



THE DUPLICATION OF THE CUBE USING A RULER AND COMPASS AND THE QUANTUM CLONING MECHANISM USED BY DUALITY PHOTONS

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Abstract

a. The Unsolvability of the Three famous Ancient Greek Problems Doubling the Cube, Trisecting the Angle, and Squaring the Circle -- **Stands on the Base justification of the Algebraic Field Theory (specifically Galois Theory) and the Theory of Constructible Numbers**, which were developed in the 19th century.

b. The Greeks often used other Techniques (**like Conic sections or Mechanical tools**) to Solve these Problems, but **their self-imposed "Euclidean" constraint, with a Ruler and a Compass**, (straightedge and compass) made these Specific Problems impossible to solve.

c. In the Published Articles [123],[124],[126] , it is **clearly evident** that the Solution of the Ancient, Unsolved Greek Problems, using **a Ruler and a Compass**, as the constraint has been set by Euclid], **Has Become Possible**, and is in the Critique of Both, **Human Logic Thinking and, The Artificial Intelligence** when it uses **The Path of Knowledge** to the Truths of Nature, and which is the **Dialectic Logic of Euclidean Geometry**.

In article [123], are given on the **2-Vectors, 3-Poles Rotation Squares Mechanism**, where $E = M$, such the Geometrical as the Mechanical Proof, by using the **Conjugate 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 from Kepler's **Unit meter of Time** $k = f^2_e a^3$, where , $a = \lambda / 2$, and which is **the clock** measuring the changes of motions, **In article [124]**, It was Noted that **When** in Photons , $E = M$, **these acquire the common Plane-meter** the Square $CMNH = [CM]^2 = \pi.[EC]^2$, where EC is the circle's Radius , **Using the Bellow-Motion Method** by creating the Square $CMNH = [CM]^2$ from E , M , and from $[E/\sqrt{2}]^2 = \pi.[M/\sqrt{2}]^2$, $\pi \equiv \frac{[E/\sqrt{2}]^2}{[M/\sqrt{2}]^2}$ **and Thus Photon is Squared to an UNID SQUARE .**

In article [126], It is important to Note that **When** in Photons , $E \neq M$, **these acquire the common Space-meter** $^3\sqrt{2}$, **Using Quantum-Cloning Method** for creating a Perfect-Copy of E , M , as are when $E = 2.M$ and , $[E \neq M]^3 = 2. [E = 2.M]^3$. **With this Way Photon is Duplicated to a New-One .** The simplified But a Rigorous Proof of the Problem , *The Squaring of the Circle using a Ruler and a Compass* , as it was first Posed by the Ancient Greeks , is followed by The Photons which Square their , Energy circle \equiv the **Herpolhode= SPIN** , to equal an **Energy Unit Square** , which **UNIT-Square** they Promote , **common Plane - meter** , 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 . At Phase Angle where $E = 2.M$, Energy Cube $[M / 2]^3$ is Duplicated and enters INTO . $[E]^3 = [2.M]^3 = 8.M^3 \equiv$ **Tetrahedron-Cube-Sphere-Mechanism.**[102]

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 , $E=M$, consist a Plane acquiring The common Plane-meter, π , and in Space (volume) through mould of Duplication of the Cube [46] , where any Two Unequal Perpendicular monads , $E \neq M$, acquire the common Space-meter $^3\sqrt{2}$, Using Quantum-Cloning Method to be Twice each other as analytically Proved-explained. 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 \leftarrow [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 $AB \equiv$ Segment \equiv Vector which is The Electromagnetic field of the Quantized on \overline{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

$$L_v = e^{i(\frac{N\pi}{2})} b=10^{-N} = -\infty \text{ m} = 0 \text{ m} , \text{ which is Nothing , and the Absolute}$$

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

In Physics , there is No single Process called "Duplication of Energy" for Photons Because Energy must always be conserved , or when Two Photons are "merged" into a single Photon.

In Mechanics , The Gravity-cave *Energy Volume quantity* $|\bar{c}| \equiv [wr]$ is Doubled , and is Quantized in Planck's- cave Space quantity $(h/2\pi) = \text{The Spin} = 2.[wr]^3 \rightarrow \text{i.e. Energy Space quantity } [wr] \text{ is Quantized , doubled , and becomes the Space quantity } h/\pi$ 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* .

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

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A.. : THE GEOMETRICAL MECHANISM OF THE DUBLICATION :

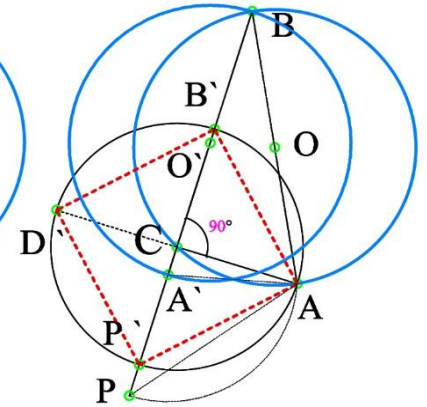
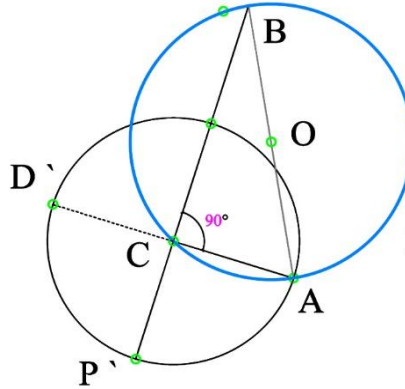
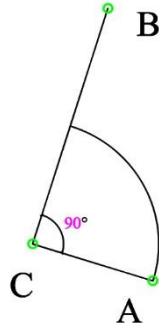
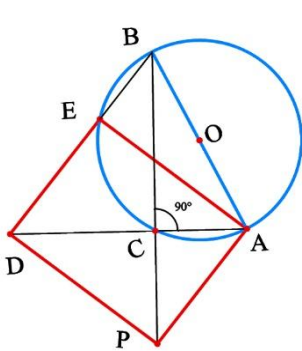
THE **DUBLICATION** OF THE **CUBE** ON TWO VECTORS

VECTOR, $CA \perp CB$,
& $CB = 2.CA$,
or $CB / CA = 2$.

DRAW HYPOTENUSE AB , OF
CON-CIRCLE {O,OC = OA} & DRAW
THE CIRCLE { C,CA=CP'=CD' } WITH
THE DIAMETER AD' = CB = 2.CA .

DRAW ON CB,THE EQUAL **CON-CIRCLE**,
{ O',O'A' = O'B' } , COMPLETE SQUARE
[AB'D'P'] & FORM THE NEW POSITION
OF POINT P' AT P , WHERE A'A = A'P

$$[DC]^3 / [PC]^3 = CB / CA = 2$$

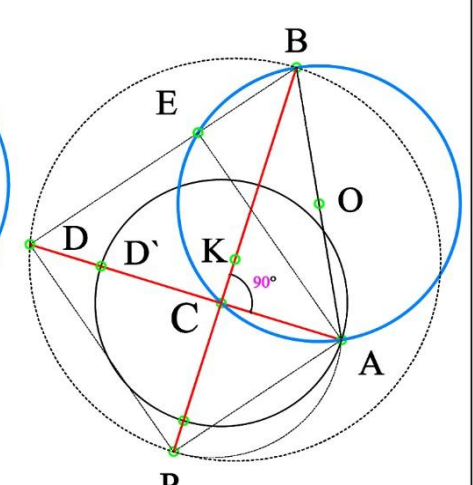
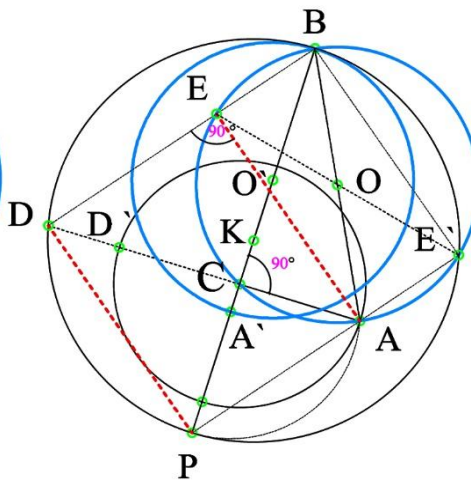
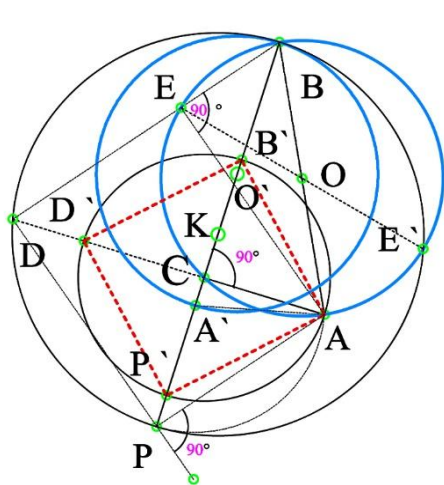


DRAW THE CIRCLE { K,KB=KP } ON DIAMETER
BP , WHICH INTERSECTS THE LINE AD' AT
POINT D , AND DRAW LINE DB INTERSECTING
THE CIRCLE { O,OB } , AT POINT E , FORM THE
DIAMETER EOE' OF CIRCLE [O,OA] & COMPLETE
THE TWO FOUR-SIDED , PAED , PE'BD .

SINCE $PD \perp PA$ & $AE \perp EB$, SO
ANGLE $\angle \{ APD = AEB = AED = 90^\circ \}$
& SINCE LIE ON DIAMETER ,AD,
OF CIRCLE { C,CA=CD=CP=CE }
THEN PAED , PE'BD ARE
RECTANGULAR-PARALLELOGRAM

THE QUICK - PROOF :

- 1.. ON RIGHT-ANGLED TRIANGLES , PAD & PBD,
ISSUES $[PC]^2 = [CA.CD]$ & $[DC]^2 = [CP.CB]$
2. BY-DIVISION $[DC]^2 / [PC]^2 = [CP.CB / CA.CD]$
And $[DC]^3 / [PC]^3 = CB / CA = 2$ **OEδ**.



S-0

Figure-1-

The , 2-Vectors 2-Poles Rotating Rectangular Mechanism . where ,The Straight line

Segment , $CB = 2.CA$, and $CB \perp CA$, and the circles $(O , OC = \frac{AB}{2}) . (O' , O'B = \frac{AB}{2})$,

On the Two Equal Diameters $BA = BA'$, of the Equal Hypotenuses , BA , BA' , and the
2-Poles at the Points A , B , valids on Triangles PAD & PBD and is $[CD]^3 = 2.[CP]^3$.

1.a..THE GEOMETRICAL- METHOD FOR THE DUBLICATION OF THE CUBE:

THE - STEPS :

- 1.. Draw Straight line Segment , CA , CB , such that , $CB = 2.CA$ and $CB \perp CA$,
- 2.. Draw the circle (O , $OC = OA = OB$) , from the Mid-Point O of Hypotenuse AB , and from Point C , Draw the circle (C , $CA = CD = CP$) .
- 3.. Form on the Straight line BP , the Diameter $BA = BA$ and circle (O , $O'B = O'A$) , And Draw Arc AP of the circle (A , $A'A = A'P$) , where Point P is on line BP .
- 4.. Draw the circle (K , $KB = KP$) , from the Mid-Point K of the Line-Sector BP , which intersects the line AD Produced at Point D . Draw line DB intersecting the circle (O , OB) at Point E , and Draw the Diameter EE' . of the circle (O , OB) .
- 5.. Complete the Quadrilaterals $PAED$, $PE'BD$.
- 6.. Show that Quadrilaterals $PAED$, $PE'BD$ are Rectangular Parallelograms , and , On the Right-angled Triangles PAD & PBD , valids $[CD]^3 = 2.[CP]^3$.
- 7.. The Method of Constructing The Side CD of the Double Cube.

