

ABSTRACT

THE NEW ATOMIC NUCLEAR AND MOLAR THEORY

This theory is supported on 8 propositions- acceptances and it is built of them.

It is developing the results of the nuclear magnetic resonance, it is correcting it and goes on the new constants of the micro-cosmos. It doubts the experiments results of Thompson's cathode rays tube and of Millikan or the tunnel rays tube and it is on magnetic resonance reason e/m .

The theory is developing the Hydrogen theory and the Balmer's formula, and it is correcting the Bohr's theory. New theory is coming from them and for the structure of the photons. This structure, explains the Maxwell's equations and it is explained of them.

New law in the reverse cubic power is coming from the logic application, for the attracted masses or charges they are rotated round the center of their mass and it is moderating the law of Newton.

THE NEW ATOMIC NUCLEAR AND MOLAR THEORY

ALEKOS CHARALAMPOPOULOS

INTRODUCTION

In my relative works that published in the PHYSICS NEWS of Greek Physicists Union, and in the INTERNATIONAL JOURNAL OF ELECTRICAL AND ELECTRONICS RESEARCH of India and in the two patents I hand them, I introduced the new theory of electricity with extension in the atomic theory of Hydrogen. Here, we'll create the new and correct atomic, nuclear and molar theory, it is published in the first and some false form in the PHYSICS NEWS and here it is integrated, with the only acceptances and propositions:

- 1) The wave length of radiations, was right counted, i.e. the 650 nm of the red radiation, where they been given, they are correct.
- 2) The frequency meters and the oscilloscopies, right count the electromagnetic frequencies , they correctly did the time hypo division.
- 3) The light velocity and of the electromagnetic waves in vacuum, right counted (with the propositions (1) and (2) that are enough, because it counted the velocity of the electromagnetic waves, in the electromagnetic cavities).
- 4) The mass of the protons is just equal to the mass of the electrons.
- 5) The magnetic field is $B=\mu_0 I/\pi r^2$ and it right counted the size of its unit, consequently the size of the unit of the electric current I (the Amp) right counted it, because it is used the formula $B=F/Il$.
- 6) In the atom, the dielectric constant is, $\epsilon_0=1 \text{ met}^{-1}$.
- 7) The spin \hbar of the electrons and protons, is equal to the angular momentum of the same particles, they are rotated round the center of mass of the Hydrogen nucleus.

METHODOLOGY

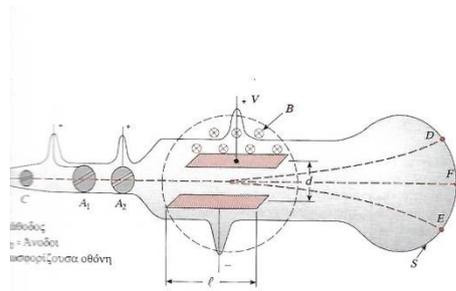
In this paper, I suggest my principles, as ancient Greek philosophers used to do. As Euclides for the building of him geometry accepted 5 requests, as Einstein for the building of theory of relativity put two axioms (the frame systems are equivalent for the description of the nature with the same laws and the velocity of the light is constant c and independent of the motions of the frame systems. Of course, there are preferential frame systems and the theory of relativity is overturning, but it is building on the two axioms). The propositions that are put here, are necessary to build with the method of induction our theory.

WHY THE 4th PROPOSITION IS ACCEPTED

In the Thomson's experiment done the definition of the reason e/m of the electron, as it was supported it. In the Millikan's experiment invented the size of the electron charge, as it was supported it.

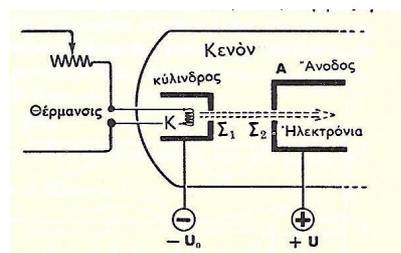
You are Knew the old lamps of incandescence. They consist of a Tangsten filament that it is incandesced and it radiates and it is visible mostly, the radiation. The radiation is photons in visible, ultraviolet and infrared spectrum.

In many cathode rays tubes, like this that Thompson¹ used, the said thermionic cathode (Tangsten's filament where are coming many Amperes with small voltage and the filament are heated), it was supported that they are emitted thermionic electrons. And they are coming in cylinder Wehnelt are accelerated of the anodes, where there are large positive voltage.



Experiment of Thompson «definition» of the reason e/m

The acceleration of the “electron” between the anodes A_1 and A_2 , is coming from the thermionic cathode in cylinder Wehnelt.



Thermionic cathode K in the cylinder Wehnelt, it has hole Σ_1

Of the cathode K where it is the Tangsten filament into the cylinder Wehnelt², come out the “electrons” between the hole Σ_1 and they are coming in the hole Σ_2 of the anode A.

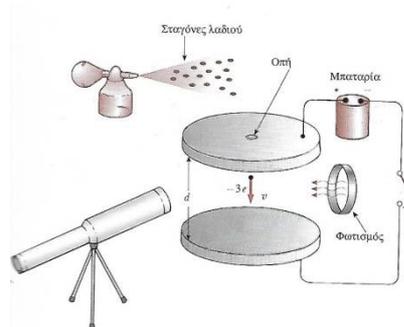
¹ ΣΥΓΧΡΟΝΗ ΦΥΣΙΚΗ R. Serway σελ. 95

² PHYSICS, A. Mazis, p. 285

That it is happening with the heat of the Tangsten filament or with the other metals of the cathode, it is the emission of photons in ultra violet radiation, that under the reaction of the electric voltage of the anodes, they are polarized in the length and they are diverted of the electric or the magnetic field an after they fall on the fluorescence display. The display is lighted of the ultraviolet radiations, as and with the radiations X. The ultraviolet radiation of the cathode could be happen and with high voltage when the cathode is cold. Consequently, Thompson not counts the reason e/m of the electron, but in some way, he counted the reason of the ultraviolet radiation.

In the cells, it is certain that there are special tunnels of the ions, as K^+ and Na^+ and others ones. The smaller Na^+ than the K^+ , it is not passes between the bigger tunnels of the K^+ . It means that the ions are not attracted from some electric charge, when they are passed into the tunnels, but of frequencies the element particles are oscillated, they are causing the electric attraction with the particles of the wall of the tunnels. The electricity is of the oscillation of the element particles they are consisted the conductors. Maybe in the large voltage the electrons are flowing. But in the electrolysis the elements or the roots are attracted on the cathode or the anode, where the frequencies of the coated metals, attracted the frequencies of the roots or elements.

So, Millikan did not product ion with the blower of the oil drops, but frequencies of the charge of the electrons of the atoms of drops of the oil (they are neutral in electric charge). The atom are very binding and they are not ionized with profit of electrons with the friction. So, the charge of the electron he counted it, it is unsafe (it is the charge it is owed of the oscillation of the electrons, of the neutral atoms and the molecules of the oil drops).



