Review Article

About the Phenomenon of Free Energy, Described by the New Axioms and Laws

Valentina Markova

Bulgarian Academy of Sciences, Sofia, Bulgaria

*Corresponding author
Dr. Valentina Markova, Bulgarian Academy of Sciences, Sofia, Bulgaria;
E-mail: i.b.r.dr_vm@mail.com

Abstract

I decided to follow the advice of the great Einstein and to try changing the way of thinking. The article describes brand new field type through new axioms and laws. The present study uses Expanded Field Theory. It changes the Classic Field Theory to a much more general theory that consists of two new axioms and eight laws. It was described from previous works of the same author. In this report is used only one (first) axiom and six laws. It is known that Maxwell's laws (1864) are based on a single axiom [1]. It states that the movement in a closed loop leads to evenly movement (with constant speed) of a vector E: div rot E= 0. The author change this axiom with a new one, according which the movement in an open loop or vortex leads to unevenly movement (with variable speed) of a vector E: div rot E ≠ 0, div Vor E ≠ 0 for vortex [2]. The subsequent results are: the evenly movement is replaced with unevenly movement which can be decelerating or accelerating; in 2D there is a cross vortex and in 3D there is a longitudinal vortex; the cross vortex in 2D is transformed to a longitudinal vortex in 3D through a transformation Δ1; the longitudinal vortex in 3D is transformed to a cross vortex in 2D through another special transformation Δ2; decelerating vortex emits free cross vortices to the environment that are called "free energy"; accelerating vortex sucks the same ones free cross vortices and so on.

Cross vortices are visible to an external observer because they reflect the sun's rays but longitudinal vortices are invisible because they diffract (do not reflect) sun's rays. The vector E is not a simple .It turns to be a complex vector: E= A+iV, E=V+ iA or E= -A-iV, E= -V- iA. It can has or amplitude A, or velocity V as a real part. Cross vortices can form two kinds' vortices: a vortex that is generated by amplitude A and the vortex that is generated by velocity V. Each of these may be accelerating or decelerating and both of them are generators. They are prototypes of material particles.

Due to the suction of cross vortices by the accelerating vortex the temperature decreases and due to the emitting of cross vortices by the decelerating field the temperature increases. Inside of the conductor the velocity of Electromagnetic field is constant (v max=c). On the periphery it decelerates because of resistance to the wall of conductor .So an increase in the size of voltage leads only to an increase in the size of current but not to an increase in the velocity.

This report offers a new type of field - accelerating field .It suck in free cross vortices that are called "free energy" from environment. The mechanism of Positive Feedback turns acceleration process to a generation process.

Introduction

The Classic Axiom

The Classic Axiom in the Theory of the Electromagnetic Field certifies **Maxwell's laws (1864)**. It postulates that the movement of an electric vector E in a closed loop is evenly:

$$\text{div (rot E)} = 0, \qquad 1$$

where (rot E) is the movement of the vector E in a closed loop; div (rot E) is the divergence (the variation in increase or decrease is zero) of the vector E during its movement in a closed loop (rot E); the movement of the vector E in a closed loop (rot E) with zero divergence (variation) of the vector E is equivalent to evenly movement or to movement with constant velocity (V) [1].

The defect of the classic axiom (1) is that it does not describe movement in an open loop or a vortex and movement with a non-constant or variable velocity V. Now is the time to break the restriction of Maxuell's axiom (1) and to expand the space of theory.

The New Axiom

Axiom 1

For the purpose of describing a larger range of movements, it is obviously necessary to expand the base of service theory. This means that such an axiom must be used which can certify wider set of movements.

The main motivation for altering the classic axiom (1) follows after the need to describe the causative relationships in uneven movements

in open systems. It turns out that open vortices are the cause of closed vortices, which means that open vortices are more fundamental than closed ones [2]. So it is the necessity to change the existing axiom of the Classic Field Theory for close loop to axioms of Expanded Field Theory for open loops [2].

In order to expand the concepts, the notion (1) of movement of vector E in a closed loop (div (rot E) = 0) in 2D (Figure 1a) is replaced by the notion (2) of movement in an open loop (div (rot E) $\neq$ 0 in 2D (Figure 1b).
So the new axiom describes an open loop movement:

$$\text{div (rot E)} \neq 0. \qquad\qquad 2.$$

For motion of vector E (rot E) along open loop with monotone-decreasingormonotone-increasing velocity is equivalent to vortex (Vor E)

Axiom 1. The motion of vector with monotone-decreasin gormonotone-increasing velocity becomes along an open vortices: div (VotE) $\neq$ 0 for vector E in 2 Dor div (VotH) $\neq$ 0 for vector Hin 3D.

Therefore: div(rot E) $\neq$ 0, or div (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), in which:

div (Vor E)> 0 or div (Vor E) <0 in 2D,   **2a.**
div (Vor H)> 0 or div (Vor H) <0 for 3D.   **2b.**

We immediately received 4 types of movements – cross (2a), which can be accelerated or decelerating and longitudinal (2b), which can also be accelerated or decelerating [2].

Consequence (of variation of moving)
The main result of Axiom 1 is that there have been 4 types of vortices: a cross vortex in 2D (E_{2D}) that can be accelerated (E_{2D} +) or decelerated (E_{2D} -) and a longitudinal vortex in 3D (H_{3D}) that can also be accelerated (H_{3D} +) or decelerated (H_{3D} -) ,(Figure1c, d) [3] .

Consequence (vortex turns to a dipole)
We are accustomed to the wrong image of a spiral with a constant distance between the turns. But it is "unreal" spiral (Figure 1, b) because if it is a spiral, it must be accelerated. If there is no acceleration, then it is not a spiral.

The reason is in the acceleration of velocity. For example, in" real" decelerating vortex E1> E3 and the Geometric Center will aim to move to the larger vector E1 (up). In the same vortex E2> E4 and at the same time the Geometric Center will aim to move to the larger vector E2 (to the left). Therefore, the Geometric Center will move to a second quadrant or to the Gravity Center (Figure 1b) [3].

