



## Why the Electron Spins Around its Proton and Around its Axis, According to the New Axioms and Laws

**Valentina Markova\***

*Bulgarian Academy of Sciences, Bulgaria*

**\*Corresponding Author:** Valentina Markova, Bulgarian Academy of Sciences, Bulgaria.

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### Abstract

The theory of new Axioms and Laws consists two new Axioms and eight new Laws which have been proposed and developed in previous reports by the same author. According to the first axiom (Axiom1), we can replace uniform motion in a closed circle with non-uniform motion in an open vortex. According to the second axiom (Axiom2), it exists pairs of vortices that are mutually orthogonal and they transport energy and matter in two opposite directions [3]. Of all possible variants of vortex pairs, the most probable is the following orthogonal pair: an accelerating vortex from the center outwards. This case describes a model of the connected proton. Due to resistance this accelerating vortex transforms and coils in a decelerating vortex from the periphery inwards. This case describes a model of the connected electron.

It is known that the Electromagnetic Field propagates at a constant speed and pulsating the waves are only transverse. According to the new Axioms and Laws in the electron-proton system, the internal connections are of variable speed and when pulsating, the waves are not only transverse but and longitudinal. Therefore the interaction between the proton and the electron inside the atom is not Electromagnetic but it is a Gravity. The interaction between the proton and electron includes cross vortex with variable velocity and longitudinal vortex (as funnel) with variable velocity. From previous developments it is clear that the electron is not a centric open vortex but an eccentric open vortex centered in the second quadrant. And the proton is not a centric open vortex but an eccentric open vortex centered but in the first quadrant. This is the reason for the formation of eccentricity vectors that decompose along the x and y axes [4].

The eccentricity vector of the electron (as an empty and bloated toroid) is larger than the eccentricity vector of the proton (as a dense and small sphere). The projections of the eccentricity vector along the x- coordinate of the electron and the proton are directed against each other. This is the reason why the proton repels the electron at a certain distance (radius).

The projection of the eccentricity vector along the y- coordinate of the electron is much larger than the projection of eccentricity vector along y-coordinate of the proton. This is the reason that the electron rotates around its corresponding paired proton.

Because the electron is generated by a decelerating vortex, it emits decelerating primary vortices bent in the direction of the input motion. Namely, the primary vortices are bent to the left if the observer is looking against the axis. This is the reason the electron also rotates around its spin axis (in spin) [4-6].

**Keywords:** Proton; Axioms; Electron

**Review**

**Eccentricity of electron**

According the Maxwels Axiom and equations from the Classic Field Theory all field structures are built from closed transverse vortices with constant velocity of movement [1,2].

The structure of an electron is well known from previous reports of the same this author. According to the new Axiom1 is obtained that the structure of an electron is an open vortex and the electron is not concentric but it is eccentric vortex. According to the Law1 is obtained that the structure of an electron is an decelerating vortex directed from outside to inside as it was described in detail [3-5].

**Axiom 1**

The motion of vector with monotone-decreasing or monotone-increasing velocity becomes along an open vortices:  $\text{div}(\text{Vor}E) \neq 0$  for vector E in 2D or  $\text{div}(\text{Vor}H) \neq 0$  for vector H in 3D ---- 1.

Therefore:  $\text{div}(\text{rot} E) \neq 0$ , or  $\text{div}(\text{Vor} E) \neq 0$ , where the motion of the vectors E in 2D, or H in 3D with monotonically- accelerated or monotonically - decelerated motion occurs in the form of an open vortex (Vor).

Consequence: In open vortex the movement can be decelerating or accelerating:

$$\text{div}(\text{Vor} E) < 0, \text{div}(\text{Vor} E) > 0 \text{ in } 2D,$$

$$\text{div}(\text{Vor} H) < 0, \text{div}(\text{Vor} H) > 0, \text{ in } 3D.$$

**Consequence**

The vector E in 2D is not a simple vector. It is a complex vector with real part and imaginary part. If in one direction, the reason is amplitude A, then result will be velocity V ( $E = +A + iV$ ). And inverse in the same direction: If reason is velocity V then result will be amplitude A ( $E = +V + iA$ ). The reverse happens in the opposite direction:

$$E = -A - iV; E = -V - iA$$

**Consequence**

One pair exists simultaneously in one direction in 2D:  $E = +A + iV$ ;  $E = +V + iA$ , through transverse vortices and in opposite direction in 2D:  $E = -A - iV$ ;  $E = -V - iA$ , through longitudinal vortices. The same is in 3D.

**Law 1**

The open transverse vortex ( $E_{2D}$ ) generates (inward or outward) an open longitudinal vortex ( $H_{3D}$ ) (inward or outward) in its center through a cross-longitudinal transformation  $\Delta 1$ :

$$\Delta 1 \text{ Vor}(E_{2D}) \Rightarrow -\text{Vor}(H_{3D}), \text{-----}(2)$$

Where Vor (for Vortex, mean an unevenly vortex) replaces rot (for rotor, mean opened closed loop); the cross vortex in 2D ( $E_{2D}$ ) (Figure1c) continues its development in 3D as a longitudinal vortex ( $H_{3D}$ ) (Figure 1d).

Consequence: The open decelerating cross vortex ( $E_{2D}^-$ ) generates inward an open accelerating longitudinal vortex ( $H_{3D}^+$ ) outward (Figure2c). This action takes place from the center of decelerating cross vortex ( $E_{2D}^-$ ) through a particular cross-longitudinal transformation  $\Delta 1$ -:

$$\Delta 1- \text{Vor}(E_{2D}^-) \Rightarrow \text{Vor}(H_{3D}^+) \text{-----}(3)$$

Because of that the velocity vector (V) decreases continuously when it moves from the outside to inwards, the whole spiral shifts toward the second (II) quadrant. The center of classic centric spiral was in the geometric center (p.O). But the new center of the decelerating eccentric spiral ( $p.F_1$ ) shifts to up and left or to the second (II) quadrant. The reason is because of deceleration velocity V decreases:  $V1 < V3, V2 < V4$  ---(4).

That is way the distance between the classic geometric center (p.O) and the new center of gravity ( $p.F_1$ ) forms a vector of eccentricity or Vector of Gravity ( $F_{1g}$ ) (Figure 1a).

