

The Euler's harmonic holomorphic regenerative universe

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Abstract: *The Cartesian dualism is a precursor to Euler's complex theory, that completes the Descartes-Leibnitz monadic conception using the natural quanta (non-splitting e , π) along with their topological torsion in the form of dual isomorphism. The complete Euler's identity controls a bounded regenerative/ recurrent multiverse (a kind of multigraph) by two regenerative exponential functions, one quantic, $e = \exp(1)$ and another gravitational, $g_0 = 10 = \exp(1)$ with the fixed points, $g_0 = \pi^2$ and $(g_0^{g_0})$ respectively. Physically, the fixed points give the well-defined the unit gravity ($g_0 \text{ m/s}^2$) and light self-ignition velocity of a stable recurrent self-sustained process, provided the rate of mass production just equals the rate removal. This is the Euler's fictitious regenerative universe - like our world, a quantum autocatalytic reaction system. The present paper describes such a system controlled by thermal gravitational waves, in the case the critical solar system.*

Key Words: *thermal gravitational waves, Euler's formula, multiscale analysis, astrophysics*

1. INTRODUCTION

What are light, gravity, heat and matter? Where do they come from? How are they possible? The answer lies in the most important and powerful equation ever discovered, Euler's formula (i.e. the complex analysis) [1, 2]. This extraordinary theory is the basis of eternal existence. It furnishes the building blocks of reality.

It solves the intractable problem of Cartesian dualism by showing exactly how mind produce matter as the metastable equilibrium of a quantum dual isomorphism (e , π), having a critical torsion state of quantum light measured by gravity.

It is of importance to make a clear distinction from the outset between the light phenomenon and the problem of light - as well as between the observations and the theories attempting to explain them, which are far from being synonymous especially for the caustic phenomenon of light with multiple reflections. Very few theoretical and/or experimental results have been established, so for the most part, this is done by analogy and plausible

inference. The existence of multiple behaviors of light produces strange scale effects requiring proper interpretation.

2. THE EULER'S COMPLETE FORMULA

The Euler's quantum space is bounded binary topological space (complex and smooth), completely self-contained (also containing limits), described by the complex theory, where e , π monads are the light photons-like natural quanta (or non-splitting quanta), corresponding to genuine properties of nature. Their general motion is described by Euler's complete formula

$$e^{2k\pi i} - 1 = 0, (k = 1,2), \tag{1}$$

with the complete contour integration on the unit complex/generator circle once and twice anti-clockwise about the origin

$$\oint \frac{dZ}{Z} = 2\pi i, \text{ the topological torsion function,} \tag{2}$$

mapping a circle into itself and $4\pi i$ into the Riemann sphere, Fig. 1. The bilinear (Mobius) transformation maps circles to circles on the Riemann sphere, parametrized as [3, 4, 5]

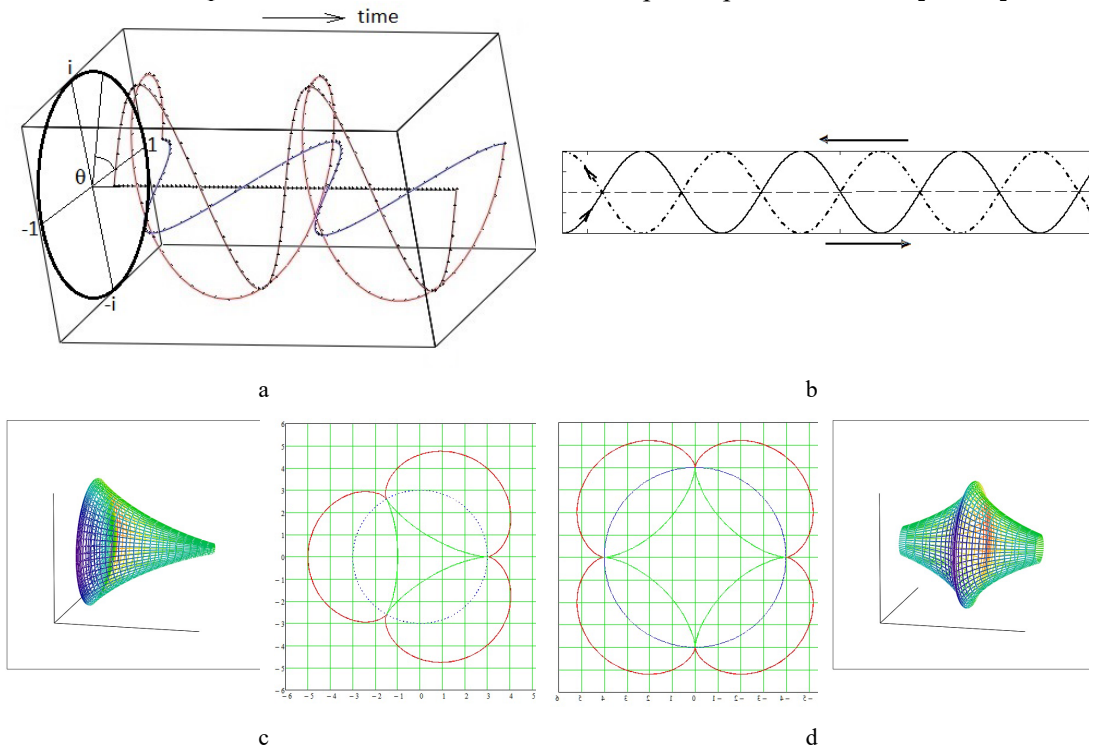


Fig. 1 The Euler's complete solution. a) indicial motion ($e^{i\theta} = \cos \theta + i \sin \theta$); b) helix and double helix ($e^{2i\theta} = \cos \theta + i \sin \theta$); c) pseudospherical motion ($e^{3\pi i} = \cos \theta + i \sin \theta$) with three fold-field symmetry axis (triad) (one-way flux); d) pseudospherical motion ($e^{4\pi i} = \cos \theta + i \sin \theta$) with the four fold-field symmetry axis (tetrad) (two way flux)

$$t = \frac{Z - 1}{iZ + i}, Z = \frac{-t + i}{t + i}, \tag{3}$$

whose equator coincides with the unit circle Z 's (horizontal complex plane), and the sphere is projected (stereographically preserving angles) to the Z - plane along straight lines through its south pole, which itself gives $Z = \infty$, Fig. 2.

