Principle of Action of Magnetic Field on Protons and Electrons

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Abstract. This article reveals the physical essence of the Lorentz force, that is a physical process has been discovered of the action of magnetic field on electrons and protons.

Given article is a part of "Real theoretical physics", which I have done on basis of existence of an ether". According to the new theoretical physics the ether is in all Universe between gravibodies, inside the gravibodies and separate bodies, and also between atoms and inside of atoms between elementary particles. The new theoretical physics does not reject the modern theoretical physics, and only deepens, expands and corrects her.

1 Action of Magnetic Field on Protons and Electrons

If a proton or electron is located in an uniform ether and is in free motion with the speed V_{free} and in free rotation with the circumferential speed V_{cir}, then the average momentum of mats of the proton which move along the same circumference is the same at all points of this circumference as is shown in Fig. **??**. The mats which move along a circumference with a greater radius have correspondingly a greater momentum of circumferential motion. The momentum of the proton's mats in the direction of their circumferential motion is called the *circumferential momentum* of mats.

If a proton is in free motion with a speed V_{free} and free rotation with a circumferential speed V_{cir} around an axis which coincides with the direction of free motion and if the proton is in an outside magnetic field directed across the direction of the free motion of the proton, then the average circumferential momentum of the mats in the proton's sphere is different at different points of circumferential motion of mats; it changes depending on

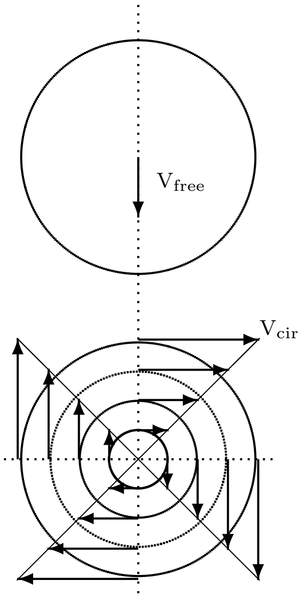

Figure 1: Circumferential momentum of denses

the positioning of the mats in a given part of the sphere with respect to the magnetic field, as is shown in Fig. **??**.

The action of the magnetic field is the strongest on the mats situated in the sector ABC, where the mats move opposite to the magnetic field. Upon the proton's rotation, all its parts pass periodically through the given sector.

If a proton has the right-directed rotation as is shown in Fig. **??**, then the mats (longmats) of the proton in the sector BAD head-collide with the mats (ovalmats) of the magnetic field. The mats of the proton in the sector BCD have consecutive collisions with the mats of this field. The momentum of mats originated by the action of the magnetic field is called *field momentum* of mats. The circumferential momenta of mats are composed of momentum of free motion and of field momenta of these mats. Fig. **??** shows that at the point C the directions of free-motion momenta of mats coincide with the directions of field momenta of these mats, while at A, the free-motion momenta of mats are oppositely directed to field momenta; due to this, the circumferential momentum of mats is greater than at A, correspondingly,

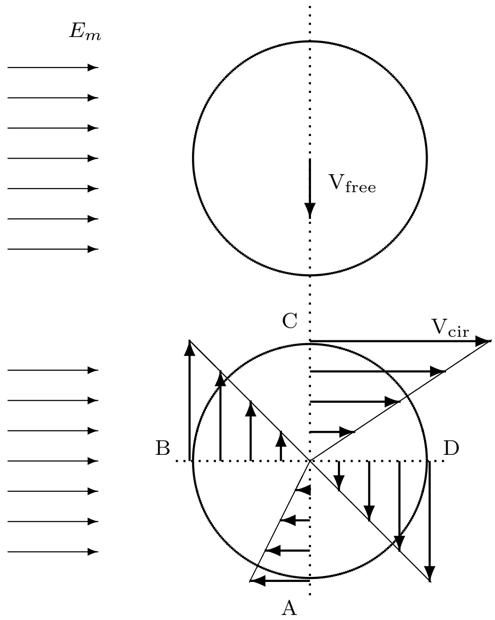

Figure 2: Average momentum of mats

the circumferential speed of mats at C is greater than that at A. The same figure shows that the part of the proton situated in the sector BCD has a greater circumferential speed than the part of the proton in BAD. Due to this, the rotation of the BAD part of the proton is decelerated, while that in the sector BCD, accelerated. That means that the BAD part of the proton is being slowed down with respect to the part of the proton positioned in the sector BCD. Due to this, the part of the proton located in the sector BCD is in circumferential rotation around the part of the proton located in BAD.

