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The tachyon astronomy.

Abstract

Two ideas : 1) The existence of H – the Hubble constant, and 2) The possibility of tachyons existence. They gives me the hope to try to describe the motion of galaxies on the other side of the border between visible and invisible parts of the Universe. And also how to expand the visible Universe part with the help of the tachyons.

The galaxies fly from the Universe center by the law:

$$\dot{a} = H \times a \qquad (1)$$

Here a – the distance of the galaxy from the Universe center, and $\dot{a}$ – the radial velocity of the galaxy at this distance (the derivative of a by the time). H – the Hubble constant:

$$H = 3 \times 10^{-18} \times sec^{-1} \qquad (2)$$

And also, any galaxy can be taken as the Universe center, and all other galaxies will fly from it by the same law (1).

The modern astronomy looks on the stars and galaxies by studying the electromagnetic fields which was emitting by the stars and galaxies. And these fields moves always with the constant velocity “c”:

$$c = 3 \times 10^{10} \times \frac{sm}{sec} \qquad (3)$$

Also the astronomers catch and others fields (particles) also emitted by stars and galaxies. The speed of them not exceeds the “c”. Moreover, the number of the particles with very high energies in the cosmic rays is very little. And their velocities are close to “c”. The number of cosmic rays with little energy is greater than with the high energy. These particles are named “the bradyons”. The particles, moving with velocities equal “c”, are named “luxons”. It is possible, that there exist the particles with the speeds more than “c”. They was named “tachyons”.

In order to detect them, the physicists took two scintillation counters with the space between them 1 meter. And the differences in time between signals of these two detectors were displayed on the screen of oscillograph. Then the speed of particle was measured by dividing 1 meter on time difference between the two signals. There were many signals like from fast tachyons, but all of them were in region of the own noises of the counters and oscillograph. And the region for slow tachyons (whose speeds were a little more than “c”) was without noises, but near empty of slow tachyons. This means, that in cosmic rays the slow tachyons is fewer than the fast tachyons.

Maximum available (for the electromagnetic fields) is the distance :

$$a_c = \frac{c}{H} = 10^{28} sm \qquad (4)$$

At the greater distance a_1, $a_1 > a_c$ (5) the galaxy has velocity more than “c” (look (1), (5)): $\dot{a}_1 > c$ (6)

The light, emitted by this galaxy **back to Earth** with the speed “c” **relatively to that galaxy**, moves **after this galaxy,** with the speed more than “c” **relatively to the Earth**. That is why the light of those galaxies doesn’t reach the Earth.

The same fate awaits the tachyon, the speed of which relatively to the Earth grater less than the speed of this galaxy. It also doesn’t reach the Earth. It will follow after this galaxy.

But, if the tachyons, emitted by that galaxy back to the Earth (relatively to the Earth) with the speed more than the velocity of that galaxy $\dot{a}_1$, then they will fly away from that galaxy, will reach a_c and then the Earth.

When the tachyon detectors will be invented, and their own noises will be lessened, then the visible part of the Universe will be expanding.

The law (1) makes it possible to derive the formule for any derivatives by time “t” from the distance "a" of the galaxy from Universe center :

$$\ddot{a} = H \times \dot{a} = H^2 \times a \qquad (7)$$

Here on the each step we used the formula:

$$\dot{H} = 0 \qquad (8)$$

The general formula is easily describes by words: How many points are over the letter "a" in the left part of the formula, to those power must be raised “H” in the right part of the formula.

From (7) we can see that at any "a" (the distance of galaxy from the center of the Universe) there exists the acceleration of the galaxy. Moreover, the more is "a" – the more acceleration "$\ddot{a}$".

If to integrate (1) by the time “t”, then we derive : $a = A \times e^{H \times t}$ (9)

A – any constant. Fore each galaxy there exists there own A.

The formula (9) describes the movement of any galaxy in time “t” and by the radius from the Universe center "a".

The average density of the matter in the region, available to electromagnetic observation, is constant. It is logically to consider that the average density of matter is constant and on the other side of the light border.

The tachyons also can have the lifetime, after which they can fall into other particles. So these tachyons can split before they reach the Earth.

The general picture is that: infinitely the new galaxies go out from the Universe center, enlarging and accelerating at that process. There are the **same number of galaxies**, which enter into the space of the electromagnetic visibility from the Universe center, **as the number of the galaxies**, which go over the light border at the same time. Beyond that border the infinite number of the galaxies fills infinitely large space, so far invisible for us, with the same average density of matter as in visible space now.

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