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QUANTUM AND QUANTIZATION (Quantum Theory of Everything)

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ABSTRACT

Quantum is a discrete quantity of energy as proposed by Planck. This paper reveals this fact and that the quantization effect is due to the presence of order and disorder characteristics in matter and radiation. Such a scenario gives birth to the Law of the Universe.

Actually, the quantum is the minimum amount of any physical entity and the quantization of energy is an action process. Indeterminacy and determinism phenomena are based on some quantum rules. That is why Heisenberg and de Broglie observed them due to the presence of the Planck constant 'h'. Gravity is a quantum characteristic provided by Nature through the Sun.

The quantum particle Lifton provides consciousness to every cell and organ in the human body. Life-soul complex energy (bio-electromagnetic radiation – cosmic) forms the human body - a quantized system. Positive thoughts develop the spirituality state – an ordered state. Pure universal consciousness is a complete form of that quantum - God. Order–Disorder Transformations have given fruitful results in the application to different systems as well as reproduced the results obtained earlier by pioneers such as Planck, Einstein, Heisenberg, de Broglie, and Niels Bohr. This itself justifies the validity of the theory and fulfils the pioneer's dreams and, in doing so, may be called a 'Quantum Theory of Everything'.

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1. INTRODUCTION

Human knowledge is based on the collection of thoughts and concepts associated with religious and scientific philosophies. Natural philosophy or the philosophy of Nature is associated with the philosophical study of Nature and the physical Universe, which was dominant before the development of modern science. Religious and scientific views differ with respect to the origin of the universe and life. Basically, religious scripts describe that the creator of the whole universe as Superpower or God, who applied their own way in the environment of a force in creating Nature, Universe and life. Science believes that the whole universe appeared through a process of evolution process. Vedic science and modern science differ with respect to the conceptions associated with human consciousness, soul and body.

A question like: “What is Quantum?” has been a cosmic subject of investigation always by humans through religious and scientific philosophies since humans entered in our planet Earth. Whether we look in the Vedas of Hindus or the Bible of Christians or the Quran of Muslims and so on, it is discussed that there exists some power – Super or Cosmic or called God, who has created the whole universe. Quantum can’t be observed through experiments of science. Rather never can scientific apparatus be constructed by which quantum may be seen. Quantum is neither in the form of matter or in form of radiation (energy), which may be observable. But why is it so?

To my mind, the reason behind the state of existence of quantum and the state of observation are different. It is observable through natural environment that nature loves symmetry (order behavior). Matter and radiation, the constituents of Universe follow randomness (disorder behavior). Disorder is pollution. Humans are bound to follow the laws of Nature and Universe. Nature and Universe are two different entities. Cox and Forshaw [1] called our Universe as “Quantum Universe”. Further, it is described that everything that can happen in our universe does happen. In an earlier study [2], Order – Disorder concepts have been developed in propounding a Scientific Philosophy so called Order – Disorder Scientific Philosophy. Thereafter, the dynamics [3] of Order – Disorder Transformations (ODTs) were established quantum mechanically. Later on, ODTs were applied in describing the evolution of the Universe [4] and the evolution of life [5]. A number of applications of ODTs have been discussed in a series of papers in cases of different systems of atomic, molecular, bio-chemical and bio-molecular, biomedical and social systems.

2. DYNAMICS OF QUANTUM CONCEPTS BASED ON EARLIER THEORIES

The importance of quantization subject speed up after the discovery of Planck’s theory of radiation. According to this theory the distribution of energy from one place to other close point place is quantum in nature, i.e., the quantized particle of energy is called photon. Such discrete nature of energy E was given by Planck in 1900 as:

$$E = h \nu \tag{1}$$

where ν is frequency and h is the Planck constant. The Uncertainty Principle of Heisenberg [6] is also based on quantum concepts. The Heisenberg Uncertainty Principle describes that it is impossible to specify simultaneously the values of conjugate members of particular pairs of physical variables that

describe the behaviour of an atomic system. There lies uncertainty in both measurable quantities, say (i) the value of the energy 'E' of a particle and (ii) the corresponding measurable time 't'. Then, in terms of the measurable uncertainties (Δ : uncertainties of the measuring variables) concept of the variables, according to Heisenberg:

$$\Delta t \cdot \Delta E \geq (h / 2 \pi) \quad (2)$$

Heisenberg realized during the statement of his Uncertainty Principle of differential space or Principle of Indeterminacy that, it is because of the presence of Planck constant 'h' there lie uncertainties in the measurement of the minimum values of conjugate quantities such as position (x) and momentum (p) or time (t) and energy (E).