2a.. = THE PROOF :

- a).. The Point E of the circle (O , OA) forms the Right Angle \widehat{AEB} , because it lies on the diameter BA , of the circle . The angle $\widehat{AED} = 180^\circ - 90^\circ = 90^\circ$,
- b).. Angle $\widehat{EDP} = 90^\circ$ because it lies on the diameter BP of the circle (K , $KB = KP$) , **Therefore** the Angle $\widehat{PE'B} = 90^\circ$ is lying on the same diameter BP of the circle.
- c).. Because in the Quadrilateral $PE'BD$, the 3-angles , $\widehat{PE'B} = \widehat{E'BD} = \widehat{BDP} = 90^\circ$, **Therefore** the Quadrilateral $PE'BD$ of the circle (K , KB) , is also a **Rectangular Parallelogram** , and thus line Segment PB' Passes through Point A .
- d).. It was Proved that the Angles $\widehat{AED} = \widehat{EDP} = \widehat{DPE'} = 90^\circ$, because they lie on the diameter BP of the circle (K , $KB = KP$) , **Therefore** the Line ED is **Parallel** to PE' .
- e).. Because the angle $\widehat{EDP} = 90^\circ$ and on the diameter EP of the circle , and Because the angle \widehat{PAE} lies on the same diameter EP of the circle , **Therefore** the angle $\widehat{PAE} = 90^\circ$.
- f).. Since for the angles it holds that $\widehat{PAE} = \widehat{PE'B} = 90^\circ$, **Therefore** the Rectangle $PAED$ is Inside of $PE'BD$, and Point A lies on PE' .
- g).. On the Right Triangles PAD , PBD it is true , 1).. $[CP]^2 = CA.CD$ and 2).. $[CD]^2 = CP.CD$, Dividing we have $\frac{[CD]^2}{[CP]^2} = \frac{CP.CD}{CA.CD}$, and then after an Order $\frac{[CD]^3}{[CP]^3} = \frac{CD}{CA} = 2$.
- h).. **The Method Is Based on the Theory of Parallels** , and is , [Thalis], (Figure-3-)
Let X , a Line Segment Placed on the Perpendicular , CP , and , A_x , D_z Be the

Sections of the Parallels , $P_{xy} - A_x$, $P_{xy} - D_z$, to which , PA , PD , respectively.

In Similar Triangles , CPD , $CP_{xz} D_z$, The Ratios apply , $(\frac{C.D_z}{CD} = \frac{C.P_{xz}}{CP} = \frac{Z}{CD} = \frac{X}{CP})$,

and by Rearranging the Terms $\frac{Z}{X} = \frac{CD}{CP}$ -(h)- Since On the Mechanism $ACDP$, it holds

$$\frac{[X]^3}{[Z]^3} = 2 , \text{ Therefore for -(h)- it holds also } \rightarrow \frac{[X]^3}{[Z]^3} = 2 \leftarrow , \text{ That is } , , , , ,$$

On the Mechanism , $ACDP$, The Straight Section Z Has been found , such that the Cube of Z , is Double that of X .

Observation :

When the Obtained Point of **Application** , POSITION , of the Straight Segment X , is any POINT , then according to the Principles of Euclidean Geometry it is considered without **Position** , **Magnitude** and **Direction** , This Geometric Indefiniteness of the Continuity of Points on Straight Line EXCLUDES at the Common Point C , of the 2-Segments , X , Z , and the **Direction** of this is **That , of the Maximum Perpendicular of the Mechanism $PABD$** of the Triangles , PAD & PBD .[Fig-2-]

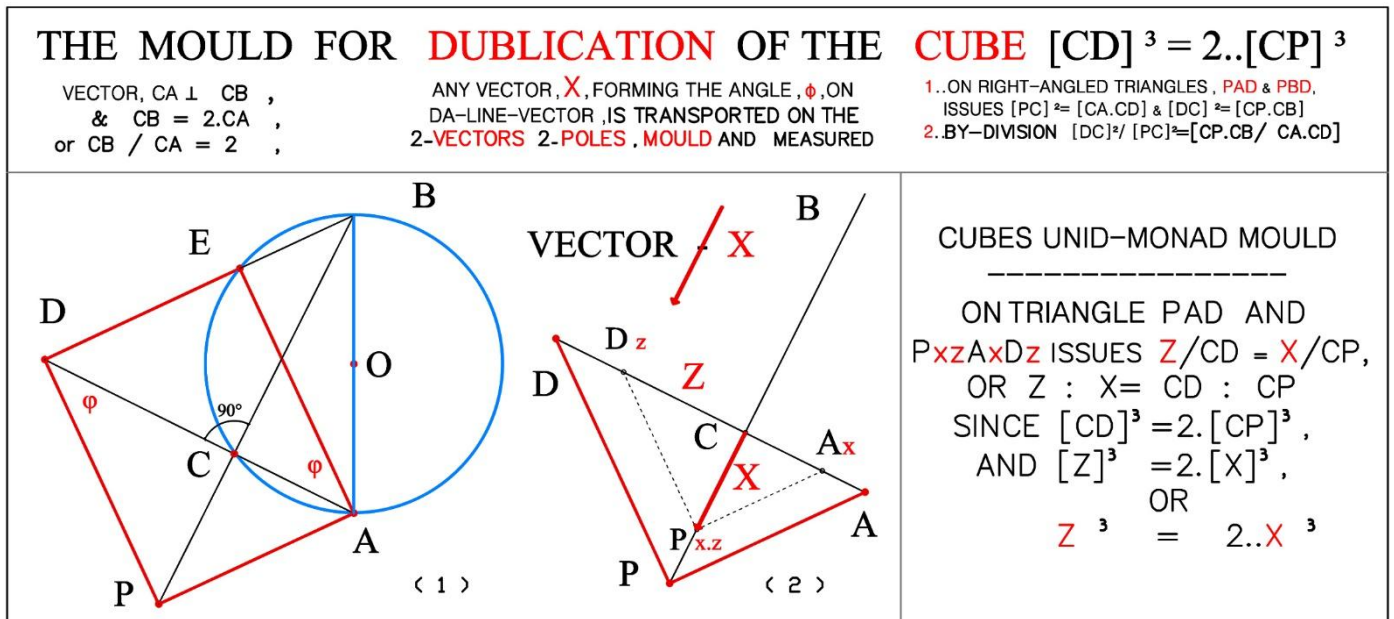


Figure-2-

In (1) ..,The **MOULD** of The 2-Right Triangles PAD , PBD on where valids the

Dublication $[CP]^3 = 2.[CD]^3$. and for Any Segment X , to Be **Duplicated to Y** .

In (2) ..,The Vector , X , is Placed on CP , **Direction** through Point C . The Parallels ,

($P_{xy} - A_x$) , ($P_{xy} - D_z$) , to which Determine the Points A_x , D_z , and such that ,

$CD_z = |Z|$ and $C - P_{xy} = |X|$, where valids the Relation $\Rightarrow |Z|^3 = 2 . |X|^3$

3a.. THE MECHANICAL CLONING - METHOD , USED BY THE PHOTONS :

THE QUANTUM - CLONING MOULD OF PHOTONS

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

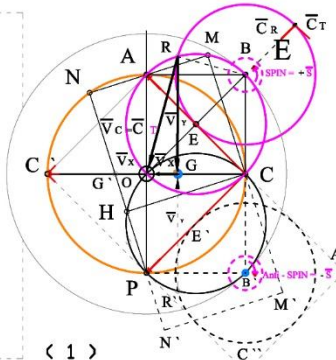
THE ANGULAR MOMENTUM \vec{B} , AS THE SPIN -- \vec{S} -- OF PHOTONS ON THE 2-Vectors 3-Poles Rotation - Mechanism - BECOMES a)...THE UNIT - SQUARE = $CMNH = \pi \cdot [AC/2]^2$ b)...THE UNIT-CUBE = $|CP|^3 = |EB|^3$, AND c)...THE CLONING - UNIT CUBE = $|CD|^3 = 2 \cdot |EB|^3$

THE PROOF

> FROM Relation $Spin=S = \vec{w} \cdot \vec{B} / 2 = \vec{c} \cdot \vec{B} / 2r$
Then $\vec{c} = |2 \cdot r \cdot \vec{S} / \vec{B}| = \sqrt{c_x^2 + c_y^2}$ AND AT POINT R, $\vec{c}_r = \vec{RO} = \sqrt{v_x^2 + v_y^2}$

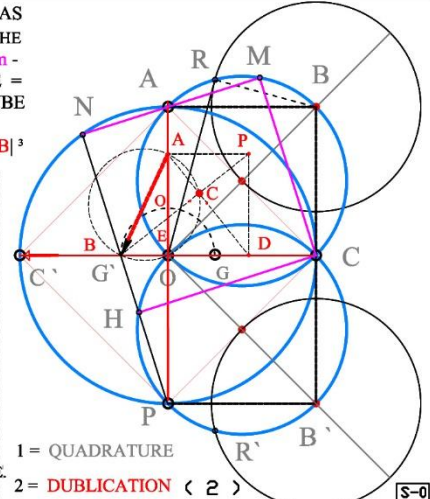
> AT Point R, $|\vec{c}_r = \vec{RO}| = \sqrt{v_x^2 + v_y^2}$
Tangential Velocity \vec{RO} , ACTS AT Point G' , -- \vec{v}_x ON $\ll CC'$ Axis & $\vec{v}_y \perp$ ON CC' -- PUSHING $CMNH$, UNIT-ENERGY, SQUARE FORMING THE TORSIONAL ANGLE $\phi = \phi' = G'PO = 2\pi/r^2$ Rads.

> FOR Point G' AT C' , Torsional Angle $\phi = C'PO = 2\pi/r^2 = 45^\circ$, which is The Bellow Motion of Photon, AND Energy-Square $CAC'P = CMNH = CHH'M'$.



IN-(1)..THE SPIN { \vec{B} } = THE CIRCLE FROM HERPOLHODE = $\{ \vec{c} \cdot \pi \cdot |EC|^2 \}$, OF PHOTONS. AND IS TRANSPORTED AS VELOCITY $\vec{RO} = \vec{v}_x^2 + \vec{v}_y^2$ & ACTS AT POINT G' , -- \vec{v}_x INTO, CC' AXIS AND \vec{v}_y , ONTO, CC' AXIS -- PUSHING $CMNH$, UNIT-ENERGY, SQUARE = $\pi \cdot [AC/2]^2$, FORMING TORSIONAL ANGLE $\phi = G'PO = 2\pi/r^2$ Rads.

IN-(2)..THE VELOCITY VECTOR \vec{AB} ACTS AT POINT B, WITH POLES A, P, PUSHING THE ENERGY $|EB|^3 = |\vec{v}_x|^3$, UNIT-ENERGY, CUBE, INTO $|CD|^3 = 2 \cdot |\vec{v}_x|^3$ CUBE.



1 = QUADRATURE
2 = DUPLICATION (2)

Figure-3-

In Fig. (1) The Spin $\vec{B} \equiv \text{Herpolhode} \equiv \vec{c} \cdot \pi \cdot |EC|^2$ of Photons is Transported as Velocity \vec{RO} and is Analyzed as $\vec{v}_x = OG'$, $\vec{v}_y = RG'$. At Point G' , the \vec{v}_y Vector Transfers the Energy of circle $\pi \cdot [EC]^2$ Into the UNIT Square $CMNH$ such that $CMNH \equiv [EO]^2 \equiv \pi \cdot [EC]^2$, While on (2) Poles A, P, of Vector \vec{v}_x , Forms The UNIT- Meters $CP \equiv OG'$ and CD , such that $[CD]^3 = 2 \cdot [CP]^3$.

4a.. = THE MECHANICAL LOGIC & ANALYSIS :

1.. It was Proved [44], [124] 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 the PN which intersects circle [E',E'C] at Point H, Then the formed Square CMNH is in [O,OC= OA].

