THE SPACE – TIME DETERMINATION PRINCIPLE AND THE TIME EXIST STILL IN PARTICLES ENTANGLEMENT ACCORDING TO EVTD^2 ENTITIES THEORY

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ABSTRACT

A very condensed summary of EVTD^2 theory shows that it bases on phenomenon of an electromagnetic wave mother (OME) existence that would have the highest frequency in whole Universe. Taking this into account, we can consider a new approach on the experiments that used a single "photon" or two correlated "photons" to make evident the phenomenon of particles correspondence. Today, any of well-known theories is not enough adapted and cannot explain the enigmas connected to this subject. Only the EVTD^2 theory can do this by remaking valid the space – time determination principle and the time existence, both being abandoned by certain physicists. The existence of OME would create waves that we call "tunnel wave" in condensed matter systems that would guide preferentially low energy particles in case of OME and its harmonics resonance in experimental devices. According to EVTD^2 theory, the "photon" would be a succession of shocks – impulsions on the entities of condensed matter. Thus, we could give a representation of phenomena where is made a choice between different ways presenting perfect correspondence and anti-correspondence according to very little differences between them. For this, it is enough to consider that one or more „water drops" would represent one low energy "photon" or two correlated „photons" and the way with OME resonance would be imagined as the "highest flow" branch of a mountain torrent. The "water drop" falling before the bifurcation has a great chance to take the highest flow way of the torrent. Thus, the space – time determination principle is strongly coming back and explains by "tunnel wave" resonance and non-resonance the correlated or non-correlated choices of "photons". Of course, the time never vanished in these phenomena and consequently it is not necessary to try an explanation for a particular communication between corresponding particles that mostly obey to a well-defined determination during time.
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1. INTRODUCTION

The so-called particles' entanglement principle that cannot give us a correct explanation is to be abolished. A new EVTD^2 entities theory, allowing simple and coherent results through the hypothesis of "guide waves" generated by the Electromagnetic Mother Wave (OME) is necessary. In "guide waves" theory the time never vanishes and the space-time determination principle still acts.

An experimental setup based on equilibrated Mach-Zehnder interferometer made possible unexpected and unexplainable results concerning isolated low energy "photons". It could be represented by figure 1 if we consider the S_1M_1 branch without the prolongation. Than, RT or TR will detect all beats. The same experiment was done with an interferometer a little modified by a variable extended way,

presented in figure 1. In [4], according to V. Scarani we found: "*More the way is extended, more particles will arrive in TT or in RR. When the two ways are different by a certain length L, all particles will arrive in TT or in RR and none of them will chose TR or RT. If the L length is more extended, one could observe the inverse phenomenon and for the 2L length all particles arrive in RT or TR as for the unmodified setup. Thus the cycle could be restated*". Later, "*Most of physicists renounced to explain these quantified interferences*"
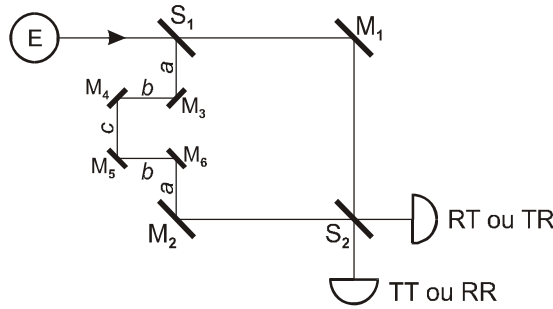

Figure 1. Little modified Mach-Zehnder interferometer.

Quanta theories, multiples worlds and non-discrimination principles made possible pseudo explanations without having the unanimity among physicists. The theory of "guide waves" or of "wide waves" developed by Louis De Broglie and further, by David Bohm presents a possibility of understanding. V. Scarani [4] explains: "*In Rhins' water falls the water is passing around a stone. A cork is floating on the water and it will pass on the right or on the left of the stone; its trajectory being influenced by the water transporting it or by the water that followed the other way*". These "wide waves" of Louis De Broglie and of David Bohm represent, in fact, a quantum edition of the ether: the theory of $EVTD^2$ could be there quite suitable but we must be very careful.

