagnetic-Wave** $\rightarrow \{[\epsilon E^2 + \mu B^2] = 2.\lambda c.\sin.2\varphi\} \leftarrow$ where Particle $2r = n\lambda$, **Cave** r , is the **Electromagnetic-Energy-Storage**, and Electromagnetic-Radiation E, B , is the **Wave conveyer** .

Following above constituents of Photon then, Since **Energy is motion** and the **Total - Energy of Elementary - Particle** is equal to the \rightarrow **Intrinsic Rotational + Kinetic Energy**

from velocity , then according to the conservation law of Energy , **This Energy is stored into Neutral caves as Stationary Loops consisting the Lobes** , and thus producing the **Space and the Anti - Space Particles with velocity vector the remaining of the Energy Term** .

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

The Breakage - Principle, is the Way of Energy conservation, where Energy never annihilates and which is always reverted into \rightarrow the two Opposites $\{ (\pm \mathbf{w})$ or the Conveyers \equiv Carriers $\}$ and an Neutral Part $2 \cdot \nabla i$ which is the Energy - Store \equiv a Tank \equiv The Magnetic fields .

Energy \equiv or as **Matter** $(+ \mathbf{w})$, as **Antimatter** $(- \mathbf{w})$ and as **Energy Part** , $2L = \bar{\mathbf{B}} \cdot \bar{\mathbf{w}}$,
i.e. Energy \equiv Motion \equiv Space + Anti space + Kinetic Energy ,

Vibrations of Systems issues for Orbits as $\rightarrow \mathbf{W} = 4\pi^2 \cdot \frac{r^3}{T^2} \cdot \bar{\mathbf{n}} = 4\pi^2 \cdot r^3 \cdot \mathbf{f}_p^2 \cdot \bar{\mathbf{n}} \leftarrow$ and agree , to Kepler celestial law such as for **macrocosm and for microcosm** .

Using the Material - Geometry-Vectors for the **Anti - Space Action** then ,

From Force $G_{ON-AntiSpace} = \bar{\mathbf{A}}\mathbf{B} \times \bar{\mathbf{B}}\mathbf{F} \equiv [\Phi+1] \times \{ |\bar{\sigma}| \cdot \Phi \equiv \sigma \cdot \Phi \} = \Phi^2 \cdot \sigma \Phi = \sigma \cdot \Phi^3$, or ,

$G_{AN} \equiv \bar{\mathbf{A}}\mathbf{B} \times \bar{\mathbf{B}}\mathbf{C} \equiv \sigma \cdot \Phi^3 \equiv \boxed{\bar{\sigma} - \text{Stress}} \boxed{[\oplus \leftarrow \Phi \rightarrow \ominus]} \boxed{[\oplus \leftarrow \Phi \rightarrow \ominus]} \boxed{[\oplus \leftarrow \Phi \rightarrow \ominus]}$

and $\rightarrow \rightarrow \rightarrow$ **Primary-Energy $\equiv \mathbf{G} \cdot \mathbf{f}_p \equiv \mathbf{h}$** and OR $\mathbf{G}^{-1} \times \sigma \times \Phi^3 \equiv \mathbf{1} \leftarrow \leftarrow \leftarrow$ where

$\mathbf{G} \equiv$ The Newton`s-Universal Force = $6,680561 \cdot 10^{-11} \text{ m}^3/\text{Ns}^2$

$\sigma \equiv$ The Glue-Bond-Stress in Material-Points $\sigma = \frac{2\pi r f}{\Phi} = 1,85 \cdot 10^{-11} \text{ Kg/m}^2$ and , f ,

in Planck`s length $r = L_p = e^{-i \cdot (5\pi/2) \cdot 10}$ is the Frequency $f_{\text{Planck}} = \frac{c}{2\pi r} = 2,952362 \cdot 10^{42} \text{ H}$,

in Planck`s Length $L_p = e^{-i \cdot (5\pi/2) \cdot 10} = \{ \sqrt{3} \cdot \pi \cdot 1,616199 \cdot 10^{-35} \text{ m} \}$

