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Theory of Bio-Radiation: Lifton

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Abstract- A biomolecule present in living beings and a molecule present in non- living material differ in respect of having growth and consciousness. This paper presents the theory of quantization of Lifton, a biomaterial particle. The quantized particle Lifton is the content of bio-radiation. In earlier studies the importance of the biomaterial particle has been observed as a biocatalyst and in the activities of human life and death systems. The dynamics of bio-radiation quantized particle has been found different than the ordinary radiation quantized particle, photon. The difference lies in their energy values and methodology followed. The photon energy h υ (υ = 1/ t) differs from the Lifton energy ϵ_T υ . However, the dimensions of Plank's constant ' h ' and SYA constant ϵ_T is same (Energy x time) , i.e .the dimension of action. Any action of Nature and Universe may be described on the basis of Order-Disorder Transformation (ODT)theory of the author(SKS)as observed earlier[http://it.science.cmu.ac.th/ejournal] of Order- Disorder Scientific Philosophy.

The dynamics of SYA radiation formula of Bio-radiation (having Lifton quantized particle), $E_\lambda = [(8 \pi / \lambda^4) \{(\mathbf{Q_F} . k_B T) / (\exp \mathbf{Q_F} - 1)\}]$ and its limiting value in shorter wavelength region ($\lambda T << 1$) obtained here differ from ordinary radiation (having quantized particle photon) formulae. It is noticeable that the product of quantity $\mathbf{Q_F}$, the quantization factor and the average energy for each vibrational degree of freedom, $k_B T$ is the quantized energy E_q of biomaterial Lifton, i.e, Lifton is the quantized particle of bio-radiation.

Key Words: Bio-Radiation, Lifton, Quantized energy particle, Order and Disorder states, Order- Disorder Transformations, Conservation and Transformation of matter and radiation, Human Body System, Life and Death Systems.

1. INTRODUCTION

A bio-molecule (of Flora and Fauna) differs from a molecule of non-living material in respect of having growth and consciousness activities. They also differ in the effects of external radiations. Internal bio-radiations as well as tissues and organs of human body system play a prominent role in the internal activities as well as with the interaction of external radiations. Order- Disorder Transformations [1, 2] with respect to nature, universe and super natural power have revealed their prominent role in human life and death systems [3, 4] . In all the activities of nature and universe the existence of the role of action (Energy x time) through matter and radiation has been involved all around [5 - 8]. The role of Planck's constant ' h ' (6.55×10^{-27} erg.sec) in atomic system and of SYA constant ϵ_T in bio-molecular system have presented the differences in the behaviours of non- living and living materials. The dimension of ' h ' and 'ϵ_T ' are same as that of action (Energy x time).

All living beings on earth possess some physical principles of conservation and transformation of matter and radiation. Sun is the main source for the transformations of energy and matter to the earth and flora and fauna living systems. In such transformations of energy the quantized particle, photon plays important role. All the existing elements on earth and in living beings are in a transformed form obtained from sun energy.

The purpose of present study is to explore the happenings of the transmission of energy and their effects inside the human body systems. Regarding it we consider that the transmission of bio-radiation takes place in human body system in form of a special type of bio-resonator ' lifton' developed through Order – disorder transformations. On the basis of quantum aspects, a bio-radiation formula for the studies of bio-molecules in human body system has been developed.

II THEORY

Let us assume that the radiation inside human body is produced by some kind of resonators. If we consider the displacement x of a bio- resonator in simple harmonic form

$$x = A \sin [(2 \pi E_q (T , t)] \quad (1)$$

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

$$E_q = E_q (T, t) = \epsilon_T \upsilon = \epsilon_T / t = \mathbf{Q_F} . k_B T, \quad (2)$$

where 'ϵ_T' is called SYA constant and $\mathbf{Q_F}$ ($\mathbf{Q_F} = \lambda / c t$, say) is the quantization factor. The dimension of 'ϵ_T' is that of energy x time. The kinetic energy, $E_{kinetic}$ at the equilibrium position of the bio-resonator at the instant ' t' is given by

$$E_{kinetic} = \tfrac{1}{2} m [(dx / dt)_{max}] ^2 = 2 \pi^2 A^2 m (\epsilon_T)^2 / t^4 \quad (3)$$

According to quantum theory

$$n \epsilon_T \upsilon = E_{kinetic} = 2 \pi^2 A^2 m (\epsilon_T)^2 / t^4 ; n : \text{integer} \quad (4)$$

$$\text{Or} \quad n \upsilon = 2 \pi^2 A^2 m \epsilon_T / t^4 \quad (5)$$

Also momentum p_x of bio – resonator is given by

$$p_x = (2 \pi A m \epsilon_T / t^2) \cos [(2\pi E_q (T, t)]$$

$$= B. \cos [(2\pi E_q (T, t)] \quad (6)$$

where $B = (2 \pi A m \epsilon_T / t^2)$ .From eqs. (1) and (6) we obtain

$$(x^2 / A^2) + (p_x^2 / B^2) = 1 , \quad (7)$$

which is the equation of an ellipse. The area of the ellipse (π A. B) formed by above equation may be described by the "phase integral" ($\int_{phase} p_x . dx$)

$$\int_{phase} p_x . dx = \pi A. B = 2 \pi^2 A^2 m \epsilon_T / t^2 = n \upsilon t^2 ; .$$

$$= n. t \quad (8)$$

The form of above equation in angular motion may be represented by

$$\int_{phase} p_\Phi . d\Phi = n. t ; \quad (9)$$

where $p_\Phi = I \omega = mr^2\omega$. I is the moment of inertia of the system and ω ($\omega = 2 \pi / t$). Finally eq. (8) and eq. (9) give

$$p_\Phi = mr^2\omega^2 = n = \text{total energy}, \quad (10)$$

which on the basis of the law of equipartition of energy allows us to associate total energy $k_B T$ of a bio-vibrator with each degree of freedom and the Lifton energy E_q to be considered as quantized energy.

