

Gravitational waves on Earth and their warming effects

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Abstract: *The gravity or reactive bundle energy is the outlet of the morphogenetic impact, known as “BIG BANG”, creating a bounded ordered/structured universe along with the solar system, including the EARTH-world with its human race. Post-impact, the huge kinetic energy is spread into stellar bodies associated with the light flux under strong mutual connections or gravitational bundle. Einstein’s general relativity theory including the gravitational field can be expressed under a condensed tensor formulation as*

$$E_{\mu\nu} \equiv R_{\mu\nu} - 1/2 R g_{\mu\nu} = \chi T_{\mu\nu}^2$$

where $E_{\mu\nu}$ defines the geometry via a curved space-time structure ($R_{\mu\nu}$) over the gravity field ($1/2Rg_{\mu\nu}$), embedded in a matter distribution $T_{\mu\nu}$. The fundamental (ten non-linear partial differential) equations of the gravitational field are a kind of the space-time machine using the curvature of a four-dimensional space-time to engender the gravity field carrying away material structures. Gravity according to the curved space-time theory is not seen as a gravitational force, but it manifests itself in the relativistic form of the space-time curvature needing the constancy of the light speed. But the constant light velocity makes the tidal wave/pulsating energy, a characteristic of solar energy, impossible. The Einstein’s field equation, expressed in terms of tensor formulation along with the constant light speed postulate, needs two special space-time tensors (curvature and torsion) in 4 dimensions, where for the simplicity the torsion/twist tensor is less well approximated (Bianchi identity) leading to a constant/frozen gravity (twist-free gravity). The non-zero torsion tensor plays a significant physical role in the planetary dynamics as a finest gear of a planet, where its spinning rotation is directly connected to the own work and space-time structure (or clock), controlled by light fluctuations (or tidal effect of gravity). The spin correction of Einstein’s gravitational field refers to the curvature-torsion effect coupled with fluctuating light speed. The mutual curvature-torsion bundle self-sustained by the quantum fluctuations of light speed engenders helical gravitational wave fields of a quantum nature where bodies orbit freely in the light speed field (cosmic wind). In contrast to the Einstein’s field equation describing a gravitational frozen field, a quantum tidal gravity model is proposed in the paper.

Key Words: *Einstein's field equation, structured space-time universe, helical torsion gravitational waves, singularity at the beginning of universe-BING BANG, astrophysics.*

1. INTRODUCTION

Besides the long-lasting and continuing paradigmatic controversies of an existentialist nature of the universe and the XXth most famous curved space-time theory of Einstein's gravitational field, there are vital practical problems on the stable activity of the Earth planet within the framework of the solar system. The unfruitful discussion of the universe of an academic nature ignored the thermodynamic equilibrium conditions essential for the existence of our world, including human lives and their activities that now become the major disturbances for the gravitational Sun-Earth mechanism. Thus, the crudest approximation of the **out of order** gravitational activity is the dramatic changes in demography given by the actual population of about 8×10^9 habitants, identified as an active power of human race $W_h \equiv g \cdot 8 \times 10^9 = 8 \times 10^{10} \text{W}$ near the critical value for a stable work, $W_{cr} \equiv (gc)_{SUN} = 2 \times 10^{11} \text{W}$, that is, an universal constant of the solar gravitational field (see 3). This state causes the global warming effect of planet accompanied by abnormal climatic changes and misunderstood population pandemics [1].

The gravitational mechanism refers to the curvature-twist relationship in embodied gravitational space-time field of the light speed that is an essential condition for the matter integrity, rather known as the conservation law of mass. Without this exact correlation cannot exist smart matter, this is organic matter including human species. In this sense, the population pandemics is a disembodiment gravitational process where the curvature-twist condition of embodied matter integrity is relaxed through changes of global population and warming. Physically, the curvature-twist relationship is a gravitational bundle (or gravity), mathematically view as an attractor. Herein, Galilean/solar gravity (or attractor) is analyzed along with the main focus of the critical Sun-Earth evolution within the framework of the solar configuration. The space-time evolution of the Earth is the most dynamically and thermodynamically stable one among all planets orbiting around the Sun, engendered by the critical light phenomena from the Milky Way galaxy, capable of life thermodynamical conditions.

The whole man's disturbance is the outcome of a little knowledge of the mutual Sun-Earth energy changes, that is gravity-light interaction. The principal aim of the present paper is to highlight a few practical results in the developments of the gravitational field that are fundamental for the changes in our current lives.