Since the BCD part of the proton is in circumferential motion around the BAD part of the proton, and since as rotation progresses, all parts of the proton pass through the sector BAD, the proton moves along a circumference perpendicular to the axis of the proton's rotation, that is perpendicular to the proton's direction of motion. Magnetic field acts similarly also on electrons.

The difference between the circumferential intensity of momenta of mats at the point of proton (electron) where the circumferential motion of mats coincides with the direction of the outside magnetic field and at the point of proton where the circumferential motion of mats is oppositely directed to

the outside magnetic field is called *the Lorentz force.*

If a proton (or electron) is situated in an extraneous magnetic field and is moving perpendicularly to the direction of the field, then due to the action of the Lorentz force the proton is in circumferential motion. The radius of this circumference is:

$$r = \frac{P_{\text{free}}}{E_m} \cdot K$$

where P_{free} is the momentum of free motion of the proton, E_m, the strength of magnetic field.

The action of the magnetic field in the greatest measure on protons and electrons only in a case when this magnetic field is directed perpendicularly to the axis of rotation of protons and electrons, i.e. perpendicularly to the trajectory of their movement. In the Wilson chamber in the presence of magnetic field the protons and electrons have a curvilinear motion. When the medium in not rarefied sufficiently and the velocity of protons and electrons is not high enough, their velocity diminishes so that they move along a contracting helix.

If the direction of motion of a proton (or electron) coincides with the direction of magnetic field, the Lorentz force is not formed, and in that case the magnetic field do not influence the direction of motion of the proton, in contrast to electric, nuclear or gravitational field. This is explained by the fact that the magnetic field consists only of ovalmats, while the gravitational and electric fields consist of ovalmats and spheremats.

As ovalmats have considerably smaller average velocity and momentum than spheremats, then ovalmats of magnetic field do not pass through elementary particle, and only through its sphere (the rarefied superficial layer). But the ovalmats act on this sphere only at passage opposite direction of rotation of elementary particle.

2 Interaction of Two Parallel Conductors with Electric Current

If two conductors are parallel to each other and if through these conductors pass electric current in one direction, these conductors attract to each other up to some distance between them. Explanation of that that the magnetic fields, formed by current electrons of one and other conductor, coincide in the direction, forming a general magnetic field for both conductors. The mats of the magnetic field leave the ether around conductors, due to that

the density of the ether between conductors is decreasing and the ether from the external sides push the conductors to each other up to distance where the magnetic fields around the conductors is more dense. If in one conductor pass an electric current in one direction, and in other conductor in opposite direction, then these conductors are moving from each other. In this case the magnetic fields have opposite direction and due to that the density of ether between conductors increased and this ether pushes the conductors. Action of magnetic fields of two conductors one on other occurs only if the electric current of the conductors have sufficient density, because than greater the section of the conductor, the strength of the magnetic field for pushing away the conductor is required more.

But, if through parallel conductors passes an electric current enough big strength that the conductors have heated up, these conductors are attracted to each other irrespective of in what direction the electric current in conductors is passing. Action of conductors with electric current on each other in this case occurs because the current electrons have central collisions with nucleuses of atoms of the the conductors, due to what there is an ionization of atoms. As a result of it around of each conductor the electric field which pushes the ionized nucleuses of atoms of the next conductor in the direction of the field, i.e. occurs attraction of conductors to each other is formed. In case of when through the conductors passes the electric current in opposite directions, then while the conductors still have not heated up, they move from each other because of influence of magnetic fields on density of the ether between the conductors, but after a while the conductors heat up and they are attracted to each other because of action of electric fields.

If two streams of electrons are radiated in parallel in one direction in vacuum or in air, then the magnetic field of one stream of electrons, pushes away other stream of electrons. The streams of electrons by a rule of the left hand will deviate in opposite directions of perpendicularly plane, passing through streams of electrons.

If the direction of one radiated stream of electrons is former but the direction of other radiated stream of electrons opposite to the direction of the first stream of electrons, then the first stream will deviate not as in the first case, but in opposite direction. The second stream of electrons also will deviate in opposite direction.

Conclusions

1. The Lorentz force, which is the changing of the direction of the motion of an electron or proton under the action of magnetic field is due to the fact that the ethermats of the magnetic field when hitting the surface layer of an electron or proton repulse to a greater degree the surface layer which is in circular motion towards the magnetic field and to a lesser degree the surface layer which is in circular motion in the direction of the magnetic field.