

# CONSTRUCTION OF NEW INSTRUMENT FOR MEASUREMENT OF THE ELECTRIC SIZES WITH THE NEW THEORY OF ELECTRICITY: THE SIZE OF THE CONSTANTS AND A NEW THEORY OF THE ATOM OF HYDROGEN

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**Abstract:** Construction of new instrument for measurement of the electric sizes with the new theory of electricity. The size of the constants and a new theory of the atom of hydrogen, with the method of the induction, it is formulated new theory of electricity. Parallel the law of OHM isn't right, because it isn't experimental law, but it defines the experiments, with the construction of the ammeters as it had done and with the arbitrary of the selection of the electric resistance  $R=1$  Ohm. So, it needs this spirit work, which defines new units of the voltage, the current and the resistance. It is formulated new theory for the hydrogen atom, where with safe reasoning the attraction force of the electron which revolves round the proton, is reverse of the radius in the third power. For fixing the new units, they are developed the experiments of Millikan, of definition of the element electric charge, of Thompson of definition of the ratio  $e/me$ , of the definition of the sizes of the mass of proton and the nuclei, with the spectrograph of mass. Parallel, they are developed the formulas they are coming of the new theory of the hydrogen atom. Special meaning in this spirit work, is the experiment of the magnetic nuclear resonance of Larmor and the experimental measurement of the frequency of the photons, that are absorbed from the protons, the its development brings the new units, with the help of the above experiments and the calculations of new constants of the particles ( $e, m_e, m_p, h, \mu_e, \mu_p$ ). It had been accepted that the frequencies are measured right and the ratios of the same sizes (i.e.  $e/e_p, m_e/m_p$ ) are absolute right.

**Keywords:** New theory of electricity, measurement of the electric sizes.

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## 1. INTRODUCTION

The new and correct theory of the electromagnetism is reported in the 1008351 and 1008844 Greek patents. Here, we'll find methods so they'll find the units of the electromagnetic sizes in comparison with the already existed, so it'll be possible the construction of new instrument of measurement of the electric sizes and they'll be found the new constants of the physics.

In the analysis that it'll be formulated the new theory of the atom of hydrogen, with very strong logic and it must be accepted, because it attaches the empirical formula of Balmer and the radius of the hydrogen atom that we estimate, it is in the accepted limits.

They are formulated constants that they are owed in experiments, as the Compton effect and other constants (i.e.  $h_e/m_e = \text{constant}$ ,  $e$  the electron) and them constants there are for the sizes of the prices that they are involved in their formulas. And the prices are these where the stated physics is accepted, or the real ( $r$ ) prices we indicate them. They have the same ratio with the stated prices of the physics and the same ratio for the real ( $r$ ) prices (i.e.  $h_e/m_e = h_{er}/m_{er}$ ). With the help of the uncontested constants, we come in the estimation of the real prices of the charges of the element particles or of their masses and the real units of the voltage, the current and the resistance.

It was accepted that the measurement of the frequencies of the electromagnetic waves is right. Moreover the subdivision of the time in the quartz watches, is owed in the frequency of emission supersonic vibrations, that they correctly measured and generally the subdivision of the time is correct, so they are correctly working the frequency counters and the oscilloscopes.

It is proved the prices of the Volt, Amp, Ohm, e, m<sub>e</sub>, m<sub>p</sub>, h, μ<sub>p</sub>, μ<sub>e</sub>, are near of the real prices.

**PURPOSE- APPLICATONS:**

The purpose of the present spirit work, is the finding of the real prices that they characterize the element particles and the size of the units of the voltage, charge, current and resistance. With these units, they'd be constructed new multi-meters of the electricity, that is new voltmeters, ammeters and counters of the measurement of the resistance.

**2. METHODOLOGY**

In this spirit work, it used the method of induction. From the formula of the force  $F=eE=m\Delta x/\Delta t^2$  and with induction, it is created the new theory of the electromagnetism. Again, with the induction, it is formulated the formula  $F=k/r^3$  for the revolved masses round a centre. And, with induction the constants are formulated and we get the conclusions.

**WHY THE LAW OF OHM ISN'T RIGTH, NEITHER THE VOLTAGE, NOR THE CURRENT AND THE RESISTANCE (THE VOLT, OHM, AMP):**

The law of Ohm isn't right. It isn't experimental law, but it fixes the experiments.

It was made ammeter, as the plan 1, at the end.

They knew the 1 Amp and the Volts, they doubled the resistances and they took 0.5 Amp, or they tripled the resistances and they took 1/3 Amp, or they put a half of one Ohm and they took double Amps etc. So, they graduated the ammeter.

