This article presents unification of quantized Space and the quantized Energy through the Geometrical Primary Dipole with the universal Principle of the Virtual Work. Collision of Dipole creates Breakages and re-collision with them transfers to them Thrust the velocity vector, that creates all Particles.

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1.. Introduction.


1.. It was shown in [9-18] what is Primary Neutral Space as well as Infinity [15] and rotational energy \( \Lambda \) [22] so [PNS] \( \rightarrow [A, B - PA, PB] \equiv \) Work \( W \equiv |ET| = [|A|, V + \Lambda x V] \rightarrow W = \int P.ds = 0 \rightarrow \text{Time } T = 0 \).

\textbf{Cause is}, because Primary Point \( \textbf{A} \) is nothing and \textbf{is Quantiﬁed as } \rightarrow \textbf{Point B} (where then is following Principle of Virtual Displacements \( W \rightarrow P.ds = 0 \)) \equiv \text{Force } x \text{Displacement } = \text{Energy } x \text{Space}, and according to ancient Greek Philosopher Anaximander [ The non-existent ( i.e. Point \( \textbf{A} \)), \textbf{Exist} when \textbf{is} \\ \text{is } \rightarrow \textbf{Point \( \textbf{B} \))} = \text{[Tô tîtou \andpont;\,\,\,\,\,\,O\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,\,...
The total Energy \( E = \lambda z A \) which is embodied in monad \( A' \) is moving as an Ellipsoid in the Configuration of co-variants \( \lambda , m , v = \Phi \mathcal{E} \), as Kinetic (Energy of motion \( \Phi \)) and Potential (Stored Energy in \( \lambda , m , v \)) energy by rotation and displacement, on the principal axis \( 2r = r^2.e^i(\lambda - \pi.r/b) = 3.96910^{-22} \) where it is balancing on Common Circle. [F5-1]

1. The rotated energy \( \pm \lambda \mathbf{V}i = \mathbf{r.m}v = \mathbf{mr}(\mathbf{wr}/2) \) Stabilizers at, Common Circle of \( 2r \) diameter which is the Sub-Space of the two Opposite Momentum Spaces and Anti-Momentum Spaces.\[s\]

2. At Common velocities, because velocities on the circumference are of opposite direction \( + \Phi \uparrow - \Phi \downarrow \), collide.

3. Collision of two vectors is equal to the Action of the two opposite quaternions \( \pm \mathbf{V}i \), \( \mathcal{O} \), \( s + \mathbf{V}i \), etc.; \( \mathbf{v} = \mathbf{w} \) is the Sub-space of the two opposite Momentum Spaces and Momentum Anti-Spaces.

C.. The Fundamental Particles creation process.

The article shows The Fundamental Particles creation process from equilibrium \( \pm \lambda \) Momentum on Common Circle of Space, Anti-Space where \( (+ \lambda - \lambda = 0 \) and opposite \( \pm \lambda \) velocities \( \mathcal{O} \) collide. Rotational energy (Momentum \( \pm \lambda \)) is entering gravity cave \( L_g = 2.r = e^i(\lambda - 9.\pi/2)b = 3.96910^{-22} \) where it is balancing on Common Circle. [F5-1]

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De Moivre’s formula for the nth roots of a quaternion, where \( q = k [\cos \varphi + \{\mathbf{v}].\sin \varphi] \) for \( w = 1/n \), 
\( q^n = k^n [\cos wq + \{\mathbf{v}].\sin wq] \) where \( q = z = \pm (x+i.y.+z.k) \), decomposed into its scalar \((x)\) and vector part \((y.i)\) and this because all the inscribed regular polygons in the unit circle have this in the first vertex at point \( 1 \) or at \(-1 \) (for real part \( \varphi = 0 \), \( q = 2n \pi \).

When the components of a vector \( w \) are expressed in terms of the three Euler angles \( \varphi, \theta, \phi \) then is as quaternion \( z(\cos \varphi / 2 \mathbf{e}_0 + \sin \varphi / 2 \mathbf{e}_1 + \sin \theta / 2 \mathbf{e}_2 + \sin \phi / 2 \mathbf{e}_3) \). The Action of a Unit quaternion on a scalar \( s \rightarrow i(\mathbf{v}.\mathbf{i}) = s + v \) (quaternion) \( v \rightarrow = (0,\mathbf{v}.) \), and of vector type \( \mathbf{v}' \mathbf{i} \rightarrow = \mathbf{v} + 2\mathbf{v}.(\mathbf{v} \times z) \) is Cauchy-Schwarz. 

When the components of a vector \( w \) (\( wx + wy + wz \)) are expressed in terms of the three Euler angles \( \varphi, \theta, \phi \) then is as quaternion \( z(\cos \varphi / 2 \mathbf{e}_0 + \sin \varphi / 2 \mathbf{e}_1 + \sin \theta / 2 \mathbf{e}_2 + \sin \phi / 2 \mathbf{e}_3) \). The Action of a Unit quaternion on a scalar \( s \rightarrow i(\mathbf{v}.\mathbf{i}) = s + v \) (quaternion) \( v \rightarrow = (0,\mathbf{v}.) \), and of vector type \( \mathbf{v}' \mathbf{i} \rightarrow = \mathbf{v} + 2\mathbf{v}.(\mathbf{v} \times z) \) is Cauchy-Schwarz. 

2.2. Quaterrion Actions : Action (\( © \)) of a quaternion \( z = s + \mathbf{v}.i = s + \mathbf{v}.\mathbf{i} \) on point \( P(a,x,y,z) \) is \( za = zp^{-1} \) (screw motion) and for \( a \neq 0 \) then \( z \rightarrow a = az \) which have the same action \( zp^{-1} \), meaning that quaternion is homogeneous in nature. Action of a Unit quaternion on a scalar \( s \rightarrow z = zs^{-1} = s^2z^{-1} = s \) Action of a Unit quaternion \( z \rightarrow \) on a vector \((\mathbf{v}.) \) is \( 2zv^{-1} \), i.e another vector \( \mathbf{v}' \) (quaternion) \( v' = (0,\mathbf{v}.) \), and of vector type \( \mathbf{v}'.\mathbf{i} \rightarrow = \mathbf{v} + 2\mathbf{v}.(\mathbf{v} \times z) \).

