Special Article

QUANTUM EXISTENCE

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ABSTRACT

The foundation of Quantum Physics is based on Planck's quantum concept of the discrete quantity of energy. All matter and bodies possess order and disorder - quantum characteristics. A quantization process takes place in every event or action during Order – Disorder Transformations (ODTs), as is also evident in cases of life and gravity, which are quantum realm-special states on the earth provided by nature through the Sun.   .

The production of life in an ordered state is in quantum form. Living life forms a disordered system. Complete death occurs in an ordered state. As the human body temperature goes on decreasing and T $\rightarrow$ 0, Δ S $\rightarrow$ 0, and so the life energy goes on decaying and the tendency for the occurrence of death develops and the condition of t $\rightarrow$ 0 signifies complete death.

The ODTs equation:
$$\iint f(O, D)\, \Delta O\, \Delta D = \iint f(t, E)\, \Delta t\, \Delta E = (1 / 2\pi)$$
$$\text{for } f(O, D = f(t, E) \rightarrow 1 \text{ (maximum quantization condition)}$$

is the quantum equation of existence, which is similar to the God equation and the equation of zero quantum gravity. This reveals the fact that the beginning and end of existence is quantum. The success of the quantum theory of everything based on ODTs and their applications is self-consistent and self-justified.

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1. INTRODUCTION

Humans cannot ignore or deny the reality behind their collected knowledge through their cultural heritage foundation as the basis of their living lives. In Hindu Veda-Rig-Veda (10:129) it is mentioned that only the point particles of high density were there before the evolution of the universe. The existence of Brahm, atoms and Nature is everlasting. Root is the composite form of matter. Brahm [Brah (God) + Om (Soul): enlightened the whole universe, i.e., the whole existence is the creation of that superpower whom humans call God, although that invisible entity stands only as a subject of perception and experiences.

All bodies and systems of our universe have some reasoning and importance for their existence. Their existence has become challenging for human beings. The origin of quantum existence is that it is the system which works best in order for the type of universe we live in, function well and support the physical foundations of our lives. The existence of the quantum principle gives a physical basis of support for the idea of free will and non-determinisms. This is because even the foundation of matter and energy is inherently unpredictable and many features of quantum existence are very important for our lives. According to one important feature, quanta of energy in electromagnetic radiation are important because, if it were not so, then a cool object would not have enough energy to radiate any visible light or parable heat.

About 13.7 billion years ago, the 'Big Bang' created a big mass of matter that eventually gave rise to life, the universe, and everything. As the universe expanded, according to current scientific understanding, matter collected into clouds that began to condense and rotate. In the beginning, everything was symmetrical (order) in nature but later on some happenings such as the 'Big Bang' or universe expansion developed randomness (disorder) behavior in existing matter and radiation.

There are four fundamental forces which govern everything in our universe. (i) Strong forces, which hold protons inside the nucleus of an atom, (ii) Weak forces, which are responsible for radioactive decay in the nucleus, (iii) Electro-magnetic forces, which tell us how charges interact and also about electromagnetism and (iv) Force of gravity, due to which planets go around the Sun and all about the issues related to gravity and gravitation. Gravity holds us and everything on the surface of the earth or draws us towards the center of the Earth.

According to the first principle of Atomic Gravity, it may be understood that at what point on Earth does gravity become zero or negligible. In recent years, it has become noticed that there are five places where gravity becomes zero on earth or where gravitational force does not work. Gravity exists everywhere in the universe and is the most important force affecting all matter in space. Without gravity all matter would fly apart and everything would cease to exist.

Gravity problems may be discussed on the basis of the principles of quantum mechanics. Quantum effects cannot be ignored such as in the vicinity of a black hole or similar compact astrophysical objects where the effects of gravity are strong.