A coil flew with the current that it must counted it and an indicator which is supported on this coil, it is revolved into a magnetic field of the magnets (plan 1). Where it'll be put the 0,5, the 5 Amp, etc, they didn't know it (the graduation). It is came of the law of Ohm  $V=RI$ . They knew the quantity 1 Amp of the law of Ampere of his parallel conductors and the 1 Volt of the  $V=P/I$ . The power P was coming of the formula  $P=RI^2$ , as at first, it fixed the arbitrary resistance R, 1 Ohm. So, with an arbitrary for the R, it can't to be right the voltage V.

That is, the graduation of the ammeter is product of the Ohm's law which has application on the experiments and it verifies them. But, the law of Ohm is not right. And the graduation of the voltage is not right, because it was selected arbitrary resistance 1 Ohm. And the resistance could not be right, because it is arbitrary and the current is not right.

**ABSTRACT OF THE NEW THEORY OF THE ELECTRICITY:**

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

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

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

$$v=I/neS \qquad n=N/Vol, Vol=\text{the conductor's volume.}$$

The electric carrier will be in voltage V and between two neighboring atoms of the conductor with length L, and it'll be accepted the 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, that it creates at its ends the voltage V.

We replace the v and we find,

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

$$V = \frac{bm}{e} v^2 \qquad (2) \quad \text{because } v=I/neS$$

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

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

And because  $I = neSv$   $P = nmSv^3$  (4)

The resistance R will be,  $R = \frac{bm}{n^2 e^3 \sigma^2} I$  (5)

The unit of the resistance will be the 1A, the unit of the current the 1E, the unit of the charge the 1I and the unit of the voltage the 1H.

**THE EXPERIMENT OF MILLIKAN:**

Millikan with the apparatus that he used it (plan 2) and with the informed sizes, he fixed the element electric charge  $e = 1.602 \times 10^{-19}$  Cb.

Millikan in the capacitor of distance of the armatures l, fixed the radius r of the drops of the oil that he blew in the capacitor with the voltage V, and from the velocity v of the fall of the drops without voltage and the density ρ of the oil and the Stokes' law  $F = 6\pi rnv$  of the friction of the air (n=efficient of viscosity of air). And,

$$mg = (4/3)\pi r^3 \rho g = 6\pi rnv \quad \text{και} \quad r = (9nv/2\rho g)^{1/2}$$

The drop balanced when electric force was applied (but, this balance didn't have success, usually the drop went up of the applied electric field  $E = V/l$ ),

$$eE = eV/l = mg, \text{ then,} \\ eV = mgl \quad (8) \quad \text{that they are constants the } m, g, l.$$

Well, if they are calculated right the m,g,l, in the balance of the charge, the product eV is a constant too and righth.

From the example 3.3 of the MODERN PHYSICS (of R. Serway, σελ.101, PEC),  $V_p = 4550$  Volt,  $m = 1.67 \times 10^{-14}$  Kgr,  $g = 9.81$  Kgr/sec<sup>2</sup> and  $l = 0.016$  met. And  $kz eV = 2.62 \times 10^{-15}$  kgr.met<sup>2</sup>/sec<sup>2</sup> (z= The number of the charge, k=a constant).

But, Millikan fixed the velocity of the fall of the drop v, and in the up going of the drop, it was applied the 4550 Volts the velocity of the up going was the v'. So, it is used a small correct  $(v+v')/v$  and after calculations  $k'eV = 2.62 \times 10^{-15}$  and  $k' = z k = 3.6$ .

So,  $e_p V_p = 7.28 \times 10^{-16}$  kgr.met<sup>2</sup>/sec<sup>2</sup> =  $e_{pr} V_{pr}$  (9) = constant and it must be verified of the real prices that we'll find, (of the  $e_{pr}, V_{pr}$ ).

The  $e_p$  is the charge of the proton, because the emission of the drops of the oil that were blew of the blower, they get out electrons and in the drop remained more proton charge and  $V_p = 4550$  volts the voltage was applied to the drops and the mass of proton is  $m_p = 1.673 \times 10^{-27}$  kgr.

**THE EXPERIMENT OF THOMSON:**

Thomson fixed the ratio  $e_e/m_e$  of the electron, with the apparatus plan 3. He launched electrons that they passed into vertical electric and magnetic field and he calculated the formula,

$$\frac{e_e}{m_e} = \frac{V_e \theta}{B_e^2 l d} \quad (10)$$

$V_e = 200$  Volt in the capacitor which had distance of armatures  $d = 0.015$  met and length of armatures  $l = 0.05$  met, vertical magnetic field  $B_e = 5.5 \times 10^{-4}$  T and  $\theta = 0.2$  rad the angle of diversion of the electrons (MODERN PHYSICS R. Serway, example 3.2, p.p. 46).

