Physical Principle of Formation and Essence of Radio Waves

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Abstract.

This article opens physical phenomena which occur at the formation of the radio waves, and opens the essence of the radio waves as an waves of quantums of uniform ether. The radio waves are a discrete ethereal fields, which are formed by electrons or protons.

The given article is a part of my project "Real theoretical physics on basis of existence of the ether". According to this new theoretical physics, the ether exists in the Universe between gravibodies and inside the gravibodies and separate bodies, and also between atoms and inside of atoms between its elementary particles. The ether is not an elastic environment, but represents itself as a separate particles of an initial matter. The particles of initial matter are moving in different directions independently from each other. Between these particles there is an absolute emptiness. The ether is the most rarefied matter and represents vacuum.

1 The Main Characteristic of Mats

The ether consist from a most small separate particles of an initial matter. These particles are called *mats*. Every mat moves only rectilinearly and always with acceleration. The acceleration of a mat is equal to velocity of this mat at given time. If the mats not will have the inertial acceleration, in this case in a result of their collisions will not be a moving the material particles in the Universe, that not occur in reality. At collisions with each other, the mats change the direction and the velocity of their motion. Therefore the mats of ether move usually in different directions. Because of collisions, the mats can not have a boundless velocity of motion. The average velocity of motion of given mat with collisions is called the *limit velocity* of the mat.

The general momenta of all mats, which are moving through a unit of ether in given direction is called the *intensity of momenta of ether* or

momenta of ether in given direction. The momenta of ether which far from the gravibodies is identical in different directions. The momenta of ether around of elementary particles or gravibody is greatest in the direction to this particle or gravibody, that represents a nuclear field or a gravitational field.

If two mats move toward each other, and if their general momenta in counter direction is great enough, then the mats can break at collision with each other, and therefore the mats are have an different mass. The mats are breaking only on flat sections and therefore the mats have flat surfaces and have the form of different polyhedrons. The mats are characterized by the sphericity their form. The mats which have sharp corners and have longer form, are called *longmats*. The mats, which have the oval form or the spherical form are called *ovalmats* or *spheremats*. At collisions the mats, the salient (lengthened parts) of the mats can in greater measure have an push relative to the centre of the mass. Because of that the mats start to rotate around of the center of the mass. As the longmats have in a greater measure the lengthened parts, then the longmats at collisions with the other mats have in a greater measure the rotation and in a smaller measure the rectilinearly motion. The ovalmats can have in a greater measure the motion and in a smaller measure the rotation, and the spheremats have almost only the motion. The rotation of the mats occurs to inertial acceleration, as well as the motion. At collisions, the mats changes the direction and the velocity of their rotation .

Apparently, the mats having a greater sphericity have a greater mobility. The ratio of the mass of mat to the greatest distance from a surface of mat up to the center of mass of mat is called the *sphericity* or *mobility* of mat and is denoted by S. Since the sphericity of all mats is various, therefore the borders between longmats, ovalmats and spheremats do not exist.

As the longmats have a small mobility, then when they collide with each other can form a congestion of longmats which represent itself the known elementary particles (nucleons and electrons). Thereby all elementary particles consist of longmats, but the ether consists from ovalmats and spheremats. The ether inside the gravibody and around the gravibody consists mainly from ovalmats, but the ether of space consists mainly from spheremats. The density of the ether around a gravibody is much less than in a gravibody, and much more than in space.

The mats an ether always move with acceleration, but at collisions with each other, the velocity of the mats is decreasing. Therefore the velocity of motion of mats is characterized by average limited velocity of motion in

view of collisions of mats with each other.

2 Formation of Ether Waves by Electric Current

Electrons of electric current in conductors collide with nucleuses of atoms at transition from one crystal in another crystal and due to that the electrons decrease their velocity of motion and of rotation. But then the electrons again increase the velocity of motion and rotation, because of inertial acceleration of motion and rotation. Therefore, the average velocity of motion and of rotation of electrons of electric current is less than the limit velocity of motion and of rotation of electrons in space.

If a variable electric current of high frequency passes through a conductor, then the current electrons passes through the ether of body between the nucleuses, and these electrons pushes the mats of the ether on the sides from a way of passage of the electrons, herewith the part of ether of body leaves the conductor.

The ether of a body (conductor) consists mainly from ovalmats, but the external ether around the body consists mainly of the fast ovalmats and the spheremats. The spheremats have a much greater sphericity and accordingly a much greater average limit velocity than the ovalmats. The spheremats and those ovalmats of external ether, which have enough a big limit velocity ant momentum, can pass in the conductor and can collide with the current electrons. The spheremats have a big velocity and therefore they can pass through the electrons, but the ovalmats cannot pass through the electrons.