Consequence (of visual perception)
It is known that light is spreading crosswise.
- Therefore, the cross vortex will reflect the light rays, and an external observer will receive the image of the crossvortex) (Figure1c) [4].
- But the thread of the longitudinal vortex does not reflect the light. The light crosses the thread of longitudinal vortex,

surrounds the thread, and continues its path without reflecting the longitudinal vortex. So it forms diffraction. Therefore, the longitudinal vortex is invisible to an external observer) (Figure1d) [4].
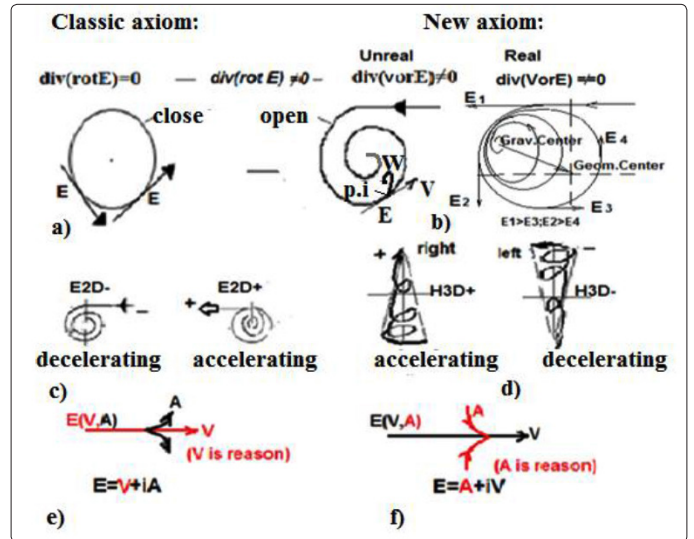

Figure 1: The classical axiom is replaced by a new axiom

Consequence (of complex vector)
The vector E is not a simple but it is a complex vector. It can contain the velocity (V) of the real (reason) flow and the amplitude (A) of the imaginary (result) cross vortices (Figure1e). But it can contain the amplitude (A) of the real (reason) cross vortices and velocity (V) of the imaginary (result) flow (Figure1f) [4].

Consequence (a pair of active generators forms resonance system.)
Because of one object pushes (Figure 2b), the other- pulls (Figure 2a), the both of them are active generators or they form a pair of active generators in complementary mode (Figure1, c) [5].

Consequence (a resonance system)
The pair of complementary objects forms a resonance system [5].

Consequence (active generators)
In the pair of complementary objects, the both of them are active generators.

For comparison in the Electromagnetic Field, the electrical circuit contains one generator element and one or several passive consumers that only transform energy from one view (kinetic) to the other view (potential), but not generate it [5].

Laws of Transformation (transformations Δ1, Δ2)
Laws of the transformation of a cross vortex (E_{2D}) into a longitudinal vortex (H_{3D}).
At every (i) point p(i) of a decelerating cross vortex E there are two simultaneous movements: velocity vector (-V) and amplitude of the cross vortex(-W) (Figure 1b). The two simultaneous movements (V and W) also exist at all points of the vortex. The cross vortex (E_{2D}-) is transformed into a longitudinal vortex (H_{3D}+). This is accomplished through a specific operator (Δ1) for cross-longitudinal transformation (Figure 2c).

The cross (E_{2D}) and the longitudinal (H_{3D}) vortex are not an original and an image by analogy with the well-known transformations of Laplace or Fourier. They are representatives of spaces with qualitatively different structures. Therefore the introduced operator ($\Delta1$) connects the original in one type (cross) of space with its image in another type (longitudinal) of space, i.e. the transformation $\Delta1$ connects two spaces with different qualities.

Law 1: The open cross vortex (E_{2D}) generates (inward or outward) an open longitudinal vortex (H_{3D}) in its center through a cross-longitudinal transformation $\Delta1$:

$$\Delta1$$
$$Vor\ (E_{2D}) => -- Vor\ (H_{3D}),$$

Where Vor (means an unevenly vortex) replaces rot (means a closed loop).

Consequence: The cross vortex in 2D (E_{2D}) continues its development in 3D as a longitudinal vortex (H_{3D}) (Figure2c).

Maxwell's law states that rotor of vector E generates in center vector H: rot E = H [1].
The present Law1 postulates that the cross vortex Vor (E_{2D}) of E in 2D generates a longitudinal vortex Vor (H_{3D}) of H in 3D. The sign (-) for Vor (H_{3D}) 3D means that E_{2D} and H_{3D} have opposite dynamics. For example when div (Vor E2D) < 0 (is decelerated), div (Vor H_{3D}) > 0 (is accelerated).

Definition: A decelerating cross vortex (E_{2D}-) is a cross open vortex (E_{2D}) for which div (Vor E_{2D}) < 0.
Figure 2c shows a decelerating cross vortex (E_{2D}-) inward.

Definition: A decelerating longitudinal vortex (H_{3D}-) is a longitudinal open vortex (H_{3D}) for which div (Vor H_{3D}) < 0.
Figure 2d shows a decelerating longitudinal vortex (H_{3D}-) inward.

Definition: An accelerating cross vortex (E_{2D}+) is a cross open vortex (E_{2D}) for which div (Vor E_{2D}) > 0.
Figure 2b, d shows an accelerating cross vortex (E_{2D}+) outward.

Definition: An accelerating longitudinal vortex (H_{3D}+) is a longitudinal open vortex (H_{3D}) for which div (Vor H_{3D}) > 0.

Figure 2c shows an accelerating longitudinal vortex (H_{3D}+) outward.
The present paper describes only the chain of matter: the push-pull chain (Figure 2d - Figure 2c) or inverse pull-push chain (Figure 2f - Figure 2e). The decelerating cross vortex (E_{2D}-) inward generates an accelerating longitudinal vortex (H_{3D}+) outward in its center through a physical transformation ($\Delta1$-) (Figure 2c).

This transformation ($\Delta1$-) is achieved through a phenomenon called Full resonance (resonance in amplitude, frequency and phase).This type of resonance will be described in detail in further developments and reports.

The present paper describes only the chain of matter: the push-pull chain (Figure 2d - Figure 2c) or inverse pull-push chain (Figure 2f - Figure 2e). The decelerating cross vortex (E_{2D}-) inward generates an accelerating longitudinal vortex (H_{3D}+) outward in its center through a physical transformation ($\Delta1$-) (Figure 2c).