$\Phi \equiv$ The Golden-Ratio Pattern $\Phi = \frac{(1+\sqrt{5})}{2} = 1,6180339887$

From above relations is seen that , in Universe exists the only one Force $G \equiv \sigma \cdot \Phi^3$, which is Acting on all **Quantized-Quantities as below** ,

$\rightarrow \mathbf{G} \equiv \sigma \cdot \Phi^3 \equiv \Phi^2 \cdot [\{\sigma \Phi\} \equiv 2\pi f_p r \equiv \mathbf{w} r \equiv \bar{\mathbf{v}} \equiv \mathbf{m} \mathbf{a} = \bar{\mathbf{c}}] \leftarrow$ and From $\sigma \times \Phi^3 \equiv \mathbf{G} \rightarrow [1,846462 \cdot 10^{-11}] \cdot [3,618033989] = 6,680561 \cdot 10^{-11} \text{ o.e.}\delta(\text{q.e.d})$

i.e. Universe is a Monad , Becoming from a **HUGE-MAGNET** of Opposites \oplus , \ominus which Forms \rightarrow The **3-Dimentional SPACES** , Φ , **ANTI-SPACES** $|\Phi \cdot \sigma|$, and \rightarrow Energy , where **ENERGY \equiv MOTION** through the **G - Force** , and the Stress - σ - becoming from Photon . Or .

The Ubiquity of Material-Geometry in Electromagnetism is Everywhere .

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

a.. From equations $f = \frac{\sigma_1 \Phi}{2\pi r}$ and $\sigma_1 \cdot [1 \pm (\sqrt{5})] / 2 = \sigma \cdot \Phi$, then **Frequency f_p** , of Photon , is Independent of the Amplitude $[\epsilon E^2 + \mu B^2]$ of the Vibration , it is **Not-Damped and Not-Driven** , and so can be related to **Any-Force that can Produce Work \equiv Energy as Wave** and thus can be **Quantized to any Monad** . The Electromagnetic-Spectrum \equiv **Photon** in all its frequencies , which as **Frequency f** , or as **Period T** , is the Regulator of the Light - Signals .

b.. **Photon** striking on an Object of Microcosm or Macrocosm then , **It is a Source**

that **Gives** → **Energy** as Energy-Storage, $\boxed{\bar{f}_n}$, and **Information** as the G-Ratio
 Propagating - Energy f_n .

- c.. **Photon** in the Microcosm of Hydrogen-Cave can-Give such **Potential - Energy or Resonance Energy** as **Frequency** f_R and Energy in [**Bracket-Orbit-Hook**] which Joins the **Atoms to Produce** the **Molecules and Crystals**, MRI Photos and all Spectrum frequencies.
- d.. **Photon** striking on **Hydrogen-Cave** can Produce the **Resonance-Energy–Frequency** f_R , such that can Produce **Photos** and **Image-Fringes** of Inter-Atom or any other Structures in Atoms.
- e.. **Photon** striking on **Cells** can Produce a **Resonance-Energy–Frequency** f_R , such that can **Enter Cell** and **Break-It-Up**. Duality-Photon Places the Storages $\boxed{\bar{f}_n}$ everywhere then it stops and diffuses. The **Kinetic-Energy** E_K of a moving Material - Point, *as this is the Photon*, is stored as motion in its Storage, $r = [n \lambda / 2]$ with the, n frequencies $f_n = n \cdot f_1$, with n lobes and with the fundamental frequency f_1 .

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

Above procedure can be used in **Cells** where cells are cases of a **Birefringence material** and their **Resonance Passage** happens as the Force of **EM-Radiation in Two directions**, *can travel in Cell* through **Cauchy Stress Tensor** where the Two Conveyers $E \perp B \perp r \equiv \sigma_1 \perp \sigma_2 \perp \sigma_3$, can carry the Energy-Storage, r , in Cell. Interfacial Properties are detected from Surfactant, **and can change the Inner-Structure of Cell to another desirable Property**. A wide Analysis in [84-86-90].

Moreover, in open Conductors the Conductor's Resultant-energy-Vector is as an **Cruise -missile** where for Primary-Forces Energies $|k_x \cdot k_y| = |\leftrightarrow|, |\updownarrow| \equiv \nabla$ become very strong **Cruise-Ballistic-missile**.

