THE ELECTRICAL WIND

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The summary: In the offered work the elementary explanation for Coulomb’s force and for Lorentz's force is given.

In our work “POLYTRONIC MODEL of ELECTRICITY”, the new definition for the electric momentum of elementary charge has been introduced. As the model of electric charge the dynamic square of radial polytron has been accepted. The suggested interpretation of the electric momentum of a charge, allows calculating force of electrostatic interaction between two elementary charges as their simple product. Accordingly, the electroforce field of the charged body is calculated as the vector sum of the elementary electric momentums.

The electrical momentum of radial polytron relative to some pole O (see fig.1) is determined by the formula

$$\vec{p}_e(m,n_r,r,\theta)=\frac{\varepsilon_e\cdot n_r^2\cdot\sin\theta}{m^2\cdot r}\quad |\mathrm{N}^{1/2}|\quad (1)$$

where r = OO' – radius-vector from pole to center of polytron;

θ – angle of slopping of radius-vector r to plane of polytron;

ε_e – the induction of polytronic electric field appropriated to field of elementary charge.

$\varepsilon_e = 2.17548923609366\cdot 10^{-11}$ $|\mathrm{N}^{1/2}|\times|\mathrm{m}|$

m – the frequency order of polytron;

n_r – the amplitude order of radial polytron.

The force of interaction between two radial polytrons, which are situated at distance r from each other, is equal to product of their electrical momentums

$$\vec{F}_e(m_i,m_j)=\vec{p}_e(m_i)\cdot\vec{p}_e(m_j)\quad |\mathrm{N}|\qquad (2)$$

In the previous works we have shown, that dimension of electric charge is

$$\boldsymbol{q_e} = 1.6021764\cdot 10^{-19}\quad |\mathrm{N}^{1/2}|\times|\mathrm{s}|$$

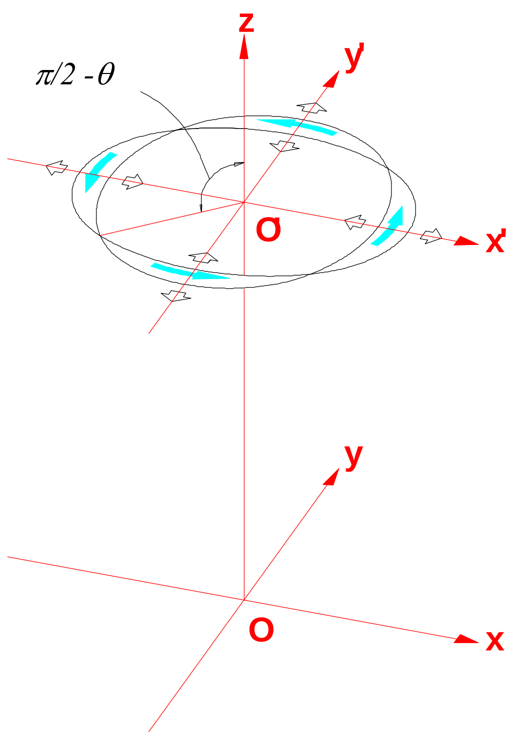


Fig. 1
Definition of the electric moment of radial polytron

Our further research of behavior of electron in electrostatic field has led us to the new formula for calculation of speed of electron after passage by it of electric potential ***U***

$$\upsilon(U)=\sqrt{\frac{2\cdot q_e\cdot U}{M_e}\cdot\sqrt{1+\frac{q_e^2\cdot U^2}{M_e^2\cdot c^4}}-\frac{2\cdot q_e^2\cdot U^2}{M_e^2\cdot c^2}}\qquad |\mathrm{m/s}|\qquad (3)$$

where: $M_e = 9.10938188\times 10^{-31}$ |kg| – the rest mass of electron;
c = 299792458 |m/s| – speed of light in vacuum;
$q_e = 1.602176462\times 10^{-19}$ |C| – elementary charge;

The graph of dependence of speed of electron from the passed accelerating potential in a range from 0 up to 2.5×10^6 volt is shown in fig.2.