Experiment Millikan

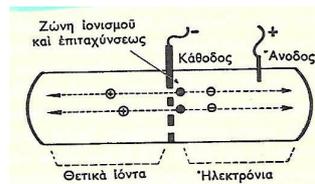
Of the blower of the oil drops, they are fallen into the hole of the capacitor in the Millikan's experiment, because of the friction of the drops, they get frequencies the electrons, and they are the cause of the charge.

And with the tunnel rays, where, as it supported they are product positive "ions" of gasses and it is counted their mass in the mass spectrographs, they are not product ions, but atoms with electric oscillation, they had aberration in the magnetic field, because the oscillation corresponds to the electric charge. If the gas is the Hydrogen where they are product the tunnel rays, then it supported of the in force Physics, that they are created ions of protons in cathode rays tubes and they counted their mass in the mass spectrographs. But, the tunnel rays are product in the cathode rays tubes³, where it is "ionized" the atom of the Hydrogen of the

³ PHYSICS, Alkinoos Mazis, p. 271

frequency of the proton and after the “proton” is coming in the hole of the cathode (in the reality it is coming in the hole the atom, it has its proton with frequency that it charges it). In the cathode rays tube, in the reality, it is the diatomic mole of the Hydrogen and when it is applied voltage between cathode and anode, then it is coming on the parts of the atoms and the one atom is positively charged of the proton frequency and the other negative charged, of the electron frequency.

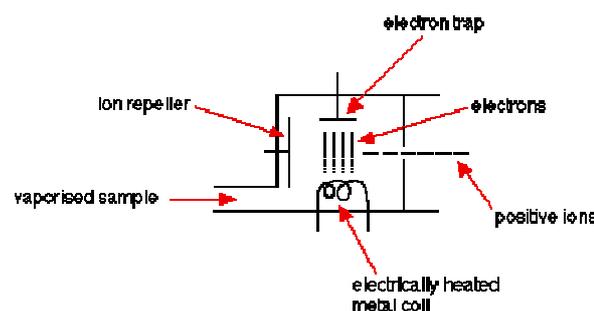
So, we are supporting that the masses of the elements are just indicated and analogue between them and it is not right counted the charges and masses of the protons or the electrons.



Cathode rays tube with cathode – and anode + and at left the tunnel rays of positive “ions”

Between cathode and anode it is applied voltage 1000 Volt, that it is separated the atoms of the molecule of Hydrogen and they are in oscillation some electrons of the atoms and in the other atoms are oscillated protons. The atoms they have oscillated electrons, are the negative “ions” and the atoms they have oscillated protons, are the positive “ions” are the tunnel rays. The positive “ions” are coming in the mass spectrographs. When this voltage is applied on mono-atomic gasses as the Helium, it goes on in oscillation of some atoms the protons and in the others the corresponding electrons. These they have in oscillation protons, they’ll be the tunnel rays.

In the cases that the elements are not gasses as the Hydrogen, but solids, they are vaporized by heat and the atoms coming in the “ionization” chamber.



“ionization” chamber of vaporized solids

As you see in the “ionization” chamber, there is thermionic emission of the filament, that as we indicated it is radiation of photons and not of electrons, they emit and put in oscillation protons of some atoms and they are the positive rays and on the others put in oscillation electrons of the atom, they are the negative rays (but, they are neutral atoms with oscillation of protons and they have some positive charge and the others negative).

See now the electrolysis. The acid H_2SO_4 for example, it is not decayed in ions in the electrolysis (H_2^{2+} and SO_4^{2-}), but in roots they are consisted of atom on molecules, and the molecule of Hydrogen have protons in oscillations and the root has electrons in oscillations. Let's see the law of electrolysis of Faraday,

$$m = \left(\frac{1}{\frac{96500Cb}{mole}} \frac{A}{n} gr/mole \right) q$$

m =the mass of the root or molecule in grammars, $F=96500Cb/mole$ the constant of Faraday, A =the atomic mass of the root in grammars/mole, n the valence of the root and q is the charge passing the voltameter of the electrolysis. If $q=96500 Cb$, $n=1$, then we take 1 gr-ion ,

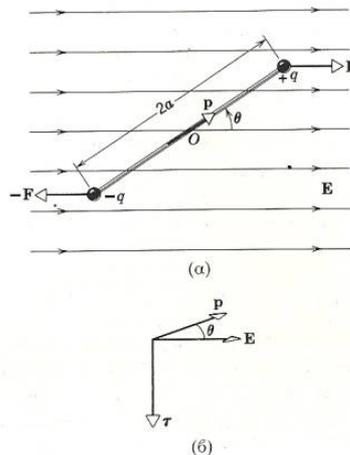
$$m = \frac{1}{96500} \frac{AN_A m_p e}{N_A m_p e} 96500 gr$$

But, $(96500/e) = N_A$ the number of Avogadro, $gr=10^{-3} Kgr$, and then $e = (96500/N_A^2 m_p) \times 10^{-3} kgr = 1.6 \times 10^{-19} Cb$ (in according to in force physics $N_A = 6.023 \times 10^{23}$ particles/mole, 1 mole = 22.4 lit = 0.0224 m^3 and $m_p = 1.67 \times 10^{-27} kgr$). This the element charge e , is of the in force physics and Millikan define it, in according of the in force physics constants. But, as we indicated the charge is suspended of the particle frequency (and we prove it bellow) and the frequency of the "ions" of electrolysis, or in the blower of Millikan, or of the ultraviolet polarized radiation of Thompson cathode rays tube, is different of the frequency that the electrons and the protons have into the structure of the atom, consequently the estimations of the in force physics, for the size of the mass and the charge of the proton and the electron is wrong.

So, we accept the 4th proposition, that is, the electron has equal mass to the proton.

THE CHARGE IS ANALOGUE TO THE FREQUENCY IN THE SQUARE POWER

We have an electric dipole with charges $q, -q$ in an electric field, as in the next plan,



It could be a diatomic gas, where the two atoms have the same mass (if you want to avoid it, because it is considered that they have covalent bond, many diatomic gasses⁴, then you consider a dipole with two equal masses m). And the electric moment of the dipole, would be $\tau = 2aqE \sin\theta = 2rqE \sin\theta$. The potential energy U to rotate this dipole, is $U = -2rqE(\cos\theta - \cos\theta_0)$. If $\theta_0 = 0$, then $U = 2rqE - 2qrE \cos\theta$.