The (10) gives,  $V_e = (e_e/m_e \theta) l d B_e^2$  and if we replace the  $B = \mu_0 I / 2\pi r$ , we'll take the equation,  $V = kI^2$ , which is of the form of (1) we gave in the new theory.

Again,  $e_p v B_p = m_p v^2 / r$ , then,

$$\frac{m_p}{e_p} = \frac{B_p^2 r}{E_p} \quad (11)$$

in spectrograph of mass (plan 4), where the proton p is launched with velocity  $v=E_p/B_p$  (selector of velocity the  $E_p/B_p$ ) and the  $B_p$  vertical to the  $v$ , it curves the electron in circle, because of the centripetal force  $m_p v^2/r$ . The  $B_p$  is the same in the selector of the velocity and on the circle of the electron.

From the data of the problem 7-5-1, p.p. 304, of ELECTROMAGNETISM, of J. Kraus,  $E_p=5 \times 10^5$  V/m and  $B_p=0.5$  T. With them data, the proton has  $r=0.020875$  met.

Now, the ratios  $E_p/E_e = V_p/V_e$  and  $B_e/B_p$ , are right and whatever they aren't right the  $E_p, E_e, B_p, B_e, v_p, v_e$ . The ratios of two same sizes (i.e.  $e_e/e_p, m_e/m_p$  etc), are correct and whatever they aren't correct the every size.

The (10)x(11) give, 
$$\frac{e_e m_p}{e_p m_e} = \frac{B_p^2 E_e r \theta}{B_e^2 E_p l} = 1840 = \text{constant} \quad (12)$$

That is, so, as the modern physics accepts for the ratio  $m_p/m_e (=1836)$  and which we keep here.

**THE COMPTON EFFECT:**

Compton made diversion in radiation X of wave length  $\lambda_0$  to carbon and they emitted to differed angles the radiation X, with shipped wave  $\lambda'$  and in the experiment he took verification of the formula,

$$\lambda' - \lambda_0 = (h_e/m_e c)(1 - \cos\theta)$$

and  $\theta$  was the angle of the emission of the radiation to the flat of the atoms of the carbon. The  $(h_e/m_e c) = 0.00243$  nm and the  $(h_e/m_e c) = 7.3 \times 10^{-4}$  met<sup>2</sup>/sec is righth, it is a constant. As Serway reports in the MODERN PHYSICS p.p. 74, the measuring verified the theory and they gave  $(h_{er}/m_{er} c) = 0.00242$  nm (the  $h_{er}, m_{er}$  are the real prices of the constants  $h_e, m_e$ , of the electron). Then,

$$\frac{h_{er}}{m_{er}} = \frac{h_e}{m_e} = 7.28 \times 10^{-4} \text{ met}^2/\text{sec} = \text{constant} \quad (13)$$

**THE TWO SYSTEMS OF UNITS:**

Up today and after of decades of 1960, it came on the system of units MKS-Amp (SI), but before 1970 there were two systems and the old physicists worked specially in the system CGS-stat-Amp. The system MKS-Amp (which is the up System International SI) has units the meter met, the kilogram kgr, the second sec and the Newton Nt of the force and unit of current the Amp. Unit of the electric charge is the Cb. In the CGS-stat-Amp, units are the centimeter cm (1cm=10<sup>-2</sup> met), the gram gr (1gr=10<sup>-3</sup>kgr), the sec (the same as in SI), the dyne, dyn (1dyn=10<sup>-5</sup>Nt) of the force but and unit of the current the stat-Amp, (1stat-Amp=1/3x10<sup>9</sup>Amp=3.33x10<sup>-10</sup>Amp). Unit of the electric charge is the stat-Cb (1stat-Cb=1/3x10<sup>9</sup>Cb=3.33x10<sup>-10</sup>Cb).

**HOW IT WAS FOUND THE DIELECTRIC CONSTANT:**

The ELECTRICITY of C. Alexopoulos, reported that it was found of the capacitor ( $q/V = C$ , when they are informed the  $q, V$  in the SI and in capacitor in vacuum is the dielectric constant  $\epsilon_0 = L(C/S)$ , where S is the surface of the armatures of the capacitor and L is their distance). But, for finding the q you must know the C, it is necessary that you know the  $\epsilon_0$  in the MKS-Amp (SI)!!

Well see, how it was found the price of  $\epsilon_0$ , and how much it is wrong, so it is overturned almost total the physics!

