Light, Gravity and Matter
(with emphasis on thermo-gravity waves)

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MOTTO: *"We are born to be re-born into an Einsteinian space-time stereographically projected by light for a terrestrial century (the Plutonian re-ignition period):* $C_S^2 = M_{\odot}^{\frac{2}{3}} \rightleftarrows N_A^{\frac{7}{8}}$, *the space-time of eternally critical (dark) mass-flow, provided the quantum equilibrium* $\left(\frac{e^3}{\pi^3} = \frac{2}{3}\right)$ *holds down, Gaia law".*

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Abstract: *What are light, gravity, and regenerating matter? Where do they originate and where do they go? The answers to these questions lie in one of the most powerful equations ever discovered: Euler's formula (i.e., complex analysis). This extraordinary theory forms the foundation of eternal existence, providing the building blocks of reality. It resolves the long-standing problem of Cartesian dualism by demonstrating precisely how the mind generates matter through the metastable (phasing) equilibrium of a quantum dual isomorphism (e, π). Physically, this dual isomorphism manifests as recurrent thermal particles, similar to photons, referred to as thermistors. Thermistors (e-plus, π-minus) produce self-sustained wavy light in the form of smoldering flamelessly combustion at low temperatures, controlled (or filtered) by thermo-gravity waves that are eternally retained in light. Gravity provides an isoperimetric thermal charge to stabilize temperature fluctuations. This critical combustion process can generate thermomolecular and chemical structures, including biological (living) cells at the Avogadro scale* (N_A). *At the back-oriented self-ignition velocity* ($C_S = 10^{10}\ m/s$), *a thermally polarized field occurs within an internal gravitational field, associated with the morpho synthesis of thermomolecular structures in frozen equilibrium (frozen chemistry). This occurs at low temperatures and high pressures* ($T = 0 - 272\ K$), *constituting the first defrosting phase. Subsequently, the redshift phenomenon takes place, resulting in the displacement of the thermal spectrum* ($T = 0 - 500°C$), *marking the second defrosting stage. A phasing theory and the main effects of natural wavy light, characterized by low isoperimetric temperature fluctuations, are illustrated through both chemical microcosmic and macrocosmic examples.*

Key Words: *chromo-thermodynamics, thermochemical waves, Joule-Thomson expansion, dual quantum isomorphism, global warming, astrophysics*

1. INTRODUCTION

This short chapter aims to assist readers, particularly young ones, in developing their own judgment regarding the vast literature in the field and in distinguishing between "matter as substance" and "dark matter" as "regenerating matter" or relative mass, akin to the allotropic modifications of ice, water, and vapor. This is also one of the reasons why the main themes addressed in this chapter concern fundamental issues of a paradigmatic nature. The choice of the term "issues of a paradigmatic nature" instead of, for example, "just paradigms of quantum light" stems from the fact that all physical phenomena observed and analyzed in human existence follow patterns similar to the recurrent process of natural wavy light at various scales. The fundamental nature of light phenomena remains far from fully understood. Only a few theoretical and experimental results have been established, and most of them, derived primarily by analogy and controversial interference, have been either incorrect or misinterpreted. The essential properties of light, along with the inherent mathematical complexities of the subject, have been revealed primarily through direct experience with the physical (and numerical) counterparts of Einstein's theories [1, 2, 3] and Maxwell's electromagnetic theory [4]. Many of these theories have sought to establish similarities between natural light and an analogous electromagnetic system, such as Minkowski's world of light cones [5], or the evolution of passive objects within a prescribed random (typically Gaussian) velocity field.

The key distinction between quantum electrodynamic (QED) cold light and quantum thermodynamic (QTHD) warm light (associated with color thermal charge) lies in their sources of generation: electromagnetic light is an artificial, human-made phenomenon, whereas natural light is a self-igniting, self-regenerating, and timeless quantum cooperative process. This process, characterized by order-disorder mutations, has the capacity to generate matter, including biological entities such as humans (biological Eulerian cycles). However, this perpetually regenerative light phenomenon is constrained by critical conditions that regulate its thermal radiation. Beyond a certain threshold, excessive thermal radiation - particularly the caustic effect of light - prevents the development of quantum-gravitational fluctuations necessary for biological evolution. These fluctuations drive evolutionary morphosynthesis processes (EMS) [6], commonly recognized as the birth-life-death (BLD) cycle. Today, as in the past, observations remain the primary exploratory tool for elucidating the properties of light, gravity, and "dark matter" as recurrent cooperative physical phenomena. This is not to suggest an absence of theoretical approaches. On the contrary, there are many -often qualitatively diverse and sometimes based on flawed premises (e.g., the postulate of constant light velocity). While many of these theories align well with certain experimental data and even claim rigor, they do not necessarily do so for the right reasons. It is crucial to exercise caution when studying light, as it can produce deceptive images, such as the "Fata Morgana" effect. When dealing with imaginary quantities, there is often an underlying, hidden aspect that remains incomprehensible for instance,

$(\left(1+\sqrt{(-1)}\right)^4 = -4)$, as noted in Huygens' letter to Leibniz.

Paradoxically, the overwhelming abundance and ongoing "inflation" of theoretical publications many of which claim to present new theories or exploit the concept of quantum light in various ways (e.g., the big bang singularity or einstein's curved space-time theory of gravity) have, in some respects, made the task of distinguishing meaningful contributions easier. This is because most of these works have failed to provide real breakthroughs in understanding and remain disconnected from the fundamental nature of regenerating light,

gravity, and matter. Consequently, they have done little to alleviate the persistent paradigmatic crisis in cosmology particularly in relation to global warming and the increasing threat of earthquakes, both of which are thermodynamic effects.

2. MATHEMATICAL BACKGROUND

The simplest and most minimal description of the regenerative and recurrent world of initial states, excluding their degeneracy, is provided by Euler's topological complex analysis [7]. This framework, a phasing theory, can be briefly characterized by the dual quantum isomorphism recurrence of initial states in the case of quantum systems involving non-splitting particles, such as (e, π), $L_e\{e, e^2, e^3, e^4\} \subset L_\pi\{\pi, \pi^2, \pi^3, \pi^4\}$ as:

1) The integral formulation

$$e^{2k\pi i} - 1 = 0, (k = 1, 2), \text{ the Euler's complete formula,} \quad (1)$$

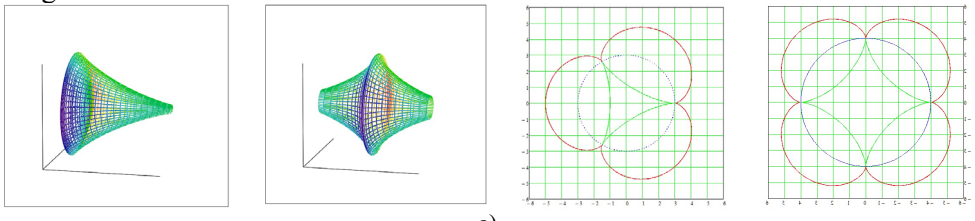
with full contour integration on the unit complex/generator circle, performed once and twice in an anti-clockwise direction about the origin.

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

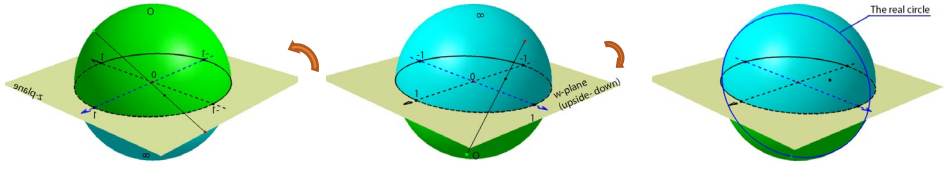
mapping a circle onto itself ($k = 1$) and onto a pseudosphere (or Riemann sphere) ($k = 2$), as illustrated in Fig. 1 (a, b) [7, 8, 9, 10]. The unit complex circle and the Riemann sphere satisfy the critical isoperimetric inequality [11].

$$4\pi A \text{ (arie)} \leq P^2 \text{(perimeter)}, \text{ the critical Sobolev inequality,} \quad (3)$$

this phenomenon characterizes the smoldering combustion form of light, occurring at low temperatures and high pressures. It is a flameless process sustained by the heat released when oxygen directly interacts with a surface acting as a condensed-phase fuel. This type of combustion enables the development of thermomolecular structures, including those essential for biological evolution.



a)



b)

