

Free Motion of Elementary Particles in Uniform Ether of Space

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Abstract. In this article is open the principle of free (inertial) motion of elementary particles (protons, electrons and photons) in space ether, with taking into consideration the deceleration of these particles in the ether.

1 Free Matic Acceleration of Free Motion of Elementary Particles

The cosmic ether located far from gravibodies, where practically there is no gravitational fields, is uniform ether. The motion of elementary particles in uniform ether between their collisions is the free motion (inertial motion). At collision of elementary particles, sharply changed the velocity and the direction of their motion.

The free motion of elementary particles have a free acceleration (inertial acceleration). If elementary particles had not a free acceleration, then they had a no free motion, due to their deceleration in ether and due to their deceleration upon collisions each with other and with gravibodies. The acceleration which an elementary particle conditionally may have in a emptiness (without ether) is called the *matic free acceleration* of an elementary particle and is denoted by ΔV_{mat} .

2 Ethereal Deceleration of Free Motion of Elementary Particles

At increasing of velocity of motion of an elementary particle in ether, increases the strength of ether momenta (ether pressing) on the front side of the elementary particle, and decreases the strength of the ether momenta on the rear side of the elementary particle. This deceleration of the motion

of elementary particles is called the *ethereal deceleration* of an elementary particle and is denoted by ΔV_{ed} .

Ethereal deceleration of an elementary particles is defined as

$$\Delta V_{ed} = \frac{V^2 \cdot \Pi}{M \cdot S}$$

where V is the velocity of elementary particles at given period of time, Π the density of ether, M the mass of elementary particle, and S the mobility of elementary particles of given kind.

Protons have a smaller mobility than electrons, and the electrons have a smaller mobility than photons.

If the density of the uniform space ether to accept $\Pi = 1$, then the ethereal deceleration of the elementary particles, moving in this ether, is defined:

$$\Delta V_{ed} = \frac{V^2}{M \cdot S}$$

Since the photons has a least mass and a mos tmobility, then for photons:

$$M \cdot S = 1$$

$$\Delta V_{ed} = V^2$$

3 Accelerated Free Motion and Uniform Free Motion of Elementary Particles

Elementary particle after radiation or after collision with another elementary particle have a new free acceleration and velocity of motion. In beginning of new free motion, the velocity of elementary particle increases due to the free matic acceleration, and at the same time the ethereal deceleration of elementary particle is also increasing due to the increasing the velocity of motion. But at beginning of new free motion of elementary particle, the matic acceleration is more than the ethereal deceleration, because the ethereal deceleration is proportionally to the actual acceleration, which less than the matic acceleration, due to the ethereal deceleration of elementary particle. When the ethereal deceleration will become equal to the matic acceleration, then the actual acceleration of the elementary particle will become zero and the velocity of the free motion of the elementary particle will not increase any more, i.e. becomes constant.

The initial motion of elementary particle after collision, when its matic acceleration is more than its ethereal deceleration, is called *accelerated free motion* of an elementary particle. The formed free motion of elementary particle, such that the ethereal deceleration is equal to the matic acceleration, is called the *uniform free motion* of an elementary particle. The velocity of the uniform free motion of elementary particles in the uniform ether (without ethereal field) is called the *limit velocity* of a motion of given elementary particles and is denoted $V_{\text{free(lim)}}$ or V_{free} .

Thus, for $\Delta V_{\text{mat}} = \Delta V_{ed}$,

$$V_{\text{free}(t)} = V_{\text{free}(t-1)} + \Delta V_{\text{mat}} + (-\Delta V_{ed}) = V_{\text{free}(t-1)}.$$

So, elementary particles at uniform motion has a free matic acceleration and an ethereal deceleration, which equal to each other. If not exist a free acceleration of elementary particle, then due to the ethereal deceleration, the free velocity of elementary particle will vanish, but this contradicts the reality.

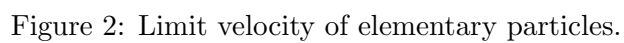
Fig. 1 shows the changing of the free matic acceleration ΔV_{mat} , the ethereal deceleration ΔV_{ed} and the actual free acceleration ΔV_{free} of an elementary particle depending on the velocity of the elementary particle V .

From Fig. 1 is seen that the free acceleration ΔV_{free} and the velocity V of an elementary particle increases until the matic acceleration $\Delta V_{\text{mat}} = f(V)$ exceeds the ethereal deceleration $\Delta V_{ed} = f(V)$. But at a certain velocity of the elementary particle, its matic acceleration becomes equal to the ethereal deceleration. As a result of this, the velocity of the elementary particle does not increase any more, and consequently, the free acceleration and the ethereal deceleration are constant. Thus, the free motion of a elementary particle becomes uniform. From the figure also is seen that during increase in velocity of elementary particle, inertial acceleration ΔV_{free} at first increases from zero to ΔV_{lim} , and then decreases to zero.

In Fig. 2 is shown the dependence of velocity of free motion of an elementary particle (V) on the time of its motion.

The limit velocity of an elementary particle is determined on the basis of the fact that when the matic acceleration and the ethereal deceleration become equal, then they do not increase anymore, therefore the limit velocity of an elementary particle is defined from the equality

$$\Delta V_{\text{mat}} = \Delta V_{ed} = \frac{V_{\text{free}}^2 \cdot \Pi}{M \cdot S}.$$



$$V_{\text{free}}^2 = \frac{\Delta V_{\text{mat}} \cdot M \cdot S}{\Pi}$$

If to accept, that $\Delta V_{\text{mat}} = \Delta V_{\text{ed}} = 1$, then

$$\Delta V_{\text{free}}^2 = \frac{M \cdot S}{\Pi}$$

The limit velocity of photons of light in cosmic ether is:

$$V_{\text{lim}} = C = 300000km/s.$$

The elementary particles which are being in space or in vacuum seldom collide with each other, therefore they between collisions there always move with a limit velocity. But, the limit velocity of the elementary particles is not alike in various places of the Universe. On edge of the Universe the density of the ether is less and accordingly there the limit velocity of elementary particles more than in the basic part of the Universe where there is also our Galaxy. The *momentum* of an elementary particle at a given time period t is defined as

$$P_t = M \cdot V_t,$$

where M is the mass of the elementary particle and V_t its velocity at a given time period t .

Follows to take into consideration that the so named energy W of the elementary particles presents itself practically the momentum of these elementary particles.

Conclusion

1. The elementary particles after start have an accelerated free (inertial) motion, which for some time changes in uniform free motion.
2. The accelerated free motion of elementary particles has not a constant acceleration, but has an accelerated acceleration, when in each unit of time the acceleration more than in previous unit of time.
3. The free motion of elementary particles has free acceleration and ethereal deceleration, which becomes equal.