**Result**

The delta1 operator ( $\Delta 1$ ) is realized by so called Full resonance.

**Definition**

Full resonance is resonance in amplitude, frequency and phase, i.e. resonance in space and time. It will be described in detail in the following articles.

The Vector of Gravity ( $F_{1g}$ ) exists the inner force that attracts and tightens the coils of the vortex toward an inner point ( $p.F_1$ ). But it does not coincide with the Geometric center (p.O). The Vector of Gravity is  $F_{1g}$ , and it is decomposed to x-axis and to y-axis. The

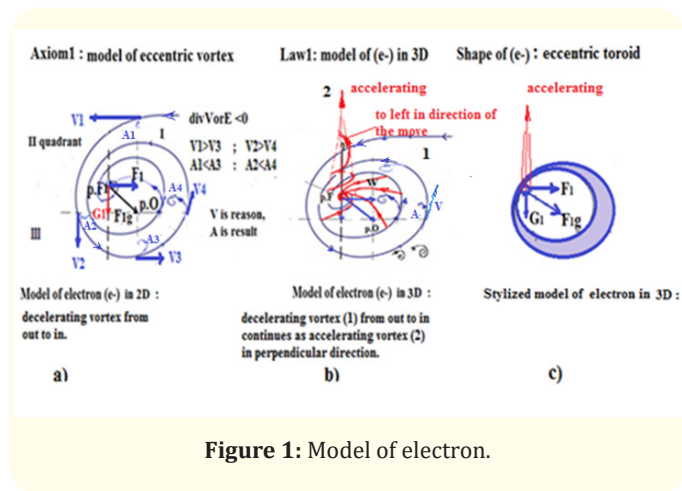


Figure 1: Model of electron.

composite vector on the x-axis is a vector  $F_1$ . In previous report the role of this vector ( $F_1$ ) was described in detail. In short- the vector  $F_1$  attracts an electron toward the proton. In this report it will be describe the composite vector on the y-axis which is a vector  $G_1$  (Figure 1a,c).

**Definition**

Mutual orthogonal vortices means these vortices that complement their acts (Figure 3).

For example: If first consumes transverse vortex and generates longitudinal vortices as funnel (electron, Law1, Figure1), the second will consume longitudinal vortices as funnel and generates transverse vortex (proton, Law2, Figure 2, will be described further).

**Axiom 2**

Through two mutually orthogonal open vortices pass two real connections.

**Remark**

This axiom is written in opposition to the familiar axiom in geometry: Through two points in pass only one line.

From axiom 2 we understand that: A pair of orthogonal vortices exist as a system of two objects with two real links. The pair of

orthogonal vortices exists in system because when the transverse part is connected in 2D in one direction, the longitudinal part is connected in 3D in opposite direction and inversely. Through two mutually orthogonal open vortices pass two connections in two opposite directions.

A pair of objects which work such as they complement each other in resonance and they are mutual orthogonal is called pair of complementary objects.

**Eccentricity of proton**

According to the Axiom2 the proton should be an orthogonal to the electron particle because both of them form an complementary pair (Figure 2) [3].

**Result**

If one object pushes ( $p+$ ) ( $E = +A+iV$ ) (Figure 3b) then the other have to pulls ( $e-$ ) ( $E = +V+iA$ ) (Axiom2) (Figure 3a).

**Result**

The both of objects ( $p+$ :  $E = +A+iV$ ), ( $e-$ :  $E = +V+iA$ ) are active generators or they form a pair of active generators in complementary resonance work.

**Result**

The first pair is in right direction: amplitude ( $A$ ) can be the reason but the velocity ( $V$ ) is the result ( $E = +A + iV$ ) (Figure 3b) (model of proton).

**Result**

At the same time the velocity ( $V$ ) can be the reason and the amplitude ( $A$ ) - the result ( $E = + V + iA$ ) (model of electron) (Figure 3a).

**Result**

The proton’s structure should be inverse to the electron’s structure i.e. an accelerating vortex from inside to outside (Low2) (Figure 2a).

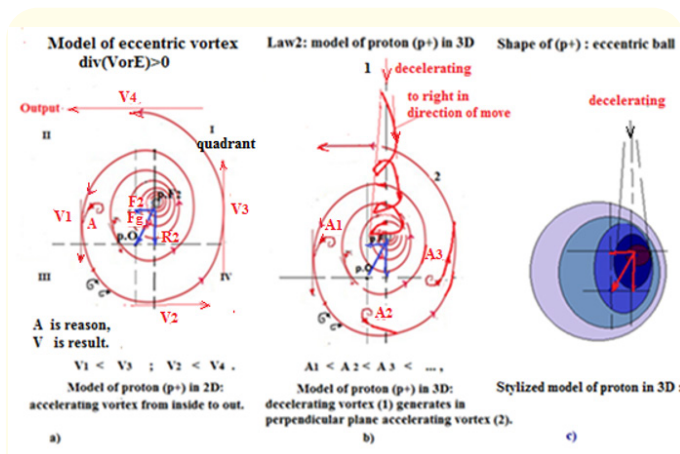


Figure 2: Model of proton.

**Law 2**

The open longitudinal vortex ( $H_{3D}$ ) generates (inward or outward) an open cross vortex ( $E_{2D}$ ) (inward or outward) in its center through a longitudinal-cross transformation  $\Delta 2$ :

$$\text{Vor} (H_{3D}) \Rightarrow - \text{Vor} (E_{2D}) \text{-----(5a)}$$

Consequence: The open decelerating longitudinal vortex ( $H_{3D-}$ ) inward generates an open accelerating cross vortex ( $E_{2D+}$ ) outward through longitudinal-cross transformation  $\Delta 2$ -:

$$\text{Vor} (H_{3D-}) \Rightarrow \text{Vor} (E_{2D+}). \text{-----(5b)}$$

Because of that in 2D the velocity vector (V) increases continuously when complex vector (E) moves from the inside outwards ( $E = A+iV$ ). Therefore the whole accelerating spiral will shift toward the first (I) quadrant.

