THE PHYSICAL MODEL OF THE FLUCTUATING VACUUM AND OF ITS COLLECTIVE EXCITATIONS : THE PHOTON , NEUTRINO AND QUARKINO.

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A physical model of the existent fluctuating vacuum (FlcVcm) as an ideal dielectric, built from dynamides, well arranged in a lattice and its elementary collective excitations: photon, neutrinos and quarkinos as a solitary package of cylindrical boson and cylindrical and spherical fermion harmonic oscillations are offered. It is common known that the physical model (PhsMdl) presents at us as an actual ingredient of an every good physical theory (PhsThrn). It would be used as for an obvious visual teaching the unknown vacuum and its excitations. We occurred physical processes of the investigated phenomena within micro world. We assume that the FlcVcm is consistent by neutral dynamides, streamlined in some crystalline lattice. Every dynamide is a massless neutral pair, consistent by two massless opposite point-like (PntLk) elementary electric charges (ElmElcChrgs): electrino (-) and positrino (+). In a frozen equilibrium position both opposite PntLk ElmElcChrgs within every dynamide are very closely installed one to another and therefore the aggregate polarization of every one dynamide has zero value and its electric field (ElcFld) also has zero electric intensity (ElcInt). However the absence of a mass in a rest of the electrino and positrino makes them possible to have a big mobility and infinitesimal dynamical inertness of its own QntElcMgnFld, what permits them to be found a bigger time in an inequlibrium distorted position. The aggregate ElcFld of the dynamide reminds us that it could be considered as the QntElcFld of an electric quasi-dipole moment (ElcQusDplMmn) because both opportunity massless electrino and positrino have the same inertness. For a certain that is why the FlcVcm dos not radiate a real photon (RlPhtn) by itself, as dynamide electric dipole moment (ElcDplMmn) has a zero value as a result of an equality of both ratios $\frac{+e}{\Theta}$ and $\frac{-e}{\Theta}$, where $\Theta $ is a dynamical mass of a PntLk ElmElcChrg ignoring the mass of own interaction. The aggregate ElcFld of every dynamide polarizes nearest neighbor dynamides in an account of which nearest dynamides interact between itself, and in a result of which its elementary collective excitations have a wave character and behavior. It is richly clear that the motions in the opposite direction of both opposite PntLk ElmElcChrgs of an every dynamide creates an aggregate magnetic

field (MgnFld) of every one and the sum of which one makes a total magnetic part of the free QntElcMgnFld. Although up to the present nobody of scientists of the theoretical physics distinctly knows are there some elementary micro particles (ElmMicrPrts) as a fundamental building stone of the micro world and what the elementary micro particle (ElmMicrPrt) means, there exists an essential possibility for a physical clear and scientific obvious consideration of the uncommon quantum behavior and unusual dynamical relativistic parameters of all relativistic quantized MicrPrts (QntMicrPrts) by means of our convincing and transparent surveyed PhsMdl.

It is well known that very often the ElmMicrPrts behavior would be studied by means of an investigation of their behaviors after some their interaction by already well known ElmMicrPrts. Therefore we shall describe the behaviour and properties of the real photon (RlPhtn) by means of my new felicitous physical interpretation of the results of its emission and absorption from atoms at their excited Schrodinger electrons (SchEls), which happens at its transition from higher energetic state into lower energetic state or vice versa transition. In such a way we could understand the origin of some their name by dint of the physical understanding these determining processes.