When SPIN $\equiv \vec{B}$ of Photons is on this Mechanism at the constant Point B, then Herpolhode is the Circle [B, BE] and Polhode is the circle [O, OA], where on B-Point motion is only the SPIN $\equiv \vec{B} \equiv \vec{c} \cdot \pi \cdot [EC]^2$. This Quantity of Energy in Polhode is Stored in the [O,OA] Half circle as UNIT Quantity, of the Total Energy \equiv The Curl-motion $\equiv \vec{c} \cdot 2\pi \cdot [EC]^2$.

The Angular Momentum $\equiv \vec{B}$, as the SPIN $\equiv \vec{B}$ of Photons is on this Mechanism, [Markos, 2-Vectors 3-Poles Rotating-Mechanism] at the constant Point B, and its Herpolhode Becomes the Area of Circle [B, BE] = $\pi \cdot [BE]^2 = \pi \cdot [CA/2]^2 = \pi \cdot [EC]^2$.

The UNIT Square CMNH is equal to $[CM]^2$ and equal to Energy-Circle = $\pi \cdot [CA/2]^2$

2..With above Motion, Photon carries the Herpolhode Energy = $\vec{c} \cdot \pi \cdot [EC]^2$ into the Polhode Energy Circle Store, and into the Anti-Polhode Energy Circle Store also.

The vector \overrightarrow{OG} by carrying Energy on axis CC' , creates the motion of Mechanism

i.e. The Energy in **Herpolhode** = $\bar{c} \cdot \pi.[EC]^2$ circle and constitutes

the **Electric – Field E , of the Electromagnetic Waves E , M .**

The Energy in **Anti-Herpolhode** = $\bar{c} \cdot \pi.[E'C]^2$ circle , constitutes the

Magnetic – Field M , of the Electromagnetic Waves E , M . and thus

Photon Electromagnetic - Waves , $E \perp M$, travel in all Spaces and affected

by the Gravitational force **G** only .

3.. When the Electric–Field E , of Photons is on Common- Point R , The Tangential-Velocity \bar{C}_T Passes from Center O , is Analyzed into Components \bar{V}_x, \bar{V}_y and ACTS at Point G', forming The UNIT Square $CMNH = [CM]^2$ and which is Equal to the Energy - Circle = $\pi.[CA/2]^2$.

THE \bar{V}_x , Component ACTS at Point , G' Tortionally through the 2-Poles A , O , and

Forms ON The MOULD of The 2-Right Triangles PAD , PBD → The Mechanism of

Dublication $[CP]^3 = 2.[CD]^3$ ← Where The \bar{V}_x Vector \equiv Square $CMNH \equiv \pi.[CA/2]^2$

= $[CP/2]^2$, PUSHES the \bar{V}_x Vector-Energy INTO The CUBE , $[CP]^3 = |\bar{V}_x|^3$,

i.e.

The Velocity-Vector , $|\bar{V}_x|$, IS Placed on **CG' Direction** through Point **G'** , and

ACTS Rotationally By Polarization \equiv **Spinning** \equiv **Tortionally Curled** through the O , A

2-Poles. and **FORMS → The Mechanism of Dublication** ← On which The **UNIT**

Energy–Square $[CMNH] = |\bar{V}_x|^3 = [CP]^3$.. On This Mechanism the Unit Energy is

Doubled , Because of the Energy-Curl-motion and Cube $[CP]^3$ is → $[CD]^3 = 2.[CP]^3$ ←

AND THUS IS DONE ,

THE QUANTUM CLONING MOULD OF PHOTONS .

5a.. = THE MECHANICAL -METHOD FOR THE CLONING OF PHOTONS

THE - STEPS :

1.. Let the Photon's SPIN Vector , Be equal to $\bar{X} = OG'$, and to find a Cloning Vector

Z , such that → $|Z|^3 = 2. |X|^3$. ← Fig-2 , 3-

2.. See Proof in [123] WHERE on the 2-Vectors , 3-Poles Rotating Squares Mechanism ,

A Point **M** on Arc - **BA** is Rolling on the circumference of circle (E,EC) , and the 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 $|O,OC= OA|$

AND WHEN SPIN $\equiv \tilde{B}$ of Photons is on Mechanism at the constant Point B , then its

Herpolhode is the Circle $[B , BE]$ and **Polhode** is the circle $[O , OA]$, where on B Point

the motion is only the Spinn $\equiv \tilde{B} \equiv \bar{c} \cdot \pi.[EC]^2$. This Quantity of Energy in **Herpolhode**

Energy-circle is Stored in the $[O , OA]$ Half -Part circle as **UNIT** Quantity = $\pi.[EC]^2$

of the **Total Energy** , which is The Curl–motion $\equiv \bar{c} \cdot 2\pi.[EC]^2$.

-
- 3.. See **Proof** , for the Rolling of Point **B** on (E, EC) circle meaning \rightarrow Radius of Curvature $\mathbf{BE} \perp \mathbf{BA} \leftarrow$ tangent , where $\overrightarrow{C_R}, \overrightarrow{C_T}$, are the two constituents of light velocity vector \bar{c} .
i.e. $\bar{c} = \tilde{\mathbf{B}} / \pi.[\mathbf{EC}]^2$, $\bar{c}_p = \left| \frac{2.r.\tilde{\mathbf{E}}}{\tilde{\mathbf{B}}} \right|$ & **The circle** (B , BE) carries the motion $\bar{c} .\pi.[\mathbf{EB}]^2$ in the circle (E , EC) , where from relation $|\overrightarrow{C_R}| \equiv \sigma.\Phi$ issues $\Rightarrow \bar{c} .\pi[\mathbf{EC}]^2 \equiv \bar{c} .\pi[\mathbf{EB}]^2$.
- 4.. See the **Proof** ,where **To Transfer** the Properties of Herpolhode , of the Conjugate circle (B,BE) to the circle (E , EC) , is required the existence of at least **One Common Point** between them , **The Position also** is by their **Common Point R** , of intersection of the Conjugate Circle (B,BE=EC) and (E,EC) , **And Direction is Defined** by the Tangential Velocity $\overrightarrow{C_T} \equiv$ Tangent **RO** , of the Conjugate Circle at Common Point R .
- 5.. See the **Proof** , that **When SPIN** $\equiv \tilde{\mathbf{B}}$ of **Photons** is on Common- Point **R** ,the Tangential Velocity \bar{C}_T **Passes** from Center O , is Analyzed into Components \bar{V}_x, \bar{V}_y is **ACTING** at Point **G`** , Forming The **UNIT Square CMNH** = $[\mathbf{CM}]^2$ AND Equal to Energy-Circle = $\pi.[\mathbf{CA}/2]^2$. **THE** \bar{V}_x , Component **ACTS** at Point **G`** , **Tortionally** through Poles A ,O , **Forming ON** The **MOULD** of The 2-Right Triangles , **PAD , PBD** \rightarrow **The Mechanism of Dublication** $[\mathbf{CP}]^3 = 2.[\mathbf{CD}]^3 \leftarrow$ Where The \bar{V}_x Vector \equiv Square **CMNH** $\equiv \pi.[\mathbf{CA}/2]^2 = [\mathbf{CP}]^2$, which **PUSHES** the \bar{V}_x Vector-Energy **INTO** The CUBE $[\mathbf{CP}]^3 = |\bar{V}_x|^3$,
- 6.. **FORM ON** \Rightarrow { The **2-Vectors , 3-Poles Rotating Squares Mechanism** } , of the Equal Vectors , **The UNID Monad** $[\mathbf{CMNH}]^2$ equal to $[\mathbf{CM}]^2$ and equal to Energy-Circle = $\pi.[\mathbf{CA}/2]^2$, and **ON** The **UNIT – VELOCITY – VECTOR** \rightarrow { \bar{V}_x Vector \equiv Square **CMNH** $\equiv \pi.[\mathbf{CA}/2]^2 = [\mathbf{CP}]^2 \equiv \pi.[\mathbf{CA}/2]^2$ } \leftarrow
FORM The 2-Right Triangles , **PAD , PBD** , from { The **2-Vectors , 2-Poles Rotating Squares Mechanism** } , On where valids the Dublication on the Unequal Vectors and The CUBES $[\mathbf{CP}]^3 = 2.[\mathbf{CD}]^3$, **AND PLACE** the Velocity-Vector $|\bar{V}_x| \equiv$ **Vector X** , **IN CP** and **DEFINE** the Vector $|\mathbf{Z}|$.

For Vector $|\mathbf{Z}|$ valids $\rightarrow |\mathbf{Z}|^3 = 2 . |\mathbf{X}|^3 \leftarrow$ and This is ,

The Quantum-Cloning of Photons.

B.. Η ΓΕΩΜΕΤΡΙΚΗ ΜΕΘΟΔΟΣ ΔΙΠΛΑΣΙΑΣΜΟΥ ΤΟΥ ΚΥΒΟΥ :

ΤΑ ΒΗΜΑΤΑ :

- 1... Τραβάτε τὰ Ευθύγραμμα και ΑΝΙΣΑ Τμήματα , CA , CB , ώστε να είναι ,
 $CB = 2.CA$ και $CB \perp CA$,
- 2... Σχηματίσατε τον Κύκλο (O , $OC = OA = OB$) , από τού Μέσου Σημείου O τής Υποτεινούσης AB , και από τού Σημείου C , Σχηματίσατε τον Κύκλο (C , $CA = CD = CP$) .
- 3.. Σχηματίσατε Επί τής Ευθείας BP την Διάμετρο BA ίση τής BA και τον Κύκλο (O' , $O'B = O'A$) , και Τραβάτε το Τόξο AP τού Κύκλου (A' , $A'A = A'P$) , ώστε το Σημείο P να ευρίσκεται επί τής προέκτασης τής Ευθείας BP .
- 4.. Από τού Μέσου Σημείου K , τού Ευθύγραμμου Τμήματος BP , Σχηματίσατε τον Κύκλο (K , $KB = KP$) , ώστε να Κόβει την Προέκταση τής AD στο Σημείο D , Τραβάτε την Ευθεία DB ώστε να Κόβει τον Κύκλο (O , OB) στο Σημείο E , και Σύρατε την Διάμετρο EOE' τού κύκλου (O , OB) .
- 5.. Συμπληρώσατε τὰ Τετράπλευρα $PAED$, $PE'BD$.
- 6.. Νά Δειχθεί ότι τὰ Τετράπλευρα $PAED - PE'BD$ Είναι **Ορθογώνια Παραλληλόγραμμα** καί Κοινά των 2-Κύκλων , Επί δε των Ορθογωνίων Τριγώνων , PAD & PBD ,
ΙΣΧΥΕΙ Η ΣΧΕΣΗ $\rightarrow [CD]^3 = 2.[CP]^3 \leftarrow$
- 7.. Η Μέθοδος Κατασκευής τής Πλευράς CD τού Διπλάσιου Κύβου τού CP .

1b.. = Η ΑΠΟΔΕΙΞΗ :

- α).. Το Σημείο E τού κύκλου (O , OA) σχηματίζει την ορθή γωνία $A\hat{E}B$, διότι κείται επί τής διαμέτρου BA τού κύκλου . Η γωνία $A\hat{E}D = 180^\circ - 90^\circ = 90^\circ$,
- β).. Η γωνία $E\hat{D}P = 90^\circ$ διότι κείται επί τής διαμέτρου BP τού κύκλου (K , $KB = KP$) , επομένως και η γωνία $P\hat{E}'B = 90^\circ$ κείμενη επί τής ίδιας διαμέτρου BP τού κύκλου.
- γ).. Επειδή στο Τετράπλευρο $PE'BD$ οι 3-γωνίες , $P\hat{E}'B = E'\hat{B}D = B\hat{D}P = 90^\circ$, Άρα τó Τετράπλευρο $PE'BD$ τού κύκλου (K , KB) είναι **Ορθογώνιο Παραλληλόγραμμο**.
- δ).. Απεδείχθη ότι οι γωνίες $A\hat{E}D = E\hat{D}P = D\hat{P}E' = 90^\circ$. διότι κείνται επί τής διαμέτρου BP τού κύκλου (K , $KB = KP$) , Άρα η Ευθεία ED είναι Παράλληλος τής PE' , AP .
- ε).. Επειδή η γωνία $E\hat{D}P = 90^\circ$ και επί τής διαμέτρου EP τού κύκλου , και Επειδή η γωνία $P\hat{A}E$ κείται επί τής ίδιας διαμέτρου EP τού κύκλου , Άρα και η γωνία $P\hat{A}E = 90^\circ$.
- ζ).. Επειδή για τις γωνίες ισχύει $P\hat{A}E = P\hat{E}'B = 90^\circ$ Άρα το Ορθογώνια $PAED$ είναι Εντός τού $PE'BD$, το δε Σημείο A κείται επί τής PE' , ή , Από τού Σημείου E , **ΜΟΝΟ ΜΙΑ ΚΑΘΕΤΟΣ** η EA , Δύναται Να Τραβηχτεί επί των Παραλλήλων PA , PE' .