2. THE INTRINSIC MOMENTUM, KINETIC ENERGY, POWER EQUATIONS

First, the gravity is a reactive bundle energy embedded in a latent (at relative rest) mass energy during an impact process, that is a process of energy mutations between two large colliding energies, i.e. a fast kinetic/light energy and another slower mass/heat energy, within a short time contact, so-called the 4D-BIG BANG [2]. The Big Bang involves also an entropic explosion where the huge entropy of the unbounded structureless universe is fragmented into closed systems embodying mass-energy, through a nearly adiabatic process. As a result of this huge explosion the initial unbounded, structureless dynamical complex, universe is rapidly changed into bounded structured universes with apparent stationary configurations similarly evolving, called galaxies, according to Lemaitre's postulate of simultaneous morphogenesis

of galaxies [2] and Thom theorem of the bordism groups [3]. One from these dynamically and thermodynamically stable critical configurations is the solar system from the Milky Way galaxy, for that the paper is focused in the case of the Earth that is the most dynamically-thermodynamically stable planet, at the thermodynamic conditions favouring the advent of organic matter.

The rapid loading in the contacting areas a source where waves are emitted, herein so-called gravitational waves, that propagate with the light speed through the bounded solar system. Apart from the singularity at the beginning of the structured universe, called “spot-light”, mechanically one first defines locally the power (work per unit time)

$$W \equiv \mathbf{F} \cdot \mathbf{u}, \quad (1)$$

and with

$$\frac{d\mathbf{p}}{dt} = \mathbf{F}, \text{ (Newton's momentum law)} \quad (2)$$

which holds both in the non-relativistic and in relativistic regimes, one gets also

$$W = \frac{d\mathbf{p}}{dt} \cdot \mathbf{u} \quad (3)$$

Finally, one defines the purely kinetic energy as a function $E_k(\mathbf{u})$ such that

$$\frac{dE_k}{dt} \equiv W, \quad (4)$$

and from (1-4) via (2) one obtains

$$dE_k = \mathbf{u} \cdot d\mathbf{p}, \quad (5)$$

$$\mathbf{u}(\mathbf{u} \cdot d\mathbf{p} - dE_k) = 0. \quad (6)$$

Equations (5, 6) constitute the fundamental contact formulation (for an interacting body system) between power, kinetic energy and momentum that stands up on its own independently of Eqs (1-4) and a reference frame [4]. It expresses the simultaneously conservation of energy and momentum for a starting power given; the Newton non-relativist/determinist formulation holds for starting/impact accelerations $\ll g$, while for accelerations within range of $O(g)$, an Einstein's energy-momentum tensor like formulation must be used [5]. Equations (5, 6) describe a self-sustained system where the momentum variation hides the mass energy (or dark/heat energy) of a molecular thermal nature.

3. THE SPOT-LIGHT MODEL OF GRAVITY

The Lemaitre's cosmology [2] postulates that all galaxies are stationary (relative at rest) and similarly spacing along with the same clock, i.e. are simultaneously experienced to the big bang. However, their morphogenesis depends on the power of genetic impact producing less or more bright stars (the sun is classified as a bright giant star with 4.8 – magnitude and G – spectral class).

The spot-light model of Sun's Big Bang is a kind of puzzle devised by the man's up-to-date knowledge, that gathers up essential physical elements/phenomena to assemble its pieces into a truthful portrayal of the world, but easily understood.

The spot-light shock model is based on two postulates: of light (PL) and matter (PM), and two principles: of relativity (P_rR) and entropy (P_rE).

PL) Quantum-tidal fluctuation of light speed $\tilde{c} = (e, 2e, e^2) \times 10^8$ m/s with $(e, 2e, e^2)$ – eigenvalues;

PM) Morphogenesis of matter associated with the entropic shock $(-\Delta S)$ of light in bounded spaces, followed by an exchange of heat (ΔQ) with the surroundings given by

$$-\Delta S \equiv \frac{\Delta Q}{T_3} = mc_v \frac{\Delta T}{T_3},$$

where c_v is the specific heat of a solid and the temperature T_3 is the (solid-liquid-vapour) triple point of some shiny matter like white metals ($T_3 \equiv 273.16^\circ$ K in the triple state of mercury, Hg, in the solar system).

PrR) The principle of relativity is closely connected to the Sun’s activity, i.e. the kinetic (light) and mass (heat) energies have tidal mutations propagating with light speed. Their surrounding effects depend on the distance relative to the Sun, perceived as the relativistic non-stationary regimes of moving mass.

The relativity is the outcome of the matter morphogenesis from the mutual heat and light energies coupled with a gauge/bundle connection, so-called gravitational bundle (or simply gravity).

The gravity plays a switch role between contacting energies that controls the quantifiable mass/heat-kinetic/light proportion creating matter/substances after the Big Bang. This is reflected through so-called the space-time invariants of physics given by energy-momentum conservation laws (the Einstein’s (1915) curved space-time theory of gravity).

PrE) The principle of entropy is an existence/integrity condition of matter, that is a space-time well-structured energy formed at one time of a statistical molecular thermal nature, termed gravitational/active mass (or mass-bound energy) timely changes. Its space-time evolution is a quantum stepping logarithmic evolution of a tidal wave type, up to the active gravitational mass becomes gravity-free energy (or inertial/passive mass); the active matter exists so long time its gravitational bundle remains intact.

