AN EXPLANATION FOR THE INDIVISIBILITY OF THE PLANCK'S QUANTUM BY EVTD2 ENTITIES THEORY

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ABSTRACT
The EVTD^2 entities theory allows to explain how is generated the electrons' electromagnetic effect and how it propagates in space-time. This new approach opens the way to Planck's quantum indivisibility understanding.
Keywords: EVTD^2 entities, electromagnetic effect and Planck's quantum.

1. INTRODUCTION

In his studies on the black body, Max Planck established the non-continuous character of energetic exchange values between the matter and electromagnetic waves. As consequence, discrete values were made evident as multiples of a non-divisible value: Planck's quantum. Further, the photon was defined as an indivisible equivalent energy quantity.

It is usually accepted that the electrons are instantaneously migrating on different orbits by changing their electronic level. Descending on a lower level, they emit the energetic differential as photons. This allowed the creation of Laser (stimulated emission) with an intermittent energetic pumping of active agent closed in a resonant cavity that, for gas is atomic, molecular or ionic low density.

In continuous emission of the black body the phenomenon is different because thermal energetic contribution is continuous and transmitted to macroscopic dimension matter, what means to great number of atoms. Trying to understand the enigma concerning Planck's quantum, it is necessary to have a different perception in comparison with the present days one on the electromagnetic wave creation by an electron if not, we shall still be in misunderstanding and we shall not have an acceptable explanation from the phenomenon point of view.

2. BASIC HYPOTHESIS: THE ENERGETIC ENTITIES EVTD^2 THEORY

The black body emission shows that for its isothermal curves, wavelength of the emitted waves are "packed" without discontinuities and they always have a maximal value of the brightness. The black body emission shows that there exists a displacement of the brightness B_λ of the isotherm to the short wavelength and simultaneously a growth of the brightness to a maximum $B_{\lambda max}$ when the temperature is growing. *The EVTD^2 theory represents the second phenomenological conjuncture, and actually, it is no more an individual particle "photon" but* a system of energetic composing the whole space that propagate the connected effects of undulated and corpuscular electromagnetism by shocks-impulsions what could be assimilated to a "pseudo particle" through a physical diffuse energy environment.
These EVTD2 entities are permanently generated by the action of an Electromagnetic Wave Mother (OME) under two-phase state. The OME is an electric and magnetic wave with longitudinal transmission (*progressive*). *This is the only basic postulate* of the new proposed theory [1, 2, 3] and [5] relative to a modulation of the whole space-time metrics that makes it completely quantified in time and space.

3. CONSEQUENCES ON UNDERSTANDING OF ENIGMATIC PLANCK'S QUANTUM

In order to understand the Planck's quantum as discrete value that is not divisible in fractional quantities especially during the black body emission, it is necessary to connect it to "photon" frequency or, better, as it is preferable to define it by the electromagnetic effect (EE) of radiation emission. Through the relation $E = h \cdot v$ defining the energy of an electromagnetic wave having the frequency v it is shown that Planck's constant, relative to quantum, is intimately close to the period T (or to the wavelength λ) of the considered wave. It means that for the period of a generated wave there will be an immutable energy and it will have an entity value analogous to "individuality". Then, this "individuality" of Planck's quantum cannot be conceived, in any case, as a random fraction of some cyclic phenomenon, because the electromagnetic wave is cyclic.

