To the Map of Science and the Quantum Physics consistency

Dmitri Martila

Independent Researcher

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Abstract

The singularities are un-physical, because the infinities of singular places and times can not be measured. But Nature, which can not be measured even in principle, is not the Nature. The Quantum Field Theory is like a tree, which has grown from the Schrödinger's equation. However, QFT has the infinities, has the singularities and gives wrong theoretical values of the proton size and spin, besides, the QFT gives the wrong vacuum expectations. Here we try to show the problem the Schrödinger equation has: it can not be deduced from the non-zero velocity $v \neq 0$ theory of Albert Einstein.

I. TO THE MAP OF SCIENCE

With all diversity of the Theoretical Physics, there is no problem to reconcile the Nature with reality. The Dark Matter and the Dark Energy are the virtual matter (we call it "virtual Dark Matter") in the left hand of Einstein Equation, possibly even the so called "exotic matter" (latter violates the "weak energy condition" and can be explanation for travel in time and space: a wormhole can connect any two coordinate times and spaces).

The problems with the "electromagnetic mass" of electron can be solved through addition of the Virtual Dark Matter.

Finding the laws in nature are preferable way of study the reality, because otherwise there is way too much freedom. The freedom of the freewill: the so called "fine tuning" is allowed not only in the initial moment of the Universe, but also throughout it.

The Double Slit experiment demonstrates by the fact, what observation at the slit destroys the interference, what there is no particle at the slits, but the particle travels from the source into screen through a mini-wormhole (which closes after the target hit). The uncertainty principle of Heisenberg proves, what the particle has definite position and the momentum. Indeed, the principle suggests to think of a particle as having definite position (without the information about the momentum), and to think of the same particle as having definite momentum (without information about the position); thus, the particle has both position and momentum.

The Nature (as the time, space, wind, density, temperature, etc) is what the Standard Instruments are measuring, and the Standard Instruments are unchangeable devices, which measure the Nature. Thus, the Nature has the artificial limits in density, time, space, temperature, in all the measurable-s. In a "thought experiment" one imagines to measure the unlimited kinetic energy (as one wich would arise by the "warp-drive" spaceship, which is hitting a planet, see Fig. 1). But in the practice the measurable (by the calorimeter) energy is limited: $E < E_m < \infty$. The natural solution is removing such situations from the reality. Like works the limit of density $\rho < N < \infty$ in Ref. [9]
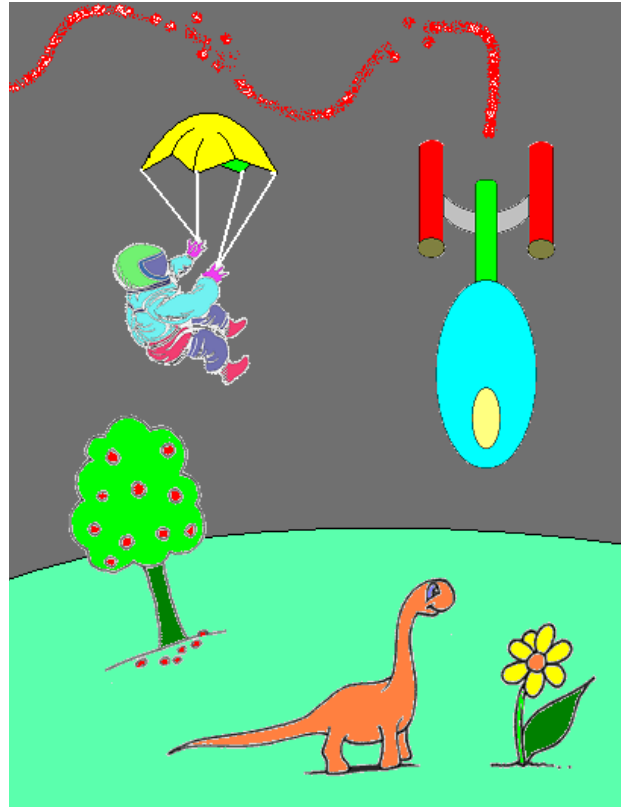
FIG. 1: The essence of "asteroi" which would have extincted dinosaurs is unknown, so it isn't ruled out, that "celestial body" could has been a falling warp-drive.

A. On U–F–O

The spiritual observations are explained by violation of the Standard Instruments. The UFO-es are not the part of Nature, because they violate the Laws of it. The Standard Instruments, which are put into the places of the violation will be corrupted by the changes. But the Standard Instruments without the spiritual interveniency can not be changed. The laws and physical constants are the same throughout the Universe and the time, in exception of the spiritual interveniency. Moreover, the laws of micro-world and the laws of macro-world are the same, but the change of scale produces different physical parameters (temperature, velocity, density).

II. REASON OF TALK

The "natural units" with $c = 1$ are used. The fabric of spacetime is flat: $g_{\nu\mu} = \text{diag}(-1, 1, 1, 1)$.

The literature presents following form of the non-relativistic Schrödinger's equation [1] in the field of A^ν

$$i\hbar \frac{\partial}{\partial t}\psi = \left(\frac{1}{2m}(\vec{p} - e\,\vec{A})^2 + e\phi\right)\psi\,. \tag{1}$$

For transformation between the non-relativistic formula and relativistic formula one shall use the free-particle approach, because it is the highest term, if the serie converges. But it converges in the local position in spacetime. Then use $\psi := exp(i\,p_\mu\,x^\mu/\hbar)$.