The mass density defined as $\rho \equiv \frac{m}{Vol} [kg/m^3]$, is a local measure of quantified/embodyed heat energy (or mass/dark energy), viewed in the Newtonian (non-relativistic) space-time and constant/frozen gravitational field ($g \equiv \bar{g}$) as the inertial mass (Kg), dependent only temperature (T), or in the Einstein’s (relativistic) curved space-time and fluctuating gravitational field ($g \equiv \tilde{g}$), as gravitational mass (or pressure per unit disk) dependent on temperature and velocity, $\rho(\mathbf{u}, T)$. The starting point is the definition of the power of the solar system, termed “**spot-light**”, as the Sun’s power

$$W_s \equiv (MG)\tilde{c} = e^{\frac{A}{2}}W, \tag{7}$$

where $A = 200$, the mass number of Hg and the other half, the power of satellites orbiting around the sun.

For $M = 2 \times 10^{30}$ Kg – equivalent mass energy, $G = e \times 10^2$ m/s² – equivalent gravity/bundle energy, it can find the equivalent light energy, $O(\tilde{c} = 10^{16})$ as $W_s/(M \cdot G^{-1}) \simeq \frac{10^{44}}{10^{28}} = 10^{16}$ W, estimates consistent with the measurements. According to the light postulate (PL), the range of light speed is $\tilde{c} = (10^8 - 10^9)$ m/s with a tidal fluctuation along with $c_{max} = 10^9$ m/s- spark-light speed and $c_{min} = 10^8$ m/s- stop-light speed.

The Sun’s activity is an intricate thermodynamical process that governs the space-time evolutions of everything physical phenomena observed from the solar universe, underlying the relativity and entropy principles. Thus, all phenomena similarly self organize in the

gravitational field of the Sun, after own space-time rules/laws and scales (or own gravitational gauge); everything works after the Sun-like organization way. The Sun's thermodynamical processes involve exchange between quantifiable mass (heat) and kinetic (light) energies in the form of quantified matter (solid-liquid-vapor) motions and disembodying tidal waves in the fluctuating field of light speed (\tilde{c}) so-called gravitational field (or simply gravity). The Sun's kinetic activity is referred as the kinetic trinity of momentum, kinetic energy and power. By the decomposition of the heliostrophic power (in relativistic sense)

$$W_S \equiv M\tilde{G} \cdot \tilde{c} = 4 \times 10^{41} W, \quad (8)$$

as the Sun's component heat/mass and light/kinetic energies it is defined the spot-heat and spot-light, respectively,

$$W_{SH} \equiv M \cdot \tilde{G} = 2e^k \times 10^{32} \text{N}, \quad (k = 1, 2), \quad (9a)$$

$$W_{SL} \equiv \tilde{G} \cdot \tilde{c} = 2 \times 10^{11} \text{m}^2/\text{s}^3. \quad (9b)$$

Then, from (9) one gets the spot-light speed, \tilde{c} , as

$$\tilde{c}_{max} = W_S/W_{SH} = 2/e \times 10^9 = 7.36 \times 10^8 \text{m/s}, \quad (10a)$$

$$\tilde{c}_{min} = W_S/W_{SH} = 2/e^2 \times 10^9 = 2.71 \times 10^8 \text{m/s}, \quad (10b)$$

and the twist (or torsion) of the heat-light mutual energy

$$\tau \equiv W_{SH}^{2/3} / \frac{1}{2} W_{SL}^2 = 2^{-1} \left(\frac{2e^k}{10} \right)^{2/3} = \left(\frac{1}{3} \div \frac{2}{3} \right) \quad (10c)$$

where its maximum (1/3) is the heat contraction, viewed as a gravitational bundle embedded in the mass of surrounding matter, while the less value (2/3) reflects the light fluctuation, interpreted as the curvature of light within the Einstein's confused curved space-time theory of gravity [5], [6].

In our approach, the heat contraction (1/3) and fluctuating light are associated with the Sun's globular form where the photon-light pressure is defined successively as

$$p_{ph} \equiv \frac{MG}{A_s} = \rho_{ph} \left(\frac{\text{Vol}}{A_s} \right) G = \rho_{ph} \frac{R_s}{3} G (= 10^{15} \text{N/m}^2) \quad (11)$$

Then, by the identification of the solar radius, R_s , with the maximum spot-light speed

$$R_s \equiv \tilde{c}_{max} (\text{consistent measurements}), \quad (12)$$

this can be considered as a curvature effect of light, and the light pressure to spot-light speed ratio

$$c_{WD} \equiv \frac{p_{ph}}{\frac{1}{2\rho_{ph} \tilde{c}_{max}^2}} = e \times 10^{-6}, \quad (13)$$

as a wake drag of Sun's work, viewed as a solar spin speed, ω_{SS} , less the Eigenrotation of the Earth, $\omega_{SE} = \omega_{SE}/e \times 10$.

Similarly to the Earth's sonic field ($a = \frac{10^3}{3} \text{m/s}$, $M = \frac{v}{a}$, $\mu = \sin^{-1} \frac{1}{M}$ Mach line cone) there is the Sun's photon/light field: $\tilde{c} = \frac{2}{e^k} \times 10^9 \text{m/s}$ and $P = \frac{\tilde{c}}{10^9}$, $1/3 < \tan P < 2/3$ - photon/light cone.