In the system CGS-stat-Amp the law of Coulomb, it hasn't constant, that is,

$$F = -\frac{q^2}{r^2} \quad q_1=q_2=q$$

In the MKSA-stat-Amp (SI), it has constant, and,

$$F = -k \frac{q^2}{r^2} \quad k=9 \times 10^9 = 1/4\pi\epsilon_0, \epsilon_0=8.85 \times 10^{-12} \text{ Cb}^2/\text{Nt-met}^2.$$

See now, if we transform the one system of units to the other,  $1\text{Cb}=3 \times 10^9 \text{ stat-Cb}$

$$F = 1\text{dyn} = \frac{(\text{stat-Cb})^2}{\text{cm}^2} = \frac{(\frac{\text{Cb}}{3 \times 10^9})^2}{10^{-4}\text{m}^2} = 10^{-5}\text{Nt} \quad (14)$$

Then, in the system SI, it is  $F = 1\text{Nt} = \frac{\text{Cb}^2}{9 \times 10^9 \text{m}^2} = 1.11 \times 10^{-10} \text{Cb}^2/\text{m}^2$  !!!

With the transformation of the CGS-stat-Amp to the SI, we found that the constant is the  $k=1.11 \times 10^{-10} = 1/9 \times 10^9$  and not the  $k=9 \times 10^9$  which is accepted! Dramatic the error and report that of the transformation of the CGS-stat-Amp in the MKS-Amp (SI), it was found the constant k, but it is dramatically wrong! And of course, the dielectric constant  $\epsilon_0$  is very much different!

For finding the constant  $k=9 \times 10^9 = (1/4\pi\epsilon_0) \text{Nt}\cdot\text{met}^2/\text{Cb}^2$ , it arbitrary was coming in to the formula (14) the k,

$$F = 1\text{dyn} = \frac{(\text{stat-Cb})^2}{\text{cm}^2} = \frac{k(\frac{\text{Cb}}{3 \times 10^9})^2}{10^{-4}\text{m}^2} = 10^{-5}\text{N}$$

And it was solved to the k.

### THE ATOM OF THE HYDROGEN:

In the space of the dimensions of the atomic physics, it happen special things, as the quantum motions, or quantum energies. So, we'll consider the friend atom of hydrogen (an electron and a proton), first that the electron revolves round the proton.

### REVOLVING ROUND THE CENTRE:

There is the attractive force  $F_{e,p}$ , between the two particles of the electron and the proton, whoever is the relation of their masses (the stated physics gives 1:1836). When a particle is revolved round a centre, it has centripetal force,

$$F_{e,p} = mv^2/r = m\omega^2 r = m(\omega r^2)(\omega r^2)/r^3 = k/r^3 \quad \text{and because } \omega r^2 = \text{constant in cyclic motion,}$$

$$F_{e,p} = m\omega^2 r = \frac{m(\omega r^2)(\omega r^2)}{r^3} = \frac{k}{r^3}$$

So, we consider that the force is,  $F_{e,p} = -\frac{e_e e_p}{\frac{4}{3}\pi\epsilon_0 r^3}$  (15)  $e_e, e_p$  the charges of the electron and the proton

and where  $\epsilon_0 = x$ . Because it is  $\epsilon_0 = x$ , here, in the revolving motions, it has dimension. It is  $\epsilon_0 = x \text{met}^{-1}$ , where it is in force the formula (15).

In the CGS-stat-Amp of units, where the charge is the stat-Cb, the  $1/4\pi\epsilon_0 = 1$  and it hasn't dimension and where they are motionless the charges and the law of attraction is reverse of the radius in the square power and there, the  $\epsilon_0$  hasn't dimension.

### QUANTUM REVOLVING:

The electron revolving round the centre of the atom, it has quantum angular momentum which is fixed of the constant h of Plank. So, we'll have,

$$mvr = h/2\pi, \quad mv2\pi r = h \quad (16)$$

But,  $2\pi r = n\lambda$  and  $r = n/k$  and  $\lambda$  is the length of the wave of the particle, k is the wave-number and  $n=1,2,3,4,5,\dots$  And  $p = mv = h/2\pi r = h/n\lambda$ ,  $p_1 = h/\lambda$  and,

$$\frac{p^2}{2m} = \frac{h^2}{2mn^2\lambda^2} \quad \dot{\eta} \quad \frac{p_1^2}{2m} = \frac{h^2}{2m\lambda^2} \quad (17)$$

In the motion of the particle, it is in force the conservation of the mechanic energy, that is,

$$E = \frac{1}{2} mv^2 + U, \quad \text{because the motion is revolving, it is in force,}$$

$$E = \frac{p^2}{2m} - \frac{e^2}{\frac{4}{3}\pi\epsilon_0 r^2} = \frac{p^2}{2m} - \frac{e^2 k^2}{\frac{4}{3}\pi\epsilon_0 n^2} = \left( \frac{h^2}{2m\lambda^2} - \frac{e^2 p_1^2}{\frac{4}{3}\pi\epsilon_0 h^2} \right) \frac{1}{n^2}$$

$$\Delta E = hv = hc/\lambda = \left( \frac{p_1^2}{2m} - \frac{e^2 p_1^2}{\frac{4}{3}\pi\epsilon_0 h^2} \right) \left( \frac{1}{n_f^2} - \frac{1}{n_i^2} \right)$$

and  $U = -\frac{e^2}{\frac{4}{3}\pi\epsilon_0 r^2}$  the potential energy of the electron.