Schrodinger [7] used the probability concepts in his wave mechanics representations. In his wave equation there appears term of Planck constant 'h' also. In probability representation of Ψ it is noticeable that there exists indeterminacy, which affects the deterministic concept of wave equation. Indeterminacy and determinism are complementary. Truly speaking that in macroscopic phenomena there is only apparent determinism and in microscopic phenomena the indeterminacy is only apparent. Every physical phenomenon observes the two aspects of indeterminacy and determinism.

The wave and particle concepts of quantum physics are each of them, a complex of indeterminacy and determinism. The possibility has been extinguished of finding "static structure" of quantum aspects in the physical measurements- a perfectly determinate reality. Later on de Broglie [7] solved photon duality concepts by the following relationship:

$$\lambda = h / p \quad (3)$$

where λ is the wavelength of radiation and $p (= mv)$ is the linear momentum of the particle. In order to solve whole controversial scenario, the Order-Disorder Uncertainty Principle and thereafter Order-Disorder Transformations (ODTs) in integral approach has been established.

3. QUANTUM CONCEPTS BASED ON ORDER-DISORDER TRANSFORMATIONS (ODTs) DYNAMICS

Order within disorder and disorder within order is the characteristic of all systems and bodies of our universe. Order and disorder form a pair of conjugate quantities similar to other paired quantities, completeness-incompleteness, symmetry-asymmetry, and the death-life system, etc. The displacement of time develops thermal vibration in atoms of the materials, which enhance the temperature and ultimately randomness in the behavior of matter and radiation, i.e., Order-Disorder Transformations are responsible for producing particle and wave characteristics (dual nature) in matter and radiation, which is supported by the Third Law of Thermodynamics. The degree of order and disorder characteristics may be measured in terms of entropy (S). The disorder behavior lies between entropy values of $S=0$ and $S=1$, while at the extreme values of $S=0$ and $S=1$ there lies order behavior. Order (O) and Disorder (D) are just like two faces of same coin. They form a pair of conjugate quantities (O, D).

According to the Unified Scientific Theory for the systems of Universe and Nature [2, 8], the generalized form of Uncertainty principle in order and disorder concepts is given by:

$$\Delta O \cdot \Delta D \rightarrow \text{constant} \quad (4)$$

This constancy may be considered as H (say), where $H = h / 2\pi$ for the atomic system, which is the minimum value of the quantization condition. That is to say, in general the uncertainty lying in measuring disorder in a system is inversely proportional to ΔO and for measuring order is inversely proportional to ΔD .

The creation of the universe is based on matter-energy equivalence phenomena which follow random behavior and happen in multi-activities in terms of quantum energy packets inside the sun with different radiation wavelengths λ , which develop a temperature notion T as in:

$$T \rightarrow f(E) \rightarrow f(1/\lambda) \quad (5)$$

where the wave function $\Psi(t)$ corresponds to simple harmonic waves

$$\Psi(t) = \sin[(2\pi/\lambda)vt] \quad (6)$$

For the case of Order-Disorder Transformations (ODTs) due to the existence of the dominance of temperature T in the whole sun's space, such that the wave function becomes bi-functional (t, T) and transforms to:

$$\Psi(t, T) = \sin[2\pi f(t, T)] \quad (7)$$

which for satisfying the quantum parity condition $\int \Psi \Psi^* dt = 1$ leads to ODTs of the form:

$$\iint f(t, T) \Delta T \Delta t = (1/2\pi) \quad (8)$$

The scientific hypothesis behind the above analogy of ODTs is that the variation of temperature ' T ', a disordered quantity with respect to the natural order quantity ' t ', is the occurrence of all the existing systems of the whole universe. A generalized form of the ODTs is given by:

$$\iint f(Q, D) \Delta O \Delta D = \iint f(t, E) \Delta t \Delta E = (1/2\pi) = \iint f(t, T) \Delta t \Delta T \quad (9)$$

This agrees with the following Heisenberg result

$$\Delta \nu \cdot \Delta t = (1/2\pi) \quad \text{where } \nu = \text{frequency} \quad (10)$$

The first quantity in each parenthesis of Eq. (9) possesses ordered behavior while the second quantity possesses disordered behavior. The above equations are concerned with the Order-Disorder Uncertainty Principle in integral space, which is parallel to the Heisenberg Uncertainty Principle of differential space for atomic systems. The statistical quantity $f(Q, D)$ (say) is described by

$$f(O, D) = \exp(E / E_D) \times \exp(-E_O / E_D) \quad (11)$$

where the symbol E represents energy. There is no involvement of the Planck constant quantity 'h' in the above quantum concepts based dynamics.

4. QUANTUM CONCEPTS BASED ON THEORY OF ACTION

Action and reaction are two opposite phenomena which work under some natural laws of motion. If a ball is striking on a wall and it follows continuous action and reaction phenomena then it forms a cyclic order where continuity exists in the striking and rebounding events as is also true in the case of a ping pong ball striking the ground.

