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# GENERATORS OF GRAVITY SYSTEMS, TUBES OF LONGITUDINAL VORTICES, PROPERTIES AND OPERATION

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**Abstract**

This is the third in a series of articles. This third article is devoted to the problem of gravity structures generation. It details the structure of the two tubes of combined in one another longitudinal vortices. The first order tube generates inside-out and creates a gravity pair of elementary particles (proton-electron). The second order of tube generates outside-in and creates a gravity pair of elementary antiparticles (antiproton-positron).

## 1. Introduction

As mentioned previously, the transverse and longitudinal vortices are a combination of rotary and reciprocating motion. In rotary motion a spiral is described, while the reciprocating motion is in a direction perpendicular to the plane of the spiral [1]. It turns out that longitudinal vortices are invisible because they do not reflect the light, no inertia because have zero mass but cross vortices are visible because they reflect the light, have inertia because they have mass [2].

As the rotary motion is measured by the amplitude of the spiral ($A$), than the

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reciprocating one is measured by the path (*S*).

**Definition 1.** Transverse vortex is one in which the amplitude of the spiral (*A*) is greater than the path (*S*), travelled by the reciprocal motion in the direction perpendicular to the plane of the vortex spiral $(A > S)$.

**Definition 2.** Longitudinal vortex is one in which the amplitude of the spiral (*A*) is smaller than the path (*S*), travelled by the reciprocal motion in the direction perpendicular to the plane of the vortex spiral $(A < S)$.

## 2. Longitudinal Vortices, Longitudinal Vortices Tubes

### 2.1. Single longitudinal vortex generates single transverse vortex

#### 2.1.1. How single longitudinal vortex generates single transverse vortex?

Single longitudinal vortex (*L*) enters into the denser medium of elementary transverse vortices (el). It has direction of motion outside-in and pierces into the plane of the top elementary transverse vortexes (el) as a microvortex (at point *O*) (Figure 1a, b).

If a single longitudinal vortex $(L+)$ has its own rotation motion clockwise $(+)$, then when it meets perpendicularly the surface of the elementary vortices (el), it entrained and rotated first layer (1) of elementary vortices in a clockwise direction $(+)$ with time $t_1$. The second layer (2) of elementary vortices (el) will delay behind, due to the low viscosity of the medium, with $\Delta t$, i.e., will move with time: $t_2 = t_1 + \Delta t$. The third layer (3) will delay (also due to poor adhesion) with more $\Delta t$, i.e., it will move with time $t_3 = t_2 + \Delta t$, and so on. This would result in delaying $(t_1, t_2, t_3, ...)$, reverse wave $(W-)$ which will now be rotated $(-)$ counter clockwise $(4-)$ (Figure 1a).

If single longitudinal vortex $(L-)$ has its own rotation counterclockwise $(-)$, then when it meets perpendicular to the surface of the elementary vortices (el), it entrained and rotates the first layer (1) of elementary vortices in counterclockwise direction $(-)$ with time $t_1$. The second layer (2) of elementary vortices (el) will delay behind, due to the low viscosity of the medium, with $\Delta t$, i.e., it will move with

time $t_2 = t_1 + \Delta t$. The third layer (3) will delay (also due to poor adhesion) with another $\Delta t$, i.e., it will move with time $t_3 = t_2 + \Delta t$, and so on. This would result in delaying $(t_1, t_2, t_3, ...)$, reverse wave $(W+)$ which will now be rotated $(+)$ clockwise $(4+)$ (Figure 1b).

**Conclusion 1.** A longitudinal vortex that enters a denser environment of elementary transverse vortices entrained these elementary vortices in layers. Due to the low viscosity of the medium, these layers delay and creep over time relative to one another. Their forefronts, delaying relative to one another, form opposite transverse wave in the opposite direction to the original direction of rotation of the longitudinal vortex (Figure 1a, b).

