

The Epr-Argument and the Quantization of energy in the energy-Caves

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ABSTRACT: Distance is the Quanta in E-Geometry, while **Material-point** is the Quanta in **Physics** and **Material Geometry** which is the composition of opposites and the Elements in **Chemistry and Physics** . As in **Algebra** Zero ,0, is the **Master-key** number for all Positive and Negative numbers , and this because their sum and multiplication becomes zero, and the same on any coordinate-system where \pm axes pass from zero , the Rolling of Positive \oplus , constituent on the Negative \ominus , constituent , creates the Neutral Material point which Equilibrium . Its Angular momentum is identical to **Spin** and consists the **First-Discrete-Energy-monad** which occupies , **Discrete Value and Direction**, in contradiction to the Point which is nothing , Dimensionless and without any Direction .

Quaternion [(+) \cup (-)] \equiv Box **B_Q** \equiv Material Point \equiv Dipole carries the Principal stress σ between A(+), B(-), which σ , as **Centripetal-acceleration** is the minimum Energy becoming from the instorage AB acceleration and is equal to the Gravity g . Because in-Box may exist different motions Revolving ,**R**, and Periodic ,**P**, the acceleration of Gravity $g \equiv \pm \sigma$ exists for the First Box-**B_R**, while for the Second Box-**B_P** is following the **Local-Extreme-case** where acceleration of Gravity $g \equiv \pm \sigma$, is the Locally altering **Spin**, by changing the Principal-stress σ with an Local-uniform Pressure

$g_L \equiv g k_E = g * [\text{Force/Area}] = G$, i.e. is proved that the minimum Local - Energy acceleration is the known , **Universal Gravitational-constant** $G = g k = k_E g = k_L \sigma = g . g_L k_L$, such for Macrocosm as for Microcosm , and for both cases Obeying Newton`s Laws of motion . **Photon is a Box** **B_R** \equiv {It is the moving Energy-Storage, $r \equiv$ The Golden ratio frequencies \rightarrow

$f_n = [\frac{n\sigma}{8r^2}] . \bar{B} \equiv \frac{(1+\sqrt{5}) . \sigma}{4\pi r} = \frac{E}{h}$, **Transported** with Light velocity by **An Electromagnetic-Radiation** of wavelength $\lambda = c / f_n = c / f_1$. It was Proved that Force **G** pressing , through Stress , g , to Enter the Critical-cave **L_p** in Planck-length with minimum-Energy creates the **Hydrogen-cave** , while vibration f_n , into the **Energy-Space-Unit-meters** , g , π , creates the **Electron** , e , and **Charges** , q . General Relativity touches the Planck-length while Quantum Mechanics begun to penetrate in it . **EPR Argument** is answered after the elucidating of what is Energy-Quantization .

KEYWORDS : The EPR Argument , Energy Quantization .

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I. CRITICISM, ON EPR , ARGUMENT

A.. What is Quantization .

Quantization is the concept (the Process) that any , { **Physical Quantity** \rightarrow [PQ] } of the objective reality (**Space = Matter , Energy = motion or Both**) is mapping the Continuous

Analogous , are the points , to only certain **Discrete-values** . Quantization of Energy is done in the Energy – Space-tanks , caves , as Material-Points, in tiny volumes and on points consisting the Equilibrium , all the Opposite Twin , of **Space \oplus –Anti space \ominus** .

In Geometry [PQ] as **Monads** , are the Points , which is nothing only , and transformed into the \rightarrow Segments , Lines , Surfaces , Volumes and to any other Coordinate System such as (x , y , z) , (i , j , k) and which are all quantized .

Quantization of E-geometry is the way of Points to become as \rightarrow (Segments , Anti-segments = Monads = Anti-monads) , (Segments , Parallel-segments = Equal monads) , (Equal Segments and Perpendicular-segments = Plane Vectors) , (Un-equal Segments twice – Perpendicular -segments = The Space Vectors = Quaternion) .

[46]

In Philosophy [PQ] are the concepts of Matter and of Spirit essence , or of Materialism and or of the Idealism .

a).. Anaximander , claimed that Non of the elements could be, Arche and proposed , apeiron , i.e.an infinitive substance from which all things are born and to which all will return.

b).. Archimedes , is very clear regarding the definitions ,that they say nothing as to whether the things defined exist or not , but they only require to be understood . Existence is only postulated in the case where [PQ] are the Points to Segments (magnitudes = quantization process) . In geometry we assume Point , Segment , Line , Surface and Volume , without proving their existence , and the existence of everything else has to be proved . The Euclid's similar figures correspond to Eudoxus` theory of proportion .

c).. Zenon, claimed that , Belief in the existence of many things rather than , only one thing ,and leads to absurd conclusions and for , Point and all its constituents will be continuous without magnitude. Considering Points in space are a distinct place even if there are an infinity of points , defines the Presented in [44] Idea of ,Markos Material-Point .

d).. Materialism or and Physicalism , is a form of philosophical monism and holds that matter (without defining what this substance is) is the fundamental substance in nature and that all phenomena ,including mental phenomes and consciousness , are identical with the material interactions by incorporating notions of Physics such as Space-time , physical energies and forces , dark matter and so on .

e).. Idealism , such as those of Hegel , ipso facto , is an argument against materialism (the mind-independent properties can in turn be reduced to the subjective percepts) as such the existence ofmatter can only be assumed from the apparent (perceived) stability of perceptions with no evidence in direct experience . Matter and Energy are necessary to explain the physical world ,The Objective Reality , but incapable of explaining mind and so results , dualism . The Reason determined in itself and its relation to the world creates the very old question as ,what is the ultimate purpose of the world ?.

f).. Hegel's conceive for mind , the Idea , defines that , mind is Arche and it is returned to [PQ] the subjective percepts , while Materialism holds just the opposite .

IN PHYSICS [PQ] are the monads , Electrical charges ,Energy , Light , Angular momentum ,Matterwhich are all quantized on the microscopic level . They do not seem quantized in the macroscopic scale because the size of the steps between each possible value is so small and invisible .

a).. De Broglie found that , light and matter at subatomic level display characteristics of both waves and particles which move at specific speeds called Energy-levels .

b).. Max Planck found that , Energy and frequency of the Electromagnetic radiation is quantized as the relation $E = h \cdot f$ where h , is a constant and frequency only defines the Physical Quantity of microcosmic level .i.e. **all motions occupying frequency are Springs of Energy** .In Mechanics ,**Kinematics Describes the motion**, while **Dynamics , Causes the motion**.

c).. Bohr modelfor Electrons in free-Atoms is the Scaled Energy levels , for Standing-Waves is the constancy of Angular momentum , for Centripetal-Force in electron orbit , is the constancy of Electric Potential ,for the Electron orbit radii , is the Energy level structure with the Associated electron wavelengths and generally The Quantization of Energy in Space or Spaces \equiv Caves .

d).. Hesiod Hypothesis [PQ] is **Chaos** , i.e. the Primary Point from which is quantized to Primary Anti-Point .[From Chaos came forth **Erebus**,**the Space Anti-space**, and **Black Night** ,**The [STPL]Mechanism** , but of Night were born **Aether** ,**The Rest Gravity Dipole Field connected by the Gravity Force, G** , and **Day** , **Particles Anti-particles** , whom she conceived and **Bare** ,**The Equilibrium between Particles and Anti-particles , in Spaces Anti-spaces , from union in love withErebus ,the Atoms Bonding**] . [43-48]

e).. Zeno's Paradox and The nature of Points [PQ] .Zeno has set the Problem and Markosgave the solution to < **Achilles and the Tortoise** > , < **The Arrow Paradox** >

< **The dichotomy Paradox** > .Solving thus the [PQ] of Euclidean-Geometry is that

which is called as the **Material-Geometry** . [48]-[58]-[70] . The word ,**quantization** , has to do with the discrete continuity , which describes the Physical reality through the Euclidean conceptual , for Points Straight lines , Planes , the Monads in Universe and the Dual Nature of Spaces as Discrete and Continuous . Euclidean Geometry is proved to be **the Model of Spaces and Material-Geometry the Model of Physical Reality** since it is Quantized as **Complex numbers** ,which are such.

f).. The current method for Physical Quantity [PQ] . [PQ] is the Material Geometry where Points , are the non-collided elements in Caves and are the two Positive and Negative breakages $\pm s^2 = (wr)^2 \equiv \oplus , \ominus$, and the Vector breakage $[\nabla_i] = 2s^2 = 2 \cdot (wr)^2$. becoming from a **Stabilized-Rotating-velocity-System** [22] With these three elements is possible by following the Geometrical Rules (and those of Algebra , as Commutation , Distribution , Expansion , Association , Absorption , Multiplication) and Permutation and Repetition to build all Physical World as shown Below .