The participation of the SchEl within the excited atom in the process of the emission or absorption is determined and limited from the Lorentz' friction force. Really the matrix element <1|r|2> of the SchEl position is determined by the product of the probability for the spontaneous transition of a SchEl from its higher energetic level into its lower energetic level and the number $(n+1)$ for the emission or the number n for the absorption of a RlPhtn, where n is the number of the RlPhtns within the external QntElcMgnFld, which polarizes atom. In order to obtain a clear physical evidence and a true physical explanation of the physical cause for an emission and absorption of the RlPhtn, in first I used the well forgotten method of Fermi, which have been used by he for determination of the time dependence of expansion coefficients of the wave function of SchEl in a hybrid state in 1927 year, using the solution of the quadratic differential wave equation in partial derivatives of Schrodinger with the Qoulomb potential and potential of Lorentz friction force and in second I determine the radius deviation by dint Newton equation of motion, taking into consideration all acting forces. Therefore it turns the emitted real photons are quanta of the quantized electromagnetic energy, which have a solitary needle form of electromagnetic oscillations. A needle diameter is determined by wave semi-length. We can understand by means of the upper scientific investigation that the creation of the QntMgnFld by moving of the massless opposite PntLk ElmElcChrgs of electrinos and positrinos in an opposite directions within all dynamides together with their aggregate QntElcFld as two mutual

insurance components of one free QntElcMgnFld one secures their motion through space

Therefore we suppose that the real photon (RlPhtn) is some elementary collective excitation of the neutral FlcVcm having the form of a solitary package of a needle cylindrical form of collective boson harmonic oscillations of both PntLk ElmElcChrgs of dynamides within the vacuum ideal dielectric. The opposite deviations of both PntLk massless opportunity ElmElcChrgs of an every dynamide from their equilibrium positions in the vacuum close-packed crystalline lattice creating its solitary package of a needle cylindrical form causes own polarization of the vacuum ideal dielectric, the sum of which creates an aggregate polarization of the FlcVcm as an ideal dielectric, which causes the existence of a total resultant QntElcFld. Consequently the aggregate electric polarization of all dynamides creates own resultant QntElcFld, which is an electric part of the free QntElcMgnFld.

The reception of an expressions for the ElcInt and MgnInt values of the QntElcMgnFld, known from the QntElcDnm, by dint of a simple transformation of an expression, describing deviation of two opposed PntLk ElmElcChrgs of distorted dynamides into the ideal dielectric of the neutral FlcVcm proves obviously and scientifically the true of our assumption about the dipole structure of the fluctuating vacuum and about the creation way of its collective oscillation - RlPhn. The existence of a possibility for a creation of virtual photons (VrtPhtns) as an unstable collective excitation within the neutral (FlcVcm) renders an essential influence over the motion of a electric charged or magnetized micro particles (MicrPrts) by means of its EntElcMgnFld. The existence of a free energy in the form of a stable micro particle (MicrPrt) can break the connection between pair contrary massless PntLk ElmElcChrgs (electrino and positrino) of one dynamide and to excite pair of two opposite charged MicrPrt and anti-MicrPrt at once.

The obvious consideration of the neutral FlcVcm as some ideal dielectric of some crystalline lattice of molecular massless dynamides within its junctions is very useful. The neutral vacuum naturally explains us the cause as a result of which the light (aggregate of RlPhtns) propagates through the vacuum by same velocity without some dependence of the velocity of its source. It is naturally that when some RlPhtn is moving within the space, filled by some material substance, then the supplementary polarization of atoms or (and) molecules of same material substance appears, which delays its moving and slows down the RlPhtn velocity. In such way the polarization of atoms (molecules) in conjunction with dynamide polarization together slow down the light velocity. This slow down of the RlPhtn velocity is known as some caring away of the light from the moving material substance.

