The Duality of Relativity

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Abstract: Due to the interaction of the Higgs field with the Einstein-spacetime components and neutrinos all matter consists of, in the Higgs field are produced the gradients/gravitational-fields. The Higgs field consists of the non-gravitational tachyons which speed is about 89 powers of ten higher than the speed of light in "vacuum" so the gravitational lines of forces look as spokes stiffly welded on to masses. When a mass rotates then the lines rotate as well. The speed of light is the speed in relation to a frame of reference which is in the rest in relation to rotating (or not) system of the divergent lines of gravitational forces. It means that the Michelson-Morley experiment is not the evidence against the aether theory so number of phenomena which can be described within the special relativity correctly is smaller than it is assumed, especially it concerns cosmology. The lacking part of ultimate theory, i.e. the Everlasting Theory, shows as well that not all masses are relativistic: the masses of neutrinos, the masses of Einstein-spacetime components and of galaxies in the rest in relation to the local expanding dark energy are invariant. And finally, due to the conservation of the ground states of the Higgs field and Einstein spacetime, sometimes, contrary to the special relativity, the speed of light can be not invariant. It all leads to the duality of relativity.

1. Introduction

The succeeding phase transitions described within the lacking part of ultimate theory [1], [2], i.e. the Everlasting Theory, show the internal structure of the Higgs field, the Einstein spacetime and the dark energy. The succeeding phase transitions as well lead to the internal structure of the bare particles. The mentioned structures are not good understood or are neglected in both the General Relativity and Standard Model so there appear many incomplete or wrong interpretations. Of course, the Everlasting Theory leads to the initial conditions applied in the General Relativity and the Quantum Physics so these mainstream theories are, generally, the correct theories but number of phenomena which can be described within these theories correctly is smaller than it is assumed.

Gravitational masses (precisely, the Principle-of-Equivalence masses) are the free Einstein-spacetime components or neutrinos or consist of the entangled or/and confined Einstein-spacetime components and/or neutrinos. The gravitational masses acquire their mass due to their interactions with the Higgs field – the masses produce gradients/gravitational-fields in the Higgs field. Just the binary systems of closed strings (entanglons) the Einstein-spacetime components and neutrinos consist of, transform the chaotic motions of components of the Higgs-field into the divergently moving tachyons. The collisions of the divergently moving tachyons with the other tachyons cause that near and near a gravitational mass the number density of the tachyons is lower and lower so time is going slower and slower. Since the ratio of the speed of light c = 299792458 m/s to the speed of the tachyons is infinitesimal (it is approximately 10^{-89}) so the gravitational field of a mass composed of the lines of gravitational

forces, i.e. of the trajectories of the divergently moving tachyons, "rotates" with the same angular velocity as the mass. The gravitational lines of forces look as spokes stiffly welded on to masses. When a mass rotates (as, for example, the Earth) then the lines rotate as well. The speed of light is the speed in relation to a frame of reference which is in the rest in relation to rotating (or not) system of the divergent lines of gravitational forces. It means that the Michelson-Morley experiment (1887) is not the evidence against the aether theory so number of phenomena which can be described within the special relativity correctly is smaller than it is assumed, especially it concerns cosmology. The Michelson-Morley experiment proves indirectly that there is field composed of the superluminal pieces of space (the Higgs field) interacting with the Einstein-spacetime components and neutrinos the all Principle-of-Equivalence masses consist of.

The Everlasting Theory shows that inertial mass of the components of the Higgs field (they were the components of the inflaton as well), gravitational masses of neutrinos and the carriers of photons and gluons (i.e. the Einstein-spacetime components) are invariant. Einstein-spacetime component carrying rotational energy has three different internal helicities. On the other hand, the strong fields, contrary to the electromagnetic fields, have internal helicity. The interactions of the internal helicities cause that there are the eight different types of gluons and only one of photons. The invariance of mass causes that the General Relativity applied to such invariant-mass objects leads to wrong results.

The cosmology described within the Everlasting Theory shows that there is the Multiverse/Cosmos with stable boundary – the boundary is not transparent for the Higgs field and Einstein spacetime [3]. It causes, for example, that the gravitational constant is invariant. At the end of the inflation, there appeared the expanding regions filled with the dark energy carrying the galaxies (the universes) or antigalaxies (the antiuniverses). The dark energy consists of the additional Einstein-spacetime components so the dynamic pressure inside the expanding regions is higher than the mean dynamic pressure outside them. Resultant velocity of a cosmic structure in our Universe should be the same as the local velocity of the dark energy. It causes that, practically, the galaxies are in the rest in relation to the dark energy so their mass is invariant as well.

