

Free Motion of Elementary Particles in Gravitational Field of Space Ether

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Abstract. This article describes the influence of the ethereal field (nuclear, electric and gravitational) on the velocity and acceleration of the free motion of elementary particles (protons, electrons and photons). The article also gives the reason why the velocity of protons and electrons, which moves in the direction of the gravitational field is more, than the limit velocity of these elementary particles, which moves in uniform ether of space.

1 Field Momentum and Field Acceleration of Elementary Particles

If an elementary particle (proton or electron) is located in uniform ether, on all sides it is subjected to the action of the same intensity of momenta of ether. If an elementary particle is located in an ethereal field (nuclear, electric or gravitational), then the force acting on it in the direction of the field is higher than forces acting from other directions, due to that the elementary particle constantly have an acceleration on direction of the ethereal field.

Due to the constant action of the ethereal field, the elementary particle constantly increases its velocity, and that is equivalent to constant of an acceleration of the elementary particle. As the elementary particle approaches to the source of the field, the strength of the ethereal field is increasing; due to this the acceleration of the elementary particle from acting of the ethereal field also increase.

Rectilinear motion of the elementary particle resulting from acting of the field on the elementary particle is called the *field momentum* of the elementary particle and is denoted by P_f . It is defined as

$$P_f = E \cdot M \cdot S,$$

where E is the intensity of the field at the point at which the elementary particle is located, M the mass of the elementary particle, S the mobility of given kind of elementary particles.

The acceleration, received by the elementary particle from the field momentum is called the *field acceleration* and is denoted by ΔV_f :

$$\Delta V_f = \frac{P_f}{M} = \frac{E \cdot M \cdot S}{M} = E \cdot S.$$

2 Velocity and Acceleration of Elementary Particles in Ethereal Fields

The *velocity* of the motion of an elementary particle in an ethereal field at a given time period t is defined by the vector sum

$$V = V_{t-1} + \Delta V = V_{t-1} + \Delta V_{\text{free}} + \Delta V_f + (-\Delta V_{ed}),$$

where V_{t-1} is the free velocity at the period t , that is, the actual velocity of the elementary particle at the previous period $t - 1$, ΔV_{free} the free acceleration of the elementary particle at the time period t , ΔV_f the field acceleration of the elementary particle at the time period t , and $-\Delta V_{ed}$ the ethereal deceleration of the elementary particle at the time period t .

The *acceleration* of the motion of an elementary particle in an ethereal field at a given time period t is defined by the vector sum

$$\Delta V = \Delta V_{\text{free}} + \Delta V_f + (-\Delta V_{ed}).$$

3 Supralimit Velocity of the Motion of Protons and Electrons

If elementary particles (protons or electrons) moves along the direction of a field, the elementary particles may increase its velocity to such a degree that the velocity becomes a *supralimit* velocity. It should be taken into account that the strength of a field is increasing on measure of the approach of the elementary particles to the source of the field. After the elementary particles leaves the field, the velocity of the elementary particle becomes again the limit velocity in uniform ether. If the elementary particle moves against the ether field, its velocity decreases.

The phenomenon of field acceleration is used in the particle accelerators (cyclotrons), where the elementary particles increase the velocity of their motion during the passage through the electric field in the direction of this field. Since the elementary particles in the cyclotrons have no rectilinear, but district motion, and the large part of way they move without the field acceleration from the electric field, then the elementary particles in the cyclotrons increase the velocity at acting the electric field, and at exiting from the electric field, the elementary particles decrease the velocity to limit velocity. Therefore the elementary particles in the cyclotrons can have a velocity less than the most fast galactic elementary particles.

The gravitational field of a gravibody is a best accelerator or decelerator of elementary particles. The acceleration or the deceleration of the elementary particles depends on direction of their motion relative to the direction of the field. For instance, the galactic elementary particles, which come to the Earth with a big energy more than $10^{10} MeV$, had an field acceleration when they was moving in the gravitational field in direction to the Sun. The increase of the momenta of elementary particles can occur only due to increase of their velocity, but the mass does not change.

But the elementary particles, which moves from the Sun to the Earth, i.e. in direction opposite to the gravitational field of the Sun, decelerated their motion. So, after flashes on the Sun the protons come to the Earth in 15-30 min after photons of light; the electrons come to the Earth in 20 hours; and the ions come to the Earth in 40 hours. The distance from the Sun before the Earth 149600000 km. Hence the velocity of the fast Sun protons reaches 80000 km/s. The velocity of the Sun electrons reaches 2000 km/s, what is considerably lower than the velocity of Sun protons. As it is seen, the gravitational field acts unequally on the protons, on the electrons and on the photon of the light. Herewith it is necessary to consider, that the gravitational field of the Sun is directed opposite to direction of motion of elementary particles, and the gravitational field of the Earth is directed in direction of motion of the elementary particles moving to the Earth.

Elementary particles, at motion from the Sun to the Earth, the more part of the time moves in gravitational field of the Sun, which decelerate the motion of elementary particles. As electrons have greater mobility than protons, then the gravitational field of the Sun in a greater measure acts on electrons than on protons, and therefore the electrons at passing from the Sun to the Earth have smaller average velocity of motion than the protons. The velocity of light from the Sun does not change at action of gravitational field of the Earth in the direction of light because on each photon in unit of

time an insignificant number of mats of the gravitational field are acting, on comparison with number is mats, which acts as ethereal deceleration. The velocity of light also does not change under action of counter gravitational field of the Sun as photons have so big mobility and inertial acceleration, at which the photons increase the velocity of the motion up to the limit velocity, which limited by ethereal deceleration, i.e. by density of the ether.

The velocity of ions of the Sun is smaller than the velocity of separate protons and electrons. If these ions had greater velocity on start of motion from the Sun, then they will be decayed on separate protons and electrons. After leaving the range of the gravitational field of the Sun, the protons and the electrons increase their velocities up to their limit velocity in the uniform cosmic ether.

If take into account that the fast Sun protons, which after flashes on the Sun comes to the Earth in 20 min, have the energy approximately 1GeV and the velocity 80000 km/s, and if take into account that the fast galactic protons, which is moving in the direction of the Sun, have the energy more 10^{10} MeV, then accordingly the velocity of the galactic protons, which moves to the Sun, more than 10^{12} km/s. As seen, the protons, moving in direction of the gravitational field, have the velocity much more than the velocity of light. This possible because of that that the protons have the much greater mass than the photons and therefore the protons have a smaller ethereal deceleration.

Conclusion

1. The influence of the ethereal field (nuclear, electric, or gravitational field) on elementary particles located in this field consists in the fact that the mats (initial particles) of the field push the elementary particles in the direction of the field, i.e. the elementary particles acquires acceleration in the direction of the field, due to that the direction and velocity of motion of elementary particles changed.

2. At motion an elementary particles in direction of ethereal field, the velocity of the elementary particles can be increased more than the limit velocity of these elementary particles in uniform ether.

3. At increasing the velocity of elementary particles (protons and electrons), increases their momenta, but the mass of elementary particles can not increase herewith.

4. The velocity of light do not increase under action of ethereal field,

because the photons of light have a small mass and a big mobility.