When vector \( w \) (\( wx + wy + wz \)) is the angular velocity vector only, in the absence of applied torques, \( L = \mathbf{L} .i = \mathbf{L}.y + \mathbf{L}.z = \mathbf{r} \times \mathbf{v} \) is the angular momentum vector (where \( r = \)lever arm distance and \( m, \mathbf{v} \rightarrow p \), the linear or translation momentum), and \( \mathbf{i} = (11,12,13) \) are the Principal moments of Inertia then angular kinetic energy \( E = \frac{1}{2} w L \mathbf{L} = \frac{1}{2} I_1 w^2 + \frac{1}{2} I_2 w^2 + \frac{1}{2} I_3 w^2 \). Since both \( L \) and \( E \) are conserved as \( L^2 = L_1^2 + L_2^2 + L_3^2 \) and \( E = L_1^2 / 2J_1 + L_2^2 / 2J_2 + L_3^2 / 2J_3 \) and by division becomes \( 1 = [L_1^2/(2J_1)] + [L_2^2/(2J_2)] + [L_3^2/(2J_3)] \) \( \rightarrow \) the Poinsot's ellipsoid construction and when \( L_2^2 / 2EJ = r^2p^2 / 2E.2E/(w^2) = w^2, r^2p^2 / (4T^2) = w^2 / [2E] \), then this is a Kinetic-Energy Inertial ellipsoid dependent on the total kinetic energy \( E \), and the translational momentum \( p \), with axes \( a \rightarrow [2E \mathbf{r} \mathbf{p}] \), \( b \rightarrow [2E \mathbf{r} \mathbf{p}] \), \( c \rightarrow [2E \mathbf{r} \mathbf{p}] \). Ellipsoid \( x^2/a^2 + y^2/b^2 + z^2/c^2 = 1 \) and when \( a^2 = b^2 = c^2 = r^2 \) the circle \( x^2 + y^2 + z^2 = r^2 \), and resultant \( E = \sqrt{a^2 + b^2 + c^2} \). Considering \( L_2^2 / 2J = J_1.w^2 / 2J = Jw^2 / 2r.p.w \) then \( E = \sqrt{r1p1w1^2 + \sqrt{r2p2w^2} + \sqrt{r3p3w^3}} \) or \( \sqrt{E^2} = \sqrt{a^2+b^2+c^2} \), i.e. a cuboid \((a \mathbf{b} \mathbf{c}) \), rectangular parallelepiped, with dimensions \( a = \sqrt{r1p1w1} \), \( b = \sqrt{r2p2w^2} \), \( c = \sqrt{r3p3w^3} \) and the length of the space diagonal (resultant) \( E = \sqrt{a^2+b^2+c^2} \).
Because the position velocity of a quaternion \( \dot{z} = s + v \vec{v} i \) is [\( d\dot{z}/ds = (d\dot{z}/d,0) (s + v \vec{v} i) = (1 + dv/\dot{z}, \nabla \vec{v} i) \)] and acceleration [\( d^2\dot{z}/ds^2 = (d^2\dot{z}/d^2,0) (1 + dv/\dot{z}, \nabla \vec{v} i) \)] in Polar plane coordinates where angular momentum \( L = \omega r m = \tau r \vec{m} = \vec{p} \), then acceleration \( d^2\dot{z}/ds^2 = (d^2\dot{z}/d^2,0) \) (s, \( \cos \theta, \sin \theta, 0 \)) = \( (0, L^2/m^2 r^3 + r, 2Ld\dot{z}/ds^2/r^2, 0) \) where, 

\[ L^2/m^2 r^3 + r = \text{the acceleration in the } (r) \text{ radial direction,} \]
\[ 2Ld\dot{z}/ds^2/r^2 = \text{the acceleration in the } \theta \text{ direction}. \]

Since Points are nothing and may be anywhere in motionless space, so Position quaternion is referred to this space only, and generally the velocity and acceleration in a non-Inertial, rotating reference frame is as,

velocity \( \rightarrow [d\dot{z}/dt] = (d/dt, \vec{w})(0, \dot{z}) = (-\vec{w} \dot{z}, \vec{w} \times \dot{z} + d\dot{z}/dt) \) and

acceleration \( \rightarrow [d^2\dot{z}/dt^2] = (d/dt, \vec{w})(-\vec{w} \dot{z}, d\dot{z}/dt + \vec{w} \times \dot{z}) = (-d\vec{w}/dt \dot{z}, d^2\dot{z}/dt^2 + 2 \vec{w} \times d\dot{z}/dt + d\vec{w}/dt \dot{z} - \vec{w} \dot{z} \vec{w}) \) where

\[ \rightarrow -d\vec{w}/dt \dot{z} = \text{the intrinsic acceleration of quaternion,} \]
\[ d^2\dot{z}/dt^2 = \text{the translational alterations (they are in the special case of rotational motion where rotation on two or more axes creates linear acceleration in, one only different rotational axis } J \), \]
\[ 2 \vec{w} \times d\dot{z}/dt + d\vec{w}/dt \dot{z} = \text{the coriolis acceleration, a centripetal acceleration is that of a force by which bodies (of the reference frames [RF]) are drawn or impelled towards a point or to a center (the known hypothetical motionless non-rotational frame [AF])}, \]
\[ \rightarrow -\vec{w} \vec{w} \dot{z} = \text{the azimuthal acceleration which appears in a non-uniform rotating reference frame in which there is variation in the angular velocity of the reference point.} \]

Time \( t \) does not interfere with the calculations in the motionless frame.

i.e. The conjugation operation (The Action of \( \dot{z} \) on \( \vec{u} \)) is a constant rotational Kinetic-energy \( (E) \), which is mapped out by the nib of vector \( \vec{w} \), as the Inertia ellipsoid in space which instantaneously rotates around vector axis \( \vec{w} \) (the composition of all rotations) with the constant polar distance \( \varrho, \vec{L}/|L| \) and the constant angles \( \theta s, \theta b \), traced on Space cone and on Body cone which are rolling around the common axis of \( \vec{w} \) vector.

and if the three components of \( E \) are on a cuboid with dimensions \( a,b,c \) then (Action of \( \dot{z} \) on any \( \vec{u} \)) corresponds to the composition of all rotations only, by the rotation of unit vector axis \( \vec{u}(0,u) \), by keeping a unit cuboid held fixed at one point of it, and rotating it \( \theta \), about the long diagonal of unit cuboid through the fixed point (the directional axis of the cuboid on \( \vec{u} \)).

Applying the fundamental equations on two points of stationary [PNS] \( z o = [\lambda, \pm \Lambda \vec{v} i] \), \( z o = [\lambda^2, |\Lambda|^2] \), \( c o = [\pm \Lambda, \nabla \vec{x} \Lambda] = 0 \) then \( e = \nabla \times \Lambda = \nabla \Lambda = [\text{div } \Lambda, \text{curl } \Lambda] = [0, \pm \Lambda] \) i.e. the points are incorporating the equilibrium vorticity \( \pm \Lambda \) either as even or odd functions. Since \( z o = [\lambda, \pm \Lambda \vec{v} i] \), then positive \( z \hat{o} = [\lambda, \Lambda \vec{v} i] \) and \( z \dot{o} = [\lambda, -\Lambda \vec{v} i] \) is the conjugate quaternion and because \( z \hat{o} \) is a unit quaternion then

Action on point is \( \dot{A} = \text{New quaternion } z = z \hat{o} \odot \delta = z \odot \hat{o} \odot z \hat{o} = [\lambda, \Lambda \vec{v} i],[0, \Lambda \vec{v} i],[\lambda, -\Lambda \vec{v} i] = [\pm \Lambda, \Lambda + 2 \Lambda \vec{X} \Lambda + 2 \Lambda (\vec{A} \Lambda) \vec{X} + \Lambda \vec{X} \Lambda + \Lambda \vec{X} \Lambda]. \n\]