The Everlasting Theory shows as well that due to the irreversible processes during the inflation, the properties of the ground states of the Higgs field and Einstein spacetime must be conserved. It causes that the speed of light in "vacuum" sometimes can be not invariant.

Velocity of light is not invariant in the Ramzi Suleiman Complete Relativity (CR) theory [4].

2. The duality of the relativity
There are the dogmas that follow from the Everlasting Theory.
1.
The speed of light is the c and invariant for an observer in the rest in relation to a source of electromagnetic waves and the dominating gravitational field.
2.
Assume that between centers of two gravitational fields distance increases and relative speed is v. Then speed of light emitted by a source in the rest in relation to one centre of the two gravitational fields has speed in the second centre equal to c – v. For example, assume that radial velocities of a very distant galaxy and our Galaxy are the same as the radial velocities of the local dark energy. This means that the stars and Earth are practically in the rest in relation to the local dark energy. It leads to conclusion that the mass of the galaxy is the rest mass whereas the relative speed of emitted light by the galaxy is on the Earth c – v. It means that the applied formula for relativistic redshift $z_r = (z^2 + 2z)/(z^2 + 2z + 2)$ is incorrect (the z is the observed redshift; for z = 1 is $z_r = 0.6$). In reality, $z_r = z = v/c$. Since for some

very distant galaxies is z > 1 so it leads to conclusion that at the beginning of expansion of the Universe there were not numerous protogalaxies which radial speeds in relation to our Galaxy were greater than the c. And within the Everlasting Theory we can explain it – just there were the superluminal protuberances of the dark energy which carried not numerous protogalaxies. More precisely, there were the cascades each of succeeding protuberances each with speed c in the closest previous more fundamental protuberance. The strictly defined biggest cosmic structures were there already at the beginning of the second/'soft' big bang (the first big bang was the expansion of the cracked space – it was the inflation) so there is the upper limit for the observed redshift for the massive galaxies z ≤ 8 [1]. Due to the collisions of the additional Einstein-spacetime components the protuberances consisted of with the other Einstein-spacetime components, the protuberances were very quickly damped.

The incorrect formula for the relativistic redshift leads to the incorrect conclusion that the farthest galaxies are NOW located about 2·13.7/0.6 ≈ 46 billion light years from Earth [5]. In reality, there were the two big bangs: the big bang of the cracked space and the 'soft' big bang which caused the exit of the Universe from the black-hole state. There was the very early Universe in which the protogalaxies were close (in cosmic scale) each to others. This leads to conclusion that the farthest galaxies are NOW located about 13.7 billion light years from Earth. Probably our Galaxy is close to the center of the expanding dark energy.

3.

To the invariant masses, i.e. to the free neutrinos and free Einstein-spacetime components, we must apply the Newtonian dynamics.

4.

When a particle is moving with speed v in relation to dominating gravitational field then its relativistic mass is real i.e. the internal structure of the particle is changing – it follows from constancy of spin and constancy of total speed of the Einstein-spacetime components the particle consists of in relation to the dominating gravitational field [1].

3. Summary

Due to the interaction of the Higgs field with the Einstein-spacetime components and neutrinos all matter consists of, in the Higgs field are produced the gradients/gravitational-fields. The Higgs field consists of the non-gravitational tachyons which speed is about 89 powers of ten higher than the speed of light in "vacuum" so the gravitational lines of forces look as spokes stiffly welded on to masses. When a mass rotates then the lines rotate as well. The speed of light is the speed in relation to a frame of reference which is in the rest in relation to rotating (or not) system of the divergent lines of gravitational forces. It means that the Michelson-Morley experiment is not the evidence against the aether theory so number of phenomena which can be described within the special relativity correctly is smaller than it is assumed, especially it concerns cosmology.

The duality of relativity follows from following facts.

1.

Masses of some particles are invariant.

2.

There are the local motions of the dark energy so relativistic masses depend on such local motions. If velocities of the local dark energy and a body moving with a speed not equal to zero in relation to an observer, are the same then mass of the body measured by the observer is its rest mass .

3.

Due to the conservation of the ground states of the Higgs field and Einstein spacetime, sometimes, contrary to the special relativity, the velocity of light can be not invariant.

The conclusion is as follows. Generally, masses are relativistic but inertial mass of the components of the Higgs field and gravitational masses of neutrinos and the components of the Einstein spacetime are invariant. The speed of light in 'vacuum' can be invariant or Newtonian. The duality of relativity results from the properties of the Higgs field, Einstein spacetime, the dark energy and from the internal structure of the bare particles. All these things follow from the succeeding phase transitions of the Higgs field which are described correctly within the lacking part of ultimate theory i.e. the Everlasting Theory.

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