Because the two opposite charges have equal masses m the every one, then, the total energy for the oscillation of the dipole⁵, is $W = \frac{1}{2} I(\omega^2 - \omega_0^2)$ and $I =$ the inertial moment, that it is $I = \frac{1}{2} 2mr^2$. If the energy U is equal to the work W of the inertial moment⁶, then $2rqE = mr^2\omega^2$. So the charge is,

$$q = \left\{ \frac{1}{2} mr^2/E \right\} \omega^2 = k\omega^2$$

$$e_c = k_{c,e} \omega_c^2 \quad (\text{for the electron or the proton})$$

We proved that the charge of the dipole, is analogue of the frequency in the square power. So, we should accept that and the diatomic gas, has an atom with oscillation of protons that it gives it the electric charge and the other atom of the gas, has the oscillation of the electrons and they are attracted (they are pulled of the magnetic fields of the same particles).

THE MASS IS REVERSE ANALOGUE TO THE FREQUENCY

The angular momentum of the electron or the proton is, $m_c \omega_c r_c^2 = \hbar$ and,

$$m_c = (\hbar/r_c^2)/\omega_c = k_{c,m}/\omega_c$$

Consequently the reason e/m of the electron or proton is,

$$e_c/m_c = k_{c,e} \omega_c^3$$

The reason e/m of the electron or the proton, in the atom of Hydrogen, is,

$$e/m = k(\omega_c + \omega)$$

Because $\omega \ll \omega_c$, and $\omega =$ the frequency of the rotating particles in the atom, then $e_c/m_c \approx e/m$, and it is the reason that we consider right the reason e/m found in magnetic nuclear resonance.

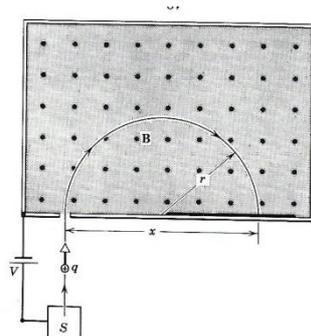
THE ERROR IN THE CALCULATION OF MASS SPECTROGRAPH

We give the next plan of mass spectrograph,

⁴ CHEMICAL BOND, Klouras- Perlepes, p.36-40

⁵ PHYSICS R. Serway, vol. I, p. 255

⁶ $E \text{ via } 2qrE \cos\theta_0 = \frac{1}{2} I \omega_0^2$



Calculation of e/m of mass spectrograph

In the calculation of the reason e/m of the mass spectrograph, it is taken the positive “ion” of the tunnel rays of the gasses of the cathode rays tube, or of the “ionization” chamber of the vaporized solids, it is accelerated in electric potential, it pass into the choicer of velocity $v=E/B$ (E = the electric field it is created on the armatures of the capacitor of voltage V and B = the magnetic field that it is vertical to the velocity and the E and it is equal to the B where it is curved the “ion” on radius). The calculations did of the formula⁷,

$$m/e = (B^2/2V)r^2 \quad (A)$$

We know that $evB=mv^2/r$, for the “ion” of charge e and mass m (it could be a proton). Then $m/e = (B/v)r = (B^2/ E)r$, because the two B are equal and are coming from an electromagnet. But $E=V/l$ (l =the length of the armatures of the capacitor where it is applied the voltage V) and,

$$m/e = (B^2/2V)lr \quad (B)$$

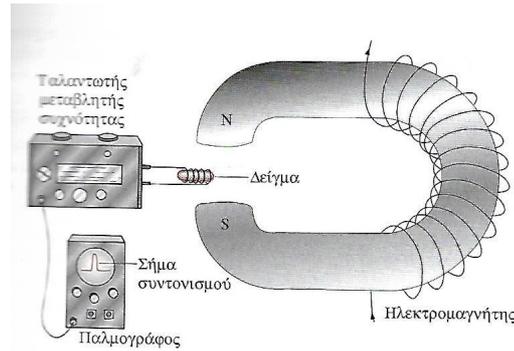
The calculations of the reason e/m are done from the formula (A), but the correct formula is the (B) and it is in force the opinion that the reason e/m didn’t right calculate of the in force physics.

WHAT THE NUCLEAR MAGNETIC RESONANCE SHOWS

As Serway reports in MODERN PHYSICS⁸, water in magnetic field of 1 T, absorbed radiation 42.577 MHz.

⁷ PHYSICS, Halliday-ResnicK, vol. II, p.196,

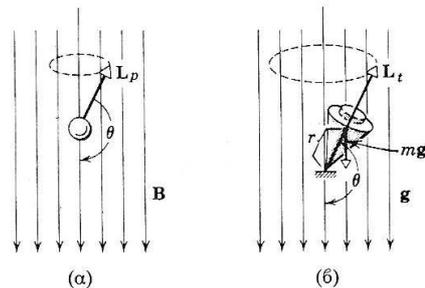
⁸ MODERN PHYSICS, R. Serway, p. 442



Sample of water is accepted alternated magnetic field 42.577 MHz of the coil that is connected with oscillator and it found into homogeneous magnetic field $B=1T$

As it is reported, it is absorbed of the protons of the water Hydrogen. The magnetic moment of the proton or the electron of the Hydrogen, is $\mu = e\hbar/2m$. We consider that the spin is $m\omega = \hbar$, then $\mu B = (e/2m)\hbar B$. Look out here. When we have magnetic field $1T$, then, $E = \mu B = (e/2m)\hbar B$, the energy of the particle, of which the spin is in $B=1T$.

In this point, we ought to indicate the next. It is considered that the protons had the sift frequency of the axis of the whirligig, that is, into the magnetic field $B=1T$, the axis of the magnetic moment of the proton, has the frequency as the whirligig (it is called Larmor frequency). See the plan of them⁹,

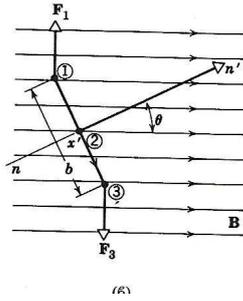


At righth, shift of whirligig axis with frequency, at left equation with shift of axis angular momentum L_p and magnetic moment μ of the proton.

As you see, the proton not balances on some solid surface as the whirligig and parallel it will have symmetric distribution of mass and charge. The charge must rotate with velocity c and the only case is, the mass and the charge to be cyclic rings of electric current and rotating of mass with velocity c , it not the model of whirligig which is in the gravity field and it touches on solid surface and it is rotating.

We consider that when is in the magnetic field B , the proton which has magnetic moment μ , it is a magnetic dipole. See magnetic dipole of rectangular parallelepiped of current conductor, in homogenous magnetic field,

⁹ PHYSICS, Halliday-Resnick, p. 286



Magnetic dipole of a rectangular parallelepiped current conductor, in homogenous magnetic field B

The rectangular parallelepiped could be a cyclic electric current $I=e/t$ of the proton and in two cases is proved¹⁰ that the magnetic moment is $\mu=IA$ (in the cyclic ring $A=\pi r^2$) and the energy $U=-\mu \cdot B$. The magnetic dipole, as the electric dipole, will have angular frequency ω .

If the energy U is gotten of angle 0° to 90° (degrees), then $U=\mu B$.