Point in E-geometry is considered the[PQ] the element , and it is Nothing , without any Position and directionwhile in Material - Geometry ,

- 1... Points ,are Both the massive discrete continuityUnits $+s^2 \equiv \oplus$ and $-s^2 \equiv \ominus$, and for
- 2... Two Units ,the Line-Sector , isthe Dipole $[s^2 \leftrightarrow -s^2]$, the Material-Point The Infinite Series of $[s^2 s^2. s^2 s^2...]$, $[-s^2 -s^2 -s^2 -s^2...]$, consist the Material-points in Lines .Because of this Property in Dipole of Material-Points . Units are always at the Edges , A , B , and because also motion \equiv Energy , then \rightarrow MAGNETS , exist anywhere from , M-Points , Atoms , Molecules , Crystals \rightarrow everywhere , and areembodied with the \rightarrow GROWTH-GOLDEN-RATIO- PATTERN $\Phi \leftarrow$
- 3... Three Units of $[s^2 s^2s^2]$, $[-s^2 -s^2 -s^2]$ not coinciding consist the Material Plane of the Infinite Linesin where motion can exist without producing work .
- 4... Four Units of $[s^2 s^2s^2 s^2]$, $[-s^2 -s^2 -s^2 -s^2]$ not coinciding consist the Material Volume of Infinite Planes.
- 5... Five Units of $[s^2 s^2s^2s^2 s^2]$, $[-s^2 -s^2 -s^2 -s^2 -s^2]$ not coinciding consist the Material Fifth - Space -Volume of Infinite Planes.

N... Units of $[s^2 s^2s^2 ..N]$, $[-s^2 -s^2 -s^2 ..-N]$ not coinciding consist the Material N-Space- Volume of Infinite Planes. Since Material-geometry follows E-geometry so , all laws of nature are also those of Geometry . i.e.

From a Set of infinite rest Units choosing two of them , is consisted , found , the Mendelejev Periodic table in Planck's level 10^{-35} m (this Property issues in all geometrical caves and in a cave of 10^{-62} m which is the Gravity level in which Gravity-Field exists) , and also all models of the atom as follows ,

n-Proton $[\oplus]$, n-Electron $[\ominus]$,n-Neutron $[\oplus \cup \cup \ominus] - [\oplus \leftrightarrow \ominus]$: From a Set of infinite rest , or , moving Units choosing two of them , is consisted , found , the Mendelejev Periodic table in Planck's level 10^{-35} m (this Property issues in all thegeometrical caves and in a cave of 10^{-62} m which is the Gravity level in which Gravity-Field exists) , and also all models of the atom as follows ,

a...In Set $\downarrow \equiv \{\text{Mould} \equiv \text{Space} \equiv \text{Cave}\} \rightarrow$ The minimum Number of Points in each Energy-Level is

- 1 for Material-Point , \rightarrow 1 Point. x 2 = 2 Elements ,
- 2 for Line-sector , \rightarrow 2 Points x 2 = 4
- 3 for Plane , \rightarrow 3 Points x 2 = 6
- 4 for Volume, \rightarrow 4 Points x 2 = 8
- m for ,m, Spaces. \rightarrow mPoints x 2 = 2m

b... Elements \rightarrow The maximum number of Elements \equiv Digits in Material - Point is , 2 , [1 Positive \oplus and 1 Negative \ominus] consisting the \rightarrow Unit-M-P $\equiv \{[\oplus \leftrightarrow \ominus], \oplus, \ominus\}$

The possible Repetitive Permutations for moulds and Elements are $\text{Mould}^{\text{Elements}} = m^2$,for every mould , so the Available -Extrema -Positions for each mould is for , Point Elements ,Material-Point , Permutations , m -CaveShapes , are for ,

- Point $\rightarrow m=1$ 2 2 \rightarrow 2 Sphere \equiv S
- Line-sector $\rightarrow m=2$ 4 8 \rightarrow 2+8 S +Lissajous Figures
- Plane $\rightarrow m=3$ 6 18 \rightarrow 10+18 Two-Spheres
- Volume $\rightarrow m=4$ 8 32 \rightarrow 28+32 Three-Spheres
- m-Space $\rightarrow m=m$ 2xm 2xm² \rightarrow 2m²+2(m-1)² m-Spaces-Volume i.e.

Energy as Charge or as motion ,is Quantized in Space ,caves , following Material-Geometry. Photon was proved to be a Material-point in cave r , where its Inner Storage is the Stationary-Standing-wave the Electromagnetic-Wave $[E^2+H^2] = 2(2r).c.\sin 2\varphi$ withnLobes representing the Normal mode vibration with

$$f_n = n.f_1 = \frac{E}{h} = \frac{n.v}{4r}$$

$= \frac{n\sigma}{8r} [1+\sqrt{5}]$, and Outward of the Storage is the PropagatingElectromagnetic- Wave

Energy-Storage ,and Electromagnetic-RadiationE , B ,is the Wave Conveyer of Cave , r , withfrequency f = Energy E / Planck-constant h , or f = E / h . From a Set of infinite rest Units choosing two of them , is found the Mendelejev-system .Physical Quantity [PQ] .are the discrete Caves \equiv Spaces in where motion \equiv Energy exists. c..Mould \equiv [The B-Positive \oplus Unit - $[\oplus \cup \ominus]$ -The O-Negative \ominus Unit] \equiv as below ,

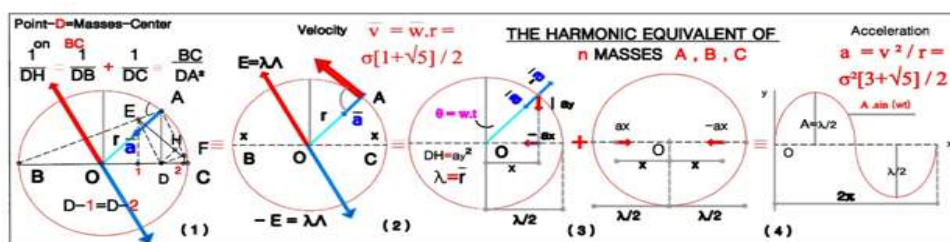


Figure-1.The Rotational Wave nature of the Material-Point-MonadAB .

In (1) , are shown Velocity , $|\vec{v}| = w.2r = \frac{2\pi}{T}.2r = 4\pi r.[f = [\frac{\sigma}{2}].(1+\sqrt{5})]$, Angular velocity $|\vec{w}| = \frac{\sigma}{2r} [1+\sqrt{5}]$, and the **Golden-ratio-Frequency** $f = \frac{(1+\sqrt{5}).\sigma}{2.2\pi r} = \frac{\phi.\sigma}{2\pi r}$ in cave AB.The Sector **OA** = distance \vec{r} , becomes from UNIT velocity-vector magnitude \vec{v} , and from Scalar time

T , consisting two vectors equal each other , or Energy as $\vec{v} = \vec{r}$ is **Quantized** in cave r , as $\mathbf{E} = \frac{F.r^2}{g}$

In (2) , are shown Centripetal , $\vec{a} = v^2/r$, Centrifugal , $-\vec{a} = v^2/r$, acceleration in r , cave. In (3) , are shown the Projections on AB axis of Centripetal , \vec{a}_x , and Centrifugal $-\vec{a}_x$ acceleration in cave , $2r = \lambda$. Note that **Waves transfer Energy but Not mass** . In (4) , is shown the Sinusoidal - motion of the Centripetal , \vec{a}_x , and Centrifugal $-\vec{a}_x$ acceleration in cave , $r = \lambda/2$.

Remark : From relations $E = h f$, frequency $f = \text{Energy } E / \text{Planck-constant } h$. In order to exist Angular-velocity $w = 2\pi/T = 2\pi f$, are needed closed-loops \cup differently $w=0$ annihilates , and consequently $E = h f = h w/2\pi = 0$, therefore

BIG-BANG may exist only in Closed-Systems which occupy energy i.e. ?? **Orbital-Periodic-motion** in

Figure is the **Quantization of Stress** $\sigma \equiv -\vec{a} = v^2/r$, and **Newton's** velocity $|\vec{v}|$ is related to $\pm\vec{a}$ acceleration , which are **Markos $\pm\sigma$** Stresses . [PQ] is the Material-Point-cave where the \oplus Unit rotates around the \ominus Unit .

Velocity , $|\vec{v}| = w.2r = \frac{2\pi}{T}.r = 4\pi r.[f = [\frac{\sigma}{2}].(1+\sqrt{5})]$, Angular velocity $|\vec{w}| = \frac{\sigma}{2r} [1+\sqrt{5}]$

frequency $f = \frac{1}{2\pi} \sqrt{\frac{k}{m}} = \frac{1}{2\pi} \sqrt{\frac{g}{\Delta}}$, and the **Golden-ratio-Frequency** $f = \frac{(1+\sqrt{5}).\sigma}{2.2\pi r} = \frac{\phi.\sigma}{2\pi r}$

[PQ] is the Material Point where the , + σ , \oplus Unit equilibrium the , - σ , \ominus Unit . **d.. Mould** \equiv [The B-Positive \oplus Unit - $\oplus \leftrightarrow \ominus$] -The O-Negative \ominus Unit] \equiv as below

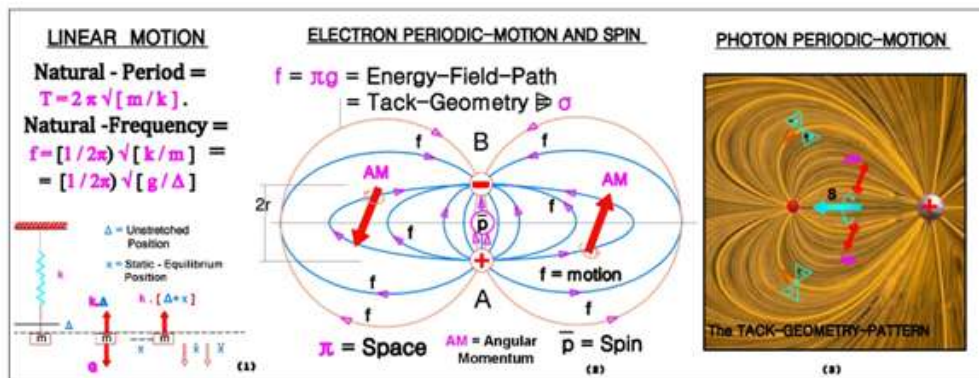


Figure-2. The Three Possible motions in caves ,Linear , Rotational , Periodic .