Since \( \text{div } \Lambda = 0 = \text{Lin } \Lambda \vec{v} \Lambda + \Lambda \vec{v} \Lambda \vec{v} \Lambda = \text{Lin } \vec{v} \Lambda + \vec{v} \Lambda + \vec{v} \Lambda \vec{X} \Lambda / d\Lambda /ds \) then \( \Lambda \vec{v} = d\Lambda /ds \), which is the arc-length derivative of \( \Lambda \) direction showing that on points exists directional vorticity as,

\( \begin{align*}
(\lambda^2-\Lambda^2) \Lambda &= \text{Euler vorticity } \mathcal{V} \\
2\Lambda (\vec{A} \Lambda) &= \text{Coriolis vorticity } \mathcal{V} & \text{Positive Scalar magnitude}
\end{align*} \)

\( 2\Lambda (\vec{X} \Lambda) = \text{Centripetal vorticity } \mathcal{V} \cup \mathcal{V} & \text{Vector magnitude and for } \vec{V} \perp \Lambda \text{ then } \)

\( \tau = [0, \Lambda \cos \theta + (\vec{X} \Lambda) \sin \theta] \) which is the Euler-Rodrigues formula for the rotation by an angle \( \theta \), of the vector \( \Lambda \) about its unit normal \( \vec{v} \). Conjugation of \( \delta \) on point \( P \) is \( G = [0, \Lambda] \odot [r + \tau, i] = [-\vec{X} \Lambda, \vec{X} \vec{v} i] \), \( \vec{r} + \Lambda \vec{X} \vec{v} \) and for \( \Lambda \perp \vec{r} \) which is velocity \( \vec{v} \) then \( \vec{G} = [0, \vec{V} \perp \Lambda \vec{X} \vec{v}] \) and the normalized quaternion is \( G^* = [\vec{X} \Lambda, \vec{v} \Lambda + \Lambda \vec{v} \Lambda ] / (\Lambda \Lambda \Lambda)^{1/2} \) which is Gravity as said of Spaces, i.e. A Potentially Rotational kinetic energy \( (mr^2\omega^2) \) as above without invoking laws of mechanics.

It was shown, that into Gravity cave \( Lg = 2.r = e^{i(.-9, \pi/2)}lb = 3,569.10^{-62} \) m, is inversely balancing the Common Circle of Space Anti-Space, with Velocities \( (\vec{v} \perp \vec{w} \perp) \) that of light \( .c \), tending to zero.

For rotations in caves \( Lc > Lg \) then exist Velocities \( (\vec{v}c = \vec{w}r) \) > than that of light \( .c \), \( (\vec{v}c > c) \text{ tending to } \infty. \)

The hidden pattern of universe is \( \text{STPL-line, which is off the Spaces and connect them (maintain, conserve, and support all universe)}, so it, the Navel string of galaxies.} \)
3.. Extremum Principle or Extrema :
All Principles are holding on any Point A.
For two points A, B not coinciding , exists Principle of Inequality which consists another quality.
Any two Points exist in their Position under one Principle , Equality and Stability,
In Virtual displacement which presupposes Work in a Restraining System .[12]
This Equilibrium presupposes homogenous Space and Symmetrical Anti-Space .
For two points A, B which coincide , exists Principle of Superposition which is a Steady
State containing Extrema for each point separately .
Extrema , for a point A is the Point , for a straight line the infinite points on line , either
these coincide or not or these are in infinite , and for a Plane the infinite lines and points
with all combinations and Symmetrical ones which are all monads , i.e.
all Properties of Euclidean geometry , compactly exist in Extrema Points , Lines , Planes , circles .
Since Extrema is holding on Points , lines , Surfaces etc , therefore all their compact Properties
( Principles of Equality , Arithmetic and Scalar , Geometric and Vectors , Proportionality , Qualitative , Quantities , Inequality , Perspectivity etc ), exist in a common context as different monads .
Since a quantity ( a monad AB) is either a vector or a scalar and by their distinct definitions are ,
Scalars ----- [ s ] , are quantities that are fully described by a magnitude ( or numerical value ) alone ,
Vectors ---- [ v N ] , are quantities that are fully described by both magnitude and a direction ,
Quaternion [ d s = s+v,̅Ni ] is a vector with two components , the one s ,is the only space with Scalar
Potential ( any field Φo ) , which is only half lengths of Space Anti-Space , ( the longitudinal positions ) ,
(x) → (x) straight line connecting Space [S] , Anti-Space [AS] in [PNS] and in it exist , the initial Work ,
Impulse , bounded on points which cannot be created or destroyed which is analogous to the ( x ) magnitude ,
and the other one y ( is the infinite local curl fields So ) due to the Spin which is the intrinsic rotation of the
Space and Anti-Space , therefore exists a common Extrema formulation for all monads .
In [17-22] , The six , triple lines , points was shown that
Extrema of Space is Anti-space ( Quaternion z'o = [ λ , Λui ] ) ,
Extrema of Plane is Anti-Plane ( Quaternion z'o = [ λ , Λui ] ) ,
Extrema of Line is Anti-Line → 0 ± ∞ ( Quaternion z'o = [ λ , Λui ] ) ,
i.e. a new Monad AB = [ s + v,̅Ni ] with s , as the real part and v,̅Ni again as the Imaginary part.
The nature of geometry is such ( circular reference ) that through this intrinsic mechanism to transform
Quaternion z'o to a different quaternion ̃f o , as is the causality dilemma of < the chicken or the egg > .
Balancing of Space , Anti-Space is obtained by the Biaxial Ellipsoid ( sx = sy ) which exists as momentum
± Λ in caves of diameter 2r . Recovery body (Stabilizer) of the two opposite magnitudes equilibrium the two
Moments by the collision of the two opposite Velocity Monads ± v , due to momentum ± ΛNi . [25-26].