Let us try to understand the occurrence of an action and how it develops. When some force is applied on a body or in a system then due to performance of work for some time t (say) some equivalent energy, E (say) develops. The union of these two physical quantities forms a notion that

$$\text{function (Time) } \times \text{ function (Energy) } \rightarrow A \text{ (Action) } \quad (12)$$

which for a photon denotes an elementary quantum, a responsible quantity for discrete individuality and dual characteristics. Eq. (1) describes that the product of time (t) and energy (E) is an order of Planck constant (h), which appears through quantization of energy factor Q_F , $Q_F = \lambda / c t$.

Any interruption in the action of DNA arises from the temperature of a physical body system and life collapses. DNA function depends on time and energy / temperature variations, which is also true for the creation of life.

This is also true in Order Disorder scientific philosophy in which the quantum of action is responsible for the discrete individuality of that entity which develops enlightening behavior, i.e., an action as represented by

$$\begin{aligned} h &= \Delta D \Delta O / \iint f(D, O) \Delta D \Delta O = \Delta E \Delta t / \iint f(E, t) \Delta E \Delta t \\ &= \Delta T \Delta t / \iint f(T, t) \Delta T \Delta t \end{aligned} \quad (13)$$

which also describes a new definition of Planck's constant.

The true meaning of Action 'A' in any system is an interplay between the component of Universe characteristics of random or disorder parameter 'D' and natural characteristic of symmetry order or order parameter 'O', represented by

$$A \text{ (Action) } = \text{function (Order) } \times \text{function (Disorder) } \quad (14)$$

The above expression describes that in every action or event Nature and Universe interact with each other.

5. QUANTIZATION OF ENERGY

We have already seen the role of quantum parity condition, $\int \Psi \Psi^* dt = 1$ in developing Order –

Disorder Transformations (ODTs) equations. Now the role of quantization condition, $Q_F = \lambda / c t$ of section 4 will be discussed.

In the order- disorder concepts , we consider disorder as a conceptual form of photon energy, $\epsilon_{ph} = h \nu = h / (Q_F t)$; while order as a conceptual form of energy for maximum quantization, Q_F , ($Q_F = \lambda / c t : Q_F \rightarrow 1$), $\epsilon_{ph} = h / t$. Q_F is a quantization factor, while the other symbols have their usual meanings. Time 't' is an invisible variable parameter, which describes natural order . Similarly , a Lifton energy⁹, $E_L = \epsilon_T \nu = \epsilon_T / (Q_F t)$, which for maximum quantization Q_F , ($Q_F = \lambda / c t : Q_F \rightarrow 1$) becomes $E_L = \epsilon_T / t$. E_L is the energy of bio-radiant particle as considered earlier . We call ϵ_T as SYA constant.

That is to say, Planck's quantum radiation equation of photon energy, E (Eq. 1) may be described as

$$Q_F E = h / t \quad (15)$$

where quantization condition factor $Q_F = \lambda / c t$. For maximum quantization,

$$Q_F \rightarrow 1,$$

for which

$$E \cdot t = h \quad (16)$$

Similarly, the de Broglie equation of matter waves, Eq. (3), $\lambda = h / p$, along with the well-known equation $E = c p$, under maximum quantization condition $Q_F = \lambda / c t \rightarrow 1$ may be converted into Eq. (16). It is remarkable that Eq. (16) possesses similarity with the Action equations, Eq. (12) and Eq. (14).

6. QUANTUM BIO-RADIATION FORMULA

It is assumed that the radiation inside the human body is produced by some kind of resonators. Let us consider the displacement x of a bio-resonator in simple harmonic form [10].

$$x = A \sin [(2 \pi E_q (t, T))] \quad (17)$$

where A is the amplitude, T is temperature and t is time. $E_L (T, t)$ is given by

$$E_L = E_L (t, T) = \epsilon_T \nu = \epsilon_T / t = Q_F \cdot k_B T, \quad (18)$$

where ϵ_T is called SYA constant and Q_F ($Q_F = \lambda / c t$, say) is the quantization factor. The dimension of ϵ_T is same as that of the Planck constant 'h', i.e., energy x time.

Then, by using kinetic theory, quantization process and using Maxwell-Boltzmann statistics, we obtain the number of modes of vibration or degrees of freedom per unit volume in the wavelength region λ to $\lambda + d \lambda$ as given by

$$E_\lambda \cdot d \lambda = [\{ (8 \pi / \lambda^4) \{ Q_F \cdot k_B T \} \} / \{ \exp Q_F - 1 \}] d \lambda \quad (19)$$

or
$$E_{\lambda} = \left[\left(8 \pi / \lambda^4 \right) \left\{ Q_F \cdot k_B T \right\} / \left\{ \exp Q_F - 1 \right\} \right] \quad (20)$$
 where $8 \pi / \lambda^4$ is the number of degrees of freedom per unit volume. The above equation is called the SYA Formula of Bio- radiation.

