POLYTRONIC MODEL of ELECTRICITY

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One of major parameters of radial polytron is its dynamic square. In our previous works we have shown quantitative link between electromagnetic radiation of radial polytron and its dynamic square. The process of electromagnetic radiation represents ejection of quantums of energy in tangential direction to quantoide. For further mathematical simulation we shall connect qualitatively and quantitatively the electromagnetic radiation of atom with change of electrical properties of radial polytrons.

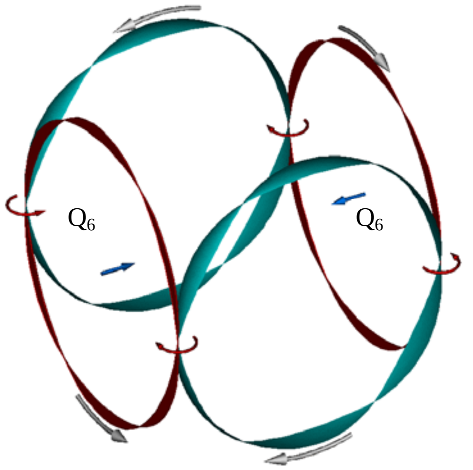

Fig.1
The neutral left-spiral atom of hydrogen at *m=6*

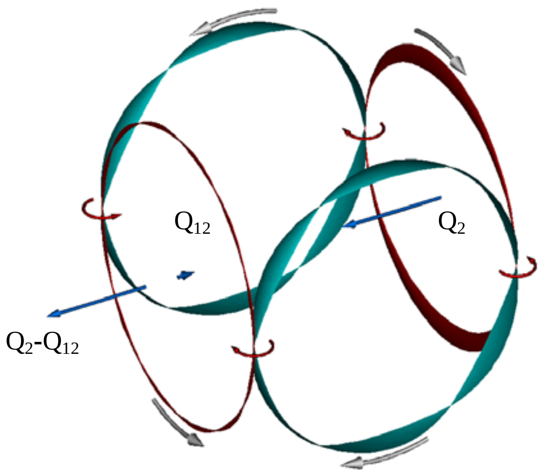

Fig.2
Polytronic model of ptoton

For this purpose we shall introduce the concept of the vector of dynamic square $\boldsymbol{Q_m}$, which operates along an axis of radial polytron. The vector of dynamic square will characterize electric charge and electric field of radial polytrons.

In Fig.1 the neutral left-spiral atom of hydrogen is shown, in which all four polytrons have the same frequency order ***m***=6. The vectors of dynamic square $\boldsymbol{Q_6}$ are equal and are directed towards each other (dark blue arrows).
The algebraic sum of vectors is equal zero and consequently the electric field around of atom misses.
At atomic ionization one of radial polytrons passes into the frequency order ***m***=2 and magnifies the dynamic square up to the value $\boldsymbol{Q_2}$ (see Fig.2). As a result of this transition the neutral atom turns into proton.
Accordingly, the right-spiral atom will turn into antiproton.
The second radial polytron can at this time occupy any other energy level, for example, level, which corresponds to the frequency order ***m***=12. Energy-wise advantageous the relations of the frequency orders are, when in quantron of the lowest order the even amount of quantrons of the higher order can be laid.

The formula for calculation of dynamic square of radial polytron looks like:

$$Q_r(m,n_r) = \frac{\pi \cdot D_s^2}{4} \cdot \left(\frac{n_r}{m}\right)^2 \cdot \left[\frac{64\cdot(m^2+4)}{64\cdot(m^2+4)+n_r^2}\right]^2 \quad |m^2| \qquad (7\text{-}7)$$

The hydrogen radial polytron has the amplitude order $\boldsymbol{n_e}$=0.0528466 and static diameter $\boldsymbol{D_s}$=197.714·10^{-12} |m|.
The maximal dynamic square of polytron is equal $\boldsymbol{Q}_{\mathbf{H}\max}$ = 0.214355·10^{-24} |m^2|.
The charge of proton (elementary charge) is equal $\boldsymbol{q_e}$ = 1.6021764·10^{-19} |C|.
The electric-flux density of proton in the field of dynamic square is equal

$$\boldsymbol{q_e} / \boldsymbol{Q}_{\mathbf{H}\max} = 7474.4 \ |\mathrm{C/m^2}|.$$

On the other hand, the stream of electric-flux density can be compared with the stream of tangential energy of radial polytron to calculate flux density of electromagnetic energy through dynamic square

$$\boldsymbol{W}_{\mathbf{t}\max} / \boldsymbol{Q}_{\mathbf{H}\max} = 101640 \ |\mathrm{J/m^2}|$$

In electromagnetic wave the electrical and magnetic component of the field are inseparably linked with each other. The same link exists and in the ring wave of radial polytron.