4.1. The Six , Triple points , Line .

It was proved as a theorem [16] that on any triangle ABC and on circum circle exists one inscribed triangle
AEBCE  and another one inscribed Extremes triangle KAKbKC such that the Six points of intersection
of the six pairs of triple lines are collinear → (3+3) . 3 = 18 lines (F-2)
In Projective geometry , Space points are placed in Plane and in Perspective theory < Points at Infinity >
and so thus are extremes points [17] . Extremes points follow Euclidean axioms and it is another way of mapping
and not a new geometry contradicting the Euclidean .
It was also shown that Projective geometry is an Extrem in Euclidean geometry and [STPL] their boundaries .
In case of Orthogonal system ( angle A = 90° ) then the inscribed triangle AEBCE is in circle and the
Extrema triangle KAKbKC has the two sides perpendicular to diameter BC and the third vertice in∞ so any
non orthogonal transformational system on an constant vector ̃A B , which is the orthogonal system , is
happening on the supplementary of 0 angle i.e. ( 90-0 ) where then on AB exists → cscθ = constant and equal
to ± [1/√1-cos(90°)] = ± [ 1/√1- (BA/ BDB)² ] which is identified for say AB = ̃v to Lorentz factor
γ = ± [1/√1-β²] where β = v/c , i.e cscθ = constant = ± [ 1/√1- (BA/ BDB)² ] , and it is the geometrical
interpretation of Projective geometry as an Extrema in Euclidean geometry .
In Projective geometry , Space points are placed in Plane and in Perspective theory < Points at Infinity > and so
thus are extrema points[17] . Extrema points follow Euclidean axioms either by translation geometry [s,0] or by
rotation [0,s,̅Ni] or both [s,̅v,̅Ni] , where s = scalar and ̅v,̅Ni = vector .The Projective sphere comprehending
great circles of the sphere as < lines > and pairs of antipodal points as < points > does not follow the Euclidean
Axioms 1-4, because <points at Infinity> must follow 1-4, which do not accept lines, planes, spaces at infinity. The same also for Hyperbolic geometry with omega point, so ???

Since Natural logarithm of any complex number b, can be defined by any natural and real number as the power \( w \), which represent the mapping to which a constant say \( e \), would have to be raised to equal \( b \), i.e. \( e^w = b \) and or \( e^{\ln(b)} = e \) , [base \( e \)]^ \( w \) natural number \( w \) = \( b \), therefore, represent mapping which is the regular polygonal exponentiation of unit complex monad \( A\bar{B} = 1 \) on base \( e \), of natural logarithms.

Using the generally valued equation of universe for zero work \( W = ds.\mathcal{O}A - B [P.\mathcal{ds}] = 0 \), [20] for primary Space and anti-Space on monad \( A\bar{B} \) with the only two quantized quantities \( ds = |A\bar{B}| \) and \( P = v.\mathcal{V} \), then work is the action of the consecutive small displacements (shifts) along the unit circle caused by the application of infinitesimal rotations of \( A\bar{B} = 1 \) starting at 1 and continuing through the total length of the arc connecting 1 and -1, in complex plane.

4.2. Perspectivity:
In Projective geometry, (Desargues’ theorem), two triangles are in perspective axially, if and only if they are in perspective centrally. Show that, Projective geometry is an Extrema in Euclidean geometry.

Two points \( P, P' \) on circumcircle of triangle \( ABC \), form Extrema on line \( PP' \). Symmetrical axis for the two points is the mid-perpendicular of \( PP' \) which passes through the centre \( O \) of the circle therefore Properties of axis \( PP' \) are transferred on the Symmetrical axis in rapport with the center \( O \) (central symmetry), i.e. the three points of intersection \( A1, B1, C1 \) are Symmetrically placed as \( A', B', C' \) on this Parallel axis. F(4-1).

a. In case points \( P, P' \) are on any diameter of the circumcircle F(4-2), then line \( PP' \) coincides with the parallel axis, the points \( A', B', C' \) are Symmetric in rapport with center \( O \), and the Perspective lines \( AA', BB', CC' \) are concurrent in a point \( O' \) situated on the circle.

When a pair of lines of the two triangles \( (ABC, abc) \) are parallel F(4-3), where the point of intersection recedes to infinity, axis \( PP' \) passes through the circum centers of the two triangles, (Maxima) and is not needed “to complete” the Euclidean plane to a projective plane i.e.

Perspective lines of two Symmetric triangles in a circle, on the diameters and through the vertices of corresponding triangles, concurrent in a point on the circle.

b. When all pairs of lines of two triangles are parallel, equal triangles, then points of intersection recede to infinity, and axis \( PP' \) passes through the circum centers of the two triangles (Extremes).

c. When second triangle is a point \( P \) then axis \( PP' \) passes through the circum center of triangle.

Now is shown that Perspectivity exists between a triangle \( ABC \), a line \( PP' \) and any point \( P \) where then Extrema, i.e. Perspectivity in a Plane is transferred on line and from line to Point This is the compact logic in Euclidean geometry which holds in Extreme Points.

Any Segment \( AB \) between two points \( A, B \) consist a Vector described by the magnitude \( AB \) and directions \( \overrightarrow{AB}, \overrightarrow{BA} \) and in case of Superposition \( \overrightarrow{AA}, \overrightarrow{A\bar{A}} \). i.e. Properties of Vectors, Proportionality, Symmetry, etc exists either on edges \( A, B \) or on segment \( AB \) as follows:

Theorem: On any triangle \( ABC \) and the circumcircle exists one inscribed triangle \( A\bar{B}\bar{E}B\bar{C} \) and another one circumscribed Extrema triangle \( K\bar{A}K\bar{B}K\bar{C} \) such that the Six points of intersection of the six pairs of triple lines are collinear \( \rightarrow (3+3).3 = 18 \).
The Six Triple Points Line → The Six, Triple Concurrency Points, Line → [STPL] → F(4-2)

It has been proved [16] that since Perspective lines, on Extremes Triangles AEBECE, KA KB KC concurrent, and since also Vertices A, B, C of triangle ABC lie on sides of triangle KA KB KC, therefore all corresponding lines of the three triangles, when extended concurrent, and so the three lines are Perspective between them i.e.

This compact logic of the nine points [A, B, C], [AE, BE, CE], [KA, KB, KC] of the inscribed circle (O, ABC) when is applied on the three lines KA KB, KA KC, KB KC, THEN THE SIX pairs of the corresponding lines which extended are concurrent at points PA, PB, PC for the Triple pairs of lines [AAE, BCE, CBE], [BBE, CAE, ACE], [CCE, ABE, BAE] and at points DA, DB, DC for the other Triple pairs of lines [CB, KBA, BECE], [AC, KB, CEAE], [BA, KB C, AEBE] and lie on a straight line, and in case of points A, B, C being on a sphere then [STPL] becomes a cylinder.

Conclusion:
1. [STPL] is a Geometrical Mechanism that produces all Spaces, Anti-Spaces in the Common Sub-Space.
2. Points A, B, C and lines AB, AC, BC of Space, communicate with the corresponding AE, BE, CE and AEBe, AECE, BCE of Anti-Space, separately or together with bands of three lines at points PA, PB, PC, and with bands of four lines at points DA, DB, DC on common circumscribed circle (O, OA) Sub-Space.
3. If any monad AB (quaternion), [s, v, wI], all or parts of it, somewhere exists at points A, B, C or at segments AB, AC, BC then [STPL] line or lines, is the Geometrical expression of the Action of External triangle KA KB KC, the tangents, on the two Extreme triangles ABC and AEBECE (of Space Anti-space).

5. The method:

THE BALANCING OF SPACE → ANTI-SPACE.

The work W, for the infinite points on the two tangential to n planes is equal to W = [n.P] = [n]. where n = displacement of A to B and it is a scalar magnitude called wavelength of dipole AB.

