Fundamental Journal of Modern Physics
Vol. 8, Issue 2, 2015, Pages 85-104
Published online at http://www.frdint.com/

GRAVITY STRUCTURES - ESSENCE AND PROPERTIES

VALENTINA MARKOVA

IER (Inst. of Basic Researches)
Sofia, Bulgaria

Abstract

This is the second in a series of articles. This article describes the effects and the results of the new approach, i.e., from the opening of the closed vortices and replacing the even with uneven movement. A number of very interesting properties and surprising mutual relationships appear, such as: the electric charge as a dynamic characteristic; the structure of the vacuum as a feed-back; the essence of the masses, as cross vortices; the form of the two vortex elements as dynamics of an accelerating and a decelerating vortex; the eccentricity of the vortices of the two elements as a reason why the decelerating element rotates around the accelerating one; step by step transformation of the linear movement into a vortex one and vice versa with constant proportion as the cause of a parasitic rotation of the two vortex elements around their axis and others.

1. Introduction

The popular axiom guaranteeing Maxwell's laws states that the even convergent motion of vector E leads to movement in a closed loop $(\operatorname{div}\operatorname{rot} E = 0)$ [1]. It is proposed to replace this with a new axiom, which states that the uneven movement of vector E results in an open loop $(\operatorname{div} \operatorname{rot} E \neq \mathrm{o})$ or an open vortex [2]. The first article describes three axioms and four laws which lead to the following results: the

Keywords and phrases: gravity structures, Maxwell's laws.

Received June 18, 2015

even convergent movement is replaced by an uneven (decelerating or accelerating) and from a movement in 2D a movement in 3D is obtained; pairs of objects are constructed as transformations of uneven vortices (a decelerating into an accelerating and vice versa) and a movement in two resultant, mutually perpendicular closed loops in 3D is obtained [3]. In this second article, the descriptive approach of the essence of the phenomena is selected, instead of using ready terms. This choice aims now to avoid the need for parallel and complicated explanations. The new axiom $(\text{div rot } E \neq 0)$ describes the Gravity field, while the former axiom $(\text{div rot } E = 0))$ describes the Electromagnetic field which is only one of results of Gravity field**.**

Definition 1. Gravity structures represent a design of elements and links between them founded on the axiom $(\text{div rot } E \neq 0)$.

Let us look at the main Gravity vortex pair: an accelerating transverse vortex (2) generated by a decelerating longitudinal vortex (8); longitudinal vortex connection (3); a decelerating transverse vortex (1) emitting an accelerating longitudinal vortex (7) (Figure 1). The reverse pair is not examined for now [3].

2. Properties and Characteristics of the pair of Vortex Structures [2; p. 289-293], [5; p. 34-85]

2.1. Charge of the two structures of transverse vortices

Definition 2. The pair of transverse vortices (1) and (2) connected with longitudinal vortex (3) represent a sustainable system which we will call a sustainable pair (Figure 1).

Let us mark the two objects as an accelerating object $(2), (a2 > 0)$ and a decelerating object $(1), (a1 < 0)$. Let us break the transverse link (3) between the two objects (1) and (2), for example, in point 3 (p. 3) . For instance let us put the accelerating object (2) in an electric field with two poles. Then the accelerating component $(2), (a2 > 0)$, of Figure 1 will move to the pole, which contains an excess of decelerating elements $(1), (a1 < 0)$, i.e., to the negative pole. The cause is that the accelerating element (2) strives to form a sustainable pair with one of the excessive decelerating elements (1) and it looks as if it has a positive charge. If we put the decelerating vortex element (1) of Figure 1 in the electric field, it will move to the pole, which contains an excess of accelerating elements (2), $(a2 > 0)$, i.e., to the positive pole. The cause is that the decelerating element (1) strives to form a sustainable pair with one of the excessive accelerating elements (2) and it looks as if it has a negative charge (Figure 1).

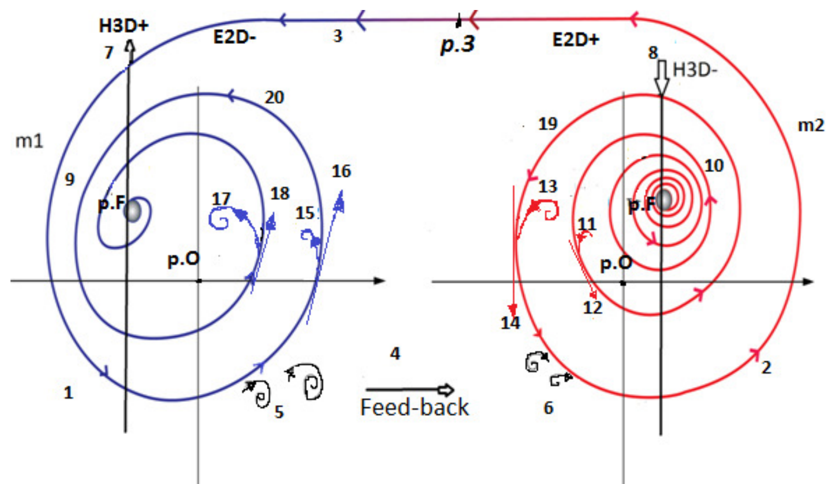

Figure 1.