Forces $k\Delta = G = m g$, therefore $m \ddot{x} = - k x$ and $\ddot{x} - (k/m) x = 0$ (1) Defining the Centrifugal frequency $w_n^2 = k/m$ then $\ddot{x} + w_n^2 x = 0$ with general

solution $x = A.\cos w_n t$ where A , is constant and $w_n = \frac{1}{2\pi} \sqrt{\frac{k}{m}}$ and for initial Positions $x = \frac{\dot{x}(0)}{w_n} .\sin w_n t + x(0).\cos w_n t$..(2) with Natural Period and frequency

$T = 2\pi \sqrt{\frac{m}{k}}$ and $f_n = T^{-1} = \frac{1}{2\pi} \sqrt{\frac{k}{m}} = \frac{1}{2\pi} \sqrt{\frac{g}{\Delta}}$ in cave $2r = \Delta$ (3)

[PQ] is the Material-Point E-field-Unit where the , \oplus Electron-Charge moves to **Oneway-Pairs Linearly and Rotating** , to the , \ominus Electron-Charge and is the created **Plane-Magnetic-Plane** of the \oplus Unit , for \ominus - electron-motion. Remark :The three Types of motion is the [PQ] which results to Energy-equations as

Linear-motion $\rightarrow f_n = \frac{1}{2\pi} \sqrt{\frac{k}{m}} \rightarrow 4 \pi^2 f^2 . m = k$ (1) and $f^2 = \frac{k}{4.\pi^2.m}$

Orbital-motion $\rightarrow a = \sqrt{\frac{1}{k.f^2}} \rightarrow \frac{1}{f^2 . a^3} = k$... (2) and $f^2 = \frac{1}{k . a^3} = \frac{\Delta}{a^3 . m . g}$

Periodic-Orbital-motion $\rightarrow k = 4\pi^2 . f^2 . m = \frac{1}{f^2 . a^3}$ (3) and $f^2 = \frac{1}{k . a^3} = \frac{k}{4.\pi^2.m}$

Because motions happen in the same circumstances then from (1) and (2) issues ,

$$\frac{g^2}{4.\pi^2.\Delta} = \frac{\Delta}{a^3.m.g} \text{ and } \Delta^2 = \frac{a^3.m.g^3}{4.\pi^2} \text{ or } \Delta = \frac{1}{2\pi} \sqrt{ma^3g^3} \dots\dots(a)$$

From frequency $f^2 = \frac{1}{4\pi^2} \left(\frac{k}{m}\right) = \frac{1}{k a^3}$ and $k^2 = \frac{4\pi^2 m}{a^3}$ then $k = 2\pi \sqrt{\frac{m}{a^3}} \dots\dots(b)$

From $k = \frac{4.\pi^2.m.f^2}{1} = \frac{1}{f^2 a^3}$ then $f^4 = \frac{1}{4\pi^2 m a^3}$ and $f^2 = \frac{1}{2\pi} \sqrt{\frac{1}{ma^3}}$ or $f = \sqrt[4]{\frac{1}{4\pi^2 m .a^3}} \dots\dots(c)$

The motion in an Electric-field is from , Voltage $V \rightarrow \bar{q} = \frac{K_E}{V_P} = \frac{m_e c^2}{2V_P} = \frac{g c^2}{8\pi f^2 V_P}$

and for Photon Gravitational force $G = f_n . \sqrt{2} . \bar{q}$, and for electron $G = c\sqrt{2}\bar{q}$.

With the above Displacement Δ , Unit-Spring-Force-Stress k , Frequency f , light velocity c , and Charge \bar{q} , everything is generated.

The Physical Quantity [PQ], is the Space \equiv Magnetic-field \mathbf{B} , **the discrete-Energy-caves or the Non-continuity of Points** , in where the Anti-Space \equiv Electric-field \mathbf{E} motion \equiv Energy exists , and is Quantized .

Double-Orbital-Periodic motion $[\oplus \leftrightarrow \ominus]$ in above Material-Point is the Eternal-Plane-Curve motion of the \oplus constituent to the \ominus constituent in the two x, z , axis of motion . The Above

Double-Orbital-motion is in a Uniform-Energy-Point-Space as this is Spin $\mathbf{S} = \bar{B}$, so Issues

$$\bar{B} = \bar{r} m \bar{v} = \sqrt{\bar{r}^2 + m^2 \bar{v}^2}$$
, since $\bar{r} \equiv$ the Space , and is Perpendicular to $m\bar{v} \equiv$ The Energy .

Laplace equation for **Incompressible Space** \bar{r} , is $\rightarrow \nabla^2 E = -\nabla E = -\nabla \bar{B} = -\nabla \sqrt{\bar{r}^2 + m^2 \bar{v}^2} =$

$$-\nabla \bar{r}^2 + [2\pi m f \bar{a}]^2 = 0$$
 or issues $\bar{r} = -2\pi m f . \bar{a} \dots\dots(1)$ and the condition for motion to be **Irrotational**

Energy is $\nabla \times \bar{B} = \nabla \times \bar{S} = 0$, or $\nabla \times \bar{B} = \nabla \bar{r} + 2\pi m f . \bar{a} = 0$, and then $\bar{r} = 2\pi m f . \bar{a} \dots\dots(2)$. Relations (1) , (2) denote the

Alternative-Positions of Magnetic-Field in the Two-transverse-Positions as in Fig 2- (2) . For Gravity issues -

$$\nabla E = -\nabla g = 4\pi . m_e f^2_e$$
 , since $4\pi^2 f^2_e . m_e = \mathbf{k} = \pi \mathbf{g}$ and $\rightarrow \mathbf{g} = 4\pi f^2_e . m_e$

e.. Mould \equiv [The Elements in the Atom cave] \rightarrow Masses - Charges - Caves \leftarrow :

The behavior of Interacting of Charges is similar to that of Interacting of masses and this because of the similar

Force-equations . For Electricity Resultance R_T issues **The Parallel Connections Resistors inverse law** $\frac{1}{R_T} = [$

$$\frac{1}{R_p} + \frac{1}{R_e} + \frac{1}{R_n}]$$
 , which issues and for Systems having Reactions to any motion , **i.e. mass** , and is also for **Charges**

and Chemical **Bonds** .

The Nucleus Total-Harmonic mass $\equiv M_T$ becomes from relation $\rightarrow \frac{1}{M_T} = \frac{1}{m_p} + \frac{1}{m_e} + \frac{1}{m_n}$,

and The Nucleus-Orbit Total-Charge $\equiv Q_T$ becomes from relation $\rightarrow \frac{1}{Q_T} = \frac{1}{q_p} + \frac{1}{q_e}$ where

a-**Proton** $\oplus \rightarrow$ mass $m_p = 1,672.10^{-27}$ Kg \rightarrow Charge $C_p = 1,602.10^{-19}$ C $\rightarrow d = 8,4.10^{-16}$ m

b-**Electron** $\ominus \rightarrow$ mass $m_e = 9,11.10^{-31}$ Kg \rightarrow Charge $C_e = 1,602.10^{-19}$ C $\rightarrow d = 5,0.10^{-17}$ m

c-**Neutron** $[\oplus \leftrightarrow \ominus] \rightarrow$ mass $m_n = 1,672.10^{-27}$ Kg \rightarrow Charge $C_n = 0,0$ C $\rightarrow d = 1,7.10^{-15}$ m

d-**Newton's law** for masses $F_N = G \frac{m_1.m_2}{r^2}$, e... **Coulomb law** for Charges $F_c = C \frac{q_1.q_2}{r^2}$,

f - **Kepler laws** for Planets and **Constant-Areas** $4\pi^2 . m . f_n^2 = \mathbf{k}$, $\mathbf{k} . f_n^2 . a^3 = 1$

g - **Magnetic-fields laws** for Charges and Periods $T = \frac{2\pi . m_T}{q . \bar{B}_F}$, $\bar{B}_F = \frac{2\pi . m_T}{q . T} = \left| \frac{2\pi . m_T}{Q_T} \right| f$

The Total-energy for Unit-mass $E_T = K_E + P_E$, is from equation $\dot{x} = \sqrt{\frac{2}{m} [E - \{ \frac{k}{a} + \frac{L^2}{2m a^2} \}]} = c$

where for $\rightarrow K_E = 0$, $c = 0$, $E = \frac{m.c^2}{2} + \{ \frac{k}{a} + \frac{L^2}{2m a^2} \} \leftarrow$ Energy becomes $E = \frac{k}{a} + \frac{L^2}{2m a^2}$

or, Above configuration of , masses m_L , Charges q_L in a Hydrogen cave **a** , **Forms** an Harmonic Oscillator with a Natural Frequency f_R with the less Damping-factor (1/m).

The Quantum of a Magnetic - Field \bar{B}_L in a cave , a , is the Resonance - Magnetic Frequency , f_R , depended on the Stiffness , the Damping 1/ m , of the cave per unit charge q, as the **Electro-Mechanic-equation** $\rightarrow q$

$$\bar{B}_L = [2\pi . m_L] . f_R \leftarrow$$
 where ,

1.. Resistor R , in **Electric Circuit** corresponds the analogous **Mass , m** , in **Mechanics** .