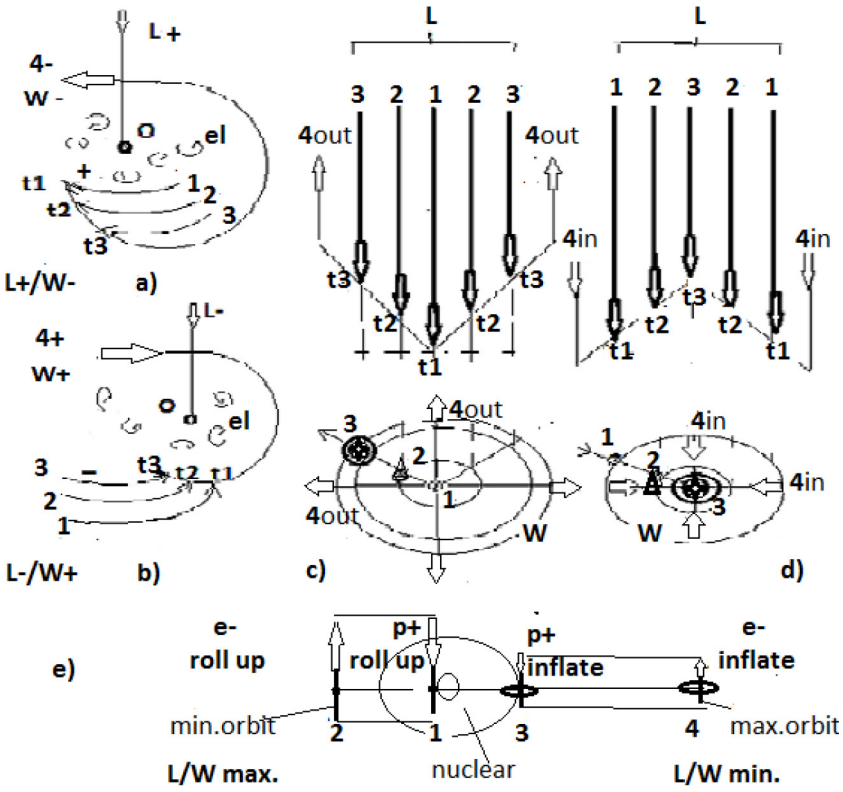


**Figure 1.**

### 2.1.2. Frontal impact of single longitudinal vortex in the middle of elementary vortices

Frontal impact between longitudinal vortex ($L$) and relatively denser environment of basic elementary transverse vortices (el) is seen as a piercing point, microvortex or vortex point ($O$). The characteristics of this vortex point ($O$) are a function of the characteristics (speed, frequency, amplitude) of the longitudinal vortex ($L$) and the medium of elementary vortices (el). An example of such a vortex point ($O$) is known as elementary particle quark [3] (Figure 1a, b).

**Conclusion 2.** At the place of frontal impact of a longitudinal vortex with relevant characteristics (speed $V$, frequency $w$ and amplitude $A$) with basic elementary transverse vortices, something like a piercing point, microvortex or vortex point is obtained, which corresponds to a particle of quantum mechanics known as a quark [3] (Figure 1a, b).

Elementary basic cross vortices (el) fill the space between the material particles that are compacted cross vortices and are perceived as part of the so called vacuum. The whole vacuum will contain all invisible elements. Beyond elementary cross vortices (el) and elementary longitudinal vortices and pipes of longitudinal vortices included in one another are also invisible.

### 2.2. Three longitudinal vortices generate an elementary particle

As it is known, there are three quarks in a proton (antiproton) [3]. This means that there should be at least three longitudinal vortices in generating a single object by transverse vortexes, or such a particle. Therefore, the object of transverse vortices should be packed around three piercing points or three quarks of different sizes, qualities and characteristics. A package shall be implemented according to Section 2.1.1 of three series of delaying (due to lower viscosity of the medium) to one another transverse layers generated by these three types of reverse waves (Figure 1c, d).

**Conclusion 3.** Three longitudinal vortices with different characteristics $(V_1, w_1, A_1), (V_2, w_2, A_2)$ and $(V_3, w_3, A_3)$, form package of an elementary particle (Figure 1c, d).

### 2.3. Structuring the two orders of vortex tubes

#### 2.3.1. Structuring a tube of longitudinal vortices with reverse wave with direction inside-out: first order tube

If at the centre along the tube axis there is a longitudinal vortex $(L_1)$ having a maximum longitudinal velocity $(V_{1\max})$, minimum frequency $(w_{1\min})$ and a minimum amplitude $(A_{1\min})$, then at the periphery of the tube a longitudinal vortex $(L_3)$ with a minimum longitudinal speed $(V_{3\min})$ and maximum frequency $(w_{3\max})$ and the maximum amplitude $(A_{3\max})$ will be coiled (Figure 1c).

**(a) Piercing points order (quarks)**

In the event of generating an elementary particle, the fastest longitudinal vortex $(L_1)$ is in the centre, then it creates the smallest piercing point in the centre, or a quark (1) with specific characteristics (circle with point). The piercing point or the quark (2) of the slower longitudinal vortex $(L_2)$ is outside to the periphery and is shown with a larger diameter and specific characteristics (circle with a triangle).

The third, longitudinal vortex $(L_3)$ creates the third piercing point, most outwards to the periphery or a quark (3), shown with the largest diameter with specific parameters (circle with a star) (Figure 1c).

**(b) Reverse wave direction**

Then the central longitudinal vortex $(L_1)$ will arrive first at speed $V_{1\max}$ per time $t_1$; outer longitudinal vortex $(L_2)$ will arrive later on per time $t_2 = t_1 + \Delta t$, i.e., it will delay with $\Delta t$, and the peripheral longitudinal vortex $(L_3)$ at speed $(V_{3\min})$ will arrive at latest per time $t_3 = t_1 + 2\Delta t$, i.e., will delay with another $\Delta t$. Thus, at the tube out a reverse longitudinal ($L$) wave will be obtained inside-out $(4_{\text{out}})$ in sequence $t_1, t_2, t_3, ...$, having the transverse vortex ($W$) will also be inside-out $(4_{\text{out}})$. The reason for such a layering of the speeds of longitudinal vortices $(L_1, L_2, L_3, ...)$ is the different conductivity of the medium. At the above mentioned tube at its centre $(L_1)$ the conductivity is greater than at its periphery $(L_3)$. Therefore, the speed at the centre $(V_{1\max})$, along the tube axis is greater, than

the speed $(V_{3\min})$ at the periphery of the tube $(V_{1\max} > V_{3\min})$, (Figure 1c).

