The Main Absurd Ideas That Destroy Theoretical Physics

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Abstract: I assume that the readers of this article have read the Wikipedia article entitled "Aether theories": https://en.m.wikipedia.org/wiki/Aether_theories. Here, applying the Scale-Symmetric Theory (SST), we derived the speed of light in "vacuum" c and speed of quantum entanglement from the beginning (ab initio). The derivation shows that the mainstream interpretation of the invariant c is incomplete and that the Michelson-Morley experiment cannot be considered to be the first strong evidence against the aether theory. We still cannot calculate the half-integral spin of proton within the 3-valence-quarks model - it is the "proton spin crisis". Experiments suggest that the total proton spin carried by quarks can be consistent with almost zero. Is the quark model of proton partially incorrect? Here we show the origin of the spin asymmetry in deep inelastic muon-proton scattering that leads to the proton spin crisis. SST shows that inside baryons there are produced the quark-antiquark pairs but there are not single valence quarks because contrary to the electric charges of proton and electron, the electric charges of quarks are highly unstable. SST shows that spin of proton is carried by orbital angular momentums of the carriers of gluons. The third main absurd idea is that pure/massless energy (for example vibrations) can propagate without some aether composed of physical/non-zero-volume particles. In reality, elementary energies are carried by the components of the Planck scale and by the components of the two scales below it.

1. Introduction

This is a review article. Here we described the main absurd ideas that destroy cosmology and Standard Model (SM). They are the mainstream interpretation of the invariant speed of light in "vacuum" c, existence of single/valence quarks in baryons, and propagation of pure energy without some aether composed of physical/non-zero-volume particles.

The Scale-Symmetric Theory (SST) shows that the succeeding phase transitions of the superluminal non-gravitating Higgs field (HF) during its inflation (the initial big bang) had led to the different mass/energy scales and size scales (bigger structures consist of smaller structures) [1A]. Due to a few new symmetries and 7 parameters only, there appear the superluminal binary systems of closed strings (the spin-1 entanglons) which are responsible for the quantum entanglement (it is the quantum-entanglement scale), neutrinos and the very stable spin-1 neutrino-antineutrino pairs (NAPs) moving with the speed of light in "vacuum", c, which are the components of the gravitating Einstein spacetime (ES) (it is the Planck scale; mass of lightest neutrino is the smallest gravitational mass; neutrinos acquire their

gravitational masses due to their interactions with the Higgs field [1A]; as for electrons, we can define two different masses of a neutrino i.e. particle mass and wave mass (or their geometric mean) [2]), cores of baryons (it is the proton/electric-charge scale), and the cosmic-structure/Protoworld (it is the cosmological scale; Protoworld created the early Universe [1B]) that evolution leads to the dark-matter (DM) structures (they are built of entangled non-rotating-spin NAPs), dark energy (it consists of the additional non-rotating-spin NAPs interacting gravitationally only i.e. they are not entangled i.e. the dark energy is an infinitesimal part of the ground state of ES) and the expanding Universe (the "soft" big bang due to the inflows of the dark energy into the Protoworld) [1A], [1B]. The proton scale leads to the atom-like structure of baryons [1A].

I assume that the readers of this article have read the Wikipedia article entitled "Aether theories" [3].

2. The speed of light in "vacuum" ab initio

Here, applying the Scale-Symmetric Theory (SST), we derived the speed of light in "vacuum" c and speed of quantum entanglement from the beginning (ab initio). The derivation shows that the mainstream interpretation of the invariant c is incomplete. We will prove that the speed c is the speed of the carriers of photons and gluons in relation to any object that is entangled with them so it can be a detector as well. According to SST, the aether/field is the Higgs field (associated with the gravitational interactions) plus the Einstein spacetime composed of the non-rotating-spin-1 neutrino-antineutrino pairs (they are the carriers of photons and gluons) associated with the Standard-Model (SM) interactions. Photons and gluons can be carried by the Einstein spacetime or can move independently from it – but it is not important because a photon is initially entangled (it is the superluminal quantum entanglement), for example, with a star in distant galaxy and is finally entangled, for example, with a detector on Earth so redshift is always defined by the relative velocity of the star and the detector (i.e. does not depend on aether).

