6.3. The model of electromagnetic induction

Consider the model of the phenomenon of electromagnetic induction (figure 6.2). Let there be a conductor 1 with the current, which creates a magnetic field around itself. At the same time he placed in parallel another conductor 2. Magnetic field B (flux of gravitons) of the conductor 1 is aimed up. It directs the electrons in the conductor 2 of the charge tube in the direction of the vector B.

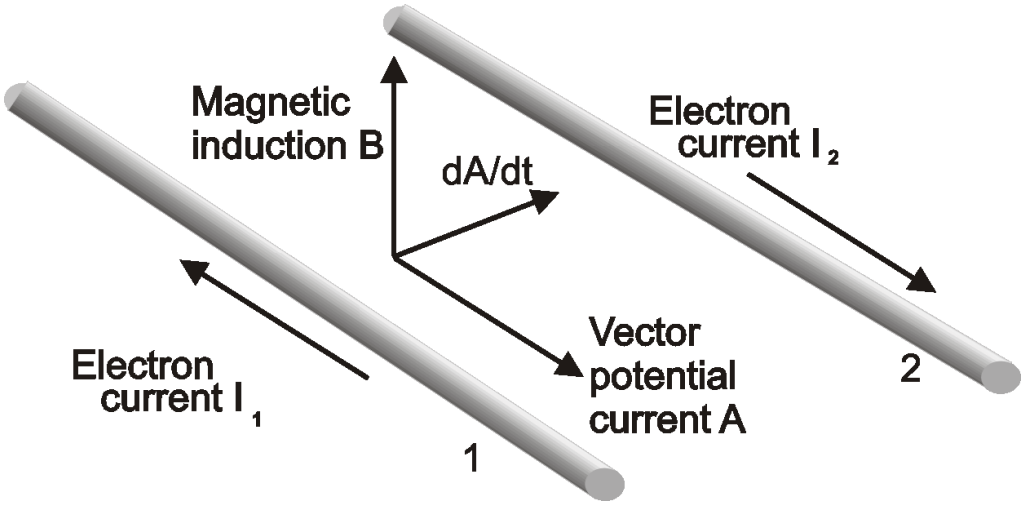

Figure 6.2. The scheme of electromagnetic induction

Again, that all fast-rotating bodies are one thing in common. Under the influence of external torques the body axis turns not on the same plane, in which she turned to without rapid rotation, and in the plane perpendicular to it. The motion of the axis at a constant moment is not accelerated, but with a constant angular velocity. It lasts only as long as the external moment. Once terminate external moment, immediately stopped and the motion axis.

Forceful action on the electrons flow is reduced to their shift by “graviton wind”. But with the shift of the center of mass of a rapidly rotating body the body is shifting in the direction perpendicular to the direction of force. Figure 6.3 show that if the flow B shifts the centers of mass of the electron neutrino component, the top of them seeks shift to the right and bottom — to the left. This moment of forces deploying electron charge tube E down in the direction of flow B.

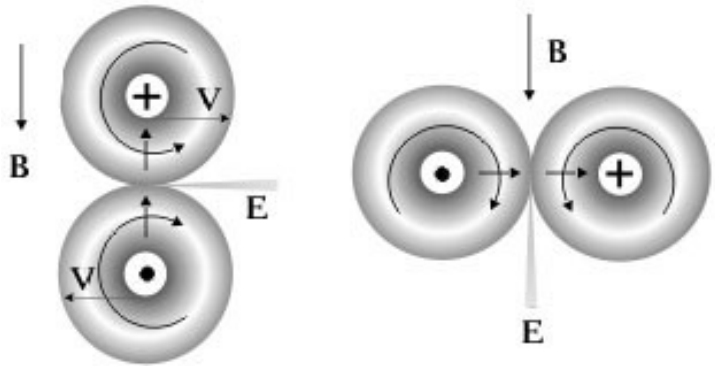

Figure 6.3. The orientation of the electron in a magnetic field

The increase in current in the conductor 1 (Figure 6.2) leads to an increase in the value of the vector potential A of conductor 2. But the increase of the vector potential is equivalent to the appearance of the vortex electric field $E_{rot} = -\frac{\partial A}{\partial t}$. This external force for positive charges directed against the derivative $\partial A/\partial t$, i.e. from the conductor 2 to conductor 1, and for electrons — in the opposite direction. The resulting force tends oriented to displace the electrons in Figure 6.3 right. But with this shift of the center of mass of the electrons fall into the region's own axial velocity, which causes them to drift along the axial axis of the conductor.