The Order–Disorder Scientific Philosophy [1, 2], later referred to as the "New Unified Scientific Theory" [3] has discussed that the Universe and Nature are two different entities which form disordered and ordered systems respectively. Such features affect every event and action. Order and disorder form a set (order, disorder) of conjugate quantities similar to other sets (complete, incomplete), (pleasure, sorrow), (symmetry, asymmetry), and (death, life) etc. The existence of one quantity has no meaning

without the other quantity of each set. For instance, order within disorder and disorder within order is the characteristic of all existing bodies and systems.

2. ORDER–DISORDER STATES OF MATTER AND RADIATION

In Physics, the terms order and disorder designate the presence or absence of some symmetry or correlation in many particle systems. In condensed matter physics, systems typically are ordered at low temperatures; upon melting, they undergo one or several phase transitions into less ordered states. The melting of ice and the demagnetization of iron by heating are good examples of order – disorder transitions. The degrees of freedom with respect to order and disorder can be translational (crystalline ordering), rotational (ferroelectric ordering) or a spin state (magnetic ordering). If a disordered state is not in thermodynamic equilibrium, one speaks about 'quenched disorder'. Glass is obtained by quenching (super cooling) a liquid.

Ordered and disordered states exist in both matter and radiation. First we would like to discuss the cases of matter. Generally, three states of matter: solid, liquid and gas are known by their neighboring atomic distances in increasing order due to which their structural configurations call them solids to be in ordered states and fluids (liquids and gases) in disordered states. If the close atomic arrangement in solids changes and the long-range ordered structure shrinks somehow then disorderliness develops (fluids) due to which irregularity and non-periodicity arises and fluids possess isotropic behavior. Such happenings take place during order-disorder transformations and that's why solids form an ordered system (long range order) and fluids form a disordered system (short range order). During the transformation process from a solid to a liquid, some form of energy takes place and different intermediate condensed states develop in metals and crystals, such as liquid metals and liquid crystals, which are referred to as condensed materials of disordered solids [4, 5], as can be experimentally observed through their diffraction patterns.

Generally, in the thermodynamic concept, high thermal energy is associated with disordering and low thermal energy with order. Such arrangements where energy is spread over many atoms are more disordered, having more entropy than those arrangements where it is more concentrated energy which may be transiently concentrated over a few atoms, but it will never spontaneously group up so that it is on a few atoms in a system.

Entropy measures the amount of disorder in energy as well as the amount of disorder in atoms. Energy such as thermal, electrical or chemical energy always flows from places where it is plentiful to places where it is absent. Arrangements where energy is spread over many atoms are more disordered than of more entropy cases where arrangement is more concentrated.

3. ORDER–DISORDER QUANTUM CONCEPTS

The failure of classical and statistical concepts as observed in cases of the kinetic theory of matter and specific heat cases, there was a need of some special types of concepts by which unsolved problems of physics may be tackled. Quantum concepts of quantum physics were introduced to solve such problems [6]. Quantum physics based on quantum concepts brought revolution after the establishment of the quantum theory of radiation by Planck in 1900. Later on order-disorder quantum concepts of this author have been found successful in describing the dynamics of different bodies and systems of the Universe and Nature. Matter and radiation/energy both possess a dual nature of particle and

wave. This dual nature helped Einstein in his proposition of the inter-conversion of matter and energy.

In the order-disorder concepts, we consider disorder as a conceptual form of photon energy, $\mathcal{E}_{Ph} = h\upsilon = h / (Q_F t)$; while order as a conceptual form of energy for maximum quantization, Q_F, ($Q_F = \lambda/c\,t : Q_F \to 1$), $\mathcal{E}_{Ph} = h / t$. 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 energy [7], $E_L = \mathcal{E}_T \upsilon = \mathcal{E}_T /(Q_F t)$, which for maximum quantization Q_F, ($Q_F = \lambda / c\,t : Q_F \to 1$) becomes $E_L = \mathcal{E}_T / t$. E_L is the energy of a bio-radiant particle as considered earlier. We refer to $\mathcal{E}_T$ as an SYA constant.