If you look again the experiment of nuclear magnetic resonance, we have alternating magnetic field in coil $B=B_0 \cos(\omega t + \theta)$, that is coming from the alternating electric current of the oscillator $I=I_0 \cos(\omega t + \theta)$. The B_0 is about¹¹ 1 Gauss= 10^{-4} T.

The current is $I=Ne/t$, where N is the number of the electric carriers (electrons) that they are flowing in the conductors, e is the charge of the carriers and t the time. But, when the current in conductor of section S is coming in distance L in time t , then,

$$I=NeL/tL=Nev/L \quad \text{and} \quad v=IL/Ne=ILS/NeS, \quad v=\text{the velocity of the carriers and,}$$

$$v=I \cdot \text{Vol}/NeS, \quad \text{and}$$

$$v=I/neS \quad n=N/\text{Vol}, \quad \text{Vol}=\text{the volume of the conductor.}$$

The electric current will be in voltage V and between two neighbouring atoms of the conductor of length L , it will be accepted force, $F=m\Delta x/\Delta t^2=eE=e(V/L)=e(V/b\Delta x)$ and $eV=bmv^2$, $L=b\Delta x$ and E = the electric field of the conductor, the voltage V creates on the its ends.

We replace the v and we find,

$$V = \frac{bm}{n^2 e^3 S^2} I^2 \quad (1)$$

And because the electric power is $P=VI$, then,

$$P = \frac{bm}{n^2 e^3 S^2} I^3 = kI^3 \quad (3)$$

In the solenoid choke of the alternating magnetic field it is in force,

$$B=\mu_0 In, \quad n= \text{torus to the length of the solenoid and,}$$

$$P=k(B_0 / \mu_0 n)^3 \cos^3(\omega t + \theta) = 500 (k/n^3) \text{ kWatt} \quad (4)$$

¹⁰ PHYSICS, Halliday-Resnick, vol. II, p. 179

¹¹ PHYSICS, Halliday-Resnick, vol. II, p. 287-288

This electric power is alternating and in frequency $\omega=2\pi \times 42.577 \times 10^6$ rad/sec, it is corresponding to alternating magnetic field, that of angle 0° to 180° , it comes back the axis of the magnetic moment with the work and consequently with the given energy, in many protons. The the absorbing energy of the proton is $U_1 = 2\mu B = 2(e/2m)B\hbar$. This energy is equal to $U_1 = -\mu B \{\cos(0^\circ) - \cos(180^\circ)\} = 2\mu B$. This energy is offered of the choke power, in 0° to 180° (degrees) of the phase of $(\omega t + \phi) = 0 - 90^\circ$. And of 180° to 360° , the alternating magnetic field, is given its power to the corresponding neighbouring electron of the Hydrogen, that it has opposite magnetic moment to the proton in the B.

After the 180° to the 360° , the axis of the magnetic moment of the proton, it rotates the homogenous magnetic field 1T, giving to it work. Now the energy is $U_2 = -2\mu B$. Then, the total energy U, will be the energy U_1 minus the energy U_2 of the final position, then

$$U = 4\mu B = 2(e/m)B\hbar.$$

So, the frequency will be $\omega = (2e/m)B = 2\pi \times 42.577 \times 10^6$ and,

$$e/m = 1.337 \times 10^8 / B \quad (5)$$

This is why e/m is considered right¹².

THE LAW OF IN THE CUBIC REVERSE POWER

When a mass or a charge, is rotating round the center of mass, in relation to another mass or charge, the motion is cyclic and in the reverse cubic power. That is, we have the centripetal force, of a revolving body,

$$F = mv^2/r = (mvr)^2/mr^3 = k/r^3$$

The motion is cyclic and on heaven bodies there is together, the force of the spring of gravity force, that the heaven body it is attracted of someone mass of other body. The spring is increased and coiling between the two masses and the initial cyclic motion is become elliptic now.

The law in the reverse cubic power is catholic and Cavedish, if he realized the same name experiment, he realized it on motionless masses and not revolving. So, the conclusions of Cavedish are not sure for the gravity law of the revolving masses. And Coulomb made the experiments on motionless charges and it is wrong him law of attraction of the charges, when they are rotated.

THE 3th LAW OF NEWTON IS VERY LIMITED

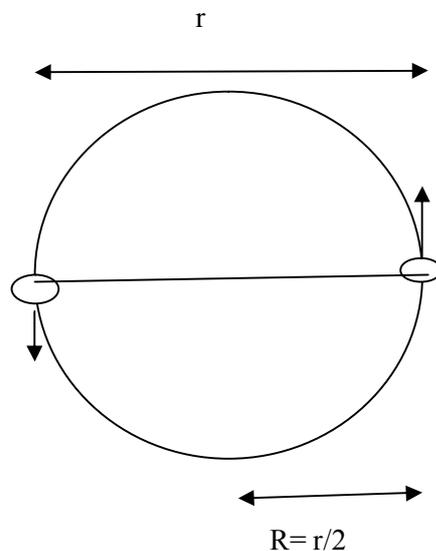
¹² In the PHYSICS of Halliday-Resnick, vol. II, p. 287, it is reported that the frequency $f = \omega/2\pi = \mu B/2\pi L$ and $L = \hbar$, that is $\hbar \omega = \mu B$. The magnetic moment μ , as it is reported, it was defined from this formula and consequently the sizes are "made" to satisfy this formula.

We consider two cyclic ring conductor of electric current, of radius R and r, that they are parallel and their center is found on line. The conductor a will exercise on the b attraction force (if they are flowed of equal parallel current with same course), $F_{ab}=BI(2\pi r)$ and B is the magnetic field that it creates it. And the b conductor creates the same field to the a and it will exercise attraction force, $F_{ba}=BI(2\pi R)$. We proved that the force exercising the one conductor to the other, it isn't equal with the opposite force of the other conductor. With the same way, an electric charge, exercises to the other one an equal opposite force, only if they are absolute equal charges.

If we push a body with a force F' , we feel its reaction, it is a smaller force than F' . Totally we'll push with force $F=F'-F_r$ and F_r is the smaller force of reaction to the force we exercise it. If the gravity masses that they are interacted with forces equal and opposite, then it is in force, $F=F'(1-b) = -(-F) = -(F'(1-b))$. Differently it is not in force this law, for the non equal masses. διαφορετικά δεν ισχύει αυτός ο νόμος για άνισες μάζες. And already we did the analysis of two reasons, that the force between nucleus of an element and of an its electron, it is in the reverse cubic power, $F = \{e^2/(4/3)\pi r^3\} (1-b)$.