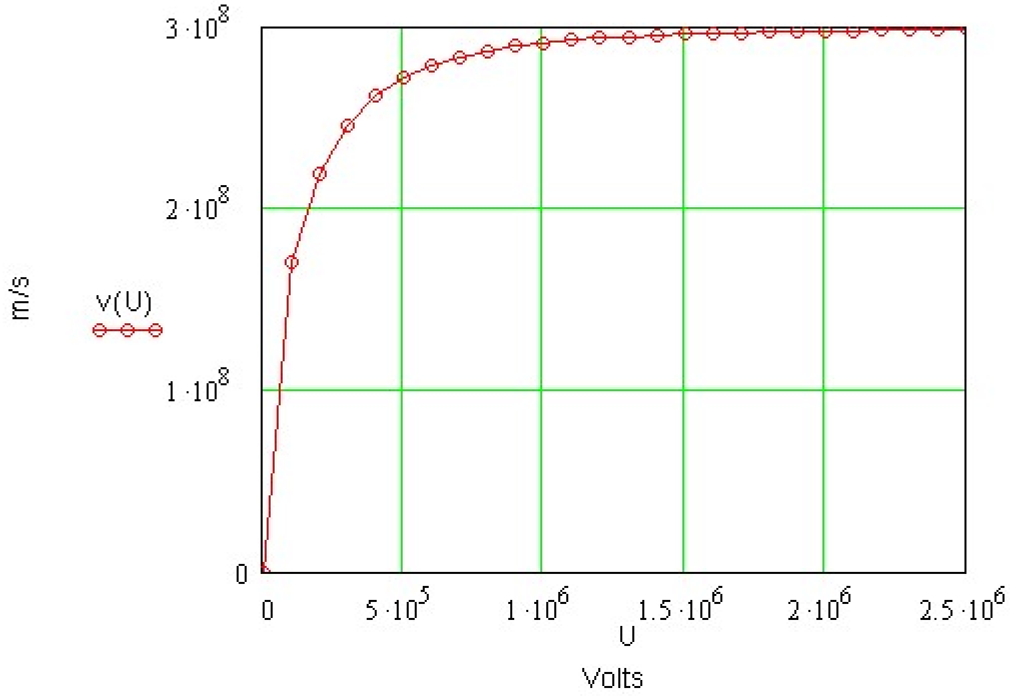


Fig. 2
The graph of dependence of speed of electron from the passed accelerating potential

In fig.3 the character of approaching of speed of electron to speed of light in the range of accelerating potential from 1×10^9 up to 4×10^9 volts is shown. We presume that presence of positive and negative peaks on the graph is connected with incorrect work of the mathematical program. We wrote about it in our work "BINARY LAW of BACKGROUND RADIATION".

