SPACE IS THE ORIGIN OF ENERGY

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Abstract:

*We study how bounded dynamic-matter-body-system oriented Consciousness including everything created with unfolding physical universe. Space or Scale Factor is the source of all energy hence it creates everything including matter, live & Consciousness. We thus analyses the space for discussion. We will consider the alternative approaches to the cosmology of Kantowski–Sachs universe. Considering the new model of unfolding physical universe explaining my article "**The Complex Model Of The Quantum Universe**" other than GRT are very much essential for the present epoch, where the metric tensors are assumed to be as $T_0^0 = \rho$ (matter energy density), $T_1^1 = \varepsilon_l$ (latent energy density) and $T_2^2 = T_3^3 = - p$ (negative pressure). We found an important relationship $\varepsilon_l = \rho - p + K$*

or $\varepsilon_l + p = \rho + K = \frac{C^4}{8\pi G} \frac{1}{R^2} > 0$, or $= - \frac{C^4}{8\pi G} \frac{1}{R_I^2} < 0$ in other phase, considering 'K' is the Consciousness creating factor containing Hubble Parameter H_R & c' the velocity of photon–like particles in vapor-like exotic matter fluid stage where $c' > c$, c' is the velocity of photon-like in the tachyon field and c is the velocity of light.

Keywords: Space–Time, Phase Change, Exotic Matters fluids, Latent Energy Density, Matter Energy Density, Consciousness Creators, Thermodynamic Laws.

Introduction:

There is no consensus yet on how the physical universe initially came to be, perhaps the spontaneous symmetry breaking of different unified field from Big-Rip singularity and finally through phase change systems, occurring our physical universe thereby separating gravity, exotic matter fluids to ordinary matter fields through negative pressure from SUT force field symmetry breaking with another spontaneous symmetry breaking of GUT force field create matter oriented physical universe including consciousness with the creation of closed or bounded unaccounted number of dynamic matter-body systems such as different lives like human etc.

The construction of different cosmological models, describing by dark energy, has attracted the attention of researchers to the fact that different types of cosmological singularities do exist. First of all, one should mention the Big-Rip singularity arising in the models where the phantom dark energy is present. Under phantom dark energy one can understand the phase transition situation arises before Big-Bang singularity, the substance has an absolute value bigger than its energy density then creates negative pressure for expansions of physical universe, we found Big-Break singularity. Such a singularity is then characterized by a finite value of the cosmological radius R with time.

In 1915 Einstein published the general theory of relativity. He expected the universe to be closed, spherical and homogeneous, to be filled with ordinary matter. Again, if we go out-side the gravitating sphere, we see the gravitation would be weaker and weaker. According to the Einstein's general relativity, the matter-space-time cannot be separated by any cost. Thus, out-side the gravitating sphere, where real time can't be defined, the corresponding space must be measured mathematically as imaginary space (according to the theoretical physics considering space is then belongs to another phase) because we know that space is a function of time. Therefore, wider universe has actually a complex space-time.

We found a relation between folding (wider universe) and unfolding (matter oriented physical universe) space-time of the universe by using Wheeler De-Witt equation. The generalized solution for the Einstein field equations for a homogeneous universe was first presented by Alexander Friedmann.

Here we consider a (4 + D)–dimensional Friedmann–Robertson–Walker type universe having complex scale factor $R + iR_I$, where R is the scale factor corresponding to the usual 4–dimensional Universe while R_I is that of D–dimensional space, an extra dimensions associated with consciousness etc. It is then compared with (4 + D)–dimensional Kaluza–Klein Cosmology having two scale factors R and a (= iR_I). It was shown that the rate of compactification of higher dimension depends on extra dimension 'D'. The Wheeler–DeWitt equation is constructed and general solution obtained. We found that for D = 6 (i.e. in 4 + 6 = 10 dimension), the Wheeler–DeWitt equation is symmetric under the exchange of $R_I \leftrightarrow R$, where we found (10-7) dimensional flat universe, hence no adiabatic stage arises in this situations after then closed and adiabatic stage arises.

We now considering the D–dimensional internal space 'a' (= iR_I) of the Kaluza–Klein cosmology with scale factor R_I including Einstein's 4–dimensional space-time of the scale factor R. Considering the vacuum universe was instantly equilibrium with the infinite boundary $(R \to \infty, R_I \to \infty)$ like a plain white paper. The break-down of the special unitary group SU(11) of U(11) into SU(6) × SU(5) × U(1) occurring under the pre-distribution of energy when it reaches below the "critical point" (it is compared with the curie point of the magnet, there is no any magnetization above the curie point).