Finally, from (8- 10) one gets the integral relationship for the solar work

- the constant rate of kinetic energy (**spot-light**):

$$\tilde{c}\tilde{G} = 2 \times 10^{11} \text{m}^2/\text{s}^2 \cdot \text{s}^{-1}, \tag{14a}$$

- the gravitational mass-purely kinetic energy equivalence:

$$(M \tilde{G}_{max})^{1/2} \equiv \frac{1}{2} \tilde{c}_{min}^2, \tag{14b}$$

- the gravitational/potential power-momentum equivalence (**radiant light**):

$$(M \tilde{G}_{max})^{1/3} \equiv \frac{1}{2} \tilde{c}\tilde{G}. \tag{14c}$$

Equations (14) still hold on the kinetic trinity of the solar global behavior that reflects the complementary heat-light energy of solar matter, its evidence is given by

$$h (M\tilde{G}_{max}) \equiv 1, \tag{15}$$

where $h = \frac{2}{3} 10^{-33} \text{Js}$ – Plank constant, and $(M \tilde{G}_{max}) = 2e^2 \cdot 10^{32} = 3/2 \cdot 10^{33} \text{N}$.

The non-linear processes of Sun’s inside work (gravitational tidal waves) are the outcome of an entropic jump (implosion) into the unbounded chaotic universe (high entropy), whereby ordered material structures are created.

The organizing degree of structured matter is given by its temperature that is a measure of heat energy absorbed during the Big Bang (impact power) so-called mass/dark energy.

The solar system is a dynamical equilibrium state involving the coexistence of three different phases/stages. The equilibrium material structure of the Sun is given by the (solid-liquid-vapor) triple point of the temperature $T_3 = 273.16^\circ \text{K}$ (like mercury).

The gravitational mechanical bundle, G , is the thermodynamical equivalent of the triple temperature, T_3 ,

$$G\left(\frac{m}{s^2}\right) \equiv T_3(^{\circ}K) = e^2 \times 100 \tag{16}$$

In the interior of the fluid motion the coupling mechanism of different thermodynamic processes of a nuclear fission nature, can be identified as a pair coupled non linear terms

$$h_{tt} = c^2 h_{xx} \tag{17}$$

in the space-time domain $(x, t) \in D$ modeling water hammer like waves, herein the light hammer.

Each non linear term models the gravitational (\tilde{G}) and light (\tilde{c}) wave fields where the non linear terms (subscript denote partial derivatives) in Eq. (17) fall into three composition modes:

- 1) cross twist generation is the non linear twist mechanism from motion \tilde{c} (fluctuating light) that serves as the inhomogeneous source of motion \tilde{G} (gravity) that it can produce motion \tilde{G} from a genesis shock (early/spark stage-shearing mode), Fig. 1a;
- 2) mutual modulation, is the non linear twist mechanism in the evolution of motion \tilde{c} (light fluctuation) by which motion \tilde{G} modulates the evolution of existing \tilde{c} until a self-non linear mechanism takes place within each motion and their motions are in sync (matured stage – in sync pumping mode, Fig. 1b);
- 3) twist decay is the non linear mechanism by which the motion \tilde{c} serves as a homogeneous source for the motion of quantified G , until the stop-light speed is reached (lately stage – out of sync pumping mode, Fig. 1c).