η).. Επί των Ορθογωνίων Τριγώνων **PAD** , **PBD** ισχύει , 1).. $[CP]^2 = CA \cdot CD$, και

2).. $[CD]^2 = CP \cdot CD$. Διαιρώντας έχουμε $\frac{[CD]^2}{[CP]^2} = \frac{CP \cdot CD}{CA \cdot CD}$, και μετά την Νέα Διάταξη

γίνεται η Σχέση $\frac{[CD]^3}{[CP]^3} = \frac{CD}{CA} = 2$. Το πώς επιτυγχάνεται τούτο στο Σχήμα-2-

θ).. Η Μέθοδος Στηρίζεται στη Θεωρία των Παραλλήλων ,[Thalis] , (Σχήμα-3-)

Έστω **X** , Ευθύγραμμο Τμήμα τοποθετημένο επί τής Καθέτου , **CP** , και **A_x** , **D_z** , οι Τομές των Παραλλήλων , **P_{xy}** , **A_x** , **P_{xy}** , **D_z** , προς τής , **PA** , **PD** , αντίστοιχα .

Στα Όμοια Τρίγωνα , **CPD** , **CP_{xz}** , **D_z** , ισχύουν οι Λόγοι $\frac{C \cdot D_z}{CD} = \frac{C \cdot P_{xz}}{CP} = \frac{Z}{CD} = \frac{X}{CP}$,

και με Αναδιάταξη των Όρων $\frac{Z}{X} = \frac{CD}{CP}$ -(θ)- Επειδή δε επί του Μηχανισμού ,ACDP ,

ισχύει $\frac{[CD]^3}{[CP]^3} = 2$, επομένως και για την -(θ)- ισχύει $\frac{[X]^3}{[Z]^3} = 2$, Δηλαδή ,,

Επί του Μηχανισμού , ACDP , έχει ευρεθεί το Ευθύγραμμο Τμήμα Z , ώστε ο Κύβος του Z , να είναι Διπλάσιος του X .

Παρατήρηση :

Όταν το ληφθέν **Σημείο Εφαρμογής** , ΘΕΣΗ , τού Ευθύγραμμου Τμήματος **X** , είναι το ΤΥΧΟΝ , τότε σύμφωνα με τής Αρχές τής Ευκλείδειας Γεωμετρίας θεωρείται χωρίς Θέση Μέγεθος και Κατεύθυνση , Αυτή η **Γεωμετρική Αοριστία** τής Συνέχειας των Σημείων επί Ευθείας **ΕΚΛΕΙΠΕΙ** στο Κοινό Σημείο **C** , των 2-Τμημάτων , **X** , **Z** , η δέ **Κατεύθυνση Αυτής τής Μεγίστης Καθέτου τού Μηχανισμού PABD** των Τριγώνων , **PAD** & **PBD** .

2b,, Η ΜΗΧΑΝΙΚΗ - ΜΕΘΟΔΟΣ ΓΙΑ ΤΗΝ ΚΛΩΝΟΠΟΙΗΣΗ ΤΩΝ ΦΩΤΟΝΙΩΝ :

ΤΑ -ΒΗΜΑΤΑ :

1.. ΔΕΙΤΕ το [123] Μηχανισμός , { **2-Vectors , 3-Poles Rotating Squares Mechanism** } , Όπου όταν Σημείο **M** είναι στο **R** , Κοινό τού Τόξου **BA** και του κύκλου (**B,BE**) , η δε γραμμή **MA** εκτείνεται στο Σημείο **N** του κύκλου (**O,OC= OA**) , ενώνοντας με την **PN** η οποία τέμνει τον κύκλο **[E',E'C]** στο Σημείο **H** , Τότε Σχηματίζεται το ΜΟΝΑΔΙΑΙΟ τετράγωνο **CMNH** στον κύκλο **[O,OC= OA]** , ΠΟΥ ΟΤΑΝ το **SPIN** $\equiv \tilde{B}$ των Φωτονίων βρίσκεται στον Μηχανισμό Σταθερού Σημείου **B** , τότε η **Αντιπολική** του είναι ο Κύκλος **[B , BE]** η δε **Πολική** του ο κύκλος **[O , OA]** , όπου η Κίνηση στο Σημείο **B** είναι μόνο η Περιστροφή $\equiv \tilde{B} \equiv \bar{c} \cdot \pi \cdot [EC]^2$. Αυτή η Ποσότητα Ενέργειας στον Ενεργειακό Κύκλο τής **Αντιπολικής** του , Αποθηκεύεται στον Κύκλο **[O , OA]** ως ΜΟΝΑΔΙΑΙΑ Ποσότητα της Συνολικής Ενέργειας η οποία προέρχεται από την **Ελικοειδής Κίνηση** $\equiv \bar{c} \cdot 2\pi \cdot [EC]^2$.

2.. ΔΕΙΤΕ την Απόδειξη, για την Έννοια της Κύλισης του σημείου **B** στον κύκλο (**E**, **EC**) → Ακτίνα καμπυλότητας **BE** ⊥ **BA** ← και Εφαπτομένη όπου, \vec{C}_R , \vec{C}_T , είναι οι Δύο Συνιστώσες του Διανύσματος της ταχύτητας του Φωτός \vec{c} . Δηλαδή ισχύει μεταξύ του

SPIN ≡ \vec{B} και \vec{c} , „ $\vec{c} = \vec{B} / \pi \cdot [EC]^2$, $\vec{c}_P = \left| \frac{2 \cdot r \cdot \vec{E}}{B} \right|$, Όπου ο κύκλος (**B**, **BE**) Μεταφέρει την κίνηση που είναι, $\vec{c} \cdot \pi \cdot [EB]^2$, στον κύκλο (**E**, **EC**), και από τη σχέση, $|\vec{C}_R| \equiv \sigma \cdot \Phi$ Είναι η Μεταφορά της κίνησης από το Κέντρο **B** στον κύκλο ⇒ $\vec{c} \cdot \pi [EC]^2 \equiv \vec{c} \cdot \pi [BE]^2$

3.. ΔΕΙΤΕ την Απόδειξη, όπου για να Μεταφέρουμε τις Ιδιότητες της **Αντιπολικής** του Συζυγούς Κύκλου (**B**, **BE**) στον κύκλο (**E**, **EC**), απαιτείται η ύπαρξη τουλάχιστον ενός Κοινού Σημείου μεταξύ τους, **Η Θέση** ορίζεται από το Κοινό των Σημείο **R**, τομή του Συζυγούς Κύκλου (**B**, **BE = EC**) και του (**E**, **EC**), η δε **Κατεύθυνση** ορίζεται από την ταχύτητα, $\vec{C}_T \equiv$ Εφαπτόμενη **RO**, του Συζυγούς Κύκλου στο Κοινό Σημείο **R**.

4.. ΔΕΙΤΕ την Απόδειξη ότι όταν το **SPIN** ≡ \vec{B} , των Φωτονίων βρίσκεται στο Κοινό των Σημείο **R**, η Εφαπτομενική ταχύτητα \vec{C}_T , διέρχεται από το Κέντρο **O**, Αναλύεται στις Συνιστώσες, \vec{V}_x , \vec{V}_y , και **ΕΝΕΡΓΕΙ** στο Σημείο **G**, σχηματίζοντας το ΜΟΝΑΔΙΑΙΟ τετράγωνο **CMNH** = $[CM]^2$ και ίσο με Κύκλο της Ενέργειας = $\pi \cdot [CA/2]^2$, Η Δε, \vec{V}_x , Συνιστώσα **ΕΝΕΡΓΕΙ** στο Σημείο **G** Στρεπτικά στους 2-Πόλους **A**, **O**, **ΔΗΜΗΟΥΡΓΕΙ** τά 2-Ορθογώνια τρίγωνα **PAD**, **PBD** → Ο Μηχανισμός Διπλασιαμού του Κύβου $[CD]^3 = 2 \cdot [CP]^3$ ← Όπου το \vec{V}_x Διάνυσμα ≡ Τετράγωνο **CMNH** ≡ $\pi \cdot [CA/2]^2 = [CP/2]^2$ το οποίο **ΣΠΡΩΧΝΕΙ** την Διανυσματική Ενέργεια → \vec{V}_x , **ΜΕΣΑ** στον **KYBO** $[CP]^3 = |\vec{V}_x|^3$,

5.. **ΣΧΗΜΑΤΙΣΤΕ**, Επί του Μηχανισμού { **2-Vectors**, **3-Poles Ro-Squares Mechanism** } [Fig- 4-3], Των ΙΣΩΝ – Διανυσμάτων, Το **ΚΑΛΟΥΠΙ** των **2-Ορθογώνιων Τριγώνων**, **PAD**, **PBD**, Επί του Μηχανισμού Των **ΑΝΙΣΩΝ** – Διανυσμάτων, { **2-Vectors**, **2-Poles Ro-Squares Mechanism** } που ισχύει ο **Διπλασιασμός των Κύβων**, $[CP]^3 = 2 \cdot [CD]^3$. **ΚΑΙ** έπειτα **ΤΟΠΟΘΕΤΗΣΤΕ** το Διάνυσμα της Ταχύτητας $|\vec{V}_x| \equiv$ **Vector X**, Εντός του **CP**, **Και ΟΡΙΣΑΤΕ** το Διάνυσμα $|\mathbf{Z}|$, όπως τούτο αναφέρθηκε.

Για το Διάνυσμα $|\mathbf{Z}|$ ισχύει → $|\mathbf{Z}|^3 = 2 \cdot |\mathbf{X}|^3$ ← **ΚΑΙ ΕΙΝΑΙ**

Η Κβαντική Κλωνοποίηση των Φωτονίων.

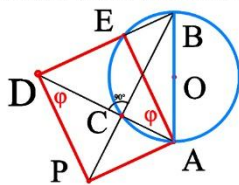
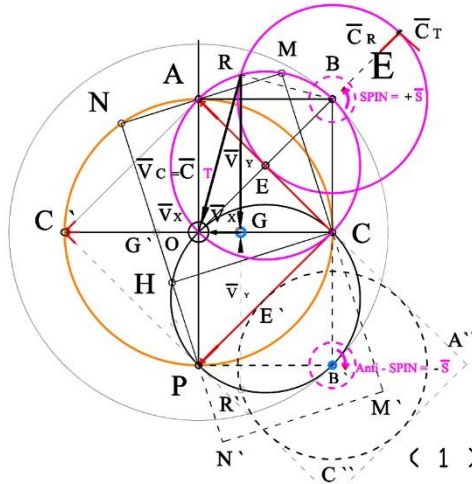
C..THE TWO FORK-TYPE MECHANISMS FOR THE CLONING OF PHOTONS :

THE QUANTUM - CLONING UNIT-MOULD OF PHOTONS

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

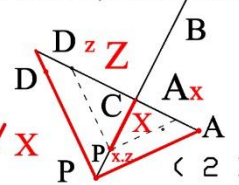
- > FROM Relation $Spin=S = \bar{w} \cdot \bar{B} / 2 = \bar{c} \cdot \bar{B} / 2r$
Then $\bar{c} = |2 \cdot r \cdot \bar{S} / \bar{B}| = \sqrt{C^2 + CR^2}$ AND
AT POINT R, $\bar{C}_T = \bar{R}O = \sqrt{V_x^2 + V_y^2}$
- > AT Point R, $|\bar{C}_T = \bar{R}O| = \sqrt{V_x^2 + V_y^2}$
Tangential Velocity $\bar{R}O$, 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
 $\Phi = \bar{G}'\bar{P}O = 2\pi/r^2$ Rads.
- > FOR Point G' AT C' , Torsional Angle
 $\Phi = \bar{C}'\bar{P}O = 2\pi/r^2 = 45^\circ$, which
is The Bellow Motion of Photon, AND
Energy-Square $CAC'P = CMNH \cdot CHH'M'$.