Conclusion 1. The charge of the open vortices is a dynamic feature of the transverse vortex and is proportional to the acceleration, which is the same, respectively, at the output $(E2D+;\ p.3)$ of the accelerating (2) and the input $(p.3;\ E2D-)$ of the decelerating (1) vortex {Figure 1). The charge is an essential expression of the structure, rather than its shape. It is an internal dynamic manifestation of the vortex structure, not just an external addition (or lack) to the shape of open vortices.

2.2. The space between the two vortex elements (vacuum) is full of elementary vortices that are exactly like the main open vortices

The main transverse link (3) is between the accelerating (2) and the decelerating

(1) open vortex. The main decelerating vortex $(a1 < 0)$ of the decelerating element (1) emits elementary vortices (5) in the space around this object (1), and the main accelerating vortex $(a2 > 0)$ of the accelerating element (2) sucks these elementary vortices (6). Thus a reverse movement appears (4) (feed-back) from the decelerating (1) to the accelerating (2) element in the empty space between the two elements. The direction (4) is opposite to the main transmission (3) on the main connection of the accelerating (2) to the decelerating (1) element. The sign of the feed-back (4) is positive, because the more powerful is the main transmission (3), the more powerful is the counter transmission (4) to the full saturation (Figure 1).

Conclusion 2. The elementary decelerating transverse vortices (5) are emitted (outside) by the main decelerating vortex (1) and the elementary accelerating transverse vortices (6) are sucked by the main accelerating transverse vortex (2) by means of the positive feed-back (4). The elementary transverse vortices (5, 6) are similar to the main transverse vortices (1, 2), but are in another - smaller measuring scale. Thus, the main (1, 2) and the elementary (5.6) transverse vortices form a sort of fractal structures in 2D (Figure 1).

Later on we will see that the longitudinal vortices form similar structures in 3D.

2.3. Difference in the form and distribution of the mass of the two vortex objects

(a) The form

Due to the nature of the pair vortex objects the accelerating object (2), is established as a movement $(E2D+)$ inside-out. The secondary transverse vortex (11) and the linear speed (12) are with less amplitude towards the center $(p.F)$ of the body (2); but the secondary transverse vortex (13) and the linear speed (14) are with more amplitude to the periphery (19) of the body (2) .Hence they form a high density to the center of the body (2) or form a sphere.

The decelerating object (1),) is created as a movement $(E2D-)$ outside-in. The secondary transverse vortex (15) is with less amplitude but the linear speed (16) is with much greater amplitude towards the periphery (20) of the body (1). The secondary transverse vortex (17) is with more amplitude but the linear speed (18) is with less amplitude to the center $(p.F)$ of the body (1). Hence they form a great density to the periphery of the body (1) or form a ring (Figure 1).

Conclusion 3. The secondary decelerating transverse vortices (15, 17) are emitted (inside) by the main decelerating vortex (1) and the secondary accelerating transverse vortices (11, 13) are sucked by the main acceleratory transverse vortices (2). The secondary transverse vortices (11, 12, 15, 17) are similar to the main transverse vortices (1, 2), but are in another - smaller measuring scale. Thus, the main (1, 2) and the secondary (11, 12, 15, 17)) transverse vortices form a sort of fractal structures in 2D (Figure 1).

Conclusion 4. The accelerating object (2) is more like a solid sphere, while the decelerating object (1) is more like a ring (or a thoroid) (Figure 1).

(b) The distribution

Elementary vortices (5) are transmitted by the decelerating element $(1), (a1 < 0),$ they take away mass from it and therefore the decelerating element (1) has a strongly reduced mass (m1). The elementary vortices (6), which are sucked by the accelerating element $(2), (a2 > 0)$ add to its initial mass and thus the accelerating element (2) has a much greater mass ($m2$) compared to the mass of the decelerating element ($m1$) (Figure 1).

Conclusion 5. The accelerating element (2) has quantitatively a much greater mass ($m2$) compared to the mass ($m1$) of the decelerating object (1) (Figure 1):

$$m2 > m1.$$

Both vortex objects differ significantly in internal structure and should not be measured in the same manner. The difference in mass is not only quantitative but also qualitative. Paragraph 2.2 and 2.3, a) show that first: the accelerating element (1) sucks elementary vortices (6) and accumulates the main mass ($m2$) in itself and second: the accelerating element (2) is generated in the direction inside-out, it accumulates and concentrates this basic mass ($m2$) at its center $(p.F)$ (Figure 1).