Fig. 1 The symmetry axis of rotation-reflexion axis of a) pseudo-sphere (far field of three-fold twistorial motion and four-fold spinorial motion); b) a Riemann isoperimetric surfaces (near field, $4\pi \cdot \pi^2 \rightleftarrows \frac{4\pi}{3}\pi^3$)

2) The topological formulation of quantum gravity characterized as complex, smooth, and recurrent relies on two exponential functions: $e^x(\ln e \equiv 1)$ and $g_0^x(\log g_0 \equiv 1), x \in \mathbb{R}$. These functions, referred to as the quantum and gravitational functions,

respectively, define the quantum scale and its extension, the gravitational scale, which are intrinsically linked by:

$$e^e = \frac{\pi^3}{2} = \frac{3}{2} g_0, \text{ the saturation of quantum function,} \tag{4a}$$

$$\ln x = 2.3 \log x, \text{ the decimal/gravitational quantum function,} \tag{4b}$$

$$e^0 = \frac{e^x}{\int e^x dx}, \text{ the null/void functions,} \tag{4c}$$

Both quantum and gravitational logarithmic scales are ubiquitous in mathematics, physics, and engineering, with Euler's formula (7) being one of the most remarkable equations in mathematics. However, its gravitational extension to the saturation

$$g_0^{g_0} \equiv c_s = 10^{10} \text{ m/s, the self-ignition velocity,} \tag{5}$$

unequivocally defines the light field as the most fundamental entity in physics, astrophysics, and cosmology.

As a general principle, the quantum recurrence process of initial states (e, π), given by

$$\begin{gathered} e + e^2 = \pi^2 \equiv g_0, \\ \pi^2 + e = 4\pi, \text{ the quantum initiation/starting,} \end{gathered} \tag{6}$$

requires the successive traversal of both quantum and gravitational fields until the initial states (e,π) are recovered, according to…

$$(e\pi)^{2/3} \rightleftarrows \frac{\pi_c^3}{e^2} = \frac{\pi}{e^2} g_0 = 4.196, \text{ the quantum buckling/loop} \tag{7}$$

$$(e^2 g_0)^{1/3} \rightleftarrows (e g_0^2)^{1/4} \cong 4, \text{ the gravity buckling/loop} \tag{8}$$

Equations (7) and (8), together with the expression for

$$c_{lim} = \frac{230}{g_0^2} c_s^{g_0 - 2}, \text{ the re-ignition velocity} \tag{4'}$$

represent the stereographic projection of light onto the entire quantum field, given by $(4e^2 = \pi_c^3)$. This construct is known as the critical isoperimetric quantum compact.

The stereographic projection onto the unit complex circle preserves any physical quantity measured in hexadecimal degrees, particularly those related to heat and its quantization (such as temperature, entropy, enthalpy, and gravity). Consequently, each quantum entity (L_e, L_π) is assigned a critical physical scale that characterizes the thermal radiation of a light-like critical quantum system (Eqs. (7, 8)). This equilibrium state is perpetually maintained, provided that the universal quantum equilibrium is sustained (see Fig. 2, Yin-Yang symbol).

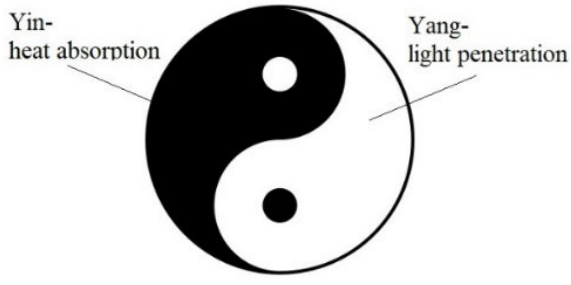


Fig. 2 The quantum buckling symbol (reversibility paradox).

$\frac{e^3}{\pi_c^3} = \frac{2}{3}, (e\pi)^{1/3} = 2$, the restricted reversible torsion (spin-twist locked), (9a)

does not exceed

$$e^3 + \pi_c^3(51^0\ C/K) \leq T_{lim} < e^4(55^0\ C/K), \text{ the global warming limit,} \quad (9b)$$

the result consistent with the Earth planetary limit ($T_{max} = 56.7^0\ C$). In fact, the re-ignition velocity (4'), $c_{lim} = e \cdot 10^8 \cong 3 \cdot 10^8 m/s$, which was postulated by Einstein as the constant speed of light, represents a critical velocity for the development of thermomolecular structures.

In thermodynamic terms, the quantum equilibrium (9a) represents a phasing metastable equilibrium between the critical boiling temperature, $T_{b,e} \equiv e^3 = 20^0 C$, associated with e-automorphism (warm), and the critical melting temperature, $T_{m,\pi} \equiv \pi_c^3 = 30^0 C$ f corresponding to π-metamorphism (cold). Meanwhile, the global warming limit (9b) is nothing more than the constant latent heat of the allotropic transformation within the dual quantum automorphism.

$$Q \equiv \frac{1}{2}\left[\left(T_{vap} - T_b\right)_e + \left(T_{frost} - T_m\right)_\pi\right] = \frac{1}{2}[(e^4 - e^3) + (\pi^4 - \pi^3)] = 50^0 C/K, \quad (10)$$

the constant latent heat,

By defining a quantum calorie as.

$$1cal_{15^0} \equiv e^e = 15.15^0 C, \text{ the quantum calorie,} \quad (11a)$$

and

$$\frac{\pi_c^3}{e^2} \equiv J = 4.196\ J/cal, \text{ the mechanical equivalent of calorie,} \quad (11b)$$

(or its inverse $J^{-1} = 0.238\ cal/J$, by defining a quantum calorie as the thermal equivalent of kinetic energy (J), the latent heat is given by:

$Q_{cal} = J \cdot 1\ cal_{15^0} = 63\ cal$, the constant calorific value of allotropic transformation, (10')

The kinetic similarity between the allotropic behavior of dual quantum automorphism (manifesting solely as a thermal effect) and the allotropic modification of water ($T_{3,H_2O} = 0^\circ C, p_{3,H_2O} = 1\ bar$) is referred to as the hydraulic analogy of light. This analogy is characterized by the redshift of latent heat, given by $g_0 c_s^{1/2}$ resulting in a latent heat value of $Q_{cal,H_2O} = 63\ Mcal$, which is consistent with the chemistry of water and essential for maintaining Earth's equilibrium.

The quantum recurrence of initial states, as expressed in Eqs. (7) and (8), represents the most general formulation for binary mixtures in a critical metastable equilibrium within a finite gravitational field, $G \in [g_0, g_0^2]$, which depends solely on temperature T and is sustained by light.

This recurrence ensures the perpetuity of initial states if and only if the absorbed matter does not exceed a critical threshold, given by ($\oint e^x dx = 2e^e = \pi_c^3$, which defines the isoperimetric mass $c_s^{\pi_c^3} \equiv M_\odot$, the solar mass), corresponding to the solar mass.

This critical mass is often referred to as dark matter or the dead weight of light. The sequence of quantum processes in a reciprocating solar-like system operates with constant matter only if it exists as a frozen, amorphous, structureless mass at low temperatures ($\leq 100^0 K$), typical of fast-rotating astronomical objects (such as solar satellites).

The characteristic mass is given by: $m_s = c_s^{V_m} \simeq 10^{22} Kg$, where $V_m \equiv e^4 - \pi_c^3 - \frac{\pi}{e} = 22.436\, dm^3$, represents the molar volume of an ideal gas. He light produced through the thermal radiation of solar satellites including the $Moon(m_M = e^2 \times 10^{22} Kg$, thr Galilean moons: (4.8, 8.9, 10.8, 14.8)×10^{22} Kg and pseudo-planets such as Pluto ($1.3\times 10^{22} Kg$) and Mercury ($33\times 10^{22} Kg$) – constitutes the radiant quantum energy of satellites, commonly referred to as "dark energy".

This energy is theoretically concentrated in a conventional or fictitious "SUN", defined as "SUN" $\equiv c_s^{2e^e} = 10^{30.3} Kg$ representing the solar critical mass.

Additionally, the solar dead weight carried by light is given by $M_\odot \equiv c_s^{\pi_c^3} = 10^{31} Kg$ Furthermore, the Avogadro mass, $N_A \equiv M_A = c_s^{e^4 - \pi_c^3} = 6 \times 10^{23} Kg$, represents the regenerative mass, which is equivalent to the Martian mass at 200 K.