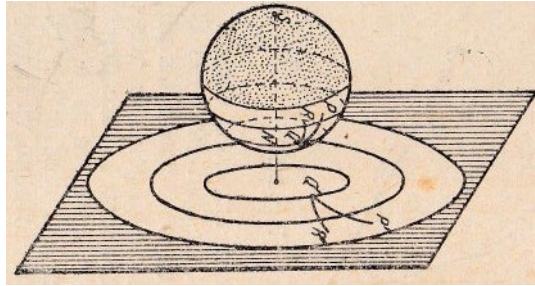


Fig. 2 Riemann as unit sphere

The Mobius transformation is a bijective function between the quantum and gravitational scales

$$(e^2 g_0)^{1/3} \rightleftharpoons (e g_0^2)^{1/4} \tag{4}$$

Equation (4) is the quantum-gravity reciprocity theorem [6, 7, 8], the base of Euler's holomorphic regenerative universe.

3. THE EULERIAN DUALISM

Outside of mathematical and physical constants e (the base of exponential recurrent function $\oint Z dZ = expZ + C$) and π , the ratio of circle circumference to diameter $\pi (\equiv C/d \int_{-1}^1 \frac{dx}{\sqrt{1-x^2}})$, the (e, π) variables are mass less torsionable particles containing eternally regenerating torsion potential ($C \rightarrow \infty$ free parameter). Depending on the bounded space considered they may engender matter (dark energy or heat) and their light self-ignition (kinetic energy) through quantum bending-twisting interconnection into a bounded space.

The canonical relationships of inter-connecting, torsionable variable quanta, define a dual isomorphism of lattices L_e, L_π ,

$$\left. \begin{aligned} e + e^2 &= \tilde{g} \cong 4e \\ e^3 &= 2\tilde{g} \\ e^4 &= 2(e\tilde{g}) = \tilde{m}_q + \tilde{g} \end{aligned} \right\} \begin{aligned} &L_e - \text{the quantum lattice, physically} \\ &\text{the exothermal quantum auto-} \\ &\text{catalytic fusion reaction} \end{aligned} \tag{5a}$$

$$\left. \begin{aligned} \pi &= \pm \tilde{g}^{1/2} \\ \pi^2 &= \tilde{g} \\ \pi^3 &= 3\tilde{g} \\ \pi^4 &= \tilde{g}^2 \end{aligned} \right\} \begin{aligned} &L_\pi - \text{the quantum lattice, physically} \\ &\text{the endothermal quantum auto-} \\ &\text{catalytic fusion reaction} \end{aligned} \tag{5b}$$

where $\tilde{g} = \pi^2 \cong g_0 \equiv 10$, the gravity unit ($\log g_0 = 1$) and $\tilde{m}_q \equiv e^4 - \tilde{g} = \frac{\pi^4 - \tilde{g}}{2}$, the regenerative/relative quantum mass, as the metastable equilibrium of quantum torsion fusion provided

$$\frac{e}{\pi} + \frac{\pi}{e} = 2, \left(\frac{e}{\pi}\right)^2 = \frac{3}{4}, \left(\frac{e}{\pi}\right)^3 = \frac{2}{3}, \left(\frac{e}{\pi}\right)^4 = \frac{1}{2}, \text{ the phase/ local equilibrium,} \tag{6a}$$

$$(e^2 g_0)^{1/3} = (e g_0^2)^{1/4}, \text{ the global equilibrium,} \tag{6b}$$

By the elimination of parameter \tilde{g} , the intrinsic torsion equations of unit disc/compact ($\pi^2 = g_0$) are written as

$$\left. \begin{aligned} \frac{1}{3} + \frac{2}{3} &= 1 \\ \left(\frac{1}{3}\right)^2 + 2\left(\frac{2}{3}\right)^2 &= 1 \end{aligned} \right\} \text{the stable self-sustained reaction condition,} \tag{7a}$$

$$\left. \begin{aligned} \frac{1}{4} + \frac{3}{4} &= 1 \\ \left(\frac{1}{4}\right)^2 + 2\left(\frac{3}{4}\right)^2 &= 1.25 \end{aligned} \right\} \text{the critical recurrent process condition,} \tag{7b}$$

The integral form of Eqs. 7 is given by Wallis integrals and/or Euler integrals.

The quantum dual isomorphism is a recurrent process describing the autocatalytic fusion of natural quanta, with the gravitational linkage restoring the initial form on the unit circle by continuous 4π – rotation, the gravitational loop does shrinking to a point (topological torsion),

$$\frac{\log x}{\ln x} = \frac{e}{2\pi}, x \in \mathbb{R}, \text{ the Euler's double scale,} \tag{8}$$

Mathematically, the topological torsion distinguishes the topology of the 3 – manifold \mathbb{R} (rotation space) or of the 6 – manifold \mathbb{C} (configuration space) from the “trivial” topologies of Euclidian 3-space and 6-space [4].

Regardless the topological space size and the way it formed, its structure is preserved as long as the about metastable equilibrium holds on for

$$\left(\frac{e}{\pi}\right)^2 = \frac{3}{4}, \text{ (the critical equilibrium condition) and } \left(\frac{e}{\pi}\right)^3 = \frac{2}{3}, \text{ (the universal equilibrium condition).}$$

Both topological invariants define together the dimensionality of a structure (shape, the Euler characteristics for spherical polyhedral, and size, Eq. 8), seen as stable structures with rotation-reflection axis (triad and tetrad, Fig. 1).

The quantum and decimal exponentiation are the most important ubiquitous in mathematics, physics and engineering.

In cosmology, topology can be used to describe the overall shape of the universe excluding the optical aberrations of light occurred by the rotation-reflection axis symmetry, and the wrong interpretation of observable results.