An analogy will illustrate the scenario. Suppose steam is being cooled through the phase transition temperature of 100^oC. Normally, we expect the steam to condense to water at this temperature. However, it is possible to super–cool the steam to temperature below 100^oc, although it is then in an unstable state. The instability set in when certain parts of the steam condense to droplets of water which then coalesce and eventually the condensation is complete. In the super–cooled state the steam still remains its latent heat, which is released as the droplets form.

Again, we now consider the so called real space-time unfolding with ϕ-field within the folded space as internal space. Let us consider, there exists alternative values ϕ_i (i = 1, 2,……..) of the ϕ-field, all are corresponding to states of the same lowest energy which now acquire that status of vacuum-like. There is basic symmetry with respect to all ϕ_i, but in practice the system may spontaneously acquire one of them. This is again a breakdown of symmetry. The consequences of this for the very early physical universe are that it is divided into different domains, each with a different value of ϕ_i. In this way the universe acquires like discontinuities along the domain walls. These translate into highly significant discontinuities of matter distribution.

In the early stage something happens to the ϕ-field for unfolding the physical universe. Above a critical temperature T_c, the vacuum state, the state of lowest energy, is none other than $\phi = 0$. But below T_c the state of lowest energy changes, it is now corresponds to a situation when ϕ has nonzero values. The breakdown of SUT symmetry unified group SU(11), gave two fundamental groups SU(6) leads to a phase transition and another fundamental unified group SU(5) then spontaneously breaks into subgroup like SU(3) × SU(2)$_L$ × U(1), in which the scalar field ϕ changes. The original vacuum, with false vacuum ($\phi = 0$) is no longer the true vacuum ($\phi = \sigma$). The inflationary stage arises, however, if the true vacuum is not immediately attained.

We begin with another analogy of ferromagnetism and the crucial role of the Curie temperature 770ºC for iron. Above this temperature a bar of iron shows no magnetism in an external field. This is because its elementary nuclear magnets are randomly aligned with no resultant magnetization. Energetically, this is the lowest state for the bar and it chooses to remain in that state as the most stable one. Below the Curie temperature the state of lowest energy changes to that in which all the nuclei are aligned along the bar, which develops polarity at its ends.

There are two states of the same lowest energy possible, depending on which (north or south) of the two poles falls at a given end. The ultimate choice of one state apparently breaks the symmetry although theoretically and inherently the symmetry is always there.

New Field Equations When Space-Time is Complex:

The work covered by the Einstein field equations did not tell us the important item of information about the universe is what happened when the volume of the matter universe squeezed into zero volume or beyond it. To find the answer to this question it is necessary to do beyond the concept of Einstein universe. We need a new concept with Einstein's universe to proceed any further and Einstein's general relativity with complex space–time is one of such theory. We will consider alternative approaches to cosmology of Kantowski–Sachs universe. We have the line element to start with:

$$ds^2 = -N^2(t)dt^2 + a^2(t)dr^2 + b^2(t)(d\theta^2 + Sin^2\theta d\phi^2)$$

The only nontrivial Einstein equations of the above metric (with N = 1 are)

$$\frac{\dot{b}^2}{b^2} + \frac{2\dot{a}\dot{b}}{ab} + \frac{1}{b^2} = -\frac{8\pi G}{c^{/4}}T_0^0 \qquad\qquad \frac{2\ddot{b}}{b} + \frac{\dot{b}^2}{b^2} + \frac{1}{b^2} = -\frac{8\pi G}{c^{/4}}T_1^1$$

$$\frac{\ddot{a}}{a} + \frac{\ddot{b}}{b} + \frac{\dot{a}\dot{b}}{ab} = -\frac{8\pi G}{c^{/4}}T_2^2 = -\frac{8\pi G}{c^{/4}}T_3^3$$

Where $c^{/}$ is the velocity of photon–like particle in vapor-like stage where $c^{/} > c$, the velocity of photon-like in the tachyon field and c is velocity of light.