At higher temperatures, this mass undergoes sublimation. The "SUN" mass accumulated rapidly in the vicinity of Mercury is essentially a momentum-like expression of the critical velocity, $c_{lim} = e \times 10^8 m/s$. This relationship can be expressed as:

$$\underbrace{M_\odot}_{\substack{dark \\ matter}} \equiv \underbrace{m_{MOON}}_{\substack{dark \\ energy}} \cdot c_{lim} = (e^2 \times 10^{22}) \cdot (e \times 10^8) \equiv 2 \times 10^{31} Kg, \tag{12}$$

the momentum (impulse) of light,

Here, m_{MOON} a is an isoperimetric average value, given by: $\left(\frac{1}{2} e^e g_0^2 c_s^2\right)$. From $m_{MOON} \cdot k_B \equiv 1$ ($k_B = 1.38 \times 10^{-23} J/Kg$ – Boltzmann constant) and $\frac{m_{MOON}}{G_\odot} = \frac{e^2 \cdot 10^{22}}{e \cdot 10^2} = e c_s^2$ ($G_\odot = 272 \frac{m}{s^2}, T_{c,O_2+N_2} = -270°C = 0K$ – chemical solar gravity), results that the kinetic energy of light (c_s^2), which is rapidly stored in satellite motions, is subsequently recovered as latent heat, absorbed by slower planetary motions.

This process enables the growth of structured matter or thermomolecular structures, under critical conditions of space and volume occupied by molecules.

This interaction defines the thermodynamic field (where P represents pressure and T represents temperature), which governs the development of regenerative structured matter (such as molecules and cells), as illustrated in Figure 3.

Figure 3 depicts the quantum loop (Eq. 7) at an astronomical scale, where satellite motions enclose an adiabatic aviary box (corresponding to the Avogadro mass), effectively shielding thermomolecular structures from the chemical effects of light, particularly the N_2(Nytrogen) effect of light.

Meanwhile, the gravitational loop (Eq. 8) is embedded within the surrounding thermodynamic field of molecular structures.

This process corresponds to the redshift, describing the displacement of the thermal spectrum from the frozen quantum state ($\leq 50^0 K$, characterized by constant latent heat) toward astronomically massive planetary objects. The gravitational loop manifests as a two-soliton-like coherent structure (SCS) [12, 13], further explored in the following section as thermogravitational waves.

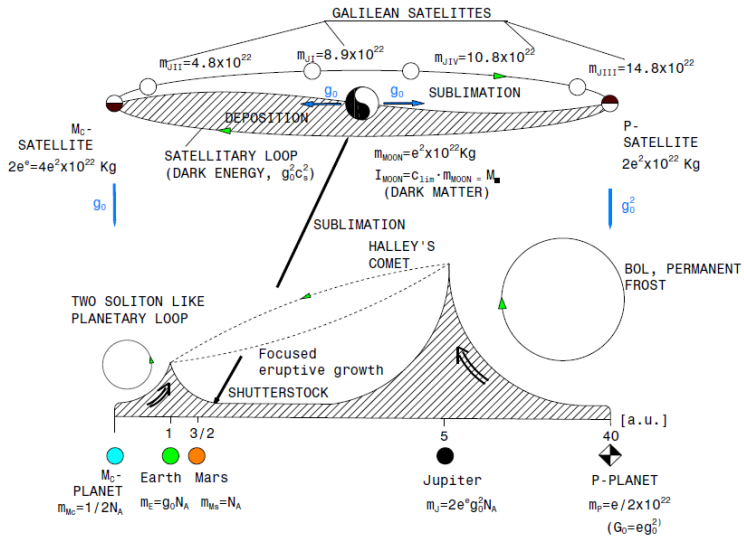


Fig. 3 The quantum-gravity allotropic modifications of solar system (reshaping gravity waves): the gravity shift, the displacement of fast quantum inertia less loop toward slower inertial material loop.

3. A MODEL OF RECURRENT SELF-CONTAINED UNIVERSE

Historically, three major conceptions of the universe have emerged, each corresponding, to some extent, to the reality of our world: The Newtonian Conception – This model describes an absolute space and time framework, where motion is expressed through a simple equation, $s(t)$ as a function of time. It incorporates a universal constant, given by: $\mu_N = \mu_{JT}/c_S$, (where μ_{JT} represents the Joule-Thomson expansion cooling effect;

1) The Einsteinian Conception – This perspective introduces space-time as a dynamic entity, characterized by its continuous expansion (spatial dilation), leading to the well-known concept of an expanding universe. This framework is fundamentally linked to Einstein's famous energy-mass equivalence formula: $E = mc^2$;
2) The Holistic Conception – This model envisions a regenerative and recurrent universe, which is completely self-contained and extends timelessly. Its evolution is governed by critical thermodynamic conditions, based on the automorphism of light. The system follows a closed formulation: $C_S^2 = M_{\odot}^{\frac{2}{3}} \rightleftarrows N_A^{\frac{7}{8}}$ (where $\frac{2}{3} = e^3/\pi^3 \ = \mu_{JT}; \frac{7}{8} = \frac{e}{\pi}$).

A critical regenerative universe, encompassing all phases of reality—including human existence has long been proposed. This model is founded on the dual quantum automorphism of wavy light, exhibiting isoperimetric fluctuations similar to a flameless smouldering combustion process. Such a process has the capacity to preserve timeless regenerative thermochemical molecular structures, provided it remains under controlled conditions.

The smouldering combustion process occurs at both molecular (microcosmic) and astronomical (macrocosmic) scales, manifesting as back-oriented light (or the "fire wake" of light). The matter bound by gravity serves as an essential stabilizing factor for light, facilitating the morphosynthesis of a thermodynamically stable, compact, and timelessly regenerating structure akin to a "perpetuum mobile" system. This regenerative process is sustained only if the velocity of chemical reactions does not exceed the critical re-ignition velocity of light, given by: $c_{ch} \leq c_{\lim} \approx 10^8 m/s$, (see Eqs.4').

The BOL universe operates within a dynamic equilibrium governed by the speed of light. Within this framework, gravitational mass, or gravitational matter, is essential for the existence of light; conversely, in the absence of light, one encounters a state of perpetual frost, reminiscent of a black hole.

Furthermore, the notion of antimatter remains predominantly theoretical, emerging either as a mathematical construct introduced by Dirac or as a potential misinterpretation of physical principles, as suggested by Higgs. This challenges its classification as a tangible physical entity. Since the time of Einstein, the positivist approach in physics—firmly anchored in empirical observation and experimental validation—has gradually evolved toward a more speculative paradigm reminiscent of science fiction. This shift has incorporated concepts such as antimatter, dark matter and energy, as well as various phenomena such as black holes and wormholes. The ongoing misinterpretation of physical phenomena has historically led to conceptual ambiguities. This trajectory ranges from Leonardo da Vinci's studies on turbulence to contemporary theories like Dirac's antimatter and the cosmological constructs of dark matter and dark energy, which frequently function as folkloric or heuristic expressions rather than being grounded in physical reality.

Thermochemical microcosmos. Wavy light can be conceptualized as a complex, smooth, and recurrent autocatalytic reaction that occurs at a self-ignition velocity. ($c_s \equiv g_0^{g_0} = 10^{10}\frac{\mathrm{m}}{\mathrm{s}}$ where $\log g_0 = 1$). This reaction is sustained under the solar isoperimetric inequality condition ($4\pi A \leq P^2$ – solar isoperimetric inequality which ensures a critical balance between the production and removal (or regeneration) of molecular structures. The fundamental thermochemical properties of this system include: Molar volume – $v_m \equiv e^4 - \frac{\pi}{e} = 22.436\ dm^3$ and Regenerative mass (Avogadro mass) – $N_A \equiv c_s^{e^4-\pi_c^3} = 6 \cdot 10^{23} Kg$. From an alternative perspective, light can be understood as a form of smouldering combustion—characterized by a low-temperature, high-pressure, flameless reaction sustained by the heat released when oxygen directly interacts with the surface of a condensed-phase fuel (H_2, C). his type of combustion, involving dark matter as the combustible substance, results in a continuous and stable release of energy behind the flaming fronts of wildfires—an effect referred to as back-oriented light (BOL).