This transformation ($\Delta1$-) is achieved through a phenomenon called Full resonance (resonance in amplitude, frequency and phase).This type of resonance will be described in detail in further developments and reports.
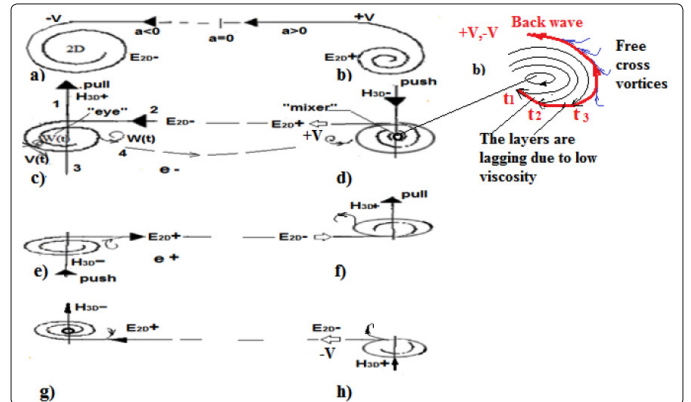

Figure 2: Two Transformation Laws. Options in two complementary complex objects

Consequence: The open decelerating cross vortex (E_{2D} -) generates inward an open accelerating longitudinal vortex (H_{3D} +) outward. This action takes place from the center of decelerating cross vortex (E_{2D}-) through a particular cross-longitudinal transformation $\Delta1$-:

$$\Delta1-$$
$$Vor\ (E_{2D}\ -) => Vor\ (H_{3D}\ +).$$

Figure 2c shows this transformation in 3D.
The Consequence of Law1 corresponds only to the pulling apart from inside center (Figure 2c) of the cross vortex pair of objects in 2D (Figure 2c - Figure 2d).

Actually it describes in 2D the model of electron as the decelerating inward vortex (dec (e-)) (Figure2c) in the chain of proton-electron (Figure 2d - Figure 2c). Every electron (dec (e-)) of this type pulsates in 3D in two modes of: "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

If Law1 generates in 3D a simple and single longitudinal vortex, it would describe the Expanded Maxuell'law for Electromagnetic Field: (Vor E) $_{2D}$= k (.Vor H) $_{3D}$.

If Law1 generates in 3D a pipe - wrapped vortices from longitudinal vortices inserted into each other , it describes another field with properties inverse to the Electromagnetic Field Actually it describes the Gravity Field as a Gravity Funnel. Gravity funnel is generated in 3D tube of longitudinal vortices as a longitudinal energy in pulling part outward (Figure 2c) of the pair of complementary objects (Figure2c – Figure2d) [7, 8].

Consequence: The open accelerating cross vortex (E_{2D}+) generates inward an open decelerating longitudinal vortex (H_{3D} -) outward. This action takes place from the center of accelerating cross vortex (E_{2D}+) through a particular cross-longitudinal transformation $\Delta1$+:

$$\Delta1+$$
$$Vor\ (E_{2D}\ +) => Vor\ (H_{3D}-).$$

The Consequence of Law1 describes in 2D the model of electron (e-) as the accelerating inward vortex(acc(e-)) (Figure 2c) in the chain of proton-electron (Figure 2d - Figure 2c) .Every electron (e-) of this type pulsates in 3D in two modes of : "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

Consequence: The existence of the electron (e-) is associated with the emission of free cross vortices in the surrounding space.

Consequence: The Consequence of Law1 describe decelerating (dec (e-)) or accelerating (acc (e-)) cross vortex to inward as two models of electrons (e-).

Consequence: We immediately obtain the models of 4 types of electrons (e-): (dec (e-)) and (acc (e-)) electrons, which each of them pulsates in two modes: "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

Consequence: It exists another two consequences (not described in the article), but they describe decelerating or accelerating cross vortices to outward. This is the 2 type of positrons: (dec (e+)) and (acc (e+)) positrons.

Consequence: We immediately obtain the models of 4 types of positrons: (dec (e+)) and (acc (e+)) that each of them pulsates in two modes: "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

Laws of the transformation of a longitudinal vortex (H_{3D}) into a cross vortex (E_{2D}).
For the opposite transformation a new operator $\Delta 2$ is introduced to transform a longitudinal (H_{3D}) into a cross (E_{2D}) vortex. The physical nature of this $\Delta 2$ transformation is quite different in comparison with $\Delta 1$.

The transformations $\Delta 1$ and $\Delta 2$ are orthogonal, rather than symmetrical to each other.

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

$$\Delta 2$$
$$\text{Vor (H3D)} => -- \text{Vor (E2D)}$$

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

$$\Delta 2-$$
$$\text{Vor (H}_{3D}\text{ -)} => \text{Vor (E}_{2D}\text{+).}$$

Consequence: It is described in 2D the model of proton (p+) as the accelerating outward vortex (acc (p+)) (Figure 2d) in the chain of proton-electron (Figure 2d - Figure 2c). Every proton acc (p+)) of this type pulsates in 3D in two modes of: "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

Consequence: A necessary condition for generating of elementary particle acc (p+) is the presence of free cross vortices called "free energy", and a sufficient condition is the longitudinal vortex to work (from out to in) as a mixer(Figure 2b).

The Consequence of Law2 in 3D refers to the pushing part (Figure 2d) of the pair of complementary objects (Figure 2c – Figure 2d).The transformation $\Delta 2$- emphasizes that the movement of the longitudinal vortex (H_{3D}) inward is the cause, but the movement of the cross vortex(E_{2D}) outward is the result (Figure 2d).

When the Consequence of Law 2 are generated by the pipe - wrapped longitudinal vortices, it describes Gravity field .It has the inverse properties to the Electromagnetic Field. This Gravity field exists as a tube from inserted one in another the longitudinal vortices .It forms a Gravity funnel which have a pushing and a pulling ends. In this case the down end of Gravity Funnel (H_{3D}-) has pushing effect because the pushing end of Gravity funnel is attached to the pushing part (Figure 2d) of the pair of objects (Figure 2c – Figure 2d) This end decelerates in 3D direction and generates in 2D plane (perpendicular to 3D) cross vortex from inside to outside as a matter.