2.. Inductor L , in **Electric Circuit** corresponds the analogous **Energy , f** , in **Masses** .

3.. Capacitor C , in **Electric Circuit** corresponds the analogous **Magnetic , q** , in **Planes** .

4.. Voltage V , in **Electric Circuit** corresponds the analogous **Field-Strength . \bar{B}_F** , in **Fields** .

5.. The Parallel RLC-Electric-Circuits Create a **Resonant Frequency** stored in Magnetic Field \bar{B}_F , while the Charged Electrons are stored as Energy in Static-Electric-Field

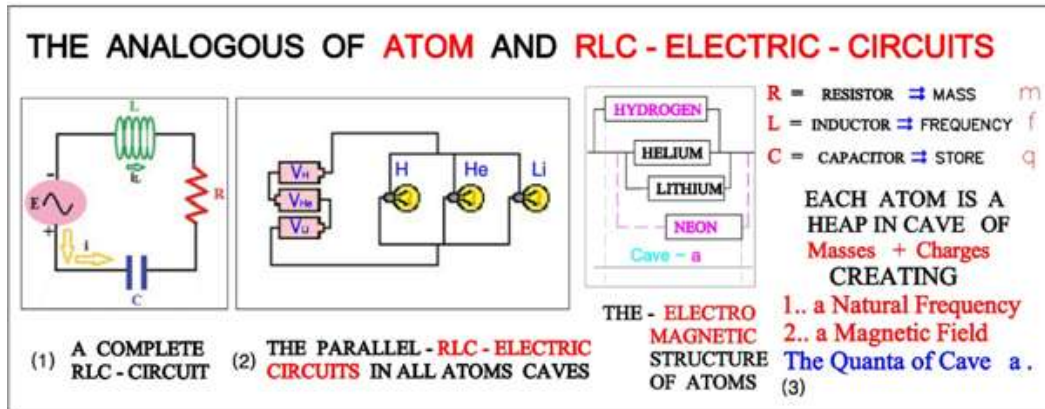


Figure - 3- : The Analogous of Atom's Structure and the RLC-Electric-Circuits .

Electro-Mechanic Equation, $q\vec{B}_L = 2\pi m f$, exploited in Hydrogen-Atom creates the **Uniform Magnetic-field** \vec{B}_L , which IGNORES, the velocities in (1) and Capacitance in Energy-levels (1-2) The Heap of masses and Charges FOLLOWS Permutation-Rules and Newton-Laws .

II. THE MATH –REASONING OF QUANTIZATION

1.. General :

It was shown that The two elements In Nature are motion \equiv **Energy** and **Space** \equiv Displacement. In Mechanics Work \equiv Energy \equiv motion is Force (x)Displacement and is conserved. In order that

Motion is Conserved as Displacement in all directions , then this Displacement must be kept , or **Quantized**, in a **Finite Space** differently is annihilated .In Mechanics the only-possible motion in aFinite Space , is the Periodic excitation [\leftrightarrow]Reciprocating, and the Revolving motion [$\oplus \cup \ominus$] which defines the **Quality** of particles .Atom is a Finite-Energy-Space in where exists motion \equiv Energy \equiv Force x Orbit. Motion occurs from Electrons with mass [m] executing the Circular and Elliptical Plane Orbits from Nucleus mass m,obeying **Kepler's laws and Newton's Lagrange laws**.

$$\text{Motion in Atom cave , } r \text{ is Velocity } \dot{r} = \sqrt{\frac{2}{m} [E - V(r) - \frac{L^2}{2mr^2}]} \equiv \sqrt{\frac{2}{m} [E - \{ \frac{k}{r} + \frac{L^2}{2mr^2} \}]} \text{ i.e.}$$

Electron's Velocity $v_e = \dot{r}$, the motion , is depended on the **Total Energy E of the cave** , r , the Orbit and of the **Angular-Momentum Vector L of caves** which is equal to **Spin S** . Since **Energy in Areas = dA/dt** , is also a constant it consists the **Quantized Potential-Energy in Caves and in Capacitors** .

It was shown in [58] that the maximum velocity in a closed system occurs in Common circle ,when the Two velocities , \bar{c} , \bar{v} , are perpendicular between them , and is not producing Work , from where then dispersion follows Pythagoras theorem and the resultant Quantized linear Space length ,|r|,

becomes ,as the Resultant of the Energy Vectors $\bar{r} = |(\bar{c}.T)| = \sqrt{v^2 + c^2}$ and by using Space Vector \bar{r} ,

$\bar{r} = |(\bar{c}.T)| = \sqrt{v^2 + c^2}$ then The total Rotating energy \bar{A} in a loop , or Cave , or System is \rightarrow

$$\pm \bar{A} = \bar{p} \cdot \bar{r} = (M c) \cdot r = (M c) \cdot \sqrt{v^2 + c^2} = [p c]^2 + [m_0 \cdot c^2]^2 \leftarrow \text{or is } E_T = E_R + E_K \text{ i.e.}$$

The Total-Energy of Elementary-particles \equiv Intrinsic Rotational + Kinetic Energy .

For Complex numbers , or Quaternion , follow E-geometry.Action (©) of two Equal Quaternion is as

$$\bar{z} \cdot \bar{z} = [s + \bar{v} \cdot \nabla i]^2 \rightarrow \bar{z} \cdot \bar{z} = [s + \bar{v} \cdot \nabla i]^2 = s^2 - |\bar{v}|^2 + [2\bar{w}] \cdot |s| \cdot |\bar{v} \cdot \nabla i \cdot \bar{w}$$

Action (©) of a quaternion $\bar{z} = s + \bar{v} \cdot i = s + \bar{v} \cdot \nabla i$ on point P (a, x,y,z) is $a\bar{z}' = \bar{z}p\bar{z}'$ (screw = helicoidally motion) and for a $\neq 0$ then z and a © z = az which have the same action $\bar{z}p\bar{z}'$, meaning that Quaternion is Homogeneous in nature . Action of a Unit quaternion on a scalar ,s, is $\bar{z} = \bar{z}s\bar{z}' = s$.

Action of a Unit quaternion \bar{z} on a vector ($\bar{v}\nabla i$) is $\bar{z}\bar{v}\bar{z}'$, i.e. another vector \bar{v}' (quaternion) $\bar{v}' = (0, \bar{v}'\nabla i)$, and of vector type $\bar{v}' \cdot \nabla i = \bar{z} + 2\bar{v} \cdot (\bar{v} \times \bar{z}) + 2\bar{v} \times (\bar{v} \times \bar{z})$.Since every quaternion ,q, is equal to its versor , V(q),multiplied by its tensor (norm) , and is for versor $V(q) = e^{(0+\pi i)}$ as $|V(q)| = \sqrt{3}$ and $q = V(q) \cdot \sqrt{3} \cdot \pi$.

Action (©) of a Quaternion $\bar{z} = s + \bar{v} \cdot i = s + \bar{v} \cdot \nabla i$ on itself is the Binomial type i.e.

$$(s + \bar{v} \cdot \nabla i)(s + \bar{v} \cdot \nabla i) = [s + \bar{v} \cdot \nabla i]^2 = s^2 + |\bar{v}|^2 \cdot \nabla i^2 + 2|s| \cdot \bar{v} \cdot \nabla i = s^2 - |\bar{v}|^2 + 2|s| \cdot |\bar{v}| \cdot \nabla i = s^2 - |\bar{v}|^2 + 2 \cdot s^2,$$

where , $\rightarrow s^2 \rightarrow (\bar{w} \cdot r)^2 \leftarrow$ is the real part of the new quaternion and it is a **Positive-Scalar-magnitude**.

$\rightarrow [-|\bar{v}|^2 = r^2 \cdot |\bar{w}|^2 = -s^2 \leftarrow$ is the always negative Anti-space which is always a **Negative-Scalar-magnitude**

$2|s| \cdot |\bar{v}| \cdot \nabla i = 2 \cdot s \cdot [|\bar{w} \cdot r] \cdot \nabla i] = 2 \cdot s \cdot s = 2 \cdot s^2 \rightarrow$ the Double angular velocity term which is a **Vector magnitude** and $s = [|\bar{v}| \cdot \nabla i] = [|\bar{w} \cdot r] \cdot \nabla i$, or **Quantization of Energy** $s \equiv |\bar{v}| \equiv |\bar{w} \cdot r|$, in Space \bar{r} as frequency \bar{w} .

2..The Beyond Planck-Length and Rotational-motion:

Since **motion** \equiv **Work** \equiv **Energy** and is continually produced in The Material-point ,therefore it is stored in it as \rightarrow **Golden-ratio-frequency-Pattern** and is the **motion**, not stored eternally because of Super-flows , but Partially and the rest , **superfluous - motion**, is launched out the Box \bar{r} , as an **Propagating Electromagnetic-Wave** which carries the Energy-Box B_R .

This is the Way of carrying the Energy or The **Work** or The **motion** .[26]i.e. **Motion IN the Box and Motion OUT the Box** ,which is **Electromagnetically Pushing**.