Conclusion 6. The accelerating object (2) with mass $m2$ is heavy, dense and full, and the maximum of the mass is to the center $(p.F)$ and the minimum of the mass is to the periphery (19) **(**Figure 1).

Paragraph 2.2 and 2.3, a) also show that first: the decelerating element (1) emits elementary vortices (5) outwards and emits a considerable mass away from its main mass ($m1$) and second: the decelerating element (1) is generated in the direction outside-in and accumulates the remaining mass ($m1$) only in the periphery (20) while the center remains as if it is "empty" (Figure 1).

Conclusion 7. The decelerating object (1) with mass $m1$ is light, empty and hollow, with a maximum of mass at the periphery (20) and the minimum of the mass is to the center $(p.F)$ (Figure 1).

Further, we will see that the interior of the main decelerating element (1) is full of the secondary decelerating vortices (3), but "invisible" to the external observer (Figure 4).

Conclusion 8. The accelerating element (2) draws the majority of elementary vortices (5) and (6) through the feed-back (4) due to the suction effect of the accelerating vortex, and thus it "bares" the greater part of the space around the decelerating element (1) (Figure 1).

2.4. Difference in the reflection of the light of two vortex objects and the relationship between them

(a) Two objects

As we know light is distributed evenly in space in the form of transverse electromagnetic wave [4]. Both vortex objects (1) and (2) are also created by transverse waves but uneven transverse waves. One of the objects is generated by a transverse accelerating (2) and the other is created by a transverse decelerating wave (1). Therefore the two vortex objects and the light are similar and homogeneous and that is why these objects will reflect the electromagnetic light wave in an adequate manner (Figure 1).

Conclusion 9. Both vortex objects (1) and (2) will be visible as they are: the accelerating object (2) will be visible as a large and dense sphere and the decelerating) object (1) -as an empty and light ringlet (Figure 1).

(b) The connection

The connection between the two vortex objects (3) is not transverse, but longitudinal. It is a longitudinal vortex [2, 3]. If the dimensions of the section of this longitudinal vortex are commensurable with the length of the electromagnetic wave of light, and when the transverse electromagnetic wave, called light, meets this longitudinal thread of connection (3), then it will diffract around it, i.e., it will wind round and will continue to move in the original direction, with the initial speed and intensity. The longitudinal vortex (3) conducts energy from (2) to (1) and is invisible, i.e., it is something like an invisible energy (Figure 1).

Conclusion 10. The light will not be reflected, refracted or bent by the longitudinal vortex (3) and we, as external observers, will not see anything (Figure 1).

(c) The feed-back

The reverse link (4) between the two vortex objects (1) and (2) is neither transverse nor longitudinal, and is realized by the movement of elementary vortices (5) and (6) (Figure 1). If the dimensions of the elementary vortices (5) (6) are commensurable with the length of the electromagnetic wave, and when the electromagnetic wave meets these elementary vortices, then it will diffract around them, i.e., it will wind round them and will continue to move in the initial direction, speed and intensity. The elementary vortices (5) and (6), forming the reverse link (4) are also invisible, but conduct matter, not energy, i.e., they represent a sort of invisible matter (Figure 1).

Conclusion 11. The elementary vortices (5) and (6), filling the space between the two vortex objects (1) and (2) and generating the reverse link (4) between them, are also invisible to the external observer.

Therefore, we as external observers will see the accelerating object (2) as a heavy sphere; the decelerating object (1) as a light and empty ringlet, but we will not any see any of the links between them: neither the direct (3) nor the reverse (4) connection (Figure 1).

2.5. Pulsing (breathing) of the whole system in time

The accelerating (2) and the decelerating (1) objects pulse in time by bending and stretching, both in terms of a longitudinal component {(7) and (8)}, and a transverse component, {(9) and (10)}. The reason for pulsing modulation comes outside. It forces the generating longitudinal vortex (8) of the accelerating object (2) to pulse. Thus, when the generating longitudinal vortex (8) extends, the accelerating transverse vortex (10) shrinks, the longitudinal vortex link (3) shortens, the decelerating transverse vortex (9) shrinks and the resulting longitudinal vortex (7) extends. The elements at this condition look as if they have small and shrink bodies and the distance (3) between them is shortened.

And vice versa, when the generating longitudinal vortex (8) shortens, the accelerating transverse vortex (10) inflates, the connection of longitudinal vortex (3) extends, the decelerating transverse vortex (9) inflates and the resulting longitudinal vortex (7) shrinks. The elements at this condition look as if they have large and inflate bodies and the distance (3) between them is extended.