The 4-momentum operator is $\hat{p}_\alpha = -i\,\hbar\,\partial_\alpha$. Holds $\hat{p}_\alpha\,\psi = p_\alpha\,\psi$.

The literature presents the relativistic Schrödinger's Equation [2] in operator form

$$\hat{P}^\nu\,\hat{P}_\nu = -m^2\,, \tag{2}$$

where

$$\hat{P}^\nu = \hat{p}^\nu - e\,A^\nu\,. \tag{3}$$

Then, written down

$$(\hat{p}^\nu - e\,A^\nu)(\hat{p}_\nu - e\,A_\nu) = \hat{p}^\nu\,\hat{p}_\nu - e\,A^\nu\,\hat{p}_\nu + e^2\,A^\nu A_\nu = -m^2\,. \tag{4}$$

Used the Lorenz gauge: $\hat{p}^\nu A_\nu = 0$. Because $p^\nu = (E, \vec{p})$ and $A^\nu = (\phi, \vec{A})$, then in components and after applying the operators to ψ holds

$$-E^2 + p^2 + e\,\phi\,E - e\vec{A}\,\vec{p} + e^2\,((\vec{A})^2 - \phi^2) + m^2 = 0\,. \tag{5}$$

In case $\vec{A} = 0$ holds

$$-E^2 + p^2 + e\,\phi\,E - e^2\,\phi^2 + m^2 = 0\,, \tag{6}$$

where from we extract the energy

$$E = \frac{e\,\phi}{2} + \frac{1}{2}\sqrt{4\,m^2 + 4\,p^2 - 3\,e^2\,\phi^2}\,. \tag{7}$$

If the $p = 0$, the $E \neq e\phi + m$. Thus, the transformation has failed. Please note, what even if the ϕ is small, still is discrepancy

$$E \approx \frac{e\,\phi}{2} + m \neq e\,\phi + m\,. \tag{8}$$

4

III.   KNOWN PROBLEMS WITH QUANTUM PHYSICS

Such problems surely are fundamentally deep. So, they start with the Schrödinger's equation. As it is demonstrated above. But the subsequent development shows indeed the in-solvable problems, e.g. [4]. The problems are in-solvable, because they are not discussed in public. Look:

"An argument by Freeman Dyson shows that the radius of convergence of the perturbation series in QED is zero.[7] The basic argument goes as follows: if the coupling constant were negative, this would be equivalent to the Coulomb force constant being negative. This would "reverse" the electromagnetic interaction so that like charges would attract and unlike charges would repel. This would render the vacuum unstable against decay into a cluster of electrons on one side of the universe and a cluster of positrons on the other side of the universe. Because the theory is 'sick' for any negative value of the coupling constant, the series do not converge, but are an asymptotic series. From a modern perspective, we say that QED is not well defined as a quantum field theory to arbitrarily high energy. [8] The coupling constant runs to infinity at finite energy, signaling a Landau pole. The problem is essentially that QED appears to suffer from quantum triviality issues. This is one of the motivations for embedding QED within a Grand Unified Theory." (Wikipedia 2017).

But Grand Unified Theory is not possible, because electron is the perfect sphere. Look: the undiscovered particles distort the sphericity of electron. [3] But electron due to the Principle of In-distinguish-ability of elementary particles [6] – can not differ in own shape. Thus, indeed, the elementary particles are perfectly spherical, which rules out the NEW particles. But GUT has own new particles of the Grand Unification. Thus, the GUT is illusive.

Hereby one shall add, what on our level of knowledge the elementary particles are considered immortal (the electron lives longer than 10^{24} years [5]). It is because the "deaths" of elemetary particles are making them distinguishable, but latter is not possible.

How the vacuum polarization reduces the infinite charge of electron? Why the total charge of vacuum is infinite and positive? Take the vacuum of space between the Moon and the Earth. Then apply the electric field. Would you hope, what the vacuum gains non-zero total ("net") charge? No, because any neutral material under polarization remains neutral. So, how come, what the total "screened", "renormalized" charge of electron is finite, while

the "naked", "non-renormalized" charge is infinite in Quantum Field Theory?

Dear reader, who ever you are, please write me short email to eestidima@gmail.com with the code in the email subject: "werta". Then I will know, what you have red the paper. Then I am happy, and you are happy, because you would get around 0.1 % of the possible "nobel prize". Also you would receive the lattest developments on the subjects in the reply file. Let us continue:

The known (from our early days of school education) the electrostatic law q/r^2 demands, what the charge density of electron is almost a point-like. Thus, at some distance from the charge, its charge shall be infinite, because vacuum has zero net-charge and the electron has the infinite charge according to non-renormalized QED.

IV. CONCLUSION

We have demonstrated, what even such well established thing as Schrödinger's Equation is not correct. So, we have gained the knowledge: we know, what we are sure, what we have demonstrated that within the "Mainstream Science". And we shall be avoided of baseless criticism, until a disproof would come.

A. To the Proof-making

If you do not know a theorem, then you truly don't know the theorem. If you are sure, what the $2 = 1 + 1$, then you are truly sure. If you doubt, what Darwinism is correct, then you truly doubt it. So, there is always the Verity. There is no limit of getting knowledge. Let us call a man, who got to know all, as "Champion". Think about the Champion. The Champion knows also, what he exists. So, the Champion really exists, because even such a knowledge is out to get there.

We are the champions,

Got time for lost ones,

Cause we are the champions...

For the Good!

(cf., "We are the champions", the song).

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