

## A Note on the New Dynamic Particles in Living System

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### Abstract

We have proposed the existence of a new dynamic particle “Movion” in the living body which control the cellular commutations. The microscopic cellular systems are composed of microscopic electrons and protons which are relativistic particles having dual character of particle and wave (photon) depending on the velocity of the particle. We call this particle with dual character Movion. This Movion concept can be used to explain the dynamic character and the communication process of the living cells.

### 1. Introduction

Quantum mechanics is the underlying principle behind the working of the microscopic world of atoms and molecules in living and non living systems. Most of the modern appliances,

for instance, mobile phone, computer, transistor, laser, electron microscope and the global positioning system, cellular communications are based on particles following the quantum mechanical laws [1-5]. In biological system, we call it quantum biology. Photosynthesis can only be explained by quantum coherence. To understand the physics of black holes, both quantum mechanics and general theory of relativity (GTR) must be applied as these objects are small and at the same time are super massive. The problem is that GTR and quantum mechanics are mutually exclusive theories as they are based on different axioms and cannot be applied simultaneously. Presently, one of the greatest challenges in physics is to unify the two theories [6-9]. In living system, however, we see a living cell is composed of heavy molecule (obeying gravitational laws (GL)) while small atoms and protons (follow the relativistic laws) . But both these two laws are functioning together and

inseparably in biological system. This new type of particle obeying both relativistic and gravitation laws might be termed as “Movion” which governs the super fast cellular communion generating biophotons with the expense of entropy change [10-14]. In this article we just discuss the generation of such biological particle following both GTR and the GL.

## 2. Procedure and Theory:

According to Einstein’s, when a radiation of energy  $h\nu$  is incident on the substance which ejects a photo-electron of maximum velocity  $v$  and gives

$$h\nu = \frac{1}{2}mv^2 + \omega_0 \quad (1)$$

where  $h$ ,  $\nu$ ,  $m$ ,  $v$  and  $\omega_0$  are Plank’s constant, frequency of incident photon, mass of electron, velocity of electron and photo-electric work function respectively [2,4].

$$h\nu = \frac{1}{2}mv^2 + h\nu_0 \quad (2)$$

### 2.1. Threshold frequency assessment:

The frequency  $\nu_0$  is known as threshold frequency. A living cell may be

considered to be composed of both as heavy ( molecules and ions of low velocity) and very small relativistic (electron , protons of high velocity) particle all these are coupled with the cell and function cooperatively. This may be termed as the dual behaviour of the theory of living cell. According to this dual theory, a moving particle with velocity  $v$  of mass  $m_0$  has two parts, one particle part  $m$  exists as matter form and the rest part  $m_e$  is wave part equivalent energy [1]. These two parts retain their energy un-detached from each other. One increases with decrease of other. But the total energy is conserved. With increase of velocity, the particle part decreases while the energy of the wave part increases [10-14]. It has been considered that the cellular body is formed by a large number of smallest-Quantum-Energy Levels-of movion (QELM). The QELM has mass which is equivalent to energy of photon as discussed above. The QELM is believed to be the mass energy form of photon/electron associated with the cell and is named as ‘metom’ in living cell (equivalent atom in matter). Metom may be of different energy and frequency associated with different cells in the body and may also undergo transition from lower frequency  $\nu_m$  to higher frequency  $\nu_p$  state of photon due to the increase of velocity  $v$  of the atoms/proton associate

with the cells. The dual theory gives the total relativistic energy of the cell  $E_T (= m_o c^2)$  of moving particle,

$$E_T = E + E_e \tag{3}$$

where E and  $E_e$  are the moving-energy (energy of equivalent particle part governed by gravity) and dual-energy (photonic energy) of moving part governed by relativistic law, respectively. The moving particle energy (associated with cellular communication) and wave part-energy are  $E = mc^2$  and  $E_e = m_e L$  respectively. The Eq (3) can be represented by

$$E_T (= m_o c^2) = mc^2 + m_e L \tag{4}$$

where  $m_o$ , m,  $m_e$ , c and L are rest-mass, moving-mass, movion-mass (mass of equivalent-energy), velocity of light and quantum factor of energy, respectively.

The value of  $L = c^2 \left( \frac{m_o^2}{m^2} - \frac{2m_o}{m} + 1 \right) = c^2 \left( 2 - v^2/c^2 - 2\sqrt{1 - v^2/c^2} \right)$  and L varies from 0 to  $c^2$ . The above Eq (4) may also represent as classical form

$$E_T (= m_o c^2) = mc^2 + \frac{1}{2}mv^2 + \frac{1}{2}mv^2 \left( \frac{3}{4} \frac{v^2}{c^2} + \dots \right) \tag{5}$$

This theory is useful for any velocity and size of moving electrons in the cell for the explanation of physical laws of nature including the electronic and photonic flow in the living cell governing the communication process . This metom energy is also called the bio phonon energy which is considered to be responsible for the cellular communication. This energy is a also related to the entropy change of the cell with change of thermodynamic parameters inside the body or the change entropy  $\Delta S = \Delta E_T$

**Conclusion:**

This entropy or energy change is transmitted by the cell as biophoton for communication to the brain through neurons. By using this new theory it will be possible to explain the different phenomena in living systems. More detailed discussion showing how metoms are associated with life process and various metabolic functiona are yet to be discovered. Further studies are necessary for detailed understanding in such novel areas.

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