THE CUBS - UNIT - MOULD

$$[CD]^3 = 2 \cdot [CP]^3$$

$$[Z]^3 = 2 \cdot [X]^3 \text{ VECTOR } / X$$



THE ANGULAR MOMENTUM \bar{B} , AS THE SPIN -- \bar{S} -- OF PHOTONS ON THE 2-Vectors 3-Poles Rotation- Mechanism - BECOMES a)...THE UNIT - SQUARE = $CMNH = \pi \cdot |AC/2|^2$ b)...THE UNIT-CUBE = $[CP]^3 = [EB]^3$, AND c)...THE CLONING - UNIT CUBE = $[CD]^3 = 2 \cdot [EB]^3$

IN-(1)..THE SPIN { \bar{B} = THE CIRCLE FROM HERPOLHODE = $\{ \bar{c} \cdot \pi \cdot |EC|^2 \}$, OF PHOTONS, AND IS TRANSPORTED AS VELOCITY $\bar{R}O = \sqrt{V_x^2 + V_y^2}$ & ACTS AT POINT G' , \bar{V}_x INTO, CC' AXIS AND \bar{V}_y , ONTO, CC' AXIS -- PUSHING $|CM|^2 = CMNH$, UNIT-ENERGY, SQUARE = $\pi \cdot |AC/2|^2$, FORMING TORSIONAL ANGLE $\Phi = \bar{G}'\bar{P}O = 2\pi/r^2$ Rads.

IN-(2)..THE VELOCITY VECTOR \bar{AB} ACTS AT POINT B - WITH POLES A, P - PUSHING THE ENERGY $[EB]^3 = |\bar{V}_x|^3$, UNIT ENERGY, CUBE, INTO $[CD]^3 = 2 \cdot |\bar{V}_x|^3$ CUBE.

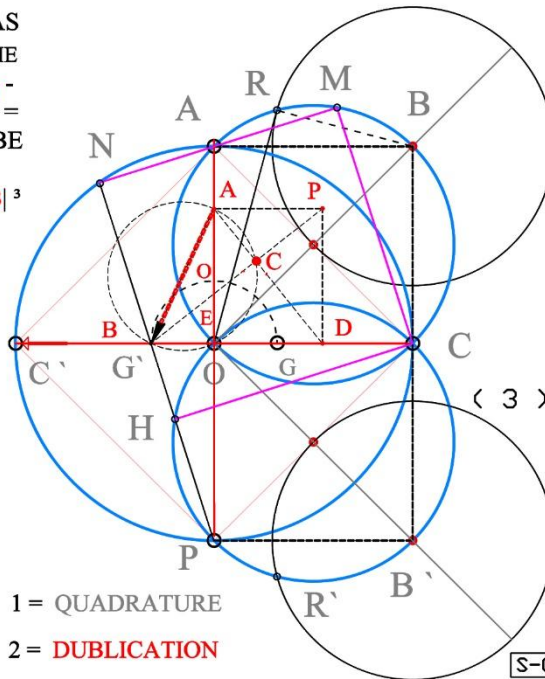


Figure-4-

In=(1)- The Spin $\tilde{\mathbf{B}} \equiv \mathbf{Herpolhode} \equiv \bar{c} \cdot \pi \cdot |\mathbf{EC}|^2$ of Photons is Transported as Velocity $\overline{\mathbf{RO}}$, and is Analyzed as $\bar{v}_x = \text{OG}'$, $\bar{v}_y = \text{RG}$. At Point G' , the \bar{v}_y Vector Transfers the Energy of circle $\pi \cdot |\mathbf{EC}|^2$ Into Square CMNH such that $\text{CMNH} \equiv [\mathbf{EO}]^2$, **While**

In=(2)- From { The **2-Vectors**, **2-Poles** Rotating The Poles A, P, of Vector \bar{v}_x , Forms The **UNIT- Meters** $\mathbf{CP} \equiv \text{OG}'$ and \mathbf{CD} , such that $[\mathbf{CD}]^3 = 2 \cdot [\mathbf{CP}]^3$.

In=(3)- Are Formed, The 2-Right Triangles, **PAD**, **PBD**, from {The **2-Vectors**, **2-Poles** Rotating Squares **Mechanism** }, On where valids the Dublication of the Unequal Vectors.

1c..THE PHYSICAL NOTION OF THE QUADRATURE :

The exact Numeric Magnitude of number, π , may be found only by numeric calculations.[44]. Markos $\rightarrow 11 / 10 / 2015$

All magnitudes exist on the < **Plane Formation Mechanism of the first dimentional Unit AB** > as Geometrical elements consisting, **the Steady Formulation**, (The Plane System of the Isosceles Right-angle triangle ACP with the three Circles on the sides), and **the moving and Changeable Formulation of the Twin, System-Image**, (This Plane and Perpendicular System of Squares, Anti-squares is such that, *the Work Produced in a Between closed Area to be equal to zero*).

Starting from this logic of correlation upon Unit, we can control *Resemblance Ratio* and construct all Regular Polygons on the Unit Circle as this is shown in the case of squares. On this **System** of these three circles F.4- (The Plane Procedure Mechanism which is a Constant System) is created also, a *Continues* and, an Opposite *Not continues* Symmetrical Formation, the changeable System of the Regular Polygons, and the **Image** (Changeable System of Regular anti-Polygons) the **Idol**, as much this in **Space** and also in **Time**, and was Proved that in this Constant System, *the Rectilinear motion of the Changeable Formation is Transformed into a twin and Symmetrically Axial - centrifugal Pole Rotation (this is the motion on System)*.

The conservation of the Total Impulse and Momentum, as well as the conservation of the Total Energy in this Constant System with all Properties included, exists in this Empty Space of the Un-dimensional Point Units of the mechanism.

All the forgoing referred can be shown (maybe Presented) with a Ruler and a Compass or can be seen, live, on any Personal Computer. The method is Live Presented on the Dr..Geo machine Program.

The Theorem of *Hermit-Lindeman* that number, π , is not Algebraic, is Based on the theory of Constructible numbers and number fields (*on number Analysis*) **and Not** on the < **Euclidean Geometrical Origin-Logic on Unit elements Basis** >

The mathematical reasoning (*the Method*) is Based on the restrictions imposed to seek the Solution < **i.e. with a Ruler and a Compass And Not Differently** >.

By extending Euclid logic of Units on the Unit circle to unknown and now proved Geometrical Unit elements , thus the settled age-Old question for the Unsolved Problems is Now Approached and is Solved the continuously stood Problem . All Mathematical interpretation and the relative Philosophical reflections Based on the Theory of the Non -Solvability must Properly Revised .

2c.. The Verification of Quadrature in Physics :

From math theory of Elasticity , Cauchy equations of **Stresses** in three dimensions are ,

$$\frac{\partial \sigma_x}{\partial x} + \frac{\partial \tau_{yx}}{\partial y} + \frac{\partial \tau_{zx}}{\partial z} + X = 0 , \frac{\partial \tau_{xy}}{\partial x} + \frac{\partial \sigma_y}{\partial y} + \frac{\partial \tau_{zy}}{\partial z} + Y = 0 , \frac{\partial \tau_{xz}}{\partial x} + \frac{\partial \tau_{yz}}{\partial y} + \frac{\partial \sigma_z}{\partial z} + Z = 0 \quad \text{where are ,}$$

$\sigma_x , \sigma_y , \sigma_z$ = Principal stresses in x,y,z axis , $\tau_{xy} , \tau_{xz} , \tau_{yz}$ =shear-stresses in xy , xz , yz Plane , X,Y,Z = The components of external forces and of **Strain** , $\frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = 0$, $\frac{\partial}{\partial x} \frac{\partial v}{\partial y} = 0$, $\frac{\partial}{\partial x} \frac{\partial w}{\partial z} = 0$, where $u = u(y,z) \rightarrow$ are Deformation components , *The Displacements* , in y , z axis .

$v = c \times z$ = the Rotation on z , axis

$w = - c \times y$ Anti-rotation in y axis .

Applying above equations on an orthogonal section of a solid , then exist the differential equations of equilibrium , and for the boundary conditions is found that , the Stress function is satisfying equations ,

$$\frac{\partial \tau_{yx}}{\partial y} + \frac{\partial \tau_{zx}}{\partial z} = \frac{\partial \gamma_{yx}}{\partial y} + \frac{\partial \gamma_{zx}}{\partial z} = \frac{\partial^2 u}{\partial y^2} + \frac{\partial}{\partial x} \frac{\partial v}{\partial y} + \frac{\partial^2 u}{\partial z^2} + \frac{\partial}{\partial x} \frac{\partial w}{\partial z} = 0 \quad \dots\dots\dots (1)$$

and the boundary conditions on solid`s surface , $\frac{\partial u}{\partial y} dz - \frac{\partial u}{\partial z} dy + y.dy + z.dz = 0 \quad \dots\dots\dots(2)$

where , $\gamma_{xy} , \gamma_{xz} , \gamma_{yz}$ = the Slip components where is , $\gamma_{xy} = \frac{\partial u}{\partial y} + \frac{\partial v}{\partial x}$.

Equations show that the resultant shear-stress at the boundary is directed along the tangent to the boundary and that , the Stress function $u = u(yz)$ must be constant along the Boundary of the cross section . i.e. each cross section on x, axis is rotated as a disk in its Plane , from which Points follow relation $u = u(yz)$ and since stress function are constant , then from equation (2) $y.dy + z.dz = 0$ or $y^2 + z^2 = \text{constant}$, meaning that , **a Cross-section Under Stress stays Plane only in circle circumference , or a Plane Space , under Energy Stress , remains Flat only when the Plane becomes a circle , This Principle of Mechanics also Applies to the SPIN of Photons , i.e . follows the Plane Mould which is the Squaring of the circle.** 25 / 9 /2015

The same is seen in Laplace`s equation $\frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} \equiv \nabla^2 u = 0$ which is termed a Harmonic function.

Placing $\nabla^2 u = 0$ in Both Parts of the equation of the circle , becomes Identity and $\nabla^2 u.(y^2+z^2) = \nabla^2 u.(c)$, **or any Monad = Quaternion , consisted of the real part the Plane Space , and under Energy Stress the Imaginary Part , remains in Flat only when the Plane becomes a circle , i.e. the Energy-Space discrete continuum follows extrema E-Geometry Mould , π , which is the Squaring of the circle.**

If Potential Energy is zero then vector $\bar{\tau}$ is on the surface indicating the conjugate function. [49].

In Electricity , when an Electric current flows through a Conductor , then a transverse circular

Electromagnetic field is Produced around itself following the Vector – Cross - Product Plane mould , π . Because , the nth - Degree - equations are the Vertices of the N-Polygon in circle so , π , is their mould . [45-47]

3c.. The Physical Notion of The Duplication :

This Problem follows , The three Dimensional Dialectic logic of Ancient Greek Philosopher , Αναξίμανδρος , [« τό μή Ον , Ον γίγνεσθαι »] . The Non-existent Exists , when is Done , ‘ The Non - Existent Becomes and never is] , where **the Geometrical magnitudes** , have a *linear Relation* (the continuous Analogy on Segments) *in all Spaces as , in One in Two and in Three Dimensions , as this happens to the Compatible Coordinate Systems .*

The Structure of Euclidean Geometry is such [8] that it is a Compact Logic where **Non - Existent** is found Everywhere , and **Existence** , The *UNIT monads* , is found and is Done Everywhere .