Because of the two different motions ,The Revolving and Excitation motion , the acceleration of Gravity $g \equiv \pm \sigma$ exists in the First Box- B_R only , while in the Second Box- B_P is followed the Local- Extreme-case .This acceleration of the Gravity $g \equiv \pm \sigma$ is altered Locally by changing the Principal-stress σ with an Inverse-Local-uniform-Pressure $g_L \equiv g = k = g \sigma = g \cdot [\text{Force} / \text{Area}] = G$ i.e. **G** is the minimum Locally manifested ,force on masses, which is the known as the

Universal Gravitational constant $G = g = k = g k_E = g \cdot [g_L k_L] = k_L \sigma$.[73-74] The Interior motion is kept in its Wavelength-Tank $2r = n\lambda$, as well as the Outer-Linear motion as an **Propagating Electromagnetic-Wave**, which carries the **Energy-conveyer**, i.e. The stored Energy in the loop is $\rightarrow W_1 = v^2 \left[\frac{h}{2\pi} \right] = 4\pi^2 \cdot r^3 \cdot f_p^2 = k$, where it is as **Wave** with

Frequency $[f_1 = (E^2 + H^2) = n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \left[\frac{n\sigma \cdot B}{8r^2} \right]$ and as **Particle** the velocity $[\bar{v} = \bar{c} = \lambda f]$ which is dependent on velocity v , and Planck's constant h , or on loop r , and on frequency f_s , and which is the Wave. It is proved that this minimum **Wave - constant** $\rightarrow k = \pi g$ i.e. **In Rotational-motion Quantization of Energy happens into the Spin-cave as frequency f_s** .

3..Rotational-motion: From Kepler thirdlaw ,Closed-Space-Energy equation of Newton's Laws

Constant-Energy $k = v^2 \cdot r = (w r)^2 \cdot r = \left[\frac{2\pi}{T} r \right]^2 \cdot r = \frac{4\pi^2 r^2}{T^2} \cdot r = \frac{4\pi^2 r^3}{T^2} = 4\pi^2 \cdot \frac{r^3}{T^2} = 4\pi^2 \cdot r^3 \cdot f_p^2 \dots (k)$ where r is the radius of orbit , $f = 1 / T$ the frequency of rotation , \bar{B} is the Cave-Angular-momentum Because (k) is constant , $r^3 \cdot f_p^2$, is also a Constant multiplication of cave , r , and the frequency f , and since **Work** \equiv **motion** is conserved in cave , r , as the , n , frequencies $f_N = n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma \cdot B}{8r^2}$, and for a Damping-cave $\rightarrow r(t) = r(t+w) \leftarrow$ as Planck's scale is with **min-Damping = 1** , then **Unit-Energy-**

Quantity E_u , (the critical-energy-unit in the min r) is the Unit-Stress-Gravity g , as $E = k = \frac{T^2}{a^3} = g = \frac{1}{f^2 \cdot a^3}$ and for $a = r$ then $g \cdot r^3 \cdot f_p^2 = 1$, the Kepler second constant-Unit-law for areas i.e.

Stress g , when is entering into the minimum cave , the **Space** , of a minimum Surface , then from the **Period of Rotation T** , on the Perimeter, is created the **minimum Quantity of Energy-cave** which is the **Hydrogen-Atom** , where $g f^2 \equiv$ **The Quantized Energy-Part**.

The Moving Electron in Orbit of charge $\bar{q} \equiv \ominus$ with the **Orbit-Velocity-Vector \bar{v}** , Produces Work, as $\bar{v} = \sqrt{\frac{2}{m} \left[E - \left\{ \frac{k}{r} + \frac{L^2}{2m r^2} \right\} \right]}$. **IN Orbit** , \bar{q} **Creates** the Varying and Perpendicular Magnetic-Field,

\bar{B} , which in time-turn **Creates** an Electric-field $\bar{E} \perp \bar{B}$, with resultant force \mathbf{F} acting on Electron e . The Produced Work is **Quantized** as frequency which is **The-Electron-Nutation-Orbit-frequency**

as $f_N = \frac{sQ}{2\pi \cdot j_{3w}} = f_R = 2,8398447 \cdot 10^{10} S^{-1}$.

Charge masses with $q = q_L$ in a cave a , create a **Magnetic-Field \bar{B}_L** , of an **Quantized-Strength**

$\rightarrow \bar{B}_L = \left[\frac{2\pi \cdot m_L}{q} \right] \cdot f$ and are stored in Field \bar{B}_L which is the Storage of Energy f .

4..Linear-motion and Hydrogen-cave:

From Mechanics , and for the One degree of freedom , Vibration of a mass m , and Stiffness , k , in a Distance a , is for $w^2 = [k/m]$ the equation , $m \ddot{x} + w^2 x = 0$, with solution \rightarrow the Period $T = 2\pi \sqrt{\frac{m}{k}}$, or frequency

$f_H = \frac{1}{2\pi} \sqrt{\frac{k}{m}}$, or as $4\pi \cdot m \cdot f_H^2 = k$, and Energy $E = h f_H$, where

$h =$ Planck's constant. From Orbit-equation $\bar{v} = \sqrt{\frac{2}{m} \left[E - \left\{ \frac{k}{a} + \frac{S^2}{2m a^2} \right\} \right]}$, or $E = \frac{m v^2}{2} + \frac{k}{a} + \frac{L^2}{2m a^2} =$

$h \cdot f_H$ since $\bar{B} \equiv S \equiv L$. The first term is the Linear-Kinetic energy in cave , the second is the Stiffness of motion and the third is the Surface-Rotational-Energy due to the Spin of cave r .

The Hydrogen Diameter $a_H = \sqrt[3]{\frac{1}{g f^2}} = \sqrt[3]{\frac{h^2}{g E^2}} = 2,1145016 \cdot 10^{-11} m$, and Energy $2E = [Jw]^2 \equiv 13,6 \text{ eV}$ i.e. **Energy** \equiv **motion** $\equiv 13,6 \text{ eV}$ is **Quantized** in the **Space-Caver** $\equiv a_H$

The constant Energy k , in Orbit is $k = \frac{L^2}{2ma}$ and depends on the Total-mass-cave $m = M_T$. From cave $r = n \cdot [\lambda/2] = n \cdot (c/2f_1)$ and $v = 2\pi \cdot f_1 \cdot [n \cdot c/2f_1] = n \cdot \pi \cdot c$, then $v = n \cdot \pi \cdot c$ (v).i.e. In caves **Velocity as Energy**, c , is **Quantized** in Unit-Space π , as that of light-velocity c .

5..InTack-Geometry-Pattern formulation, where for minimum cave a is $a = \sqrt[3]{\frac{1}{k \cdot f^2}} = \sqrt[3]{\frac{1}{g \cdot f^2}}$, and

for $k = g$, and $f = E/h = 13,6 \text{ eV}/h = \text{Unit-Energy-Space-frequency}$ then $f = 3,28393 \cdot 10^{15}/s$, and the cave $a = 2,11450164 \cdot 10^{-11} \text{ m}$ that of Hydrogen.

Gravity Force F_G is a **Stress** on all objects controlling the Growing Golden-Ratio Φ Stress. Equating Newton-Centripetal force $F = \frac{mv^2}{r}$, and the Coulomb-law-Force $q \cdot v \cdot B$ then, $F = \frac{mv^2}{r} = qvB$

or $\rightarrow m \cdot v = q \cdot r \cdot B = m \cdot (w \cdot r) = m \cdot r \cdot \frac{2\pi}{T} = 2\pi \cdot m \cdot r \cdot f$, and issues $q \cdot B = 2\pi \cdot m \cdot f$, or $f = q \cdot B/2\pi m$ Solving to Magnetic field $B \equiv \bar{B}_L$ then $\rightarrow \bar{B}_L = [\frac{2\pi \cdot m \cdot r}{qT}] \cdot f$.i.e.

Energy as frequency f , is **Quantized** in the Unit-Field created from **Point-Charge** \bar{q}_L .

6.. Quantization of Newton's Universal **Force** G into light velocity \bar{c} as Stress \bar{g} : The Planck's length, is an **Energy-cave**, and is the smallest **Energy-Unit of Space** and this is because of Space, $s = 0$ and $k = 1$. [70] It was proved that in these caves, the motion happens

as $[(c) \leftrightarrow (L_p)]$ following the one degree of freedom equation $\ddot{x} + w^2 x = 0$ with solution the

frequency, $\frac{w_n}{2\pi} = f_e = \frac{1}{2\pi} \sqrt{\frac{k}{m}}$ and the Infinite motions in Sub-caves as, $1 = g f_n^2 \cdot a^3 = [\frac{4\pi^2}{GM}] \cdot f_n^2 \cdot a^3$. From relation $G =$

$g \cdot k_E = 6,680561 \cdot 10^{-11} \text{ m}^3/\text{N} \cdot \text{s}^2$ and Orbit-relation $c \cdot r^3 \cdot f_p^2 = 1$, $f_p = \sqrt{1/cr^3}$, and from $f = E/h$ then $\rightarrow \frac{E}{h} = \sqrt{1/cr^3}$ or, $E = h \cdot \sqrt{1/c \cdot r^3} \cdot \frac{E^2}{h^2} = \frac{1}{cr^3}$ and $\rightarrow E^2 = \frac{h^2}{c \cdot r^3}$, **an Energy**

relation between, c , r , and Total-Energy $2L = 2n(3 + \sqrt{5}) \cdot [\frac{\sigma^2}{\pi r^2}] = 4n \cdot \Phi^2 [\frac{\sigma^2}{\pi r^2}]$

From Unit-Work = sine Integral $= \int_0^t \frac{\sin t}{t} dt = 1$, and the min-semi-major axis, a , is,

$a = 2,1145016 \cdot 10^{-11} \text{ m}$, frequency $T^{-1} = f_p = 3,28393 \cdot 10^{15} / \text{s}$ as Energy and can **Enter, Format and cohesive, the first or any other Energy Rim in Planck's length.**

Using relation $1 = g \cdot f_n^2 \cdot a^3 = [\frac{4\pi^2}{GM}] \cdot f_n^2 \cdot a^3$, above frequency $f = T^{-1}$ then weight,

$GM = 4\pi^2 f_n^2 \cdot a^3 = 4,0250523$ and $M = 6,0250214 \cdot 10^{10} [\frac{N}{m^3 (\frac{1}{s})^2} = \text{Kg}]$. which is the **Planck-Cave -Total-**

Mass, M , in g , as $\rightarrow G = M \cdot g = h \cdot f_n = g \cdot k_E = [\frac{c \cdot r^3}{a^3}] \cdot [g_L \cdot k_L]$.