The stability of this process is governed by the Sobolev critical isoperimetric inequality: $4\pi A \leq P^2 \equiv \pi_c^3$), which ensures that the reaction maintains a self-sustaining equilibrium.

$$M_{\odot} = c_s^{\pi_c^3} Kg, \text{ the solar isoperimetric mass,} \tag{12'}$$

The frozen back-oriented light (BOL), also referred to as the wake of light, and its associated heat do not exceed the critical threshold of $e^4 = 55^0\ K/C$. This threshold represents the global warming effect, where the deep descent of frosty light ($c_s = 10^{10}\ m/s$) into its critical gravitational warm field induces a thermodynamic transformation. his process is governed by bulk thermodynamics, specifically classical thermodynamics, which describes phenomena in which temperature variations play a central role particularly the critical global warming effect, where the threshold ($e^4 = 55^0\ °C$) is exceeded [14, 15]. The framework of classical thermodynamics is based on four fundamental laws:

- Zeroth Law: Establishes thermal equilibrium and defines temperature.
- First Law: Governs irreversible processes and ensures the conservation of energy in thermodynamic equilibrium, maximizing entropy.
- Second Law: Describes the natural tendency of entropy to increase, leading to irreversible processes.

- Third Law: Governs reversible processes at frozen equilibrium, where entropy approaches zero as temperature approaches absolute zero.

These laws provide a solid experimental foundation for understanding the interactions between light, gravity, and temperature within a self-sustaining thermodynamic system.

This work introduces a quantum thermodynamic phasing theory for recurrent phenomena, experimentally verified at both molecular and astronomical scales. The theory is grounded in the concept of wavy light, which propagates at a well-defined self-ignition velocity (c_s displaying quantum automorphic fluctuations in frozen metastable equilibrium within a fully self-sustained space (Eqs. 4', 7, 8). Unlike conventional models that propose an expanding universe, this approach describes a regenerative, non-expanding system, in alignment with Euler's minimal world. It is constructed from seven fundamental elements that represent opposing yet complementary aspects of nature: {non-splitting quanta (e, π), $\sqrt{-1}, 0, 1, \left(e^{\pi i} + 1 = 0\right), (\ln x = 2.3 \log x, x \in \mathbb{R})$}. When light self-ignition is interrupted, it results in the back-scattering of dual automorphic quantum fluctuations, behaving similarly to semiconductors. This effect is observed in physical thermistors, which can be classified as follows: (PTC-L_e, NTC-L_π) PTC (Positive Temperature Coefficient) thermistors - analogous to L_e-type light-emitting quanta, storing radiant energy in the form of light and NTC (Negative Temperature Coefficient) thermistors—analogous to L_π – type quantum fluctuations, storing thermal energy as heat. The interplay between PTC and NTC thermistors is manifested in phenomena such as the light curves of hot supernovae and seven-star asterisms/constellations in frozen equilibrium, both of which are temperature-dependent.

The Back-Oriented Light (BOL), conceptualized as mixed quantum crystals defrosting in a gravitational field (Eq. 8), exhibits dual quantum behaviors: superconductor photon behavior, characterized by the scattering and splitting of electromagnetic radiation (Compton effect), and semiconductor thermistor behavior, characterized by the scattering but non-splitting of thermal radiation (Joule-Thomson effect). Thus, this model provides a coherent quantum thermodynamic framework in which light and heat fluctuations dynamically interact with gravitational and thermodynamic fields, leading to self-sustained regenerative processes in a non-expanding universe. In this context, thermodynamics previously considered a non-axiomatic science firmly grounded in experiment achieves quantitative consistency within the framework of the conception of wavy automorphic light (polychromatic light).

Light is not merely a source of illumination but a complex cooperative phenomenon that drives the formation of both matter and heat, encompassing thermodynamic processes that must be measured and quantified. This concept forms the foundation of quantum thermodynamics, which governs regenerative (classical irreversible) processes by establishing measurement standards based on the velocity of light.

The core subject of thermodynamics is heat, which originates from light and exhibits a probabilistic nature.

Its quantization involves key physical entities, including: latent heat energy absorbed or released during phase transitions; gravity related to critical or gravitational thresholds, such as the toxic nitrogen concentration limit (N_x %); enthalpy a measure of order within a system; and entropy a measure of disorder, governing thermodynamic equilibrium.

Unlike classical approaches that treat thermodynamic properties as continuous variables, quantum thermodynamics introduces discrete measurement principles, where each property is characterized by two critical values: the minimal (critical) value the lowest threshold required for a process to occur, and the maximal (limit) value the upper bound beyond which a system becomes unstable.

These values are not merely theoretical but are experimentally verified, ensuring the practical applicability of the framework.

The fundamental laws governing quantum thermodynamic processes can be reformulated by incorporating the concept of timeless recurrent gravity bulk a compact, polarized structure defined by the relation ($\pi^4 = g_0^2$). This formulation introduces an invariant thermodynamic field (p, T) with critical points, including: (p_c, T_c) — the critical pressure and temperature, marking phase transitions, and T_3 — the triple point, where solid, liquid, and gas phases coexist in equilibrium.

0) ***The zeroth law***: the polarization of the (p, T) – field.

The first defrosting (or light refraction) by gradually compressed mixtures.

$$p_0 \equiv c_S^{\frac{1}{2}} = 10^5\ Pa = 1\ bar, p_{vacum} = 1\ Pa = 1\ N/m^2, the\ pressure\ unit,$$

$$p = p_0\ g_0^n, (n = 0 - 3), p_c \equiv \frac{1}{4} \cdot \frac{C_S^{\frac{1}{3}}}{2} = p_0\ g_0^2 = 250\ bar,$$

$$the\ regenerative\ enthalpy\ of\ light\ (thermal\ energy\ unit)$$

$$H_0 \equiv p_c = p_{c,H_2O}, experimental\ value$$

The second defrosting through cooling (Joule-Thomson expansion).

$$T \equiv \frac{1}{2}\ C_s^{\frac{1}{3}} = (1 - 10^3)K\ , the\ Kelvin\ scales\ of\ flameless\ smouldering\ combustion$$

$$T_0 \equiv 0K, the\ threshold\ of\ molecular\ structure\ (prime\ moving\ matter)$$

$$S_{lim} \equiv e g_0^2 = 272K, \qquad the\ entropy\ (disorder)\ limit$$

$$S_{lim} = T_{c,N_2} + T_{c,O_2} = -272\ °C, \qquad the\ experimental\ value, O_3, allotrope, ozone)$$

$$T_a = c_s^{\frac{1}{4}} + e^3 \equiv a = 336\ m/s, the\ acoustic\ velocity$$

$$\frac{T_a}{1000} = 0.336 = \mu_{JT}, the\ starting\ point\ for\ JT - expansion\ (cooling\ effect)$$

$$g_0 c_S^{\frac{1}{2}} \equiv 1 \frac{Mcal}{K}, \qquad thermal\ conductivity\ unit$$

$$Q_l \equiv \frac{\pi^4}{2} = 50°C/K, \qquad the\ constant\ latent\ heat$$

$$Q_l = \frac{1}{2}\left(T_p - T_3\right)_{O_2}, the\ experimental\ value, permanent\ oxygen\ frost$$

$$S_c = e^4 = 55° \frac{C}{K}, \qquad the\ critical\ entropy$$

$$S_c = T_{3,O_2} = 54°K, \qquad the\ experimental\ value, solid\ O_2\ and\ N_2\ 55\%$$

With four thermal agitation phases shifting toward the critical threshold S_c(N_2 concentration).

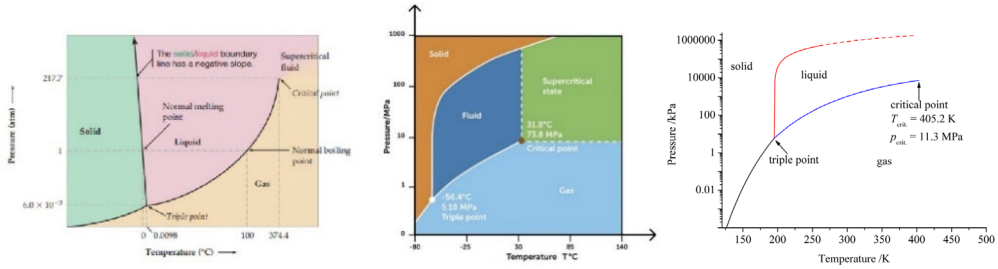
$$g_n = 2e^2 + n g_0\ (n = 0 - 3), \text{the thermochemical waves}$$

1) ***The first law of redshift***: The displacement of light radiation from the toxic radiation of nitrogen allotropes, cyanogen.