Case I: When $\lambda T \gg 1$ (Longer wavelength limit)

$$E_{\lambda} = \left(8 \pi / \lambda^4 \right) k_B T \quad (21)$$

Case II: When $\lambda T \ll 1$ (Shorter wavelength limit)

$$E_{\lambda} = \left(8 \pi / \lambda^4 \right) \cdot \left(k_B T \cdot Q_F \right) \exp Q_F \quad (22)$$

The dynamics of SYA radiation formula of Bio-radiation (having Lifton quantized particle), $E_{\lambda} = \left[\left(8 \pi / \lambda^4 \right) \left\{ Q_F \cdot k_B T \right\} / \left\{ \exp Q_F - 1 \right\} \right]$ and its limiting value in shorter wavelength region ($\lambda T \ll 1$) obtained here differs from ordinary radiation (having quantized particle photon) formulae. There is closer agreement in the forms of SYA radiation formula and its form in shorter wavelength region while deviation exists in its forms as compared to longer wave length ($\lambda T \gg 1$) region. It is noticeable that the product of quantity Q_F , the quantization factor and the average energy for each vibration degree of freedom, $k_B T$ is the quantized energy of biomaterial Lifton, which is the quantized particle of bio-radiation.

(i) Quantized Energy Particle Lifton and Human Life–Death System

Quantized energy particle of bio-radiation is Lifton, whose bi-functional energy $E_L(t, T)$ is given by

$$E_L(t, T) = \left(\lambda / c t \right) k_B T \quad (23)$$

Lifton is a new biomaterial particle of human life and death system. The heartbeat and the vibration generated thereafter in the brain may be expressed through the wave function of vibrating motion of simple harmonic type $[\psi = \sin [(2\pi / \lambda) vt]]$. The dominance of temperature T exists in whole space of human body such that the wave function transforms to

$$\Psi = \sin [(2\pi E_L(t, T))] \quad (24)$$

which for satisfying the quantum parity condition $\int \Psi \Psi^* = 1$ leads to Order – Disorder Transformations of the form

$$\iint E_L(T, t) \Delta t \cdot \Delta T = 1 / 2\pi \quad (25)$$

This is in agreement with the Heisenberg result, Eq. (10).

Lifton is responsible for the sustainability of life and occurrence of death. All living beings possess the same physical principles of conservation and transformation of matter and energy. The Sun is the main energy supplier for everything on Earth.

The state of living life system is a disordered state while the state of occurrence of death is ordered state. For the working of life-death system [11] the required ordered form of energy E_w is a combination of (i) quantized energy of photon $E_{ph} (= h/t)$ (ii) quantized energy of Lifton $E_L [= (\lambda / c t) k_B T]$ and (iii) Gibbs energy $\Delta G (= \Delta H - \Delta S)$. H is the Helmholtz energy function and S is entropy. Gibbs energy is generated in the body by the supplied food materials and water. Equivalence principle of Einstein provides disordered energy $E_D (= m c^2)$. By using ordered form of energy E_w and disordered form of energy E_D in ODTs [Eq (13)], we obtain finally

$$t \cdot [m c^2 - (E_T / t) \log t - (h/t) \log t] \cdot \exp [(E - \Delta H + \Delta S) / m c^2] = 1 / 2\pi \quad (26)$$

It is noticeable that, in the above equation, the sum of both forms of the energies $L_{ph} [L_p = (h/t) \log t]$ and $L_{lif} [L_{lif} = (E_T / t) \log t]$ show logarithmic behavior. Both follows infinite and zero values at $t = 0$ and $t = 1$, respectively. L_{ph} and L_{lif} equals to $m c^2$ or in exponential terms the numerator equal to the denominator term then the equilibrium of life system is disturbed. Considering the condition for the numerator term of exponential quantity to be zero is against the principle of evolution. The condition $E - \Delta G > 0$ for the sustainability of life is evolution disordered characteristic. The laws of nature can't exist without time. It can be believed that something exist beyond time, which has transformed itself periodically, leading to the apparent creation and destruction. This is very similar to the Einstein equivalence principle and Descartes theory of rationalism. Until the quantities of left hand side of above equation balance the right hand side quantity $1 / 2\pi$, the possibility of existing life is there. As temperature of body goes on decreasing rapidly, the tendency of entropy and lifton energy quantity L_{lif} moves towards zero. Under these conditions, above equation takes the form

$$t \cdot [m c^2 - (h/t) \log t] \cdot \exp [(E - \Delta H) / m c^2] = 1 / 2\pi \quad (27)$$

Now the role of time factor reveals the fact of decaying process of energy as life span increases. At the time of death, the system follows

$$L_p = (h/t) \log t = m c^2 \quad (28)$$

and $E - \Delta H = m c^2 \quad (29)$

When lastly $\Delta H = 0$, there is loss of internal energy the body attains complete death. State (ordered state). Simultaneously energy of form L_{ph} leaves the body. At this point lastly there occurs.

$$E = m c^2 \quad (30)$$

It shows that there is complete conversion of mass into energy.