In Euclidean Geometry Points Do Not exist , But their Position and correlation is doing Geometry. With this Logic The Universe cannot be created , Because it is continuously becoming and Never IS . [9], [107-108]

According to Euclidean Geometry , and since the Position of Points (*Empty Space*) creates the Geometry and Spaces , Zenon Paradox is the first concept of Quantization . [15]

In terms of Mechanics , Spaces Mould happen through , *Mould of Doubling the Cube* , where for any monad $ds = CP_{xy} \equiv X$, and analogous to CD_z the Volume or The Cube of segment $CD_z \equiv Y$, is the Double the volume of $[CP_{xy}]^3$ cube or monad $[CD_z]^3 = 2 \cdot [CP_{xy}]^3$ This is one of the *Basic Geometrical Euclidean Geometry Moulds* , which create the *UNIT METERS of monads* which \rightarrow **Linear** is the Segment $ds = CA$, **Plane** is , π , the Square CMNH equal to the circle , and in **Space** is $\sqrt[3]{2}$ volume $[CD]^3 =$ in all Spaces , *Anti-Spaces and Sub -spaces of monads* \leftarrow **i.e.** The Expanding square , CBAO , is Quantized to **UNIT CMNH Square** by Translation to Point G , and by Rotation through Poles A , P , (the Poles of rotation) . The Constructing relation between any Segments CP_{xy} , CD_z is \rightarrow

$$[CD_z]^3 = [CP_{xy}]^3 \cdot (CD / CP) \text{ as in in [45-47] , and from Fig-4-}$$

$$Z = X \cdot \{ CD / CP \} \rightarrow [126] , \text{ where } \rightarrow |Z|^3 = 2 \cdot |X|^3 \leftarrow$$

4c.. Application of the Duplication in Physics :

The Electromagnetic Waves are able to transmit Energy through a Vacuum (*Empty Space*) by storing their Energy vector in an Standing Transverse Electromagnetic Dipole wave , and so considered completely Particle like, and in the transverse interference Pattern to be considered as completely Wave , so **the Same Quantity of Energy** is as , [110]

Energy $I_d = \frac{\rho \pi^2 c^3}{2\lambda^2} [\epsilon E^2 + \mu H^2]$ **in volume** $V = \left[\frac{4(w^2 r^2)^3}{3\pi} \right]$ having mass \rightarrow **Particle Energy**

and $I_d = \left(\frac{\rho \cdot c}{2} \right) \cdot (wA_0)^2$ **in Interference Pattern** as \rightarrow **Wave**

This is the Wave-Particle Duality unifying the Classical Electromagnetic field and the

Quantum Particle of light .Angular momentum of Particles is $\rightarrow \text{Spin} = \frac{E}{w} = [\pm J.\bar{w}^2] = \bar{B} = \bar{S} = \pi.r^3.\sigma\Phi / 2 = [\frac{\pi.\sigma.\Phi}{2}] r^3$, where $\rightarrow r^3 = 2.\bar{S} / \pi.\sigma.\Phi \leftarrow$ and $\text{Spin} = \frac{h}{\pi} = 2.[wr]^3$, **or Energy Space quantity , wr , is Doubled and Becomes The Space Quantity $\frac{h}{\pi}$,**
 The above relation of Spin shows the deep relation between Mechanics and E-geometry , *where in the tiny Gravity-cave of $r=10^{-62}$ m , the Energy -Volume-quantity [wr] in cave , is Doubled and is Quantized in Planck`s - cave Space quantity as , $(\frac{h}{\pi}) = \text{Spin} = 2.[wr]^3$ in $r = 10^{-35}$ m [107] i.e.*

Energy Space quantity , wr , is Quantized , and Becomes the New Space quantity , $h/\pi = 2.[wr]^3$, Doubled , following the Euclidean Space-mould of Duplication of the cube by changing frequency, in tiny Sphere volume $V = (4\pi/3).[wr/2]^3$. Also ,
And Since $w = E / [h/2\pi] = m.c^2/[h/2\pi] = 2\pi.mc^2/h = 2r.s^2 = 2.r^3.w^2$, where then mass $m = \frac{(wr)^3}{c^2} = \frac{2}{c^2} (wr)^3$, Is Doubled as above with Space-mould and , is what is called Conversion factor mass , $m \equiv \text{mass}$, and it is an Index of the Energy changes . All Energy magnitudes from , 0 to $\rightarrow \infty$, Deposit in the same Space , Resonance , by changing their frequency

5c.. Application of The Trisection in Physics :

Since Total Energy in cave $(wr)^2$ is dependent on frequency only , and is Stored in the Fundamental and the first Six Harmonics , Therefore the Summations Bands of these Seven Isochromatic Quantized interference Fringe-order-Patterns , is the Total Energy E in the same cave $(wr)^2$ as , [50-52]

$$E = \text{Spin} . w = \bar{S}.w = (h/2\pi).2\pi f = [\frac{8\pi r^2 f_1}{3}].[\frac{n(n+1)}{2}] = [\frac{4\pi r^2 f_1}{3}] n.(n+1) \dots(a)$$

6c.. The Quantization of Euclidean Geometry, [49]

{ Points, Segments, Lines, Planes , and the Volumes } , **to its moulds F-5- . Quantization of E-geometry** is the Way of Points to Become as a \rightarrow (Segments , Anti-segments = Monads = Anti-monads) , (Segments , Parallel-segments = Equal monads) , (Equal Segments and Perpendicular - segments = Plane Vectors) , (Non-equal Segments and twice-Perpendicular-segments = The Space Vectors = Quaternion) , by defining the Mould of Quantization .

The three Ways of Quantization are \rightarrow for UNIT Monads \equiv The Material Points , the Mould is the Cycloidal Curl Electromagnetic field , for Lines the Mould is that of Parallel Theorem with the least constant distance , for Plane the Mould is the Squaring of the circle π , and , for Space is the Mould of the Duplication of cube $^3\sqrt{2}$. All methods in Fig-5-.

In [61] The Glue-Bond Pair of Opposites $[\ominus \oplus]$, creates Rotation with angular velocity $w = v/r$, and velocity $v = w.r = \frac{2\pi}{T} = 2\pi r.f = [\frac{\sigma}{2}].(1+\sqrt{5})$, The frequency $f = \frac{(1+\sqrt{5}).\sigma}{4\pi r}$, Period $T = \frac{4\pi r}{\sigma(1+\sqrt{5})}$ where $\pm \sigma$, are the two Centripetal F_p and Centrifugal F_f forces .

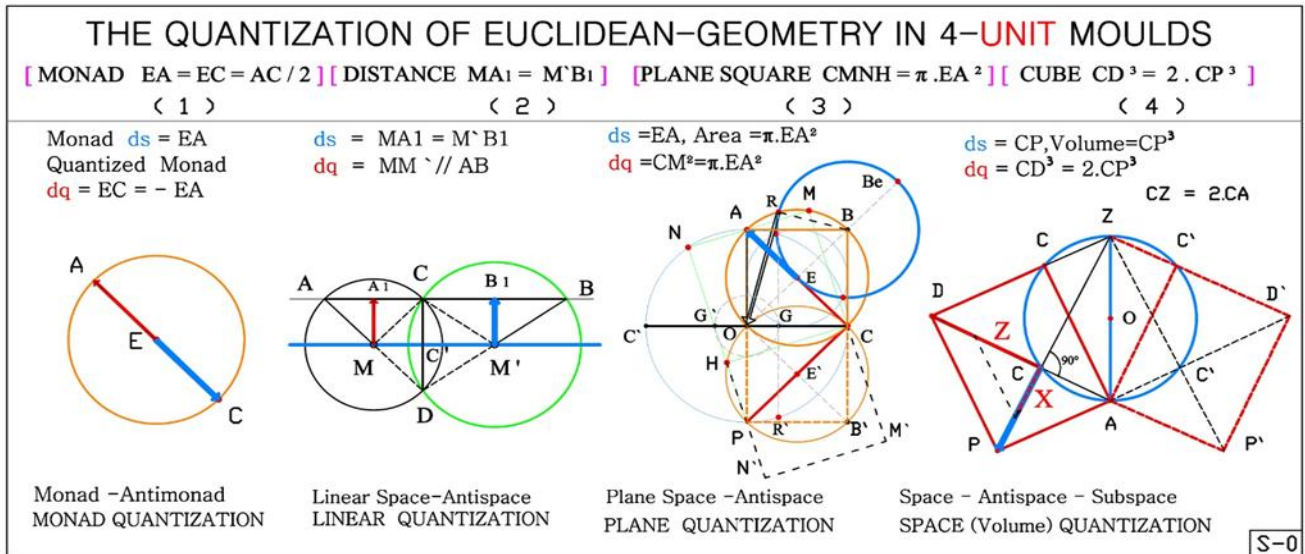


Figure-5-

The UNIT-Monads for → **1)..** Two Points , **2)..** Three Points , **3)..** Two Perpendicular-Equal Vectors , **4)..** Two Perpendicular -NOT. Equal Vectors . But one should be Double the other .

In.1- , The Point A may be at Position E or C , or Anywhere .

The Points A , E , **Define the Straight-line-Segment AE** , and their Symmetrically Opposite Segment CE,

In.2- , The Three Points , C , M , M' , Not on Line , **Define the Straight-line-Segment MM'** which may be Extended to the Apeiron , ∞ , and the Point C , NOT on line , MM' . From Point C , **UNIT-Mould** is the **minimum Line-Segment** that can Be Drawn to the line . It has been Proved and elucidated that , From Point C there is **ONLY- ONE** Parallel the → CA , CB , AB , that can be Deawn to line MM' .

In.3- , The Two Perpendicular & Equal Vectors , CA , CP , **Define the Isosceles Right Angled Triangle , CAP** , on where the **UNIT** , Diameters - circle [E , EA=EC] , and [E' , E'C=E'P] , are Doubled in Common [O , OC = OA = OP] . **UNIT-Mould** is the **Square Equal to the Unit-Circles** that can Be Formed on Triangle CAP . It has been Proved that an Square , CMNH , can be found on the Three circles such that Square CMNH ≡ π . [CA/2]² , which is < **The Quadrature of The Circle** > .

In.4- , The Two Perpendicular & Unequal Line-Vectors , CA , CZ , **Define the Right Angled Triangles , PAD , PBD** on CB line where the **UNIT-Vector** CA = |CB/2| Such that [CD]³ = 2 . [CP]³ , which is < **The Dublication of The Cube** > .

In PHYSICS , for **UNIT - MOULD** are Used , The **Physical Vectors of Forces** , The **Displacement** , The **Velocity-Vectors** , etc.

In MECHANICS , for **UNIT - MOULD** are Used , The **Physical Vectors of → Force - Momentum** , **Displacement – Orbit** , **The Velocities** , Herpolhode , etc.

The Dark - Energy in Physics . [43]

Radiation of Energy is enclosed in a cavity of the tiny Energy volume λ , (which is The cycloidal Wavelength of monad) with Perfect , Absolute Reflecting Boundaries where this cavity may become infinite in every Direction and thus getting in maxima cases (the edge limits) the Properties of Radiation in free Space .The PHOTONS as Electromagnetic vibrations in this Volume , is analogous to the vibrations of an Elastic Body , (Photo-Elastic Stresses in an Elastic material [18]) in this volume Thus Fringes are a Superposition of these Standing (stationary) vibrations .. [41]

METER of Mass in Physics , is the Reaction of Matter \equiv Anything The material , against Motion , the contrast Inertia of matter against Kinetic Effects , and it is a number only without any other Physical meaning . [39-40]

The meter of mass during a Parallel -Translation , is a constant magnitude for every Body ,while for Moment of Inertia during a Rotational - motion is Not , except it is referred to the same axis of the Body . markos 11/9/2015 .