This order of tube acts as a generator, mixer and transmitter. It converts and transforms the movement of the longitudinal vortices (*L*) to the movement of the transverse vortices (*W*). As a final result, the package of transverse vortices (*W*) inside-out $(4_{\text{out}})$, which is obtained by this transformation is the prototype of the proton particle $(p+)$ (Figure 1c).

**Definition 3.** A tube of longitudinal vortices, nested one inside the other, wherein the longitudinal axis is the fastest $(V_{\max}, w_{\min}, A_{\min})$ one, and at the periphery is the slowest $(V_{\min}, w_{\max}, A_{\max})$ vortex, will be called a longitudinal tube of the first order.

**Conclusion 4.** In a first order tube, there are combined to one another longitudinal vortices, when there is a fast longitudinal vortex along the central axis, with parameters $V_{\max}, w_{\min}, A_{\min}$, and in the periphery of the tube there is a slow longitudinal vortex, with parameters $V_{\min}, w_{\max}, A_{\max}$, a reverse inside-out wave is obtained (Figure 1c).

The direction of twisting of each longitudinal vortex (*L*) can be counterclockwise $(L-)$ or clockwise $(L+)$. The direction of twisting of each cross vortex (*W*) can be outwardly (counterclockwise, $W-$) or inwardly (clockwise, $W+$) (Figure 1a, b). A longitudinal tube of the first order is defined if in the center is located a longitudinal vortex of maximum speed $(V_{1\max})$, while in the periphery is located a longitudinal vortex of minimum speed $(V_{3\min})$ (Figure 1c).

**Conclusion 5.** A first order tube generates three transversal waves different in qualities (around the three quarks), which collectively form a proton type particle $(p+)$ (Figure 1c).

**(c) The field of longitudinal vortices**

The longitudinal vortices are a special type of field that does not move in crosswise way as the electromagnetic field (for example the light) but it stands above the every object as a structure. A complex mode of the tube of longitudinal vortices contains a generating the matter and a emitting by the matter part simultaneously.

The generating part of that field is described in this paper. The emitting part and a complex mode of the tube will be described in one of the next papers. Getting ahead of description the generating part of the complex mode of tube of longitudinal vortices generates the particle type proton $(p+)$ and emitting part is emitted by the particle type electron $(e-)$ (Figure 3).

The speed of longitudinal waves is described by the formula $[(1.62)^n.c]$, where ($c$) is the velocity of the light; (1.62) is approximate value of the well known Golden section; and ($n$) is the number of longitudinal vortex that grows outside inside. So, in case of $n = 1$, $[(1.62)^1.c]$ is selected the slowest longitudinal vortex {(3), in the case of Figure 1c}, which is the most outside. In case of $n > 1$, $[(1.62)^n.c]$ is selected the faster longitudinal vortex to the center {(2), (1), in the case of Figure 1c}. Hence in the direction to the center of the tube the speed becomes faster and faster 2.62$c$; 4.17$c$; 7.14$c$; etc. It turns clear that in the center of the tube $(n > 1)$, the speed of the longitudinal vortex $[(1.62)^n.c]$ is much greater than the speed of light ($c$) (Figure 1c).

**2.3.2. Structure of a tube of longitudinal vortices with reverse outside-in wave: tube of second order**

If a longitudinal vortex $(L_3)$ having minimum a longitudinal velocity $(V_{3\min})$, a maximum frequency $(w_{3\max})$ and a minimum amplitude $(A_{3\min})$ is positioned at the centre of the tube, then in the periphery of the tube a longitudinal vortex $(L_1)$ having a maximum longitudinal velocity $(V_{1\max})$, a minimum frequency $(w_{1\min})$ and a maximum amplitude $(A_{1\max})$ will be coiled (Figure 1d).

**(a) Piercing points order (quarks)**

In case of elementary particle generation, in which there is a rapid longitudinal vortex $(L_1)$ in the periphery, then the location of the different in qualities quarks (piercing points) is opposite to point 2.3.1 (a). In the periphery, where the fastest longitudinal vortex $(L_1)$ is, the smallest quark (1) with specific parameters (circle with point) is positioned; in the middle, where the longitudinal vortex $(L_2)$ with

average speed is, the average quark (2) with specific parameters (a circle with a triangle) is positioned; and in the centre, where the slowest longitudinal vortex $(L_3)$ is, the greatest quark (3) with specific parameters (circle with a star) is positioned (Figure 1d).

**(b) Reverse wave direction**

Then the peripheral longitudinal vortex $(L_1)$ will arrive first at a speed $V_{1\max}$ per time $t_1$; the inner longitudinal vortex $(L_2)$ will arrive later per time $t_2 = t_1 + \Delta t$, i.e., it will delay with $\Delta t$; and the central longitudinal vortex $(L_3)$ at a speed $V_{3\min}$ will arrive last per time $t_3 = t_1 + 2\Delta t$, i.e., it will delay with one more $\Delta t$. So at the outlet of this type of tube a reverse longitudinal wave ($L$) directed outside-in $(4_{\text{in}})$ will be obtained, in sequence $t_1, t_2, t_3, ...$, as the transverse vortex ($W$) will also be directed outside-in $(4_{\text{in}})$ (Figure 1d).