**Result**

The center of classic spiral was in the geometric center (p.O). But the new center of the accelerating spiral (p.F) shifts to up and right or to the first (I) quadrant. That is way the distance between the classic geometric center (p.O) and the new center of gravity (p.F<sub>2</sub>) forms a vector of eccentricity or Vector of Gravity (F<sub>2</sub>g) (Figure 2a).

**Result**

The mechanism of action of the delta2 operator ( $\Delta 2$ ) in 2D contains all variations of so called "Back wave". It will be described in detail in the following articles.

**Result**

The Vector of Gravity (F<sub>2</sub>g) exists such as the inner force that inflates and expand in 2D. It works such as a mixer the windings of the accelerating vortex.

Therefore the new center moves toward an inner point (p.F<sub>2</sub>) that does not coincide with the geometric center (p.O) (Figure 2a).

The vector of Gravity is F<sub>1</sub>g. It is decomposed to x-axis and to y-axis. The composite vector on the x-axis is a vector F<sub>2</sub>. In previous report the role of this vector F<sub>2</sub> was described in detail. Shortly vector F<sub>2</sub> repels proton (p) to electron (e-) (Figure 2a).

**Result**

The composite vector on the x-axis (vector F<sub>2</sub>) repels proton (p) from electron (e-).

**For accelerating (proton) and decelerating (electron) particles Law 4**

For an uneven (accelerating or decelerating) vortex the product between current velocity (V<sub>i</sub>) of uneven movement on one and the same current line and current amplitude (W<sub>i</sub>) of its perpendicular cross vortices is a constant in every (i) step:

$$(V_i) \cdot (W_i) = \text{const.} \text{-----(6)}$$

Where V is current velocity, W is current amplitude, i = 0 ÷ ∞ is current point from step to step.

**Result**

The product (V<sub>i</sub>) · (W<sub>i</sub>) is proportional to the current power (P<sub>i</sub>) of the uneven vortex in current (i) step. The current power (P<sub>i</sub>) of the uneven vortex is a constant in every (i) step.

**Result**

The product (V-) · (W+) is proportional to the current power (P-) of the decelerating vortex, product (V+) · (W-) is proportional to the current power (P+) of the accelerating vortex.

**Result**

When two accelerating vortices are close enough to each other they will attract (because of W-). When two decelerating vortices are close enough they will repel (because W+).

**The reason for eccentricity of electron**

According to the Law1 electron consists of decelerating cross vortex rolled from outside to in.

The Law5 describes that decelerating vortex emits decelerating elementary vortices to environment.

**Law 5**

The velocity (V) of a decelerating longitudinal vortex in 2D decreases in (n) portions  $(1/\psi)^n$  times, while the amplitude (W) of transverse vortices increases reciprocally in (n) portions  $(\psi)^n$  times:

$$|V|^2 = V_0^2 (V_0/V) \text{-----}(7a)$$

$$|W|^2 = W_0^2 (W_0/W) \text{-----}(7b)$$

Where  $v_n$  and  $w_n$  are periodic roots with period n that fulfill the requirement for orthogonality:  $v_{n,wn} = V_{0,W0}; n = 0 \div \infty$ ; the roots  $v_n$  and  $w_n$  are expressed as:  $v_n = \psi_{n,V0}, w_n = (1/\psi)^{n,W_0}/V_0$  is the starting value of  $V_n$ ;  $W_0$  is the starting value of  $w_n$  and  $\psi$  is a proportion which fulfills the requirement:  $\psi - 1/\psi = 1$  and it is called golden proportion.

**Result**

Decelerating vortex of electron (e-) emits elementary cross vortices from periphery to center inward and from periphery to environment outward as well. The reason is positive sign (+) in second equation (7b).

**Result**

The elementary cross vortices which are emitted from periphery to the center are phased at the Gravitational center (p.F<sub>1</sub>) in the second quadrant (II) (Figure 2c, Figure 4a).

Consequence: As a result of the phasing in the Gravitational center (p.F<sub>1</sub>) a vertical acceleration vortex is generated (Figure 2c) Law1 (3,4). Therefore decelerating cross vortex continues in accelerating longitudinal vortex, perpendicular to the plane 2D of the transverse vortex (Figure 2c). This process of transformation is described by the operator Δ1.

Consequence: The process of transformation which is described by the operator Δ1 is realized through so called full resonance (Law1). It is resonance of amplitude, frequency and phase or of space and time.

**The reason of eccentricity of proton:**

According to the Law2 proton consists of accelerating cross vortex rolled from inside to out.

There is new Law 6 which describe that accelerating vortex sucks accelerating elementary vortices from environment [3-5].

**Law 6**

The velocity (V) of an accelerating longitudinal vortex in 2D increases in (n) portions  $(\psi)^n$  times, while the amplitude (W) of transverse vortices decreases reciprocally in (n) portions  $(1/\psi)^n$  times;

$$|V|^2 = V_0^2 (V_0/V) \text{-----}(8a)$$

$$|W|^2 = W_0^2 (W_0/W) \text{-----}(8b)$$

Where  $v_n$  and  $w_n$  are periodic roots with period n that fulfill the requirement for orthogonality:  $v_{n,wn} = V_{0,W0}; n = 0 \div \infty$ ; the roots  $v_n$  and  $w_n$  are expressed as:  $v_n = \psi_{n,V0}, w_n = (1/\psi)^{n,W_0}/V_0$  is the starting value of  $V_n$ ,  $W_0$  is the starting value of  $w_n$  and  $\psi$  is a number which fulfills the requirement:  $\psi - 1/\psi = 1$ ,  $\psi$  and it is called golden proportion.

**Result**

Accelerating vortex of proton sucks from out to inward elementary transverse vortices because of sign (-) in second equation (8b).

**Result**

According to the Law2 (6) vertical decelerating vortex in 3D generates accelerating transverse vortex in 2D from Gravitational center (p.F<sub>2</sub>) to periphery (Figure 4b). Therefore decelerating longitudinal vortex in 3D, which is perpendicular to the plane 2D of the transverse vortex, continues into accelerating cross vortex (Figure 4b). This process of transformation is described by the operator Δ2.

Consequence: The process of transformation which is described by the operator Δ2 of Law2 (6) is realized through so called back wave. It will describe further.