$C_0\ N_2\ (N \equiv C - C \equiv N, found\ in\ satellites\ T \leq 100\ K)$ Toward thermo-gravitational radiation (planets), with longer thermal wavelengths (far way N_2).

$$T°C = (272 + T)K, l_w = 272K(0°C), the\ long\ thermal\ wavelength \tag{13}$$

The first law is associated with a phase shift from the melting phase (solid-liquid) to the boiling phase (liquid-gas), in conjunction with the critical reversible processes of retrograde melting/vaporization and retrograde freezing/condensation (Fig. 4).



$H_2 + \frac{1}{2}O_2 \rightarrow (H_2O)_{liq} +$
$68.5\ Mcal\ (e^4 + g_0)$
EARTH (water)

$CO + \frac{1}{2}O_2 \rightarrow (CO_2)_{liq} +$
$67.6\ Mcal\ (e^4 + g_0)$
MARS (carbon dioxide)

$N_2 + 3H_2 \rightarrow 2NH_3 +$
$77\ Mcal\ (e^4 + 2g_0)$
JUPITER (ammonia)

Fig. 4 The allotropic triple point shift, the displacement of T_{3,NH_3} toward T_{3,CO_2}, toward T_{3,H_2O}

2) ***The second law* of critical binary mixtures**: The allotropic interaction of opposing or complementary components is in metastable (phase) equilibrium if and only if there exists one mixture that is self-contained within the other six distinct mixtures. This phenomenon is also known as the distribution of relative peakedness (kurtosis property) or the relative equilibrium problem of three bodies (Poincaré). Mathematically, it describes a two-soliton coherent structure of dual quantum automorphism (Eqs. 7, 8), or polarized Eulerian cycles/graphs.

3) ***The third law* of allotropic transformations**: The cyclical recurrence of initial states continues perpetually, provided the allotropic transformation does not exceed its latent heat, given by $(Q = (g_0^2)/2)$

$$Q_l \leq S_{lim} = e^4, \text{ the critical inequality of entropy} \quad (14)$$

Latent heat (physically represented by oxygen frost: $Q_l \equiv T_{cr,O_2} = 50K$), remains constant at the redshift normalized with $g_0 = 10°\text{C}$, (the thermal sensory threshold), and $g_0^2 = 100°\text{C}/K$. The temperature (T_{b,O_2,N_2,H_2O}) provides the critical and limit values for (N_2 concentration), concentration, corresponding to reshaping (earthquake) and global warming effects.

$g_{cr} = Q_l/g_0 = 5$, (5G – surface earthquake)

$g_{\text{lim}} = Q_l^{\frac{1}{2}} = 7$, (the deep earthquake)

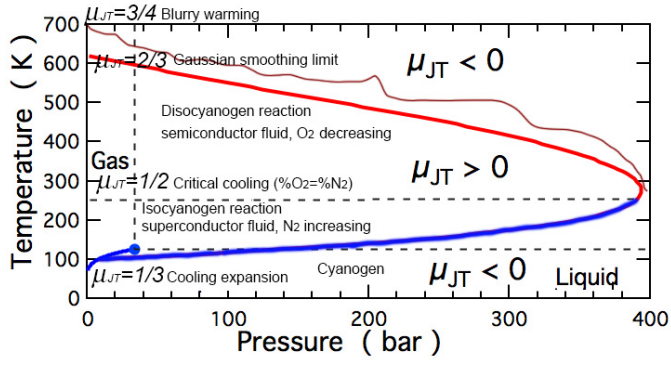
$\mu_{JT,c} = \frac{Q_l}{g_0^2} = \frac{1}{2}$, (the critical cooling Joule-Thomson effect)

$\mu_{JT,lim} = \frac{2}{3}$, (the limit of cooling Joule-Thomson effect)

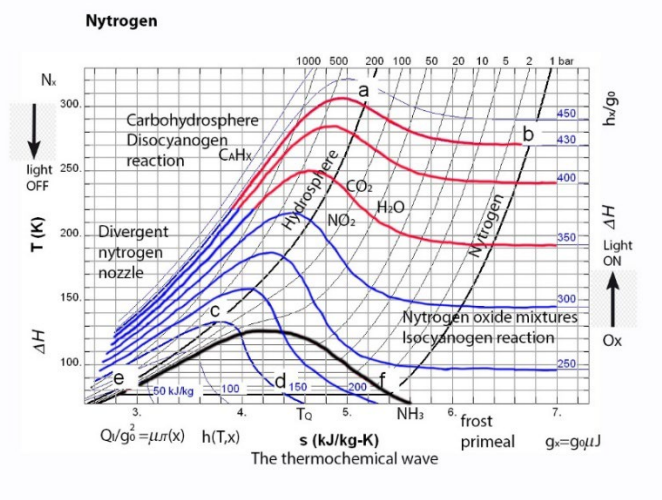
$\mu_{JT,w} > \frac{2}{3}$, (the starting point of global warming effect)

The second law applied to the synthesis of atomic and molecular structures from critical monoatomic molecules is summarized in Fig. 5 for the fundamental molecules H_2, N_2, O_2, CO_2, with their molecular masses equivalent to critical quantum values. The percent of nitrogen, referred to as gravity, is defined as follows: $(H_2 \approx e, H_2O \approx NH_3 \approx e^3$, $N_2 \approx O_2 \approx \pi_c^3$, $NO_2 \approx CO_2 \approx e^4 - \pi^2$, $C_2N_2 \approx e^4)$.

The figure illustrates the limits of the smouldering combustion process (Fig. 5a), the thermochemical waves (Fig. 5b), and the regenerative molecular structure (Fig. 5c), where the intrinsic quantum-gravity equations (Eqs. 7, 8) align with the thermochemical kinetics.



a)



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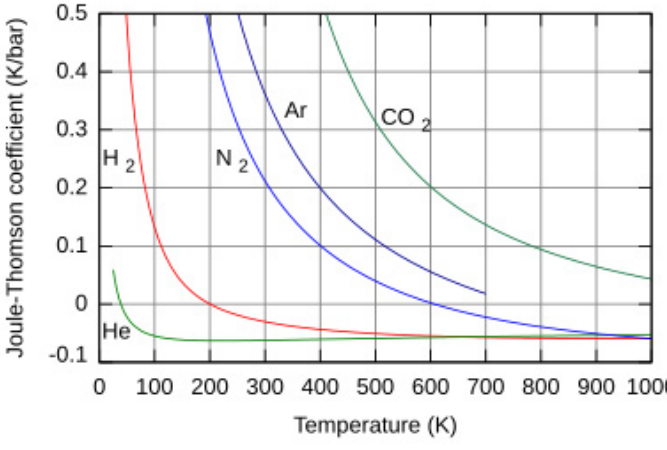


c)

Fig. 5 Smouldering (flameless) combustion limits and thermochemical waves: a) the Joule-Thomson coefficient for $C_2N_2(N \equiv C - C \equiv N), cyanogen, \mu_{JT} = \left(\frac{\partial T}{\partial p}\right)_h$, b) the thermochemical wave, c) the Joule-Thomson coefficients for various gases at atmospheric pressure ($1\ bar \equiv c_s^{\frac{1}{2}}$)

The Eulerian quantum automorphism (Eqs. 7, 8), associated with smoldering-like wavy light (well-defined via the exponential-gravitational function saturated or at the limit, $C_s = g_0{}^{g_0}$m/s) represents a timeless mechanism for a regenerative, extended, or diverse universe (commonly misunderstood as expanding). This mechanism holds provided $Q \leq S_{lim}$, (Eq. 14) or the spin-orbit locked condition. It constitutes a completely self-contained assembly of regenerative material (dark matter) capable of maintaining an "autocatalytic reaction" at a critical size, where the rate of production equals the rate of removal, and the system remains in frozen equilibrium. When the reaction is out of order, the system becomes self-sustaining, leading to an expansion, followed by an explosion, similar to supernovae i.e., the system tends to escape its boundaries. The perpetuum mobile-type recurrence mechanism is governed by three critical factors that determine the regeneration of initial states:

- Thermal level (gravity light modulation, GLM)
- Regenerative mass level/size (reshaping light modulation, SLM)
- Speed of movement modulation of the observed moving objects (temporal light modulation, TLM).