Since the current electrons have few collisions, they moves and rotates with a big velocity. Because of fast rotation of the electrons, the longmats of electrons the longmats of the surface of the electrons have a big circular velocity and accordingly a big momenta. Therefore the longmats of electrons pushes away the ovalmats with such force, that the ovalmats are repulsed by from the conductor with a big velocity. But this velocity less than the average limit velocity of these ovalmats in the surrounding ether. Therefore at the further motion of these mats their velocity increases up to average limit velocity of these mats in the surrounding ether. The average limit velocity of motion of mats, at their collisions with others mats of the ether, is directly proportional to mobility (sphericity) of mats.

The ovalmats, which have such mobility, at which they at moving from a conductor with a current increase their velocity of motion till average velocity of motion of mats of the surrounding ether, continue to move from

the conductor. The ovalmats, which have such mobility and accordingly such average limit velocity, at which they almost not change the direction of their motion at collisions with the mats of the ether, is called *wave mats*. Wave mats, which have the sphericity equal to the average sphericity of mats of the space ether, is called *light mats*, as they at collisions have average velocity equal 300000 km/s.

The wave mats, leaving the conductor at motion of the electric current in one direction, form one ethereal wave. Each change of the direction of the electric current creates a new ethereal wave. Set of these ethereal waves is called *radio waves* or *radio waves*. The direction of motion of radio waves to perpendicularly to the conductor with the electric current. Frequency of radio waves is equal to frequency of change of the direction of the electric current in conductor. Radio waves are conditionally represented on fig. below.

If the antenna is a rectilinear conductor, than the emission of radio waves occurs as is shown in Fig. **??**.

The ovalmats, which have a smaller mobility than the light mats, have a smaller average velocity of motion and in a greater measure change the direction of motion at collision with the mats of the ether, due to that they quickly are dissipated, not continuing the motion further, similarly to mats of magnetic field.

The ovalmats, which have a greater mobility than the light mats, move more rectilinearly than the light mats and have the average velocity of motion greater than 300000 km/s. Due to that, these mats move ahead of the light mats, expanding the radio wave in the manner of more high harmonicas. The density of location of light mats in a radio wave more than the density of location of faster wave mats. It is due to that, the ether have a greater concentration of mats, which have a smaller mobility.

Thus, the radio waves are kept and continue the motion only in that case if they consist from wave mats, which have the mobility equal or greater than the average mobility of mats of the surrounding ether.

The magnetic field, unlike radio waves, is formed from ovalmats, which has a smaller momenta than the limit momenta of mats of the surrounding ether. Therefore the ovalmats of a magnetic field move from the conductor, do not increases, but reduces the average velocity of the motion, and considerably changes the direction of the motion because of collisions with the mats of the surrounding ether. Therefore these ovalmats at motion form only a turbulence of mats, in the form of a ether wind, that represents a magnetic field. But, owing to the big concentration of these mats in ether,

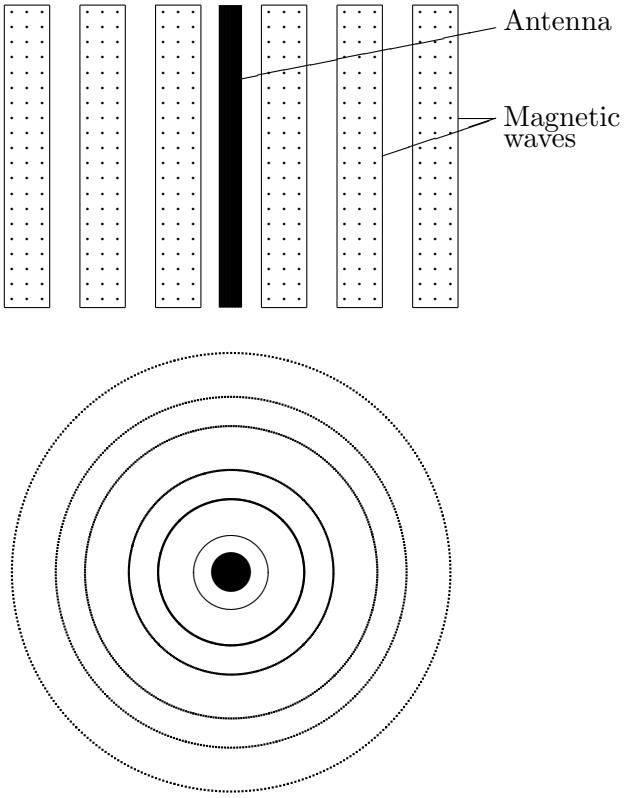

Figure 1: Emission of radiomagnetic waves

then the formed magnetic field, has a great strength.