**Definition 4.** A tube of longitudinal vortices, combined in one another, in which the slowest vortex $(V_{\min}, w_{\max}, A_{\min})$ is along the longitudinal axis, while the fastest vortex $(V_{\max}, w_{\min}, A_{\max})$ is in the periphery, we shall call a longitudinal tube of the second order.

**Conclusion 6.** In a tube of second order, with combined in one another longitudinal vortices, when a slow longitudinal vortex with $V_{\min}$, $w_{\max}$ and $A_{\min}$ is located along the central axis of the tube, and a fast longitudinal vortex with $V_{\max}$, $w_{\min}$ and $A_{\max}$ is located in the periphery of the tube, a reverse outside-in wave is obtained (Figure 1d).

**Conclusion 7.** A tube of second order generates three different in qualities and directions (around the three quarks) transversal waves, which collectively form a single particle of antiproton type $(p-)$ (Figure 1d).

### 2.3.3. Generator tubes of first and second order have 8 types of operating modes corresponding to 7 periods of chemical elements plus one neutron mode

The first type of tube, that generates elementary particle of proton type $(p+)$ (Figure 1c), could contain two types of longitudinal vortices: outward $(W-)$ (Figure

1a) and inward $(W+)$ (Figure 1b). The second type of tube that generates an elementary particle antiproton type $(p-)$ (Figure 1d), could also contain two types of longitudinal vortices: outward $(W-)$ (Figure 1a) and inward $(W+)$ (Figure 1b). Whether a proton (Figure 1c) or antiproton (Figure 1d) will be generated, the main criterion is: whether a longitudinal vortex ($L$) of maximum $(V_{1\max})$ (Figure 1c) or of minimum $(V_{3\min})$ (Figure 1d) speed is located in the centre.

The proton (Figure 1c) and the antiproton (Figure 1d) are generated by three longitudinal vortices with different parameters that create three piercings (quarks) with different qualities. The longitudinal clockwise vortex $(L+)$ creates transverse vortex $(4-)$ in counter clockwise direction: inside-out (Figure 1a). Since the transverse vortex in state inside-out coincides with the positive charge state of a free particle, then let denotes the condition $(4-)$ by one "1" [2]. The longitudinal vortex in counter clockwise direction $(L-)$ creates transverse vortex $(4+)$ in clockwise direction: outside-in (Figure 1b). Since the transverse vortex in state outside-in coincides with the negative charge state of a free particle, then let denote this state $(4+)$ by zero "0" [2].

Then 2 number of states {out –(1); in $-(0)$} for each of the 3 number piercings (quarks) of transverse vortices will give 8 number of modes $(2^3)$ for each of the first $(p+)$ and second $(p-)$ order tube. For example, in mode 000, where the three vortices are in $-(0)$, this proton will be totally closed and will be manifested as an electro-neutral, i.e., as neutron. Mode 001, where only the innermost longitudinal vortex of the tube of first order is of outward direction (1) and the other two longitudinal vortices have in direction (0), then this proton will be minimally open out ( maximally closed ) and, due to its minimum potential energy, it will aim to be placed in the centre of the nucleus. In mode 111, when the three vortices are out –(1), this proton will be maximally open out (minimally closed) and, due to its maximum potential energy it will aim to be placed on the periphery of the nucleus. There are also 5 transition modes: 010, 100, 101, 110, 011, corresponding to the 5 different layers in the nucleus between the outermost (111) and innermost (001) layer.

So protons in the 7 layers of the nucleus will generate electrons in 7 different

electronic orbitals. These 7 electronic orbits correspond to the 7 periods in the table of Mendeleev, by fixing the ratio $(L/W)$ between the longitudinal ($L$) and transverse ($W$) component (Figure 1a, b) [1]. For example, in 001 state the proton, which must be in centre of the nucleus (1), will have a maximum longitudinal $(L_{\max})$ and minimum transverse $(W_{\min})$ component $(L_{\max}/W_{\min} = \max)$. (Figure 1e). This condition (1) resembles the rolled up state of a proton. Then the rolled up proton (1) will generate a rolled up state of electron (2) at the nearest orbit. In state 111, which must be at the periphery of the nucleus (3), there will be minimal longitudinal $(L_{\min})$ and maximum transverse $(W_{\max})$ component $(L_{\min}/W_{\max} = \min)$.

- This condition (3) resembles ***the inflated state*** of the proton. Then inflated proton (3) will generate an inflated state of the electron (4) in the most distant orbit. The condition (1) resembles ***the rolled up state*** of the proton. Then rolled up proton (1) will generate a rolled up state electron (2) in the nearest orbit (Figure 1e).

- On the other hand the same electron-proton pair as the pair (3)-(4) pulsates in time. This means that an electron (4) is in the inflated state $(L_{\min}/W_{\max} = \min)$, then after the half-period, is in the rolled up state $(L_{\max}/W_{\min} = \max)$. In the inflated state $L_{\min} << W_{\max}$ and the electron manifests as a particle. In the rolled up state $L_{\min} >> W_{\max}$ and the electron manifests as a wave of longitudinal vortex that turns to be invisible [2]. This pulsation of the proton changes the orbit of electron from ***circle to ellipse***.

