

# Possible Reconciliation of Unitary Quantum Theory and General Relativity

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**Abstract:** The authors discuss contradictions between the principal branches of the modern physical picture of the universe. Space and time have been shown in the Unitary Quantum Theory (UQT) not to be connected one with the other, unlike in the Special Theory of Relativity. In UQT, time becomes Newtonian again, and the growth of the particle's mass with growing speed proceeds from other considerations of physics. Unlike the quantum theory, the modern gravitation theory (the general theory of relativity) is not confirmed by experiments and needs to be considerably revised.

**Keywords:** Unitary Quantum Theory, General Relativity, Special Relativity, Maxwell Equations, Lorentz Transformations, equation of John Wheeler and Bryce DeWitt

## 1. Introduction:

Readers unfamiliar with general ideas of UQT (Unitary Quantum Theory) will find it quite difficult to understand the matter and so it's better to first read [1, page 1-49]. The current picture of the world looks quite depressing. The authors of UQT wrote many times about [1-4]. On one hand, GRT (General Theory of Relativity) describes the world in terms of a continuous field, but unfortunately it has very weak experimental evidence, though it's quite visible for a penetrating mind. On the other hand Modern Quantum Theory demonstrates excellent experimental evidence, but is replete with paradoxes that baffle any serious mind. The standard response of any professional physicist-theorist to these paradoxes is simple: «Shut up and count», - which can only draw a smile from an unbiased researcher.

UQT solves several problems: the possibility of a single quantum particle being present in several places at once, the corpuscular wave dualism, the ratio of uncertainty, and it can even partially confirm the redundancy of the Aether which special relativity theory calls for. It is necessary to point out that the UQT wave function differs from the standard wave function of Quantum Mechanics by the presence of a multiplier from a running structural function:

$$\Phi(\mathbf{r}, t) = f(\mathbf{r} - \mathbf{v}t) \exp\left(i \frac{Et}{\hbar} - i \frac{Pr}{\hbar}\right) \quad (1)$$

**The structural function of the wave packet resets the de Broglie wave in all space except for the narrow domain of its existence. This is why Aether, in which the wave could propagate, is superfluous - the waves simply do not exist.** All problems associated with wave function reduction thus disappear. We should emphasize that de Broglie wave is simply the geometric location of the maximal

points of a packet when it moves, and becomes a result of the sum of partial waves (harmonic constituents), that is why it can be observed in diffraction experiments, since all equations are linear. On the other hand, the phase velocity of partial waves can be any, while the group velocity of partial waves can be limited.

There is no reason to doubt the correctness of the UQT, as it allowed, for the first time in history, to calculate the constant of fine structure  $1/137$  [1, page 58] (the square of dimensionless electric charge) and calculated an analytically precise solution to the UQT scalar integral differential equation. This allowed the precise calculation (error < 1%) of the masses of numerous elementary particles, including the Higgs Boson, made five years before its discovery.

This calculation was made in 2007. After the calculation was published, professor Vladimir Dubovik (Bogoliubov Laboratory of Theoretical Physics, JINR – Dubna) told one of the authors (LS): “You will not be forgiven, a mistake will be found, and in 2-3 months there will be nothing left of you, “. Yet 14 years have passed, and scientific society pretends that UQT does not exist at all. Note that a good student or mathematician can repeat these calculations [1, page 64] on a regular laptop with Maple or Mathematica programs.

However, these results required the sacrifice of the special theory of relativity: only the relativistic relationship between energy and impulse remained, while shrinking rulers and slowing clocks were relegated to the past. Now the growth of mass with velocity has a clear physical clear origin – it is absolute and related to the growth of wave packet



amplitude – details can be found [1, page 6], [2-4]. It is a direct conversion of kinetic energy into mass. Particle motion is absolute, but what is it that the motion is relative to, remains obscure. We suspect that particle movement is relative to the global potential of vacuum, but it will become evident in future.