Consequence: The open accelerating longitudinal vortex (H_{3D}+) inward generates an open decelerating cross vortex (E_{2D}-) outward in its center through a special longitudinal-cross transformation

$$\Delta 2+: \ \Delta 2+$$
$$\text{Vor (H}_{3D}\text{+)} => \text{Vor (E}_{2D}\text{-).}$$

Consequence: It is described in 2D the model of proton (p+) as the decelerating outward vortex dec (p+)) (Figure2h) in the chain of proton-electron (Figure 2h - Figure 2j). Every proton (dec (p+)) of this type pulsates in 3D in two modes of: "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

Consequence: A necessary condition for generating of elementary particle dec (p+) is the presence of free cross vortices called "free energy", and a sufficient condition is the longitudinal vortex to work (from out to in) as a mixer (Figure 2b).

Consequence: We immediately obtain the models of 4 types of proton: (dec (p+)) and (acc (p+)) that each of them pulsates in two modes: "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

Consequence: It exists another two consequences (not described in the article), but they describe decelerating or accelerating cross vortices to inward. This is the 2 models of antiprotons (dec (p-)) and (acc (p-)).

Consequence: We immediately obtain 4 types of anti proton: (dec (p)) and (acc (p-)) that each of them pulsates in two modes: "expanded cross vortex and a shortened longitudinal vortex" and "shrunken cross vortex and extended longitudinal vortex".

Consequence: The first type of electron (acc(e-)): when the electron is inside a proton-electron system (connected in the atom) has accelerating cross vortex (E_{2D}+) inward that generates a decelerating longitudinal vortex(H_{3D}-) upward.

Consequence: The second type of electron (dec (e-)): when the electron is free (outside of the atom) has decelerating cross vortex $(E_{2D}-)$ inward, which generates an accelerating longitudinal vortex upward $(H_{3D}+)$. When electron is free (second type (dec (e-)), the decelerating cross vortex $(E_{2D}-)$ is broken. But accelerating longitudinal vortex $(H_{3D}+)$ radiates a fast ingredient that connects to the decelerating longitudinal vortex $(H_{3D}-)$ at input of the proton.

Consequence: There is a significant difference in the states of a bound electron and a free electron. For example scientists measure the mass of a free electron with a decelerating cross vortex $(E_{2D}-)$ inward, and can't measure the mass of a connected electron with an accelerating cross vortex $(E_{2D}+)$ inward.

Conclusions

1. A necessary condition for generating of elementary particle (p+) is the presence of free cross vortices called "free energy", and a sufficient condition is the longitudinal vortex to work (from out to in) as a mixer.
2. The existence of the electron (e-) is associated with the emission of free cross vortices in the surrounding space.
3. If the Law 1 generates a simple and single longitudinal vortex, it would refer to the Electromagnetic field.
4. If the Law 1 generates a pipe - wrapped vortices from accelerating longitudinal vortices inserted into each other, it really generates accelerating Gravity Funnel.
5. If the Law 2 is generated by a pipe - wrapped vortices from decelerating longitudinal vortices inserted into each other, it refers to the decelerating Gravity Funnel.
6. The new extended meaning of the term" Complementarily" is when the two parts are generating and they act anti-phase - one push and the other pulls.
7. The two transformations Δ1 (Law1) and Δ2 (Law2) are not symmetrical but rather form pairs of objects that complement each other in their action .So they form a pairs of complementary objects or they are mutually orthogonal.
8. The two vortices in the described above vortex pairs (Figure 2c - Figure 2d) play the role of generators (!) - One push (Figure 2d), the other –pulls (Figure 2c). Obviously in described above chain (Figure 2c - Figure 2d) there is not the consumer. Therefore this chain has not energy losses.
• It is well known that in every Electromagnetic chain has generator and one or more consumers. That's why Electromagnetic chain has energy losses.
9. Both transformations, Δ1 (Law1) and Δ2 (Law2), are not regulated by external regulator or external parameters. Therefore the processes are regulated only by internal laws and are not determined by outside parameters.

Law of nonparametric movement of the vortex
Obviously the processes of acceleration and deceleration of the longitudinal vortex is a nonparametric process. Processes of accelerating and decelerating longitudinal vortices manifest both quantitative and qualitative changes [5].

This mechanism of amplification is known in cybernetics as Positive Feedback.

Law 3: Accelerating and decelerating of the main vortex is going by internal logic as a nonparametric process through Positive Feedback.

The Law 3 shows that velocity Vi increases by redistribution with cross vortices. There is also redistribution of mass. The mass of the cross vortices is added in portions (quanta) with acceleration to the initial mass of the longitudinal vortex with velocity Vi and thus accelerates it more and more (Figure 3a).

The accelerating longitudinal vortex sucks in more cross vortices from outside that accelerate further the longitudinal vortex with velocity Vi and so on. Thus the longitudinal vortex at output (Vi) increases its velocity and acceleration which returns at input .The reason is that it sucks in more cross vortices and increases of the acceleration and mass to the entrance (Figure 3a).

This process runs avalanche until it reaches a saturation level where the acceleration becomes maximum (a max) for a time slice (t0 -tn), (Figure 3b).
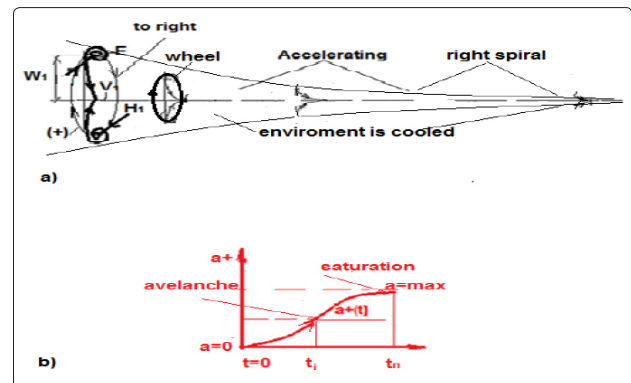

Figure 3: Positive Feedback

When, for example, an accelerating vortex sucks in with acceleration the cross vortex, then in start moment (t=0) its first derivative is minimum: a=0. However the accelerated absorption of the cross vortex increase and when in the end moment (t=tn) the positive acceleration of the cross vortex becomes maximum: amax>>0. The mass of this cross vortex is added to the longitudinal vortex accelerating it further (Figure 3b).

It is an example of the avalanche process. In the next cycle the accelerated longitudinal vortex again sucks in a portion (quantum) of the cross vortex and so on. Through Positive Feedback the level of saturation constantly increases, the time interval needed for saturation becomes longer, etc.

Positive Feedback turns the described above avalanche process from an amplifier to a generator process.