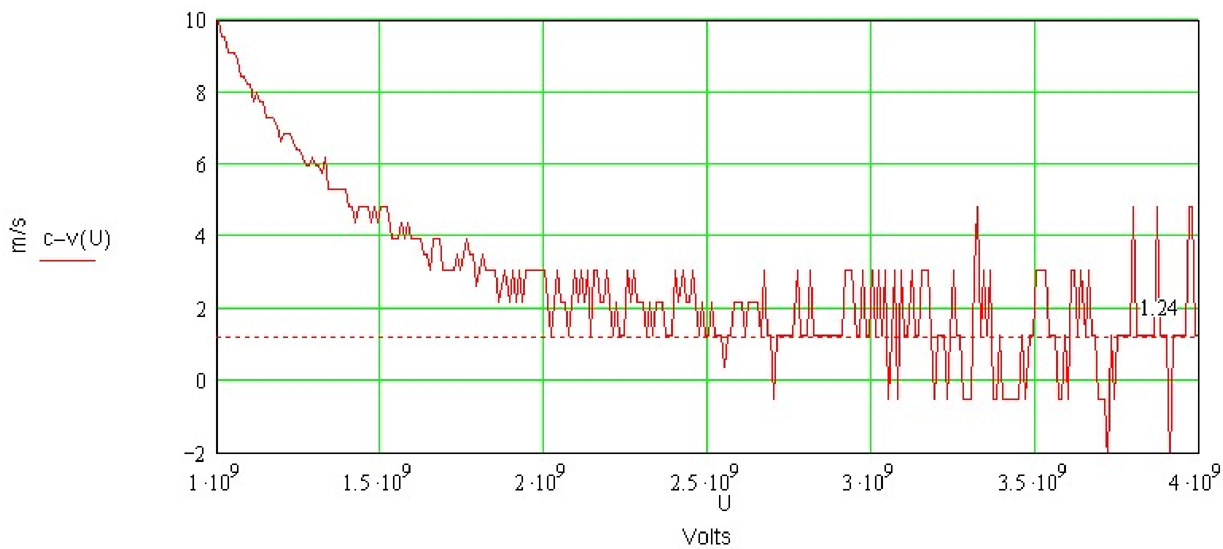


Fig. 3
The character of approaching of speed of electron to speed of light

As evident from fig.3, in the range of accelerating potential higher than 2×10^9 volt, it is precisely traced the horizontal line of values of relativistic speed of electron, which is located at a level of 1.24 m/s less than speeds of light.
We presume, the graph in fig.4 can serve for specification of some physical constants.

The force, that is acting to electron during its movement in electric field, decreases in process of the increasing of speed of electron

$$F_E(x,U)=\frac{q_e\cdot U}{x}\cdot\sqrt{1-\left(\frac{\upsilon(U)}{c}\right)^2}\qquad |N| \qquad (4)$$

Force in the formula (4) has some similarity to force of a wind, which moves a sailing vessel in the sea. For this reason we have named the force $\boldsymbol{F_E(x,U)}$ as a force of electric wind.
Kinetic energy of electron, after passage by it of the accelerating potential $\boldsymbol{U}$, is calculated under the formula of classical physics

$$W_k(U)=\frac{M_e\cdot[\upsilon(U)]^2}{2}=q_e\cdot U\cdot\sqrt{1+\frac{q_e^2\cdot U^2}{M_e^2\cdot c^4}}-\frac{q_e^2\cdot U^2}{M_e\cdot c^2}\qquad |J| \qquad (5)$$

In the formula (5) the mass of electron is constant, therefore kinetic energy of rectilinear movement of electron at $\boldsymbol{\upsilon(U)=c}$, is equal 0.255MeV.
But, according to the relativistic theory, the full kinetic energy of the immovable electron is twice more than this value. Hence, second half of kinetic energy of electron, at the speed of its movement equaled to speed of light, remains as energy of rotation.
In other words, at movement of electron under action of the electric wind, energy of rotation (the angular momentum) turns into energy of rectilinear movement (the linear momentum).
Other energy, which the electron gets under action of the electric wind, is resonant energy.
In our work "THE MOST IMPORTANT QUANTUM NUMBER" the formulas and examples of calculation for three resonant energies of radial polytron are resulted.
Thus, experimentally detectable energy of the moving electron is equal to the sum of two kinetic and three resonant energies.
The kinetic energy in the formula (5) represents the difference of two energies.
For electron, the first member of this difference characterizes protonic energy (or a matter), whereas the second member of the difference characterizes antiprotonic energy (antimatter).
For positron, on the contrary, the first member of the difference characterizes the antiprotonic energy, the second member of the difference – the protonic energy.
At collision of relativistic electrons and positrons with energy of everyone near 500MeV, there is a birth of protons and antiprotons, i.e. there is a birth of substance from protonic energy and antisubstance from antiprotonic energy.
At that, if energy of electron is more, than energy of positron, then the proton will be arise, and if energy of positron is more, than energy of electron, then the antiproton will be arise.
The speed of particles at such energy is less 40m/s, than speed of light.
We suppose, that the suggested mathematical model will help for the further researches of a matter and an antimatter, and, also, in researches of dark matter and dark energy.