As all massless MicrPrts (spherical neutrinos and nearly flat quarkinos) are collective solitary excitements of the neutral FlcVcm and massive McrPrts are amount of such collective solitary excitation of the neutral FlcVcm in a form of a nearly flat and spherical fermion harmonic oscillators and such a fermion oscillation of one or two ElmElcChrgs within same vacuum, having own ElcMgnFlds, then every one of them can freely move through vacuum lattice of its ideal dielectric without any friction or damping. That is to say why one moves without to feel the existence of the vacuum within a space. Difference between spherical neutrinos and nearly flat cylindrical quarkinos ensures difference in their behavior. While spherical neutrinos are invariant relatively directions in a three dimensions space, then nearly flat quarkinos are sums of two small neutrinos have three directions (colors), which determine their orientation in three dimensional space. Amount of one Pn-Lk ElmElcChrg and one neutrino of a some aroma (flavor) constitute one massive lepton of same aroma (flavor). The aroma of the neutrino and quarkino is determined by their size of fermion harmonic oscillation. Moreover nearly flat quarkinos need to change own orientation in a space by emission or absorption of gluon, which is a fully magnetized field without electrical field. Really, the magnetic interaction of the electric current of a self-consistent moving PntLk ElmElcChrg and the magnetic field of the absorbed or emanated gluon forces quark to turn itself and changes own orientation (color) in space. In such an obvious way we understand what is the color and why quark changes its color at its interaction by gluon.

Moreover, the existence of some massive MicrPrt within the vacuum distorts its ideal crystalline lattice by the high density QntElcMgnFld, created by own FnSpr ElmElcChrg. This natural distortion of the molecular lattice of the neutral FlcVcm excites and ensures the gravitation field of the ElmMicrPrt's mass, which by using same force show attention upon mass of another ElmMicrPrt and upon its behavior. In such a naturally obvious and physically clear way we understand why the force of the gravitation interaction is determined by the self-energy or own mass at rest. The equal dependence of the electric, magnetic and gravitation interactions between two charged, magnetized or massive particles from the distance between them is a result of an equal dimensionality of the space within which they act.

In such an obvious way we understand that a form of Lorentz transformations is determined by the clear physical request for an equality (invariant) of the description of a wave function within all inertial coordinate systems. Indeed, it is naturally that the time must have equal value in all points of the motionless coordinate system. As a wave equation is invariant in a relation to Lorentz transformation, then in all motion inertial coordinate system describes the propagation of the time within

motion inertial coordinate system. Only at such a dependence of the time from the coordinates of its place all wave shapes would be alike.

In our new point of view here we need to note obvious supposition that the spreading quantum trajectory of the SchEl is a result of the participating its well spread (WlSpr) ElmElcChrg in isotropic three dimensional non relativistic quantized Furthian stochastic circular harmonic oscillations motion, which is a forced result of the electric interaction (ElcIntAct) of the SchEl's WllSpr ElmElcChrg by the electric intensity (ElcInt) of the resultant resonance QntElcMgnFld of all stochastic virtual photons (StchVrtPhtns), existing in this moment of the time within the area, where the ElmElcChrg is moving. In order to understand this uncommon stochastic motion we must remember the isotropic three dimension non-relativistic classical Brownian stochastic trembling along often broken straight motion. Therefore we understand why there is no possibility for a classical Lorentz' electron (LrEl) to be in a hybrid state, as it must go along one smooth classical trajectory and therefore it has no possibility to tunnel through potential barrier between two different quantized orbits. But in a natural result of its quantized stochastic motion it is turn out that the quantized SchEl repeatedly $(\simeq 10^{6}\times)$ goes (tunnels) through the potential barrier between both stationary states by dint of the ElcIntAct of the SchEl's WllSpr ElmElcChrg by the ElcInt of the resultant resonance QntElcMgnFld of all StchVrtPhtns existing in this moment of the time within the barrier area. Really at these periodic tunneling of the SchEl it has a possibility to go from one stationary orbit to another stationary orbit and back again for the time of the emission or the absorption of a RlPhtn by a purpose to ensure the periodic alteration of the atomic ElcDplMmn, constituent by SchEl's WllSpr ElmElcChrg and the ion ElcChrg. It is quite plainly that it needs the optical resonance to be observed in a case of a coincidence of the proper circular frequency of these transitions between both energetic state with the radiation frequency $(\omega_c=\omega_2 - \omega_1)$.

R E F E R E N C E S

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