A = the amount of rotation on dipole AB (this is angular momentum L and it is a vector). Momentum ± A = r.m.v = rm.wt = m.r².w, where w is the angular velocity (spin) which maps velocity vector v on the perpendicular to ± A plane with the two components v ⊥ v B. Tangential velocity v e = wr is a quaternion v e = w.r = z ± [s ± v, wI] where s = |v e| = |r.w| and v, wI = |wIx|.
In a spherical cave the Biaxial Ellipsoid ($\mathbf{ax} = \mathbf{ay}$) exists as momentum $\pm \Lambda$ on coves of diameter $2r$ with parallel circles $\rightarrow 0$. The Biaxial Anti-Ellipsoid ($-\mathbf{ax} = -\mathbf{ay}$) exists as equal and opposite momentum $\mp \Lambda$ on the same diameter $2r$ with anti-parallel circles $\rightarrow 0$. Equilibrium of the two Ellipsoids $\pm \Lambda$, presupposes a Stabilizer system attached to Ellipsoids such that opposite Momentum is distributed to the Center of Mass of the total system and, recover equilibrium, which is the center of the spherical cave.

**The Biaxial Ellipsoid and Anti-Ellipsoid are inversely directed and rotated in the same circle, so the two velocity vectors collide.** This collision of the two opposite velocity vectors is the Action (Thrust) of the two quaternion and it is, 

$$\text{Action of quaternions } (s + r, \mathbf{vi})(\overline{(s + r, \mathbf{vi})}) = [s + r, \mathbf{vi}]^2 = s^2 + |\mathbf{vi}|^2 \cdot |r, \mathbf{vi}| = s^2 = \frac{1}{2} \left( r, \mathbf{w} \right)^2 \quad \text{is the real part of the new quaternion,}$$

$$-|\mathbf{vi}|^2 = \left[ 2w, |s|, |r, \mathbf{vi}| \right] = 2w.(r, \mathbf{v}i) \quad \text{is the always negative Anti-space (a vector $\perp$ to $\mathbf{w}, \mathbf{r}$ plane),}$$

$$-|\mathbf{vi}|^2 = \left[ 2w, |s|, |r, \mathbf{vi}| = 2w.(r, \mathbf{v}i) \quad \text{is the double angular velocity term.}$$

i.e. In the recovery equilibrium (maybe a surface cylinder with $2r$ diameter), and because velocity vector is on the circumference, the infinite breakages (the only row material) identify with points $A, B, C$ (of the extreme triangles $ABC$ of Space $ABC$) and with points $AE, BE, CE$ (of the extreme triangles $AEBeCe$ of Anti-Space) all, on the same circumference of the prior formulation and are rotated with the same angular velocity vector $\mathbf{w}$. The inversely directionally rotated Energy $\pm \Lambda$ equilibrium into the common circle, so Spaces and Anti-Spaces meet in this circle giving Thrust, to the breakages of each other.

Extreme Spaces (the Extreme triangles $ABC$) meet Anti-Spaces (the Extreme triangles $AEBeCe$) through the only Gateway which is the, **Plane Geometrical Formulation Mechanism of the [STPL] line**.

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**Index:** $DA \rightarrow PA = x$ axis, $A \perp (DA, PA) = y$ axis, Positive vorticity $\cup + \uparrow$, Negative vorticity $\cup - \downarrow$

**Thrust ($\mathbf{v} = \mathbf{w}, \mathbf{r}$) on Breakages $[s^2, -|\mathbf{vi}|^2, \left[ 2w, |s|, |r, \mathbf{vi}| \right] = 2(wr)^2]$ produces $w^3[\mathbf{r}]^3 \cdot [1-1 + 2]$ magnitudes ($w.r$)$^3$, is a Positive Scalar magnitude, with Positive or zero electric charge and spin $\frac{1}{2}$ and for,

**Breakage ($w.r$)$^2$, is a Positive Scalar magnitude with Positive or zero electric charge and spin $\frac{1}{2}$,**

1. **Breakage ($w.r$)$^2$ being on Points $A, AE$ collides with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DA, PA$ forming Leptons $\rightarrow ve, e$ and Quarks $\rightarrow u, d$**

2. **Breakage ($w.r$)$^2$ being on Points $B, BE$ collides with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DB, PB$ forming Leptons $\rightarrow \mathbf{v}_u, \mathbf{u}$ and Quarks $\rightarrow c, s$**

3. **Breakage ($w.r$)$^2$ being on Points $C, CE$ collides with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DC, PC$ forming Leptons $\rightarrow \mathbf{v}_r, \mathbf{r}$ and Quarks $\rightarrow t, b$**

**Breakage $-|\mathbf{w}, \mathbf{v}i|^2 = - (w.r)^2$, is a Negative Scalar magnitude with Negative or zero electric charge and spin $\frac{1}{2}$,**

1. **Breakage $- (w.r)^2$ being on Points $A, AE$ collides with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DA, PA$ forming Anti-Leptons $\rightarrow ve, e$ and Anti-Quarks $\rightarrow \bar{u}, \bar{d}$**

2. **Breakage $- (w.r)^2$ being on Points $B, BE$ collides with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DB, PB$ forming Anti-Leptons $\rightarrow \mathbf{v}_u, \mathbf{u}$ and Anti-Quarks $\rightarrow \mathbf{c}, \mathbf{s}$**

3. **Breakage $- (w.r)^2$ being on Points $C, CE$ collides with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DC, PC$ forming Anti-Leptons $\rightarrow \mathbf{v}_r, \mathbf{r}$ and Anti-Quarks $\rightarrow \mathbf{t}, \mathbf{b}$**

**Breakage 2($w.r)^2$, is a Vector magnitude with Positive or Zero or Negative Electric charge, spin ($2w$) = 1,**

1. **Breakage 2($w.r)$ being on Points $A, AE, AE, AE$ youtube with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DA, PA$ forming Gluons $g, \mathbf{W}^+$ Bosons the $\mathbf{W}^+$ particle and the $\mathbf{W}^-$, $g$, Anti particles.**

2. **Breakage 2($w.r$) being on Points $B, BE, BE, BE$ youtube with vector $\mathbf{v} = w.r$ and then are getting off the common circle at point $DB, PB$ forming Gluons $g, \mathbf{Z}^0$ Bosons the $\mathbf{Z}^+$ particle and the $\mathbf{Z}^-$, $g$, Anti particles.**

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3. Breakage \( 2|w|w \), being on Points \( C, CE \), collide with vector \( \vec{v} = w \vec{r} \) and then are getting off the common circle at point \( Dc \), \( Pc \) forming → Gluons \( g \), \( H^+ \) Bosons the \( H^+ \) particle and the \( H^- \), \( \vec{g} b \), Anti particles.