**System electron - proton**

The difference between of electron and proton is in regard to complementarity. They are mutual orthogonal as structure and are complementary in a system. A system is formed through cross vortices in plane 2D (Law7) and longitudinal vortices in volume 3D (Law8).

**Law 7**

A pair of mutual orthogonal vortices in 2D forms a closed loop by feedback in 2D through primary transverse vortices and operates in parallel resonance.

The Law 7 demonstrates closed loop in plane 2D of pair proton-electron. This pair conducts energy through the real connection (crosslink1) and conducts matter through a feedback as primary transverse vortices (feedback1) in 2D (Figure 3).

**Result**

The pair proton-electron in 2D conducts energy from proton to electron and conduct matter in 2D from electron to proton in the form of primary transverse vortices.

**Result**

The primary elementary transverse vortices in feedback represent transferred “dark “matter, called “free” energy. This part of the chain in 2D is invisible and unexplored.

**Result**

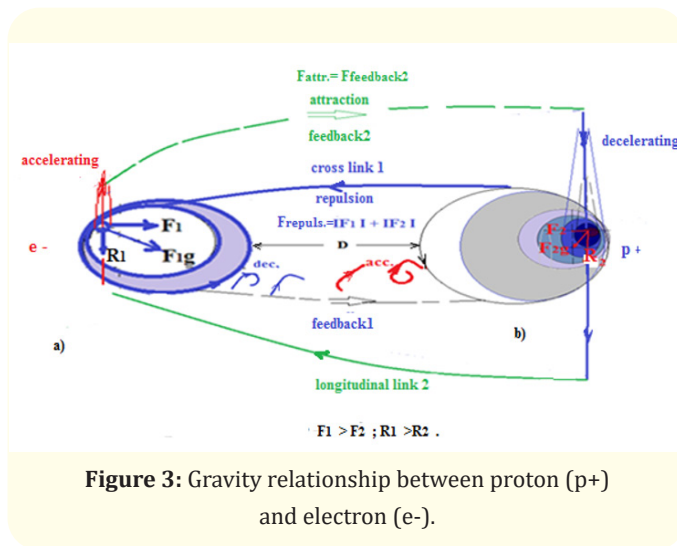
The reason for the emission of primary elementary cross vortices is the deceleration (dec.) of the main longitudinal vortex of electron (e-) (Figure 3a).

The movement of primary transverse vortices from electron (e-) toward the space around the proton is due to the sucking action of the accelerating (acc.) of the main longitudinal vortex of proton vortex (p+). This is done through feedback (feedback1) (Figure 3a,b).

**Law 8**

A pair of mutual orthogonal vortices in 3D forms a closed loop by feedback in 2D through primary longitudinal vortices and operates in parallel resonance.

The Law8 demonstrates a closed loop in volume 3D of pair proton-electron (feedback2). This pair conducts energy through the real connection (longitudinal link2) and conducts matter through a feedback (feedback2) (Figure 3a, b).



**Figure 3:** Gravity relationship between proton (p+) and electron (e-).

Therefore there are the difference kind “dark” vortices. They should be a longitudinal kind of “dark” vortices as well.

**Result**

These primary elementary longitudinal vortices represent in 3D so called longitudinal “dark matter” (feedback2).

**Result**

The pair proton-electron in 3D conducts longitudinal energy from proton to electron (longitudinal link2). The electron sucks a longitudinal energy from proton.

**Result**

The pair proton-electron in 3D conducts longitudinal matter from electron to proton (feedback2). The proton sucks a longitudinal matter from electron.

**Remark**

The chain between electron and proton in 3D is composed only from longitudinal vortices. It is the most mystical, completely invisible and completely unexplored (feedback2, longitudinal link2).



Consequence: The chain in 2D (crosslink1,feedback1) of Law7 and the chain in 3D (longitudinal link2,feedback2) of Law 8, are mutual perpendicular and operates in Full and works as Full Volume resonance (Figure 3a, b).

**Gravity Forces between electron and proton inside the atom**

According to the Axiom1 and Axiom2 the relationships between electron and proton are measured by the distance (D) between them and by the repulsive force ( $F_{repuls}$ ) between them.

**Result**

In the first pair of complementary objects electron-proton which are linked in the frame of atom, the distance (D) between objects is right proportional to summation of modules of their forces ( $F_1, F_2$ ) along x-axes (Figure 3 a, b):

$$D = f (|F_1| + |F_2|) \text{ ----- (9)}$$

Where F1 and F2 are uneven vortices with a variable speed.

**Result**

The Force of repulsion ( $F_{repuls}$ ) between electron and proton is right proportional to the summation of modules of their forces ( $F_1, F_2$ ) along x-axes:

$$F_{repuls} = |F_1| + |F_2| \text{ -----(10)}$$

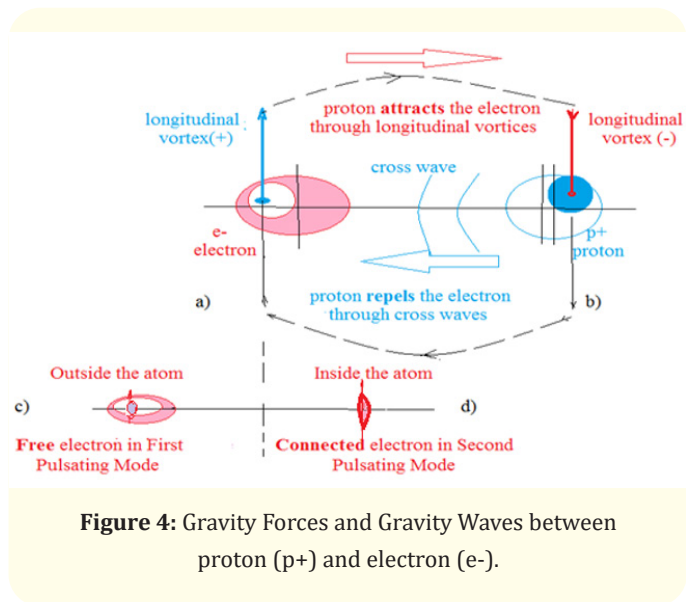
According the Law1 and Law2 we can realize the differences between Force of repulsion ( $F_{repuls}$ ) and the Force of attraction ( $F_{attract}$ ), among the electron and the proton.