Using above r_{Planck} , then $\rightarrow g_G = s [\frac{\pi r v^4}{2}] = s [\frac{\pi r c^4}{2}] = g_G = 9,8076925 \text{ m/s}$ i.e.

Gravitational Vector-force G , **Entering light-velocity-cave**, \bar{c} , creates **Stress** g_G .

7..Quantization of Stress \bar{g} into **Hydrogen-cave** H :

G Pushing \rightarrow on g , on the Earth-Unit-coefficient, k_E , is the **Starting**, for first time begins, of this **Mechanism** and from relation $G = g \cdot [g_L \cdot k_L] \equiv g \cdot [1 \cdot 1] \equiv \rightarrow g$, or $G = g$, meaning that in Earth-System of gravity, the Newton's Gravitational constant G , and Gravity g are equal, while in all other relative Systems are equal to the proportionality of their Local-constant k_L . It was proved that, **Constant** G , is the **mechanism**, mould, for the **First-kick-Start** upon this Unit-Granular-Energy-Stress-Layer g , to formulate in that minimum energy orbit as above.

The minimum quantized-energy is stored in the Gravity-Layer g , becoming from the Unit energy of the sinus orbit. From Energy-equation $E = h \cdot f = h/T = h/\sqrt{g \cdot a^3}$, where $g = T^2/a^3$ then period

$T = \sqrt{g \cdot a^3} = \sqrt{9,8076925 \cdot (2,1145016 \cdot 10^{-11})^3} = 3,04513 \cdot 10^{-16} \text{ s}$, since for Unit-Work = sine

is Integral $= \int_0^t \frac{\sin t}{t} dt = 1$. and the semi-major axis, a , is, $a = 2,1145016 \cdot 10^{-11} \text{ m}$, and frequency

$T^{-1} = f_p = 3,28393 \cdot 10^{15} / \text{s}$, which corresponds to a loop in Planck's scale $(4/3) \cdot \pi \cdot r^3 = 3,96 \cdot 10^{-32} \text{ m}$,

then the Energy in this Planck's loop is the minimum **Energy** $E = h \cdot f_p = [6,6262 \cdot 10^{-34} \text{ J} \cdot \text{s}]$.

$[3,28393 \cdot 10^{15} / \text{s}] = 2,176 \cdot 10^{-18} \text{ J}$, and in eV $\rightarrow [2,176 \cdot 10^{-18}] / [1,6 \cdot 10^{-19}] = 13,6 \text{ eV}$

Above quantity of Energy consist the **Hydrogen minimum Energy-Rim**, becoming from equation

$a = \sqrt[3]{T^2/g} = \sqrt[3]{\frac{[3,04513 \cdot 10^{-16}]^2}{9,8076925}} = 2,1145016 \cdot 10^{-11} \text{ m}$, for Unit-Energy quantity. From Newtonian

Constant of Gravitation relation, $G = E = h \cdot f_n = [\frac{c \cdot r^3}{a^3}] \cdot [g_L \cdot k_L] = g \cdot k_E = g \cdot [g_L \cdot k_L]$ and since for the **First Chemical-Neutral-material-cave**, r , constants g_L, k_L are equal to unity. i.e. $g_L = k_L = 1$, then, above Energy of $E = 13,6 \text{ eV}$ in Hydrogen-Plane-orbit corresponds to the **minimum-Energy-cave** and is \rightarrow **The First-Physical-Quantized-Energy-Structure.**

8.. Quantization of Stress \bar{g} into Electron-cave e :

Electron is created through the vibration, f_n , in the Energy-Space, g, π , Unit-meters.

From M-Point, frequency $\rightarrow f_N = n \frac{(1+\sqrt{5})\sigma}{4\pi r}$, and $\rightarrow w = 2\pi \cdot f_N = n \frac{(1+\sqrt{5})\sigma}{2r} = \left| \frac{n}{r} \right| \cdot \frac{(1+\sqrt{5})\sigma}{2}$ the

Natural-frequency in Planck's length for **Primary particle** occupying the less **Negative-Charge** frequency, is **the Electron**, which follows the linear equation $F = -k r = -k r \cdot \bar{r}$ with solution,

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

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

$$\bar{q}_{\text{Electron}} = \frac{G}{c \sqrt{2}} = \frac{6,680561 \cdot 10^{-11}}{1,41429 \cdot 2,9979346 \cdot 10^8} = 1,58 \cdot 10^{-19} \text{C. The same result is From Constant-Orbit}$$

Energy $k = \pi g$ where $f_e = \frac{1}{2\pi} \sqrt{\frac{k}{m}} = \frac{1}{2\pi} \sqrt{\frac{\pi g}{m}}$, and $g \equiv 4\pi f_e^2 m_e$ is **Quantized** in Unit-Space π .

All above Physical Structures Vibrate, In-Sectors with minimum Energy, and form the

\rightarrow **Electron-charge** \leftarrow In Surfaces with minimum Energy, and thus forming the **Orbits**. Orbit relation $r^3 f_p^2 = \text{Constant}$, as multiplication of cave r , and frequency f , is the Energy and since **Work** \equiv motion is conserved in orbit, r , as the, n , frequencies \rightarrow

$$f_n = n \frac{(1+\sqrt{5})\sigma}{4\pi r} = \frac{n\sigma \cdot \bar{B}}{8r^2} \text{ then for a damping-cave } \rightarrow r(t) = r(t+w) \text{ with min-Damping} = 1 \text{ and}$$

Unit-Energy-Quantity W_u , (**critical-energy unit**) in-min, r , which is **Gravity** g . From, **Orbital-Periodic-motion** is formatted the Energy-Space of the $[\oplus \leftrightarrow \ominus]$ in **Tack-Geometry-Pattern** and formulation, where for minimum Planck $L_p \equiv a$ cave as

$$a = \sqrt[3]{\frac{1}{k \cdot f^2}} = \sqrt[3]{\frac{1}{g \cdot f^2}}, \text{ for } k = g \text{ and } f = E/h = 13,6 \text{ eV/h} = \text{Unit-Energy-Space-frequency}$$

$= 3,28393 \cdot 10^{15}/s$, and is in Planck L_p , minimum $\equiv a$ cave $= 2,11450164 \cdot 10^{-11} \text{m}$.i.e. Gravitational-force G , is **Quantized** in light-velocity, c , as **Point-Charge** \bar{q}_L .

9.. Quantization of Electron-Nutation-Work into Proton-Electron-Rim-Orbit f_N : Gravitational constant, G , is The Pulling and Cohesive Force on all the Quantized

Energy Structures which communicate with everything due to **Periodic excitation** on all Spaces. Newton's laws issues for masses and the same to Electrons in caves as below f^3_p

$$G \equiv g \cdot k_E \equiv g \cdot [g_L k_L] \equiv \left[\frac{T^2_p}{a^3} \right] [g_L k_L] \equiv \left[\frac{1}{f^3_p a^3} \right] [g_L k_L] \equiv 9,808238 * 6,8116 \cdot 10^{-12} \equiv 6,68056 \cdot 10^{-11} \frac{m^3}{Ns^2}$$

Electron being in Hydrogen-cave **Precesses from the different axis of rotation** and **Nutation's from the immense-communication to gravity**, g . Electron-Spin as the Angular-momentum vector \bar{B} rotates according to equation $\frac{d\bar{B}}{dt} = [\bar{u}\bar{B}] = u\bar{B} \cdot [\bar{k}\bar{k}]$ in the Gravitational Potential

$U_g = [mg] \cdot s \cdot \cos \theta = -sQ \cdot [\bar{k}\bar{k}]$, so the change of \bar{B} is $\frac{d\bar{B}}{dt} = u = \frac{sQ}{B} = \frac{sQ}{J_3 \cdot w_3}$ and from 1-degree equation of motion u

$\cdot \ddot{u} + w^2 u = 0$, then **Period of Nutation** $T = \frac{2\pi}{u} = \frac{2\pi J_3 w}{sQ}$, and **Frequency**

$$f_N = \frac{sQ}{2\pi J_3 w}, \text{ i.e. Work as frequency is Quantized in the Slit-Focus Electron-Bracket-Orbits.}$$

10.. Quantization of Electron-Nutation-Work into Nucleus-Proton The Chains of Stationary-Periodic-Spins are Pointy-vibrating in Orbit LRC- Circuit with

their characteristic frequencies $f_1 = \frac{(1+\sqrt{5}) \cdot \sigma \cdot \bar{B}}{4\pi r}$ and are filling up the entire universe. In nucleus opposites $Q_1 = \oplus, Q_2 = \ominus$ are touched and create their Stationary-Magnetic-field.