If the direction of the motion of radio waves is crossed with a direction of a gravitational field, the radio waves are displacing in the direction of the gravitational field because the gravitational field consists from spheremats which have a greater sphericity (mobility) and accordingly a greater average momenta than the ovalmats of radio waves. But, as the radio waves of high frequency unlike of the radio waves of low frequency have a greater concentration of superfast mats, which do not deviate at collision with the gravimats, then only a part of the mats of radio waves of high frequency deviate under influence of the gravitational field.

3 Cross-section Waves

As the ether is not an elastic environment, then the ether waves have a motion in environment directly, but not because of the transfer of momenta of mats from one part of the ether to mats of other part of the ether. At motion of radio waves, the mats of these waves can collide with the mats of the surrounding ether, which have a greater or smaller momenta than the mats of radio waves. If the mats of the radio waves collide with the mats, which have a smaller momenta, these mats with a smaller momenta moves in the sides and they form a cross-section waves. But these waves exist only on some distance, as they consist from the mats, which have a limit velocity smaller than 300000 km/s. If the mats of radio waves collide with the ethermats, which have a greater momenta, in this case the mats of radio waves change more the velocity and the direction of their motion, why they leave the moving radio wave.

4 Formation of Ether Waves by Atoms

Ether waves (radio waves) are formed not only at passage of a variable electric current through a conductor, but also at orbital motion of protons in atoms. (See article "Principle of a structure of multielectronic atoms"). As the mass of protons 840 times more the mass of electrons, then the orbital protons at rotation push away considerably more ovalmats of surrounding ether than the orbital electrons. Therefore the protons radiate radio waves with greater amplitude than electrons. Since every orbital electron (except for the first orbit) moves above one orbital proton and they have an opposite direction of rotation, then the amplitudes of ether waves of orbital protons

and electrons is in opposite directions and the difference of these amplitudes is acting only.

As the orbital protons have circular motion, the direction of radiation of radio waves by given proton changes according to the location of this proton at present time. Herewith the radiation of ether waves in given direction periodically repeats through each orbital turn of a proton. Thus, the proton being in the given orbit of the given atom radiates ether waves in the given direction with frequency of equal angular speed of orbital motion of this proton.

Atomic hydrogen have only one orbital electron which radiates radio waves with length of a wave 21 sm. Molecules of hydrogen do not radiate radio waves as in this case the orbital electron has periodic tangential collisions with the proton (nucleus) of the next atom of a molecule, due to that the electron is braking its rotation and even change its direction of rotation. Then the speed of rotation is increasing, also the axis of rotation becomes in a direction of orbital motion. But this speed of rotation is insufficient for formation of ether waves. Orbital protons and electrons have the speed of rotation corresponding to 1/2 spin, because at orbital motion they have no collisions (except for last orbit of electrons).

Apparently, the radio waves do not represent a electric field and a magnetic field, i.e. an electromagnetic field does not exist. It follows from that that the principle of their formation is various also they have a different distance of existence. Maxwell has successfully created a mathematical model for the radio wave, but herewith he has presented the radio wave in manner of an electromagnetic field, what factually not reflect essence of a radio wave. Einstein could not create the theory of a uniform field, i.e. could not open essence of all fields, since he has rejected the existence of an ether, and because of this, the development of physics was detained a century.

Conclusions

1. At passage of an electric current of high frequency through a conductor, the current electrons passes through the ether of body between nucleuses and pushes the ether in the sides from the way of current electrons. But, the more mobile mats of the ether around of the conductor have a greater momenta and they can pass in the conductor and get in the sphere of current electrons. The current electrons have a fast rotation and consequently their circumferential mats have a big momenta. The mats of the electrons repulses

the mats of ether from the conductor and the mats of the ether form a radio wave. Each new direction of an electric current creates a new radio wave.

2. Radio waves represent a multitude of consecutive discrete ether waves which consist from mats, which have a limit momenta greater than the average limit momenta of surrounding ether, while the mats of radio waves move predominantly rectilinearly.

3. The cross-section radio waves are formed at collision of mats of radio waves with the mats of the surrounding ether. The momenta of mats of the cross-section radio waves is smaller than the average limit momenta of mats of the surrounding ether, therefore the mats of the radio waves push away the mats of the surrounding ether, which form the cross-section radio waves.

4. Radio waves of greater frequency have a greater concentration superfast mats with a velocity 300000 km/s, why they in a smaller measure deviate under action of a gravitational field.

5. Ether waves (radio waves)of atoms are radiated by orbital protons but not by orbital electrons.