We have already seen of the role of the quantum parity condition, $\int \Psi\, \Psi^* \, d\tau = 1$, in developing Order–Disorder Transformation (ODT) equations. Also, in an earlier study [6], the importance of the quantization condition, $Q_F = \lambda / c\,t$, has been discussed.

4. ORDER–DISORDER TRANSFORMATIONS (ODTs)

The well-known Order-Disorder Transformation equation may be described as follows [2].

$$\iint f\,(O, D\,)\, \Delta\, O\, \Delta D \;=\; \iint f\,(t\,,\, E\,)\, \Delta\, t\, \Delta\, E \;=\; (1 / 2\pi) \;=\; \iint f\;(t, T\,)\, \Delta\, t\, \Delta T \qquad (1)$$

where the symbols have their usual meanings. Quantum concepts were used in describing the above ODTs. This equation is also known as the Order-Disorder Uncertainty Principle in the integrated approach. A number of applications of ODT equations have been discussed in earlier articles [3, 8-11] for different cases of atomic, molecular, bio-molecular, biochemical, biomedical and social systems and satisfactory results have been obtained. Those earlier studies were concerned with both non-living and living materials.

5. APPLICATION OF ODTs IN HUMAN LIFE-DEATH SYSTEMS

The secrets about the production of life and the occurrence of death have long been challenging and mysterious issues for human beings. The beginning and end of human life are naturally defined by the onset and cessation of organism function. The real dynamics of the beginning and end of human life is a very complicated process. A human being is a biological organism whose consciousness supervenes from its basic make-up. We would like to discuss the inevitable process towards the biological phenomena of the production of life and occurrence of death. It appears that death is an event that takes place at a set point in time when the collection of body processes that maintains homoeostasis finally cease [12]. There is a need to discuss the biological energy decaying process of death. There is also a need to discuss a criterion used for the determination of death, i.e., the transition from the state of living to the state of non-living.

Living beings possess some physical principles of conservation and transformation of matter and energy. Sun energy is a resource energy for every entity on earth and also the maintenance of life depends on the transformation of energy from the sun. In an earlier study [13], the dynamics of life and death phenomena were discussed on the basis of Order–Disorder Transformations (ODTs). The total supplied energy to the human body has been considered as the sum of photon energy E_P, Lifton energy E_L and Gibbs free energy ΔG.

$$E_{Total} = E_{Ph} + E_L(t, T) + \Delta G = h/t + (\lambda/ct) k_B T + \Delta G \tag{2}$$

Here the symbols have their usual meanings. According to the theory of bio-radiation [14], the radiation inside the human body is produced by some kind of resonators which are formed by the quantized energy particle, Lifton. The energy E_{Total} was considered as an ordered form of energy. From Einstein's mass–energy conversion formula $E = mc^2$, we considered mc^2 as a disordered form of energy. There is one more energy Life soul energy, $E_{L-S\,Complex}$, which controls the human actions. According to an earlier study [11], human life-soul complex energy (bio-electromagnetic radiation – Cosmic) $E_{L-S\,Complex}$ has been described by

$$E_{L-S\,Complex} = (1/2\,\pi\,t)\ \exp(E_{Ph}/E_L) \tag{3}$$

where the photon energy E_{ph} and Lifton (life particle) energy E_L are the same as mentioned above. In this study, we have included Life – soul energy $E_{L-S\,Complex}$ in E_{Total} and now E_O is the sum of four energies. It is done in order to understand the role of Life-Soul Complex energy $E_{L-S\,Complex}$ in the dynamics of the life-death system under order-disorder transformations. The ODT equations are described by

$$\iint f(O, D)\,\Delta O\,\Delta D = \iint f(t, E)\,\Delta t\,\Delta E = (1/2\pi)$$
$$= \iint \exp(E/mc^2)\exp[-\{h/t + (\lambda/ct)k_B T + \Delta G$$
$$+ (1/2\,\pi\,t)\exp\{(-h/t)/\{(\lambda/ct)k_B T\}\}/\overset{2}{mc}]\,\Delta t\,\Delta E$$
$$= (1/2\pi) \tag{4}$$