Today UQT has acquired features quite essential for a self-sufficient cosmology. Remarkably, at least in the approximate version of oscillating charge equation [1-4], there are no conservation laws for energy and momentum. It is exactly these laws of energy and momentum conservation that prevent the creation and development of the Universe, they are not discussed in some versions of GRT, and they also invoke problems that can only be solved if some relativistic interpretations were abandoned.

When high-energy protons collide, new protons, mesons and other particles may appear. Science has yet to explain the spontaneous appearance of matter with a relative physical mass value, which depends on the reference point. The difficulty arises when explaining the appearance of multiple particles, as special relativity (SRT) does not offer a mechanism for conversion of kinetic energy into matter – SRT holds that mass has the same value in all reference frames; it is constant regardless of particle movement. UQT on the other hand explains the spontaneous appearance of multiple particles as follows – as a particle accelerates, its mass grows because the amplitude of its wave packet grows [1, page 6], [2-4]. The field of the wave packet will diffract on the complex structure of the proton, and a huge number of different particle types will appear at diffraction maximums. In terms of multiple births, they are mainly  $\pi^+$ ,  $\pi^-$ ,  $\pi^0$ . Strange quarks, new nucleons, and heavy particles such as B-mesons, W-bosons, Z-bosons appear much less frequently. The main problem in studying such collisions is the large number of particles formed.

The reverse process can be observed in nuclear reactions and is widely exploited by mankind. The mass deficit of the reaction products vs reactants is balanced by the kinetic energy of the products.

Unfortunately, special relativity theory has left its schizophrenic imprint not only on quantum theory, but also on general relativity theory. Imagine two particles flying towards each other from different distant places towards where we calculated they must meet. If gravitational field values along the particles trajectories are different, which is the most reasonable assumption, then at the point of intended meeting they will have different times and therefore will never meet. This is because in GRT, two particles with the same spatial coordinates, but at

different times, are completely different ones, and to meet these particles must have the same time. Even if they have identical space coordinates, the time coordinates will always be different and so no collision is possible. Of course, this is terrible.

What sacrifices have been made and what conclusions can be drawn from this review [1-4]?

1. *GRT and quantum theory misinterpret the notion of time. Space and time are not linked.*
2. *Time flow can be uniform only and should not dependent on physical conditions. Sir Isaac Newton adhered closely this position.*
3. *Change of gravitational potential does not change the speed of time, but speed of physical processes.*

UQT has the same requirements [1-4]. In order to save Einstein's brilliant physical ideas of coincidence of gravitational and inert mass, identification of inertia and gravity, reduction of gravity to the curvature of space (which is the basis of GRT) we should get rid of the time idea.

Almost fifty years ago, physicists John Wheeler and Bryce DeWitt [5, 6] derived the Great Equation on the basis of Einstein's ideas - which the scientific community at first rejected, as it «violated physical laws». Formally, the equation did not break physical laws, however, it fundamentally altered the familiar picture of the world. According to Wheeler and DeWitt time does not exist at all.

*«Time has never existed and never will. It is only in our mind and equations we use every day...We are not aware of phenomena that can describe time» (back translation) —John Wheeler [5]. And again, we remember the words of Blessed Augustine: «I know what time is, until I am asked about it...»*

### Conclusions:

And then there's the cherry on top - In 1976, at a symposium in Burakan [7], Professor N.A. Kozyrev reported on unusual astronomical observations he had made when scanning the celestial sphere with a reflector telescope covered by an opaque lid. He placed unusual sensors in the focal plane of telescope - a torque scale or a small thin-film resistor included in balanced bridge arm (see fig. 1). Kozyrev had found that when the telescope was directed at point 3 Fig. 2, where the star was expected to arrive, the torque balance pointer deviated from zero while resistor resistance had changed.