4. Breakage \( 2(w \vec{r})^2 \) on Points \( A,B,C \) and on points \( AE, BE, CE \) then on \( PA, PB, PC \) → the Photos \( \gamma \), Graviton \( G^\pm \), \( M^\pm \), Bosons the \( \gamma \), \( G \), \( M \) particles and the \( \gamma \), \( G \), \( M \) Anti particles.

\[
Q_{PA} = |B, CE, PA| |2|w||w|^2 = |r.w| 2(r^2.w^2) = 2(r^3.w^3) \quad \rightarrow \gamma
\]
\[
Q_{PA} = |C, BE, PA| |2|w||w|^2 = |r.w| 2(r^2.w^2) = 2(r^3.w^3) \quad \rightarrow \gamma
\]
\[
Q_{PB} = |C, AE, PB| |2|w||w|^2 = |r.w| 2(r^2.w^2) = 2(r^3.w^3) \quad \rightarrow G
\]
\[
Q_{PB} = |A, CE, PB| |2|w||w|^2 = |r.w| 2(r^2.w^2) = 2(r^3.w^3) \quad \rightarrow G^+
\]
\[
Q_{PC} = |A, BE, PC| |2|w||w|^2 = |r.w| 2(r^2.w^2) = 2(r^3.w^3) \quad \rightarrow M
\]
\[
Q_{PC} = |B, AE, PC| |2|w||w|^2 = |r.w| 2(r^2.w^2) = 2(r^3.w^3) \quad \rightarrow M^-
\]

The [STPL] line → producing Leptons and Quarks

1. Positive breakage Quantity \( s^2 = (r.w)^2 \) → Being at Space points \( A,B,C \) and of \( \vec{v} = w \vec{r} \) then Action magnitudes \( Q \) at coexisting points \( D_A, D_B, D_C \) - \( P_A, P_B, P_C \) produces Leptons and Quarks with spin \( \frac{1}{2} \), and carry them on [STPL] line.

\[
Q_{DA} = |A| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow v_e
\]
\[
s^2 = (r.w)^2 \quad \rightarrow \text{Being at Anti-Space points } A, B, C, AE, BE, CE \text{ then Action magnitudes } Q \text{ at coexisting points } D_A, D_B, D_C \text{ are}
\]
\[
Q_{DA} = |A| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow e
\]
\[
s^2 = (r.w)^2 \quad \rightarrow \text{Being at Space and Anti-Space points } A, B, C, AE, BE, CE \text{ then Anti magnitudes } Q' \text{ at coexisting points } P_A, P_B, P_C \text{ are}
\]
\[
Q'_{PA} = |A| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow u
\]
\[
Q'_{PA} = |A| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow d
\]
\[
Q_{DB} = |B| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow v_{\mu}
\]
\[
s^2 = (r.w)^2 \quad \rightarrow \text{Being at Anti-Space points } A, B, C, AE, BE, CE \text{ then Action magnitudes } Q \text{ at coexisting points } D_A, D_B, D_C \text{ are}
\]
\[
Q_{DB} = |B| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow \mu
\]
\[
s^2 = (r.w)^2 \quad \rightarrow \text{Being at Space and Anti-Space points } A, B, C, AE, BE, CE \text{ then Anti magnitudes } Q' \text{ at coexisting points } P_A, P_B, P_C \text{ are}
\]
\[
Q'_{PB} = |B| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow c
\]
\[
Q'_{PB} = |B| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow s
\]
\[
Q_{DC} = |C| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow v_{\tau}
\]
\[
s^2 = (r.w)^2 \quad \rightarrow \text{Being at Space points } A, B, C, AE, BE, CE \text{ then Action magnitudes } Q \text{ at coexisting points } D_A, D_B, D_C \text{ are}
\]
\[
Q_{DC} = |C| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow \tau
\]
\[
s^2 = (r.w)^2 \quad \rightarrow \text{Being at Space and Anti-Space points } A, B, C, AE, BE, CE \text{ then Anti magnitudes } Q' \text{ at coexisting points } P_A, P_B, P_C \text{ are}
\]
\[
Q'_{PC} = |C| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow t
\]
\[
Q'_{PC} = |C| |s^2| = |r.w|^2(r.w)^2 = (r.w)^3 \quad \rightarrow b
The [STPL] line → producing Anti-Leptons and Anti-Quarks

2. **Negative breakage Quantity** - $|\Psi|^2 = -\overline{\Psi}\Psi = -|\Psi|^2 \rightarrow$ Being at Space points A, B, C then Action magnitudes $Q$ at coinsiding points $D_A, D_B, D_C - P_A, P_B, P_C$ produces **Anti-Leptons** and **Anti-Quarks**, and carry them on [STPL] line.

$$Q_{DA} = |A| |s|^2 = |r \cdot w|^2 = (r \cdot w)^2 \cdot \cos(A, DA) + \cos(B, DA) + \cos(C, DA) \rightarrow \nu_e$$
$$s^2 = (r \cdot w)^2 \rightarrow$$ Being at Anti-Space points $A_E, B_E, C_E$ then Action magnitudes $Q'$ at coinsiding points $D_A, D_B, D_C$ are

$$Q'_{PA} = |A| |s|^2 = |r \cdot w|^2 = (r \cdot w)^2 \cdot [-\cos(A, PA) - \cos(B, PA) + \cos(C, PA)] \rightarrow \nu_\mu$$

The [STPL] line from Breakage Quantity $[2w] |s| \overline{\Psi} = 2(w \cdot r)^2 \overline{\Psi}$

The [STPL] line → producing Bosons

The [STPL] line → producing Strong Gluon $(g)$ → Electromagnetic $(\gamma)$ → Weak $(W^\pm, Z^\pm, H^\pm)$ Bosons
3. Breakage Quantity $|2w|.,s.,|r.\vec{v}.i = 2w.(sr).\vec{v}.i = 2w.(r.^2.w).\vec{v}.i = 2w.r.^2.w.\vec{v}.i$ → Being Tangential at Space points A,B,C and Axial at Space-Anti-space points AAE,BBE,CE, then Action magnitudes FA at coinciding points DA, DB, DC and PA, PB, PC produces Forces with spin 1 (because of 2w) on [STPL] which transfer Energy (Thrust) on Leptons and Quarks.

a. Breakages on Points A,B,C and on points AEE, BBE, CEE then on [DA], DB, DC → the Gluons g and W+, [ Z^+] , H± Bosons the W^+ particle and the W^-, gR, Anti particles.

QDA = |A|,2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(A,DA) \] → gR  
QDB = |B|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(B,DA) \] → gR  
QDC = |C|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(C,DA) \] → gR

2.(r^3.w^3) → Being at Anti-Space point FA, then Action magnitudes FA at coinciding point DA is QDA = |B,CE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ - \cos(BCE,PA) \] → gR  
QDA = |B,AE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ - \cos(BAE,PA) \] → gR

b. Breakages on Points A,B,C and on points AEE, BBE, CEE then on [DA], DB, DC → the Gluons g and W±, [ Z^± ] , H± Bosons the Z± particle and the Z∓ , gg , Anti particles.