The quantum material compact is the unit disc of Z , bounded by its unit circle Fig. 3, obtained by the particular rotation as the simplest Riemannian surfaces or the compact/closed disc π^2 , containing all circles bounding the disc. This particular transformation will have importance for exemplifying the dual existentialist of quantum light in the next chapter, as two-light flow phases: in the day time (or partially immersed body) and in the night time (or fully immersed body). Thus, in Fig. 3, the seen t-plane is half-compact (light-flux $\Phi_L \equiv e^3 \pi^3 c_s, c_s$ - light velocity) and the dark compact (the Z – plane) is quantum mass, as

$$\begin{aligned} e^4 - \pi^3 &= 23.6 (\cong g_0 e), \text{ the recurrent (or eternal) mass,} \\ \pi^4 - (e^4 - \pi^3) &= 73.8 (\cong g_0 e^2), \text{ the relative (or temporal) mass,} \end{aligned} \tag{9}$$

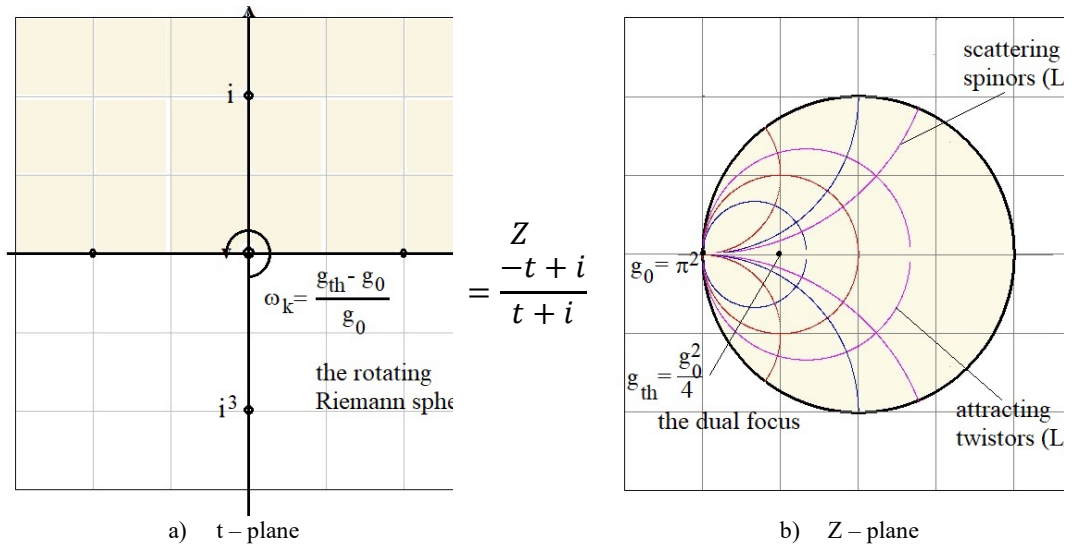


Fig. 3 The correspondence $t = (Z-1)/(iZ+i)$, $Z = (-t+i)/(t+i)$ in terms of the complex planes of t and Z (the upper half-plane of t , bounded of its real axis is mapped to the unit disc of Z , bounded by its unit circle)

surrounding a dual focus (“sagittal” foci)

$$g_{th} \equiv e^4/2 = 27.3 \cong \pi^4/4 = 24.25 \equiv g_0^2/4, \text{ the thermal focus,} \tag{10}$$

$$g_0 \equiv \pi^2 \cong 10 \text{ m}^2/\text{s}, \text{ the conventional/standard focus.}$$

The difference between them is given by the thermal characteristic, of focal points, g_0 -warm and g_{th} -cold with

$$\Delta\theta_n \equiv \frac{\pi^4}{2} = 48.7^\circ\text{C}, \text{ the normal working regime,}$$

$$\Delta\theta_c \equiv e^4 = 54.6^\circ\text{C}, \text{ the critical thermal regime.}$$

That's the physical interpretation of Euler's quantum material unit disc where the angular measure in degrees represents mass and/or the heat/dark energy

$$m_{min} = \frac{45^\circ}{2} \equiv \frac{e^4}{2} - \frac{\pi^2}{2} = 22.36, \text{ the minimum mass,}$$

$$m_{fc} = \frac{55^\circ}{2} \equiv \frac{e^4}{2} = 27.3, \text{ the critical recurrent mass } (\Delta\theta_{cr} = 55^\circ\text{C}),$$

$$m_{max} = \frac{60^\circ}{2} \equiv \pi^3 = 31, \text{ the maximum stable mass } (\Delta\theta_{max} = 60^\circ\text{C})$$

The relative focal distance determines the thermal working regime against a standard distance $g_{th} = \frac{g_0^2}{4} = 25$ (Jovian value) for the normal thermal working regime with $\Delta\theta_n = \frac{g_0^2}{2} \leq 50^\circ\text{C}$, $(\theta_{day} \leq (\frac{e}{\pi})^3 \cdot \frac{g_0^2}{2} = 33.3^\circ\text{C}, \theta_{nigh} \leq 16.6^\circ\text{C})$, and $g_{thc} \equiv e^4/2 = 27.3$ with the critical thermal working regime with $\Delta\theta_c = e^4 \leq 55^\circ\text{C}$ $(\theta_{day} \leq (\frac{e}{\pi})^2 \cdot e^4 = 41.25^\circ\text{C}, \theta_{night} \leq 13.75^\circ\text{C})$ at the relative distance $d_{rel} = \frac{g_0^2}{g_{thc}} = 36.6$, that is the nearest or critical distance from the thermal focus. Since the quantum focal points are the diathermal gravitational spherical surfaces (no retain heat), the relative focal distance shows the thermal displacement effect occurred by the Riemann spherical gravitational waves. In terms of temperature ($^\circ\text{C}$), the thermal displacement law is given by (Fig. 6)

$$\frac{g_{th}}{g_0^2} = \left(\frac{T}{T_3}\right)^{4/3} \frac{T_3+C}{T+C}, C= 2e^4, \text{ the thermal displacement law,} \quad (11)$$

where the triple point of water ($g_0^2 e \equiv 273.16^0 K = 0^0 C$), T_3 is the critical temperature of the Solar System.

The thermal gravitational displacement law (Eq. 11) is the equivalent of Wien's displacement law of the spectrum of equilibrium radiation as given by Plank's law [9, 10].

4. THE CRITICAL SOLAR SYSTEM

The regenerative solar system is the duplicate of the dual quantum isomorphism at the gravitational scale with two fixed points: $c_s = g_0^{g_0} (m/s)$, the light self-ignition velocity and $0 K (\equiv -g_0^2 e^0 C)$ the thermal dead (monomolecular motion to retain heat) in conjunction with the quantum-gravity reciprocity theorem, Eq. 4. The astronomical results from Ref. [11] are used for comparisons, but at the onset it is of importance to understand who is the SUN, which surrounds the settled and eternally regenerating planets? The answer lies in the Euler's extraordinary formula, where on the unit circle exists such a triple point

$$i^3 = 3\pi_{rad} = 270^0 (\equiv G_0) \equiv T_{3H_2O} (0^0 K) \equiv g_0^{\pi^3} (M_0)$$

with subtle linkage: SUN's mass (M_0), gravity (G_0), hydrosphere (harbouring life), and its constant flux ($\Phi_0 \equiv e^3 \pi^3 g_0^{\pi^2} = 6 \times 10^{12} m^2/s^3$, the constant light flow rate) timeless providing both light and heat/dark energy required for the recurrent process of quantum autocatalytic fusion reactions (Eqs. 5). The relative mass occurring at the north pole (i, warm) is responsible for the metastable (phase) equilibrium of process, and if mass (neutrons, molecules) is produced at a rate that exceeds the rate of escape by diffusion, the reaction is self-sustaining and nuclear explosions result associated with the apparent colour of thermal radiation shifting from blue (low temperatures) towards red (high temperatures).

