

APPROACH OF THE POSTULATE $E=MC^2$ BY THE THEORY
OF EVTD² FROM THE MECHANIC AND PHENOMENON
POINT OF VIEW

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ABSTRACT

The postulate $E=mc^2$ is easily demonstrated by our new theory of “All” based on the EVTD². These entities (Energetic, Volume, Timporal, Dynamics and Deformable) would be the non-divisible “elementary bricks” quantified in space (dimension), time and energy. They would be so configured by the single hypothesis of this new theory: the postulate of the existence in Universe of a primary electromagnetic wave being, therefore, the Mother Wave (MW). This double vibrating action of the electric and magnetic waves composing the MW permits to explain by phenomenon and by calculus the postulate $E=mc^2$ on the simplicity criteria. In the same time, a joint approach for the notion of energy is proposed as to get closer the senses of this term in physics and mechanics.

Keywords: equivalence, mass, energy.

1. INTRODUCTION

The equivalence relations $E=mc^2$ between mass and energy postulated by Albert Einstein was effectively confirmed only by the nuclear physics. This postulate had not yet any evident phenomenological explanation. It is true that any valuable explanation approach is not allow by actual conventional physics because it doesn't dispose of adapted possibilities for the phenomenological representation and also for convenient mathematical modeling as to make understandable this equivalence. The first problem to solve is to find a definition for what exactly the energy represents or to have a more precise representation of the term usually employed by physicists and mechanists.

Presently, the physicists use the notion of diffuse energy that would fill the whole space and that was called Ether by ancient Greeks. The Ether found a little come back as to accept the existence of an environment filled of something named diffuse energy what gives a certain continuity to space and to condensed matter. Several mechanical properties could issue from this energy called diffuse due to relation $E=mc^2$ and thus it's normal to use the mechanical knowledge and possibilities. Mechanics shows that energy is a physical value describing the capacity to do mechanical work. Also Mechanics describes two types of energy: kinetic energy attached to the dynamic notion of movement quantity and the potential one attached to position's properties.

Considering the EVTD² theory one we shall give a better understanding image of the diffuse energy that could coherently correlate with the mechanical representation. All spaces from Nature are under a double vibratory influence of two waves – electric and magnetic components of MW in accord with

this theory. Thus, from the physical point of view, the notion of diffuse energy could be understood by the EVTD² theory as mechanical energy describing the possibility to do mechanical work. In fact it remains to suppose, in accord with the new theory, that all space is constituted from a continuum of “something” which could be named substratum being continuously animated in a vibrating mode by the permanent action of the MW.

2. INITIAL CONSIDERATIONS ON THE POSTULATE

Further, we shall focalize on the demonstration of equivalence mass – energy $E=mc^2$ by the EVTD² theory. It is necessary to remember that 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.

It is known from the EVTD² theory that during propagation the electromagnetic wave produces in the space filled with EVTD² 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. Thus the two electric and magnetic components are produced [1,2,5]. This becomes concrete for a half period of the electromagnetic wave effectively produced by “pushed” chocks–impulses during the half of the electron’s orbit what means on a pack of EVTD² equivalent to the orbit’s ray perpendicular to the considered propagation direction. Analogous, for the next half period, in an equal pack of EVTD² during the second half of orbit it will produce the same effect but by “drawn” chocks–impulses (figure 1, a and b). Finally, we found that the electric and magnetic components of the M W produce, in reciprocal perpendicular planes aligned to propagation direction, “pushed” and ”drawn” chocks – impulses. A very brief presentation of the hypothesis concerning the light generation and propagation included in the “All” theory (EVTD² 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.

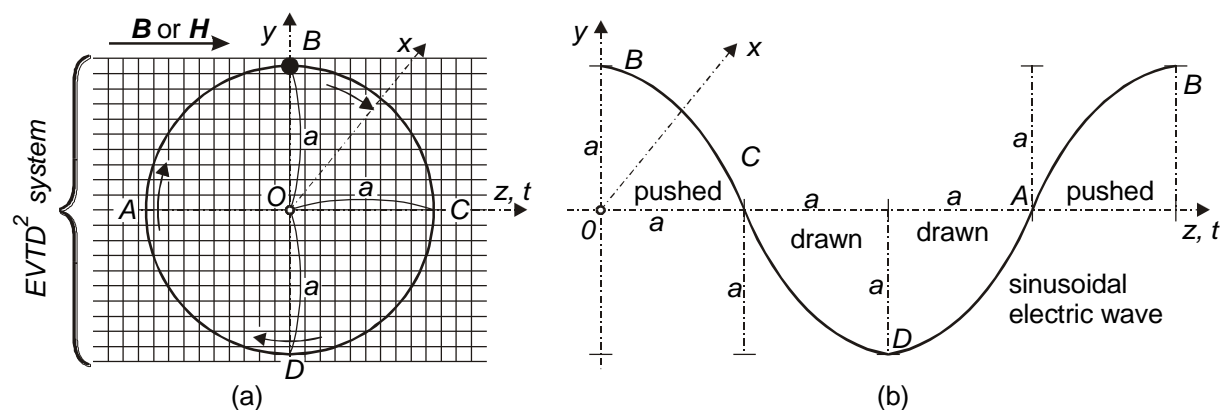


Figure 1. Orbital movement of the electron in an EVTD² environment (a); electric wave generation on z, t axis (b).