On solving the above equation, we obtain

$$E \cdot t = (1/2\pi)\exp(\Delta G/mc^2) + (1/2\pi)[(h/t + \mathcal{C}_T/t + \Delta G)/mc^2]\,\ell og\,t$$
$$+ [(1/2\,\pi\,t)\exp(-h/\mathcal{C}_T)/\overset{2}{mc}]\cdot(1/2\pi)[(h/t + \mathcal{C}_T/t + \Delta G)/mc^2]$$
$$+ [(1/2\,\pi\,t)\exp(-h/\mathcal{C}_T)/\overset{2}{mc}]\cdot(1/2\pi)\exp(\Delta G/\overset{2}{mc})\,\ell og\,t \tag{5}$$

Here $\Delta G = \Delta H - \Delta S$. H is the Helmholtz energy function and S represents entropy. All four terms on the right-hand side of equation (5) are constant terms. The third and fourth terms contain Life-Soul complex energy. As the body temperature goes on decreasing and $T \to 0$, $\Delta S \to 0$ and the third and fourth terms on the right-hand side go on decaying and following a new form of the above equation which indicates the tendency for the occurrence of death.

$$E \cdot t = (1/2\pi)\exp(\Delta H/mc^2) + (1/2\pi)\exp[(h/t + \Delta H)/mc^2]\,\ell og\,t \tag{6}$$

On the right-hand side of the above equation, the behavior of the time factor with respect to the energy factor describes an exponential decay, which reveals that, for $t \to 0$, energy contribution in action process moves to ∞ value while at very large span to zero. It reveals the fact of the decaying process of energy as life span increases. Finally, the first term remaining describes the following action process.

$$E \cdot t = (1/2\pi)\exp(\Delta H/mc^2) \tag{7}$$

The remaining energy (remains after death for some moment), ΔH, goes on decaying and lastly $\Delta H \to 0$ at the state of death. Actually, all energy during death converts into heat energy (First Law of Thermodynamics), which is a function of T and S and hence $\Delta H \to 0$. In this transition period during the decaying of ΔH, the function of brain tissues might end. After death, what remains is the following equation:

$$\iint \Delta t \, \Delta E = 1 / 2\pi \tag{8}$$

which is the quantum equation of the Uncertainty Principle in the integration approach. Under a maximum quantization effect after the decaying of all types of energy of the human body, what remains is quantum. This happening shows that quantum is the last existence. It is remarkable that the action process of human life and death phenomenon begin from quantum and end on quantum through the following equation

$$\iint f\,(O, D)\,\Delta O\,\Delta D \;=\; \iint f\,(t\,,E\,)\,\Delta t\,\Delta E \;=\; (1/2\pi) \tag{9}$$

which ends to the state of Eq. (8), which is the quantum law of not only life but of whole existence. When, in Eq. (9), the distribution functional quantity $f(O, D)$ or $f(t, E) \to 1$, there is complete quantization, which is a natural happening under order-disorder transformations. In an earlier study [13], no such happening was observed.

6. QUANTUM GRAVITY

According to Einstein, gravity is the curvature of the universe and world gravity is the curvature of space-time caused by massive objects which wrap and curve the universe. He also realized that the effects of acceleration and gravity were indistinguishable. Space wraps under accelerated motion. Thus, according to Einstein, gravity is the curvature of space-time.

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

$$\iint f\,(\,E_R\,,t\,)\,\Delta E_R\,\Delta t \;=\; 1 \,/\, 2\pi F_C \tag{10}$$

Here $f\,(\,E_R\,,t\,) = \exp(\,E \,/\, E_R\,)\,.\,\exp(\,-\,E_O \,/\, E_R\,)$ $\tag{11}$

where E_R is the energy with respect to the 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 the above proposition during the case of the force of gravity.