(ii) Role of Lifton Towards Life System and God Equation

The quantized life energy particle Lifton plays prominent role in the production of life, life existence and in developing a master key – God equation. The transmission of bio-radiation takes place in the form of a special type “Bio-resonator: Lifton” developed through ODTs. Lifton is the life particle

which provides consciousness to every cell and organ in the human body. A mother's womb is the natural site where a fetus develops. The fetus is the developing embryo which is formed when an ovum is fertilized by a sperm. During fertilization, bio-radiation is generated whose quantized energy particle is lifton. Sometime before the delivery of a child a period comes usually, after 4-5 months of pregnancy, when a photon (external energy resource) interacts with a Lifton and through ODTs develops Life-Soul complex energy (bio-electromagnetic radiation - cosmic) [12].

$$E_{L-S \text{ Complex}} = (1/2 \pi t) \exp (E_{ph}/E_L) \quad (31)$$

This is the individual eternal energy fragment of God known only by his or her own body. The individual physical body is unique for everyone and is based on his or her genetic characteristics. In an earlier study [13], we have discussed the formation of amino acids by the interaction between a Lifton (life particle) and a protein molecule which helps in the formation of the building block of a DNA molecule.

The result of any action or event is controlled by some Superpower as is confirmed by *The Bhagwadgita* [14]. The doctrine of the mathematical philosopher Descartes and his associates [15] (Theory of Rationalism) considers that Universe is a system based on the concept that, when there is the existence of "Infinity and God", only then can the existence of an atom or matter be understood. The philosopher Spinoza of this series considered that God is the only entity which has infinite attributes including thoughts and extension.

To understand the dynamics of thought generation in human mind we consider the interaction between life particle or Lifton and Life-Soul complex energy). According to Vedas life particle of human body moves with very high velocity. Therefore we have introduced Einstein's relativistic concepts for the above discussed reasons. Let us consider that a Lifton moves with velocity v and that the Life-Soul complex is in a stationary state. Thus, we obtain under Order-Disorder Transformations

$$\text{Action of positive thoughts } (A_+) = E_+ \cdot t = 1/2 \pi \quad (32)$$

$$\text{Action of negative thoughts } (A_-) = E_- \cdot t = 1/2 \pi + 2a \epsilon_T \quad (33)$$

where $a = 1 - (v^2 / c^2)^{-1/2}$.

The following equation

$(A_+) = E_+ \cdot t = 1/2 \pi = \iiint f(O, D) \Delta O \Delta D = \iiint f(t, E) \Delta t \Delta E = \iiint f(t, T) \Delta t \Delta T$
may now be referred to as the '**GOD EQUATION**'.

7. QUANTUM CONCEPTS BASED ON BIO-THERMAL WAVE MOTION IN HUMAN BODY SYSTEM

Bio-thermal wave motion in the human body system is a thermal problem. In this problem, heat transfer concerns the generation and exchange of thermal energy between physical systems. Thermal radiation is electromagnetic radiation. It occurs through any transparent medium of disordered materials.

Different types of matter and bio-radiant energy exist inside the human physical body system.

In order to study bio-thermal wave motion in human body system by means of Order-Disorder Transformations methodology, we consider the wave function Ψ_L of the Life particle Lifton and its corresponding energy, E_L

$$\Psi_L = \sin [2\pi f(t, T)] = \sin [2\pi E_L] \quad (34)$$

$$E_L = (\lambda_L / c t) k_B T \quad (35)$$

We have developed the following two second-order homogenous differential equations for understanding the wave function and energy variations with respect to wave length λ_L and time t .

$$d^2 \Psi_L / d \lambda_L^2 - d \Psi_L / d t + \omega^2 \Psi_L [1 + (1 / \omega) \{ (1 / \Psi_L^2) - 1 \}] = 0 \quad (36)$$

$$d^2 E_L / d t^2 - d E_L / d t + \omega'^2 E_L = 0 \quad (37)$$

Here $\omega = 2\pi k_B T / c t$ and $\omega' = 1/t$. The second quantity within the large bracket in the above-mentioned first equation being small after neglecting, the equation takes the form

$$d^2 \Psi_L / d \lambda_L^2 - d \Psi_L / d t + \omega^2 \Psi_L \quad (38)$$

In both equations (37) and (38) there is similar gradient behavior. Both equations correspond to free vibration with damping as happens in the case of bio-radiation damping.