Stationary-Electron-Charge, $q \equiv \ominus$, with **Orbit-Velocity-Vector** $\bar{v} = \sqrt{\frac{2}{m} [E - \{ \frac{k}{r} + \frac{L^2}{2m r^2} \}]}$

occupies Zero Kinetic energy between Q_1, Q_2 therefore, $K_E = \frac{mv^2}{2} = E - \{ \frac{k}{r} + \frac{L^2}{2m r^2} \} = 0$

or $E = \{ \frac{k}{r} + \frac{L^2}{2m r^2} \} = \frac{\pi g}{r} + \frac{L^2}{2(g/4\pi f^2) r^2} = \frac{\pi}{g r^2} [g^2 r + 2 \cdot L^2 \cdot f^2] \dots (s)$ Equation (s) issues for the Atom Stationary-nucleus and it is **The Strong-Force between Nucleus-Protons**.

III. THE CRITICISM

The Fundamental Advances occur to the Part of science that Really needed or misleading. The same happens to EPR Argument which is as question \rightarrow

a.. Can Quantum Mechanical description of Physical reality be considered Complete?

EPR Argument is exactly the same as that of Idealist-Philosopher-Hegel's, concerning conceive for mind, the Idea. For Hegel mind is Arche and it is returned to Physical Quantity, the subjective percepts, which

is the **Objective reality** . For Materialism holds , Just the opposite which is the true , because all Ideas of the Objective reality Come from outside , Pass through our five Senses to our Brain . which is working as a Computer elaborating and creating minds , and which deposits them in caves .e.g. **The High-tree picture** passes through our Eyes which turn the picture to electricity and electricity through nervous-conductors to Brain and deposited to a microchip. This High-tree-Idea in microchip exists only **If-had-come** from outside **and NOT** the opposite because Differently, Human race could do **Infinite-Objective-realities** which is a false.

Because mind occupies the process , of less elaboration and thinking may use , the **High-tree picture** , as the raw material for complicated figures based on the initial, On this , **Quantum-Mechanics is dialectically** working on the **Right-Direction for Completeness**.

b..How many Parallels pass through a point P to a line AB ? **For Euclidean-Geometry Only-one** , while for **all Non-Euclidean-Geometries , two and Infinite ones** .

Because the set question existed for many centuries , about two centuries ago Mathematicians gave a temporary solution to this problem through the NON Euclidean-Geometries . **Unfortunately** , General-Relativity followed the temporary solution resulting to the confinement of Physics in Planck's length and Big-Bang .

The Solution of the Unsolved ancient-Greek-Problems and that of Zenon Paradox gave the answer such for Physics and as Guidelines for **Future-Basic-Advances** . Nature cannot be described through infinite concepts , as this can happen in Algebra and values , because are devoid of any meaning in our Objective - Reality , or the Physical World , or the Nature , or the Cosmos . Solutions of geometric classification problems with moduli Spaces and Algebraic geometry by giving a universal space of parameters for the problems , must follow

the classical and **Dialectic logic of Geometry which exists in Objective reality** and is reflected to the mind recipient . The solution to this Problem and others is given in many articles [44-70] .

c..Bohr Rejection to EPR , and Entanglement .

The Wave-Particle Duality of Photon , or The Principle of locality , comes out of Einstein work saying that <The Energy of the Physical reality which are objectively possessed cannot be influenced instantaneously at a distance> . Entanglement , as a < Physical phenomenon that occurs when pairs or groups of Particles are generated or interact in ways such that the Quanta-state of each Particle cannot be described independently- instead a Quantum-state may be given for the System as a whole> From above attempt is seen that both Parts were trying to create a local-Quantization to interpret at Wave-Particle Duality of Photon . The answer is given in [68] .

The Non-Euclidean Geometries did not help in the Right-direction but offer a Trap in where General Relativity was first captured , Ignoring that Nature cannot be described through infinite local concepts , as this can happen in Algebra and values . The answer is that , Photon **Particle** $\rightarrow 2r = n \lambda$, **Cave** , r , Is the **Electromagnetic-Energy-Storage** , Photon **Wave** $\rightarrow \mathbf{E-B}$ Electromagnetic-Radiation, and Is the **Conveyer of Cave** , i.e. **Photon** , Is of the **two consistent-Pattern** , Box \equiv matter \equiv Magnetic-field, and Wave \equiv Energy \equiv The Plane-motion . The United-Coulomb-Newton Law for Interactions denotes the coinciding point of these Laws , which is the **Pointy-caves with velocity equal to the cave** .

d..The Light velocity , c , and Planck's length.1.. In articles [68-69-70] is proved that, in **Material Point** , the Eternal-Rotation of (+) Opposite around (-) Opposite , due to Centrifugal and Centrifugal Glue-Bond Principal stresses , $\pm \sigma$, **creates in Primary and in caves which are Standing waves as a Resonance phenomenon**

the Angular-momentum-Vector being Identical to the Spin of Particles , and which is trapped in caves's loops always being in Phase with each other . Their amplitude of Oscillation varies from Zero at Nodes and to maxima at Antinodes . The **N loops are** , the **N** , **Sub - Stores** created in the **Main-Store** , **r** , and this because Energy Momentum vector $\mathbf{\bar{B}}$, or the Spin follows the Stationary-Wave -Nodes Principle in Material - point only.

2..From Inner-cave-velocity equation $v = \omega r = (2\pi/T) \cdot r = 2\pi \cdot f_1 \cdot r$, and wavelength $\lambda = cT = c / f_1$, then cave $r = n \cdot [\lambda/2]$, therefore $r = n \cdot (c / 2f_1)$, and cave-velocity is $\mathbf{v} = 2\pi \cdot f_1 \cdot [n \cdot c / 2f_1] = \mathbf{n \cdot \pi \cdot c}$ or $\mathbf{v} = \mathbf{n \cdot \pi \cdot c}$ (c)

showing that velocities in lobes are $\mathbf{n \cdot \pi}$, times that of light , i.e. **In Material-points exist velocities multi-times that of light** .

Above equation (c) denotes that light velocity , **c** , is the **Quanta of velocities** in Planck's length because differently **could-not-be measure** for Space and Energy .

3..Energy produced by Reference System $\{D_A - P_A\} \equiv [R]$ (x', y', z', t') moves with a velocity \bar{v} , parallel , to $x-x'$, axis with respect to the fixed and Absolute System

$\{D_A - O\} \equiv [S](x, y, z, t)$ and is conserved. [58]

In General-Relativity is referred that Space - time is giving energy to matter or absorbed it from matter , and thus the Total energy is not conserved . Here are Not clarified what are the three Basic

Quantities , Energy , Matter and Time .

It was prior proved [70] that **the Basic Quantity is only the Energy→motion** , while **Matter is the Space** , { the Reaction to the Change of Energy \bar{v} or $d\bar{v}$ } , **in-where Energy is stored**, and **Time is the meter of changes in Space and in Energy**.

The Argument< Energy is not conserved but it changes because Space-time-does>**is the greatest – confusion for these magnitudes** . In [31-36-39] was clarified that → **a3)** Because of Zero acceleration of rotational velocity \bar{w} in a cave , velocity $\bar{v}=\bar{w}r$ is also constant , so thus **GR failed to explain the WHY speed of light is constant** , considering constancy of light as an axiom from which derived the rest of its theory .

Relativity considers Electron-Spin as a property of Electromagnetic field interaction ,rather than a property of the free electron ,it is of that property the free electron because is a material-point charged from **G** force on **c**, electromagnetic field , **ignoring the today called Vacuum which is not** . Before , there was not neither any Geometrical-analysis of Spaces nor of Quantization .

b3) Because for the reality of discrete monads , GR failed **to explain the WHY → Wave nature** , **is the Intrinsic Electromagnetic Wave of Particles** (Maxwell's Displacement current) and speed of light is constant in a **Stress-Strain-System** with (where Red-shift happens as low **f** and Blue-shift , as high **f**) Photon to be as Particle and Wave also as above, but considering constancy of light as an axiom deriving theory . Here and now is referred that , Since the mass is equal to

m = $\frac{2}{c^2} (wr)^3 = \frac{h.w}{2\pi.c^2}$, analogous to Energy **w→ then mass is a factor measuring the energy magnitude only**,

c3) Because GR , by Appealing space-time a Priori is **accepting the two elements , the Space and the Time , as the fundamental elements of Universe** without any proof for it and so everybody can say that this argument **Stay on air without any proof** . It has been proofed [22-26] that any space , AB , is composed of points A , B which are nothing and equilibrium by the opposite forces , $P_A = -P_B$, following the Principle of Virtual Displacement , without any time referred .

d3) Because GR, by Presenting Time as element of universe **could not perceive that , Time (t) is the conversion factor** between the conventional units (second) and length units (meter) and by considering the moving monads (particles etc. in space) at the speed of light pass also through Time , this is an **widely-agreeable-illusion** . It was proved that Time is a meter ,**i.e. A simple number** , measuring the alterations of Space concerning velocity and direction and nothing else .