Inside each fundamental bare fermion is spinning global torus which carries half-integral spin. Spins of the global tori are defined as follows [1A]

$$m_d\, r_d (2\, v_n / 3) = \hbar / 2, \tag{1}$$

where v_n is the equatorial spin speed of the components of a global torus whereas m_d and r_d are respectively mass and mean radius of the global torus.

Rest masses and mean radii of the global tori result from new symmetry [1A]

$$m_d = m_1 K^{2(d-1)}, \tag{2}$$

$$r_d = r_1 K^{d-1}, \tag{3}$$

where $m_1 = 2.34008 \cdot 10^{-87}$ kg and $r_1 = 0.94424 \cdot 10^{-45}$ m are the inertial mass and radius of the closed string (for entanglon is $2m_1$ and r_1), and $K = 0.7896685548 \cdot 10^{10}$ [1A].

From formulae [1], [2] and [3], we obtain the natural speeds, v_n, of the objects characteristic for the different scales

$$v_{n,d} = 3\, v_t / [2\ K^{3(d-1)}], \tag{4}$$

where $v_t = 2.386343972 \cdot 10^{97}$ m/s is the mean speed of the non-gravitating tachyons [1A], $d=2$ is for the entanglons responsible for the quantum entanglement whereas $d=4$ is for the neutrino-antineutrino pairs i.e. for the carriers of photons and gluons (photons behave as gluons in fields with internal helicity i.e. in the nuclear strong fields). Formula (4) shows that we can neglect the natural speed of nucleons in the aether because for $d = 8$ we obtain $v_n \rightarrow 0$. Formula (4) gives $v_{entanglon,d=2} = 0.7269253 \cdot 10^{68}$ m/s and $v_{photon/gluon,d=4} = c = 299{,}792{,}458$ m/s.

Formula (4) shows that there is a correlation between the invariant speed of photons/gluons, c, and the speeds of entanglons and tachyons. Since photons/gluons are entangled via entanglons with their source or a last-interaction object (it can be a detector) so the speed c is the speed of photons/gluons in relation to their source or a last-interaction object.

We can see that SST shows that the Michelson-Morley experiment cannot be considered to be the first strong evidence against the aether theory.

There must be a correction of the General Relativity (GR) cosmology.

3. The proton spin crisis

We still cannot calculate the half-integral spin of proton within the 3-valence-quarks model. Experimental data show that there is something wrong with such model. Is the quark model of proton partially incorrect? Here we show the origin of the spin asymmetry in deep inelastic muon-proton scattering – it leads to conclusion that single valence quarks cannot be in existence.

SST shows [1A] that with probability ~51% proton is composed of spin-1/2 positively charged core (spin oriented, say, up) and neutral relativistic pion in the S state ($l = 0$). The core consists of the entangled or confined carriers of gluons – there is the spin-1/2 global torus/elementary-electric-charge (spin oriented up) and the spin-0 central condensate. The mass distance between the condensate and the torus is very close to the mass of muon i.e. is ~105.8 MeV. With probability ~49% proton is composed of spin-1/2 electrically neutral core (spin oriented down) and positively charged pion with angular momentum equal to 1 (spin oriented up) so total spin is half-integral and is oriented up. The neutral core consists of spin-1/2 positively charged core (spin oriented up) and the spin-1 pair composed of electron and electron-antineutrino (spin oriented down) so total spin is half-integral and is oriented down.

Probabilities for the two states of neutron are ~63% and ~37% [1A].

Such model of nucleons leads to their masses, to the relative magnetic moments, spins, and so on [1A].

Consider now a measurement of the spin asymmetry in deep inelastic muon-proton scattering. Since the mass distance between the condensate and torus is close to the mass of the going in polarized muons so there is a resonant interaction of the polarized cores of nucleons in a target with the going in polarized muons – there is not such interaction of the muons with the relativistic pions. Just the deep inelastic muon-proton scattering concerns muons and the cores of nucleons only! The SST model of proton shows that the spin-1/2 of the core of proton is oriented upwards for a time period of about 0.51 and is oriented downward for a period of 0.49.