Why light flies with speed of light?

In the base part of politronic physics it is shown, that in a radial politron, diameter of a circle on which politron's nodes during the moments of the maximum radial amplitude quantoide settle down, it is defined under the formula:

$$D_r=\frac{D_s}{1+\frac{n_r^2}{64\cdot\left(2^2+m^2\right)}}\qquad |m| \qquad (6)$$

This diameter is called as radial dynamic diameter of a polytron.
Diameter of a circle on which polytron's nodes during the moments of zero radial amplitude of a quantoide settle down, is called as static diameter D_s.

The square of each radial quantron is calculated under the formula:

$$q_r = \frac{\pi \cdot n_r^2}{4 \cdot m^3} \cdot \left[\frac{D_s}{1 + \frac{n_r^2}{64 \cdot (2^2 + m^2)}} \right]^2 \qquad |\mathrm{m}^2| \qquad (7)$$

The sum of the squares of all quantrons is called as the radial dynamic square of a polytron and in m times more then square of one radial quantron:

$$Q_r = m \cdot q_r \qquad |\mathrm{m}^2| \qquad (8)$$

In fig.4 continuous lines two quantoides of the radial polytron having a frequency order m=4, with amplitude order $n_r = \sqrt{2}$ during the moments of time displaced on a half-cycle of frequency of own oscillations are shown. By dashed lines the same quantoides, but with amplitude order $n_r = 2$ are shown.

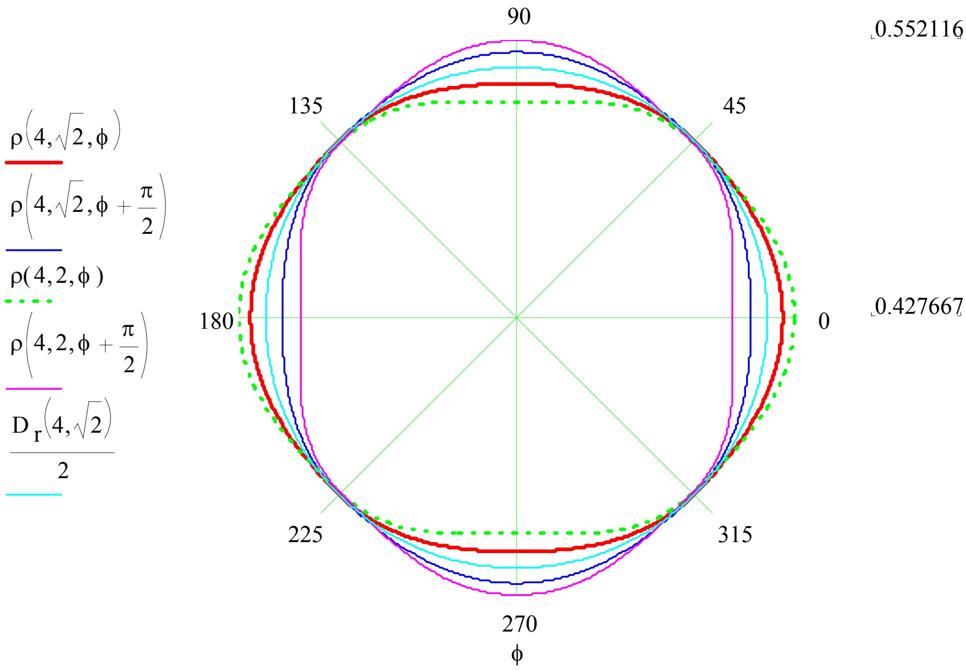


Fig.4 Configurations of boundary quantoides of the polytron having a frequency order ***m=4***, at two various amplitude orders $n_r = \sqrt{2}$ (continuous lines) and $n_r = 2$, (dashed lines), displaced on a half-cycle of frequency of resonant fluctuations.