4. EVTD²: ELECTROMAGNETIC WAVE GENERATION AND TRANSMISSION

The electromagnetic wave is composed of two components: electric and magnetic waves whose amplitudes are synchronous and they propagate in orthogonal planes aligned to its direction. The electromagnetic wave puts the crossed space and matter in a double vibrating state in accord with its frequency and the amplitudes are defined by the two perpendicular components. In accord with the above mentioned for the EMW [1, 2, 3 and 5] considered as two plane longitudinal waves, one could understand that two superposed and aligned to the propagation direction EVTD² packs would be submitted to the same spatial excitation during a period. The two neighbor packs of entities will be under double vibrating alternate solicitation "pushed" and "drawn" by the chocks – impulses that will produce traction and contraction alternate symmetric stresses. In any case we arrive at the conclusion that for any considered couple of neighbor entities the solicitation for each of them will be alternate, symmetrical, and produced by the same movement quantity corresponding to the same speed c (being the same with those of the EMW). In fact all points of an EVTD² live temporally the same events simultaneously.
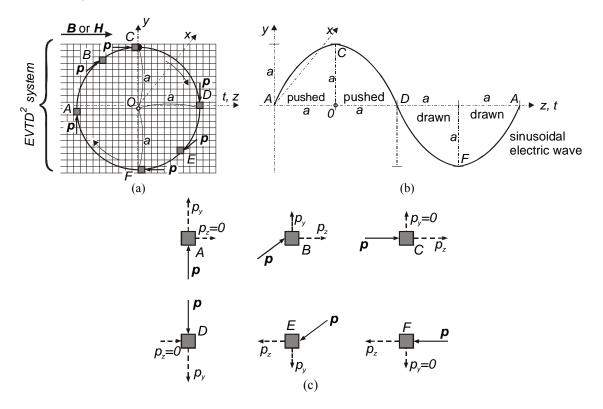

Figure 1. Orbital movement of the electron in an EVTD² environment (a); electric wave generation on z, t axis (b); variable direction shock-impulsions decomposed on the two orthogonal directions (c).

The couple of magnetic and electric components of EMW propagate, for example, respectively in the plane *Oyz(t)* and *Oxz(t)* and thus generating the EVTD^2 volume entities and a modulated space-time metrics and whole condensed matter. It is known from the EVTD^2 theory [1, 2, 3, 5] that during propagation the electromagnetic wave produces in the space filled with EVTD^2 entities a succession of elastic chocks–impulses, alternatively "pushed" and "drawn" (which could mean traction and compression) during a complete period of the orbital electron's itinerary around the atomic nucleus (Fig. 1).

Thus, the two electric and magnetic components are produced [1, 2, 3 and 5]. This becomes concrete for a half period of the electromagnetic wave effectively produced by "pushed" chocks–impulses during the half of the electron orbit what means on a pack of EVTD^2 equivalent to the orbit's ray perpendicular to the considered propagation direction. Analogous, for the next half period, in an equal pack of EVTD^2 during the second half of orbit it will produce the same effect but by "drawn" chocks–impulses (figures 1, a and 1, b). A very brief presentation of the hypothesis concerning the light generation and propagation included in the "All" theory (EVTD^2 theory [1, 2, 3, 4, 5] in which "a particle named photon", out of subject, is replaced by another very different duality of the electromagnetic wave and of chocks – impulses being much more representative was done here. The volume EVTD2 entities would have a cubic dimension equivalent with Planck's length (1,6.10^{-35} m.) and the EMV's frequency would be approximately neighbor with those of Planck ≈10^{44} Hz.

Now, in order to describe the sinusoidal variation of the electromagnetic wave, by the EVTD^2 entities theory, it is imperatively necessary to consider the electron's spin movement during its orbital movement, as described in [2, pg. 35–41]. If not, we shall find the classic case described in the figure 2, where the electron covers, in a certain manner, a round conductor and then, the electromagnetic field is no more evolutionary sinusoidal.
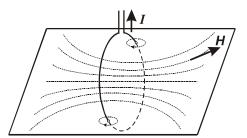

Figure 2. Electromagnetic field generated by an electric current covering a round conductor.