That's the shift of thermal spectrum accompanied by gravity waves experienced as severe climatic changes including earthquakes, tornadoes, fires, floods, etc., all that resulting from the global warming phenomenon.

The global warming phenomenon, rather felt than understood, is the direct result of the properties of fluid at the critical point (c), liquid at the normal boiling point (b), or the solid at the melting point (m), closely related to the behaviour of fluid in retrograde vaporization and retrograde condensation processes. These recurrent molecular processes at fixed critical temperatures are found in the formations of stars, and the Solar System surrounding the SUN is the maximum recurrent mass (M_0) stabilized at $\Delta\theta = 2e^4 = 110^0 C$ for all planets of the system with molecular parathermal structures (retaining heat as evolving relative mass). The giant supernovae with solar masses about

$$\frac{M_{sup}}{M_0} = \frac{e^4 - g_0}{\pi^3} = 1.44, \text{ the Chandrasekhar limit,}$$

and the parathermal structure is the case of most supernovae triggered by one of two basic mechanisms: the sudden re-ignition of nuclear fusion in a degenerate star such as a white dwarf, or the sudden gravitational collapse of a massive star's core, with the SUN (M_0) undergoing this type of explosion [12].

The solar systems differentiate between them by the free radical quantum bond to moderate the autocatalytic reaction appearing to proceed by a branched-chain, free-radical mechanism

$$\left. \begin{array}{l} g_0^{\frac{1}{2}} = \pm\pi \\ 3g_0 = \pi^3 \\ g_0^2 = \pi^4 \end{array} \right\} \begin{array}{l} \text{the free radicals} \\ \text{or quantum bond} \end{array} \quad (11')$$

The free radicals are the quantum gravitational link-ups that behave qualitatively as the para-thermal molecular structures of mass retaining heat, forming gravitational masses of stars.

$$\begin{aligned} M_{SUP} &\equiv \frac{e^4 - g_0}{\pi^3} M_O = 1.44 M_O, \text{ the supernovae-like solar (hot) systems,} \\ M_O &\equiv g_0^{\pi^3} = 10^{30} kg, \text{ the solar terrestrial (warm) systems,} \\ M_U &\equiv \frac{\pi^4 - g_0}{2\pi^3} = 1.41 M_O, \text{ the Ursae-like (frozen) asterism.} \end{aligned} \quad (12)$$

All solar gravitational systems are autocatalytic reaction of quantum fusion occurring the (light) kinetic energy and (heat) regenerative para-thermal masse as

$$\begin{aligned} M_{SUP}^{1/2} &= 2\pi(\pm e + e^2)g_0^2 c_s^2, \text{ the unstable unifocal solar system, (a)} \\ M_O^{2/3} &= c_s^2, \text{ the metastable bifocal solar system, (b),} \\ M_{UMinor}^{1/2} &= 2\pi(\pm e)g_0 c_s^2 \text{ and } M_{UMajor}^{1/2} = 2\pi e^2 g_0 c_s^2, \text{ the two stable} \\ &\text{unifocal solar system(c).} \end{aligned} \quad (13)$$

where it is remarked three gravitational structures fluctuating gravitational core structure (a), two soliton-like coherent structure (b) and two distinctly core structures, with

$$M_{\otimes} \equiv M_{SUP} = M_O^{3/2}, \text{ the Chandrasekhar limit.} \quad (14)$$

The solar-terrestrial system (SUN-EARTH) with the mass M_O is the minimal/critical quantum system in frozen/metastable equilibrium, $\left(\frac{e}{\pi}\right)^3$ only known to harbour life on the Earth planet, at the distance of one astronomical unity, $1 a. u. = 3/2g_0 c_s = 1.5 \times 10^{11} m$, from the conventional stable SUN (M_O), from where orbit the planets surrounding it.

Other luminous constellations, on account of their relativity, must be far enough to the Earth to have no noticeable effects on its biosphere, i.e. at the distances as far as (10^3-10^4) light-years away ($1 \text{ ly} \equiv 10^{13} \text{ km} \equiv \frac{2}{3} 10^5 a. u. \cong 10^4$ terrestrial diameters).

Although Euler's regenerative quantum universe is bounded, it is extremely large and immeasurable, existing forever.

Unlike the BIG BANG singularity theory of the impulsive beginning of the universe, the present reverse approach is a smooth evolution based on the (non-splitting) natural quanta, e and π , as dual quantum isomorphism and its photosynthesis into molecular structures.

The previous Plank-Einstein's quantum (atomic splitting) theories [13-14] were based on the conventional solar mass M_O ,

$$4/3h_p \cdot M_O = 10^{-3}, h_p - \text{the Plank constant,}$$

i.e. without retaining heat and gravity, being able to describe only atomic structures of matter as the electromagnetic field along with the Lorentz transformations to take into account relativity effect of light (wrongly postulated by Einstein).

The reverse alternative of the natural quantum evolution makes consistent sense by $Rk_B N_A = g_0$ and $m_{EARTH} = g_0 N_A (kg)$, k_B - the Boltzman constant, N_A - Avogadro

molecular number ($N_A = 6 \times 10^{23} \text{ mole}^{-1}$), R – universal gas constant, where g_0 is the gravitational bond of molecular structures able to retain heat as para-thermal or relative mass with half-kinetic energy (c_s), the light velocity, one-third ($c_s^{2/3}$) – the ray of terrestrial para-thermal hydrosphere floating in light flow and one-fourth ($c_s^{1/2}$) the buoyant pressure.

The dual quantum isomorphism via the photosynthesis process of light engenders the chemical autocatalytic reactions of fundamental molecules from the solar system: O_2 (the O – atomic, O_2 – molecular, O_3 – ozone allotropes of oxygen), H_2 (the 1H , 2H , 3H – isotopes of hydrogen), CO (the ^{12}CO , ^{13}CO , ^{18}CO isotopes of carbon monoxide) and CH_4 (the saturated hydrocarbon – methane).