QDB = |B|,2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(B,DA) \] → gg  
QDC = |C|,2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(C,DA) \] → gg

2.(r^3.w^3) → Being at Anti-Space point FA, then Action magnitudes FA at coinciding point DB is QDB = |B,CE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(BCE,PA) \] → gR  
QDB = |B,AE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(BAE,PA) \] → gR

c. Breakages on Points A,B,C and on points AEE, BBE, CEE then on [DA], DB, DC → the Gluons g and W±, Z±, [ H± ] Bosons the H± particle and the Z∓ , gB , Anti particles.

QDC = |C|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(C,DA) \] → gB  
QDC = |B|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ - \cos(C,DA) \] → gB

2.(r^3.w^3) → Being at Anti-Space point FA, then Action magnitudes FA at coinciding point DC is QDC = |B,CE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(BCE,PA) \] → gB  
QDC = |B,AE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(BAE,PA) \] → gB

d. Breakages on Points A,B,C and on points AEE, BBE, CEE then on PA, PB, PC → the Photos γ, Graviton G±, M±, Bosons the γ, G, M particles and the γ, G, M Anti particles.

QPA = |B,CE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ - \cos(BCE,PA) \] → γ  
QPA = |C,BE,PA|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ - \cos(CBE,PA) \] → γ

QPB = |C,AE,Pb|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(CAE,Pb) \] → G  
QPB = |A,CE,Pb|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ \cos(CAE,Pb) \] → G

QPC = |A,Be,Pc|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ - \cos(BAE,Pc) \] → M  
QPC = |B,Ac,Pc|2|wr|^2 = |r.w|2.(r.w)^2 = 2.(r^3.w^3). \[ - \cos(BAE,Pc) \] → M

Where \( \cos(A,DA), \cos(AE,DA) = \cos \text{of tangents at points } A,B,C - AEE,BBE,CEE \text{ and the [STPL]} \), (x-x axis).

Spin 1 → 2 x ½ :

½ Spin → S = h/2π = h/r = 6,626.10⁻³⁴ Js⁻¹/2π = 1,05459. 10⁻³⁴ Js⁻¹ = 6,5822.10⁻¹⁶ eVs⁻¹ and it is the Energy of a Photon = |w|r^2 for the Positive and Negative scalar Breakage magnitudes particles.

Quantity → 2|w.r|^2 = 2| |w.r|^2 = ½ Spin = Spin 1 and equal to 2| 6,5822.10⁻¹⁶ eVs⁻¹ = 1,31644.10⁻¹⁶ eVs⁻¹. Spin Anti-Spin is the rotational equilibrium of spaces.

Spin is an Intrinsic property of the three Breakage Quantities 6,5822.10⁻¹⁶ eVs⁻¹ for Leptons and Quarks and double 1,31644.10⁻¹⁵ eVs⁻¹ for the Vector Breakage magnitude particles.

Angular velocity \( w = 2,5656.10⁻⁸ eVs⁻¹/1,9845.10⁻⁶ m = 2,58564.10⁻¹⁵ eV/m \) of the rotational energy \( \Lambda \) is a common property of all breakages resulting from the Action of velocity vector \( \vec{v} \), on the breakages. Energy is equal to the velocity vector \( |v| = |w|r \), or \( E = w.r.G = 2,5656.10⁻⁹ eVs = 2,5656.10⁻²² Js. \)
6.1. Photoelasticity:
In Photo elasticity, the speed of light (vector $\mathbf{v}$) through a Homogenous and Isotropic material, (transparency, outstanding toughness, dimensional stability, mold ability, very low shrink rate, etc.), varies as a function of the direction and magnitude of the applied or residual stresses.

Light through a Polarizing filter (a Plane cavity of thickness $L$) blocks spatial components except those in the plane of vibration, and if through a second Plane cavity, then the components of the light wave vibrate in that plane only. Polarized light passing through different Flat cubes (stressed material), splits into two wave fronts travelling at different velocities, each parallel to a direction of principal stress but perpendicular to each other. (Birefringence property of stress material with two indices $n_1,n_2$ of refraction). The components of the light waves interfere with each other to produce a color spectrum.

[Retardation, $\delta$ (nm) is the phase difference between the two light vectors through the material at different velocities (fast, slow) and divided by the material thickness ($L$) is proportional to the difference between the two indices of refraction i.e. $\delta/L = n_2 - n_1 = C(\sigma_1 - \sigma_2)$, where $\sigma_1, \sigma_2$ are the Principal stresses.]

Retardation, $\delta$, determines color bands or fringes (A fringe $N$ is each integer multiple of the wavelength) where the areas of lowest orientation and stress appear black followed by gray and white and as Retardation and stress ($\sigma$) go up then the colors cycle through a more or less repeating pattern and the Intensity of the colors diminishes (decreases).

Because the colors repeat at different levels of retardation and stress, then is tracked as color band sequence from the black or white regions and are repeated periodically following the whole fringe of colors, as Black, Gray, White-Yellow, Yellow – Orange (dark yellow), Red, Violet (1st order fringe), Blue, Blue-green, Green-yellow, Yellow, Orange (dark-yellow), Red, Violet (2nd order fringe) →

In Common circle, with different angular velocity vector, $v = w \times r$, in the absence of applied Torques produces a color Spectrum which is the Color Forces $\rightarrow$ Gluon Red, Gluon Green, Gluon Blue.

Stability is obtained by the opposite momentum $-\Lambda^\perp$ where $E = -(v \times B) = -(v.B) \perp$ and

The two perpendicular Static force fields $E$ and Static force field $B$ of Space-Anti-Space, experience on any moving dipole $A \cdot B = [\lambda, \Lambda]$ with velocity $\mathbf{v}$ (momentum $\Lambda = m\mathbf{v}$ only is exerting the velocity vector $\mathbf{v}$ to the dipole $\lambda$) a total force $F = F_E + F_B = (\lambda m)E + (\lambda m)v \times B$ which combination of the two types result in a helical motion and generally to any Space Configuration (Continuum) extensive property, as Kinetic (3-current motion) and Potential (the perpendicular Stored curl fields $E, B$) energy, by displacement (the magnitude of a vector from initial to the subsequent position) and rotation and equation is as (N5)

The Total Energy State of a quaternion $E_T = \sqrt{[m \cdot v.E.]^2 + [A \cdot v.B + A \times vB]^2} = \sqrt{[m \cdot v.E.]^2 + [E^2}^2$

\[ i.e. a \text{ moving Energy cuboid (axbxc), rectangular parallelepiped, with space diagonal length} \]

$E = \sqrt{a^2+b^2+c^2}$ where $→ a = |p_1vB_1|$, $b = |p_2vB_2|$, $c = |p_3vB_3|$ and when

$v_E = 0$ then $E_T = A \cdot v.B + A \times vB$ which is the accelerating removing energy $\Lambda$ towards $vB$.