2. RESULTS ANALYSE BY THE $EVTD^2$ ENTITIES THEORY

In the $EVTD^2$ entities' theory, the so-called "photon" is only a simple shock – impulsion on these entities and thus, the electromagnetic effect is propagated (EE). As the insulated EE has low energy, its environment could influence it. Also we must take into account in ours judgments all direct and indirect correlations between these particles. Is it than possible that this mechanical characteristic determine the particles to make a personal choice? Normally we could think that it is not possible as John Bell wrote about this enigma: "I do not see what we must proceed but I hope that one day somebody will find an explanation and we shall say that my imagination was simply too limited".

In case of the equilibrated interferometer, after the option between reflection (R) or transmission (T) on the separator S_1, the two particles' ways are equivalent and they both arrive on RT or on TR according to number of knots. In this particular case, here are three knots for the phase changing in each mirror M_1, M_2 and reflections on S_1 and S_2 separators. During a reflection the phase is inversed and this induces a knot in the state of a propagating wave. Contrarily, the phase is unchanged during a transmission. An electromagnetic wave could resonate on its way between the emitting source E and the detector (RT or TR). The analyze of the two others ways arriving to RR or to TT shows us that on one trajectory there is only one knot on M_1 and on the other one there are three knots (S_1, M_2 and S_2) according to figure 2.

We do not know what way will chose the EE shocks – impulsions as to arrive to the same destination RT or TR because we just observed a certain equivalence between them. In the experiment with the modified interferometer were obtained cyclic results in accord to the difference value - *L, 2L, 3L* etc... between the ways. These experimental observations drove us to the idea that there is a resonance in this device. Concerning figure 1, we must mention that the distance *l* (the length of interferometer side) is equal to $l = 2a + c$ and meantime *2b* represents the length difference of the two ways. In order to simplify, we could assume that *c* has a value almost equal to *a,* and only *b* is fluctuant. We can

count on one side, seven knots and than the choice is TT or RR and, on the other side, six knots driving to the arrival in RT or TR.
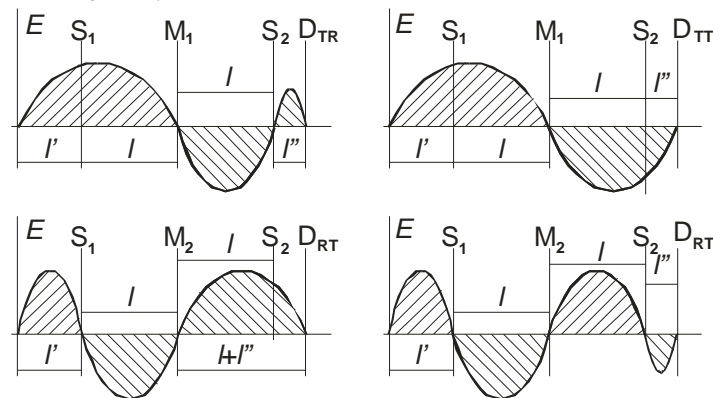

*Figure 2. Different possibilities of waves vibration
in equilibrated Mach-Zehnder interferometer.*

On the other side of the device, the number of knots is the same for equilibrated interferometer. A particular resonance could be in this prolonged side if b value is proportional to $n \cdot L / 2$ with n integer and odd. Hypothesis: if b is increasing or decreasing around this value, the resonance decreases till the anti resonance for $b = p \cdot L / 2$ with p integer and even. During ways' difference evolution we are progressively passing from a 100 % EE's correlation on one way out to an perfect inverse EE's correlation (100 %) for the other way out.
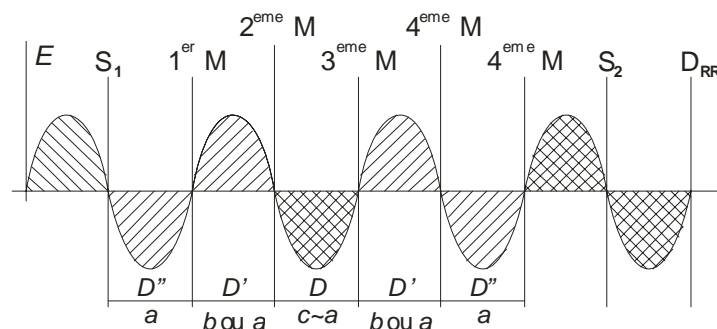