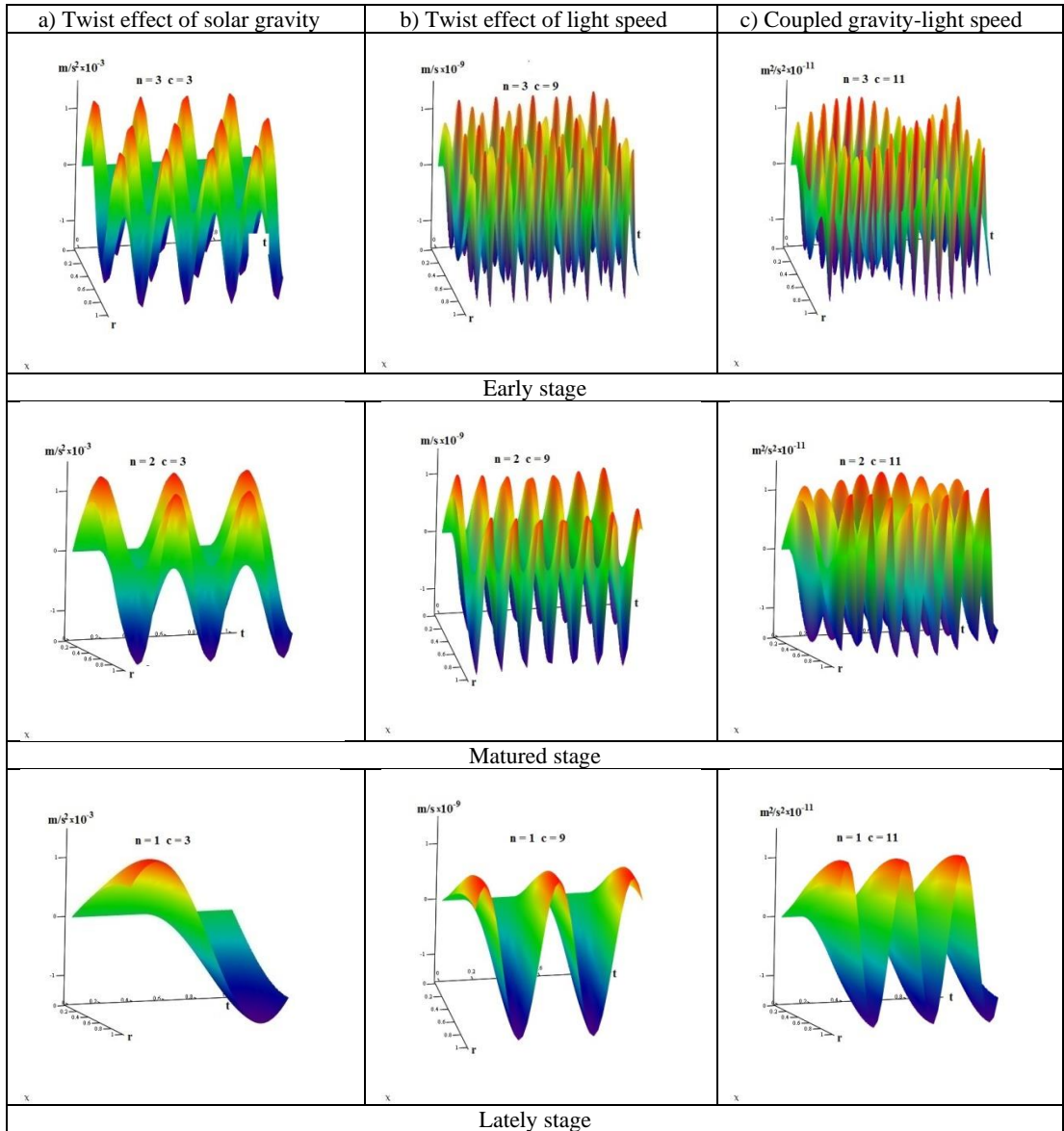


Figure 1. – The work of Sun (gravitational tidal/quantum waves)

The Sun’s physical mechanism is a centrifugal-centripetal mutual mechanism whereby the atomic aspersion/spray of its large mass ($M \approx 10^{30}$ Kg) is spread at light speed ($c \approx 10^9$ m/s) and small spin ($\omega_s \approx 10^{-6}$ rot/s), along with the gravity bundle ($G \approx 10^3$ m/s²) as a Coriolis like acceleration (Lamb vector $\mathbf{L} = \boldsymbol{\omega} \times \mathbf{u} - \nabla V$, $L \approx \omega_s c \equiv G$), [7], [8], [9].

The solar gravitational mechanism transfers the thermonuclear energy as mass-light energy via different gravitational tidal/quantum waves with a large range of wave length (or frequency) from photon/light wave length ($\approx e \times 100$ nm – gravitational quantum) to X – ray ($\approx e$ nm – light quantum).

The coupling mechanisms of complex thermonuclear processes is based on the twist/torsion concept of both mass/heat energy and kinetic/spot-light energy producing a quantum gravity

field in the tight range of light cone, $\tau \in \left(\frac{1}{3}, \frac{2}{3}\right)$ (Eq. 10c), with the critical value $\tau_{cr} = \frac{1}{2}$ of the bivalent twist angle.

This huge wave field controls omnidirectionally every energy mutations described through physical laws of conservation of the kinetic energy both in non-relativistic (Eqs. (5, 6)) and relativistic (Eq. (14)) regimes.

The twist/torsion process of both mass/ heat and kinetic/ light energy is a bivalent process carrying energy by means of quantum gravitational tidal waves, viewed as the space-time evolution of matter (both inorganic and organic). The bivalence of torsion is described by the exponential evolution of quantum energy as

- the light speed:

$$\tilde{c} = e^k \times 10^8 \text{m/s}, k = 1,2, \tag{18a}$$

- the gravity bundle:

$$\tilde{G} = e^k \times 10^2 \text{m/s}^2, k = 1,2, \tag{18b}$$

- the rule of valence:

$$\begin{aligned} e + e^2 &\equiv \tilde{g} \approx 10, \text{ unit gravity,} \\ e \times e^2 &= e^3 = 2\tilde{g}, \\ e^{-1} + e^{-2} + 1/2 &\cong 1, \end{aligned} \tag{18c}$$

where $e^k (k = 1,2)$ is a quantum valence assigned to the fluctuation of the large entities engendering fields like the solar system.