Consequence: The electron repulses the proton through transverse vortex (cross link 1) or by repulsion of the transverse windings or the transverse coils (Figure 3b, a, Figure 4b, a).

Consequence: The proton attracts electron through longitudinal vortices (longitudinal link 2) or by tightening of longitudinal threads of perpendicular coils (Figure 3a, b, Figure 4a, b).

**Score of electron-proton system**  
**The shape and mass of electron and proton**

The shape of electron looks like to thin and empty ring or narrow toroid. The reason is the decelerating vortex from out to in. The shape of proton looks like to dense, heavy and little ball. The reason is the accelerating vortex from in to out [4].



**Figure 4:** Gravity Forces and Gravity Waves between proton (p+) and electron (e-).

The mass of electron is much less (as empty ring, Figure 6a) than the mass of proton (as dense ball, Figure 6b). The current measurement method shows that:  $m_e$  (electron) =  $9,11 \times 10^{-31}$  kg;  $m_p$  (proton) =  $1,6726231 \times 10^{-27}$  kg. Or it is true that:  $m_{p+} = 1836 \cdot m_e$ .

**Result**

The mass of little ball of proton is much more (1836 times) than the mass of empty toroid of electron:

$$m_p >> m_e \text{ -----(11)}$$

**Remark**

It should be emphasized that the mass ( $m_e$ ) that is measured by Electromagnetic field is the mass of the outer free electron. It is outside the atom and is not bound to any proton. This free electron represents an inflated (along x-axis) and empty toroid. As a comparison, the inner electron that is inside the atom and is connected to its corresponding proton represents crumpled (along x-axis) and dense toroid (Figure 4 c,d) [5].

**Result**

The measuring the mass of an electron with an Electromagnetic field means that physicists are measuring the mass of free electrons outside the atom.

**Result**

Inside the atom, the mass of the electrons is smaller. The further inside the electron, the smaller its mass. The more inward the

electrons are, the more invisible they become. The innermost ones are not visible as particles. The reason is that their spins around their axes are almost zero. Therefore their mass are reduced to zero and energy is spread only along the path of the orbit.

Consequence: The outer electrons are different than the inner electrons.

The outer electrons are bigger (in diameter), heavier (in mass) and clearly visible. Their velocity along orbit is less but angular speed around axis is bigger.

The inner electrons are smaller (in diameter), lighter (in mass) and almost invisible. Their velocity along orbit is bigger but angular speed around axis is less.

**The eccentricity**

The eccentricity of the electron depends on the fact that the transverse vortex from the outside to the inside is delayed. The decelerating vortex emits transverse vortices from the periphery inwards, which are phased at one point (Law 5). This is the reason why the electron acquires the shape of a empty toroid (Figure 4a).

This toroid is inflated and flattened along the x-axis when the electron is free and outside the atom (Figure 4c). This toroid is small and drawn along the y-axis when the electron is inside the atom (Figure 4d).

The eccentricity of the proton depends on the fact that the transverse vortex from the center to the inside is accelerated. The accelerating vortex sucks transverse vortices (Law 6). This is the reason why the proton acquires the shape of a dense ball (Figure 4b).

Consequence: The eccentricity of the electron ( $F_1g$ ) (in form of empty ring) is much more than eccentricity of proton ( $F_2g$ ) (in form of dense ball), (Figure 3a,b) [6]:  
 $F_1g > F_2g$ . -----(12a)

**Result**

The projection to the x-axis ( $F_1$ ) of the electron’s Vector of Gravity ( $F_1g$ ) is greater than the projection ( $F_2$ ) to the x-axis of the proton’s Vector of Gravity ( $F_2g$ ) (Figure 3a,b):  
 $F_1 > F_2$  ----- (12b)

**Result**

The projection to the y-axis ( $R_1$ ) of the electron’s Vector of Gravity ( $F_1g$ ) is greater than the projection ( $R_2$ ) to the y-axis of the proton’s Vector of Gravity ( $F_2g$ ) (Figure 3a,b):

$R_1 > R_2$  ----- (13)

Consequence: The reason the electron rotates around the proton is because the vector  $R_1$  is greater than the vector  $R_2$ .

**The force of repulsing and attraction (Figure 3a, b)**

- The proton repulse your personal electron. This is done through (cross link1). According to this link it is realized that the proton repulse your personal electron with force  $F_{repuls}$ . [7].
- We saw above that the proton repulses its personal electron with force  $F_{repuls}$  (10):  $F_{repuls} = I F_1 I + I F_2 I$ .
- It is well known that Electromagnetic waves propagate transversely and at a constant speed.
- The known transverse wave is the Electromagnetic wave with a constant speed. In the case between the proton and the electron we have a longitudinal wave with a variable speed - acceleration-deceleration. This type of wave is not Electromagnetic but Gravitational.

Consequence: Inside the atom there is not Electromagnetic field with constant velocity of spreading. Inside the atom it exists a Gravity field with variable velocity of spreading (accelerating-decelerating).

And the longitudinal vortices (longitudinal link2, feedback2) propagates longitudinally at the variable acceleration-deceleration speed. This elastic links (longitudinal link2, feedback2) of longitudinal vortex with variable velocity is the example for Gravity Force in the longitudinal direction.

Consequence: The longitudinal vortices (longitudinal link2, feedback2) is not an Electromagnetic connections but they are Gravity links.

$F_{attract} = F_{feedback2}$  ----- (14)

Therefore the longitudinal vortex from the proton that passes through center of electron attracts the electron to the proton. This elastic link (longitudinal link2, feedback2) of longitudinal vortex



with variable velocity is the example for Gravity Force in perpendicular direction in 3D [8]. A formula for the magnitude of this elastic attracting force cannot be written on this stage.

Consequence: The proton repulses its electron ( $F_{\text{repuls}}$ ) in 2D and attracts its electron ( $F_{\text{attract}}$ ) in 3D by forces of Gravity field.

**Result**

While force of repulsing is force of transverse vortices (10). ( $F_{\text{re-puls}} = I F_1 I + I F_2 I$ ), then force of attracting is force of longitudinal vortex (14) ( $F_{\text{attract}} = F_{\text{feedback2}}$ ).