The Dual Property of The **Simultaneous existence** as Electric and as Magnetic Fields in wavelengths, λ_x, λ_y , as **Effective Range** which is thrust through the Newton's Gravitational Force G , only becomes from the Trigonometry relations,

$$\sin(2\varphi) = \sin(\pi - 2\varphi) = \sin\left(\frac{\pi}{2} - \varphi\right) \text{ and from Physics } E_x = g,$$

- 4... **Maxwel Electric Displacement current** $\vartheta D / \vartheta t$ is created from (c_x, c_y) **Vectors motion**, which happens from the gravity continuous action which produces the Work $W = c_y g$, Since E-W, M-W, are both the Resultance of circular -frequencies W_R ,

it reveals the coupling of motion $\{E-W\} \rightarrow \vartheta \sqrt{c_x^2 + c_y^2} / \vartheta t$, and

$$\{M-W\} \rightarrow \vartheta \sqrt{c_x^2 + c_y^2} / \vartheta t, \{E-W\}.$$

This means that the Source-charge of Electromagnetic waves are the Vectors =

Resultants E-W , M-W , where $W_{RX} , W_{RY} = \vartheta \sqrt{c_x^2 + c_y^2} / \vartheta t$, and

$W_{RZ} = \sqrt{c_x^2 + c_y^2} = \vec{c}$, and are

E-W = The Kinetic Energy and M-W = The Potential Energy Propagating From one Position to another without any matter being transferred . Both are Propagated by the action of the Gravity , g. c_y which exists without mass , through Gravity-Field-medium continuously only.

The Dual-Property of Particles and Waves allow Electromagnetic waves to Propagate in an definite direction and simultaneously to Propagate themselves along , and independently of the medium , and this because are created by the vibration of an electric charge [\oplus , \ominus] .

4.b.. The Origination of Spin \bar{B} :

It is an Application to Material-Points [$\oplus \leftrightarrow \ominus$] by considering the Positive-constituent with angular velocity $\bar{w} = \bar{v} / r = \frac{\sigma}{2r} [1 + \sqrt{5}]$ (1) [70] and for an angle 45° from , x , axis , where then the Ellipsoid of Angular-velocity is Perpendicular to the Plane of motion . Moment of Inertia to , z , axis is that of sphere equal to $J_3 = \frac{\pi r^4}{4}$ which is the same in all

Principal axes , and exists , $J = J_1 = J_2 = J_3 = \frac{\pi r^4}{4}$, therefore Angular-kinetic-energy \equiv Angular-velocity-Ellipsoid and then becomes , $J_1 w_1^2 + J_2 w_2^2 + J_3 w_3^2 = 2E$ (2)

The Energy-Ellipsoid as $\bar{B} \equiv$ Spin are , $w_1^2 + w_2^2 + w_3^2 = \frac{2E}{J} = \frac{32 E}{(\pi r^4)^2} = \frac{B^2}{J^2}$.

Angular-momentum \equiv Spin $\equiv \bar{B} \equiv [r \sigma (1+\sqrt{5})]$ (3) In Figure -14- and

for the center , K , of \oplus sphere , issues $\bar{w}_K = [\bar{w} . \bar{r}_K] = [\frac{\sigma[1+\sqrt{5}]}{2r} 2r] = \sigma [1 + \sqrt{5}]$ and $\bar{B} = \bar{S} = [\bar{r} . m \bar{v}] = [r . m . \sigma(1+\sqrt{5})] / 2$ and for m=1 then $\bar{B} = [r \sigma (1+\sqrt{5}) / 2]$. The Interchangeable Ellipsoids of Angular velocity [70-P49] , and Momentum for the same Moment of Inertia is $J_1 = J_2 = J_3 = J$, and Angular Velocity $w_1 = w_2 = w_3 = w$, and Momentum $B_1 = B_2 = B_3 = B$