The same thing happens if we begin to approximate the conductor 1 to conductor 2. Movement of a conductor will cause the movement of an attached boundary layer field, i.e. "Graviton wind". This "wind" will seek to move the electrons right, causing them to drift along the axis. Induced current will have a direction opposite to the original. With decreasing of the current in the conductor 1 "graviton wind" is directed left and the induced current in the conductor 2 will flow in the same direction as the original. Hence, the rule of Lenz is.

The displacement of charges in the remote conductor is the source of the induced EMF. It is caused by a external power by changing the vector potential over time. At the ends of open-wire there is a potential difference is exactly equal to the EMF.

If the conductor 2 is also the current flows, these currents are gravitated, if they have the same direction and repel each other with oppositely directed currents. This is true for the motion of two electrons, for the currents in the vacuum and the currents in the conductors. The scheme of interaction of two unidirectional currents is shown in figure 6.4.

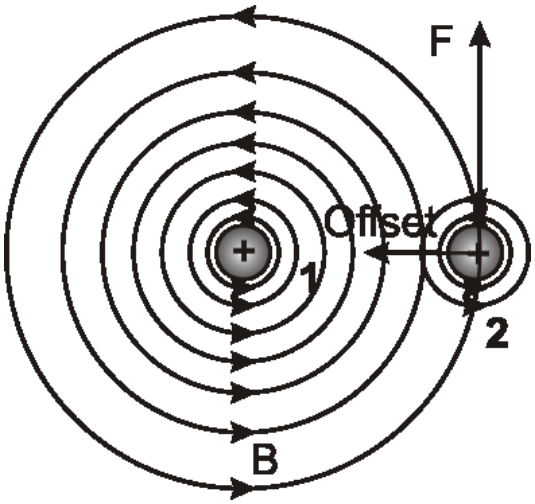

Figure 6.4. Interaction of unidirectional currents

The figure shows the two conductors, in which the currents of electrons are directed to the drawing. In conductor 2 electrons forming a current are oriented so that their charge tubes are directed along the axis of the conductor. The flow of magnetic induction from the conductor 1 acts on the rapidly rotating electrons in the conductor 2.They are shifting their centers of mass upwards, where the linear speed of rotation to the left and to the conductor 1. Therefore, the electron flow conductor 2 will be shifted to the conductor 1. If the electrons are not in the free stream, and in the conductor, there will be a force tending to move the conductor. Similarly, the magnetic field shifts the electrons of the conductor 2 conductor 1. This is the mechanism of strong interaction.

In Figure 6.5 shows a diagram of the secondary side of the transformer, closed on the condenser. The analysis of the mechanism of charges can distinguish induced current J_{ind} charges in the secondary

winding of the transformer, the conduction current in the circuit and J_{rot} J_{grad} current through a capacitor.

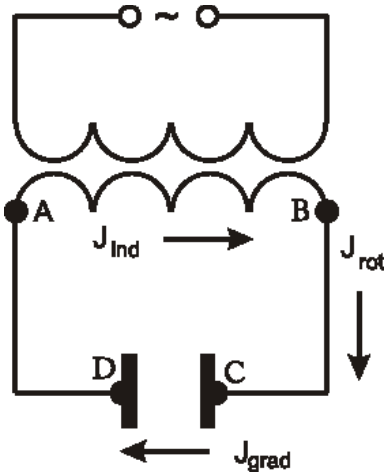

Figure 6.5. The currents in the secondary circuit

The widespread opinion that attracted only a metal wire with the same direction of the currents and flows of "bare" electrons always repel each other is not justified. If all the electrons in the flow of the same orientation, they are attracted to each other — is constriction of the flow. The electric field of a single electron is vector it becomes saturated with the closure of a positive charge.

6.3. Model propagation of radio waves

In classical electrodynamics, electromagnetic radiation called radio waves, heat radiation, light, X-rays and γ-radiation. It is believed that all these radiations have a common nature, differing only in frequency.