**Electron and proton temperature (Figure1b), (Figure2b)**

We saw that the electron consists of a decelerating vortex with a direction from outside to inside. The decelerating vortex emits elementary decelerating vortices (Law5), which raise the temperature inside in the electron toroid. But just in center (in empty hole of toroid) the temperature is low and center is cool. The reason is that through the center passes in perpendicular (in 3D) an accelerating longitudinal vortex (Law1). It suck in accelerating primary vortices from outside to in and decreases temperature in center (Law6) [9].

**Result**

Inside the toroid of electron, the temperature increases or the electron is hot. In center (hole) the toroid of electron the temperature decreases or the electron is cold.

We saw that the proton consists of a accelerating vortex with a direction from inside to outside. Due to the positive acceleration this vortex sucks elementary accelerating vortices (Law6), which reduce the temperature inside the ball of proton. Just in center temperature is higher and center is warmer. The reason is that the decelerating longitudinal vortex passes through the center and emits additional transverse vortices increasing the temperature (Law5) [10].

**Result**

Inside the ball of the proton the temperature decreases or the proton is cold, but in center it is warmer.

Consequence: As the structure of electron (decelerating vortex) is mutually orthogonal to structure of proton (accelerating vortex) and shapes of the electron (toroid) and the proton (ball) are mutually orthogonal, so and the temperatures inside the electron (warm

toroid with cool hole) and proton (cool ball with warm center) are mutually orthogonal.

**Visible, invisible**

It is well known that sunlight is transverse waves propagating at a constant speed. When these transverse waves cross the thread of the longitudinal vortex, they are not reflected but they surround the thread. The reason for this action is the fact that the thread diameter of the longitudinal vortex is commensurate with the wavelength of sunlight. The described phenomenon is known as diffraction [11].

**Result**

The longitudinal vortex is invisible to an outside observer because it do not reflect sunlight but bypasses it or it diffracts.

For comparison, if sunlight transverse waves cross an object consisted by transverse vortex, they are reflected by it. Therefore any outer observer will see this transverse object.

**Result**

The transverse vortices inside the particles objects (electron and proton) are visible to an outside observer because they reflect sunlight but not bypasses or diffract it. An outside observer can see only cross vortex objects. The some of the cross vortex objects belongs the elementary particles.

**Result**

The transverse vortex connection (cross link1) between the proton and the electron is invisible and the cross vortex connection of free vortices (feedback1) between electron and proton is invisible as well. The reason is that the free cross vortices are commensurate to the size of light wave (Figure 3a, b).

**Result**

The longitudinal vortex connection (feedback2) between the electron and the proton is invisible and the longitudinal vortex connection of free vortices (longitudinal link2) between the proton and the electron is invisible as well (Figure 3a, b).

Consequence: Therefore, the proton and the electron are visible, but the links between them are invisible (Figure 3a, b).

### Pulsating mode

It exists a pulsating mode for electrons inside the atom and protons in atom. They pulsate in Time and in Space as well. More specifically for the transverse vortex of the electron there are two phases.

In first phase the electron (in Space) is outer electron and it floats outside the atom. It is swollen, flattened to the x-axis with bigger diameter, empty and clearly visible. The reason for this phenomena is that its personal proton throws more energy through cross link1 to corresponding electron. Therefore the electron rejects to more distance (D) and bloats along x- axes. At the same time, according to the sign minus (-) in Law1 (2), the longitudinal vortex shortens in perpendicular (along the y- axes) to the plane of the electron (Figure 4c).

Consequence: In first phase are the outer electrons. They become bloated along x- axes and flattened along y- axes.

### Result

In first phase outer electron is clearly visible.

The outer electron can break off in a transverse connection (crosslink1, Figure 3a,b) and it can fly out of the atom or to become a "free" electron.

In first phase the electron (in Space) is free electron. The electron is located at a long distance to the its own proton, at any place in space. This free electron is controlled exclusively by the chain of the longitudinal component (longitudinal link 2, Figure 3a,b) in any point in the space. Therefore in first phase the electron can be an free electron. It is very curious that it breaks the transverse link, but it holds the longitudinal link with its personal proton. This proton continues to control this free electron as his personal subordinate.

The free electron can break off the transverse link toward the proton. But this free electron holds the longitudinal vortex as link with its personal proton that controls this free electron.

Consequence: In first phase are the free electrons as well. They become most bloated along x- axes and most flattened along y- axes.

### Result

In first phase a free electron is clearly visible.

### Result

The free electron is connected to its proton only through longitudinal vortex.

### Result

The free electron pulsates and floats almost independence with its proton.

In the second (in Space) is connected electron. The connected electron rotates inside the atom. It becomes shrink and little. The reason is that it is pulled along the y-axis and it becomes almost invisible (Figure 4d).

Consequence: In the second phase are connected electrons and inner electrons. They shrink along x- axis and stretches along y- axis.

The reason for this phenomena is that the proton sucks energy through cross link1 and shrink the electron along x-axis (Figure 3a, b). At the same time the proton using the feedback2 pumps a longitudinal vortex toward the electron and stretches y- axes. Therefore, the electron in the second phase becomes contracted in a cross vortex (x -axes) and very stretched in a longitudinal vortex (y- axes). But this very contracted cross vortex is almost invisible and longitudinal vortex is completely invisible.

### Result

In the second phase of pulsating mode the connected inward electron becomes almost invisible.

Such electron is located as close as possible to the proton. It is controlled exclusively by the chain of the transverse component (crosslink1) (Figure 3a, b). Therefore, this nearby electron (as a slave) moves almost synchronously with its proton (master).

### Result

The relationships between proton and connected electron are such as between master and slave.

**Result**

The connected electron (slave) pulsates and moves almost synchronously with its proton (master).

The relationships between proton and connected electron are such as between master and slave. For comparison: the free electron pulsates and floats almost independence with its proton.

In a pulsating mode in Time are all connected electrons. The electron repeats the pulsation of the corresponding proton. The electron and the corresponding proton pulsate in phase.

**Result**

In Time every pair of electron-proton pulsate in phase.

**Result**

The pulsating in Time of electrons change circle orbit to elliptic orbit.