Consequence: The Positive Feedback in a longitudinal vortex turns the process of amplification to a process of generation. The Positive Feedback can be a base for constructing an energy generator.

Probably this generative effect of the Positive Feedback was used by Nikola Tesla in the construction of the electronic block for his electro mobile. The original engine worked in generator mode and needed a battery only at start up.

Law of theconstantPower of thevortex
Aswesawabovetherearetwoqualitativelydifferentmovementsateach (i) point p (i) of thedeceleratingvortex E: longitudinalvectorvelocity

(V) andcrossvortexwithamplitude (W) (Figure 1,b). The reason of thatisthevector E isnot a simplevectorbutitis a complexvector (Figure 1,e,g).

Accorting of Classic Mechanic, the simultaneous operation of two independent vectors is equal to the sum of these vectors. But accorting of Starting Axiom, simultaneous operation of two mutual dependent vectors is equal to the multiplication of the sevectors.
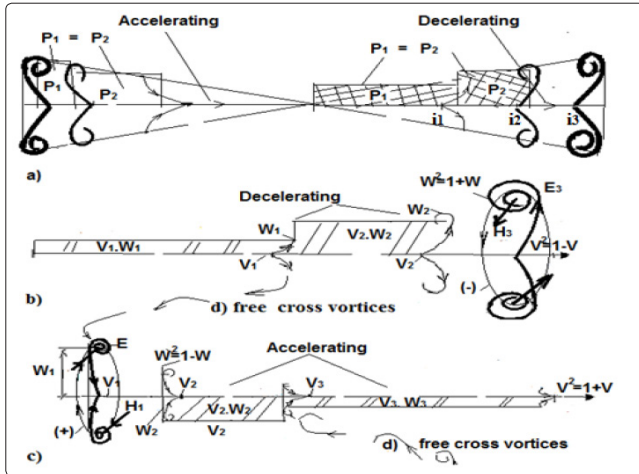

Figure 4: A System of accelerating and decelerating vortices

- According to Law 3, the transforming one vector (V) into a vortex (W) and vice versa is a non parametric process. Transformation is done by internal laws but not by outside setting.
- The non parametric transformation of two variables V (t) and W (t) is mathematically described by the product V (t) .W (t) of these variables.
- We have seen that at each (i) point of the vortex E there is simultaneously a vector velocity (V) in 1D and vortex pressure (W) in 2D (Figure1b, Figure 4a).
- In the case of the decelerating longitudinal vortex the velocity decreases (V-), while the amplitude of the cross vortices increases (W+) in such a way that their product (V-). (W+) remains constant all along the longitudinal vortex. The product (V-). (W+) is proportional to the power (P-) of the decelerating longitudinal vortex (Figure 4b).
- In the case of the accelerating longitudinal vortex the velocity increases (V+), while the amplitude of the cross vortices decreases (W-) in such a way that their product (V+). (W-) remains constant all along the longitudinal vortex. The product (V+). (W-) is proportional to the power (P+) of the accelerating longitudinal vortex (Figure 4c).

Law 4: For an uneven (accelerating or decelerating) vortex the product between current velocity (Vi) of longitudinal movement on one and the same current line and current amplitude (Wi) of its perpendicular cross vortices is a constant in every (i) step:

$$\textbf{(Vi). (Wi) = const.}$$

where i= 0 ÷ ∞ is current point from step to step.

Consequence: The product (Vi). (Wi) is proportional to the current power (Pi) of the uneven vortex in current (i) step (Figure 4a).

Consequence: The current power (Pi) of the uneven vortex is a constant in every (i) step (Figure 4a, b, c).

Consequence: At a decelerating vortex vector velocity (V) is transformed according to internal law into the amplitude of the cross vortex (W) (Figure 4b).

Consequence: At accelerating vortex vector velocity (V) is transformed according to internal law into the amplitude of the cross vortex (W) (Figure 4c).

Laws of the velocity of the longitudinal vortex (V) and the amplitude of the cross vortices (W)
We saw in the previous point (p.5) that at a decelerating vortex vector velocity (V) is transformed according to internal law into the amplitude of the cross vortex (W) (Figure 4a, b). More precisely-the reduction in speed (V) is transformed into an increase in the amplitude (W) of cross vortices.

Law of the decelerating longitudinal vortex
Law 5: The deceleration vortex in 2D is described with a system of 2 equations in which: longitudinal velocity (V) decreases in (n) portions (ψn) times; the amplitude (W) increases in (n) portions (ψ n) times:

$$\begin{aligned} &I\ V^2 = V0\ (1 - V), &&3.\\ &I\ W^2 = W0\ (1 + W), \end{aligned}$$

where vn ,wn n are periodic roots with period n; vn ,wn are mutual orthogonal that fulfill the requirement for orthogonality : $v_n \cdot w_n = V_0 \cdot w_0$, $v_n \cdot \omega_n = V_0 \cdot W_0$; n = 0 ÷ ∞; the roots vn , wn are expressed as: $v_n = (1/\psi^n) \cdot V_0$, $\omega_n = \psi^n \cdot W_0$; linear velocity V0 is the starting value of Vn , amplitude of cross vortex W0 is the starting value of ωn ,; ψ is a proportional that fulfills the requirement: **ψ-1/ ψ =1**.

Consequence: The deceleration vortex in **3D** is described with a system of 4 equations in which: longitudinal velocity (V) decreases in (n) portions (ψ^n) times; the angular velocity (w), the amplitude (W) and the number (N) of cross vortices increase in (n) portions (ψ^n) times:

$$\begin{aligned} &I\ V^2 = V0\ (1 - V), &&3a.\\ &I\ W^2 = W0\ (1 + W),\\ &I\ w^2 = w0\ (1 + w)\\ &I\ N^2 = N0\ (1 + N) \end{aligned}$$

where vn ,wn are periodic roots with period n; vn ,wn are **mutual orthogonal** that fulfill the requirement for orthogonality : $v_n \cdot w_n = V_0 \cdot w_0$, $vn \cdot \omega n = V_0 \cdot W_0$; n = 0 ÷ ∞; the roots v_n , w_n and ω_n and n_n are expressed as: $v_n = (1/\psi^n) \cdot V_0$, $\omega_n = \psi^n \cdot W_0$; $w_n = \psi^n \cdot W_0$, $[n_n] = \psi^n \cdot N_0$; linear velocity V_0 is the starting value of V_n, amplitude of cross vortex W_0 is the starting value of ω_n , angular velocity w_0 is starting value of w_n, **number N_0 is starting value of n_n, $[n_n]$ is the closest integer**; ψ is a proportional that fulfills the requirement: **ψ-1/ ψ =1**.