In an earlier investigation [16], the plasma oscillations occurring in bio-radiation were studied. Those oscillations are self-consistent motions having non-linearity and electromagnetic radiation characteristics. Plasmas are conductive and respond to electric and magnetic fields. It was derived that the plasma frequency $\omega_p = (2\pi E_L / T)$, which corresponds to transverse vibrations. The generated thermal waves due to the quantum particle Lifton in the human body system will affect not only blood, tissues and organs but also the functional systems.

8. APPLICATION OF ODTs TO MOLECULAR SYSTEMS

We are applying for the first time the Eq. (9) of the Order-Disorder Uncertainty Principle in integration approach or ODT's equation to molecular systems.

(A) Mean free path and thermodynamical energy of the molecules of a gas

The molecules of a gas move about randomly colliding with each other. The properties of molecules [17] are the same as that of the gas as a whole. In between different collisions the molecules move along straight line paths. The average value of all possible free paths is called the mean free path of the molecules.

Let all the molecules of a gas have a diameter ζ and the molecules are moving along a cylindrical tube of radius ζ , i.e., the cylindrical tube axis, over every segment, is along the free path of the molecule. It is imagined that all the molecules are at rest, and that only one of the molecules move through the space occupied by the other molecules. The moving molecule collides with all these

molecules. In this way, the number of collisions made by the moving molecule is equal to the number of molecules whose centre lie within the cylindrical tube. We consider that the length of the cylindrical tube is ℓ and then the volume of the tube V is given by

$$V = \pi \zeta^2 \ell \quad (39)$$

If n is the number of molecules per unit volume of the tube, then the number of molecules N in the tube is given by

$$N = V n = \pi \zeta^2 \ell n \quad (40)$$

As a moving molecule has travelled total distance ℓ , therefore the average distance travelled λ , i.e., the mean free path by the molecule between two successive collisions becomes

$$\lambda = \ell / \pi \zeta^2 \ell n = 1 / \pi \zeta^2 n \quad (41)$$

Actually, the existing molecules of the gas are moving simultaneously, and a more rigorous formula for the mean free path having a correction term, $1/(2)^{1/2}$ as suggested by Maxwell may be given by

$$\lambda = 1 / [(2)^{1/2} \pi \zeta^2 n] \quad (42)$$

According to the Kinetic Theory of Gases, the energy per degrees of freedom and the number of molecules of a gas n is related by

$$1 / n = k_B T / 2 E \quad (43)$$

If the mean speed of thermal motion of the molecules is C and time taken to cover of mean free path distance is t , then we may express that

$$C \cdot t = \lambda = 1 / [(2)^{1/2} \pi \zeta^2 n] \quad (44)$$

By using above Eq. (42), Eq. (43), Eq. (44), we may express energy E

$$\begin{aligned} E &= [(1 / 2) k_B T] / [(2)^{1/2} \pi \zeta^2 C t] \\ &= k_B T / K t, \end{aligned} \quad (45)$$

where $K = [2 (2)^{1/2} \pi \zeta^2 C]$ (46)

Here K is a constant. E is the mean kinetic energy of a molecule, i.e., the total energy of the gas, which may be expressed here, in functional form as

$$\epsilon_{\text{total}} = E = \epsilon(t, T) \quad (47)$$

Thermal energy of motion $\epsilon_{\text{thermal}}$ is expressed by

$$\epsilon_{\text{thermal}} = k_B T \quad (48)$$

Now the aim is to study the whole phenomenon of kinetic theory in the view of Order-Disorder Transformations (ODTs). For this task, we express distribution function $f(t, T)$ in the form

$$f(t, T) = \exp(E / \epsilon_{\text{thermal}}) \exp(-\epsilon_{\text{total}} / \epsilon_{\text{thermal}}) \quad (49)$$

By using this value of $f(T, t)$ in the Order-Disorder Transformation equation., we obtain

$$\iint [\exp(E / \epsilon_{\text{thermal}}) \exp(-\epsilon_{\text{total}} / \epsilon_{\text{thermal}})] \Delta T. \Delta t \approx (1 / 2 \pi)$$

By using above values of ϵ_{total} and $\epsilon_{\text{thermal}}$ in above equation, finally we obtain

$$E + k_B T = (1 / \pi n t^2), \quad (50)$$

which along with Eq (41) of mean free path λ provides

$$E + k_B T = \lambda (\zeta / t)^2 \quad (51)$$

Here the sum of kinetic energy E and thermal energy $\epsilon_{\text{thermal}}$ ($\epsilon_{\text{thermal}} = k_B T$) as total thermodynamical energy E_{TD} of the gas can be expressed by

$$E_{\text{TD}} = (1 / \pi n t^2) = \lambda (\zeta / t)^2 \quad (52)$$

It may also be said that the total thermo-dynamical energy of a gas depends on mean free path λ , molecular diameter ζ and time t .