Conclusion 12. The accelerating (2) and the decelerating (1) element as well as the connection (3) between them pulsate (breathe) in time. The generating longitudinal vortex (8) shortens or extends and causes or expansion or contraction of the transverse vortex (10) and thus extending or shortening of the longitudinal link (3), which causes expansion or contraction of the transverse vortex (9) and the extension or shortening of the resulting longitudinal vortex (7) (Figure 1).

3. The Decelerating Element Revolves around the Accelerating one. The Open Vortices are Eccentric but not Concentric [5; p. 65-75]

3.1. Eccentricity of the decelerating element

In the decelerating element (1) the linear speed at the periphery (16) is greater than the linear speed to the center towards the more internal turn (18) (Figure 1). Moreover the speed *V*1 in point 1 (1) in Figure 2a is greater than the speed *V*2, at its opposing point 2 (2), i.e.: $V1 > V2$; and the speed *V*3 in point 3 (3) is greater than the speed *V*4 in the opposite point 4(4), i.e.: $V3 > V4$. In the perpendicular direction

*V*5 in point 5(5) is greater than *V*6 in point 6 (6), i.e.: $V5 > V6,$ etc. This dynamics has shown that the transverse turns will be drawn to the higher speed, i.e., to *V*1 (upwards) and *V*5 (left)(when observer is against the body), the geometric center $(p.O)$ will shift to the new place or to the gravity center $(p.F)$. The distance between the two centers (point *O* - point *F*) will be $(FL-)$. So the decelerating vortex (1) will thicken generally to the periphery (20) and the center will shift from geometric center $O(p.O)$ upwards and left to the gravity center $F\,(p.F)$. The power of eccentricity $(FL-)$ will be proportional to the distance from point $O\,(p.O)$ to point $F\,(p.F)$, i.e. : $(p.O - p.F)$ (Figure 1, Figure 2a).

3.2. Eccentricity of the accelerating element

By the same logic the center of the accelerating vortex (2) will be drawn to the higher speed: up and right (when observer is against the sketch) (Figure 3). Drawing to the center of the accelerating vortex (2) up and right $(FL+)$ is opposite to the shift of the center of the decelerating vortex (1), which is pulled up and left $(FL-)$ (when observer is against the sketch) (Figure3).

3.3. Mutual disposition of the accelerating and the decelerating eccentric vortex objects

(a) Eccentricity

The accelerating element (2) is much denser to the center, than the decelerating (1) is much denser to periphery. So the accelerating element (2) has a lack of space in center (Figure 1), then the shift of the center of the accelerating element $(FL+)$ is much less than a shift of the center of the decelerating element $(FL-)$ (Figure 3). Therefore, the shift $(FL-)$ from the center of the decelerating vortex from point $\mathrm{O}(p.0)$ up and left to point $F\,(p.F)$ will be much greater in absolute value than the shift $(FL+)$ from the center of the accelerating vortex from point $O\,(p.O)$ up and right to point $F\,(p.F)$: $|FL-| > |FL+|$.

This means that when $(FL-)$ and $(FL+)$ decompose horizontally and vertically: the horizontal $(F1-)$ and vertical vector $(F2-)$ of the shift $(FL-)$ of the decelerating element (1) will also be larger than the horizontal $(F1+)$ and vertical vector $(F2+)$ of the shift $(FL+)$ of the accelerating element. (2) (Figure 3), i.e.: $|F1-| > |F1+|$; $|F2-| > |F2+|$.

Conclusion 13. The decelerating element (1) has a greater shifted center, greater eccentricity and greater force of eccentricity $(FL-)$. This force $(FL-)$ is directed from the gravity point $(p.F)$ to the point of the geometric center $(p.O)$ and is decompose into two perpendicular to each other components: the first one $(F1-)$ is aimed at the accelerating element (2) and the second one $(F2-)$ is perpendicular and (in a plan of view from the top downwards) it is situated on the right of the first (Figure 3).