Ranges	Radiowaves	Light			X-rays	γ-radiation
		IR	Visible light	UVA		
Wavelength λ, m	3.10^{1}-5.10^{-4}	5.10^{-4}-8.10^{-7}-4.10^{-7}-10^{-9}			2.10^{-9}-6.10^{-12}	10^{-10}-10^{-13}
Frequency f, Hz	10^{7}-6.10^{11}	6.10^{11}-$3,75.10^{14}$-$7,5.10^{14}$-3.10^{17}			$1,5.10^{17}$-5.10^{19}	3.10^{18}-3.10^{21}
Method of obtaining	Variables currents	Atomic processes			Interaction electrons and nuclei	Nuclear processes

Quantum physics distinguishes between the photons (light, X-rays, γ-radiation) and radio waves. For many phenomena we can be considered medium of photons with zero mass as a continuum (as light wave), although it consists of individual photons. Photons interact with matter, placing him in thermodynamic equilibrium. Recall that the ratio of the number of photons to the number of protons is 10^{9}. Radio waves are vibrations in the environment gravitons. Radio waves unit with photons the propagation velocity equal ~ 3 • 10^{8}m/c. This is the average "thermal" speed gravitons of electromagnetic field.

In the visible part of the universe there is a relict background — this is radio waves with wavelengths from 0.6 mm to 50 cm. The energy density of the background radiation is about 0.25 eV/cm^{3}.

Characteristics correspond to the radiation from a black body with a temperature of about 2.7 K, and are described by formula Planck.

Now the cosmic microwave background radiation is interpreted as radiation that has survived from the time of the Big Bang. [12] Expansion of the universe leads to an increase in the length of the existing waves. Incorrect interpretation is that microwave radiation is now considered as a "stretched" photons, rather than radio waves. But photons are particles and radio waves are fluctuations in the continuous medium graviton field. It is clear that photons-particles can not be converted into radio waves by any stretching.

Radio waves by the microwave background can be excited by some source. The most likely of them is a low-energy photons. In particular, fluctuations in the graviton layer adjacent to the photon resulting from rotation of the photon around the axis. This rotation determines the energy of the photon and thus the length of the excited radio waves. The natural frequency of the photon corresponds to the natural frequency of the electron $\nu_o = 1{,}76 \bullet 10^{11}$ Hz or $\lambda \approx 2$ mm.

Consider the ordinary situation where the source of radio waves is alternating currents in conductors. The subsequent behavior of the pulse perturbation in the field depends on the frequency of disturbances and the size of the chain. For a quarter of the period of increasing current flow front energy goes away from the radiator by a quarter wavelength: L = cT/ 4. Impulse disturbance will continue its movement, as any disturbance in the gas.

In the next quarter period, the current in the wire will decrease. Energy begins to flow in a wire back from the surrounding space. In the first moment will be reduced to zero amplitude of the trailing edge of the first pulse. For a quarter of a period of wire all the energy of the inner circle will be transmitted at a distance from the wire λ/ 4. But the front of the first pulse at the end of half time has to move away from the radiator λ/ 2. Diagram of the energy flux is shown in figure 6.6.

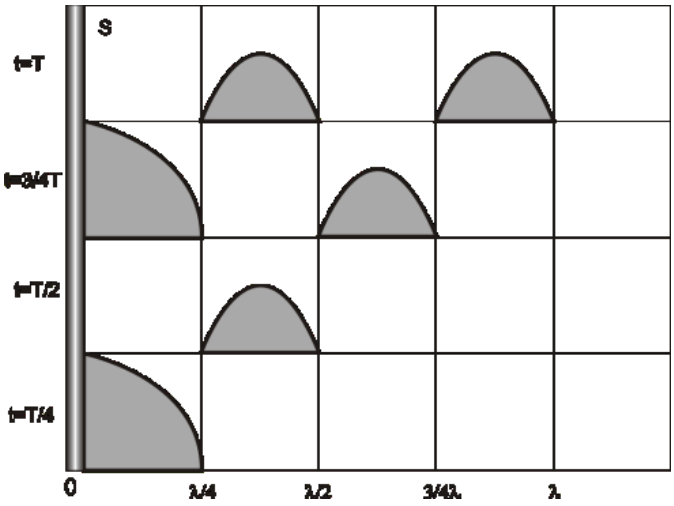

Figure 6.6. The flow of energy from the emitter

Due to the finite speed of propagation of pulses to return all the energy already departed has not succeed. Thus, at high frequency the vortices are separated from vibrator, carrying energy in the form of pulses. Periodicity pulses are every half-period. Pulse duration is a quarter of the period.