The solar clock reflects the relativity between the timeless Sun's spin, ω_s ,

$$\tilde{\omega}_s = \frac{\tilde{G}}{\tilde{c}}; \omega_s = \sqrt{\prod_k \tilde{\omega}_s^k} = 10^{-6} \frac{\text{rad}}{\text{s}} \tag{19}$$

and the trigonometric clock (at second accurate) given by the Earth's Eigenrotation,

$$\omega_E = 7.27 \times 10^{-5} \text{ rad/s.}$$

The Sun's tidal activity (or simply tidal-light) is produced by its quantum fluctuation, that propagates in the whole solar system.

The quantum light fluctuation produces seasonal energy effects upon the Earth (pressure and temperature), and diurnal Doppler-like light effects apparently viewed as the curvature phenomena of light.

The fluctuation of gravity, equivalent to the entropy variation (16), is a measure of the Sun's activity in working order, given by its allowable deviations

$$\delta G \leq \frac{G_{max} - G_{min}}{G_{min}} = e \equiv \Delta S = e^\circ K, \tag{20}$$

that must kept at this level, and at both global and local scale. In the case of Earth, the global and local warming condition renders

$$\Delta T \leq \frac{\log m_E}{\log M_s} e = 2.22^\circ K, \tag{20'}$$

4. THE GRAVITY OF EARTH

The solar gravity waves control the entire activity of the Earth preserving its dynamical and thermodynamical stability through the constant spot light (light-flow rate, Eq. 14a), i.e. how long the Sun-Earth work is in sync and the light twist does not exceed its critical value ($\tau_{cr} = \frac{1}{2}$).

The main disturbance factors are the mass and quantified gravity (or equivalent temperature) that can be kept at a fixed level for a synchronized work. Otherwise the out of order gravitational activity release contact gravitational micro-waves of X-ray type ($\approx e$ nm) for the restoring of thermodynamical equilibrium, known as the gravitational Gaian-like self-regulation process [1], [11]. The contact gravitational waves for the equilibrium state restoring, produce disembodying mass energy, a dangerous effect for the organic matter.

The balance between the heat flux (the product of light flow rate L (14a) and the temperature T_3 (16) and the spreading light coefficient (σ) ($\sigma \equiv \frac{\log m_p}{\log M_s}$) gives the quantified gravity of a planet (m_p , Kg) orbiting around the Sun (d_p , m). The fundamental equation of quantifiable gravity field for solar system is written as

$$\tilde{g}_p = \frac{\sigma^k GL}{\log M_s d_p^l}, \quad (21)$$

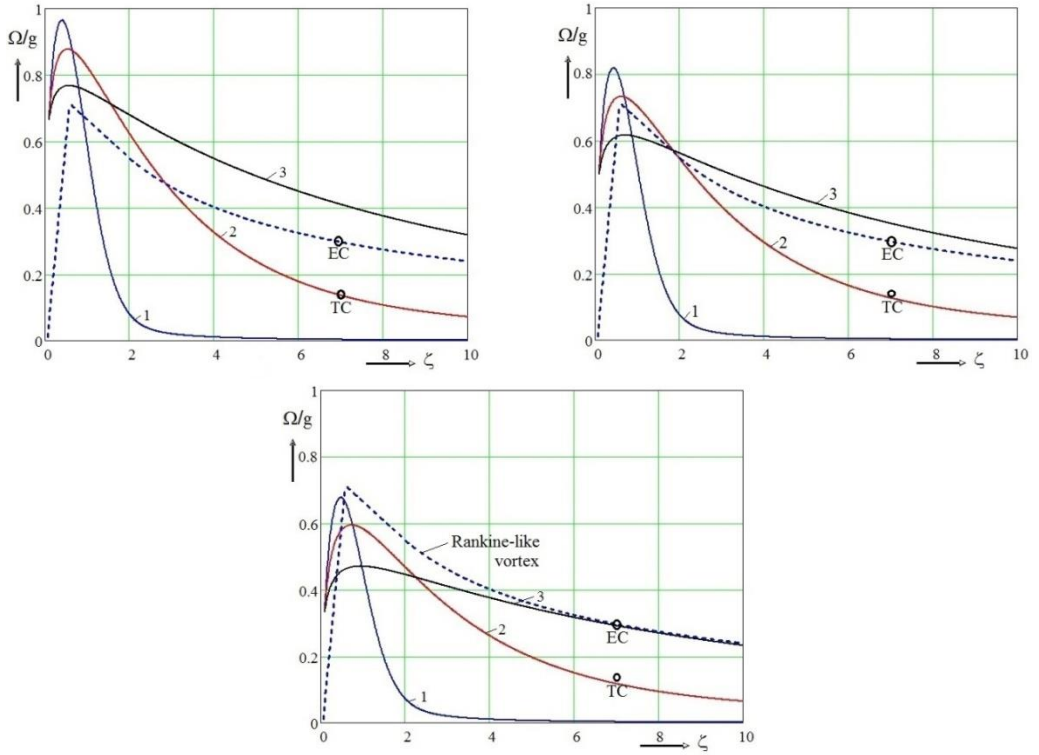
where upscripts denote exponents of the gauge connection for the work mode ($k = 1$ – shearing mode, $k = -1$ – pumping mode) and gravity modulation, specific to each planet. The Earth planet with ($k = 1$, $l = 1$) and ($\tilde{g}_E = 9.817\text{m/s}^2$) is the unique planet in a thermodynamic equilibrium state capable of life condition.