e3) Because GR , by Presenting Space-Time universe **Becoming from Big Bang** is accepting Infinite priors . Euler-Savary equation of couple-curves is related to the Tangential and angular velocity from (Space , Path , Anti-space , Evolute) and it is , **The Rolling - Glue-Bond of Space , Anti-space** , which happens on the instaneous center of curvature by STPL line . [58]

f3) Because GR Presents Space-Time as essence of the universe while is Just the **opposite**, refer

$$\text{Work} = \text{Total Energy} = \text{TE} = [\Lambda \nabla + \bar{\Lambda} x \nabla] = \sqrt{[m.v_E^2]^2 + [A.v_B + \bar{\Lambda} x v_E]^2} = \sqrt{[m.v_E^2]^2 + T^2} = \sqrt{[m.v_E^2]^2 + |\sqrt{p_1 v_{B1}}|^2 + |\sqrt{p_2 v_{B2}}|^2 + |\sqrt{p_3 v_{B3}}|^2} =$$

$$L_{TW} \equiv \bar{z}_0^w = (\lambda, \Lambda \nabla i)^w = (\bar{z}_0)^w . e^{[\bar{v}.w\theta]} = (\bar{z}_0)^w . e^{[\bar{\Lambda} \nabla i / \Lambda \bar{\Lambda} [Arc \text{ Cos}(\frac{w|\lambda|}{2|\sqrt{\bar{z}}_0 \bar{z}_0|})]} (TW)$$

Nature has not any < meter > to measure quantized quantities (of Space and of Energy) except these of the Geometry constants, one of which is number , π ,

(Archimedes number π) so quantization of Points (λ) follows Geometry constant (π) and for Energy W_d , which is the quantized Energy of the Quantity dissipated per cycle , [and this because monads follow sinusoidal oscillation on wavelength \equiv monads as the **w**.th- power and the **n**.th-root of this monad where **w.n = 1** as above on and in the same monad] and which energy is → $W_d = [mw].\lambda^2/4 = [2m\pi f].\lambda^2/4 = [m\pi.\lambda^2/2].f = C.f$, **i.e.**

From above monads $(s + \bar{v}\nabla i)^{1/w} = |z_0|^{-w} . e^{-i(\varphi+2k\pi).w}$, where $\cos \varphi = s / |z_0|$ and for Rotated Energy case where $s = 0$, and also $\cos \varphi = 0$ exists for angle $\varphi = \pi/2$ the quaternion $(s + \bar{v}\nabla i)^{1/w}$ as **dimension power** → **w = b ← and for k = 1 above becomes**, $e^{-i(\pi/2+2k\pi).w} = e^{-i(\pi/2+2k\pi).b} = e^{-i(5\pi/2).b} = e^{-i(5\pi/2).10}$ and is for Planck length $L_p = e^{-i(5\pi/2).10} \dots (P_l)$

Equation (P_l) , is the basic Geometrical interpretation of the <Planck scale meter> based On the two **Geometry constant** π where **k = 1** , and **base b = 10** , and this from logarithm properties with different bases on the same base **e** as this is ,

$$e^w = [b^{\log_b(e)}]^w = b^{w \cdot \log_b(e)} \text{ and because } \sqrt[w]{e} = e^{1/w} = e^{-w} = x^{1/w \cdot \log_b(e)}$$

which are monads in monads , **and is therefore of Wave motion** with angular velocity

$w = 4 W_d / (\pi \cdot C_o \cdot \lambda^2)$, [5-4] i.e. Space and Energy is quantized and measured on the two Constant and Natural numbers e, π .where for base the natural logarithm e ,and exponent the decimal base , $b = 10$, then is \rightarrow

For base $e = 2,71828$ and base $b = 10$ then $e^{-(78,2879)} = 1 \cdot 10^{-34} m$

For base $e = 2,71828$ and base $b = 10$ then $e^{-(78,5398)} = 8,906 \cdot 10^{-35} m$

For base $e = 2,71828$ and base $b = 10$ then $e^{-(80,5905)} = 1 \cdot 10^{-35} m$

$L_p = e^{i \cdot (\frac{\pi}{2} + 2k\pi) \cdot b} = e^{-i \cdot (\frac{5\pi}{2}) \cdot b} = e^{i \cdot (-\frac{5\pi}{2}) \cdot 10} = e^{-(78,5398)} = 8,906 \cdot 10^{-35} m$

$L_p \equiv \{ \sqrt{3} \cdot \pi \cdot 1,616199 \cdot 10^{-35} m \} \rightarrow$ Planck's length .

GR , is confined in L_p Chaos ,without any connection with L_{TW} Spaces which begin from Zero $\equiv 0 \equiv$ Nothing \equiv -[Nothing] \equiv [+][-] \equiv [+] \leftrightarrow [-] \equiv [$\oplus \leftrightarrow \ominus$] \equiv Material-Point and this because followed the **False Directions given by NON Euclidean Geometries** Referring only π , have to say that its Physical-Interpretation [75] , is that which is the Euclidean-Geometry-Quantum and which **Regulates velocities in caves and turbines. e..The Stationary Photon-Charge S_p , and Light velocity c .**

In **Material-point** executing **Periodic-Orbital-motion**, issues the **Tack Geometry** i.e. the tracks of the Electric-lines Pattern are **closed-loops** and not straight-lines , and becoming from the [\oplus] constituent **towards** [\ominus] constituent , **from the left and right directions** , and this because of the Voltage between the ends of the Spaces . [Rotation is the opposite motion which happens in the Material-points but because of the same Stress σ , is created the Centrifugal-Force F_f and frequency $f_n = \frac{1\sigma}{8r^2} \cdot \bar{B}$]

Electrons can be spinning clockwise or anti-clockwise and Propagate on a Spiral trajectory, since Spin becomes from $\uparrow \leftrightarrow \downarrow$ Antiparallel-Angular-momentum vectors \bar{B} , and is created in M-Point a Dipole-Moment. Since Angular-Momentum $\bar{B} = AM$, Spin is equal to $AM / \text{Unit-Area} = AM / \pi$, and because of the **One-way-closed-loops**, then

AM stays in cave , r.

For Photon issues the same as above with Angular-Momentum the Moment $\bar{B} = (s^2) \times s$ **Electron Spin** and **Electric-Charge** is the same and the Cave-Spin is equal to the

Moment of couple becoming from the $\uparrow \leftrightarrow \downarrow$ Antiparallel-Angular-momentum vectors

$\bar{B} = a m v = 2,1145016 \cdot 10^{-11} m \cdot 7,237315 \cdot 10^{-32} kg \cdot 2,99798 \cdot 10^8 = 4,5879026 \cdot 10^{-34} / \pi$,

where issues $\rightarrow S/2 = 1,4603748 \cdot 10^{-34} \rightarrow$ and it is **the Electron-Spin** .

In-Spinning-Material-Point , the Periodic-motion is equal to that of Electron and **Stationary-Photon-Spin S** $= \bar{B} / \pi = \frac{\pi \cdot m \cdot p}{2} \bar{B} = \left[\frac{\pi \cdot m \cdot p \cdot s^3}{2} \right] = 1,4603748 \cdot 10^{-34} J$

Above Spinning Material-Point disappears the **EPR Paradox** because is extended and actually is filling up the entire universe . These Stationary-Particles are permanently entangled with Wave -packets becoming from **M-P-Photons** , which Orientate and Re-orientate Spins from force ,

$f_n = \frac{(1+\sqrt{5})\sigma}{4\pi r} \cdot \bar{B} = \frac{\pi r^3 \sigma}{8} [1+\sqrt{5}]$ and Orients Spin \bar{S} to \bar{B} as $\rightarrow \bar{g} = f_n \times \bar{B} =$

$\bar{g} = |f_n| \times |\bar{B}| \cdot \sin \theta = \left[\frac{(1+\sqrt{5})\sigma}{4\pi r} \right] \frac{\pi r^3 \sigma}{8} [1+\sqrt{5}] \cdot 1 = \frac{[\sigma^2 r^2 (1+\sqrt{5})^2] \cdot \sigma^2 r^2 \cdot \Phi^2}{32 \cdot 8} \dots (g)$

i.e. the force orienting the Stationary-Spin \bar{B} , is the **Growing-Golden-ratio** pattern $\Phi^2 = \Phi + 1$.

When Photon hits an **Obstacle** , it reflects on it and comes to our eyes and then we can see the obstacle . Some will go to heating the Obstacle which **Radiates** according to its temperature . The absorbed Photons are radiated at a longer wavelength such as AM and FM bands go right through Photons are waves imparting Energy ,and when interact with electrons in outer shell of an Atom then the Energy is transferred to the electrons ,upping them to a higher energy level .The Storage-atom now can re-radiate another Photon or it can give up its energy in other ways including Heat .As in **Praxis** ,two wires [+(-) -] are needed to **carry-Power** to an appliance ,and when are bundled Parallel ,then the **Magnetic-Field** from one will **cancel the field** from the other , the same happens to Photons in Energy-levels which work as **Separate-coaxial-Levels**, and **Shield Radiation** .

All above happen because of the same Spin and Electric-Charge .Markos 15/3/ 2019

IV. CONCLUSION

Work is **Energy is motion** , and is transported in **closed Boxes** which are the **Electric and the Magnetic fields** either these are Stationary or Moving, **This is Propagation of Energy** .

Objective Reality is only One, and is Reflected to our mind as Electromagnetic-Wave which becomes Image. Because Energy-Boxes are composed of a Positive-Constituent moving towards the Negative Constituent and E-M travels always in all continuous Means. General-Relativity and consequently **the EPR Argument and all following the General-Relativity** Have to Search the Under-Planck's Region as this is done by myself for years and **Quantum Mechanics** .Furthermore the very interesting Question for Chemistry is the **WHY Atoms Bond** and create Molecules . An answer in [82-88] .markos 24/12/2019

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