**More detail about rotation of the electron around its proton**

According to descriptions in previous points the reasons of rotation are following [10,11]:

- The mass: The mass of proton is almost 1800 times more than the mass of electron (7).
- The shape and eccentricity of proton: The proton consists of numerous coils of a slow accelerating vortex, very tightly coiled from the inside to out. This is the reason the proton looks like a very dense but slightly eccentric ball. The eccentricity is small because there is simply no free space inside the ball. The eccentricity of proton ( $F_{2g}$ ) is less than the eccentricity of electron ( $F_{1g}$ ) (12a) (Figure 3a, b, Figure 4a,b).
- The shape and eccentricity of electron: The electron consists of several pieces of coils of a fast decelerating vortex coiled from the outside to inside. This is the reason the electron looks like a very empty and very eccentric toroid. The eccentricity is significant because fast decelerating input vortex emits many and long primary vortices from periphery to the center (Low5). Therefore this long primary vortices open inner space of the electron. They are phased in Gravity center, that shifts the coils. Therefore the eccentricity of electron ( $F_{1g}$ ) is more than the eccentricity of proton ( $F_{2g}$ ) (12a) (Figure 3a,b, Figure 4a,b).

- The difference in Rotating Force between proton and electron: Because of that eccentricity of electron ( $F_{1g}$ ) is bigger than the eccentricity of proton ( $F_{2g}$ ) (12a), then the projection to the coordinate axis -y of ( $F_{1g}$ ) is greater than the same projection of ( $F_{2g}$ ), or  $R_1 > R_2$  (13) Therefore from (13) follows that the Rotating Force of electron  $R_1$  is bigger than Rotating Force of the proton  $R_2$  (Figure 3a, b). This inequality (13) means that the electron will rotate around its own proton.

**Result**

The reason the electron (with Rotating Force  $R_1$ ) to rotate around the proton (who has the Rotating Force  $R_2$ ) is that  $R_1 > R_2$ . Therefore the electron ( $R_1$ ) will rotate around its own proton ( $R_2$ ).

**Conclusion**

The difference in eccentricity (mass and shape) is the reason for rotating of electrons around their respective protons.

On other hand the electron in periphery of atom has bigger size along x-axis (Figure 4c), but the inner electron has less size along x-axis (Figure 4d).

**Result**

Every electron in periphery (with Rotating Force  $R_{1(per)}$ ) will rotate around an inner electrons (with Rotating Force  $R_{1(center)}$ ):

$$R_{1(per)} > R_{1(center)} \text{ ----- (15a)}$$

Therefore this inequality (15) means that the vector  $R_{1(per)}$  of an electron in periphery of the atom is more than  $R_{1(center)}$  of an electron in center of the atom. Thus every electron in periphery will rotate around an inner electron.

In order to rotates the periphery electron around the inner electron it is necessary the velocity along its orbit of periphery electron to be bigger than the velocity of inner electron.

**Result**

The velocity  $V_{per}$  along the orbit of inner electron is bigger than the velocity  $V_{inner}$  of outer electron.

$$V_{inner} > V_{per} \text{ ----- (15b)}$$

If we summarize what is described we will get the following: The light, empty and very eccentric toroid of the electron will rotate around the heavy, dense but slightly eccentric proton ball because the vector  $R_1$  in periphery is much more than the vector  $R_2$  in center of circle (13). The empty and very eccentric electron rotates around dense and slightly eccentric proton (Figure 3a,b).

In order to rotate the periphery electron around its axis it is necessary for the periphery electron the velocity along its axis to be less than the velocity along its axis for inner electron. According Law4:  $V_{inner} \cdot w_{inner} = V_{per} \cdot w_{per}$ .

**Result**

The angular velocity  $w_{per}$  around axis of periphery electron is bigger than the angular velocity  $w_{inner}$  of inner electron.

$$w_{per} > w_{inner} \text{-----(15c)}$$

And for rotating the periphery electrons around the inner electrons (15a,b,c).

**Conclusions**

The difference in eccentricity (mass and shape) is the reason for rotating of each outer electron ( $V_{per} \cdot w_{per}$ ) around each inner ( $V_{inner} \cdot w_{inner}$ ) one.

**More detail about rotation of electron around its own axis**

**The reasons of rotation around axis are following [10,11]**

The decelerating vortex which winds electron decreases in velocity because of sign minus (-) in equation (7a) (Law5). At the same time decelerating vortex emits decelerating elementary vortices in increasing amplitude because of sign plus (+) in (7b) (Law5) [7,8]. These decelerating elementary vortices are directed from periphery of electron to the center where they are phased in Gravity center  $F_1$ . An essential feature is that they are curved to the left (Figure 1b).

**Result**

Because the main vortex of the electron rotates to the left from outside to inside, the decelerating primary vortices (in increasing amplitude) of the electron are bent, curved and convex in the direction of motion (to left) of the main vortex of the electron.

The fact that primary vortices of the electron are bent, curved and convex in left in the direction of motion of the main vortex of

the electron means that all toroid body of electron will rotate to left around its axis.

**Conclusion**

The whole wheel of the electron toroid body rotates to the left around its axis.

**Remark**

Left direction in 2D is when the an independent observer looks against the longitudinal vortex in 3D.

The speed of rotation of the electron around its center of Gravity ( $F_1$ ) depends on the magnitude of the negative acceleration of the main decelerating flux that builds the body of the electron toroid. The greater the negative (-) acceleration, the greater the number (N) of emitted primary decelerating vortices (curved to the left) and the greater is the negative (-) acceleration and amplitude (W) of these primary vortices (Law5) (7a,b). This is the reason the electron to rotate around its own Gravity center ( $F_1$ ) not with velocity of decelerating main vortex but with reduced speed or with velocity of decelerating primary vortices with reduced speed [5].

**Result**

The electron will rotate around its own Gravity center ( $F_1$ ) with reduced speed ( $\omega$ ).

In first pulsating Mode electron is inflated and empty. Therefore it is located at the farthest orbits or it is a free electron. The amplitude of primary transverse vortices increases ( $W_{free}$ ) and their negative acceleration also increases, which causes rotation at a faster speed ( $\omega_{free}$ ).

**Result**

The electron in first Pulsating Mode (free electron) which is inflated and empty rotates faster ( $w_{free}$  is bigger) than the inner electron ( $w_{inner}$  is less) in second Pulsating Mode (Figure 4c) (15c) ( $w_{free} > w_{inner}$ ).