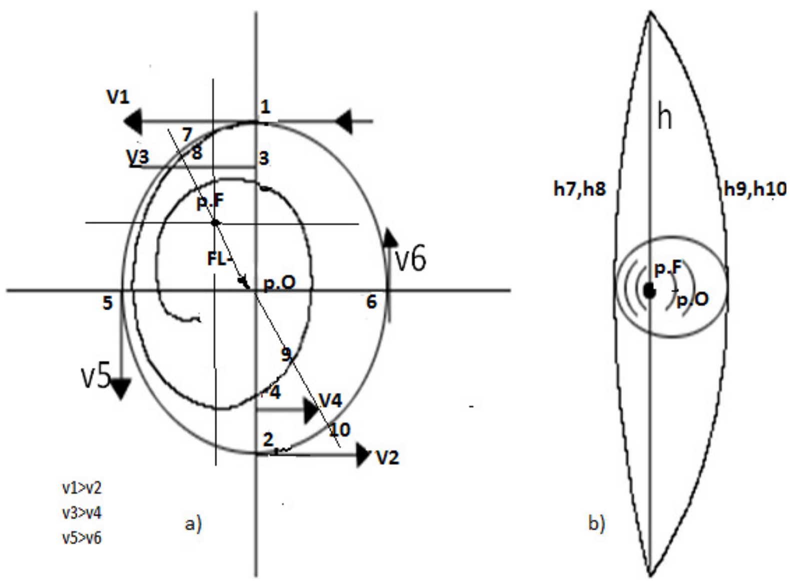

Figure 2.

Conclusion 14. The accelerating element (2) has a less shifted center, less eccentricity and a smaller force of eccentricity $(FL+)$. This force $(FL+)$ is directed from the point of eccentricity $(p.F)$ to the point of the geometric center $(p.O)$ and is decomposed into two perpendicular to each other components: the first one $(F1+)$ is directed to the decelerating element (1) and the second one $(F2+)$ is perpendicular and (in a plan of view from the top downwards) it is situated on the left of the first (Figure 3).

(b) Distance (L)

The power of eccentricity (FL) is decomposed into two components: ($F1$) and ($F2$). Thus, we obtain that $(F1-)$ of the decelerating element (1) is in the opposite direction $(F1+)$ of the accelerating element (2) and is larger in absolute value, as we show in paragraph 3.3.a), i.e.: $|F1-| > |F1+|$.

Since $(F1-)$ and $(F1+)$ are in opposite directions and face each other, they precisely determine the distance between the accelerating (2) and the decelerating (1) vortex (Figure 3).

Conclusion 15. The distance between the two vortex elements (L) is proportional to the sum of absolute value each of the two forces $(F2-)$ and $(F2+)$ with which they push one another away (Figure 3): $|F1-| + |F1+|$.

(c) Speed ($V0$)

On the other hand the force $(F2-)$ of the decelerating element (1) and the force $(F2+)$ of the accelerating element (2) is one-way, but also $(F2-)$ is greater than $(F2+)$ in absolute value as we show in paragraph 3.3.a: $|F2-| > |F2+|$.

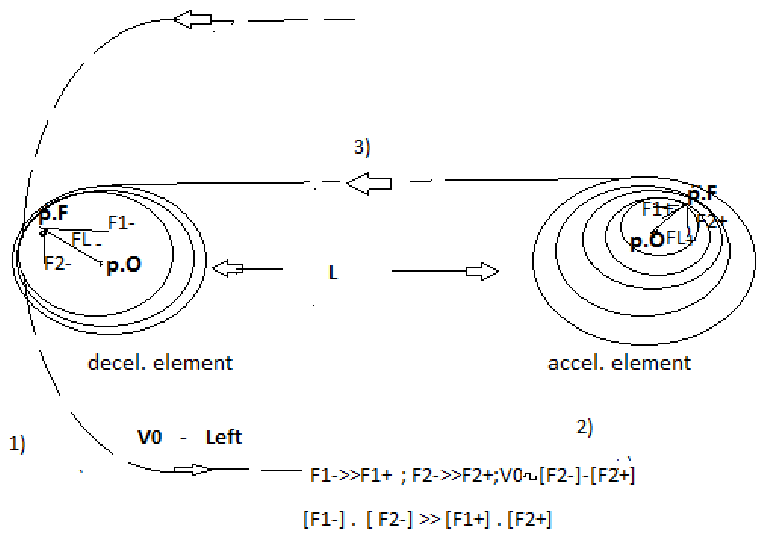

Figure 3.

This is the cause, the decelerating element (1) to turn at a certain speed ($V0$) around the accelerating element (1) (Figure 3).

Conclusion 16. The speed of movement ($V0$) of the decelerating element (1) around the accelerating element (2) is proportional to the difference of absolute value of the two forces $(F2-)$ and $(F2+)$ (Figure 3): $|F2-|-|F2+|$.

(d) Pulsing in the time

Paragraph 2.5 shows that the decelerating element (1) does not rotate in a circle, but in an ellipse around the accelerating element (2) due to pulsation of the whole system over time. The generating longitudinal vortex (8) should do two periods (two contractions and two extensions) so that the decelerating object (1) makes one turn in an ellipse around the accelerating object (1) (Figure 1).

Conclusion 17. The decelerating element (1) describes a full ellipse around the accelerating element (2) for two periods of the generating vortex (8) (Figure 1).