The chemical autocatalytic reaction is a combustion-like process by a branched chain free-radical mechanism similarly to quantum fusion reactions, in which the free radicals (or diathermal gravity) behave qualitatively as the neutrons, so that the decomposition is autocatalytic.

The heat released by the interaction/“combustion” of molecular structures is held at close temperature range by the mechanism of critical fluid states (the thixotropy property of a material which softens when strained) for the timeless recurrence/regeneration of cyclical processes.

The gravitational link-ups seen as thermo-gravitational waves, function as a diathermal surface of molecules absorbing the excessive radiation into gravitational molecular structures, with caloric value, H (retaining heat).

The dimension of solar system (M_\odot) is given in Figs 4, 5.

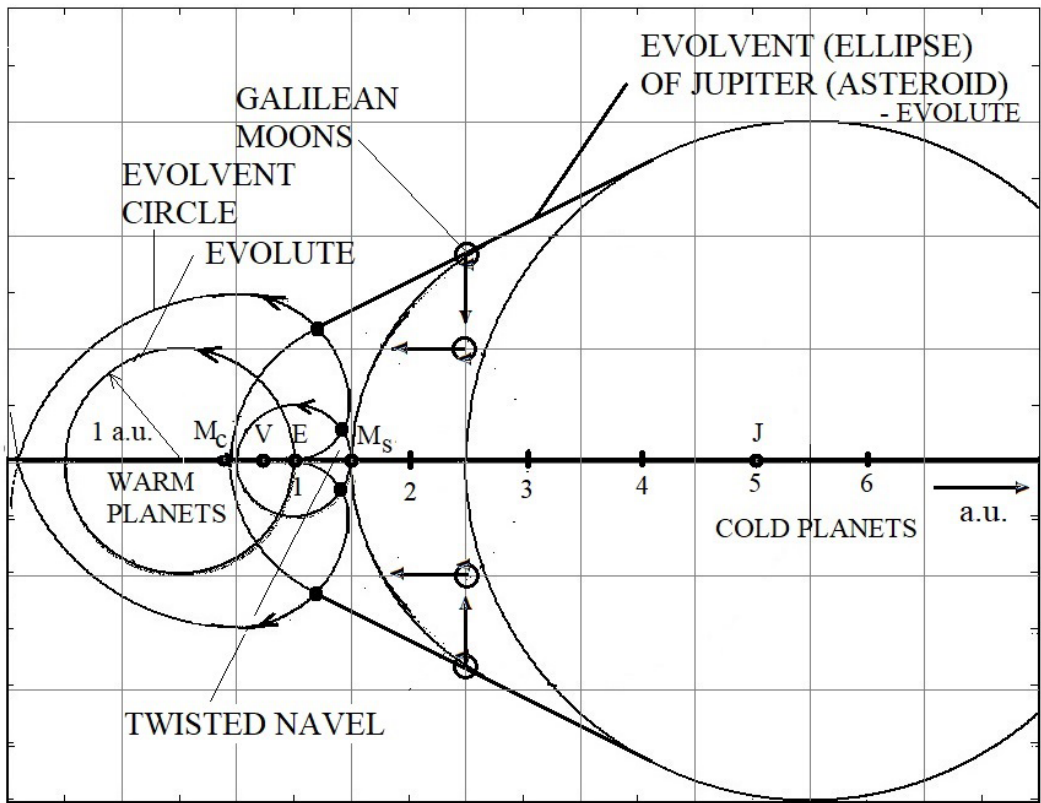


Fig. 4a The near field of solar system: the rotation-reflection axis effect (triad, a three-fold symmetry axis)

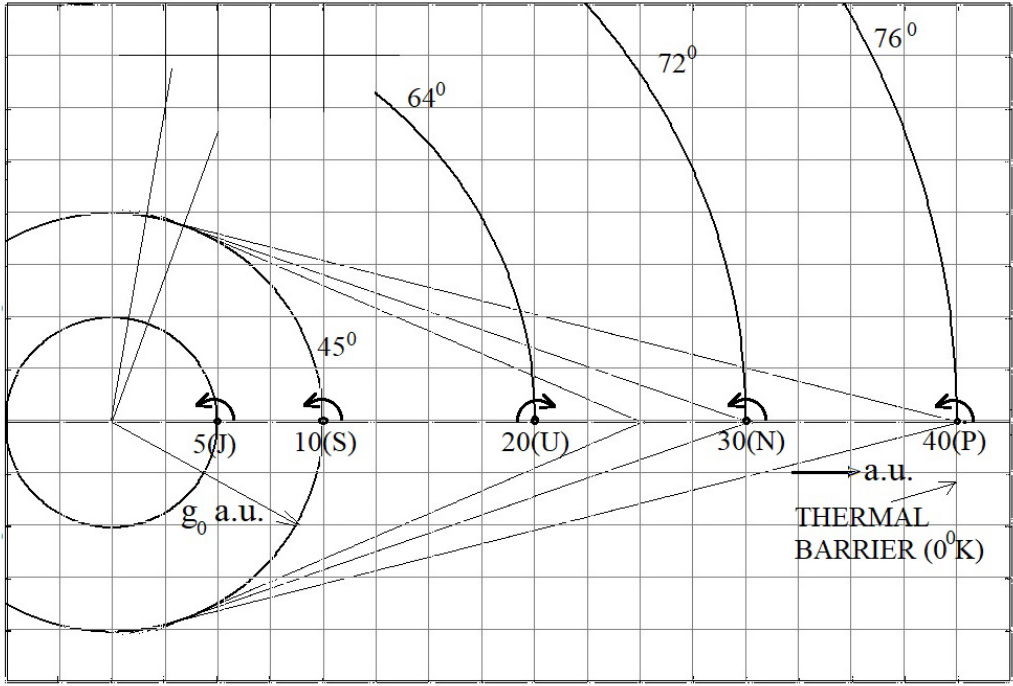


Fig. 4b The far field of solar system: Jupiter (12 natural satellites, Galilean largest moons: $m_g \approx 10^{22}$ kg (with molecular structure), $m_{far} \approx 10^{18}$ kg and $m_{farthest} \approx 10^{16}$ kg (no molecular structure), Saturn, Uranus, Neptune, Pluto