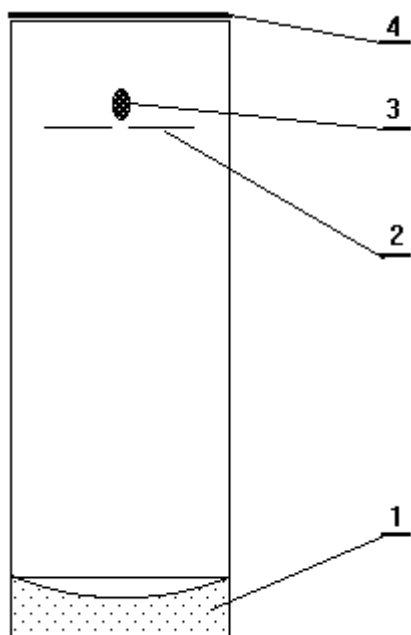


Fig.1. Scheme of Kozyrev telescope. 1 – focusing mirror, 2 - slot, 3 - detector, 4 – light-proof lid.

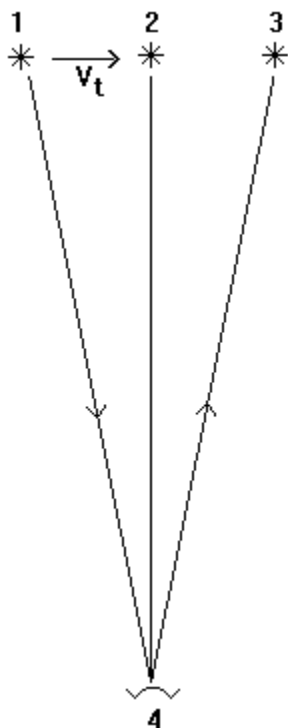


Fig.2. The past (1), verily (2) and the future (3) positions of astronomical object. Portion of light emitted by object in position (1) reaches observer (4) many years after. During this time the object that moves perpendicular to observer with speed  $v_t$ , moves to position (2). If at the moment of record portion of light were emitted for point of observation it would meet object in point (3).

These results initially seemed so unbelievable that astronomers did not take them seriously, and for more than a decade, nobody tried to repeat these observations using Prof. Kozyrev's method. Later they were confirmed in Japan, Germany and America and the halo of «crazy» around Kozyrev disappeared

without a trace. Now there are many scientific articles on this subject [8] even including Kozyrev's assumption that «time burned in stars». But, Kozyrev initially argued that these were examples of superluminal motion.

Here we would like to offer very simple and natural explanation of these results from UQT point of view. According to UQT, any particle is a single wave packet (field slot) – function  $f(r-vt)$  of equation (1). If somebody performs a Fourier transform over it, then instead of this function he will get a set of infinite numbers of sinusoids (partial waves) that exist on the  $r$  axis from  $+\infty$  till  $-\infty$ . Mathematically this is exactly the same representation. In other words, they both exist at once. Let us trust in mathematics! The star just appeared in Point 3 (Figure 2.) and photons started their movement from it, a long time before they will finally reach the telescope, but their harmonic components would appear at point 3 IMMEDIATELY. There are many photons, the sum of their partial waves carries energy, and that results in change of the detector (3) resistance at Figure 1.

We think that further research should focus on a theory of Global Potential - Space Curvature. However, four-dimensional space-time should be forgotten. Our Solar System proves with great precision that gravity spreads instantaneously. Perhaps the study the nature of partial waves offers the most promising possibility to explain gravity in the future. All of this can be seen as illustrative evidence of the correctness of UQT.

The Author (LS) has been formulating UQT for more than 63 years and he has found that TRUTH is of little interest to mankind, and now money is the main goal, although in the past it was not quite so. The main difficulty in adopting a new paradigm is growing ignorance, which is linked not only to a decline in the general level of education, but also to a certain degeneracy, as evidenced by the world's diminutive political figures. The extreme complexity of the overall false picture of the world and the emergence of useless but well financed projects also challenge the adoption of a new paradigm. Who wants to lose their grant money? Nevertheless, a new picture of the world could free humanity from the daunting challenges that loom ahead [1 page 90, 2-4].

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