4. The Open Vortices Rotate in a Parasitic way around their own Axes, too

4.1. Parasitic rotation of the decelerating element around its axis by secondary vortices

(a) The secondary vortices

From the paragraph 2.3.a we realize that he secondary vortices (3) are resulted by the main vortices (1, 2), and they (3) have the same shape and dynamics as the main vortices (1, 2) but in the smaller scale. For example: The main accelerating vortex (2) has accelerating secondary vortices (3) and the main decelerating vortex (1) has decelerating secondary vortices (3) (Figure 4).

(b) Directions

Inside the decelerating element (1) there is a large number ($n1$) of powerful in amplitude ($W1$) secondary vortices (3) (Figure 4) which are closed inside and can not be emitted outside into the surrounding area in the form of free elementary vortices (5) and to be involved in the feed back (4) (Figure 1). These secondary vortices (3) with amplitudes ($W1$) are curved to the left (3) and rotate the decelerating element (1) to the left (4) with velocity ($w1$) (Figure 4), which coincides with the main direction of generating the decelerating vortex (1) – to the left (3) (Figure 1).The direction “left” is at relation to observer standing against the sketch (Figure 4).

Conclusion 18. The direction of the rotation of the decelerating element (1) around its axis is to the left (4) and the magnitude of the speed ($w1$)) of the parasitic rotation is proportional to the product of the number ($n1$) and the amplitude ($W1$) of the secondary vortices (3) (Figure 4).

4.2. Parasitic rotation of the accelerating element around its axis by secondary vortices

Inside the accelerating element (2) (Figure 4) there are also secondary vortices (3), though much fewer in number ($n2$) and with a much smaller amplitude ($W2$), which are closed and can not be involved in the feed-back (4) (Figure 1). These secondary vortices (3) with amplitudes ($W2$) are curved to the right (3) and rotate the accelerating element (2) at a speed ($w2$) to the

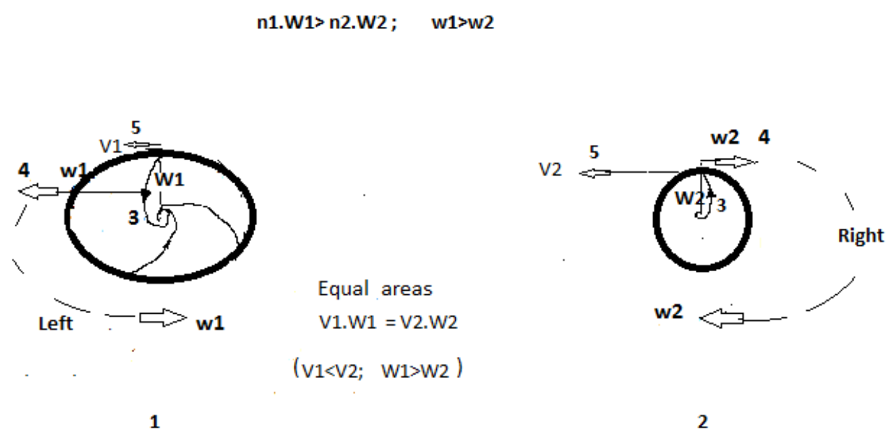

Figure 4.

right (4) (Figure 4), although the main direction of generating the accelerating vortex (2) is to the left (3) (Figure 1), the direction "right" is at relation to observer standing against the sketch (Figure 4).

Conclusion 19. The direction of the rotation of the accelerating element around its axis (2) is to the right (4) and the magnitude of the speed ($w2$) of the parasitic rotation is proportional to the product of number ($n2$) and the amplitude ($W2$) of the secondary vortices (3) (Figure 4).

4.3. Difference in the speed of rotation around the axis of the decelerating and the accelerating elements

Inside the decelerating element (1), the number ($n1$) and the amplitude ($W1$) of the secondary vortices (3) are much larger than the number ($n2$) and the amplitude ($W2$) of the secondary vortices (3) of the accelerating element (2) (Figure 4), i.e.: $n1 > n2$; $W1 > W2$, or: $n1.W1 > n2.W2$.

Conclusion 20. Since the speed around the axis ($w1$) of the decelerating element (1) is proportional to the product $(n1.W1)$, and the speed around the axis ($w2$) of the accelerating element (2) is proportional to the product $(n2.W2)$, and $n1 > n2$ and $W1 > W2$, then the decelerating element rotates much faster than the accelerating one, i.e., $w1 > w2$