7c..The Three Master-Meters in One , for E- Geometry Units Quantization ,

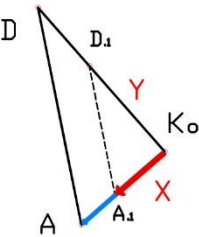
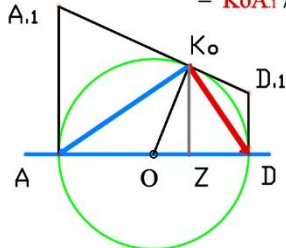
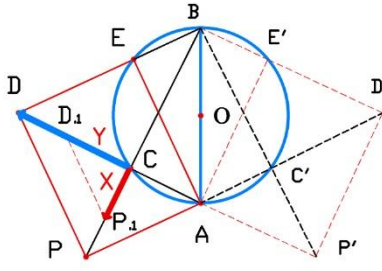
THE THREE LINEAR UNIT - METERS OF SPACES		
$KoA \perp KoD \quad A_1D_1 // AD$ $KoA_1 / KoA = KoD_1 / KoD$ $KoA / X = AD / Y$	$KoA \perp KoD \quad DD_1 // AD$ $OA = OD = OKo \quad OD \perp AA_1 \perp DD_1$ $(KoA)^2 / (KoD)^2 = AD / DD_1$ $= KoA_1 / KoD_1$	$CP_1 \perp CD \quad CP_1 / CP = CD_1 / CD = P_1D_1 / PD$ $ CP_1 ^2 / CP ^2 = CD_1 ^2 / CD ^2 = P_1D_1 ^2 / PD ^2$ $ CP_1 ^2 / CP ^2 = CD_1 ^2 / CD ^2 = P_1D_1 ^2 / PD ^2 = CB ^2 / CA ^2 = 2$
		
THALIS MOULD FOR THE LINEAR AND PARALLEL RATIO EXTREMA (1)	EUCLID MOULD FOR THE PLANE PARALLEL RATIO EXTREMA IN Markos SEMI - STPL Line (2)	MARKOS MOULD FOR THE SPACE PARALLEL RATIO EXTREMA IN THE DUPLICATION OF THE CUBE (3)

Figure-6-

The Thales , Euclid , Markos Mould , for the **Linear – Plane - Space** , Extrema Ratio Meters. Master - meter is the linear Relation of the Ratio , (*continuous analogy*) of the Geometrical magnitudes , of all Spaces and Anti-spaces in any monad .

This is so because of the , extrema - ratio - meters .

Saying **master-meters** , we mean That the Ratio of two or three Geometrical magnitudes , is such that they have a linear relation (*continuous analogy*) in all Spaces , *in one in two in three dimensions*, as this happens to the Compatible Coordinate Systems as these are the Rectangular [x,y,z] , [i,j,k] , the Cylindrical and Spherical -Polar . The Position and the distance of Points can be then calculated between the Points , and thus to **Perform independent Operations** (Divergence , Gradient , Curl , Laplacian) on Points only .This Property issues on material

Points and monads . This is permitted because , Space is quaternion and is composed of Stationary quantities , the Position $\vec{r}(t)$ and the kinematic quantities , the velocity $\rightarrow \vec{v} = dr/dt$ and acceleration $\rightarrow \vec{a} = d\vec{v}/dt = d^2r/dt^2$.

Kinematic quantities are also the tiny Energy volume caves (*cycloid is length λ , the Space of velocity \vec{v} , and \vec{a} consist in gravity's field the infinite Energy Dipole Tanks in where Energy is conserved*) . In this way all operations on edge Points are Possible and applicable .

Remarks :

In F6-(1) ,The Linear Ratio , *for Vectors* , begins from the same Common Point K_0 , of the two concurring and Non-Equal , Concentrical and Co-parallel Direction of monads X , Y , or $X = K_0A_1$ - and $Y = K_0D_1$ - and Become $K_0A_1 - K_0D_1$.

In F6-(2) ,The Linear Ratio , *for Plane* , begins from the same Common Point K_0 , of the two Non-equal , Concentrical and Co-Perpendicular Direction monads.

The Segment $K_0A \perp K_0D$, $OK_0 = OA = OD$ and since OD_1, OA_1 are diameters of the two circles then $K_0A_1 = AA_1$, $K_0D_1 = D_1D$, and Linearly (*in One Dimension*) the Ratio of $K_0A / K_0D = AA_1 / DD_1$, in Plane (*in Two Dimensions*) and the Ratio $[K_0A]^2 / [K_0D]^2 = AA_1 / DD_1$, **i.e.** in Euclid's Plane mould $[K_0A \perp K_0D]$, **The Plane Ratio Square of Segments – K_0A, K_0D -- is constant and Linear , and for Any Segment CP_1 on circle (O,OC) exists another one CP such that ,**

$$\rightarrow CP^2 / CP_1^2 = AA_1 / DD_1 = K_0A_1 / K_0D_1 \leftarrow$$

i.e. the Square Analogy of the sides in Any Rectangle Triangle AK_0D is linear to Extrema Semi-Segments AA_1, DD_1 or to K_0A_1, K_0D_1 monads , or the mapping of the continuous Analog Segment K_0D to the discrete segment K_0A .

The Proof :

Segment $K_0A \perp K_0D$ because triangle AK_0D is rightangled triangle and $K_0Z \perp AD$.Radius $OK_0 = OA = OD$. Since AA_1, DD_1 ,are also Perpendicular to AD , therefore $K_0Z \parallel AA_1 \parallel DD_1$. According to Thales theorem the Ratio $(ZA/ZD) = (K_0A_1 / K_0D_1)$ and since tangent $A_1K_0 = A_1A$ and $D_1K_0 = D_1D$ then $AA_1 / ZK_0 = ZK_0 / DD_1$, and from Pythagorean theorem (Lemma 6) $\rightarrow K_0A^2 / K_0D^2 = (AZ/ZD) = (AA_1 / DD_1) = (K_0A_1 / K_0D_1)$ **i.e.** The ratio of the two squares K_0A^2, K_0D^2 are Proportional to line segments , K_0A_1, K_0D_1 . (o.e.δ).

In F6-(3) ,The Linear Ratio , *for Volume* , Begins from the same Common Point C , of the two Non-equal , Concentrical and Co-Perpendicular Direction monads.

In (3) \rightarrow Segment $CP \perp CD$, and Ratio $[CP_1 / CP] = [CD_1 / CD]$, and Linearly (*in one dimension*) the Ratio of $[CP_1 / CP] = [PD / P_1D_1]$, **i.e.**

in Thales linear mould $[P_1D_1 \parallel PD]$, Linear Ratio of Segments P_1D_1, PD is constant and Linear , and is the Master key Analogy of the two Segments-monads .

Also \rightarrow Segment $CA \perp CP_1$, $OC = OA = OB$ and since $P_1D_1 \parallel PD$, then $[CA / CD]$

= $[CP_1 / CP] = PD / P_1D_1$, and Linearly (*in one Dimension*) the Ratio of , $CP / CP_1 = PD / P_1D_1$ and in Space (*Volume*) (*in three Dimensions*) the Ratio $[CP]^3 / [CD]^3 = [CP_1 / CD_1]^3 = 1/2$. **i.e. in Euclid's The Plane mould $[CP // CP_1 , CD // CD_1]$, The Volume Ratio of Volume Segments $-CP / CD -$, is constant and Linear , and for any Segment CP exists another one CP_1 , such that $\rightarrow (CD_1)^3 / (CD)^3 = 2 \leftarrow$**
i.e. The Duplication of the Cube.

Also , All dimensions of Monads coexist linearly in Segments – Monads and separately (they are the Units of the three Dimensional axis $x,y,z - i,j,k -$) and consequently in all Volumes , Planes , Lines , Segments , and Points of Euclidean Geometry , which are all The One Point only and which is Nothing. For more in [49-51] . 25/9/2015

At the Beginning of the article it was referred to Geometers scarcity from which instigated to Republish this article and to locate the weakness of Prooving these Axioms which created the Non - Euclid Geometries and which deviated General Relativity in the \langle Space - time \rangle confinement . Now is more referred ,

- a). There is not any Paradoxes of the infinite Because is clearly defined what is a Point and what is a line Segment .
- b). **The Algebra of Constructible numbers and Number Fields is an Absurd theory** based on groundless Axioms as the fields are , and with directed Non-Euclid orientations which must be Properly revised .
- c). **The Algebra of Transcendental numbers has been devised to Postpone the Pure Geometrical thought** , which is the base of all sciences , by changing the Base - field of the Geometrical solutions to Algebra as Base . The Pythagorians discovered the existence of the incommensurable of the Diagonal of a square in relation to its side without giving up the base of it , which is the geometrical logic.

d). All theories concerning **the Unsolvability of the Special Greek Problems are Based on Cantor's shady Proof** , \langle that the Totality of All Algebraic numbers is Denumerable \rangle and not edified on the geometrical Basic logic which is the foundations of all Algebra .

The Problem of Doubling the cube as that of the Trisection of any angle , is a Kinematic Mechanical Problem with moveable Poles , and could not be seen differently , while Quadrature with constant Poles of Rotation and the Proposed Geometrical solutions are all clearly exposed to the critic of the Readers , and Today with AI .

All trials for Squaring the circle are shown in [44] and the set questions will be answered on the Changeable System of the two Expanding squares , *Translation [T] and Rotation [R]* . The solution of Squaring the circle using the Plane Procedure method is Now Presented and consists an , *Overthrow* , to all existing Theories in Geometry , Physics and Philosophy .

- e). Euclidean - Geometry is the Base of all sciences , and it is the reflective logic from the Objective Reality and which is nature .

Markos 30 / 4/ 2026

D = SELECTED FROM PRIORS :

1d.- The Herpolhode & Polhode of The Black-Holes .

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 $\vec{B} = J \cdot \vec{w}$

$D = 2 \cdot r$

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}

$\vec{w} = \frac{1}{2} (J_3, w_3 / 2J_1, \cos\theta) \pm \sqrt{[-s \cdot Q / J_1, \cos\theta] + [J_3 w_3 / 2J_1, \cos\theta]^2}$

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

Figure-7- The Total Energy $2 \cdot E = \text{Spin} = \vec{S} = \vec{w} \cdot \vec{B} = \vec{c} \cdot \vec{B} = \vec{c} \cdot \left| \frac{\vec{B}}{r} \right|$, and $\vec{c} = \vec{c}_P = \left| \frac{2 \cdot r \cdot \vec{E}}{\vec{B}} \right|$

The Velocity of Photon \vec{c}_P is analyzed to Centripetal $\vec{c}_K \equiv \vec{R}\vec{B}$, Tangential $\vec{c}_T \equiv \vec{R}\vec{O}$. It was shown [70] that the Rotation with angular-velocity \vec{w} for 45° , to the instantaneous material axis $OA \equiv [\oplus \leftrightarrow \ominus]$ of Rotation where Point A is the, *Nib*, of Angular-velocity vector \vec{w} , and Sweeps - Out at OA slant height of the Central, **POT - Cone**, and with $\vec{w} = \frac{v}{R} = 2\pi f$, { 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 $\vec{c}_K \equiv \vec{R}\vec{B}$** , and to **Tangential $\vec{c}_T \equiv \vec{R}\vec{O}$** .

Conclusions :

In Fig-7- are shown the **Polhode** circle [PT], **Herpolhode** circle [2a] in Plane E. The Polhode Cone-POT is rolling on the Fixed- Herpolhode-Cone POS, with a constant Centripetal velocity $\vec{c}_T \equiv \vec{R}\vec{O} \equiv |\vec{v}| = \frac{\sigma}{2} [1 + \sqrt{5}] \equiv \sigma \cdot \Phi$, 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-4-), **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 $[\oplus, \ominus]$.