If it is emitted of the fall of the electron of a level of excitement to an interior level, the energy is moved at  $\Delta E=hv=hc/\lambda$  of the emitted photon and we have the consequence of the empirical formula of Balmer, as it generated for the hydrogen atom,

$$\frac{1}{\lambda} = R \left( \frac{1}{n_f} - \frac{1}{n_i} \right) \text{ and}$$

$$R = (1/hc) \left( \frac{p_1^2}{2m} - \frac{e^2 p_1^2}{3\pi\epsilon_0 h^2} \right)$$

So, my theory is in agreement with the experiments data, of the empirical Balmer's formula for the hydrogen atom and to the general formula for the atom and it enforces the acceptance of the formula (15).

**THE RELATION OF THE CONSTANTS IN THE REVOLVING ELECTRON IN THE NEW THEORY OF THE ATOM OF THE HYDROGEN:**

It is in force,  $F_{e,p} = -\frac{e_e e_p}{\frac{4}{3}\pi\epsilon_0 r_e^3} = m_e v_e^2 / r_e$  (18) we consider that the proton is very heavy and almost motionless.

And  $e_e e_p = (4/3)\pi\hbar_e^2 / m_e$  (19)

Because  $v_e = \hbar_e / m_e 2\pi r_e$ , then  $\epsilon_0 = 1 \text{ met}^{-1}$ .

We have from the (18)  $\frac{e_e e_p}{\frac{4}{3}\pi\epsilon_0 r_e^3} = m_e \omega_e^2 r_e$  (20)

and  $r_e^4 = \frac{e_e e_p}{\frac{4}{3}\pi\epsilon_0 m_e \omega_e^2}$  (21)

and  $\omega_e = 2\pi f = 2\pi c R = 2.068 \times 10^{16}$  rad/sec, is the frequency of the photon, which ionizes the hydrogen atom, which is found at the level  $n=1$  and  $R$  = the constant of Rydberg.

We consider that it is coordinated the frequency of the photon, to the frequency of the revolving electron, round the proton, and it ionizes it and the frequency is the same to the photon and it is maximum in the excitements of the electron.

The (19)  $e_e e_p = (4/3)\pi\hbar_e^2 / m_e$  gives,  $m_e^2 m_p \frac{e_e m_p}{m_e e_p} \frac{e_p^2}{m_p^2} = (4/3)\pi\hbar_e^2$  or

$$e_p^2 / m_p = 2.28 \times 10^{-3} \hbar_e^2 / m_e^2$$
 (22)

The ratio  $\hbar_e^2 / m_e^2$  is a constant  $(\omega_e^2 / 2\pi)^2$  as we found in the (13) and,

$$e_p^2 / m_p = 1.532 \times 10^{-11} \text{ Cb}^2 / \text{kg} \text{r}$$
 (23) = constant. But,

$$\frac{e_e m_p}{e_p m_e} \frac{e_p^2}{m_p} = e_e e_p / m_e = 2.82 \times 10^{-8} = e_{er} e_{pr} / m_{er}$$
 (24) = constant.

The ratio  $e_e e_p / m_e$  is a constant, because it is product of two constants, the (22) and (12) and it is equal to the same ratio of the real prices.

**THE FREQUENCY OF THE SPECTROGRAPH AND OF LARMOR:**

From  $e_p v_p B_p = m_p v_p^2 / r$  it goes on the frequency,

$$\omega_p / 2\pi = f_p = e_p B_p / m_p$$
 (25)

of the spectrograph of mass, where the proton p does the frequency  $f_p$  in the magnetic field vertical to its velocity.

When it is applied the magnetic field  $B_L$  to a proton, it get shift of axis frequency  $f_L$  of Larmor. This is,  $f_L = e_p B_L / 2m_p$ . So, in the  $B_L = 1 \text{ T}$ ,  $f_L = 47.878 \times 10^6$  c/sec (Hz).