In atoms of hydrogen the energy state of polytrones with frequency order m=4 corresponds to its atomic phase. Temperature of transition of hydrogen in an atomic phase above 2000˚C. In molecular hydrogen all polytrones have a frequency order m=6.

In fig.5 hyperbolic dependence of the total square of quantrons in a radial polytron from value of a frequency order m is shown. The same schedule has the energy spectrum of series by Layman. Hence, energy of radiated photons can be defined on the dynamic square of radial polytrones if it will be known conversion factor.

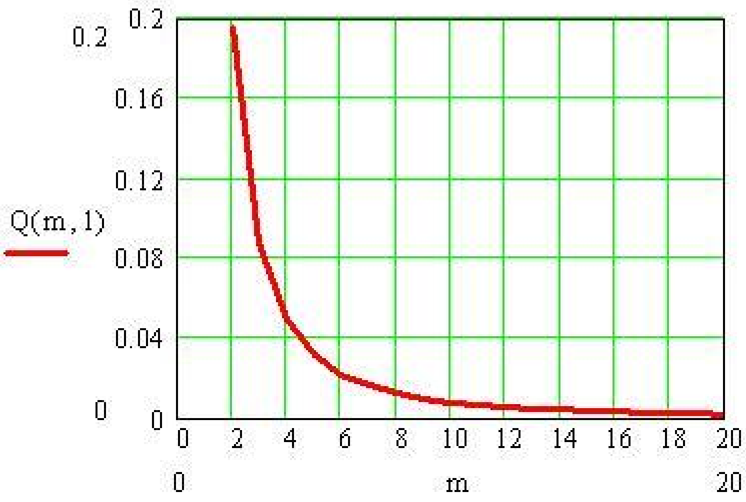


Fig.5 The schedule of dependence of the dynamic square of a radial polytron from a frequency order or frequency quantum number ***m***

Supposing, that the free electron has the same sizes, as well as that radial politron which generated it, we will calculate other parameters of this electron.

In fig.6 the figure formed at oscillations of a quantoide of electron is shown.

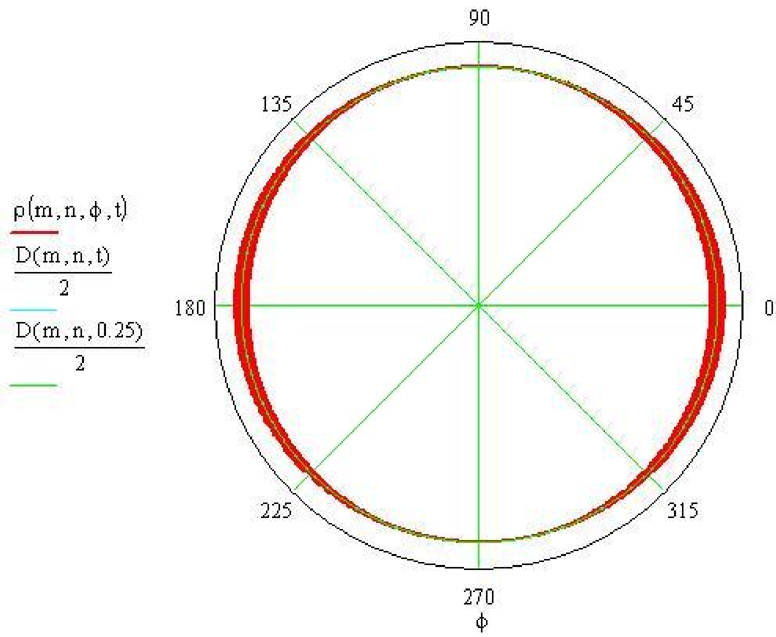


Fig.6 The form of resonant fluctuations of free electron (positron) at the energy level corresponding to frequency quantum number ***m=2.***

The line of dynamic diameter divides the square of each quantron on two equal parts. Energy resonant oscillations as was is shown above, equal to half of full energy of electron 255000eV = 4.086×10^{-14}J. Frequency of oscillations we take from our earlier work: http://vlamir43.narod.ru/dipole_of_speed_e.pdf $\nu(m=2)=1.93\times10^{18}$Hz.