It is noteworthy that: When starting number N0 =1 the number nn is calculated with the row: 1;1.62; 2.62;4.25; 6.88, 11.15,;18.07; 29.28;47.43,...The closest integer [nn] form row::1,2,3,4,7,11,18,29,47,..For comparison, **Fibonacci's order** is: 0,1,1,2,3,5,8,13,18,21,34,… Obviously there is a similarity between the two rows at the beginning. But finally (after 18th) the number [n_n] **rises sharply** (29>21, 47>34…) compared to the **order of**

Fibonacci.

Consequence: A decelerating vortex ($E_{2D}-$) with a velocity vector (V) **emits** to the environment decelerating vortices with increasing amplitude (W) (**because of sign + in second equation of system 3,3a**).

The amplitude (W) increases **in perpendicular direction** to the velocity vector (V).
In decelerating longitudinal vortex, the amplitude (W) increases only if it is directed from the inside to the outside, ie. If the decelerating vortex emits outward cross vortices with increasing amplitude (W) (Figure 4b).

Consequence: The emitting of decelerating cross vortices to environment in perpendicular direction forms so called " quanta " and this process is called "quantum".

According to the Law1 and Rule of the Right Hand, the decelerating cross vortex (E) generates at the center to outside (to left) a longitudinal vortex (H).So at every n_i point forms left rotating wheel perpendicular to the velocity (V).

Therefore, the decelerating longitudinal vortex in 3D forms left rotating spiral (left- counter clockwise when observer watches against the movement) (Figure 4b).

Consequence: Decelerating longitudinal vortices rotate counterclockwise (-), watched against the movement (Figure 4b).

Consequence: Because of increasing of the amplitude (W) the angular velocity (w) and the number of cross vortices (N) it forms decelerating, thickening and expanding left rotating Funnel in which: W_{max}; w_{max}; N_{max}.

Consequence: Two or more decelerating longitudinal vortices repel each other .The reason is due to the emission of cross vortices from center to outside.

Law of the accelerating longitudinal vortex
Law 6: The acceleration vortex in 2D is described with a system of 2 equations in which: longitudinal velocity (V) increases in (n) portions (ψ^n) times; the amplitude (W) decreases in (n) portions (ψ^n) times:

$$I\ V^2 = V_0\ (1 + V), \qquad 4.$$
$$I\ W^2 = W_0\ (1 - W),$$

where vn ,wn are n periodic roots with period n; v_n ,w_n are **mutual orthogonal** that fulfill the requirement for orthogonality : $v_n.w_n = V_0.w_0$, $v_n.\omega_n = V_0.W_0$; $n = 0 \div \infty$; the roots vn , wn are expressed as: $vn = (\psi^n).V_0$, $\omega_n = (1/\psi^n).W_0$; linear velocity V_0 is the starting value of V_n , amplitude of cross vortex W_0 is the starting value of ω_n ,; ψ is a proportional that fulfills the requirement: $\psi-1/\ \psi =1$.

Consequence: The acceleration vortex in 3D is described with a system of 4 equations in which: longitudinal velocity (V) increases in (n) portions (ψ^n) times, the angular velocity (w) , the amplitude (W) and the number (N) of cross vortices decrease in (n) portions (ψ^n) times:

$$I\ V^2 = V0\ (1 + V), \qquad 4a.$$
$$I\ W^2 = W0\ (1 - W),$$
$$I\ w^2 = w0\ (1 + w)$$
$$I\ N^2 = N0\ (1 + N)$$

where v_n ,w_n n are periodic roots with period n; v_n ,w_n are **mutual orthogonal** that fulfill the requirement for orthogonality : $v_n.w_n = V_0.w_0$, $v_n.\omega_n = V_0.W_0$; $n = 0 \div \infty$; the roots v_n , w_n and ω_n and n_n are expressed as: $v_n = (\psi_n).V_0$, $\omega_n =(1/\psi^n).W_0$, $w_n =(1/\ \psi^n).W_0$, $n_n =(1/\psi^n).N_0$; linear velocity V_0 is the starting value of V_n, amplitude of cross vortex W_0 is the starting value of ω_n , angular velocity w_0 is starting value of w_n, **number N_0 is starting value of n_n**; ψ is a proportional that fulfills the requirement: $\psi-1/\ \psi =1$.

The first positive root of the first equation (of 3, 3a; 4, 4a) is: $v_1 = \psi.V_0 = 1, 62. V_0$. The periodic roots of the first equation (of 3, 3a; 4, 4a) are obtained from the expression: $v^n = V_0. (v^{n-1}+v^{n-2})$.

The first positive root of the second equation (of 3, 3a, 4, 4a) is: $w_1 = (1/\psi.)W_0 = 0, 62. W_0$. The periodic roots of the second equation (3,3a; 4, 4a) are obtained from the expression: $w^{n-2} = W_0. (W^n-w^{n-1})$.

Consequence: When velocity (V) increases, the amplitude (W) decreases so that at eachs tep (n_i) (according to Consequence of Law4) theproduct (Vi). (Wi) is a constant (Figure 4a). For an accelerating longitudinal vortex, the amplitude (W) decreases **only if** it is directed from the outside to inside, ie. If the accelerating vortex sucks in cross vortices with decreasing amplitude (W)(Figure 4c).

Consequence: An accelerating vortex ($E_{2D}+$) with a velocity vector (V) **sucks in** accelerating vortices with decreasing amplitude (W) in perpendicular direction (**because of sign-insecondequation of system 4a**).

Consequence: The sucking of accelerating cross vortices from environment in perpendicular direction forms so called " quanta " and this process is called "quantum".

According to the Law1 the accelerated cross vortex ($E_{2D}+$) generates (sucking) to its center a longitudinal vortex ($H_{3D}-$) from the outside to inside (to the right). At each point (i) a right rotating wheel is formed. The spiral vortex in 3D is formed as a right rotating spiral (Figure 4c).Therefore, the acceleration vortex will twist to the right – clockwise (+), viewed against the movement (Figure 4c).

Consequence: Accelerating longitudinal vortices wind clockwise (+), watched against the movement (Figure 4c).