THE ATOM OF THE HYDROGEN

The equal mass electron and proton, are revolving round their center of mass,



Electron and proton are revolving in radius r one the other and $r/2$ round the center of their mass

The electron attracts the proton and the proton attracts the electron with the equal opposite force (because the charges and the masses are equal and opposite the charges), so, each particle is accepted attraction force $F = \{e^2/(4/3)\pi \epsilon_0 r^3\} (1-b) = m\omega^2(r/2)$. We consider that in the atom, it is constant the angular momentum of the electrons and the protons revolving round their center of mass and on all the states of them, and the symbol is h . So, the above equation will be,

$$F = e^2 (1-b)/(4/3)\pi\epsilon_0 r^3 = m\omega^2(r/2) = \hbar^2/2m(r/2)^3 \quad (6)$$

WHAT THE EMPIRICAL FORMULA OF BALMER IS MEANING

Balmer for explaining the visible spectrum of emission of the Hydrogen atom, invented empirically the formula,

$$1/\lambda_{if} = \text{Ryd}\{(1/n_i^2) - (1/n_f^2)\}$$

and λ_{if} is the length of the wave that the atom of Hydrogen emits it from the state n_i to the state n_f , and $\text{Ryd} = 1.0973732 \times 10^7 \text{ met}^{-1}$ the Rydberg's constant. The formula was generalized for all radiation of Hydrogen. If $n_f = \infty$, then,

$$1/2\pi(r/2) = 1/\lambda = \text{Ryd}/n^2 \quad (7)$$

This is the wave length λ it is winding the curve of state n of the electron and the proton, round the center of mass of them. We are introducing the realized wave, in according of it, the particle is realized (and it is a particle), when it is realized a full its wave. And in the first state of Hydrogen atom, the electron and the proton are realized in one wave, then they are revolved round of their mass and $\lambda = 2\pi(r/2)$ and $r/2 = R$.

So, in every course in Hydrogen, it will be the same angular momentum \hbar (and not $\hbar n$, that Bohr supported it),

$$\hbar = mv(r/2) \text{ and } \hbar = mv2\pi(r/2) = mv\lambda = mvn^2(1/\text{Ryd}) \quad (8)$$

The formula (7) gives for the first state of Hydrogen atom,

$$R = r/2 = 1.45 \times 10^{-8} \text{ met} \quad (9)$$

The radius of revolving of the electron or the proton round the center of mass is very large in relation to this Bohr indicated and it is the right for the first state of Hydrogen atom. The atomic and nucleus distances are very larger than they are indicated.

THE LENGTH WAVE OF COMPTON

Compton explained the length waves of the radiation X and he invented the electron wave length, $\lambda_{\text{Compton}} = \hbar/mc = 0.00243 \times 10^{-9} \text{ met}$ and Serway¹³ is reporting that the experimental price is $0.00242 \times 10^{-9} \text{ met}$. We are thinking as above, $2\pi r_e = \lambda_{\text{Compton}} = \hbar/mc = 0.00242 \times 10^{-9}$ and

$$r_e = r_p = 3.85 \times 10^{-13} \text{ met}, \quad (10)$$

the radius of the proton or the electron they have spin \hbar .

¹³ MODERN PHYSICS, R. Serway, p. 72-76

VELOCITY AND FREQUENCY OF REVOLVING

If we are considering that the angular momentum round the center of mass of Hydrogen \hbar , is the same and for the spin of the protons and electrons, then,

$$(\hbar/mv)/(\hbar/mc)=R/r_e=1.45 \times 10^{-8}/3.85 \times 10^{-13} \text{ and}$$

$$v=7965.5 \text{ met/sec} \quad (11)$$

the velocity of the electron or the proton on the first state of Hydrogen. Then the angular frequency is,

$$\omega=v/R= 5.49 \times 10^{11} \text{ rad/sec,}$$

$$f=\omega/2\pi=8.74 \times 10^{10} \text{ Hz.}$$

This frequency is satisfied for the electromagnetic waves, that it is absorbed of the Hydrogen atom and it is supported that it is the frequency that the electron absorbs it, in relation to the nuclear magnetic resonance absorb of Hydrogen. But, it is a satisfied absorbed frequency in the atom of Hydrogen, here theoretical calculation.

POTENTIAL AND KINETIC ENERGY

We knew that the kinetic energy is, $E_k=\int_0^v m \left(\frac{dv}{dt}\right) dx = \frac{1}{2} mv^2$. So, again, we'll act for the potential energy of the electron or the proton of Hydrogen. The radius changes from 0 to R. And,

$$E_p=\int_0^r (-e^2(1-b)/\left(\frac{4}{3}\right)\pi\epsilon_0 r^3) dR = 3e^2(1-b)/8\pi\epsilon_0 r^2 \quad (12)$$

Here, we considered as equal to zero the indeterminacy energy $-3e^2/8\pi\epsilon_0 0^2$, because philosophically the zero is indeterminacy.

As we reported it, the motion of the electron or the proton is cyclic round the center of mass of them, that is, single harmonic oscillation. We knew that in single harmonic oscillation, the potential energy is equal to the kinetic energy. Then,

$$3e^2(1-b)/8\pi\epsilon_0 r^2 = \frac{1}{2} mv^2 \quad \text{and known the } r=2R, v,$$

$$e^2/m = 2.235 \times 10^{-7} / (1-b) \quad (13)$$

The (13)/(5) gives $(e/m = 1.337 \times 10^8 / B)$,

$$e= 1.672 \times 10^{-15} B / (1-b) \text{ Cb} \quad (14)$$

the charge of the electron or the proton.

And the (13), (14) give,

$$m = 1.25 \times 10^{-23} B / (1-b) \text{ kgr} \quad (15)$$

the mass of the electron or the proton.

ANGULAR MOMENTUM AND MAGNETIC MOMENT

The angular momentum of the electron or the proton of Hydrogen atom, is,

$$h = mvR = 1.444 \times 10^{-27} B / (1-b), \quad h = 9.073 \times 10^{-27} B / (1-b) \quad (16)$$

That is, for the Hydrogen atom, the angular momentum is very larger than the in force physics and it is equal to the spin $\tau\omega v$ of them particles. And the magnetic moment μ , is,

$$\mu = evR/2 = ecr/2 = 1.93 \times 10^{-19} B / (1-b) \quad (17)$$

THE DENSITY OF HYDROGEN GAS

In according to the in force physics, the experimental density of the Hydrogen is¹⁴ $d = 0.08988 \text{ kgr/m}^3$. The density of the gram-ion is $d_{\text{gr-mole}} = N_A A m_p$, where A = the atomic number of the element, m_p = the mass = m in work here, of the proton and N_A = the number of Avogadro. The corresponding number of Avogadro in our theory, is the N_{Alek} and the atomic number of Hydrogen atom is 2 and consequently the molar 4 (the 2 protons + the two electrons) and the density of the gram-ion is,

$$d_{\text{gr-mole}} = N_{\text{Alek}} 4m = 4F(m/e) = 4 \times 96500 / 1.337 \times 10^8 = 2.887 \times 10^{-3} \text{ kgr/mole}$$

and $d = 0.128866 \text{ kgr/m}^3$ because the mole = 0.0224 m^3 . Consequently it is larger than the experimental price on the factor 1.434. So, in our theory, the Faraday's constant F is minus on $1/1.434 = 0.69735$. It is ,