These factors correspond to sensory effects: the warming or microwave effect, reshaping solid and allotropic phase change effects, and the stroboscopic or visibility effect, respectively. These are illustrated through diagrams (Figs. 6, 7, 8). Fig. 6 shows the thermal spectrum shift toward the red critical in the thermogravitational field, with (short wavelength $= g_0^2$) as given by

$$\frac{g(T)-e^e}{g_0^2} = \left(\frac{T}{T_C}\right)^r \frac{T_C+C}{T+C}, T_C = eg_0^2, C = 2e^4, \text{ the microwave field,} \quad (15)$$

where $\left(\int_0^e e^x dx\right) \doteqdot e^e \equiv 14.5\ K/C$ to $15.5\ K/C = 1cal$ [14].

The allotropic modifications of regenerative mass (Avogadro mass) at both thermomolecular and astronomical scales are shown in Fig. 7 and Eqs. 16 and 17. The gravity effect at the thermomolecular scale manifests through the viscosity μ, a property of flowing fluids, and their drag (heat dissipation), which is a processional effect of gravity dependent on temperature and pressure. The figure highlights the dominant influence of temperature as a result of the torsional gravitational buckling lag (Eq. 8), described by an empirical formula similar to Sutherland's [16, 17], utilizing quantum constants.

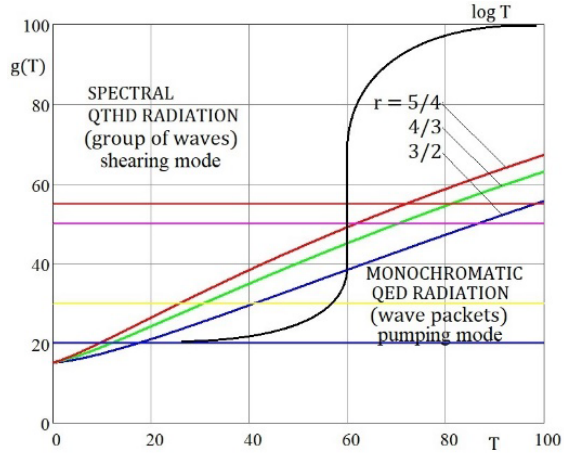
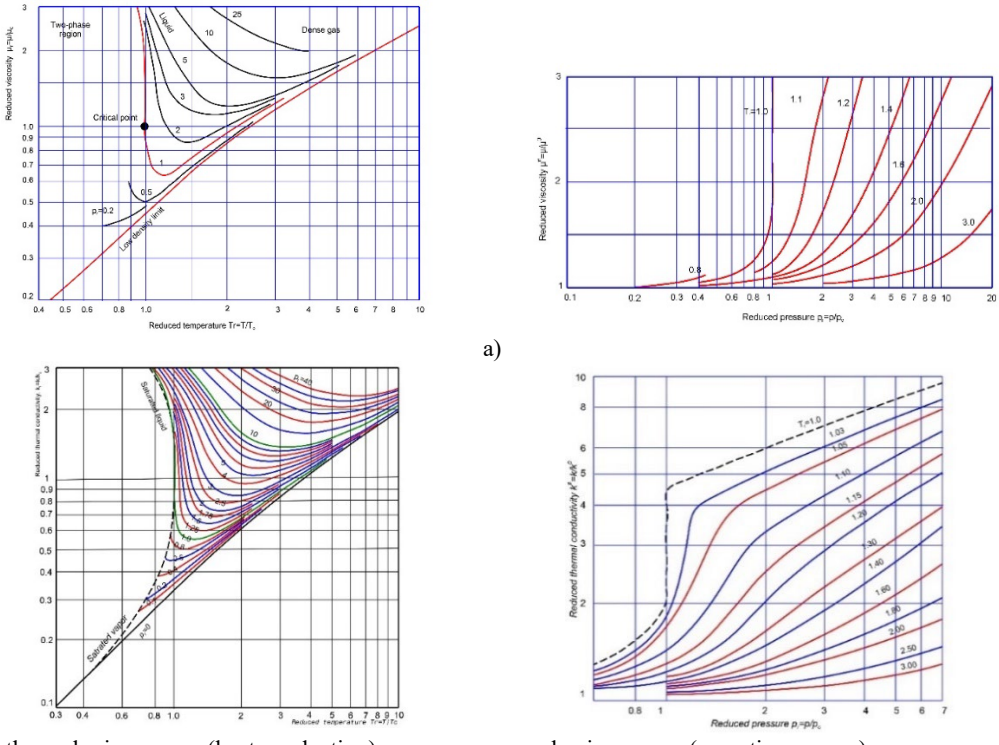


Fig. 6 The thermogravitational microwaves (the continuum/train of a group of waves)

$\mu_r = \frac{\mu}{\mu_c} = \left(\frac{T}{T_C}\right)^{3/2} \frac{T_C+C}{T+C}, T_C = eg_0^2, C = 2e^4$, the quantum nature of viscosity, (16)

where $\nu_{c,air} = \left(\frac{\mu}{\rho}\right)_{c,air} = \frac{e^e}{g_0\sqrt{C_S}}\ m^2/s, \nu_{c,H_2O} = \frac{1}{g_0\sqrt{C_S}} m^2/s.$

Viscosity governs thermal conductivity in gases and liquids according to Fourier's law of heat conduction, and is closely associated with the critical phenomena of retrograde vaporization and retrograde condensation [10].



a)

thermal microwaves (heat conduction) pressure reshaping waves (osmotic pressure)

b)

Fig. 7 The thermal conductivity in fluid mixtures with critical phenomena of retrograde vaporization and retrograde condensation: a) reduced viscosity $\mu_r = \mu/\mu_c$ as functions of temperature and pressure; b) reduced thermal conductivity $k_r = k/k_c$ as functions of temperature and pressure

At the astronomical scale, the reshaping effect is exemplified by Halley's comet, where the mass flux in the solar system periodically balances the oxygen concentration from fast isocyanogen reactions on cold planets with the nitrogen concentration from slower disocyanogen reactions on warmer planets, as

$$m_H = C_S^{2e^2} = 6 \times 10^{14} Kg, t_H = \frac{m_J/m_E}{\left(\frac{T_{OJ}}{T_{OE}}\right)_{syd}^{-1}} \cdot \frac{g_J/g_E}{\left(\frac{T_{OE}}{T_{SJ}}\right)_{sid}^{-1}} = 74.4y = e^2 g_0, \text{ the balance} \quad (17)$$

of solar system,

The average sensitivity curve for modulated light (also called the stroboscopic effect contrast threshold function) as a function of frequency f is given by (Fig. 8).

$T(f) = e\left(C_S^{-1/2} f \frac{\pi^3}{e^3} + g_0^{-1}\right)$, the quantum gravity detachment, (18)

The contrast threshold function demonstrates the stroboscopic/visibility effect when the modulation frequency of the TLM exceeds a certain threshold. The magnitude of the TLM reveals a visible stroboscopic effect at relatively low frequencies, ranging from approximately 10 Hz to 2000 Hz (equivalent to the temperature 2000^0 C, representing the defrosting nearfield within the solar system). At higher frequencies, between 10 MHz and 100 MHz (equivalent to a temperature of 272 K), the effect occurs in the frozen far field outside the solar system.

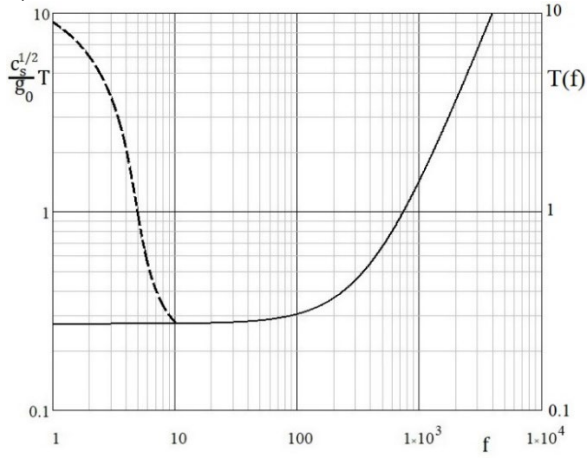


Fig. 8 Stroboscopic/visibility effect contrast threshold function:
near field ————, far field – – – –

4. UNIVERSAL TWO-SOLITON COHERENT STRUCTURE, SCS (ASTRONOMICAL MACROCOSMOS)

Equation (Eq. 8) represents the general topological form of the law of two self-contained peaks for binary mixtures in thermochemical equilibrium. It describes the evolutionary phases of regenerative matter with thermomolecular structures, encompassing molecular mutations at the subatomic level, which are observed at the astronomical scale as cyclical planetary motions. Each planet is associated with an allotropic modification corresponding to its generative period (its age measured in terrestrial years). The seven quantum states, bonded by two loops (Eqs. 7, 8), form two soliton-like coherent structures (SCS), or self-contained structures. The quantum loop (satellites) is represented by its isoperimetric quantum average ($4e^2 = \pi_c^3$), referred to as a fictitious "SUN," with solar mass M⊙≡csπc3$M_\odot \equiv c_s^{\pi_c^3}$ and light velocity $c_s = g_0^{g_0}$, i.e. cosmic triple point, CTP ($c_S, M_\odot, g_0$). This structure surrounds an orbit of seven self-regenerating planets, each moving on a slower gravitational loop.