becomes $3J w^2 = C$ and $3B^2/J = C$ and since for circle $J = \frac{\pi r^4}{4}$ then $\frac{3\pi r^4}{4} w^2 = C = (\frac{3\pi r^4}{4}) w^2 = (\frac{3\pi r^2}{4})(rw)^2 = (\frac{3\pi r^2}{4}) [\frac{\sigma}{2} (1 + \sqrt{5})]^2 = \frac{3\pi r^2 . \sigma^2}{8} [3 + \sqrt{5}] \rightarrow$ *The Ellipsoid of Angular-velocity, \bar{w} ,*

and $3B^2/J = \frac{3(rmv)^2}{J} = \frac{3(rv)^2}{J} = \frac{3r^2 . \sigma^2 [3 + \sqrt{5}]}{2} [\frac{4}{\pi r^4}] = \frac{6 . \sigma^2 [3 + \sqrt{5}]}{\pi r^2} \rightarrow$ *The Momentum-Ellipsoid , \bar{B} .*

From equation $3B^2/J = \frac{6 . \sigma^2 [3 + \sqrt{5}]}{\pi r^2}$, and for $J = \frac{\pi r^4}{4}$ then $B^2 = \frac{\pi r^4}{3.2} \frac{6 . \sigma^2 [3 + \sqrt{5}]}{\pi r^2} = 4 . r^2 \sigma^2 \Phi^2$ and

The Angular-momentum In Planck`s-Length \equiv Spin $\equiv | \bar{B} | \equiv 2 . r \sigma \Phi = 2 . \pi . r^2 . f \dots$ (s)

The value of $| \bar{B} | = [2 . 8,79455 . 10^{-35} . 1,6180339] = 2,845976 . 10^{-34} \{ Kg/m/s \}$.

For Planck-Length $r_p = 1,61623 . 10^{-35} \sqrt{3} \pi = 8,79455 . 10^{-35} m$, velocity $| \bar{v} | = \frac{\sigma}{r} [1 + \sqrt{5}]$

and from (s) then \rightarrow Planck-cave-Stress $\sigma = \frac{\bar{B}}{4r . \Phi} = 1$, Total-Energy $2E = [J w]^2$,

From $| \bar{v} | = \frac{\sigma}{r} [1 + \sqrt{5}] = c = 3 . 10^8 m/s$ then , $\sigma = \frac{3 . 10^8}{3,679551 . 10^{34}} = 8,1477332 . 10^{-27} Kg/m^2$

$| w | = \frac{\sigma}{2r} [1 + \sqrt{5}] = (\frac{8,1477332 . 10^{-27}}{2 . 8,7945510^{-35}}) . 3,2360675 = 1,499 . 10^8$, or $| w | = 1,5 . 10^8 rad / sec$,

For $\sigma = 8,147733 \cdot 10^{-27} \text{ Kg/m}^2$ and $\bar{B} = 5,691952 \cdot 10^{-34} \text{ J}$ then , Period $T = \frac{2\pi}{w} = \frac{2\pi r}{v} = \frac{4\pi r}{\sigma(1+\sqrt{5})} = \frac{4\pi \cdot 8.79455 \cdot 10^{-35}}{\sigma(1+\sqrt{5})} = \frac{3,4151}{\sigma} 10^{-34} \text{ s}$, or **Period T** = $[\frac{4,191584}{10^9}] \text{ s}$, and frequency $f = \frac{1}{T}$ i.e. **Planck-frequency $f_1 = 2,38573294 \cdot 10^{34} \text{ Hz}$** . From above issues ,

a).. The Spin of cave , r , is Equal to the Angular-momentum-Vector \rightarrow **Spin** $\equiv |\bar{B}| \equiv 2r \sigma \Phi$ which contains and is the Golden-Ratio-frequency Φ as Pressure , $\pm \sigma$, in cave r .

b).. In Planck`s-length [for light velocity $c = 3 \cdot 10^8 \text{ m/s}$] , **velocity** is $|\bar{c}| = \frac{\sigma}{2} [1 + \sqrt{5}] \text{ m/s}$ and in cave $r_p = 8,79455 \cdot 10^{-35} \text{ m}$, the **Pressure $\sigma = \frac{r \cdot c}{[1 + \sqrt{5}]} = 8,147733 \cdot 10^{-27} \text{ Kg/m}^2$** .

c).. In Planck`s-length the Period of Oscillation is $T = \frac{4\pi r}{\sigma(1+\sqrt{5})} = 4,192 \cdot 10^{-8} \text{ s}$, and

Frequency $f_p = \frac{1}{T} \equiv \frac{\sigma \cdot (1 + \sqrt{5})}{4\pi r} = 2,3857265 \cdot 10^7 \text{ Hz}$, which is the minimum in Planck-cave .