$$1-b = 1/1.434 = 0.697 \quad (18)$$

That is, $F(1-b)/e = N_{\text{Alek}}$. The constant F of Faraday must multiply with $(1-b)$, because the reason $(m/e)/(m'/e') \approx 1/(1-b)$. Experiment errors in the estimation of the $m' = 1.672 \times 10^{-27} \text{ kgr}$ and $e' = 1.602 \times 10^{-19}$, that are the sizes of the in force physics, they don't give the correct equation $(m/e)/(m'/e') \approx 1/(1-b)$, but with satisfied touch. Then the (14),(15) give for the charge and mass of the electron and proton,

$$e = 2.4 \times 10^{-15} \text{ Cb} \quad (19)$$

$$m = 1.79 \times 10^{-23} \text{ Kgr} \quad (20)$$

and,

¹⁴ Wikipedia

$$\hbar=2.07 \times 10^{-27}, h=1.3 \times 10^{-26} \quad (21)$$

$$\mu=2.77 \times 10^{-19} \quad (22)$$

THE CONSTANTS OF THE LIGHT AND THE ANGULAR MOMENTUM

It is in force for the Hydrogen light the constant $f_{\text{light}}=c.Ryd = 3.29 \times 10^{15}$ Hz for the first state of the atom and consequently in according to the kinetic = with the potential energy E we found above¹⁵, $h_{\text{light}}=E/f_{\text{light}}=1.136 \times 10^{-15}/f_{\text{light}}$

$$h_{\text{light}} = 3.45 \times 10^{-31}$$

and this constant we use in the emissions of series Balmer, Lyman etc. The f_{light} is different of the f of the revolving of the electron or the proton round the center of mass of atom. Bu, it opened the door of the acceptance many constants h_{light} for the light and not one as in the atom of Hydrogen, with revolving of the particles of the constant \hbar , it is different of the constant of the light. And as already indicated, the atom of the Hydrogen absorbs frequency of $f=8.74 \times 10^{10}$ ($=\{mv^2/h\}$ Hz, it is the frequency of the revolving of the electron or the proton round the center of the mass and $mv^2=2 \times \frac{1}{2}mv^2$ of the kinetic energies of the proton and electron).

As it is visible, the photon that it is emitted of the exciting of the Hydrogen atom, it is consisted of two charged with opposite charges electric rings and every charge, it coming from the proton and the electron and bellow it'll be given the structure of the photons and generally of the electromagnetic waves.

WE ARE COMING IN NUCLEAR PHYSICS

The estimations for the nuclear physics, as we'll see they are wrong. The nuclear distances are larger than the in force physics and the error is on the using the law in the reverse square power and it must the using of the law in the reverse cubic power, it is proved from us.

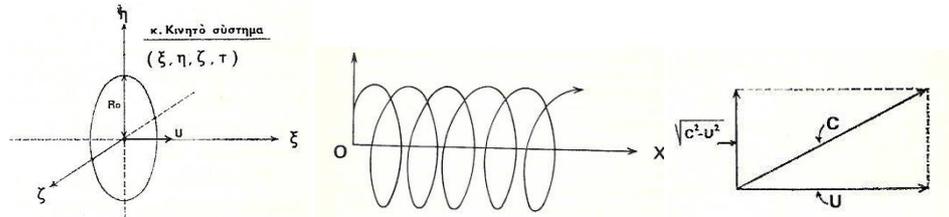
THE STRUCTURE OF THE PROTON AND ELECTRON

In my cosmotheory THE IDION, it was supported that these two element particles, have charge of 2e in their center and they are revolving two particles with charge -0.5e in their

¹⁵ $E=2 \times \frac{1}{2}mv^2$ because the photon is coming from the kinetic energy of the proton, but and the electron, they have te same kinetic energy, The photon is dual particle with opposite charges, they are coming from the electron and the proton

diameter, in radius R with velocity c. The invention is on the theory of dr Demetres Kominos, about bonded photon, ($E=hf$, relativity, quanta, Nikiforakis). Mr Kominos considered that the electron or the proton, are consisted of a bonded photon. That it is revolving in circle. When it is motionless, it is like ring, when it is moved, it is opening like the coil tore. The it is in form the external velocity v and the internal v_{in} and it is in force,

$$c^2=v^2+v_{in}^2 \quad \text{και} \quad v_{in}=\sqrt{c^2-v^2}$$



Motionless particle

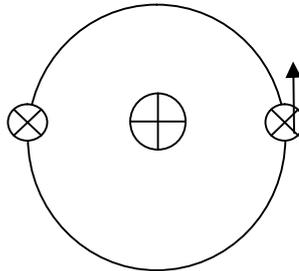
Moved particle

The three velocities of the moved

So, it is in force the principle of impetus conservation on the direction of the initial velocity c when the particle likes ring, then,

$$m_0c=m\sqrt{c^2-v^2} \quad \text{και} \quad m=\frac{m_0}{\sqrt{1-\frac{v^2}{c^2}}}$$

In our theory, it is not go on the bonded photon, but for two charged particles $-0.5e$, they are bonded of the central $2e$ charge (total charge $1e$ for the proton), with velocity c, as the plan,



The two particles are revolving with velocity c with the motionless in the center. They are emitted the field of the electric charge, total $1e$. When the two lines of the two in diameter particles are united, it is in form the graviton, it is turbine dislocation of the ether. So, the two peripherals particles are formed the mass, because they are made revolving motion and it is describing of dr Kominos and the central particle is responsible for the charge of the proton or electron (central charge- charges of peripherals). Consequently the magnetic moment of the particle, it is opposite of this, it is estimated for the charged particles.

Because the two particles are revolving, it is in force the attraction of the center, in the reverse cubic power,

$$F=\{(2ex0.5e)/(4/3)\pi\epsilon_0r^3\}(1-b)-\{(0.5e\chi0.5e)/(4/3)\pi\epsilon_0(2r)^3\}(1-b)=m\omega_c^2r$$

The frequency ω_c of the revolving particles is very large and $\omega_c = \hbar/mr^2 = 7.79 \times 10^{20}$ rad/sec.

THE ERROR OF RUTHERFORD

Rutherford estimated the distances and the $r_0=1.2 \times 10^{-15}$ met of the nucleus of radius $r=r_0 A^{1/3}$ met. This estimation is coming from the solution of the equation $\frac{kZe^2}{r} = \left(\frac{1}{2}\right)mv^2$, where $\frac{1}{2}mv^2$ is the kinetic energy K of the particle α that it “falls” in the nucleus of aluminum atomic number $Z=13$. When the kinetic energy is ¹⁶ 7.7 MeV= 1.23×10^{-18} j, then $r=4.9 \times 10^{-15}$ met). Well, we see how they are estimated the nuclear distances with the law in the reverse square power, but we proved that the right law is in the reverse cubic power and the distances are smaller than above.