In the case of the force of gravity the disordered form of energy takes the form of potential energy developed during free fall motion under gravity g of a body, i.e.

$$\int_{r=0}^{r=H} F_g \,.\, d\,r \;=\; m\,g\,H \tag{12}$$

Here F_g ($F_g = m\,g$) is the force of gravity and H is the height. Free fall motion of a body under gravity describes that height H is given by

$$H = (1/2)\,g\,t^2 \tag{13}$$

By using this value of H [$H = u\,t + (1/2)\,g\,t^2 = 0 + (1/2)\,g\,t^2$], the potential energy E_{Pot} takes the form

$$E_{Pot} = (1/2)\,m\,g^2\,t^2 \tag{14}$$

By taking potential energy as a disordered form of energy E_D and an ordered form of energy of a photon as $E_O = h/t$ (h = Planck's constant), the Order–Disorder Transformations (ODTs) equation finally gives

$$\iint Q_F\,\Delta E.\,\Delta t\ = 1/2\pi \tag{15}$$

where the quantization factor $Q_F \rightarrow 1$.

Here we observe the quantum nature of gravity. Earth's gravitational field is anything but even its lumpy changes depend on where we are. But what would happen if we lost it all together? In an earlier study [6] with the value of the potential energy $E_{Pot} = 2md^2/t^2$ [where the potential energy E_{Pot} was obtained after rationalizing the factor 'g' between the equations $E_{Pot} = m\,g\,d$ and $d = (1/2)\,g\,t^2$; where d stands for distance], we obtained the following same results of zero gravity:

$$\iint Q_F\,\Delta E.\,\Delta t\ =\ 1/2\pi \tag{16}$$

where $Q_F = 1$, which was the case of complete quantization and the Zeroth Law of Gravity. The potential energy considered as a disordered form of energy was not having the gravity factor 'g', while the present form contains the 'g' factor. Both studies give us an understanding about quantum gravity phenomenon and confirm the views of Einstein that the effects of acceleration and gravity are indistinguishable. Thus, we come to know that gravity is a quantum phenomenon.

7. CONCLUSIONS

(i) The equation $\iint \Delta O\,\Delta D = 1/2\pi = \iint \Delta t\,\Delta E$ may be referred to as the quantum equation of whole existence, which is the result of the ODTs equations under maximum quantization f(O, D) = f(t, E) $\rightarrow$ 1.

(ii) The beginning and end of existence is quantum.

(iii) The whole existence has been composed by that quantum which is complete, perfect and truthful. Similar concepts exist in Descartes Theory of Rationalism [15], i.e., the small particle atom cannot exist until the compositor of whole existence does not exist.

(iv) Quantum nature in a system develops through the quantization process under Order–Disorder Transformations.

(v) Lifton and photon play prominent roles in human life-death systems.

(vi) The production of life in an ordered state is in quantum form. Living life forms a disordered system. Complete death occurs in an ordered state.

(vii) When there is no existence of consciousness, life-soul energy (resource energy) in the human body decays and the occurrence of death phenomenon takes place, whether it occurs normally, during medical treatment or is accidental.

(viii) The complete quantization in cases of life and earth gravity reveal the fact that both follow quantum characteristics, $\iint \Delta t \, \Delta E = 1/2\pi$, which is a gift for Earth provided by Nature through the Sun under Order-Disorder Transformations (ODTs). Life and gravity are quantum realm, special states on earth − the blessings of the super power, God.

(ix) The success obtained by results and dynamics of the systems such as atomic, molecular, biomolecular − biochemical, biomedical, social, and quantum gravity itself justify the validity of the Quantum Theory of Everything or the New Unified Scientific Theory for the systems of the Universe and Nature.

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