Next we consider a = R & b = iR$_I$, where $\quad . \quad i = \sqrt{-1}$. Then above equations becomes

$$\frac{\dot{R}_I^2}{R_I^2} + \frac{2\dot{R}\dot{R}_I}{RR_I} - \frac{1}{R_I^2} = -\frac{8\pi G}{c^{/4}}T_0^0$$

$$\frac{\ddot{R}}{R} + \frac{\ddot{R}_I}{R_I} + \frac{\dot{R}\dot{R}_I}{RR_I} = -\frac{8\pi G}{c^{/4}}T_2^2 = -\frac{8\pi G}{c^{/4}}T_3^3$$

$$\frac{2\ddot{R}_I}{R_I} + \frac{\dot{R}_I^2}{R_I^2} - \frac{1}{R_I^2} = -\frac{8\pi G}{c^{/4}}T_1^1$$

Before we consider specific forms of T_k^i, it is worth noting that three properties must be satisfied by the energy tensor in the present framework of cosmology. The 2nd is obviously defining negative pressure by $T_2^2 = T_3^3 = - p$. and the first $T_0^0 = \rho$ is define the matter energy density and the third $T_1^1 = \varepsilon_l$ is define the latent energy density, which playing a vital role

for the creation of everything and unfolding the beautiful conscious physical universe including an infinite number of conscious lives.

Analysis:

The formation of physical universe were started from 10-dimensional space-time instead of 4-dimensional Einstein's universe by exchanging the so called dark energy through symmetry breaking of the Super Unified Gaussian Energy Group SU(11). We then found an exotic matter fluids staying like vapor- phase (you may compare it with the phase changing system like Gas-Vapor-Liquid states) which then changes to ordinary matter field with the help of strong forces of SU(6) [found after symmetry breaking of SU(11)]called latent energy groups(comparing like releasing & distributing of latent heat when phase changes from vapor to liquid without changing its ordinary temperature that means staying in the same temperature like 100°C of boiling water with vapor) formed everything to the physical universe by exchanging the bosons of SU(5), initially it was flat physical universe, remembering that in the flat situations no adiabatic stage arises due to its flatness (10-dimensional to 7-dimensional flat universe), after then arising adiabatic stage below the critical temperature with 5th & 6th dimensions including surface tension of the closed physical universe, the situation associated with Black-Hole. Thus, below the critical temperature, obeys thermo-dynamical laws within 4th dimensional closed Einstein's universe with slowly evaporating Black-Hole. Then appears our most wanted closed matter oriented expanded volume of physical universe with initial inflation. In the similar manner constructed everything, like human or lives as a bounded dynamic closed matter body-life-system with individual identities of dynamic sensations creating through an electromagnetic interaction by the bosons of SU(6) in the framework of SU(6)× U(1)after spontaneous symmetry breaking of the unified group SU(5). The framework of SU(6)× U(1)brings the photons of U(1) [the electrodynamics U(1)], which are inevitable arises particles that have the characteristics of a magnetic monopole. Monopoles are highly stable particles and once created they are not destructible and so they would survive as relics to the present epoch and open an electron-ocean of real space.

From the above metric equations, **we found then important relationship $\varepsilon_l = \rho - p + K$, or**

$$\varepsilon_l + p = \rho + K = \frac{c'^4}{8\pi G} \frac{1}{R^2} > 0, \text{ otherwise } = -\frac{c'^4}{8\pi G}\frac{1}{R_I^2} < 0 \text{ where } K = 3\frac{c'^4}{8\pi G}\frac{\dot{R}^2}{R^2} = 3\frac{c'^4}{8\pi G}H_R^2 \text{ is the}$$

Consciousness creating factor which contained, the Hubble parameter H_R & c' the velocity of photon−like particles in exotic matter fluids stage where $c' > c$, i.e. where c' is the velocity of photon-like in the tachyon field and c is the velocity of ordinary light. Now, $\varepsilon_l + p = \rho + K$ is maximum when R is minimum initially i.e. after $R_I \leftrightarrow R$, although there always exists R_I at Big-Bang singularity, when $-R_I^2 = R^2$ (negative means belong to other phase) and minimum when R is maximum i.e. at Big-Break singularity, after then contraction started and continuing till to reach Big-Crunch singularity.

In the tachyon field T, the energy density and pressure of this field are respectively considering as $\rho = \frac{V(T)}{\sqrt{(1-\dot{T}^2)}}$, $p = - V(T)\sqrt{(1 - \dot{T}^2)}$, $V^2(T) = -\rho p$ where V(T) is the potential of the tachyon field T.

Let us consider, $\qquad 2\frac{\ddot{R}}{R} + \frac{\dot{R}^2}{R^2} - \frac{1}{R^2} = -\frac{8\pi G}{c'^4}\varepsilon_l$ or $\frac{d}{dt}\left(\frac{\dot{R}^2}{R^2}\right) = \frac{\dot{R}}{R}[\frac{1}{R^2} - 3\frac{\dot{R}^2}{R^2} - \frac{8\pi G}{c'^4}\varepsilon_l]$

Considering, Hubble parameter $H_R = \frac{\dot{R}}{R}$ is fixed for different physical universe, i.e. constant with maximum R, then $\varepsilon_l = \frac{c'^4}{8\pi G}(\frac{1}{R^2} - 3\frac{\dot{R}^2}{R^2}) = $ constant,