THE BALANCE OF THE ELECTRON-PROTON, OR PROTON-PROTON

The electron and the proton are balanced when they are face by face their electric rings and the true motion of the currents in the opposite direction, in the same direction the convention currents. They’ll be attracted of the opposite charges and they’ll be pushed of the magnetic field of the currents. Proton-proton have the same the true and the convention course of the currents, and,

$$e^2/(4/3)\pi\epsilon_0 r_{p-e}^3 = BI(2\pi r) = (\mu_0 I/2\pi r_{p-e})I(2\pi r)$$

where r_{p-e} is the distance of the proton and the electron, they have electric rings radius r and $B=\mu_0 I/\pi r_{p-e}$. We know that the magnetic moment is, $\mu=IA^2=I\pi r^2$ and then,

$$e^2/(4/3)\pi\epsilon_0 r_{p-e}^3 = \mu_0 \mu^2/\pi^3 r_{p-e}^3$$

We are replacing the $e=2.4 \times 10^{-15}$, $r=3.85 \times 10^{-13}$ and $\mu=2.77 \times 10^{-19}$, $\mu_0=4\pi \times 10^{-7}$, we find $r_{p-e}=2.83 \times 10^{-12}$ met, because we considered $\epsilon_0=1$.

This nuclear radius is very large in relation to the acceptances of the in force physics. But it is right, because the reflections of the radiation X in the Bragg’s theory, in the experiments they are not being in atomic flats, but in nuclear flats, (this is the reason the distances are in the order of size of r_{p-e}). We just proved true of them distances, in nuclear distances. But, the Compton’s length of the electron, it is happening in the reflection of X radiation and the emission of the electron, it help the calculation of the distances of the electron or the proton.

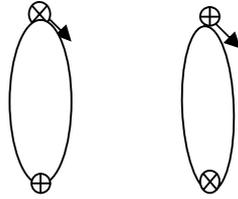
The couple proton-proton has the same energy $(-e^2/(8/3)\pi\epsilon_0 r_{p-e}^2) + (\mu_0 \mu^2/\pi^3 r_{p-e}^3)$ and the neutron (the neutron is consisted of a proton and an electron) the same opposite energy.

If you replace the prices of the electric energy of the two protons $(-e^2/(8/3)\pi\epsilon_0 r_{p-e}^2)$, you’ll see that it double in absolute price of the magnetic energy $(2\mu_0 \mu^2/\pi^3 r_{p-e}^3)$.

THE MOLECULE OF THE HYDROGEN

¹⁶ MODERN PHYSICS, Serway, example 3.5

As we described the proton-proton in the nucleus, something analogue it is happening with the two atoms of the Hydrogen. They are electric rings as the plan,



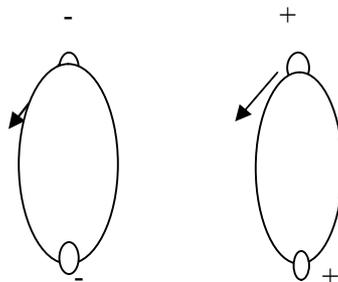
Every couple of the electron- proton of the two atom of the molecule, is attracted with electric force $F_{p-e} = -e^2 / (4/3)\pi r_{p-e}^3$, it is coming from the proton of the atom that it has radius oscillation, consequently the electric charge e' of the atom, that it is smaller than the charge e of the initial proton and the corresponding electron of the other atom, where and this is having opposite charge $-e'$ for the atom, it coming from the radius oscillation of the electron and it is smaller than the initial charge e . They are pushed of their magnetic field, that is, of the field of proton and electron, they have radius oscillation.

THE PHOTON AS DUAL PARTICLE IN THE BASE OF MAXWELL'S EQUATIONS

The nature from the smallest particles of the matter and for the atoms and for the photons, it begins with this simple way we indicate it. With the right equations of Maxwell for the electromagnetic waves, as we correct them, we'll explain this structure, because these equation come on mechanisms of the micro-cosmos.

THE PHOTON AS TWO FACED ELECTRIC RINGS

We consider two element opposite charges, they are rotated in face in cyclic rings, they form, that is, cyclic loops of electric current. The particles they have the charges, are rotated with velocity c' .



The two particles – charges and the two +, they form cyclic loops of current

The two charges $-$, are coming from the two negative charges $0.5e$ they are rotated round the charge $+2e$ of the proton and the two charges $+$, are coming from the two positive charges $0.5e$ of the electron, they are rotated round the charge $-2e$. It is formed the mass in the electron or the proton, of the revolving of the two charges $0.5e$ and in the photons happen the same, the photons have mass¹⁷.

The two them particles, the cyclic loops, they near and come far of between them, the indicated equation of the distance is, $x=x_0+x_m\cos(\omega t+\varphi)$. In the same time, they are moved vertically to the axis between the rings, as, $y=y_m\cos(\omega t+\varphi)$.

Let's go the Maxwell's equations for the electromagnetic waves.

1st EQUATION

It is, $\epsilon_0 \oint \mathbf{E} \cdot d\mathbf{S} = 0$

This is the correct equation.

A sphere of radius r , large in relation to the rings, it'll has $E4\pi r^2=0$, because the two field E_1 of the positive and E_2 of the negative charges, are equal and opposite fields. So, the structure of the photon we propose it, it explains the 1st equation and it is explained of this. If the r is smaller than before, there is alternated field.

2nd EQUATION

This is, $\oint \mathbf{B} \cdot d\mathbf{S} = 0$

As before, for the same reason, the sphere of large radius r , it'l has zero magnetic field to it flows it, because the two magnetic fields B_1 and B_2 of the positive and the negative loop, are opposite and equal. The 2nd equation explains the structure we propose it and it is explained of it. Again, in smaller radius than the r , there is alternated field.

3^d EQUATION

It is, $\oint \mathbf{B} \cdot d\mathbf{l} = \mu_0 \frac{d\Phi_E}{dt}$

We leave out the dielectric constant ϵ_0 , because as we indicated on others, it is wrong in the equation, the above is the correct equation.

¹⁷ In according to the experiment Pound-Rebcka at 1960, the photons have gravity mass, MECHANICS Univ. of Berkeley p. 349-352, MODERN PHYSICS, R. Serway, p. 78-79

Look out now, how the alternated electric flow forms cyclic magnetic field B. Initial it is indicated that the two electric charges and their rings they form them, are oscillated with length of oscillation x_m . That is, when the positive is moved at right, then the negative is moved at left. Then we have two of the same course currents and the two are formed magnetic field B ($B2\pi r$ in the above equation). But the two electric rings have electric flow Φ_E , it is chanced of the oscillation round the x_m , but and the oscillation round the y_m . These oscillations cause the alternated B and E.

The 3rd equation is explained and it explain the structure we propose it.