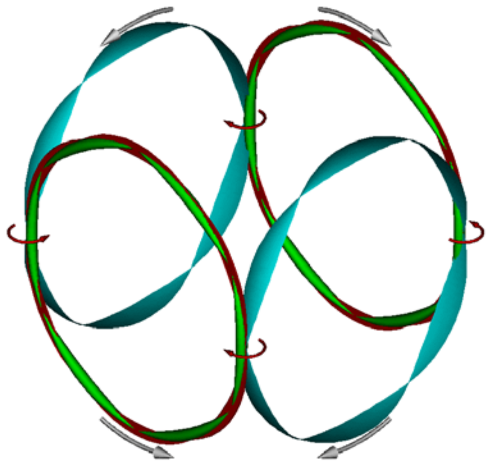

Fig.3
Hydrogen atom with the depicted magnetic component in the ring wave of radial polytron

In Fig.3 the same neutral atom of hydrogen, as in Fig.1, but with the magnetic component in the ring wave of radial polytrons is shown. As follows from Fig.3, the ring wave of radial polytron has three moments - mechanical, electrical and magnetic.
However, this standard and generally accepted method of the definition of physical properties of the ring wave has restricted possibilities and complicates mathematics.
We consider, that for successful development of the polytronic theory it is necessary more perfect and adaptable mathematics.

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Let's analyze physical sense of existing definitions of the moments used in modern physics.
The electrical dipole moment of two equal and opposite in sign the charges $\boldsymbol{q}$ is determined as product of absolute value of one charge by distance $\boldsymbol{l}$ between charges. The vector of electrical dipole moment is directed from negative charge to positive.

$$\vec{p}_l = q \cdot \vec{l} \qquad |\mathrm{C{\cdot}m}|$$

On the right from the aforecited formula the dimension of electrical dipole moment is written. Quite enough of fleeting glance to spot, that any physical sense this moment does not carry. The electrical dipole moment should have such structure, in order with its help began possible to evaluate electrical forces. We shall take for new definition of the electrical moment the formulas, which are intended for calculation of force of interaction between slices of parallel-plate capacitor.
The pressure of electrical forces on the plate of plane condenser in vacuum is proportional to quadrate of potential difference between slices and is inverse-proportional to quadrate of distance between slices.

$$p_C = \frac{\sigma^2}{2 \cdot \varepsilon_o} = \frac{\varepsilon_o \cdot E^2}{2} = \frac{\varepsilon_o}{2} \cdot \left(\frac{U}{l}\right)^2 \qquad |N/m^2|$$

where $\sigma = q/S$ – surface density of charges on each plate of condenser
ε_o – permittivity of vacuum
E – electrostatic intensity between plates of condenser
U – potential difference between plates of condenser
l – distance between plates of condenser

The force of interaction between two charged rings, which are located on one axis ***z*** "by the face to each other" is evaluated under the formula.

$$F_q(z) = \frac{q^2 \cdot c^2}{2 \cdot \pi \cdot 10^7} \cdot \int_0^{2\pi} \frac{z \cdot d\varphi}{\left[z^2 + D^2 \cdot \cos^2\left(\frac{\varphi}{2}\right)\right]^{\frac{3}{2}}} \qquad |N| \qquad (7\text{-}8)$$

In Fig.4 the firm red line shows dependence of force $F_q(z)$ from distance between rings metered in portions of diameter of the ring.