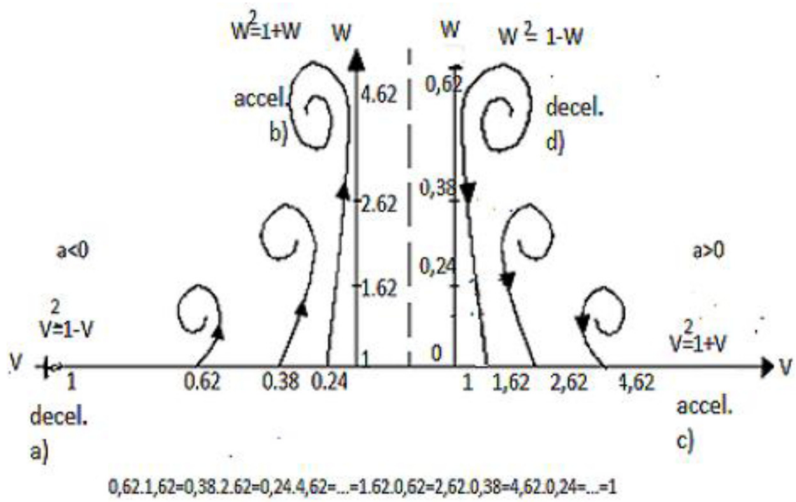

Figure 5.

5. The Law of Conservation in 2D

(a) For a homogeneous movement

As it is well known, the Law of Conservation is described as a vector sum of the kinetic (Ek) and the potential (Ep) energies as different manifestations of the same movement [4]:

$$E_K + E_p = \text{const.}$$

(b) For a complex linear- vortex movement

The Law of Conservation must be a scalar product of the energy (*Ev*) of the linear movement (5) and the energy (*Ew*) of the vortex movement (3). The angle between the two movements is taken to facilitate, it is equal to $\pi / 2$ $(\cos(\pi / 2) = 1)$ (Figure 4). The extended law of Conservation will have the following g form:

$$Ev.\, Ew = \text{const.}$$

Each of these energies (*Ev* and *Ew*) is the sum of a kinetic and a potential ingredient. The kinetic component of the energy (*Ev*) is proportional to the amplitude of linear movement (V), and the kinetic component of the energy (Ew) is proportional to the amplitude of the vortex movement (W).

(c) For a more simplified modification

Let us ignore the potential ingredients of the linear (5) and the vortex (3) movements. For the energy of the linear movement (Ev), the potential ingredient is equal to the diameter of the longitudinal vortex (5) and it is negligible. For the energy of the vortex movement (Ew), the potential ingredient is equal to the diameter of the transverse vortex (3) which is not negligible. However, within the diameter precision of the transverse vortex (3) the more simplified modification of the extended Law of Conservation can be used (Figure 4):

$$V.W = \text{const.}$$

(d) For an uneven movement

For a decelerating movement the famous equation for internal division of a segment into two parts in a consistent rate is applied: $x^2 = 1 - x.$ The roots α of the equation represent proportions and they are: $\alpha^n = \alpha^{n-2} - \alpha^{n-1}.$ The first root is $\alpha = 0{,}62$ and is known as a proportion of the "golden section", where $n \geq 1$ [6]

For an accelerating movement an equation for an external division of a section into two parts in constant proportion must be introduced: $y^2 = 1 + y.$ The roots β of this equation are also periodic and they are: $\beta^n = \beta^{n-2} - \beta^{n-1}.$ The first root is the proportion $\beta = 1{,}62$ where $n \geq 1.$

(e) For a decelerating linear -vortex movement

The decelerating linear -vortex movement (Figure 5a, b) with a decelerating speed (V) of the linear component in x and the accelerating speed (W) of the vortex component in y, will be described as a system of two equations in x, y. The first equation in x is for an internal division of a segment in constant proportion and the second equation in y is for an external division of a segment in constant proportion. To facilitate we adopt the initial values of x and y as equal to one. The system has roots (α) and (β), which are connected in the following way: $(\alpha^n).(\beta^n) = 1,$ where

$n \geq 1.$ [2; p. 151-154].

$$\begin{vmatrix} x^2 = 1 - x, \\ y^2 = 1 + y. \end{vmatrix}$$

By substituting the speed in x with V and the speed in y with W (at initial speeds of V and W, equal to one) we will receive the system:

$$\begin{vmatrix} V^2 = 1 - V \\ W^2 = 1 + W. \end{vmatrix}$$

The system has roots (v) and (w), which are connected in the same way, namely: $(v^n).(w^n) = 1,$ where $n \geq 1.$

(f) For an accelerating linear -vortex movement

The accelerating linear vortex movement (Figure 5c, d) with accelerating speed (V) of the linear component in x and a decelerating speed (W) of the vortex component in y will describe a system of two equations in x, y.