All astral configurations exhibit such a generative triple point, with seven self-regenerating gravitational planets at astronomical distances, where $1\ a.u. = \frac{3}{2} g_0 c_s\ m$. This approach is relative to the regenerative weak back-oriented light, in which the gravitated mass—composed of an, O_2, N_2 mixture (dark matter, colloquially referred to as "folksy term")—is scattered across multiple scales, from molecular mass to astronomical rotating bodies, while preserving the same gravitational structures (O_2/N_2 proportions).

On the other hand, the absolute approach, which applies outside the phenomenon of light at light-year distances ($1\ l_y = \varphi c_s^{1/3} = 10^{13} Km$, treats light as a pulsating source (CTP) that produces tidal and inertial-like torsion waves. In this framework, the internal phases become eigenvalues or proper modes of regenerating and/or scattering mass. This

phenomenon is observed as frozen structures, such as asterisms resembling Bears, hot supernovae, and the dispersion of the Milky Way-like spiral galaxies. Mathematically, these phases are described as dual quantum automorphisms or CSCs, which act as strange attractors. Ultimately, what remains is the interpretative challenge for astrophysicists, who must identify the observations and records produced by these phenomena. A regenerative universe, such as our solar system, is a completely self-contained binary quantum space, within which lies Earth, the third planet from the "SUN" and the only known astronomical object to harbor life—our world, though little understood. The origin of light, as an esoteric astronomical object ill-defined as the "SUN" is central to the lack of understanding surrounding both "dark energy" (as a constant mass of satellites) and "dark matter" (as the critical light-momentum of satellites, referred to as the fictitious solar mass, $M_{\odot}$).

The absence of these foundational concepts has contributed to the paradigmatic crisis in cosmological research over the past three decades.

Thus, there are two types of "dark matter" or heat clusters: Gaussian (distribution) clusters, which are reversible and long-lasting, associated with persistent lighting galaxies (c_s) or gravitational wells of SCS-like structures (Eq. 7). These contrast sharply with chi-squared distribution hot clusters, which are shorter-lived and associated with bright supernovae, exceeding the critical solar mass $M_{\odot}$, with $\frac{3}{2}M_{\odot}$ (the Chandrasekhar limit). Beyond the collapse of a supernova, a new gravitational well emerges, referred to as a "black hole". The concepts of antimatter and black holes, however, are often treated as speculative or science fiction in nature.

Cosmic asterisms and constellations can be distinguished by their combustion and chemical reaction processes. Most reactions terminate once thermal equilibrium is reached, that is, when the energy of the reactants equals the energy of the products. A relationship exists between the ignition temperature and the pressure of the mixture under specific conditions.

The combustion process in this context is a form of smoldering combustion, characterized by low temperatures and the absence of flames, sustained by the heat released when oxygen directly interacts with the surface of a condensed-phase (high-pressure) fuel, such as (H_2, O_2). The combustible substance referred to as "dark matter" engages in a persistent, stable combustion process, regenerating biomass behind the flaming fronts of caustic, toxic light, provided its critical size is maintained (as dictated by the Sobolev critical isoperimetric inequality). The critical solar system, with its SCS structure, is capable of generating human-like self-combustion (smouldering type), as summarized below

$$c_s^2 = M_{\odot}^{2/3} \rightleftarrows N_A^{7/8}, \text{ the human smouldering combustion,} \tag{19}$$

with the critical age $\boldsymbol{e^2 g_0 \sim (70-80)\ years}$ and

$$I_{L,max} = c_s m_p = e g_0^2 \times 10^{30}\ Kgm/s,$$
$$I_{L,min} = c_{lim} m_{MOON} = 2 g_0 \times 10^{30}\ Kgm/s, \text{ the Procureastean size of the heliocentric system (long-short phase)} \tag{20}$$

In contrast to the interactions of solitons in a collisionless or inertia-free atomic plasma and the recurrence of initial material states, the interactions of SCS (Self-Contained Structures) in the morphosynthesis processes of thermo-molecular and chemical structures involve inertial collisions that accumulate (burning dark matter) over long periods (spanning thousands of years). These processes store and regenerate both light and heat energy (referred to as "shutter stock" or dark energy) via a smouldering combustion mechanism. This mixed energy, stored

and regenerated in cosmic systems such as solar-like systems, asterisms, or periodically regenerated constellations, persists for varying time periods, either short or long.

The critical "SUN" system, continuously self-regenerating over extended periods, contains carbon (12C, 13C, 14C – isotopes), hydrogen (1H, 2H, 3H – isotopes) and oxygen (O1, O2, O3 – allotropes), which undergo rapid renewal in celestial bodies such as the MOON (serving as the isoperimetric average of the quantum satellite loop, also referred to as the "SUN," as illustrated in Fig. 3), Pluto, and Mercury as satellites. The morphosynthesis of thermo-molecular and chemical structures proceeds at a slower rate, maintaining frozen thermodynamic equilibrium for extended durations within the frozen chemistry of the gravitational planetary loop.

This includes: O2 (allotropic state) molecules in Mercury (planet), CO2 (liquid + gas) molecules in Venus, H2O (allotropic state) molecules in Earth, CO2 (allotropic state) molecules in Mars and CxHx hydrocarbon mixtures in warm planets. These systems are in thermochemical equilibrium with nitrogen oxide mixtures in the colder planets, including Jupiter, Saturn, Uranus, and Neptune.

Solar molecular chemistry involves the smouldering combustion (burning) of hydrocarbons (comprising carbon and hydrogen in the presence of O_2).

Beyond the point of complete combustion, the reaction produces water and carbon dioxide, which remain in equilibrium with a mixture of nitrogen oxides, forming a balanced reaction

$$\underbrace{C_2N_2}_{cyanogen} \rightarrow \underbrace{2\underbrace{C^{12}}_{carbon\ izotop}}_{carbon\ izotop} + \underbrace{(T_{C,O_2} + T_{C,N_2})}_{\substack{M_\odot(-272°C\equiv 0K) \\ solargravity}}, \mathrm{T} < 100\mathrm{K}\text{, the prime frost (Moon)} \tag{21a}$$

$$\underbrace{N_xO_{x(mix)}}_{\substack{nytrogen\ oxide \\ mixtures}} + H_2 \overset{heat}{\longrightarrow} \underbrace{NO_2}_{\substack{nytrogen\ dioxide \\ freezing}} + \underbrace{NH_{3_{liq}}}_{amonia}, \mathrm{T} > 100\mathrm{K}, \tag{21b}$$

the endothermal isocyanogen reaction (cold planets)

$$\underbrace{C_xH_{x(mix)} + O_2}_{\substack{hidrocarbon+oxigen \\ mixtures}} \overset{heat}{\longrightarrow} \underbrace{CO_2}_{\substack{carbon\ dioxide \\ melting}} + (H_2O)_g, \mathrm{T} > 200\mathrm{K}, \tag{21c}$$

the exothermal disocyanogen reaction (warm planets)

equation (21) illustrates the chemical solar system, which encompasses human self-combustion.