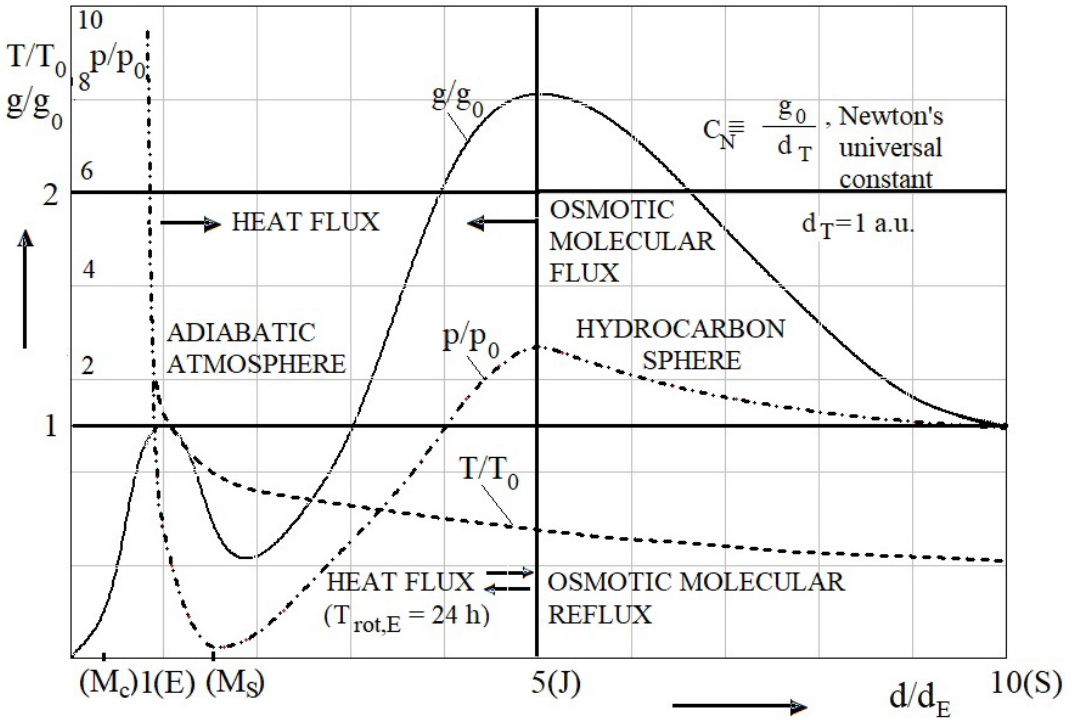


Fig. 5 The two soliton-like coherent gravitational structure

The astronomical scale ($1 a.u. = 3/2g_0c_s$) and the constant synodic period relative to the Earth-dynamic focus (T_{OE} – orbital period $\equiv T_{SE}$ – synodic period = 365 days) allow the visibility of quantum dual isomorphism through its morpho-synthesis in the form of the system itself as planets orbiting in space.

The free quantum radicals (gravitational link-ups), Eq. 12, are effectively neutralized by contact with a gravitational surface (moving bodies) so that free radical concentration is maintained near zero at such surface, absorbing gravity in matter as gravitational regenerative para-thermal mass or relative mass with calorific value. The interface gravity is a kind of a semi-permeable membrane, i.e. only thermal permeable, the chemical molecular interchange being an osmotic dynamic process, in metastable equilibrium between the phases of molecular structures, the so-called osmotic equilibrium and/or osmotic pressure, or rather osmotic gravity as thermodynamic effect (para-magnetic mass flux at a molecular scale).

Mercury, Mars and Pluto are such surfaces with almost no atmosphere to retain heat, their solid surfaces emitting radiant thermal energy into two adiabatic cavities at different temperatures ($T_{Mc} = 750 K$, the warm planets) and ($T_p \cong 0 K \equiv -273^0 C$, the cold planets) creating two systems in thermodynamic equilibrium across the diathermal bifocal gravity (two soliton-like coherent structure or sagittal foci), Fig. 5, according to the zeroth law of thermodynamics [15]. The terrestrial (g_0) and Jovian ($g_{th} = \frac{g_0^2}{4}$) planets constitute the complex sagittal foci, the caustic/critical thermal effect of light or the so-called global warming. Figure 4a shows the Mars squeezed between Earth, Venus and Mercury to form a twisted elliptical novel and 4b is the expansion of cold planet as the temperature increases.

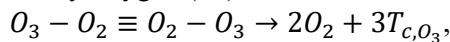
5. THE SOLAR THERMODYNAMIC MECHANISM (“HEAT PUMP”)

The critical thermal effect a light is the outcome of both photosynthesis of natural quanta along with the chemical equivalence: oxygen $O \equiv e^2$, hydrogen $H \equiv \frac{\pi}{3}$, carbon $C \equiv 2\pi$, and polarization of thermal field given by cross interaction of critical values (T_c, p_c) for try-oxygen (O_3) and molecular hydrogen (H_2)

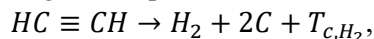
$$\left(\frac{T_c}{p_c}\right)_{H_2} \cdot \left(\frac{p_c}{T_c}\right)_{O_3} = \frac{2}{3}, \text{ the chemical meta-equilibrium.} \quad (15)$$

Equation (15) is the starting up for the chemical autocatalytic reaction of the cosmic molecular process as a “sandwich-type” cross-flow, heat and mass exchanger, constituted by the evolving planets in space, closed in an internal hydrogen sphere floating in an external hydrocarbon sphere, partially immersed in it. Figure 5 shows the mechanism of energy transport through the conductivity of critical fluids (triple point $T_{3,c}$ with the coexistence of three different phases) and thermo-molecular pressure difference (mass flow in osmotic equilibrium). This thermo-mechanical mechanism is nothing else than the cosmic tidal thermo-gravitational waves occurring the global warming phenomena, dangerous for the gravity bonds when its critical value is exceed, $e^4 \equiv T_{war,c}^0 = 54.6^0 C$. (42^0 – in day time, 13^0 – in night time). The solar system in working order is functioning properly at a mean temperature $T_{work}^0 \equiv 2T_{rot,E} = 48^0 C$ ($32^0 C$ – day, $16^0 C$ – night). Starting for molecular reactions, there are:

- Mercury’s reaction for try-oxygen (O_3)

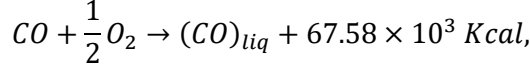
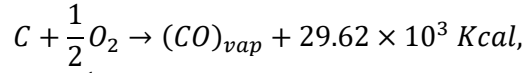


- Pluto’s reaction for hydrogen isotope



where the free-radical mechanism is maintained in frozen metastable equilibrium at rotating planetary surfaces: $\left(\frac{T_{sy}}{T_{rot}}\right)_{Mc} \cdot T_{rot,Mc} = 120^0C, g_0 \cdot \left(\frac{T_P}{T_E}\right)_{rot} \equiv 64 K$, respectively.