We can see that the SST model, when compared with the 3-valence-quarks model, leads to an illusion that the number of quarks with spin in the proton's spin direction should be almost the same as the number of quarks whose spin is in the opposite direction. This SST prediction is consistent with experimental data [4]. On the other hand, the 3-valence-quarks model suggested initially that the sum of the quark's spin should be equal to the proton's spin i.e. the 3-valence-quarks model is inconsistent with experimental data. This is the proton spin crisis.

Other experiments suggest that the total proton spin carried by quarks can be consistent with almost zero.

Emphasize that the experimental data lead to conclusion that proton does not consist of 3 valence quarks or that such model is partially incorrect! On the other hand, the experimental data are consistent with the SST model.

Moreover, measurements of the European Muon Collaboration (EMC) effect show that the quark distributions in nuclei are not the sum of the quark distributions of the constituent nucleons [5], and that the self-volume of nucleon quarks is larger for nucleons of the heavier nucleus [6]. These phenomena as well suggest that there is something wrong with the 3-valence-quarks model of nucleons. Just the data are in disagreement with theoretical predictions. The anomalies can be easily explained within SST. Just there are the two different states of proton and of neutron [1A] (due to the fact that the emitted gluons during the transitions from one state of a nucleon to the second one are entangled with nucleons, detectors measure the mean state of it) and there are the defined correlations between the different nucleon states that change with increasing number of nucleons in atomic nuclei – such changes are partially stepwise [7].

SST shows that inside baryons there are produced the quark-antiquark pairs but there are not single quarks because contrary to the electric charges of proton and electron, the quark charges are highly unstable [1A], [1C]: stability of the electric charge of proton follows from the phase transitions of the Higgs field and the quantized shortest-distance quantum entanglement of the carriers of gluons whereas stability of the electric charge of electron results from the half-integral spin and the mean distance between the Einstein-spacetime components. There is not in existence a phenomenon leading to stability of the electric charges of quarks. In fields with internal helicity (the nuclear strong fields have internal helicity) can be produced quark-antiquark pair with different masses of the constituents but total electric charge of the pair must be equal to zero. In field with left-handed internal helicity, the positively charged quark in a pair has higher mass. Our Universe was created in a field with left-handed internal helicity [1B] so in parallel with the production of the proton-antiproton and electron-positron pairs, there were produced the proton-electron pairs that created the matter-antimatter asymmetry.

4. Impossibility of propagation of pure, i.e. massless, energy

The third main absurd idea is that pure/massless energy (for example vibrations) can propagate without some aether composed of physical/non-zero-volume particles. Such idea leads to objects that can contain singularity i.e. the incoherent object. Just the GR theory of black holes is incorrect. SST shows that there are in existence the black holes of new kind with quantized masses and without central singularity [1B], [1A].

SST shows that the GR principle-of-equivalence is correct for Planck scale and bigger scales. But there are two scales below the Planck scale that have inertial mass only i.e. cannot be observed directly – it means that the statement that "what is unobservable does not exist" is nonsensical (just there are the pure indirect effects). Elementary energies are carried by the components of the Planck scale and of the two scales below it.

5. Summary

Here we described the main absurd ideas that destroy theoretical physics. SST shows that the Michelson-Morley experiment cannot be considered to be the first strong evidence against the aether theory. SST shows that baryons do not contain valence single quarks because contrary to the electric charges of proton and electron, the electric charges of quarks are highly unstable. SST shows as well that pure/massless energy (for example vibrations) cannot propagate without some aether composed of physical/non-zero-volume particles.

There are many other absurd ideas as, for example, the exponentially increasing number of Feynman diagrams with linearly increasing number of loops in them that causes that calculated quantities are infinite [8]. Francis Brown said: "We know for a fact that at some point it (i.e. QED) begins to diverge from real-world physics. What's not known is how to estimate at what point one should stop calculating the diagrams." In my opinion, there is no physical reason to postulate the existence of such a point. Just SST shows that QED does not act properly because it is the incomplete theory and at least partially incorrect. SST shows that structure of bare fermions is very rich whereas in QED it is assumed that bare fermions are sizeless. The SST QED is very simple without infinities and singularities because of the internal structure of bare fermions [1A]. The next absurd assumption is that we can apply in physics the indeterminate mathematical forms.

The described erroneous ideas cause that we still cannot solve tens basic problems. I am waiting for the end of such mental dark "ages" in cosmology and Standard Model. Who is responsible for this terrible mess in basic research?

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