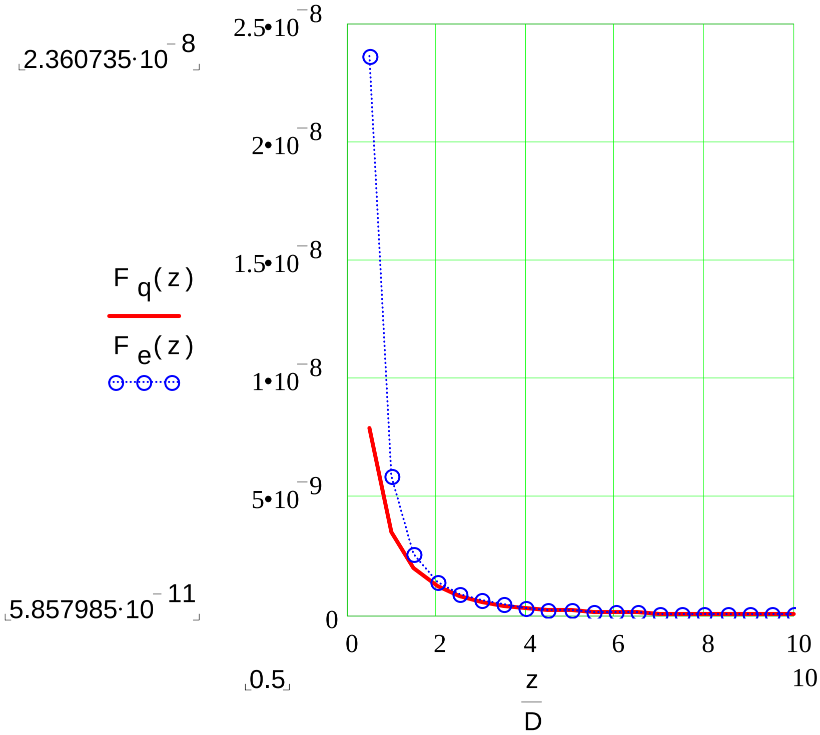

Fig.4
Forces of interaction between two ring charges (firm red line) and between two point charges (dashed line with circles)

The dashed line with circles shows the force $F_e(z)$ of interaction between point charges. As it is visible from Fig.4, at big distances between charges of force $F_q(z)$ and $F_e(z)$ tend to the same value.
Before, how formulate new definition of the electrical moment we should to tell, that the point electric charges with a spherical field do not exist in the nature. In the nature there are electric charges with the directional electric field. We can term these charges as electric dipoles, but it is not two unlike charges. This is field of dynamic surface of polytron.
In polytronic model the electric field has direct logical sense, because it is metered in square meters.

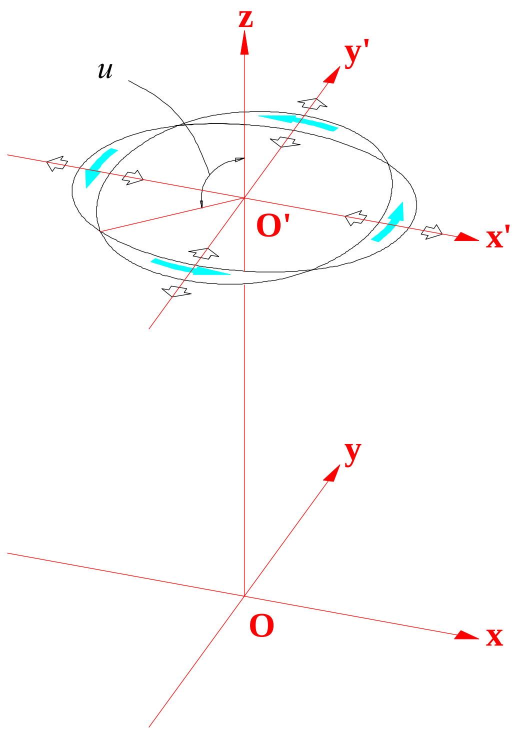

Fig.5
Definition of electrical moment of radial polytron

The electrical moment of radial polytron about some point O (pole) is determined by the formula

$$\vec{p}_e(m, n_r, r, \theta) = \frac{\varepsilon_e \cdot n_r^2 \cdot \sin\theta}{m^2 \cdot r} \quad |N^{1/2}| \qquad (7\text{-}9)$$

where r = OO' – radius-vector from pole to center of polytron (see Fig.5);
θ – angle between radius-vector r and plane of polytron;
ε_e – the induction of polytronic electric field appropriated to field of elementary charge.
$\varepsilon_e = 2.17548923609366 \cdot 10^{-11}$ $|N^{1/2} \cdot m|$

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

$$\vec{F}_e(m_i, m_j) = \vec{p}_e(m_i) \cdot \vec{p}_e(m_j) \quad |N| \qquad (7\text{-}10)$$

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

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

Thus, the ratio of induction of charge to the value of the charge has dimension of speed.
The formula (7-10) is applicable for great distances between charges. At small distances between polytrons in atom and between atoms in crystal it is necessary to take into account influence of the amplitude and frequency orders onto the value of the induction of polytronic electric field $\varepsilon_q (m, n_r)$ for each polytron. In this case $\varepsilon_q (m, n_r) \neq \varepsilon_e$.

Till now in the theory of electricity there is the problem of positive charge.
Positron has positive charge, but it cannot exist as freely, as electron exists.
The reason of this "unequality" between electron and positron is unknown. In metals and semiconductors the positive charge is considered as absence of electron, i.e. as "electron defect".
Investing the same mechanical characteristics into these "electron defects", as for electron, we aggravate the situation even greater.
The complexity of the problem of positive charge creates great difficulties for understanding of magnetic properties of atoms.