(B) Einstein Specific Heat of Solids in ODTs Concept

When one assumes that the atoms of a solid are equivalent to a set of oscillators having same frequency and a continuous range of energies, then the application of Maxwell-Boltzmann distribution law leads to the Dulong-Petit law of specific heat of solids. However, the law does not agree with experimental facts.

Planck's quantum theory of radiation explains very well the facts of radiation. The Planck's quantum particle of radiation, photon possesses ordered energy

$$E_{\text{photon}} = h \nu = h / t \quad (53)$$

According to Planck's quantum theory of radiation, the average energy ϵ per oscillator is given by

$$\epsilon = h \nu [1 / \{ \exp(h \nu / k_B T) - 1 \}] \quad (54)$$

For $3N$ oscillators in a solid, the total energy becomes

$$\epsilon_{\text{total}} = 3N h \nu [1 / \{ \exp (h \nu / k_B T) - 1 \}] \quad (55)$$

The corresponding distribution function $f (E, t)$ is given by

$$f (E, t) = \exp (E / \epsilon_{\text{total}}) \exp (- E_{\text{photon}} / \epsilon_{\text{total}})$$

Thus, ODTs provides

$$\iint [\exp (E / \epsilon_{\text{total}}) \exp (- E_{\text{photon}} / \epsilon_{\text{total}})] \Delta E. \Delta t \approx (1 / 2 \pi) \quad (56)$$

After substituting corresponding values in above equation, finally we obtain

$$E = 3N k_B T, \quad (57)$$

i.e., for one mole

$$E = 3RT \quad (58)$$

Thus, for specific heat of the solid, we have

$$\begin{aligned} C_v &= \partial E / \partial T \\ &= 3R \end{aligned} \quad (59)$$

But according to the quantum concept, the energy of an oscillator is given by

$$E_{\text{oscillator}} = [N + 1/2] h \nu \quad (60)$$

Then, according to Planck's theory of radiation, the total energy ϵ_{total} of $3N$ oscillators becomes

$$\epsilon_{\text{total}} = 3N h \nu [1/2 + 1 / \{ \exp (h \nu / k_B T) - 1 \}] \quad (61)$$

This ϵ_{total} in ODTs as described above will provide the modified value of C_v other than $3R$. On employing further, the lattice vibration concept in specific heat evaluation as used by Debye, further modification in ODTs methodology may improve the specific heat of a solid. However, some precautions will be essential in the considerations of longitudinal and transverse modes of lattice vibrations.

9. QUANTUM RELATIVISTIC DYNAMIC PROPOSITION

Einstein's proposal of description about the concept of gravity is different from the Newtonian concept. Einstein's concept is based on his general relativity theory. According to him gravity is the curvature of the universe and that curvature is dynamical. In Einstein's view world gravity is the curvature of space-time caused by massive objects. He proposed that massive objects warp and curve the universe. According to his Equivalence Principle he realized that the effects of acceleration and gravity were indistinguishable too. Space warps under accelerated motion. Thus, according to Einstein, gravity is the curvature of space-time.

We have already seen [18] that the mass-energy relation of Einstein, $E = mc^2$, is derivable through Order-Disorder Transformation methodology. We have considered that the ordered form of energy as $E_{\text{photon}} = h \nu$ and the disordered form of energy as the photon radiant energy. This energy was

derived from the equivalence of quantized kinetic energy ($= p^2 / 2m$; $p = h v / c$) with the classical kinetic energy ($= m v^2 / 2$) in quantized condition, which becomes equal to the value cp .

In Order-Disorder Transformation methodology, the quantum relativistic dynamic proposition of Einstein about the concept of gravity may be described by

$$\iint f(E_R, t) \Delta E_R \Delta t = 1 / 2\pi F_C \quad (62)$$

$$\text{Here } f(E_R, t) = \exp(E / E_R) \cdot \exp(-E_O / E_R) \quad (63)$$

where E_R is the energy with respect to reduced mass of a system and F_C is a curvature force created during accelerated motion of reduced mass variation with time 't' accordingly. Here effort has been made to observe the effect on above proposition during the case of force of gravity.