In second Pulsating Mode (inside the atom) the electron is contracted and tight and it is located at the closest orbits. Therefore the amplitude of the inside cross vortices decrease and their acceleration also decrease, which causes the wheel arm to rotate at a slower speed.

**Result**

The electron in second Pulsating Mode which is contracted and tight, rotates relatively slower ( $w_{inn}$  is less) than the periphery electron ( $w_{per}$  is faster) (15c) (Figure 4d). ( $w_{per} > w_{inner}$ ) [6].

**Conclusion**

The free electron and electron in periphery rotates around its axis faster ( $w_{free}$ ) than the connected electron and electron in inner orbit ( $w_{conn}$ ):

$$w_{free}, w_{inner} > w_{conn} \text{ -----(16)}$$

We saw above that the speed of rotation of the electron around its proton depends on the distance (D) between them (Figure3a,b). The outer electron (inflated on x-axis) has bigger eccentricity ( $F_1g$ ) and respectively bigger projection onto x-axis ( $F_1$ ) than the inner electron (folded along x-axis). Therefore velocity along orbit is right proportional to the distance V (D).

**Conclusion**

The speed of rotation of the electron (slave) along its orbit (V) around its proton (master) depends inversely proportional on its distance (D) to its own proton in the nucleus of the atom: the bigger distance D the less velocity along orbit (V).

The speed of rotation of electron (slave) around its axis (w) is limited to the speed of rotation of its own proton (its own master). We saw above that electron rotates around its axis to left with reduced speed. The proton rotates around its axis to left as well. The bigger the distance the bigger velocity of electron around its axis (w). Therefore velocity around axis is right proportional to the distance w (D) [7].

**Conclusion**

The speed of rotation of the electron (slave) around its axis depends directly proportional on its distance (D) to its own proton (master) in the nucleus of the atom: the bigger distance D the bigger angular velocity around axis (w).

We saw that the inner electron has less velocity around its axis (w) and bigger velocity along its orbit (V) (Law4). But outer electron has bigger velocity around its axis (w) and less velocity along its orbit (V). This is true according Law4:  $w \cdot V = \text{const}$  [11].

**Conclusion**

The inner electron has less velocity around its axis ( $w_{min}$ ) and bigger velocity along its orbit ( $V_{max}$ ), ( $w_{min} \cdot V_{max}$ ). But outer electron has bigger velocity around its axis ( $w_{max}$ ) and less velocity along its orbit ( $V_{min}$ ), ( $w_{max} \cdot V_{min}$ ):

$$w_{min} \cdot V_{max} = w_{max} \cdot V_{min} = \text{const.}$$

**Conclusions**

The reason the electron to rotate around its proton that is inside the nucleus is that the electron has greater eccentricity than the eccentricity of proton. The longer eccentricity vector ( $F_1g$ ) of electron and correspondingly a larger rotation vector ( $R_1$ ) as a projection of the eccentricity vector on the y-axis are the real reason to rotates electron around proton.

The reason the electron rotates around its axis is the direction of bending to the left primary transverse vortices, their number, their acceleration and their amplitude. These primary decelerating transverse vortices fill the empty space inside the toroid of electron. These bended to left primary transverse vortices rotate electron around its axis..

There is difference between forces outside and inside the atom. Outside the atom the free electron can move from Electromagnetic Force. But inside the atom there are not forces with constant velocity as Electromagnetic forces. Inside the atom there are only forces with variable velocity (accelerated or decelerated). Therefore inside the atom there are only Gravity forces. For example: The Force of Repulsion (cross link1) from the cross vortex is not Electromagnetic Force. It is transverse accelerating-decelerating force or it is a transverse Gravity Force inside the atom. The Force of Attraction (feedback2) from the longitudinal vortex is not an Electromagnetic Force as well. It is the longitudinal force of other kind or it is a longitudinal Gravity Force (Low1, Low2).

Usually until now the elementary particles (electron and proton) are observed and measured as a free particles in an Electromagnetic Field outside the atom. Because the free electron is outside the atom, it has a broken cross-link with its proton. The free electron is not bound by a transverse gravitational bond, but only by a longitudinal link. The longitudinal bond is uneven in Space, but pulsates uniformly in Time. It firmly holds and controls the electron wherever it is in Space. The transverse bond pulsates uni-

formly in time and will propagate transverse waves at a constant speed. So the pulsation of the electron in Time will mimics an Electromagnetic wave.. Therefore an external observer will measure the electron's mass using the effect of an external Electromagnetic field on the electron's own Electromagnetic field

But if the particles are observed and measured inside the atom, the observer will register that they emit and receive the Gravity waves with variable velocity (transversely or longitudinally). Consequently, the forces that structure the atom from within are Gravitational forces but not Electromagnetic forces (Low5, Low6).

As usual the masses of the free electron and the free proton are measured outside the atom in the middle of an Electric Field. But according the new Laws the masses of the electrons connected inside the atom are less than the masses of the free electrons outside the atom.

-If electrons are measured inside the atom the observer will discover that their mass is less with the innermost having almost zero mass.

The inner electrons are connected mainly by a transverse component and that is why move almost synchronously with their protons. The outer and free electrons are connected mainly by a longitudinal component and that is why move most independently of their protons. The appearance and behavior of the outers and inners electrons is different. The orbital velocity of periphery electrons is less than the orbital velocity of inner electrons but the angular velocity of periphery electrons is bigger than the axe velocity of inner electrons (Law4).

An accelerating vortex is launched from the proton in the direction of the electron. Due to friction, after a distance (D), it becomes retarded and begins to wind up decelerating and form the toroid of the electron's body. Because it is decelerated, this vortex emits primary decelerating vortices into the surrounding space (Law 5). The decelerating primary vortices are sucked in by the accelerating vortex of the proton (Law6) and form a reverse (Back) wave. The forward and reverse waves surround a closed circle of transverse vortices and work in resonance in 2D (Law7). A similar closed circle is formed by the longitudinal vortices that work in resonance in 3D (Law 8). The two resonant circles (in 2D and 3D) are mutually perpendicular and work in Full Volume resonance.

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