Now, considering R & $\dot{R}$ are variables then differentiating with respect to time t, we found $\frac{\ddot{R}}{R} = -\frac{8\pi G}{3c'^4}\varepsilon_l < 0$ which is equivalent to the Einstein's GRT. The Friedmann equation for the evolution of the cosmic scale factor R(t) which represents the size of universe,

$$\left[\frac{\dot{R}(t)}{R(t)}\right]^2 = \frac{8\pi G}{3}\rho(t) - \frac{kc^2}{R^2(t)}. \text{ i.e. } \dot{R}^2(t) = \frac{8\pi G}{3}\left[\rho(t).R^3(t)\right]\frac{1}{R(t)} - kc^2$$

Differentiating the above equation with respect to time t, and since the total matter in a given expanding volume is unchanged, i.e. $\left[\rho(t).R^3(t)\right]$ constant. We have,

$$\frac{\ddot{R}(t)}{R(t)} = -\frac{4\pi G}{3}\rho(t)$$

Since $\ddot{R}$ is always negative, at a finite time in the past, R must have been equal to zero. Then, according to both this models, the contents of all galaxies must have once been squeezed together in a small volume where the temperature would have been immensely high.

We now consider a (4+D)–dimensional Friedmann–Robertson–Walker type universe having complex scale factor $R + iR_I$, where R is the scale factor corresponding to the usual 4–dimensional Universe while R_I is that of D–dimensional space. It is then compared with (4+D)–dimensional Kaluza–Klein Cosmology having two scale factors R and a $(= iR_I)$. The Wheeler–DeWitt equation is constructed and general solution is obtained. It is found that for D = 6 (i.e. in 4 + 6 = 10 dimension), the Wheeler–DeWitt equation is symmetric under the exchange of $R_I \leftrightarrow R$ and the wave equation becomes

$$\Psi_D(R, R_I) = AR^{\frac{\gamma}{D-1}} R_I^{\frac{\gamma\sqrt{D}}{3\sqrt{D}+\sqrt{3(D+2)}}} = AR^{2\gamma/5}$$

$$\text{Or, } \Psi(R) = Bt^{4\gamma/15} \text{ , where A, B are a constants } \& \gamma > 0$$

It is to be noted that there may be possible to constructs multiple universe with different sizes of exact life-span physical universe for the fixed amount of ε_l.

We assumed that R-space changes to 'R_I' by absorbing an amount of the latent energies 'ε_l' or unfolding physical universe by releasing an amount of latent energies from folding-space then distributing energies through converting as negative pressure '- p', matter energy density 'ρ' and consciousness creating factor **'K'** which contains c' & Hubble parameter $H_R = \frac{\dot{R}}{R}$.

In the similar way we found all sensible lives like human of closed bounded dynamical-body system, where consciousness creating factor for human (other than creation of mind, intelligence etc.) was also directly involved with the ratio of speed to the expanding or unfolding physical universe including individual space-time-like of closed bounded dynamic volume R^3 of the expanding human body system when constructive matter volume of dynamic live body depends on ρ although this volume is not numerically equivalent to R^3 but very close to it. In the first half of life-span of live or human, feels the mechanical strong strength forces increasing with visible change of dynamical bounded body system and strength will be maximum at Big-Break like singularity (i.e. at young age) then contraction started with feeling gradually weakness of low strength till to reach the Big-Crunch like singularity and finally feels absolute weakness with mechanical breakdown of dynamical body-parts then human or live is no more i.e. physical death, for star showing then supernova explosion. Therefore we assume consciousness like as sun behind floating dark cloud.

Consciousness creating by the interaction with electrons through holographic laser like beam of rays through photoelectric effects and acting at the human brain-like, then creates minds, intelligence etc. An analogy will illustrate the scenario of consciousness that if we imagine an ordinary light of quanta are in wave of electromagnetic ocean and be quite successful at it, wouldn't be much of a stretch for us to image electrons as something like tethered buoys floating in an electromagnetic harbor. Along come the waves (new kind of light energy) from new energy sources as explained before which pull and tug at the buoys (electrons). Weak waves have no effects, but strong ones just might yank a buoy from their mooring and set it adrift. A wave model of light would predict an energy-amplitude relationship and not the energy-frequency relationship. Again, photoelectric experiments describe an electromagnetic ocean where monstrous swells wouldn't tip over a canoe, but tiny ripples would fling you into the air. If that wasn't enough, the photoelectrons seem to pop out from the surface of body too quickly. When light intensities are very low, the rate at which energy is delivered to the surface is downright sluggish. It should take a while for any one particular electron to capture enough of this diffuse energy to free itself. It should, but it doesn't.