**Conclusion 8.** The inflated electron is seen as a particle, but the rolled up electron is not seen at all. The electron sequentially in time manifests: in the first phase - as a visible particle and in the second phase - as an invisible wave. Just in that second phase of the time the electron spills in ***the entire space*.**

- When the electron spills and fills the entire space it connects with its proton by means of the longitudinal vortexes. If we put a barrier in the space with two or more holes during this phase of time, the wave of longitudinal vortexes will pass through the everyone hole at the same time.

### 2.3.4. Examples of both types of tubes

#### (a) Twisting of accelerative and delaying longitudinal vortex

Generally typical for field structures (longitudinal or transverse vortices) that

they move unevenly (accelerating or delaying) and twist and vortex secondary.

Delaying longitudinal vortex (3) emits delaying secondary transverse vortices (2) in its movement (Figure 2a). These delaying secondary transverse vortices (2) emit longitudinal vortices (*f*) from their centre in the indicated direction, defined by the well-known Right Hand Rule [4]. The longitudinal vortex (3) will look like as if it is delaying, it expands and swells in section and reducing the step, at the same time twists in counter clockwise direction (1) (Figure 2b).

**Conclusion 9.** Delaying longitudinal vortex twists clockwise when viewed against the direction of movement and reducing step increases its diameter.

Accelerating longitudinal vortex (3) draws to itself accelerating secondary transverse vortices (2) (Figure 2c) in its movement that change to elementary vortexes (el) in the space (vacuum) (Figure 1a, b). These secondary accelerative transverse vortices (2) suck in their centre the longitudinal vortices (*f*), which are perpendicular to the plane of the transverse vortex (2) and have direction determined by the well-known Left Hand Rule [4]. The longitudinal vortex (3) will look like as if accelerating, shrinks by section and increasing the step, at the same time twists in a clockwise direction (1) (Figure 2d).

**Conclusion 10.** Longitudinal acceleration vortex twists in a clockwise direction when viewed against the direction of movement and increasing the step it reduces its diameter.

So, not only the accelerating and the delaying longitudinal vortex twist around their axes, but the accelerating vortex increases its mass and velocity and delaying vortex decreases its mass and velocity.

**Law 1.** Longitudinal acceleration vortex sucks and glues the elementary vortexes and increases its mass and velocity but longitudinal delaying vortex emits the elementary vortexes and decreases its mass and velocity (Figure 2d, b).

***If we want generating of energy from vacuum, we have to accelerate the longitudinal vortex in the space full of suitable elementary vortexes***.

**(b) Example of the first order tube of longitudinal vortex-conductor (p. 2.3.1)**

When along the axis (1) of a conductor (4) (Figure 2e) transverse vortexes (ei) of the most electrons cooperate, and their longitudinal axes (hi) are located in sections

perpendicular to the conductor, then a co-operative, longitudinal vortex (*E*) is obtained (Figure 2g). It moves in the center faster over time $(t_1)$ than at the border one $(t_2)$, $(t_1 < t_2)$ and therefore a "reverse" wave inside-out is obtained (3) (Figure 2e).

**(c) Example of the second order tube of longitudinal vortex-superconductor (p. 2.3.2)**

When along the axis (2) of a conductor (4) (Figure 2f) longitudinal axis (hi) of the most electrons cooperate, and their transverse vortexes (ei) are located in sections, perpendicular to the conductor, then a co-operative longitudinal vortex (*H*)

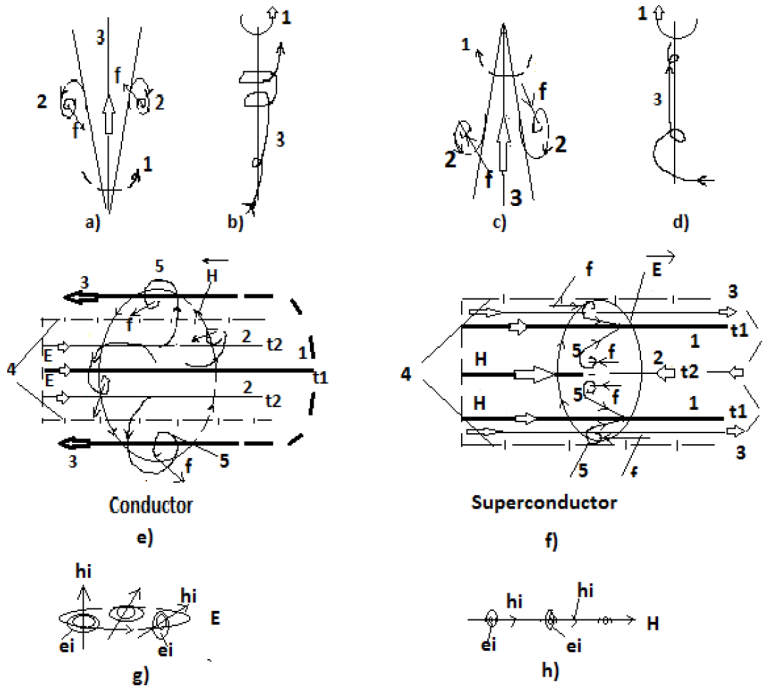


**Figure 2.**

is obtained (3) (Figure 2h). It moves in the center more slowly in time $(t_2)$ than at the border one $(t_1)$, $(t_2 < t_1)$ and therefore a "reverse" wave outside-in is obtained (3) (Figure 2f).