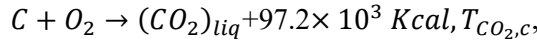
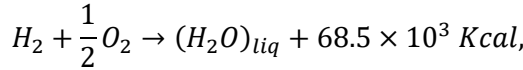
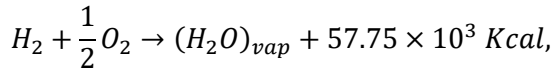
The Venusian reaction is a hot pole (backward rotation – the quantum bifurcation, $e^3 \equiv 2g_0$)



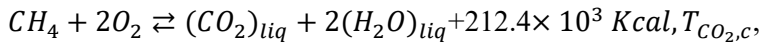
corresponding to the quantum forking, $e^3 \equiv 2g_0$.

The terrestrial, Martian and Jovian reactions are in metastable/critical equilibrium ($T_{H_2O,c}, T_{CO_2,c}, T_{CH_4,c}$) as

- the thermal forking (triple/critical point T_3 in metastable equilibrium - the gravity bifurcation $e^4 = 2(e g_0)_3 = 2g_{th}$)



- the osmotic thermo-molecular equilibrium (the saturation point – the return/twist point $e^4 \equiv 55^0C \cong 200 K = T_{CO_2,c}$)



for hydrocarbons ($T_{CH_4,c}$).

One observes the universal quantum equilibrium of $\left(\frac{e}{\pi}\right)^3 = \frac{2}{3}$ which is hold on both local (warm) and global (cold) thermal radiation in conjunction with the Avogadro-hypothesis, i.e. the same number of molecules for the same conditions of pressure and temperature, herein for the critical conditions, T_c, p_c , with gravity bonds as (Eq. 16)

$$m_E \equiv g_0 N_V = 6 \cdot 10^{24} kg, \text{ the Earth's mass (the terrestrial warm focus)}$$

$$m_J \equiv c_s^{e g_0} = \frac{T_{OJ}}{T_{OE}} \cdot g_0 g_{th} N_V = 2 \cdot 10^{27} kg, \text{ the Jupiter's mass,} \quad (16)$$

$$g_{th} \equiv \frac{e^4}{2} = e g_0 = 27.3 m/s^2, \text{ the Jovian gravity (the Jovian cold focus),}$$

$$G_0 \equiv g_0 g_{th} = 273 m/s^2, \text{ the solar gravity.}$$

Venus and Uranus are retrograde/backward planets representing the boiling point of CO (750 K) and H_2 (75 K) respectively, with atmosphere to retain heat. The critical (boiling, melting) points (c) are return/twist points of a recurrent cyclical process. In this sense, the solar system is an autocatalytic chemical mechanism based on the **invariance of critical** recurrent phenomena in the **vaporization and condensation of the mixtures** for states corresponding to the coexistence of the critical point (c) liquid and boiling (b) (CO, H_2O, H_2) and/or solid at melting point (m) (H_2O, CO_2, CH_4). For it the Fourier law-like thermo-molecular conduction mechanism is applicable to its rotating planets, the conduction causing much larger rates of heat transfer than natural convection.

In contrast to the molecular scale, with permanently self-equilibrating regeneration, at the macroscopic scale the mass regeneration, at the macroscopic scale the mass regeneration is delayed as relative or para-thermal mass (the half-life of a substance, the time required to undergo its disintegration: B.D. – birth and death process). Since the mass regeneration rate is

different in the two subsystems, warm and cold, a mass flux is produced periodically, for self-equilibrating them, the so-called Halley's comet

$$g_H = \frac{e}{g_0} = 0.272 \frac{m}{s^2}, m_H = C_s^{2e^2} = 5 \times 10^{14} \text{ kg},$$

$$t = \frac{m_J/m_E}{T_{OJ}/T_{OE} \cdot T_{SJ}/T_{OE}} = 76 \text{ years, the Halley mass flux,}$$
(17)

where T_O – the orbital period, T_S – the synodic period (in terrestrial days: $T_{OE} = T_{SE} = 365 \text{ days} = 1 \text{ y}$).

The stability of the solar system is given by its molecular structure (Eqs. 16) depending mainly on the thermal field surrounding the gravitational structure (“sagittal foci”), Figs. 5, 6. Physically, the two-soliton like coherent structure of gravity, Fig. 5, is a measure of different molecular regeneration rate given by the Eigen rotation of planets, occurring two distinct refrigeration velocities

$$\frac{g_{th,c}}{g_0} \equiv \frac{T_{rot,Mc}}{T_{rot,E}} = \frac{T_{rot,E}}{T_{rot,J}} = 2.5 = \frac{g_J (24.79)}{g_E (9.81)} = 2.53, \text{ the thermal critical solution,}$$
(18)

with $g_0 \equiv g_E \cong \frac{T_{rot,Mc}}{T_{rot,P}}$. Equation (18) is the thermal critical solution of the Solar System from the quantum gravity reciprocity theorem, i.e. the implicit thermal Eq. 4. Over the critical value $g_{th,c} = 25 \text{ m/s}^2$, the cold focus shifts towards the warm focus ($g_0 \equiv g_E$) occurring the global warming effect, Fig. 6. The couple, cold focus (Jupiter) and warm focus (Earth), is a two-soliton-like coherent/sagittal foci structure or simply bifocal gravity. The bifocal gravity over $g_{th,c}$ produces thermal microwaves followed by the displacement of an apparent colour spectrum toward red sweeping the temperature warm field, smoothly and continuously so long as the cause is removed, by the mechanism of critical fluid states associated with all sorts of thermo-gravitational waves.