We know that energy never created nor destroyed hence its origin is space because, no existence of universe without space, it is only changes from one kind of space to another kind of space wanting then completing a particular bounded dynamic body system.

Initially, considering tachyon field, born in the context of the string theory providing dynamical closed bounded matter-body development-systems for the creation of fixed bounded matter volume expansion, which are closely related to R^3 through negative pressure.

Therefore, space or scale factors 'R' or 'R_I' playing the vital role for the creation of everything including matter oriented consciousness within the physical universe or bounded dynamic body system of live. It creates thus, non-dynamic as well as dynamic bounded matter body system like human then unfolding mind, instincts & emotions etc. within the lives by electromagnetic interaction as explained details in my previous published articles. Thus, consciousness creation may be possible by the torsion of R_I or R. In human brain thus created illusion of consciousness or virtual consciousness. Universal consciousness interacted through laser-like beams of rays to the dynamic portion of human brain like, creates a new kind of electromagnetic force as intelligence, mind etc. details are explained in my previous published articles. Therefore, consciousness is the fundamental property of the universe with the existence of "eternal" consciousness.

Now, if we assume the possibility of existence of the universe beyond 10-dimensional space-time when $T_2^2 = T_3^3 = -p = 0$ beyond 10-dimensional space-time, then

$$\frac{\ddot{R}}{R} + \frac{\ddot{R_I}}{R_I} + \frac{\dot{R}}{R}\frac{\dot{R_I}}{R_I} = 0 \approx 2\frac{\ddot{R_I}}{R_I} + \frac{\dot{R_I}^2}{R_I^2} = 0 \quad \text{or} \quad \dot{R_I}^2 = \frac{K^2}{R_I} \quad \text{which indicates that } R_I \to \infty \text{ then } \dot{R_I} \to 0.$$

Otherwise, if we consider $\dot{R}^2 = \frac{K^2}{R}$ within10-dimensional space-time, the expansion rate $\dot{R}$ will be decreases with the expansion of scale factor R started with t = 0 i.e. from Big-Bang Singularity, the equation is that $R^{3/2} = d^{3/2} t + E$, where d & E are constants.

Now, considering t = 0 at Big-Bang singularity, then R = 0, we get E = 0, $\therefore R^{3/2} = d^{3/2} t$ imply $\dot{R^3} \propto \frac{1}{t}$ or $R^3 \propto t^2$ i.e. the volume R^3 of the physical universe increases directly with the square of time t, the Hubble parameter was then $\frac{\dot{R}}{R} = H_R \propto \frac{1}{t}$.

Again $\ddot{R} = -\frac{\dot{R}^2}{2R} = -\frac{K^2}{2R^2} = -\frac{K^2}{2D^2}\frac{1}{t^{4/3}} < 0$ means the maximum expansion of volume of physical universe including all galaxies etc. showing once been squeezed in a zero volume, when $\ddot{R} \leftrightarrow \ddot{R}_I = \frac{K^2}{2(iR)^2} = \frac{K^2}{2R_I{}^2} > 0$ means minimum when universe belonging to another phase equal or above of 10-dimensional space-time and speed of expanding physical universe is $\dot{R} = \frac{K}{\sqrt{D}}\frac{1}{\sqrt[3]{t}} = \frac{K}{\sqrt{R}}$ at Big-Break singularity, when R is maximum then contraction started.

Conclusion:

We define the existence of space beyond 4-dimensional Einstein's universe including all extra dimensions which are splits into an infinite number of sub-groups explained by a Generalized Gaussian Energy Group (GGEG), details in my previous published articles. The whole universe are always filled with different kind of dark energies (omnipotent) as like an ocean of water with tiny waves of high frequencies, our physical universe or individual lives are as bounded conscious closed dynamic body-system constructed by the ordinary matters in presence of consciousness, it is just like a cup of water or a jar of water etc. within the ocean having tidal force of long waves are trying to separating from it and shown illusively separated from the apparent calm ocean.

For example, it is known to all that we commonly said the solar family as planets & satellites etc. but I object the term 'family' and wish to say as body-parts of the closed bounded-dynamic-matter body-system of Milky-Way Galaxy. Therefore, every closed complete bounded dynamic system was assumed to be as living-like as human and constructed its body-parts usually by transforming to ordinary matters from dark energies as required by the instruction of matter oriented consciousness and till it directed to the construction for completion of body-parts including minds, intelligences, etc. as required for the smooth running of the system till death.

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