## 3. First and Second Order Longitudinal Tubes Respectively Generate two Main Types of Gravitational Couples

### 3.1. A longitudinal tube of first order generates either accelerative or delaying transverse object

#### 3.1.1. A longitudinal tube of the first order generates a transverse accelerative outward vortex, proton type $(p+)$

A longitudinal tube of the first order (1, 2, 3) generates, by transformation $(\Delta 2)$ of movement, a transverse accelerative inside-out vortex (4) proton type $(p+)$. This accelerative transverse vortex (4) by the longitudinal vortex (5) generates by transforming $(\Delta 1)$ delaying transverse vortex (6) electron type $(e-)$ (Figure 3). Delaying element (6) emits delaying $(-)$ elementary transverse vortexes $(6-)$, which are sucked by accelerative $(+)$ basic vortices $(4+)$ from the accelerative element (4) to form a reverse connection loop (7) in the opposite direction. On the other hand, perpendicularly to the plane of the transverse vortex (6) by transforming $(\Delta 1)$, an accelerative longitudinal vortex (8) from the centre of the delay element (6) and delaying, longitudinal vortex (9) in the periphery of the delay element (6) are emitted ([1], Transformer $\Delta 1$, Transformer $\Delta$, pages 5-7). Since the accelerative longitudinal vortex (8) is ahead of the delay longitudinal vortex (9), a reverse wave (10) inside-out is formed. The external impulses (13) beat time accelerative longitudinal vortex (8) and creates forward connection (11) of longitudinal vortices. The external time (13) makes the whole system of Figure 3 to pulsate in time. The elementary longitudinal vortices in the opposite direction form a reverse connection (12) of longitudinal vortices (Figure 3).

This process is continuous, because there is a continuous cycle (5, 7) and (11, 12) of the forward (5, 11) and reverse (7, 12) transmission. In order to generate micro particles the necessary and sufficient condition is the presence of the cycle (5, 7) and (11, 12) which provides a continuous process of generation. In order to generate macro bodies the necessary condition is the same-presence of the forward (5, 11) and reverse (7, 12) transmission (Figure 3).

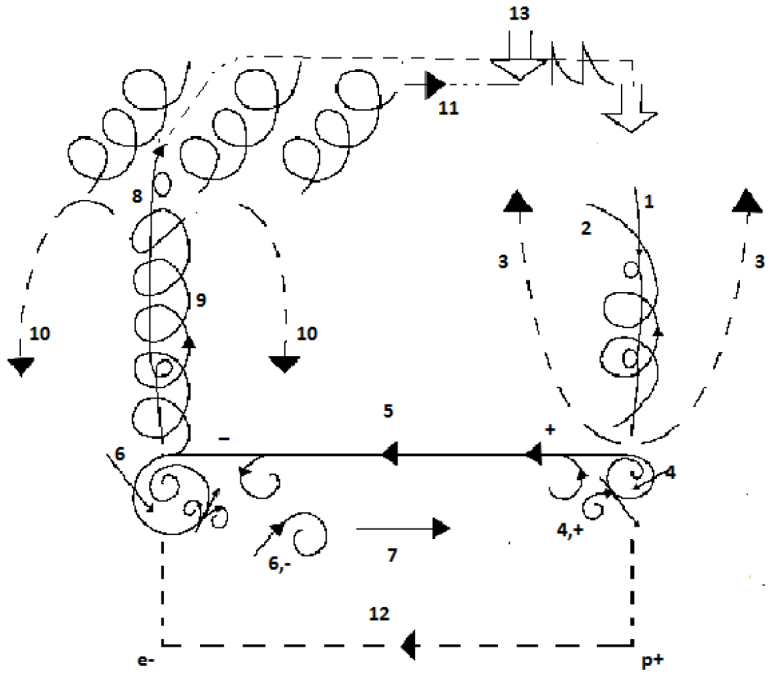


**Figure 3.**

**Conclusion 11.** A longitudinal tube of the first order generates a transverse accelerative vortex (by transformation $\Delta 2$) of particle proton $(p+)$ (4) and a transverse delaying vortex (by transformation $\Delta 1$) of particle electron $(e-)$ (6) because of circulation (5, 7) and (11, 12) which provides continuous process of generating ([1], Transformer $\Delta 1$, Transformer $\Delta 2$, pages 5-7), (Figure 3).

**Conclusion 12.** A longitudinal tube of the first order, which generates accelerative transverse vortex can generate also macro objects (4, 6), because of the necessary condition for straight (5, 11) and reverse (7, 12) connection (Figure 3).