Thus, in the radio wave energy is emitted pulses. The pulse width is equal to half the period of the radiator - the interval of increase and decrease the current. Figure 6.7 shows a picture of the

electromagnetic radiation of the dipole - dipole Hertz. Drawings made by Hertz. They are taken from his article "The forces of electrical oscillations in terms of Maxwell's theory."

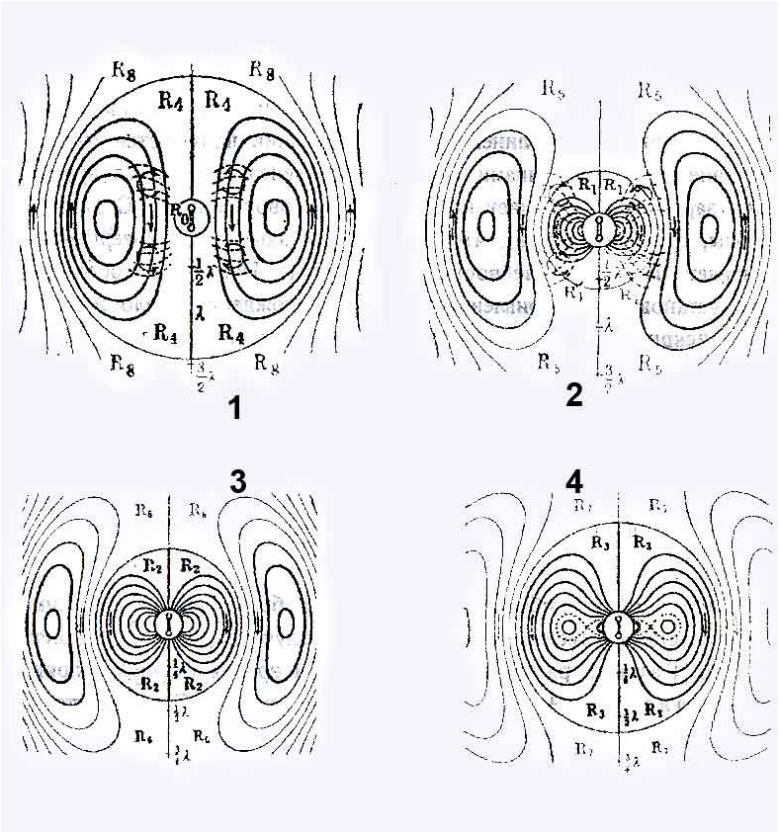

Figure 6.7. Vortices of the field in the vibrator Hertz

When using a vibrator on him periodically separate discrete closed toroidal vortices, shown by solid lines. Each vortex represents one half-cycle oscillations. This can be seen from the figures, which show four points of time.

Figure 1 represents the beginning of the new variations. The electric current in the dipole passes through the equilibrium position, reaching the highest speed. Figure 2 shows that the emerging new storm swells and pushes aside the previous storm. Figure 3 shows the time of maximum current, when all the field lines are trapped in the discharge gap vibrator. In Figure 4 we see the final phase of forming a new eddy, when current decreases to zero. Power lines are closed to each other. The vortex takes the form of a closed toroid. Already having an initial velocity in median plane, it begins to diverge from the vibrator immediately after the previous vortex.

Thus hollow toroidal vortices separated from the Hertz vibrator. They expand with the speed of light as the vortex disturbances in a continuum of gravitons. Their structure is not practically different from the bound vortices of particles. Toroidal rotation corresponds to the flux of the vector potential A. Circular rotation defines the magnetic induction B. Vectors A and B are orthogonal velocity v. There are no electric fields in radio vortices. When an alternating current in the emitter direction of the vectors A and B changes over the period. This graphically describe in Figure 6.8.