The extreme for stresses is $\sigma_{1,2} = \sigma_1 / 2 \pm (\frac{1}{2}) \cdot \sqrt{\sigma_1^2 + 4 \cdot \sigma_1^2} = \sigma_1 \cdot [1 \pm (\sqrt{5})] / 2 = \sigma \Phi$, velocity $v = w \cdot r = \frac{2\pi}{T} = 2\pi r \cdot f = [\frac{\sigma}{2}] \cdot (1 + \sqrt{5})$, frequency $f = \frac{(1 + \sqrt{5}) \cdot \sigma}{4\pi r}$, Period $T = \frac{4\pi r}{\sigma(1 + \sqrt{5})}$

d).. From Orbit vibration $f_n = \frac{(1 + \sqrt{5})\sigma}{4\pi r} = \frac{\sigma}{2\pi r} \Phi$, $f_n^2 = \frac{\sigma^2}{4\pi^2 r^2} \Phi^2 = \frac{1}{g \cdot a^3}$ and $g a^3 \Phi^2 = \frac{4\pi^2 a^2}{\sigma^2}$, or

$a = \frac{1}{g} [\frac{2\pi}{\sigma \Phi}]^2$ and from Work $W = 2E = B w = J \cdot w^2$, or $2E = 2\pi f$ and $\bar{B} f = \frac{E}{\pi}$ and 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.

Energy in Planck-cave-Particles is dependent on their Spin only , and for Electron $r = a_e$
 $E = [\Phi \frac{\sigma}{4\pi r}] \cdot \bar{B} = 1,6180339 [(\frac{1}{4\pi \cdot 1,6840307 \cdot 10^{-17}})] \cdot 2,845976 \cdot 10^{-17} = \frac{21,76 \cdot 10^{-19}}{1,6 \cdot 10^{19}} = 13,6 \text{ eV}$

In frequency , is measured the time needed for the velocity vector to Rotate , using the Kepler`s Unit of Time $k = f_e^2 a^3$, the clock measuring the changes of motions . All above equations define \rightarrow **The Ubiquity of Golden-Ratio- Φ** \leftarrow in all motions **The Angular-Momentum , Stresses , Frequency or the vector velocity V** in nature. [64]

e).. Generally all Systems Possessing **mass** , *Reaction to any motion or changes* , and **Elasticity** , $dl > 0$, are capable of Free-Vibration or **Vibration** that take Place in the absence of external excitation . On this Property is based the Programming of the Atoms and their Compounds as is [106]-**Dokimes** with many applications .

f).. When we Say that Point M is on the **Arc BA** of the circle (E, EC) , then according to the Principles of Euclidean Geometry ,this Point is considered to be **Without Position** and for a Straight-Line Segment , it is also **Without Direction** .This happens because in the Euclidian Geometry Between any Two adjacent Points exist Infinite , ∞ , Points **The Position is Specified** Only by their **Common Point R** , of intersection of the Conjugate Circle (B , BE=EC) and (E, EC) , and **The Direction is Defined** by the Tangent **RO** , of the Conjugate Circle at their Common Point R .

The **Mechanism carries The Energy Circle (E , EC) to the Circle (O,OC`=OA) of Double Energy and Area** . This change of Energy and Surfaces is the Cause for the **Geometrical Asymmetry , i.e.**

It is a Type of Birefringence-Pattern , which allows the Vector \overrightarrow{RO} , where its angle of incidence = $G \hat{R} O$ of (E,EC) circle , can Pass into angle , $O \hat{P} G$ of (O,OA) Energy-circle,

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