$m = 0$ then $E_T = A \cdot v.B + A \times vB$ which is the linearly removing energy $\Lambda$ towards $vB$.

$B = 0$ then $E_T = m \cdot v.E.$ which is the Kinetic energy in Newtonian mechanics towards $v_E$.

6.2. Conclusions:
Any moving monad $[z = s + v.i]$ is transformed into $→$

1. In Elastic material Configuration, as Strain energy and is absorbed as Support Reactions and displacement field $[V\epsilon (\bar{u}, \bar{v}, \bar{w})]$ upon the deformed placement, (where these alterations of shape by pressure or stress is the equilibrium state of the Configuration $G.\nabla\cdot \epsilon + [m.G/(m-2)].\nabla \cdot [\nabla \cdot \epsilon] = F$), (Elasticity) [26],

2. In Solid material Configuration, as Kinetic (Energy of motion $v^2$) and Potential (Stored Energy) energy by displacement (the magnitude of a vector from initial to subsequent position) and rotation, on the principal axis (through center of mass of the Solid) as ellipsoid, which is mapped out, by the nib of vector $[\Delta \epsilon = [V\epsilon + w.F.a] \delta t$, as the Inertia ellipsoid [Poinset's ellipsoid construction] in (AF) which instantaneously rotates around vector axis $w, \phi$ with the constant polar distance $w.Fe/[Fe]$ and the constant angles $\theta_1, \theta_2$ traced on, Reference (BF) cone and on (AF) cone, which are rolling around the common axis of the $\mathbf{w}$ vector, without slipping, and if $F$ is the Diagonal of the Energy Cuboid with dimensions $a,b,c$ which follow Pythagoras conservation law, then the three magnitudes $(J,E,B)$ of Energy-state follow Cuboidal, Plane, or Linear Diagonal direction, and If Potential Energy is zero, then vector $\mathbf{w}$ is on the surface of the Inertia Ellipsoid. [26-27].
3. In Quaternion Extensive Configuration, as New Quaternions (with Scalar and Vector magnitudes). Points in Space carry A priori the work \( W=|\mathbf{A} \mathbf{B} \mathbf{P} ds | = 0 \), where magnitudes \( P, ds \) can be varied leaving work unaltered (N4). Diffusion (decomposition) of Energy follows Pythagoras conservation law where the three magnitudes (J,E,B) of Energy-State follow Cuboidal, Plane, or Linear Diagonal [18].

4. In Space conserved Extensive Property Configuration (Continuum), as Kinetic (3-current motion) and Potential (perpendicular Stored curl fields) energy by displacement (the magnitude of a vector from initial to the subsequent position) and rotation. Energy is conserved in E and B curled fields.

5. The dynamics of any system = Work = Total energy, is transferred as generalized force \( Q_n \).\( Q_n = \partial W / \partial (\delta q_n) \), \( (\delta q_n) = v_n \delta t = [ (\partial v + \partial f n) \delta t = (\text{Translational + rotational velocity}) \delta t \) or \( Q_n = \nabla c. (\partial T/\delta t) + \nabla f n. (\partial T/\delta t) \rightarrow \text{Translational kinetic energy + Rotational kinetic energy}\).

6. The ultimate Constituents of Monads (s, v) is the real part \( s \), which is the Magnitude of Imaginary part, and the Imaginary part which is Vector v. The [STPL] is a geometrical mechanism (mould) which transfers the two quantities of monads from one level (confinement) to another level using quantities or the breakages of collision between monads. This mechanism is not the origin of monads, but it is the mould (the regulative universe valve). In common circle (the sub-space) of rotating space anti-space, retardation \( \delta \), determining color bands or fringes produces a color spectrum which is, the color forces, \( \rightarrow \) Gluon Red, Gluon Green, Gluon Blue.

7. In black holes energy scale \( \lambda, \lambda = k \) there are infinite high frequency small amplitude vacuum fluctuations at Planck energy density of \( 10^{113} \text{J/m}^3 \) that exert action (pressure) on the moving spaces dipole and their stability is achieved by anti-space also.

8. Dipole vectors are quaternions (versors) of waving nature, i.e., one wavelength in circumference in energy levels, that conserve energy by transferring total kinetic energy T into angular momentum L= \( r \vec{m} \vec{v} = \vec{r} \vec{p} = \vec{r} \Lambda \), where mass \( m \) is a constant. Different vectors with different energy (scalar) possess the same angular momentum. A composition of scalar fields (s) and vector fields (v) of a frame, to a new unit which maps the alterations of unit by rotation only and transforms scalar magnitudes (particle properties) to vectors (wave properties) and vice-versa, and so, has all particle-like properties of waves and particles. In Planck Scale, when the electron is being accelerated by gravity which exists in all energy levels as above, the gravity is still exerting its force so Electrodynamics can be derived from Newton’s second law.

9. Dark matter energy \( \lambda, \lambda = k \) is supposedly a homogeneous form of Energy that produces a force that is opposite of gravitational attraction and is considered a negative pressure, or antigravity with density \( 6 \times 10^{35} \text{m}^{-3} \). Because the curl of the gradient of a scalar field vanishes then, \( C_s = C_p = 0 \) (produced fields). The gauge freedom unit vectors \( ds = s(n1,2,3), \) \( dp = P(n1,2,3) \), (dependence) in space and anti-space to be a source or sink, then \( x, y, z \leftrightarrow -x,-y,-z \) which presupposes impulses \( PA = -PB \), is force P which is \( P = \nabla \times ds = \partial / \partial s [ W ] = \nabla W = \nabla [ \nabla J \circ ] = \nabla ^2 J \circ \). \( \circ \) where vector \( J = \partial / \partial s [ x = dP dx ] \circ = \nabla \times \circ = \nabla \nabla J \rightarrow \text{the Laplacian of vector field J} \) and \( G, \nabla, (a) \pm G, \nabla, (b,i) \) is \( F = \partial U / \partial \delta j \).
Electrons circulate around nucleus for ever by using conserved interchanged magnitude $J$ as velocity field, magnitude $E$ as atom’s energy level field and $B$ as energy exchanged field with the nucleus. Tangent acceleration is $a(t) = \frac{d|u|}{dt}$, Centrifugal acceleration is $a(c) = |u| \frac{d}{dt}[\frac{1}{|u|}]$.

Using (cgs) conventional units then $E$ and $B$ have the same units. Spin is macroscopic (a) on bound charge of Space and Anti-Space, and microscopic (i) on any separate dipole $AiBi$, combined through [STPL] Mechanism to produce a Positive and Negative charge layer on both sides so the two fields split as $E = Ea + Ei$ and $B = Ba + Bi$ defining the unified Macroscopic and Microscopic bound conservation of Work. In a Stress System, the State of Principle Stresses ($\sigma$) at each point (it is the double refraction in Photo – Elasticity) and it is as the Isochromatics lines $[(\sigma_1 - \sigma_2) = J.k/d]$ or Isochromatics surfaces.

7. References:


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