**3.1.2. A longitudinal tube of first order generates delaying transverse vortex** (the case is not shown at Figure 3)

It is quite possible the longitudinal tube of first order (1, 2, 3) to generate by transforming $(\Delta 2)$ of the movement a transverse delaying inside-out vortex (4).

This delaying transverse vortex (4) by transforming $(\Delta 1)$ will generate accelerative transverse vortex (6) ([1], Transformer $\Delta 1$, Transformer $\Delta 2$, pages 5-

7). In this case (not shown in Figure 3), generating element (4) will emit delaying elementary vortices $(4-)$ to be sucked from the consumable element (6) by reverse connection (7) as accelerative $(6+)$ in the same direction as a straight connection (5). This means that there will be no cycle of transmission and it generates for a short time or it generates a modified elementary particle.

**Conclusion 13.** A longitudinal tube of a first order that generates a chain of delaying outward vortex (4) and accelerative inward vortex (6) is possible to exist. It can generates micro particles (4, 6) just for a short time until the elementary vortices expire by the reverse connection (7) that has the same direction as the straight connection (5), or it can generates a modified elementary particle that performs any specific relations (not shown in Figure 3).

For example a conventional electron (p. 3.1.1.) and a modified electron (p. 3.1.2.) can form an electronic couple by exchanging elementary cross vortices each other, not with their protons.

**Conclusion 14.** A longitudinal tube of first order that generates delaying transverse vortex can generate macro bodies (4, 6) just for a short time until the elementary material exhausts. It can generate a modified macro body also that performs any specific relations (not shown in Figure 3).

### 3.2. A longitudinal tube of second order generates (sucks) delaying or accelerative transverse object outside-in

#### 3.2.1. A longitudinal tube of second order generates a chain of delaying inward, antiproton type $(p-)$ and an accelerative outward, positron type $(e+)$

A longitudinal tube (1, 2, 3) of second order generates or sucks by transforming the movement $(\Delta 2)$ delaying outside-in vortex (4) ([1], Transformer $\Delta 2$, pages 6-7) (Figure 4). This delaying transverse outside-in vortex (4) is a prototype of an antiproton particle $(p-)$. From the delay element (4) the elementary delaying $(-)$ transverse vortexes $(4-)$ are emitted, they are sucked as accelerative $(+)$ elementary vortices $(6+)$ from the accelerative element (6) and reverse connection form (7) in the opposite direction. This accelerative transverse inside-out vortex (6) is a prototype of positron particle $(e+)$. The directions of generating transverse

vortex (5) and of elementary transverse vortexes (7) are opposite. That is why the process of particle generating is continuous (Figure 4).

**Conclusion 15.** A longitudinal tube of second order, that generates delaying transverse vortex, can generate continuously the following micro particles: antiproton $(p-)(4)$, and a positron $(e+)$ (6), since the generating connection (5) and the reverse connection (7) of basic elementary vortices are opposed and form a circulation (Figure 4).

**Conclusion 16.** The longitudinal tube of second order that generates delaying transverse vortex can generate macro bodies (4.6) because of the necessary condition of main connection (5, 11) (Figure 4).

**3.2.2. A longitudinal tube of second order generates a chain of accelerative inward vortexes (4), and delaying outward vortexes (6)** (the case is not shown in Figure 4)

It is entirely possible the longitudinal tube of second order to generate or suck by transforming the movement $(\Delta 2)$ accelerative vortex (4) outside-in ([1], Transformer $\Delta 2$, pages 6-7). Delaying (6) transverse vortices $(6-)$, that should be sucked by accelerative $(+)$ basic vortices $(4+)$ of the acceleration element (4) to form a reverse connection (7) are emitted by delaying element (6). It turns out that the reverse connection (7) coincides with the direction (5) of the main transmission (not shown in Figure 4).

Consequently, there is no circulation, necessary to maintain the generating. Therefore, the process of generating micro particles is interrupted immediately after depletion of elementary vortices $(6-)$ and $(4+)$ or continues to the forming of modified (in some degree) particle with very specific function (not shown in Figure 4).

**Conclusion 17.** A longitudinal tube of second order, which generates a chain of accelerative inward vortexes (4) and delaying outward vortexes (6) can generate micro particles (4, 6) only for a short time, until the depletion of basic vortices of the connection (7). It can generate a modified elementary particle also that performs any specific relations (not shown in Figure 4).