For static diameter of electron (positron) $D_s = 197.714\times10^{-12}$ m calculation gives following values:

$n_r(m=2) = 0.61325$ – amplitude order of electron;

$A_p(m=2) = 4.543\times10^{-12}$ m – external amplitude of quantrons;

$A_q(m=2) = 4.762\times10^{-12}$ m – internal amplitude of quantrons;

$Q_r(m=2) = 2882\times10^{-24}$ m^2 –the dynamic square of quantrons in electron (positron);

$P_r(m=2) = 4.175\times10^{6}$ J/m^2 = 88.473×10^{24} eV/m^2 – density of resonant energy.

At annihilation of electron with positron two gamma quanta with length of a wave are formed $\lambda_{ep}(m=2) = 621.137\times10^{-12}$ m and amplitude 4.8×10^{-12} m. It is soft x-ray radiation formed in x-ray tubes, working at voltages above 1000 Volts.
The relation of amplitude of a gamma-photon to length of a half wave equally 0.015, i.e. only 1.5 percent. Therefore, to represent such photon in a correct proportion it is impossible.
In our work http://vlamir43.narod.ru/FORMULA_FOR_SUPERCONDUCTIVITY_e.pdf we already gave the approximate description of a design of photons.
All photons consist of two quantrons (***m*** = 2), and should look as the most thin spindle-shaped energy "slices". The forward quantron bears in itself a positive electric charge. The tail quantron is charged negatively. The lines of flux of this electric dipole create jet draught and support a photon impulse.
Probably, that on huge existential scales the photon impulse varies, i.e. jet draught weakens. But we do not have technicians for registration such vanishingly small changes.
Besides, photons possess fantastic ability immediately to give the resonant energy at a meeting with any objects of a microcosm.
Even if the photon will give all resonant energy, he "will not die", as second half of energy at it remains in the form of the thinnest imperceptible thread.
And get new resonant oscillations it can at any time.

The analysis of the received results leads us to the conclusion, that in experiences of Compton the amplitude of oscillations of x-ray radiation, but not length of wave was registered.

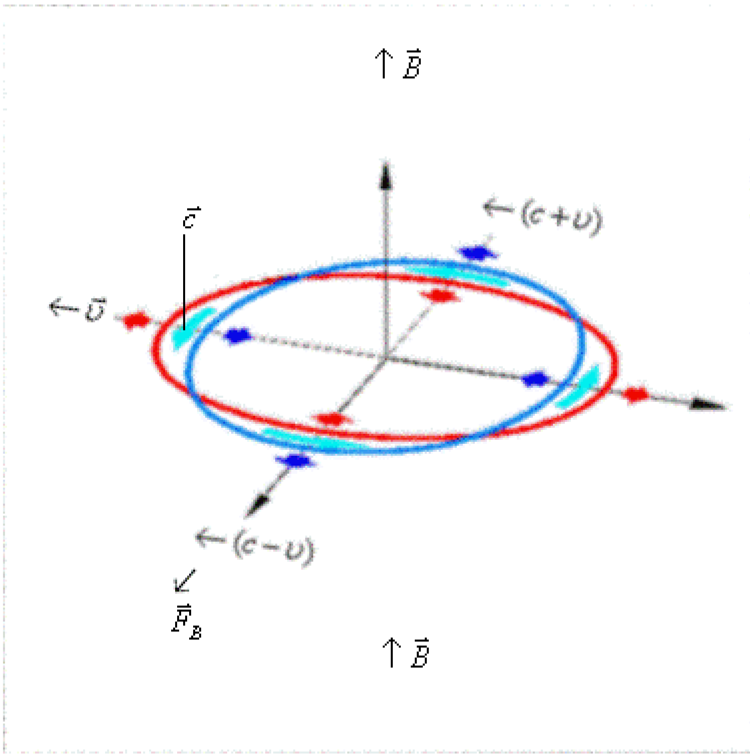
How Lorentz's force arises?