But, as Serway reported in MODERN PHYSICS, the real (r) price in  $B_L = 1 \text{ T}$ , is  $f_{Lr} = 42.577 \times 10^6$  c/sec. And because the ratios are right and not the same the prices, as the "theoretical"  $f_L$ , then, in the base of  $f_L = e_p B_L / 2m_p$ , but and of  $f_{Lr} = e_{pr} B_{Lr} / 2m_{pr}$  we take,

$$f_{Lr}/f_L = \omega_{Lr}/\omega_L = v_{Lr}/v_L = \frac{e_{pr}m_p B_{Lr}}{e_p m_{pr} B_L} = 0.88928 \quad (26)$$

The  $v_L, v_{Lr}$  are the “theoretical” and the real (r) price of the velocity of shifted axis of the proton in experiment of Larmor. Then, because the field  $E=vB$ ,  $v/B=E/B^2$ , then,

$$\frac{E_{pr} B_L}{E_p B_{Lr}} = \frac{v_{Lr}}{v_L} = 0.88928 \quad (27)$$

The (26) gives, 
$$\frac{B_{Lr}}{B_L} = 0.88928 \frac{e_p m_{pr}}{e_{pr} m_p} \quad (28)$$

And 
$$\frac{E_{pr}}{E_p} = 0.791 \frac{e_p m_{pr}}{e_{pr} m_p} = \frac{V_{pr}}{V_p} \quad (29)$$

### MAGNETIC MOMENT, FREQUENCY LARMOR AND THE CONSTANT h:

The ratio is  $(e_p/m_p) = 2f_L$  in the frequency of Larmor and the magnetic moment is,

$$\mu_p = (e_p/2m_p)h_p, \quad e_p/m_p = 2\mu_p / h_p \quad (30)$$

Then, the (28),(30) give,

$$\frac{e_{pr} m_p}{e_p m_{pr}} = \frac{\mu_{pr} h_p}{\mu_p h_{pr}} = 0.88928 \frac{B_L}{B_{Lr}} \quad (31) \quad \kappa \alpha$$

$$\frac{e_{pr} m_p}{e_p m_{pr}} = \frac{\mu_{pr} h_p}{\mu_p h_{pr}} = \frac{\mu_{pr} h_p}{h_p f_p h_{pr}} = \mu_{pr} / 47.878 \times 10^6 h_{pr} \quad (32)$$

The (31),(32), give 
$$\frac{B_{Lr}}{B_L} = 42.577 \times 10^6 \frac{h_{pr}}{\mu_{pr}} = \frac{h_{pr}}{h_p} \quad (33)$$

The (33) means that  $B_{Lr} = B_L$ , that is the magnetic field right is measured.

So, 
$$\frac{e_{pr}}{m_{pr}} = 0.88928 \frac{e_p}{m_p} \quad (34)$$

$$e_{pr}/m_{pr} = 8.511 \times 10^7 \text{ Cb/kg} \quad (35)$$

and 
$$\mu_{pr}/h_{pr} = 42.577 \times 10^6 \text{ Amp-kgr-sec}$$

Because  $\frac{e_e m_p}{e_p m_e} = \frac{e_{er} m_{pr}}{e_{pr} m_{er}} = 1836$  and the (34) and  $e_e = e_p$ ,  $e_e/e_p = e_{er}/e_{pr}$  goes on,

$$\frac{e_{er}}{m_{er}} = 1.563 \times 10^{11} \text{ Cb/Kgr} \quad (36)$$

### THE DEFINITION OF THE CONSTANTS:

Because  $e_e e_p/m_e = e_{er} e_{pr}/m_{er} = 2.82 \times 10^{-8} = \text{constant}$  (24) and  $\frac{e_{er}}{m_{er}} = 1.563 \times 10^{11} \text{ Cb/Kgr}$  (36), it goes on,

$$e_{pr} = 1.804 \times 10^{-19} \text{ Cb} = e_{er} \quad (37)$$

And 
$$e_{pr} = 1.126 e_p \quad (38)$$

That is 
$$1 \text{ II} (1 \text{ Il}) = 1.126 \text{ Cb} \quad (39)$$

And consequently, 
$$1 \text{ El} (1 \text{ El}) = 1.126 \text{ Amp} \quad (40)$$