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

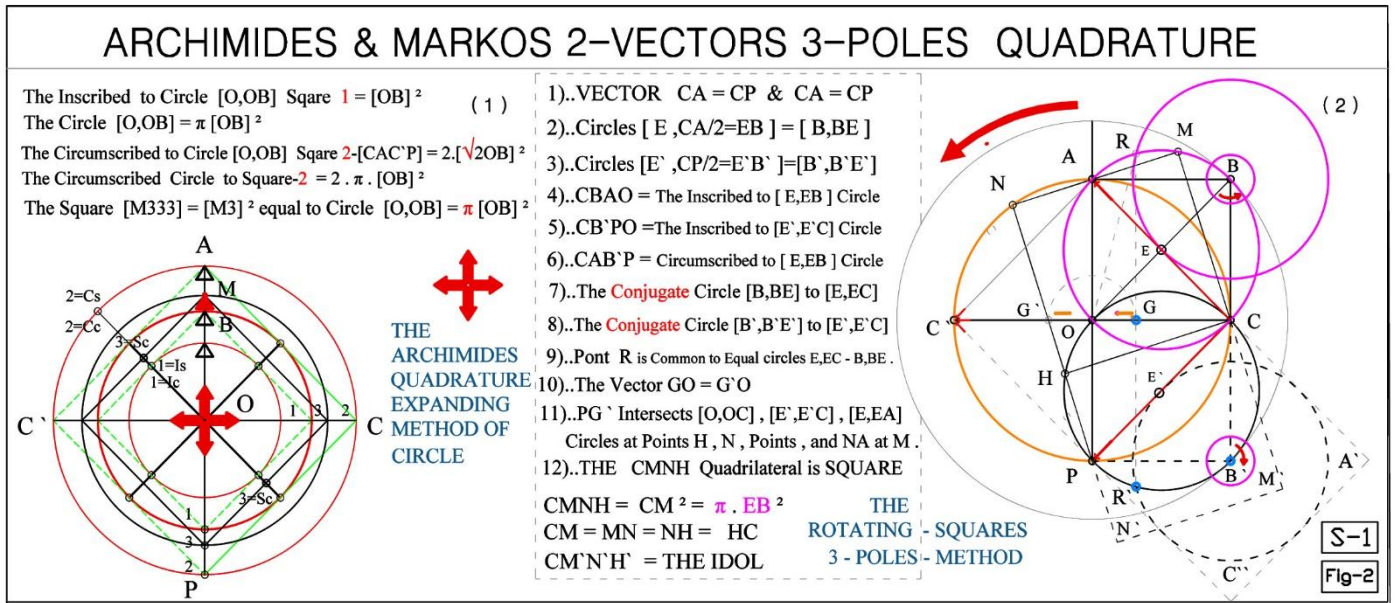


Figure-8-

In (1) , is the ARCHEMIDES Expanding method , of the Inscribed circle [O,O1] → 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 **Herpolhode** is Circle [B,BE] And **Polhode** is the circle [O,OA] , where on it the Energy \equiv Curl-motion $\equiv \vec{c} . 2\pi . [EC]^2$.

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

3d.- The Markos Theorem – On Any Diameter - OB -

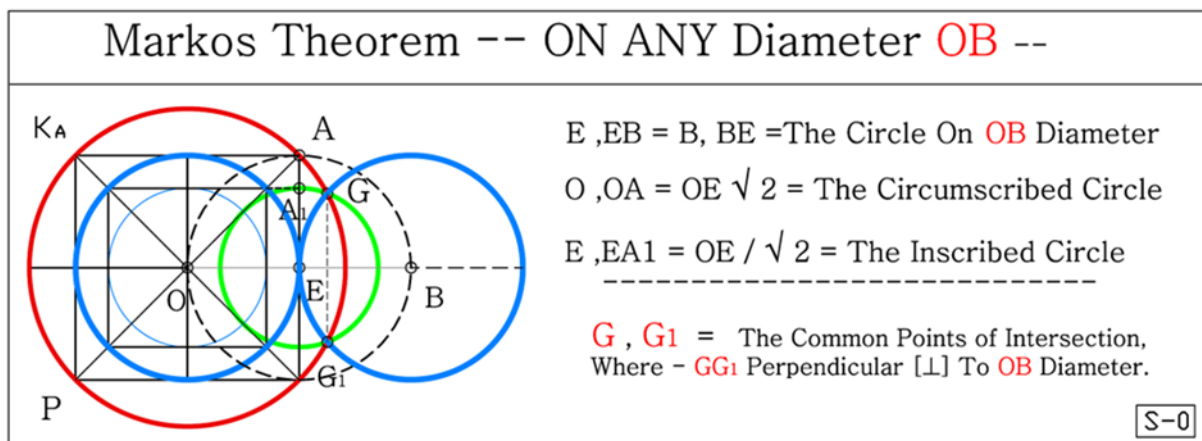


Figure - 9 – The Theorem :

On Each Diameter , OE , of any circle (E , $E B$) we Draw,

1.. *The Circumscribed circle* (O , $OA = OE \cdot \sqrt{2}$) at the Edge-Point O as center ,

2.. *The Inscribed circle* (E , $OE / \sqrt{2} = OA / 2 = EG$) at the Mid-Point E as center ,

3.. *The Circle* (B , $BE = B_e$) = (E , EO) at the Edge Point B as center ,

THEN the Three circles Pass through the common Points G , G_1 , and the Symmetrical to OB Point G_1 forming an axis Perpendicular to OB , which has the Properties of the circles , where the tangent from Point B to the circle (O , $OA = OC$) is constant and equal to $2 \cdot EB^2$ and has to do with , **the Dublication of the Cube** → *The Resemblance Ratio equal to 2* ← . Circle is squared on this Geometric Procedure by Rotation , Expantion and Translation.

The Common-Proof : In [45-47]

3d.- Η ΑΠΟΔΕΙΞΗ ΤΟΥ ΤΕΤΡΑΓΩΝΙΣΜΟΥ ΤΟΥ ΚΥΚΛΟΥ . [Fig-8-]

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 καί 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 τά Ορθογώνια τρίγωνα $CAM - CPH$ έχουν τās πλευρές τους καθέτας αλληλών άρα αι γωνίαι των $C\hat{A}M$, $C\hat{P}H$ είναι ίσαι , και επειδή ισχύει η ισότης των τριών τριγόνων $AGO AG'O$, $PO G'$, συνεπώς αί πλευραί $CM = CH$,

ε).. Επειδή το Τετράπλευρο $CMNH$ είναι Ορθογώνιο και έχει τīs 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 , $BE=EC$). Επειδή δε το Σημείο R ανήκει και στους δύο κύκλους , (E , EC) , (B , $BE=EC$) , επομένως οι Γεωμετρικές των ή , άλλες Ιδιότητες τους είναι οι Ίδιες μεταξύ των , Δηλαδή ισχύει και είναι $|CMNH| \equiv \pi \cdot [CE]^2 \equiv \pi \cdot [CA/2]^2$. **όέδ.**

4d.- Η ΜΗΧΑΝΙΚΗ ΚΙΝΗΣΗ ΤΟΥ ΦΩΤΟΝΙΟΥ ΛΟΓΩ $SPIN = \bar{\omega} \cdot \bar{B} / 2 =$

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

[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 $E_K = \frac{m \cdot c^2}{r} = SPIN$

Το Διάνυσμα τής ταχύτητας $\bar{c} \equiv \text{ΕΝΑ Ευθύγραμμο Τμήμα}$, 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 τίς 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 . **καί ΣΤΟ Σημείο R , ισχύει ,**

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

β). Η Εφαπτομένη Συνιστώσα \bar{c}_T , **Επενεργεί στο Κέντρο O** , καί αναλύεται σέ 2- Συνιστώσες την , $\overrightarrow{OG} = \overrightarrow{GO}$, NA Ενεργεί στο Σημείο G' Επί τού Άξονος CC' , και την $\overrightarrow{RG} = \overrightarrow{R'G}$, NA Ενεργεί Καθέτως ώστε $\overrightarrow{RG} \perp CC'$. **Δηλαδή στο ίδιο Σημείο G'**

Το Διάνυσμα τής ταχύτητας $\bar{c}_T \equiv \overrightarrow{RO}$, Ενεργεί Εντός τού Άξονος C- C' , και Καθέτως αυτού τού Άξονα με γωνία Στροφής $G'PO = 2\pi / r^2$ ακτίνια .

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

δ). Η ταυτόχρονος Επενέργεια τού Διανύσματος \bar{c}_T στό Κέντρο O , και η Στροφή στο Σημείο G' , **Μεταφέρει τίς Γεωμετρικές και Ενεργειακές Ιδιότητες του** στο **Εντός Αυτού Σχηματιζόμενο ΕΝΑ και Μοναδιαίο Τετράγωνο** πού ΙΣΟΥΤΑΙ μέ

το Εμβαδό του Συζυγούς Κύκλου . Αυτή η ΜΟΝΑΔΑ \equiv ΤΕΤΡΑΓΩΝΟ είναι η Μονάδα μέτρησης της Κίνησης των Χωροενεργειακών Στοιχείων του Φωτονίου που 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 :

- ε.1.** Το άρθρο-124-αποτελεί Συνέχεια του 123=ΔΙΑΝΥΣΜΑΤΑ και αφορά την Απλοποιημένη Αυστηρή Απόδειξη του προβλήματος < του **Τετραγωνισμού του κύκλου χρησιμοποιώντας Χάρακα και Διαβήτη** > όπως τέθηκε για πρώτη φορά από τους Αρχαίους Έλληνες. Τα Φωτόνια τετραγωνίζουν τον κύκλο Ενέργειάς τους \equiv Η **Περιστροφή της Αντιπολικής των** , ώστε να ισούται με ένα **Τετράγωνο Μονάδας-Ενέργειας** , 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 της Διπλής Διάθλασης του Διανύσματος της ταχύτητας $\vec{c}_T \equiv \overline{RO}$, και έτσι η κίνηση **Φυσητήρα** που είναι η Στρεπτική τους κίνηση.
- ε.2.** Η 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.
- ε.3.** Οι ακτίνες του **Φωτός** και κατά συνέπεια τα **Φωτόνια** ταξιδεύουν σε Ευθείες γραμμές , δηλαδή ακολουθούν την **Ευκλείδεια Γεωμετρία και Καμία άλλη** .
- ε.4.** Ο **Χρόνος** είναι το μέτρο, για μέτρηση των αλλαγών στην Ενέργεια , και **ΟΧΙ** άλλη Ουσία. Η Ουσία του Σύμπαντος είναι \rightarrow **Χώρος** \equiv $(\{\oplus \leftarrow r \rightarrow \ominus\})$, **Ενέργεια** \equiv $(\{\oplus \sigma \ominus\}) \leftarrow$
- ε.5.** Η Βαρυτική δύναμη G , προκαλεί την κάμψη των Φωτεινών Ακτίνων και **ΟΧΙ** τη **Στρέβλωση του Χωροχρόνου** , Έννοια που Δεν Υφίσταται και που ποτέ Διευκρινίστηκε .
- ε.6.** Επειδή η Επίλυση των Προβλημάτων του Τετραγωνισμού του Κύκλου και Διπλασιασμού του Κύβου Έγινε με , **Χάρακα και Διαβήτη** , χρησιμοποιώντας την Ευκλείδεια Μέθοδο των **Ευθυγράμμων Τμημάτων** , **Αποτελεί Ανατροπή** Όλων των Υπαρχουσών Θεωριών στη **Γεωμετρία** , τη **Φυσική** και τη **Φιλοσοφία** .

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Article [124] is Dedicated to the **National Technical University of Athens** , NTUA , from where I Graduated and Acquired the Path Knowledge of the Truths of Nature..

Το Άρθρο [124] είναι Αφιερωμένο στο Εθνικό Μετσόβιο Πολυτεχνείο (ΕΜΠ) , από όπου Αποφοίτησα και Απέκτησα την Ατραπό της Γνώσης των Αληθειών της Φύσης.

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