We must consider the electron spin movement in the same manner as the daily Earth rotation on its obit, having the spin axe perpendicular on the orbit plane. Thus, the rotating shocks-impulsions generate friction of electron mass on the diffuse energy EVTD^2 entities and shearing is brought about. In this manner *is mechanically produced the step by step shearing stresses between the borders of these entities, which could be considered, in our day's physics of fields' theory, as un incompressible fluid*. We also consider the next effect on *Oxt* axes: when the electron moves on its half orbit *ABCD* (fig. 1,a) and simultaneously is performing its spin movement, the considered shocks – impulsions are those caused by the front face of electron in the *Ox* axis direction and they give a certain sense to the shearing on the EVTD^2 entities frontally struck. If we consider the second half of the electron orbit *DEFA,* the shearing effects producing the magnetic vector variations in *Ox* direction, that have to be considered are placed behind the electron. Now we find that the shearing effect is opposite to the first one presented above and this will make the magnetic field vector to be in opposite phase, similarly to the electric field vector. The shearing can propagate from one EVTD^2 volume entity to its neighbor and its effect decreases with the distance. Than, we can assimilate this phenomenon with a polarization effect by magnetic poles, which could explain the apparition of magnetism in intimate matter – energy. It gives us the suggestion to consider *in accord with fields theory that the magnetic field issue as an effect of the kinetic moment due to spin and orbital movement of electron*. This conception of conventional physics on the magnetic field is perfectly illustrated from the phenomenon point of view by our study done through the EVTD^2 entities theory.

Now, concerning the transmission of this electromagnetic wave along the *Ox* axis, we also must consider the energetic EVTD^2 entities by considering the shocks – impulsions component parallel to

this direction. Half of them propagate by exerting compression and the other half traction on entities during an electron orbit. This dual effect is long distance transmitted by successive elastic shocks. There is no incompatibility in this transmission of electric and magnetic energy by the $EVTD^2$ entities because masse, energy and electric and magnetic charge are equivalent [2, chapter 7 and 4].

5. PLANCK'S QUANTUM IN $EVTD^2$ THEORY

After this preliminary study it is possible to explain the mystery of the indivisibility of electromagnetic effect EE of the "photon" and the understanding of the basic phenomenon showing that the energy of an electromagnetic wave is*: E = h·v*, respectively Planck's constant multiplied by the number of periods by second (frequency). From the above proposed conception of the electromagnetic wave we can than understand trough $EVTD^2$ entities theory that the radiant power emitted by each wavelength is en entire multiple of quanta *(h)*. That can be differently expressed by: *h multiplied by the number of orbits covered by the considered electrons* in the substance assimilated to the black body (a covered orbit corresponds to a period of generated wave). This is to suppose that during an orbit, the electron generates by shocks – impulsions, on $EVTD^2$ entities constituting the atomic environment, relative constant energy in time as waves, for different concerned electrons.

In accord with our theory it is not correct to suppose that there are, like for example in the case of He-Ne laser (emitting several monochromatic wavelength), *different descents of excited electrons on different lower energetic levels* and we do not have for it any coherent representation from the phenomenon point of view. Contrarily, *the conception that we are proposing shows that the electron is not practically changing its orbit, but the added energy (thermal for the black body and energetic pumping for laser) produces almost a speed growth, in accord with black body's isothermal curves displacements to higher frequencies, when the temperature grows.*

In the case of the black body, the thermal flow supplementary got by the material during warming in comparison with a preliminary state, allows understanding, in accord with convergence theory, that the very little volumes of $EVTD^2$ entities are submitted in this time to an entering flow greater to the exiting one (negative convergence). At new established temperature, the two flows are equilibrated (convergence zero) and electron's speed is constant along the isothermal curve. Analogically and in accord with fields' theory divergence, it is possible to represent that the $EVTD^2$ entities system in the black body's atoms will generate by this energetic income *an acceleration effect on the incompressible flow (identically to Venturi effect in fluid mechanics), which will have as consequence the acceleration of mobile particles of this environment that are the electrons.* Consequently, electron's movements (orbital and spin ones) will be accelerated and the frequency of generated electromagnetic wave will than grow. Concerning *h,* because the orbit remains quite constant, it is justified to associate its value to the relative constant number of energetic shocks – impulsions that the electron makes covering an orbit (a wave period).

6. CONCLUSION

The constant *h* must represent a mean value of different concerned electronic orbits. One could observe that there perhaps exists a concordance between the orbits' rays (which means the number of struck $EVTD^2$ entities) and the decreasing energy levels of the $EVTD^2$ entities belonging to atom, going away from the nucleus but the number of shocks – impulsions becomes greater (the orbit being bigger). In the specific case of laser, in comparison with the black body, the above presented basic conception remains the same but adapted to the intermittent energetic income and to wave amplification by its resonant cavity.

7. REFERENCES

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