Consequence: Because of the amplitude (W), angular velocity (w) and the number of cross vortices (N) decreases it forms accelerating, **stretching, narrowing, right rotating Funnel** in which: Wmin, wmin, Nmin (Figure 5c).

Consequence: Accelerating longitudinal vortices form a _tube_ like: the vortex is inserted at the center with the maximum lineal speed, the minimum number of coils and the minimum distance, the slower vortex is with more coils and a longer way along the spiral and the vortex at the periphery is winding with a minimum lineal speed, maximum number of coils and a maximum spiral path. Because of acceleration this tube (Figure 5a) turns to the so called Gravity Funnel (Figure 5e).
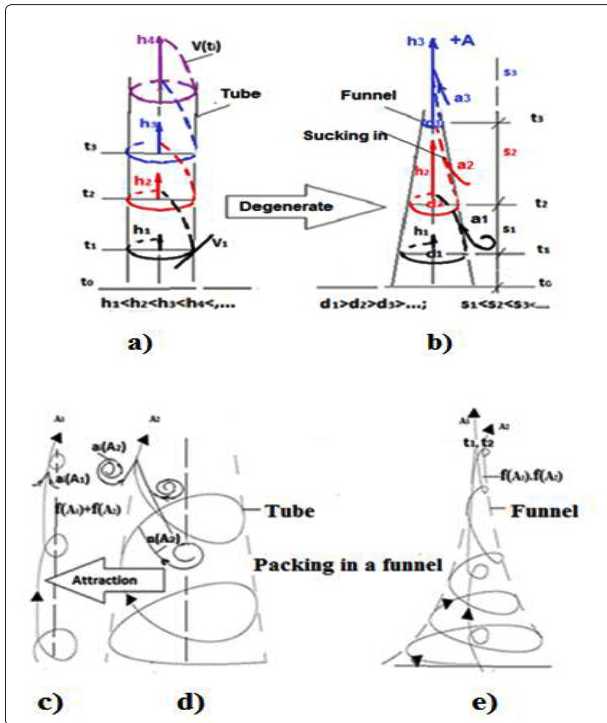
Figure 5

The faster vortex (Figure 5c) attracts the slower one. It **inserts into the slower** one (Figure 5d) and form a Gravity tube (Figure 5a).

Because of acceleration the Gravity tube (Figure 5a) turns to **a Gravity Funnel** (Figure 5e).

Consequence: In center of Gravity Funnel is located the fastest accelerating vortex with maximum longitudinal velocity V and minimum angular velocity. Outside of it is rotated the vortex with less longitudinal velocity V and more angular velocity. At periphery is rotated the vortex with minimum longitudinal velocity V and maximum angular velocity.

Consequence: The periphery vortex accelerates itself by sucking in free cross vortices (out-in) **from environment**. Butevery more internal vortex accelerates itself by sucking in all cross vortices **frome very adjacent outer vortex**.

Consequence: The Gravity Funnel attracts in direction across to the velocity and forms so called **Gravity attraction** [5].

Consequence: The Gravity Funnel attracts in direction along the velocity and forms so called **Gravity Force** [8].

The difference between Electromagnetic and Gravity Fields
Electromagnetic Field
In **center** Electric wave is spreading in constant velocity (V_1) equal to velocity of light (c) and finish at time t1 (Figure 6a). But outer layer, because of friction is spreading in less velocity (V_2) and finish at the next time t_2 ($V_2 < V_1$, $t_2 > t1$).
At **periphery** because of friction in the conductor's walls the wave is spreading in less velocity (V_3) and finish at next time t_3 ($V_3 < V_2$, $t_3 > t_2$). This lagging of the layers is the reason for the formation of so called Back wave: t_1, t_2, t_3, t_4... t_7… (Figure 6b).

It has direction of the electricity current and is opposite to the direction of electron movements or of internal electricity wave (Figure 6a).

According to the Law 5 the Back wave of electricity current is decelerating left rotating spiral and it is spreading along the surface of the resistor. Because of resistance on surface the decelerating wave emits to outside cross vortices which warm the environment (Figure 6c). They are left rotating cross vortices.
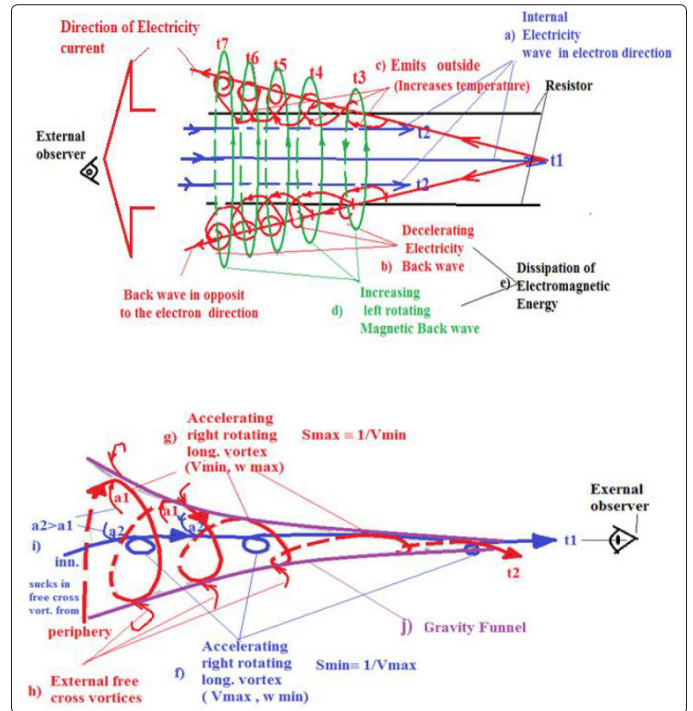

Figure 6

According to the Law 1 the emitted from decelerating longitudinal vortex to outside left rotating cross vortices (red) generate longitudinal vortices from center to left .They form left rotating close loop of Magnetic field (green) with increasing amplitude (Figure 6d).The decelerating Back wave of electricity current and increasing in **amplitude** Back wave of magnetic rings are the reason for the dissipation of Electromagnetic Energy (Figure 6e).

Consequence: Electromagnetic field is spreading crosswise and the distance (S) is right proportional to the velocity (V): $S = t.V$, where (t) is constant for this space time.