Now we assume that the energy distribution of the resonators obey the law of Maxwell and Boltzmann. The radiation spectrum arise in human body system in terms of emission and absorption of quantum radiation in discrete quanta, each of which contains amount of energy E_q [$E_q = E_q (T, t)$] of Lifton, whose radiation wave length λ is related by

$$\lambda = \epsilon_T / p = \lambda k_B T / c p \quad (11)$$

$$\text{Or} \quad c p = k_B T \quad (12)$$

Eqs. (10) and (12) emphasis about the quantization aspect. It is considerable that the radiation in biomaterials exchange energy with their surrounding not continuously but in discrete units in the form

$$(E_q)_n = n \epsilon_T \upsilon \quad (13)$$

The available states are only those for which energy is 0 , $\epsilon_T \upsilon$, 2 $\epsilon_T \upsilon$, 3 $\epsilon_T \upsilon$, …… etc, where υ is a characteristic frequency of N oscillators. The number N_n in a state of energy $(E_q)_n$ according to Boltzmann distribution law becomes

$$N_n = N_0 \exp [- (E_q)_n / k_B T] = N_0 \exp [- n \epsilon_T \upsilon / k_B T] \quad (14)$$

where N_0 is the number of oscillators in lowest energy state. Then the total number N of the oscillators is the sum of all $\Sigma_n N_n$ (from n = 0 to n = ∞).

Thus, $N = \Sigma_n N_n = N_0 \sum_{n=0}^{n=\infty} \exp [- n \epsilon_T \upsilon / k_B T]$ (15)

The total energy U is the sum of $N_n (E_q)_n$:

$$U = N_0 \sum_{n=0}^{n=\infty} n \epsilon_T \upsilon . \exp [- n \epsilon_T \upsilon / k_B T] \quad (16)$$

Thus for the average energy $\bar{E}$ of an Oscillator

$$\bar{E} = U/ N = \epsilon_T \upsilon / [\exp\{(\epsilon_T \upsilon / k_B T)\}] = \{ \mathbf{Q_F} . k_B T\} / \{\exp \mathbf{Q_F} - 1\} \quad (17)$$

Or $\bar{E} = E_q / \{\exp \mathbf{Q_F} - 1\}$ (18)

The number of modes of vibration or degrees of freedom per unit volume in the wave length region λ to λ + d λ is given by

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

Or $$E_\lambda = [(8 \pi / \lambda^4) \{ \mathbf{Q_F} . k_B T\} / \{\exp \mathbf{Q_F} - 1\}] \quad (20)$$

where $8 \pi / \lambda^4$ is the number of degrees of freedom per unit volume. We call above equation as SYA Formula of Bio- radiation.

Case – I : When λT >> 1 (Longer wave length limit)

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

Case- II : When λT << 1 (Shorter wave length limit)

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

In eqs. (20) and (22) there exist a quantity $\mathbf{Q_F}$ the quantization factor. Also in above three eqs. (20), (21) and (22), $E_\lambda \propto k_B T$. Here $k_B T$ is the average energy for each vibrational degree of freedom for vibrator, which from eq. (12) equal to c p. If we remove the quantity, $8 \pi / \lambda^4$, the number of degrees of freedom per unit volume from eqs. (20) , (21) and (22) we find the quantities of energy values $[\mathbf{Q_F} / \{\exp \mathbf{Q_F} - 1\}] k_B T$, $k_B T$ and ($k_B T . \mathbf{Q_F}$) . $\exp \mathbf{Q_F}$, respectively for these equations. The values of eqs. (20) and (22) are in closer as compared to the value of eq. (22). It is noticeable that the product of quantity $\mathbf{Q_F}$, the quantization factor and the average energy for each vibrational degree of freedom, $k_B T$ is the quantized energy E_q of biomaterial Lifton quantized particle.

III RESULTS

Lifton is the quantized energy particle of Bio-radiation as Photon is quantized energy particle of Sun radiation or ordinary radiation.SYA Bio-radiation formula described here follows different values in longer wave length limit and shorter wave length limit.

IV CONCLUSIONS

It is concluded that the radiations inside human body are produced by some kind of resonators. The quantization of energy $k_B T$ of a bio-vibrator with each degree of freedom provides the Lifton energy E_q [$E_q = E_q (T, t) = \epsilon_T \upsilon = \epsilon_T / t = \mathbf{Q_F} . k_B T$], i.e, Lifton is the quantized particle of bio-radiation.

It is noticeable that the dimension of SYA constant and of Planck's constant ' h ' is same as that of Action (Energy x time). The dynamics of SYA radiation formula of Bio-radiation (having Lifton quantized particle), $E_\lambda = [(8 \pi / \lambda^4) \{ \mathbf{Q_F} . k_B T \} / \{\exp \mathbf{Q_F} - 1\}]$ and its limiting value in shorter wavelength region (λT << 1) obtained here differ with 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 (λT >> 1) region. It is noticeable that the product of quantity $\mathbf{Q_F}$, the quantization factor and the average energy for each vibrational degree of freedom, $k_B T$ is the quantized energy E_q of biomaterial lifton, which is the quantized particle of bio-radiation.

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