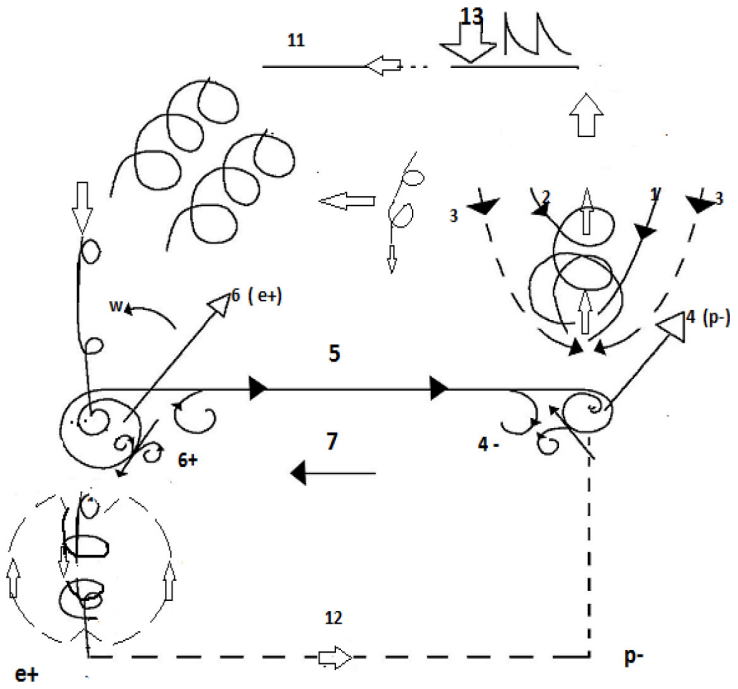


**Figure 4.**

**Conclusion 18.** The longitudinal tube of second order, which generates a chain of accelerative inward vortexes (4) and delaying outward vortexes (6) could generate conventional macro bodies (4, 6) only for a short time. It can generate a modified macro body also that performs any specific relations (not shown in Figure 4).

The modified macro body can exchange matter with some neighboring body instead of with the central generator. An example of modified macro body is the behavior of the planet Venus which exchanges with the planet Earth, instead of exchanges with the Sun.

### 3.3. Physical nature of the transformation of longitudinal vortices in the transverse vortices

Here is the place to explain the nature of the transformation $\Delta 2$ described by Law 2 ([1], $\Delta 2$, Law 2, Consequence 2, page 6-7).

The light represents pulsing of transverse vortices in the transverse direction [3]. Material bodies also are composed of packages of transverse vortices [2]. The light

and the material body have the same structure of transverse vortices in the transverse direction. That so the light is reflected by the material body. The difference is that a package of transverse vortices has a mass [2], but the light has not a mass [3]. So a package of transverse vortices is perceived as a matter.

The longitudinal vortices pulsate in the longitudinal direction [1]. The light (as transverse vortices) passes because of the diffraction through the threads of the longitudinal vortices without reflection. Therefore the threads of the longitudinal vortices are not visible. Because of the longitudinal vortices have not a mass [2], the longitudinal vortices and the pipes of longitudinal vortices are perceived as energy.

**Conclusion 19.** Tubes of longitudinal vortices are perceived as energy and packages of the transverse vortices are perceived as a matter.

The transformation of the energy into the matter is implemented through transformation $\Delta 2$. The operator $\Delta 2$ reflects the increasing in the ratio ( $A/S$ increases) as the increasing of the amplitude ($A$) and the decreasing of the distance ($S$) travelled by the longitudinal vortex, perpendicular to the plane of the transverse vortex (Figure 2b). The transformation $(\Delta 2)$ describes the decreasing of the kinetic energy, because of decreasing of the velocity and the distance ($S$) and describes the increasing of a potential energy, because of increasing of the amplitude ($A$). Therefore the longitudinal vortex is compacted ( $A/S$ increases) up to the model or pattern ( $A/S = \max$ ) up of the future generated real particle. The pattern is a part of the tube of longitudinal vortices and therefore its nature is energy (even though it is much compacted) and the pattern brings preliminary information for the future generated real particle.

**Conclusion 20.** Transformation $\Delta 2$ indicates an increase of the ratio $(A/S)$, as the amplitude ($A$) of the transverse vortex is increased, the path of the longitudinal vortex ($S$) is reduced. So the energy of the longitudinal vortices of the generating tube partially is compacted to the model or pattern of the future generated, real particle.

**Conclusion 21.** Generating of a new particle is implemented only provided that the tube of longitudinal vortices creates a pattern for particle and that there is adequate environment of elementary transverse vortices with appropriate

concentration and kinetic and potential features.

## 4. The Final Conclusions

**4.1.** The velocity of longitudinal vortexes, included one into the other in a tube, is more than the velocity of the light ($c$). The speed becomes faster and faster in direction from the outside longitudinal vortexes: 1.62.$c$; 2.62.$c$; 4.17.$c$; 7.14.$c$, etc. to the central longitudinal vortexes for a longitudinal tube of the first order that generates a particle proton type $(p+)$.

**4.2.** The generation of energy from vacuum is only possible if we accelerate a longitudinal vortex, and if the space is full of suitable free elementary vortexes.

**4.3.** Continuous process of generating of the matter as a conventional gravity couple proton $(p+)$ -electron $(e-)$, is only possible if the generating longitudinal tube is of first order and if the proton $(p+)$ is generated by an accelerating transverse vortex, and electron $(e-)$ is generated by decelerating transverse vortex.

**4.4.** Continuous process of generating of the antimatter as a conventional gravity couple antiproton $(p-)$ -positron $(e+)$, is only possible if the generating longitudinal tube is of the second order and if the antiproton $(p-)$ is generated by delaying transverse vortex and positron $(e+)$ is generated by accelerative transverse vortex.

**4.5.** There is an energy pattern that converts energy into matter and generates a future particle. Continuous process in generating of the future particle is only possible if there is a pattern (as a necessary condition) and if there is a suitable environment of the elementary vortexes (as a sufficient condition).

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