The contact gravitational waves, described recently in [1] as a problem of the diffusion equation for a vortex that spring in a viscous fluid at the onset of a relative motion (V) are reduced itself to solve the equation

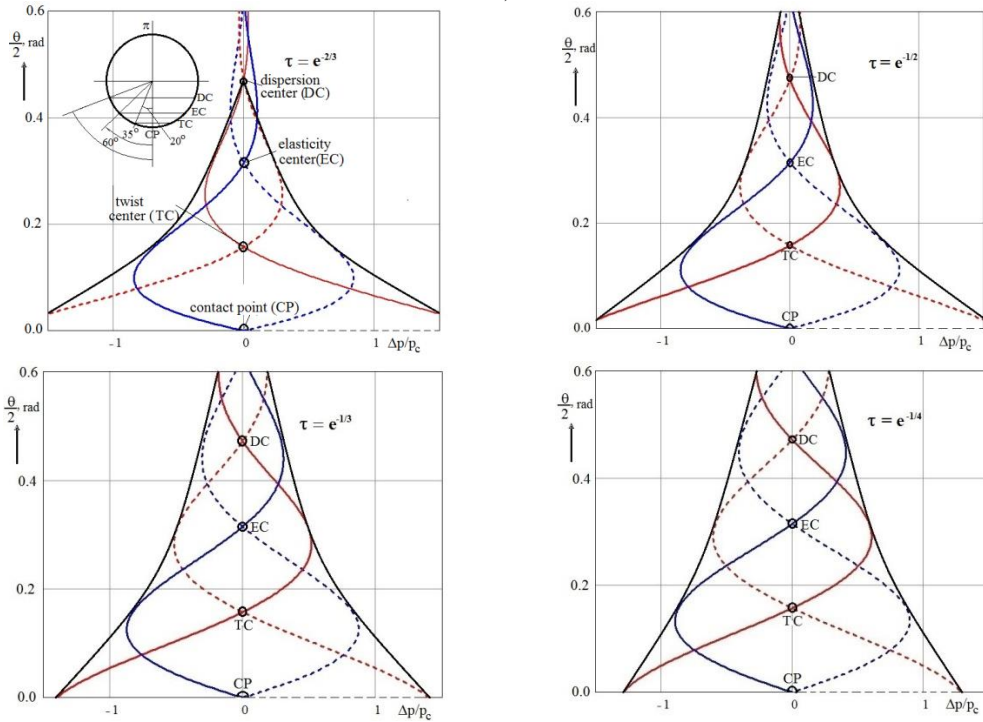
$$\omega_t = \frac{v}{r}((r\omega_r))_r, \quad (22)$$

which can render an ordinary non linear differential equation (ODE). Physically, Eq. (22) describes the evolution stages of rotational kinetic energy for a starting vortex herein quantified gravity ($\tilde{g}_E \Omega(\beta g)$), depending in the space-time non dimensional variable (Reynolds number), Re , that is the base space or age of vortex. Since a priori the onset of the relative motion, the energy-momentum tensor in the gravitational field was zero, ($\tilde{g} \equiv \bar{g}$ a constant), after starting the local contact tensor evolves into a succession three Ω -shape stages as the Re_x of vortex increases following early a stage ($Re_x \leq 10^3$), matured stage ($Re_x \leq 10^6$), and finally lately stage ($Re_x > 10^6$).

The evolution of the concentrated vorticity, that is quantified gravity of fluids, depends on the Reynolds that is a measure of flowing fluids, carrying the smallest mass energy (density ρ) of the Earth. The each age change at $Re_x = 10^3$, 10^5 and 10^6 involves geometric orientation and energy mutations, in the form of different inertial waves. For the contact fluid motions known as boundary-layers (or wall-bounded flows), at $Re_x > 10^5$, the laminar-turbulent transition regimes associated with a wave-like disturbance, are produced. These waves described the beginning of the process of disembodying mass energy, of which structure evolution has been was illustrated for water flows in [10]. This process in a gaseous flow at $Re_x > 10^6$ was described in [12]. The evolution of such a mass energy dispersion process of fluids of dispersive soliton-like type, is termed “structured/ Lagrangian turbulence”, universal valid for all turbulent contact (or wall-bounded) flows.



a)



b)

Figure 2. – The work or the Earth (contact mod): a) shearing regime for $Re < 10^6$, in Newtonian $|g|$ - field, b) turbulent regime for $Re > 10^6$, ($\zeta = Re_{cr} \equiv \omega_s^{-1}$), in Galilean \tilde{g} - field.