But we have with the (34) and  $e_p/m_p = 9.563 \times 10^7$ ,

$$\frac{e_{er} m_{pr}}{e_{pr} m_{er}} = 1836 = \frac{e_{er} m_p}{m_{er} 0.88928 e_p} = 1836, \text{ so } m_{er} = \frac{e_{er} m_p}{(0.88928 \times 1836) e_p}$$

$$\text{And } m_{er} = 1.154 \times 10^{-30} \text{ kgr} \quad (41)$$

And 
$$m_{pr} = 2.118 \times 10^{-27} \text{ kgr} \quad (42)$$

The  $\frac{E_{pr}}{E_p} = 0.791 \frac{e_p m_{pr}}{e_{pr} m_p} = \frac{V_r}{V}$  (29) gives with the (28) and  $B_{Lr}=B_L$ ,

$$V_r = 0.88928 \text{ V}, \quad (43) \text{ that is, the unit of the voltage is,}$$

$$1 \text{ Hol (1 O}\lambda) = 0.88928 \text{ Volt} \quad (44)$$

So, the resistance  $R_r = V_r / I_r = 0.88928 / 1.125 = 0.791 \text{ Ohm}$  for 1 Hol and 1 El and the 1 Al = 0.791 Ohm. Of course, we must not forget, that the resistance in the new theory is,

$$R = \frac{bm}{n^2 e^3 S^2} I \quad (5) \text{ it is analog to the current I.}$$

The formulas (37) and (43) verify the formula (9).

### 3. CONCLUSIONS

It was proved of the above analysis, that the magnetic field right was measured with the 1T, the unit of the voltage the Hol of the new electricity is, 1 Hol = 0.88928 Volt, as and the unit of the electric field is, 1E = 0.88928 Cb/met<sup>2</sup>, the unit of the current I, that is the unit El, is 1 El = 0.88928 Amp and the unit of the resistance the Al, is 1 Al = 0.791 Ohm. And the unit of the charge II, is 1 II = 0.88928 Cb. The real price of the velocity, in the selector of velocity  $E_r/B$ , ist  $v_r = 0.88928v$  and the  $v$  is estimated of the ratio E/B.

The charge of the electron and the proton is  $1.804 \times 10^{-19} \text{ Cb}$  and the mass of the electron is  $m_{er} = 1.154 \times 10^{-30} \text{ kgr}$  and the mass of the proton is  $m_{pr} = 2.118 \times 10^{-27} \text{ kgr}$ .

We know the constant  $\hbar_e/m_e = \hbar_{er}/m_{er} = \omega_e r_e^2 = 1.159 \times 10^{-4} \text{ met}^2/\text{sec}$  of the formula (13), and  $\omega_e = 2.068 \times 10^{16} \text{ rad/sec}$  the frequency of ionization of the electron, when it is in the first level of the atom of the hydrogen, which is and the frequency of the electron revolving, that it absorb this photon of this frequency. Then  $r_e^2 = 1.159 \times 10^{-4} / \omega_e$  and  $r_e = 0.7486 \text{ \AA}$ .

Then, of the formula  $r_e^4 = \frac{e_{er} e_{pr}}{\frac{4}{3} \pi \epsilon_0 m_{er} \omega_e^2}$  (21) is goes on,  $\epsilon_0 = \frac{e_{er} e_{pr}}{\frac{4}{3} \pi \epsilon_0 m_{er} \omega_e^2 r_e^4} = 0.501 \text{ met}^{-1}$

The real constant  $\hbar_{er} = m_{er} (\hbar_e/m_e) = 8.4 \times 10^{-34}$  and  $\hbar = 1.337 \times 10^{-34} \text{ kgr-met}^2/\text{sec}$ .

The real  $\mu_{er} = \hbar_{er} f_{er} = 6.565 \times 10^{-23} \text{ Amp-met}^2$  ( $f_{er} = e_{er}/2m_{er} = 7.816 \times 10^{10} \text{ Hz}$ ). And for the spin of the electron  $\mu_{ser} = (\hbar_{er}/2) f_{er} = 3.28 \times 10^{-23} \text{ Amp-met}^2$ .

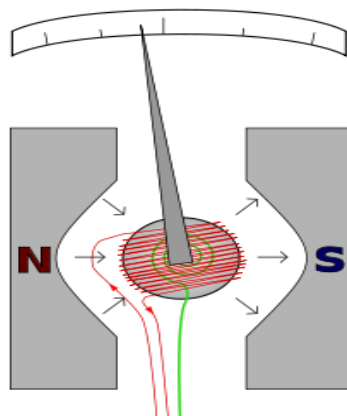
The real price of the proton is  $\mu_{pr} = \hbar_{pr} \times 42.577 \times 10^6 = 3.576 \times 10^{-26} \text{ Amp-met}^2$  ( $\hbar_{er} = \hbar_{pr}$ ) and for the spin of the proton is  $\mu_{spr} = (\hbar_{pr}/2) \times 42.577 \times 10^6 = 1.788 \times 10^{-26} \text{ Amp-met}^2$ .