In accord with the above mentioned for the M W considered as a plane wave, 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 sollicitation “pushed” and “driven” 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 sollicitation 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 MW). In fact all points of an EVTD² live temporally the same events simultaneously. It is much simpler to consider a mass m representing a parallelepiped with dimensions defined as follows. The length is aligned to the

propagation direction and is equal to a multiple of MW wavelength. The height is aligned, for example, in vertical plane to the propagation of the electric component of MW and is equal to a multiple of an EVTD² entity height (representative for the electric MW). Finally, the thickness is aligned to the propagation of the magnetic component of MW and is equal to a multiple of an EVTD² entity dimension representative for the magnetic MW. If a spherical volume does not contain an integer number of entities but some portions of them this does not have any importance because this fractions will be excited temporally by the same events. The couple of magnetic and electric components of MW propagate, for example, respectively in the plane $Oyz(t)$ and $Oxz(t)$ of the Minkovski space – time.

3. ENERGETIC COPONENT IN THE MASS PRODUCED BY MOTHER WAVE'S ELECTRIC VIBRATING SOLICITATION

Let's consider firstly the electric component of the MW propagating in the vertical plane $Oyz(t)$ in which is placed the parallelepiped's center for a fixed ray of MW. Also we shall consider all equidistant vertical planes situated on the two sides of the $Oyz(t)$ plane forming the thickness of the above-mentioned parallelepiped. In them the electric component of MW will propagate. All this planes are perpendicular on the horizontal axe Ox and they represent the mean planes for every neighbor EVTD². This volume's thickness depends on the number of magnetic dimensional components took into account. The value equidistant between the planes corresponding to the EVTD² dimension is equal to the magnetic amplitude of MW.

If MW propagates in horizontal plane as plane wave, we must consider two successive EVTD² entities placed on a horizontal alignment. Among all entities forming the alignment we shall always find two of them that would be charged alternatively by chocks – impulses “pushed” and respectively “driven”. The movement quantity of the entity will be:

$$\mathbf{p} = m_{EVTD^2} \cdot \mathbf{c} . \quad (1)$$

In fact the excited entity has an equivalent uniform elementary mass m_{EVTD^2} . In this theory all points included in an entity are in phase what means that they are permanently under the same state. Starting with this uniform instantaneous speed movements of all points included in a EVTD² (which is an elastic body), as it is question of chocks – impulses propagating with the light speed c , we can write the entities' quantified elementary kinetic energy:

$$dE_c = \frac{1}{2} m_{EVTD^2} \cdot c^2 , \quad (2)$$

equivalent to resistant work of the mass entity.

On the same alignment all entities will be simultaneously charged during the time interval Δt corresponding to the MW period and, therefore the period of its electric component. They will be in a c speed movement and, in accord with the above simplifying conditions, entire mass m of the parallelepiped volume will be alternatively animated, so all EVTD² representing this volume. This permanent animation state of the entire mass m during the quantified time interval Δt allows us to write the got kinetic energy of the mass from the electric wave:

$$E_{c\text{elec}} = \frac{1}{2} m \cdot c^2 . \quad (3)$$

From the point of view of the volume of mass m constituted of EVTD² it is a resistant work because every brick can be described by a deformable system of points. It is; in fact, representative for the action quantum of Henri Poincaré extended to volume or, more to the extension phase of Liouville¹ theorem.

¹ Liouville's (1809-1892) theorem: “The points' density in the neighborhood of a fixed point in phase extension is constant in time”.

4. ENERGETIC COPONENT IN THE MASS PRODUCED BY MOTHER WAVE'S MAGNETIC VIBRATING SOLICITATION

An effectively comparable study to the above presented can be done for the vibrating effect of the MW's magnetic component. It drives us to the same conclusions, and consequently to the same result for kinetic energy transmitted to the volume having the mass m through the magnetic wave during the time lap Δt that can be written as:

$$E_{c\ magn} = \frac{1}{2} m \cdot c^2 . \quad (4)$$

5. TOTAL ENERGY IN THE MASS PRODUCED BY MOTHER WAVE DOUBLE VIBRATING SOLICITATION

Combining the two precedent kinetic energy's values permanently transmitted during time quanta Δt to the entire mass m by the two waves, electric and magnetic forming the MW, we obtain for the total kinetic energy:

$$E_{c\ total} = E_{c\ elec} + E_{c\ magn} = m \cdot c^2 . \quad (5)$$

It is evident that this energy thus earned by the mass m is not lost because the MW being perpetually in double vibrating movement permanently transmits it. So, if this mass m is transformed in pure energy (by nuclear fusion) it will be demonstrate that the got total kinetic energy will be restituted to the space, consisting himself from diffuse energy, and will be added to its energy.

6. CONCLUSION

Finally it is verified, by the theory of "All" based on EVT² entities, that the equivalence relation $E = m \cdot c^2$ between mass and energy postulated by Albert Einstein is explained and demonstrated in a physicist manner. This physicist understanding, after others described in ours papers [1,2,5], of the famous postulate thus brings once more a strong proof for the truthfulness of the New Theory of EVT². Its internal coherence and explanation power of phenomena and experimental observations unexplained till now, works for a great probability of compatibility with the completeness our day's knowledge.

Concerning a better understanding of the diffuse energy, the proposed approach gives us an image for the space constituent as a substratum being true energy in mechanical meaning, which means "something" animated and equivalent to a physical value describing the capacity to do mechanical work. We were interested to explain the equivalent mass – energy that could be verified in radioactivity and which is well known. Contrarily, what remains to discover is the adapted process for transforming pure energy in condensed matter. Would it be in fact the Higgs' mechanism?

This new understanding was conceived and becomes perfectly clearer in the "All" theory based on EVT², described and specified in our papers mentioned in references.

7. REFERENCES

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