Figure 2, with the notation $\zeta = \log \text{Re}_x$ shows a disembodying mass energy process for gaseous flows. Figure 3 shows the Einstein's curved space-time interpretation as a light curvature effect against the present interpretation of the twisted and space-time as the outcome of quantum fluctuations of gravity/heat-light mutual energy, associated with simultaneously contracting time and expanding space.

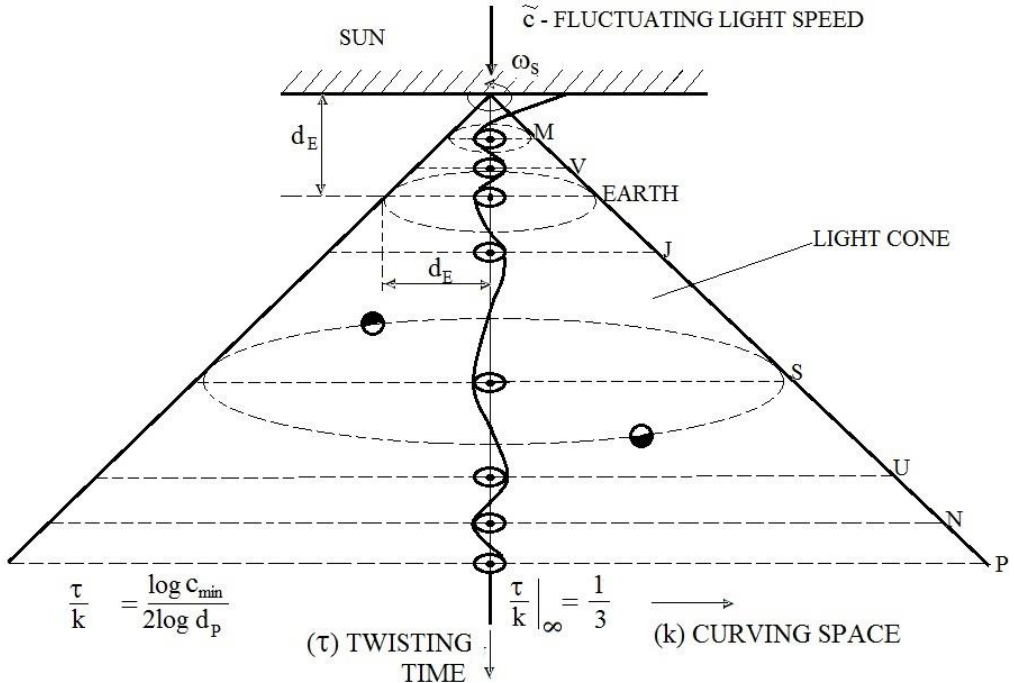


Figure 3. – Curved-twisted space-time model of gravity, $g_P = \frac{\rho_P}{\rho_{SUN}} V_{PR} \omega_{SPIN}$ (Coriolis-like acceleration)

5. CONCLUSIONS

Based on the impact process of genesis that simultaneously generates mass/heat and light energy, a spot-light model was designed for the gravitational field of the solar system. The gravity through its wave field controls everything occurring inside and watches to keep the system in working order. Briefly, the main results are summarized as follows:

- The light phenomena during the 4-Big Bang produces both quantum fluctuation of light speed, $\tilde{c} = \{e, 2e, e^2\} \times 10^8 \text{m/s}$, and entropy jump, $-\Delta S$, or mass energy, along with a gravitational bundle connection (or gravity);
- Physically, the gravity is a bivalent energy, as mass energy (quantified gravity) and/or kinetic energy (Coriolis-like acceleration, known as the generalized Lamb vector $\mathbf{L} = \boldsymbol{\omega} \times \mathbf{u} - T \nabla S$);
- The twist/torsion property of the gravity permits fast mass-light mutual mutations with a switch role;
- The field equation of gravity (21) generalizes the Newton formula, $C_N = 2/3 \cdot 10^{-10} \text{m}^3/\text{Kg s}^2$, as $g_E \equiv C_N d_E \text{m}^2/\text{Kg s}^2$ (kinetic energy density);
- The proof of the integrity/conservation of matter formed of two complementary energies (mass and light) and a bivalent bundle energy (or gravity) [13], [14], is given by the identities:
 - 1) $h M_s \tilde{G}_{max} \equiv 1$, (h – Plank constant),

2) $k/h \times g_E \equiv \tilde{G}\tilde{c}$ - light flow rate (14a), (k – Boltzmann constant).

In fact, the integrity/conservation of matter has a more subtle meaning that must be completed with: **as long as the increase in entropy does not exceed**

$$\Delta S \leq e^{\circ} K. \quad (20'')$$

The condition (20'') is the law of entropy/internal warming for conservative systems in working order.

The paper illustrates the tidal waves mechanism producing at the Sun level and the Earth's contact waves, including the process of mass energy disembodying, and a new interpretation of the twisted space-time as the outcome of the quantum fluctuations of heat-light mutual energy.

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