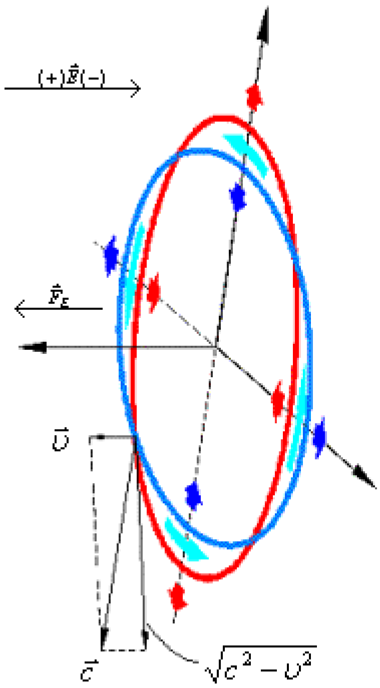
Lorentz's force is the force operating from a magnetic field which forces rectilinearly moving electron (positron) to change the rectilinear movement to movement on a circular orbit. Lorentz's $\boldsymbol{F_B}$ force and radius of orbit $\boldsymbol{R_B}$ of a moving charge are calculated under formulas:

$$\vec{F}_B = q_e \cdot \left[\vec{\upsilon} \times \vec{B}\right] \qquad |\mathrm{N}| \qquad (9)$$

$$R_B = \frac{M_e \cdot \upsilon}{q_e \cdot B} \qquad |\mathrm{m}| \qquad (10)$$

Mentioned below fig. 7 explains action of Coulomb’s force, and Lorentz's forces in two elementary cases. In the right drawing the electron is accelerated under the influence of Coulomb’s force (under the heading of an electric wind) till the speed υ then, flies in area of a permanent magnetic field (the left drawing). Under the influence of a magnetic field the electron turns on 90 degrees, and continues to move with a speed υ.
Lorentz's force forces electron to move on a circular orbit.





Electron in permanent magnetic field **B** Electron in electrostatic field **E**

Fig. 7

At electron movement in an electrostatic field (drawing on the right) on it operates Coulomb's force $\boldsymbol{F_E}$ which is parallel to speed υ. At electron movement in a permanent magnetic field (drawing at the left) on it operates Lorentz's $\boldsymbol{F_B}$ force which is perpendicular speeds υ. Electrons are shown at the energy level corresponding to frequency quantum number ***m=4.***

Expressing in the formula (10) for speed of electron under the formula (3) and using graphic interpretation in fig.7 we will receive simple understanding of force by Lorentz.

$$R_B \sim \frac{M_e \cdot \sqrt{[c-\upsilon(U)]\cdot[c+\upsilon(U)]}}{q_e \cdot B} = \frac{M_e \cdot \sqrt{c^2-\upsilon(U)^2}}{q_e \cdot B} \qquad |\mathrm{m}| \qquad (10a)$$

Lorentz's force to aspire to level speed of energy in a ring of electron (positron) and to return in an initial state of amplitudes and squares of quantrons.

It is possible to apply a working formula(10b) for calculation of orbital radius of electron

$$R_B = \frac{M_e \cdot \upsilon(U)}{q_e \cdot B} = \frac{U\cdot\sqrt{2}}{c\cdot B}\cdot\sqrt{\sqrt{\frac{M_e^2\cdot c^4}{q_e^2\cdot U^2}+1}-1} = \frac{U\cdot\sqrt{2}}{c\cdot B}\cdot\sqrt{\sqrt{\left(\frac{5.11\times10^6}{U}\right)^2+1}-1} \qquad |\mathrm{m}| \qquad (10b)$$

Lorentz's force is centripetal force. Formulas (3), (9) and (10) allow deducing the kinetic equation of movement of electron in a magnetic field.