We report that because the two rings are neared or coming far between them, then the equation is, $\oint \mathbf{B} \cdot d\mathbf{l} = \mu_0 \frac{d\Phi_E}{dt} = \mu_0 \cdot dI$

4th EQUATION

It is, $\oint \mathbf{E} \cdot d\mathbf{l} = -\frac{d\Phi_B}{dt}$

Because the rings have constant radius R, then the first part of the equation is $E2\pi R$. We have cyclic loop of current of radius R is the one particle, which it causes the alternated magnetic field B of the other particle (Alternated magnetic flow coming from the oscillation). The field E in the one particle is cyclic, as it is in the cyclic conductor of current. The changing of the magnetic flow it is caused of the oscillation of the second particle-loop, it causes to the first loop, the cyclic electric field.

The 4th equation is explained and it explains the structure we propose it.

WE ARE CREATING THE 5th EQUATION OF THE ELECTROMAGNETIC WAVES

The two electric rings are attracted of the electric charges and they are pushed of the opposite cyclic parallel current they are created them. So we have the next.

On cyclic motion is in force the centripetal force,

$$F = m\omega^2 r = \frac{m(\omega r^2)(\omega r^2)}{r^3} = \frac{kMm}{r^3}$$

So, and for the electricity, the charges are moving in cyclic curve, they are analogue to the radius in the reverse cubic power. So, because the two parallel currents are pushed with the law of the parallel conductors, we'll have,

$$F = \frac{ke^2}{d^3} = \frac{\mu_0 I^2 2\pi R}{2\pi d}$$

This is the 5th equation.

d=the distance between the two rings, R=the radius of the rings and e= the electric charge of every particle, positive and negative, and it is different on different electromagnetic waves.

The two opposite electric charges of the photons, are coming from the couple of the electron and the proton, they emit them, when they are accelerated.

The two opposite rings of current of the photons, they loose the oscillation in the length of the axis y, when they are accepted the electric field between cathode and anode of the cathode rays tube of Thomson and they are polarized in the length direction of the axis x and they are deviated in electric and magnetic field.

THE ATOM OF HELIUM

The atom of Helium is consisted of two electrons on the diameter of the atom and they distance from the nucleus of charge +2e radius r and the electrons between them, are distanced 2r.

To the reason we reported for the forces, we put the factor (1-b) in the force nucleus-electron and the two electron create negative force,

$$\{e^2/(4/3)\pi r^3\}(1-b) - \{e^2/(4/3)\pi(2r)^3\}(1-b)/4 = m\omega^2 r = \hbar^2/mr^3$$

As in Hydrogen, the atom of the Helium, emits visible spectrum and the red is $\lambda=667.8$ nm. If we solve the Balmer's formula with this length of wave, we find the constant of Rydberg, $Ryd_{He} = 1/\lambda \{(1/2^2)-(1/3^2)\} = 1.078167 \times 10^7 \text{ met}^{-1}$.

Consequently the radius of the first state of the electrons is, $r = Ryd_{He}^{-1}/2\pi = 1.476 \times 10^{-8} \text{ met}$. And the velocity will be, $(\hbar_{He}/mv)/(\hbar/mc) = 1.476 \times 10^{-8}/3.85 \times 10^{-13}$ then $v = 7825.2 \text{ met/sec}$.

The angular frequency will be $\omega = v/r = 5.3 \times 10^{11}$ and $f = 8.43 \times 10^{10} \text{ Hz}$.

The constant Ryd_{He} explains the larger than the other spectrum of the Helium, and for the other we must accept that it is different.

The potential energy will be equal to the kinetic, because it is going on simple harmonic oscillation, and, $E_k = E_p = \frac{1}{2} mv^2$.

In the multi-protons atoms, the proton are protected from the corresponding electrons, as the electrons are protected from the corresponding protons, so the attraction force is as in Hydrogen. In the base of this deal, we saw the attraction force and the potential energy of the proton and the electron in Helium.

In the Helium, the two electrons are symmetrically moved round the center of mass, in radius r. But and the two protons of the nucleus, are moved with the same frequency ω , round the center of mass and in small radius r' from it. This small radius, is the cause the electron and the proton to they find some near of the radius r, they are in (r-r'). This is the cause the attraction force of the proton-electron is some different than the Hydrogen and the

corresponding spectrums are some different (i.e. of the visible spectrum, as between 2nd and 3rd state of the atom).

In the multi-protons atoms, the electrons of the same state are interacted and the spectrums are very complexes.

But the plenty isotope of the Helium, is this it has two neutrons in the nucleus. Then the mass is $m_{\text{He}}=8m$ (2 protons + 2 electrons + 2 neutrons, and every neutron=1 proton+ 1 electron). In the cathode rays tube where they are produced and the tunnel rays of the Helium, of the electric field it is applied there, the half atom of Helium get oscillations and for two protons, consequently they are positive “ionized” and the other half atoms, get oscillations of the two electrons and they go on to the anode of the cathode tube.

THE MAGNETIC FIELD

We considered as proposition, that the magnetic field was counted right. This, as the PHYSICS of Halliday- R. Resnick, it is counted with balance of electric current and they used the formula $F=BIL$ and $B=F/IL$, L is the length of the conductor it is flew of current I and it is under the vertical magnetic field B. Again, it is counted in relation with the oscillation of the magnetic compass, it is into solenoid choke, it is flowing with current I.

It is in force the position that the B is right counted, because it reported in the PHYSICS Halliday-Resnick, that in the magnetic nuclear resonance applied magnetic field $B=0.5$ T and it was absorbed frequency 21.2 MHz, but Serway reports that is forced $B=1$ T and it is absorbed frequency 42.5 MHz. And generalized, in relation with the field B, they are absorbed the frequencies and it is indicated that the B was right counted. But and the current I is counted right, because it is used for the measurement of the magnetic field B. We consider that the sizes of I, B are received of successes before civilization of the earth, or the space. They was definite the B, I and V on large space experiments.

CONCLUSIONS

The theory here, it is supported on 8 propositions. If they are correct, then the theory is correct.

The electric current in the vacuum atomic and nuclear space, it is flow of electrons or protons and they are different the sizes of the electric charges e, in relation that they are in force for the molecules or atoms, when electron and protons are united to form them.

And the atom and nuclear distances, are very larger than the accepted of in force physics.

It is proved with the induction method, that it is in force the law in the reverse cubic power for the rotated charges or masses and we accepted the magnetic field is ($B=\mu_0 I/\pi r^2$). They are

overturning the data of the atomic and nuclear physics and it is accepted the Balmer's formula for the atomic spectra.

In the experiments of reflection of the radiation X, when i.e., they are reflected in the atoms of carbon, it isn't happening of the flats of the atoms, but of the nucleus particles. Consequently, the estimated distances are into-nucleus.

We must introduce the realized wave. The particle is realized when it does a total oscillation of the length wave, as in the states of the atom of Hydrogen.

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