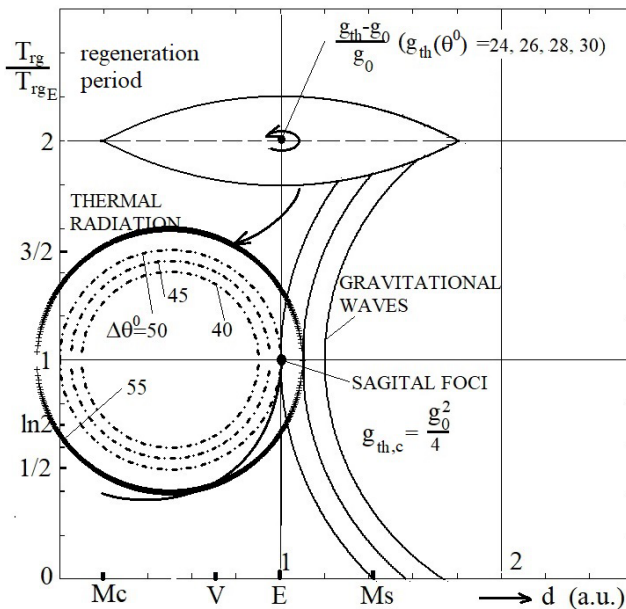


Fig. 6 The displacement law of thermal radiation from blue ($g_{th} = 24$) towards critical red ($g_{th} = 28$) (the thermal-gravity resonance/thermal tidal waves)

The displacement law of recurrent thermal Earthly field is given by (Fig. 6)

$$\frac{g_0}{g_{th}-g_0} = \left(\frac{p_c}{T_c}\right)^{1/3} = \left(\frac{e}{\pi}\right)^3, \text{ the fluid gravitational waves (the thixotropy property of fluids)} \quad (19a)$$

$$\frac{g_{th}}{g_0^2} = \left(\frac{T}{T_c}\right)^{4/3} \frac{T_c+C}{T+C}, C = 2e^4 = 110 \text{ (the temperature gradient constant),} \quad (19b)$$

the Fourier-like heat conduction,

with $\left(\frac{T_{orb}}{T_{rot}}\right)_{EARTH} = \frac{g_0^3}{e} \cong 365 \text{ days}$, the recurrence period and $\frac{g_0^2 T_{O3.c}}{365} = 73.4 \text{ years}$, the OZON recurrent period.

The critical Solar System is nothing else that a torsional buckling phenomenon associated with thermal inertial/tidal waves. The (g_0, g_{th}) (bifocal gravity) as a measure of the torsional buckling lag, are mute/hidden variables of the wavy thermal/heat transport, observable in all almost cosmic constellations, the mute nearest thermal tidal waves being daily and seasonal climate and the monthly phase changes, Fig. 7.

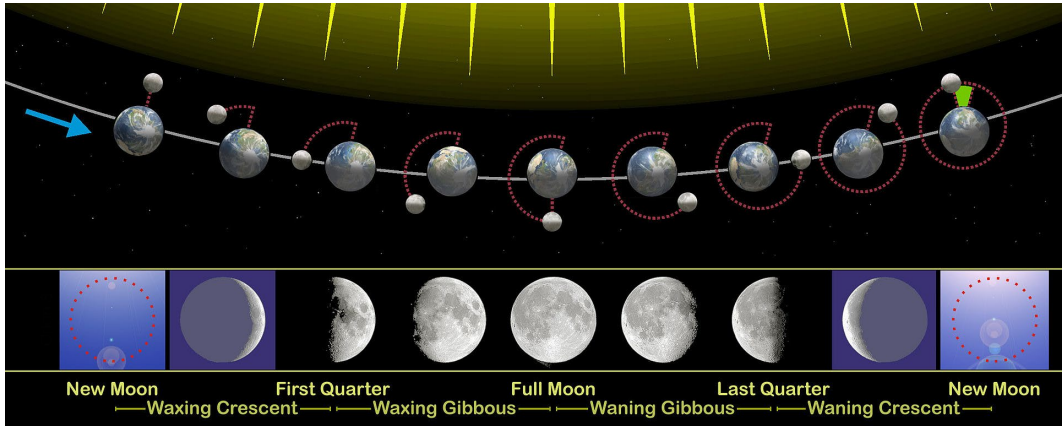


Fig. 7 The monthly changes in the angle between the direction of sunlight and view from Earth, and the phases of Moon that result as a) $\left(\frac{r_E}{r_M} \times 10^8 m\right) d_{E-M} \rightleftharpoons C_{MOON} (= \pm \pi \times 10^8 m/s)$, the tidal thermal-light waves with a different little lag/inertia: $T_{SM} = 29.53d$ and $\frac{1}{2} T_{rot,E} = \frac{1}{2} d$, respectively (the stable atmospheric climate); b) $\frac{m_{EARTH}}{m_{MOON}} \rightleftharpoons \frac{g_0 N_A}{\left(\frac{r_E g_M}{r_M g_0^2}\right) N_A}$, the tidal thermal-gravity waves with large lags (the critical hydrocarbon regime associated with earthquakes)

The quantum bond between the Earth and its only satellite, the Moon $\left(2 \frac{r_E}{r_M} = e^2, \frac{g_E}{g_M} = 2\pi, (m_E \cdot m_M)^{1/2} = 2\pi(\pm g_0) \cdot g_0^2 \cdot c_s^2\right)$ shows that:

- (1) the EARTH-MOON couple is a **supernova**;
- (2) its recurrence, engendering heat, is in working order provided the global warming

$$\Delta\theta_{lim}^0 < \frac{g_0^2 - \frac{e^2}{2\pi}}{2} = 49.4, \text{ the torsional limit,} \quad (20)$$

to exist a molecular structure (N_A). The thermal limit exceeds the critical value

$$\Delta\theta_{lim}^0 > \Delta\theta_{cr}^0 \equiv (e^4 - g_0) = 44.6, \text{ the mechanical equivalent of the calorie } (J/^0K) \quad (21)$$

6. CONCLUSIONS

The Euler's harmonic, holomorphic complex theory describes a completely self-contained, regenerative, critical universe as being a unified system for light, gravity and matter involving eternal regeneration and self-regulation when is out order working. The light, well-defined as the fixed point of the gravitational decimal scale, is focused in two focal points that function as a lens occurring multiple scale effects of mass (temporarily gravitated matter). This fictitious critical construction based on the dual isomorphism of natural quanta (L_e , L_π) preserving its topological structure on the unit complex circle is in many respects-like Solar System from Milky Way galaxy, especially the mechanism of energy transport. The thermal analysis have shown herein that the Solar System is in out order working induced by "MAN" through the vicious regeneration cycles of molecular structures, the carbonic cycle (inorganic matter) with warming effect, and nitric cycle (organic matter) with overpopulation effect. Therefore, the Gaia hypothesis begins to act for restoring the natural quantum order and less good things are to be expected.

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