*Figure 3. Judgment experience: representation of electromagnetic waves in resonance in the
prolonged side of Mach-Zehnder non-equilibrated interferometer when $b = n.L / 2$.*

We shall make a judgment experience in order to simplify and to try a better understanding of the hypothesis (figure 3). Thus, we shall assume that $b = n \cdot L / 2$, with n integer and odd is equal to a value, and that will induce a perfect resonance on the side S_1-M_2. Then is logic to think that low energy EE shock – impulsion could be driven on this way presenting a strong attractive energetic effect. We refund the already used image of the cork attracted in one of the torrent high flow zones. Figure 3 represents the way out on RR or TT with seven intermediary vibration knots along the prolonged way. Approximate adjustment of b by $n·L/2$ value is strongly modifying the symmetric repartition of vibration knots. This will produce a rapid diminution of resonance and of attraction produced by the long way. We can imagine that the flow of torrent's branch is decreasing and becomes less that the flow of the other one. The most often recorded way out becomes than, RT or TR and the resonance frequency is growing what means that the solicitation energy and also the energy of vibrating resonance response will increase with respect to resonance mode number. In conclusion, the way with seven intermediary knots will be more energetic than those with six on almost the same way. Consequently, in the case of resonance on S_1-M_2 side, the way out on RR and TT is so explained. The equality $b = n \cdot L / 2$ gives us the idea that b must be, in this case, a multiple of electromagnetic wave length, which is effectively in resonance and than the vibration knots on M_3, M_4, M_5 and M_6

mirrors do not influence the above-mentioned resonance. If the resonance is obtained on the long way, it will promote a preponderant resonance on the ways $E\ S_1\ M_1\ D_{TT}$ or $E\ S_1\ M_1\ S_2\ D_{TR}$. The most favorable juncture to have a strong flow on the S_2 separator through one or the other ways out is possible if the number of vibration knots is as bigger as possible on one way what means, in this case, three knots with the way out TR (contrarily to only one knot on the D_{TT} way out). We find and we understand the observed results for equilibrated and non-equilibrated devices. The 100 % correlations for the TR way out by resonance and, consequently, most energetic make possible that the EE follows the way ending on TR. Finally we can make the forecast for the orientation followed by the EE shocks – impulsions: they will take the vibrating energetic flow having a maximal intensity.

3. THE HYPOTHESIS OF A SPATIO –TEMPORAL DETERMINATION: TUBE OR GUIDED WAVES

What will be the nature of a wave producing a resonance state on the S_1-M_2 side? Could be an electromagnetic wave neglected till now? It seems to be natural to use the OME existence postulate that often was useful in explanations! Than it is question to assume that OME or some of its harmonics could initiate in different zones of space – time vibrating energy accumulations in form of resonance. More, if the theory will be confirmed, these OME and harmonics will be real, established and modified in real time, what means with light celerity. Consequently, the names "tube waves" or, more, "guide or guides waves" would allow making evident their characteristics – principally the creation of a vibrating energetic flow in resonance canalized along certain ways of space – time. If the hypothesis of these "guide waves" is confirmed one day, we observe that *implicitly, the time does not need to vanish as well as even the spatio – temporal determination principle that is reestablished in whole its predominance.* In fact it will be no more choice for a particle or for an EE low energy shock – impulsion. Contrarily, the EE will obey during its propagation the law of strongest energetic flow. It follows, also in the same hypothesis, that a certain entanglement phenomenon will no more utilize a choice with or without mysterious communication between EE or between different particles participating to this kind of studies.

4. CONCLUSION

Otherwise, the participating particles couples will no more make options between perfect correlation and anti-correlation, as is the case of Geneva experiment [5]. They will obey the natural law, being driven by "tube waves" attraction modulated at the light celerity [6]. In parallel, the same logic and coherent explanation of this study allows to arrive at a simple understanding by reestablishing the spatio-temporal principle in more complex phenomena generated in the Franson equilibrated or non-equilibrated interferometer's sides [4] and [6]. To be confirmed existence of these "tube or guide waves" would be more an argument for the credibility of EVTD[2] entities theory.

5. REFERENCES

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