Let's express radius of a circular orbit of electron through change of its internal kinetic energy

$$R_B(U,B) = \frac{M_e \cdot \upsilon(U)}{q_e \cdot B} = \frac{1}{2\cdot q_e \cdot c \cdot B}\cdot\left[\frac{M_e\cdot(c+\upsilon(U))^2}{2} - \frac{M_e\cdot(c-\upsilon(U))^2}{2}\right] \qquad |\mathrm{m}| \qquad (11)$$

The product $q_e c = \Phi_e$ is called as an elementary charging impulse and has dimension of a magnetic stream |Wb|.

$$R_B(U,B) = \frac{M_e \cdot \upsilon(U)}{q_e \cdot B} = \frac{\Delta W_e(U)}{2\cdot\Phi_e\cdot B} \qquad |\mathrm{m}| \qquad (11a)$$

Let's write down the equation for Lorentz's force in the form of the equation for centripetal force

$$\vec{F}_B(U,B)=\frac{M_e\cdot\upsilon(U)^2}{R_B(U,B)}=\frac{2\cdot W_k(U)}{R_B(U,B)}=4\cdot\Phi_e\cdot B\cdot\left[\frac{W_k(U)}{\Delta W_e(U)}\right] \quad |N| \qquad (12)$$

Provided that B = *const* and, accordingly, $\Phi_B = \pi[R(U,B)]^2 \times B$ we will receive:

$$\vec{F}_B(U,B)=\frac{4\cdot\Phi_e\cdot\Phi_B}{\pi\cdot[R_B(U,B)]^2}\cdot\left[\frac{W_k(U)}{\Delta W_e(U)}\right] \quad |N| \qquad (12a)$$

The formula (12a) is applicable for cases when magnetic streams Φ_e and Φ_B are parallel (pushing away) or antiparallel (attraction). For the description of process of interaction between magnetic streams at their any orientation the formula (12a) is necessary for writing down in the vector form, and, it is necessary to consider two angular components which are located in two mutually perpendicular planes.

$$\vec{F}_B(U,B)=\frac{4\cdot\left[\vec{\Phi}_e\times\vec{\Phi}_B\right]}{\pi\cdot[R_B(U,B)]^2}\cdot\left[\frac{W_k(U)}{\Delta W_e(U)}\right] \quad |N| \qquad (13)$$

The formula (13), at first sight, describes simple process of force interaction between centres of two sources of a magnetic field which is similar to process of force interaction between electric charges or between dot gravitating masses.

However in this equation the physical sense of that concept which we name as magnetic field is visible.

First, all sources of a magnetic field are in atoms and, probably, in photons, in the form of the unknown to us linear energy which in the conditions of power balance moves with a speed of light. In the polytronic physics existence of this linear energy is accepted in the form of a postulate, and to it the name ergoline is given.

Secondly, infringement of kinetic balance in this, closed in rings, energy leads to redistribution of forces of interaction of magnetic character.

Forces of magnetic character are perpendicular to a plane of sources, i.e. are generated in an axial direction and become form a circle on a ring opposite side.

Thirdly, as it has been shown above, forces of electric character are resonant forces. Electric forces arise from radial resonant oscillations of ergoline. Electric forces near a source have the toroidal form, and at a great distance from a source have the central character of distribution in space.

Fourthly, ergoline is also a gravitational field source, but only in that case if takes place curvilinearity of ergoline. Gravitational forces have radial character of distribution in space, i.e. in macroscopical scales 2/3 peak values of gravitational forces are registered only – http://vlamir43.narod.ru/Amplitudes_of_graviton_e.pdf

And fifthly (hypothetically), difficulty of detection of neutrino it is possible to explain simultaneous absence of electric resonant components and of gravitational curvilinearity in a linear corpuscle flying with a speed of light. But the magnetic component should, at least partially, to be present. Therefore, it is possible to try to apply a strong magnetic MICROWAVE FIELD to more productive "capture" of neutrino in a narrow slot-hole gap of a toroidal magnet.

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