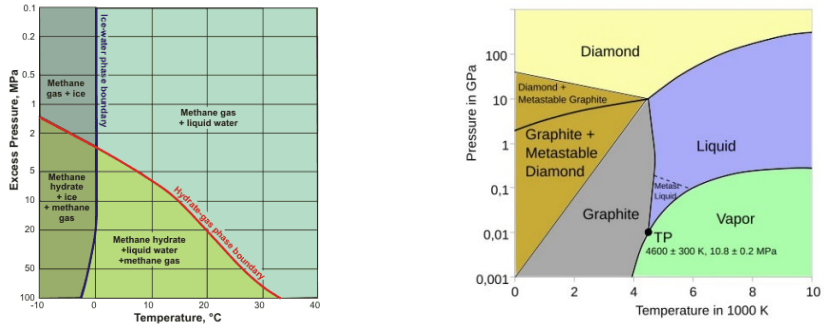
In this framework, the satellite loop plays a crucial role in light flux (P_{ch} - chemical potential), commonly referred to as "dark energy".

$$\phi_L = e^3\pi^3 c_s = e\pi g_0^2 c_s\ m^2/s^3\text{, the constant light flux,} \tag{22a}$$

and the planetary loop maintains a constant heat flux (H_{cal} – calorific value), which is commonly referred to as "dark matter".

$$\phi_H = \frac{e^3}{\pi^3}\frac{1}{g_0}c_s = 238\ Mcal\text{, the constant heat flux,} \tag{22b}$$

The physical processes involved in the light phenomenon described above are invariant; however, the matter sustaining these processes is temporarily in flux, referred to as dark or critical matter (Fig. 9).



a) Heat absorption (H_{cal} – calorific value) b) Light penetration (P_{ch} – chemical potential)

Fig. 9 The allotropic change of heat flow of matter seen on a) Earth, twistorial-polychromatic-semiconductor fluid mode; b) MOON, spinorial-monochromatic-superconductor fluid mode.

The morphosynthesis of matter and energy (Fig. 9) occurs in conjunction with quantum (satellite) and gravitational (planetary) structures, as described by Eqs. 7 and 8 (Fig. 3). Relativistic aspects are addressed by Euler's formula, which reveals the precise distinction between Einstein's and Lorentz's relativity, excluding the heat contribution (thermo-gravitational waves). It also demonstrates how a chromatic/color phasing theory can be reconciled with a higher-level esoteric theory.

Relativity and gravity are essentially conceptual frameworks used to understand the kinematic fast dynamo phenomena produced by light, and the delays introduced by g_0 and g_0^2 times at the human perception level. In this context, Einstein's space-time concept emerges as a solution, serving as a puzzle of "quantum entanglement" - the so-called curved space-time theory of gravity, as described by Eqs. 7 and 8. This framework is applied to the solar system, highlighting the conversion between quantum-gravity and space-time:

$$1\ year = T_{O,E} = 365\ d \equiv \frac{e^2}{2} g_0^2, \quad 1\ day = T_{rot,E} = 24\ hours \equiv e g_0; \quad 1\ month =$$

$$30\ days = T_{O,syn,MOON} \left(\frac{T_{O,sideral}}{T_{O,synodic}}\right)_{MOON} \cong \frac{e}{\pi}, \left(\frac{T_{rot,synodic}}{T_{rot,sideral}}\right)_{MOON} = \frac{\pi}{e},$$

$$\frac{d_{E-M}}{2r_M} = 2e^4 \simeq g_0^2, \qquad \frac{m_{MOON}}{m_P} = 2e, \quad c_{lim} \equiv d_{E-M} = \frac{e^2}{2} \times 10^8 m/s$$

$$c_s \equiv \frac{e^e}{g_0} \times 10^{10} m/s \text{ and } 1\ a.u. \equiv e^e c_s = \frac{3}{2} \times 10^{11} m,$$

the saturated quantum-gravity field. In this completely self-contained space lies the planetary system, Fig. 3, as

- $g_0^2 \equiv \frac{T_{O,P}(sideral\ years)}{g_0 T_{O,Mc}(year)} = 100$ years, the reignition (reccurence) period of Pluto (the Mercury-Pluto inertial collision);
- $e^2 g_0 \equiv \frac{\frac{m_J}{m_E}}{\left(\frac{T_{OJ}}{T_{OE}}\right)^{-1}_{syd} \cdot \left(\frac{T_{OE}}{T_{OJ}}\right)^{-1}_{sid}} \cdot \frac{g_J}{g_E} = 74$ years, the re-ignition period of Earth and mutually of 25 years ($g_0^2 - e^2 g_0$), the re-ignition period of Jupiter (the Jupiter- Earth strong collision associated with the reshaping thermo-gravity waves, seen as Halley's comet);

The gravity of planets plays the role of the M_{JT} coefficient, producing cooling for cold planets ($\frac{g_0}{g_J} \approx 0.4 > 0$), and determining the critical values for warm planets. For Mercury, the coefficient is ($\mu_{JT} = \frac{g_{Mc}}{g_0} \cong 0.33$), Earth, ($\mu_{JT} = \frac{g_{lim}}{g_0} = 0.7$), Mars ($\mu_{JT} = \frac{g_{Ms}}{g_{\lim}} = 0.5$); and for retrograde Venus, ($\mu_{JT} = \frac{g_{Ms}}{g_0} \cong \frac{T_{sid,V}}{T_{O,E}} = \frac{2}{3} = 0.66$). Einstein's theories, now known as the special

theory of relativity (without gravity) [1] and the general theory of relativity (with an empirical Weyl tensor for gravity) [2], succeeded in mathematizing the empirical natural philosophy of light—specifically the postulate of constant light velocity. However, these theories have concealed the true Euler's phasing theory of dual quantum (faster) and gravitation (slower) structures (SCS), as described in Eq. 8. By manipulating tensorial tools to represent a topological (complex and smooth) form of matter and gravity fields via empirical curvature tensors (the Ricci tensor Rab and Weyl tensor Λ gab), and by compressing the entire moving matter into an empirical energy-momentum tensor Tab, Einstein equated these tensorial forms (to a constant throughout spacetime), ultimately leading to the formulation of what we now call Einstein's field equation [8],

$$R_{ab} - \frac{1}{2} R g_{ab} + \Lambda g_{ab} \equiv -8\pi G T_{ab}, \tag{23}$$

Which, together with the empirical constants based on experiments, form the foundation for understanding the relationship between matter, energy, and spacetime.

$\Lambda = 10^{-55} cm^{-2}$, the cosmological constant,

$G = \frac{2}{3} 10^{-10} m^3/Kgs^2$, the Newton's gravitational constant,

$R \simeq 6.96 \times 10^8 m$, the radius of the sun,

$m \equiv M_{\odot} = 2 \times 10^{30} Kg$, the mass of sun,

$c = 3 \times 10^8 m/s$, the constant velocity of light,

recast to the famous folksy formula

$$E = mc^2 \equiv M_{\odot} c_{lim}^2, \tag{24}$$

The esoteric formula (Eq. 24) is nothing else than the critical mass for the thermomolecular structures, representing the delicate balance at which matter and energy interact, form, and evolve in a self-regenerating system. This critical mass serves as the threshold for transitions between different phases of matter, from solid to liquid, liquid to gas, and beyond. It's this very balance that underpins processes like combustion, planetary formation, and even the evolution of life on Earth.

$$E^{1/2} \equiv N_A, \text{ the regenerative Avogadro mass,} \tag{25}$$

which can sustain a spontaneous human combustion process, going on timeless provided the humans themselves do be out of order. When the basic precessional order of SCS-is changed, its effects, above described (warming global, pressure reshaping and visibility coherence), would intensify to restore the initial universal quantum-gravity structure. This is the Gaia reaction against the wrong Earth-human symbiosis [21, 22]. To paraphrase Malraux, the actual century has to be the rational scientific one, or it will not be.

5. CONCLUSIONS

The solar automorphic or holomorphic (complex/critical smooth and regenerative) universe comes back 10^4 years ago with amazing astral recurrence. However, Feynman's alternative way [18] of expressing quantum (non-splitting) mechanics by eschewing the description of nature in which quantum states change continuously in time via the computed probabilities, assigning to a quantum phase theory, was abandoned as being a naively realist description of the world. But, Einstein's misconception of light and none of Einsteinian theory-based approaches [19, 20] are nothing but a rational metaphysics far off the phenomenological physics of the real world. Without the Eulerian quantum phase (complex number) theory, there

would be none of the sensitive thermal world. This is the real warm, polychromatic world with its possible coherent histories, not the logical mathematics of white and black fringes, a too "arid landscape". Our world is Van Gogh's "starry night" (the universal quantum equilibrium) and Magritte's pipe with the treachery of "images" (the critical gravitational equilibrium), Fig. 10. The ¾ century periodicity of the recurrence of Halley's Comet checked for two and half thousands of time past proves the realist description of the regenerative quantum gravity phasing theory illustrated above.

a)

b)

Fig. 10 a) Van Gogh – The starry night; b) Magritte – The treachery of images

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