Also vortices Hertz the compact ring vortices moving perpendicular to its plane are satisfied by Maxwell's equations. These vortices can be separated from the emitter along its axis. They are called the

longitudinal radio waves. In practice, the structure of such waves is studied insufficiently. He who comes to the receiving antenna pulsating flow of energy vortices produces a displacement of free charges as shown above for the model of electromagnetic induction. Among the multitude of periodic perturbations resonant tank circuit provides a signal only a certain frequency.

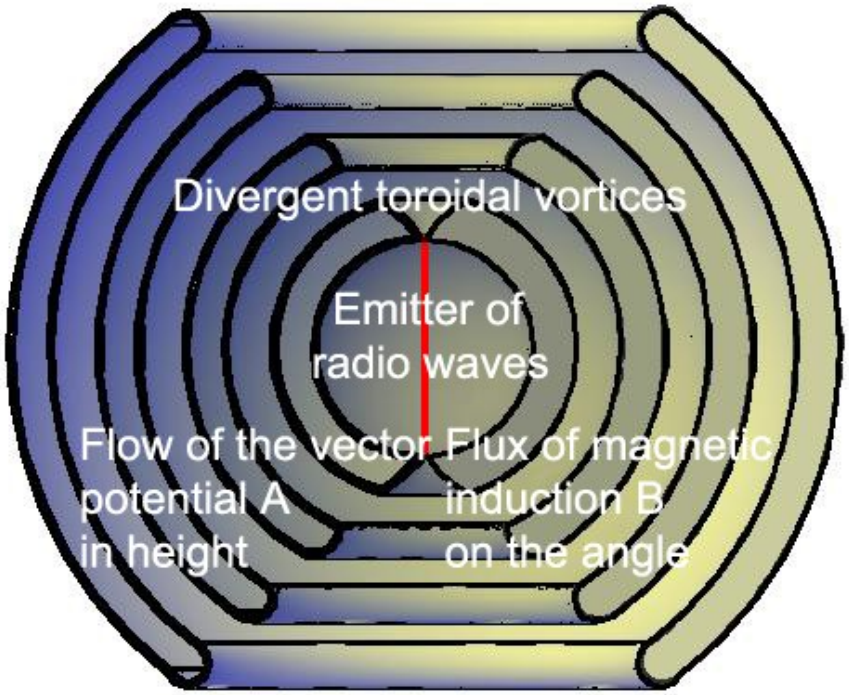

Figure 6.8. The structure of the radio waves

Seceded from the vibrator hollow toroid "radiovihri Hertz" Expands the speed of light, as the vortex perturbations in a continuous medium of gravitons. Their structure is not fundamentally different from the bound vortices of particles (Figure 6.7).

Toroid rotation corresponds to the flow of the vector potential A. Annular rotation determines the magnetic induction B. Vectors A and B orthogonal velocity v, i.e. radio waves are transverse. Electric field is not in radio wave. When an alternating current in the radiator direction of vectors A and B changes over the period.

When the current in a wire varies pattern out of energy completely repeats itself. Thus, at high frequency the vortices attached to vibrator are separated from him. They carrying away energy emitter in the form of pulses. Pulse duration is half period given current. In practice, the size of the circuit is selected such that the propagation time of the electromagnetic field in it, it would be comparable with the period of the current oscillations. The radiation will be maximized if the inside of the radiating system energy will be significantly less than outside it.

Vortex shedding from the emitter size r is above certain frequency f. To estimate this value, we assume that the outer part of the vortex is limited to a circle with a radius of 15 r. Whirlwind completely detaches from the source, when the passage of gravitons on the outside of the vortex is more than half of the period:

$f > \frac{c}{2\pi 15r} \approx 3{,}2 \cdot 10^6 \frac{1}{r}$..

When the size of the radiator is equal 1 m frequency must be more than 3 MHz.

Besides toroid "vortex Hertz" Maxwell's equations satisfy compact ring vortices moving perpendicular to its plane. Such vortices can be separated from a plane source along its axis. In practice, the structure of these waves is not well.

Arriving at the receiving antenna pulsating flow vortex energy is there displacement of free charges as shown above for the model of electromagnetic induction. Among the multitude of periodic disturbances resonant tank circuit selects the signal only certain frequency.