Gravity Field
According to the Law 6 in periphery longitudinal vortex has minimum longitudinal velocity (Vmin), maximum angular velocity of rotation (w max), maximum amplitude (Wmax) and maximum number rotations (Nmax): Vmin, w max, Wmax, Nmax (Figure 6f). It accelerates itself by sucking free cross vortices from environment.

According to the Law 6 in center longitudinal vortex has maximum longitudinal velocity (Vmax), mini (Wmin) mum angular velocity of rotation (w min), minimum amplitude (Wmin) and minimum number of rotations (Nmin): Vmax, w min, Wmin, Nmin. It accelerates itself by sucking all cross vortices from his adjacent outer vortex .This is possible because the acceleration in center is much more

(a_2) than the acceleration of his adjacent outer vortex (a_1): $a_2 > a_1$. The reason is that attraction in center is maximum (Figure 6i). Because of acceleration the Gravity tube (Figure 5a) turns to the Gravity Funnel (Figure 6j).

According to the Consequence of Law 6, the reason of the formation of the Gravity Funnel is the acceleration.
According to of Law 6 and the Structure of Gravity Funnel (p.6.3) the reason for the formation of the Gravity attraction are the acceleration and the very unique design of inserting one another of longitudinal accelerating vortices and formation of a tube that turns to the funnel.

Consequence: The phenomenon as so called "Space distortion" and the "Creation discs " are not the reason but they are only some of results. The reason for Gravity attraction is the acceleration and the very unique design of inserting (nested) one in another of longitudinal accelerating vortices.

Consequence: Gravity field is spreading longitudinally and the distance (S) along the spiral is inverse proportional to the velocity (V): $S = t/V$, where (t) is variable for spirals of this space time.

Consequence: The Electromagnetic Field ($S = t.V$) and the Gravity field ($S = t/V$) are mutual orthogonal.

Conclusions

According to Law 2 on the generation of protons (p+), the presence of free cross vortices in space is required. --According to Law 1 when electrons (e-) live as they pulsate in time, free cross vortices are emitted into the surrounding space.

Conclude: The free cross vortices are immanent essence of the crosswise space time in which the elementary particles are created and lived.
- According to the Law5 Electromagnetic field also emits free cross vortices to environment and the temperature of surround space is increasing.
- Around each artificial device (power plants, electric motors, dynamo machines, electro transformers) that operates with an Electromagnetic field there are free cross vortices.

Conclude: The Electromagnetic field also emits free cross vortices that warm the environment.
Conclude: The necessary condition for amplification of energy is the presence of free cross vortices.
In order to use the free vortices, an accelerating field is required. Only in case of acceleration there can be sucked out the available free cross vortices from the environment. These vortices were previously emitted from a decelerating field. The essence of the emitted and sucked vortices are one and the same.

Conclude: The sufficient condition to get an amplification effect is the presence of accelerating vortex or accelerating wave.
So we need an accelerating wave. The ideal case is to construct a device simulating the action of Law 1. According to the Law 1 this device generates the ideal accelerated longitudinal vortex that can suck up a maximum of free cross vortices .So it get a maximum gain. This device is quite strange but it is very simple [7, 8].

Conclude: We can get an amplification effect if we construct the ideal device (According to the Law 1).
It is much more understandable this device that uses ordinary electric waves(According to the Law5) and imitates accelerated shrinking wave so as to suck free cross vortices from the environment .This electric wave forms a standing wave within the space of an asymmetrical antenna. When a suitable impulse is fed to the input, this wave shrinks accelerated and sucks the free cross vortices that are located around each antenna [11].

Something like that has made Nikola Tesla in his electric motor of the famous electric car. He imitated accelerating wave using a very common and ordinary electric wave .It is so simple and genius! That is way Tesla is genius. His electric motor needs the outside energy only on start up, and then it generates and works without fuel.

Conclude: We can try to imitate accelerating wave using the very ordinary electric wave (According to the Law 5).
An example (in 3D) of accelerating processes in nature is the packing of lightning. The lightning consists of inserting (nested) one into other longitudinal vortices as the faster is in the center and the slower is at periphery. Therefore, the lightning power is far greater than the potential difference between the two endpoints (two clouds or cloud and earth). The scientists can't explain this phenomenon so far.

Another example (in 3D) is the tornado. A very simple example (in 2D) is the rapid water flow that descends on a steep slope. It sucks all the small streams toward itself and accelerates more and more (According to the Law 6). As a nonparametric process, root locations are determined by internal Positive feedback.

Conclude: It is very perspective the algorithm for imitation of natural processes using simpler and more accessible means.

Conclude: It is very perspective the technology that produces engines working at the expense of free energy, which is unlimited.

References
1. Landau LD, EM Lifshitz (1975) The Classical Theory of Fields (Volume 2 of A Course of Theoretical Physics), 4 Edition, Butterworth-Heinemann.
2. Markova V (2005) the other axioms (Monograph, Book 2), Nautilus, Sofia.
3. Markova V (2016) Three space times obtained by combined vortex movements, Intern. Jour. of Current Research 8: 37826-37832.
4. Markova V (2016) A method of movement at a speed greater than the speed of the light, 15th Conference" Aviation and Cosmonautics", MAI, Moscow.
5. Markova V (2017) A generator using a tube of longitudinal accelerating open vortices nested one inside the other for positive feedback, 3th International Conference on High Energy Physics, Rome, Italy.
6. Markova V (2018) About the new axioms and laws, 5th International Conference on Theoretical and Applied Physics, Vienna, Austria.
7. Markova V (2018) Antigravity device, modeled on basis of new axioms and laws, 6th International Conference on Aerospace and Aerodynamics, Barcelona, Spain.
8. Markova V (2018) Antigravity device, modeled on basis of new axioms and laws, Cosmos Publishers, International Journal of Robotics and Automation Engineering, IJARE-104.

9. Markova V (2018) An attempt to find out the major elements of matter and energy using the knowledge of new axioms and laws, 4th International Conference on High Energy & Particle Physics, Valencia Spain.

10. Markova V (2019) Expanded Field Theory. New Axioms, Laws and Consequences. Advances in Theoretical & Computational Physics, Adv. Theo. Comp. Phy 2: 01-10.

11. Markova V (2019) Generator of "free energy" according to the explanation of the phenomenon based on new axioms and laws, 2th European Physics Congress, Berlin, and Germany.