In the above scenario, the total picture becomes different. The disordered form of energy takes the form of potential energy developed during free fall motion under gravity g of a body, i.e.

$$\begin{aligned} r &= H \\ \int_{r=0} F_g \cdot dr &= m g H ; F_g = m g \end{aligned} \quad (64)$$

Here F_g is the force of gravity and H is the height. Then, the disordered form of energy E_D becomes

$$E_g = E_D = 2 m d^2 / t^2 \quad (65)$$

The free fall motion of body is under a quantum field. We consider here that the ordered form of energy $E_O = E_{\text{photon}}$. By using these two different values of energy, we observe that Order-Disorder Transformation methodology provides following equation:

$$\iint \Delta E \cdot \Delta t = 1 / 2\pi \quad (66)$$

which is an equation of the Order-Disorder Uncertainty Principle in integration approach under maximum quantization effect. It is remarkable that the contribution from statistical distribution function becomes

$$f(E, t) \rightarrow 1 \quad (67)$$

which may be due to complete quantization effect. So no quantum field effect is observed. This may be called as Zeroth Law of Gravitation. Similar observations were noticed by Chandrasekhar [19] (MGR: Modern Gravity) to the condition for the absence of any gravitational field associated with the vanishing of the curvature tensor. According to Einstein Gravitation (EGR), the gravity is a manifestation of the "curvature of space-time". This view of Einstein implicitly defines gravity in MGR of spirituality state.

10. QUANTUM THEORY OF SPIRITUALITY

Spirituality gives meaning to human life. For knowing the meaning to life spirituality is important. Spiritualism is searching for something sacred which encourages people to strive towards becoming a better person unlike religion, spirituality is not built on rules, but individual choice and growth. It is usually associated with searching within oneself instead of finding validation of the unknown through an institution or group of people with common religious practices. Since spirituality gives people a sense of freedom that religion sometimes cannot. Spirituality relieves stress and promotes peace. It also adds to happiness and contentment.

The ultimate reality and goal of everyone is for the pursuit of the ultimate truth. Science looks at “objective reality”. In terms of basic concepts, quantum theory contains some parallels to religious scriptures. The well-known Schrodinger’s cat is a thought experiment illustrating this bizarre concept. Abstract concepts may be illustrated through modern technology. For example the sloka “Om Purnamadah, Purnamidam, Purnat Purnamudacyate, Purnasya, Purnamadaya, Purnamev avasisyate” can be illustrated by a hologram. The Sanskrit shloka implies that pure universal consciousness is complete form of that Superpower, who is only purely truthful and perfect.

To worship God or to remember the Superpower with full concentration is meditation associated with spirituality. Lord Krishna in Bhagwadgeeta said “Those who worship me as Sagun Brahm (with form) or Nirgun Brahm (without form) will finally attain me. Similarly a parallel expression is according to quantum physics that every elementary entity, either in form of matter (with form) or radiation (without form): $E = mc^2$, may exhibit both particle behavior (with form) and wave behavior (without form) - dual nature. It has already been discussed above that the dual nature of matter and radiation is due to existence of order and disorder characteristics in them, which is a fundamental truth according to Unified Scientific Theory of the Systems of Universe and Nature. So it is understandable that order disorder interactions or order disorder transformations are responsible for the development of spiritualism, i.e., spirituality.

According to the Unified Scientific Theory the order-disorder interaction plays a prominent role during which a person with full concentration controls the organs of the physical body system. At that time there is attainment of ordered state, which may be pronounced as spirituality state. That is when a person does not observe any difference between order characteristic and disorder characteristic, that state is spirituality state and that person is called spiritual. People like the Lord Buddha attained that supreme spiritual state. According to him, humans are themselves the cause of their own sufferings. Suffering is a type of disorder.

We have already investigated that the Life- Soul complex energy (ordered form of energy) and the movement with very high velocity of Life particle quantized energy of Lifton (disordered form of energy) under relativistic concept through Order Disorder Transformations generates two types of energies, one associated to positive thoughts and the other associated to Maya in human mind. The positive thoughts arise in human mind due to God’s wills and negative thoughts due to interruption of Maya. Such a theory of success and failure has been already discussed in God equation. The generated positive thoughts provide concentration of mind and development of spirituality state.

11. CONCLUSIONS

“Everything has the same form”

(Plato)

“If you want to find the secrets of the universe, think in terms of energy, frequency and vibration.”

(Nikola Tesla)

“The laws of Physics are the same everywhere. The Theory of Relativity supports it.”

(Albert Einstein)

In a discussion between the four scientists: Clark Maxwell, Schrodinger, Albert Einstein, and Stephen Hawking, it was realized that there should be one theory, which should describe mostly the dynamics of every event and action of the universe. Hours before the death of Einstein, he was still trying to prove and establish the ‘Theory of Everything’ hoping that it would take us one more step closer towards the Laws of Universe.

It can be concluded that the text of this article itself supports to fulfill the dreams of the above-mentioned pioneers and hence the Unified Scientific Theory for the Systems of Universe and Nature may be called a “Quantum Theory of Everything”.

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