The first equation in x is for an external division of a segment in constant proportion and the second equation in y is for an internal division of a segment in constant proportion, where the initial values in x and y are also accepted equal to one. The system has roots (α) and (β), which are connected in the following way: $(\alpha^n).(\beta^n) = 1,$ where $n \geq 1$ [2, p. 159].

$$\begin{vmatrix} x^2 = 1 + x, \\ y^2 = 1 - y. \end{vmatrix}$$

By substituting the speed in x with V and the speed in y with W (at initial speeds of V and W, equal to one) we will receive:

$$\begin{vmatrix} V^2 = 1 + V, \\ W^2 = 1 - W. \end{vmatrix}$$

The system has roots (v) and (w), which are connected as in the previous case: $(v^n).(w^n) = 1,$ where $n \geq 1.$

Conclusion 21. Since the product of the linear (V) and the vortex (W) speeds is accepted (in paragraph 5c) for constant ($V.W$ = const.), then the product of the roots (vn) and (wn) of the corresponding equations is accepted for one: $(vn).(wn) = 1$ (if the initial values of V and W are one) (Figure 4, Figure 5).

The accelerating element (2) is completely transformed into a decelerating element (1). That is why the internal energy ($V.W$) of the two elements is kept within the accuracy of the energy of the longitudinal vortex (3) of the relationship (V / W) between them: $V2.W2 = V1.W1.$ Only the correlation between the linear (V) and the vortex (W) components are modified. For example: The linear velocity ($V2$) of the accelerating element (2) increases and the vortex speed ($W2$) reduces, so that the value of the product $(V2.W2)$ (the surface) remains the same. After the transformation {from (2) to (1)} the linear speed ($V1$) of the decelerating element (1) decreases, the vortex velocity ($W1$) increases, so that the value of the product $(V1.W1)$ (the surface) remains the same and equal to the previous value $(V2.W2)$ (Figure 4).Later on we will see that in $3D$ the internal energy is conserved in a volume.

Conclusion 22. In $2D$ the internal energy $(V2.W2)$ of the accelerating (2) element is transformed into internal energy $(V1.W1)$ of the decelerating element (1) within the accuracy of the power of the longitudinal vortex (3) of the relationship between them: $V2.W2 = V1.W1,$ (Figure 1, Figure 4).

6. General Conclusions

6.1.

The unique internal structure of the accelerating and the decelerating elements and their regime of work, are the reason for their properties. For example:

-- The acceleration (the same at the output of the accelerating element and at the input of the decelerating element) is the reason for “the charge” of the two elements.

The decelerating element emits while the accelerating element sucks the elementary vortices, which fill the space (vacuum) between the elements and form a feed-back between them. The acceleration is the reason why the accelerating element has the form of a solid thick sphere and the deceleration - the decelerating element has the form of an empty light ring (thoroid).

-- The eccentricity of the two elements and the fact that the eccentricity of the decelerating element is greater than the eccentricity of the accelerating element is the reason why the decelerating element turns around the accelerating element.

-- The pulse in time of the two elements and the connection between them is the reason why the decelerating element rotates in an ellipse (not a circle) around the accelerating element. The decelerating element makes one complete revolution in an ellipse around the accelerating element for two periods of the generating vortex of the accelerating element.

-- The secondary internal open vortices cause the both elements to rotate around their axes. The fact that the vortices of the decelerating element are more in number and they have a greater amplitude than the vortices of the accelerating element is the cause the decelerating element to rotate faster around its axis than the accelerating element. The secondary internal transverse vortices of the decelerating element are curved to the left (from the periphery to the center), and those of the accelerating element are curved to the right (from the center to the periphery), so that they rotate the decelerating element respectively to the left and the accelerating element- to the right (Left- right directions are in relation to observer standing against the sketch on the paper).

-- Visibility and invisibility: The open transverse vortices of both elements are visible and the open longitudinal vortex of the connection between them is invisible. That is why, so far the two elements were adopted one by one, without a connection between them, not as a united, synergistic and sustainable system. Except that the longitudinal vortex of the main connection is invisible (invisible energy), the elementary vortices from the feed-back are also invisible (invisible matter).

6.2. Prototypes of gravitational elements

Given an account exhibited properties of gravity elements we should note the following:

- Prototype of gravity acceleration element is the proton $(p+)$.

- Prototype of gravity decelerating element is the electron $(e-)$.

References

[1] L. D. Landau and E. M. Lifshitz, Theory of fields, M., Science, 1988.

[2] V. Markova, The other axioms (first part), Sofia, Nautilus, 2003.

[3] V. Markova, New axioms and structures, Fundamental J. Modern Physics 8(1) (2015), 15-24.

[4] S. Ivanov, Fundamental of Theoretical and Quantum Mechanics, Sofia, Sof. Univ.," Sv. Kl. Ohridski, 1998.

[5] V. Markova, The other axioms (second part), Sofia, Nautilus, 2005.

[6] A. P. Stahov, Codes of Golden proportions, M., Radio I Sviaz, 1984.