### REFERENCES

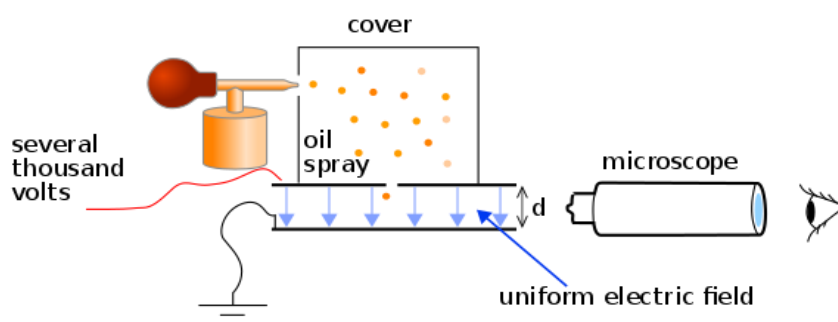
- [1] MODERN PHYSICS, R. Serway, p.p. 68-78, 91-102, 109-119, 129-138, 149-154, 253-258, 260-264, 440-443, PEK, Heraclium 2000.
- [2] PHYSICS, R. Serway, vol II, p.p. 187-197, 206, 228-230, 289-290. Τόμος IV, σελ, 55-65, 71-81, 248-250, 252-255, Korfiatis, Athens 1990.
- [3] PHYSICS, D. Halliday-R. Resnick, vol. II, p.p. 31, 177-181, 183-185, 189-190, 196-197, 285-288, 197-301, 488-497, 538-542, 545-551, 555-561, G. Pnevmatikos, Athens 1976.
- [4] PHYSICS, H. Ohanian, vol. II, p.p. 178-181, 206-209, 280-282, 287-289, 430-437, A. Fillipas, Athens 1991.
- [5] ELECTROMAGNETISM, J. Kraus, p.p. 234-236, 287, 304, 319, A. Tziolas, Thessalonica 1993.
- [6] ELECTRICITY-MAGNETICS, M. Gussow, p.p. 37-41, 173, 226, 251-253, 275-281, 362-363, 411, 416, 429, ESPI, Athens 1993.
- [7] GENERAL PHYSICS C. Alexopoulos- D. Marinos, vol. II, p.p. 36-51, 83-85, 106-107, 185, 228, 411, Papazisis, Athens 1993.
- [8] ELEMENT OF PHYSICS, Kougioumzeli-Peristeraki, vol. III, p.p. 20, 61-65, 76-77, 102-106, 245-247, Kokotsakis, Athens 1969.
- [9] PHYSICS, Alkinoos Mazis, vol. III, p.p. 30-31, 50-51, 270-275, 323-327, 432-434, 437-440, 443-454, 482-488, Estia, Athens 1963.



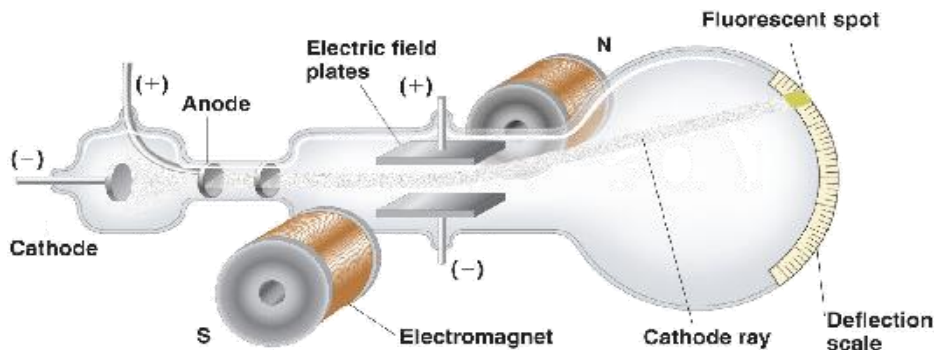
APPENDIX – A



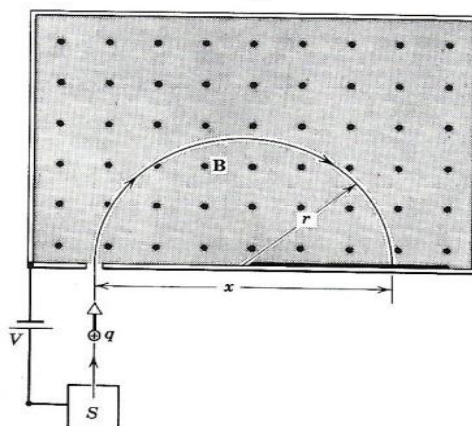
Plan 1: Ammeter



Plan 2: Millikan's apparatus



Plan 3: Thompson's apparatus



Plan 4: Spectrograph of mass