

## AN EXPLANATION OF "FREE ENERGY" PHENOMENON AND AN EXAMPLE OF A GENERATOR BASED ON EXPANDED FIELD THEORY

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### ABSTRACT

Expanded field theory is described with new axioms and laws. It includes 2 new axioms, 8 laws and many consequences. This report uses 1 axiom (Axiom1) and only 6 laws. It is well-known the Classic axiom of Maxwell's laws, who is the basis of Classic field theory. It states that the motion of vector E in closed loop is always evenly or the velocity is constant:  $\text{div}(\text{rot } E) = 0$ . The new axiom claims that the movement of vector E in an open circuit is always unevenly or the velocity is variable:  $\text{div}(\text{rot } E) \neq 0$ . When the movement is in a plane (2D), a cross vortex is produced. When the movement is in volume (3D), a longitudinal vortex is produced. If  $\text{div}(\text{rot } E) < 0$ , the vortex E is decelerating in 2D, if  $\text{div}(\text{rot } H) < 0$ , the vortex H is decelerating in 3D. If  $\text{div}(\text{rot } E) > 0$ , the vortex E is accelerating in 2D, if  $\text{div}(\text{rot } H) > 0$ , the vortex H is accelerating in 3D. When the velocity of longitudinal vortex decreases, it emits primary cross vortices to the environment and the accelerating longitudinal vortex sucks exactly the same primary cross vortices inside it. These primary cross vortices that exist in environment, are called "free energy". When the longitudinal vortex is accelerating, the cross vortices (already emitted by the decelerating vortex) are sucked in. So the longitudinal field accelerates even more in each subsequent step again and again. Therefore, there is no energy loss, as it is in the Electromagnetic field. The suction allows for further acceleration of new field. Positive feedback is the reason why acceleration process is becoming to a generating process. Acceleration takes place under specific conditions that are feasible. Due to the suction of cross vortices from the accelerating longitudinal vortex, the temperature in environment decreases. By comparison, in decelerating (Electromagnetic) field, due to emitting of cross vortices, the temperature in environment increases. It is known that the electric field is spreading crosswise at a constant velocity along the wave and at a limited velocity in perpendicular direction ( $v = c$ ). So increasing the voltage leads only to an increase the size of electricity current, but not an increase in velocity of electricity current. This report offers a new type of field that has the properties to accelerate. It not only preserves its internal energy but multiplies it, at the expense of the energy of the environment. This new field type organizes energy generation. But the generation of this original accelerating field is very complicated for now. So we are forced to imitate it using our well-known Electromagnetic field. The secret is in very unique shape of the input (to the antenna) electrical signal. Using the well-known Electromagnetic field, we can imitate the accelerating signal that sucks the free cross vortices from the environment. Something like that was done by Nichola Tesla in his "free energy generator" used in his electric car.

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## INTRODUCTION

### 1a. The Classic Axiom for evenly movement

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:

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

1

where (rot E) is the movement of the vector E in a closed loop;  $\text{div}(\text{rot } E)$  is the divergence (the variation in increase or decrease) 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[ L.D. Landau, E.M. Lifshitz, The Classical Theory of Fields ,Volume 2 of A Course of Theoretical Physics, 4th Edition, Butterworth-Heinemann,1975]. The defect of the classic axiom (1) is that it does not describe movements in an open loop or a vortex, or movements with a non-constant or variable velocity V [Markova, 2016; Markova, 2016].

**2.The New Axiom**

**1a.The New Axiom for unevenly movement [Markova, 2017]**

The new axiom describes an open loop movement:

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

**1b. The expansion of the termof vortex (vor) from Classic Fluid Theory**

- **Unrealterm of vortex:** *evenly vortex* (vor) is used in Classic Theory:
- **Real term of vortex:** *unevenly vortex* (Vor) means that the velocity (V) is variable (Figure 1A,b).An evenly unrealvortex ,  $\text{div}(\text{vor}E) > 0$ ;  $\text{div}(\text{vor}E) < 0$  will replace of description of an unevenly real vortex that exists in nature:  $\text{div}(\text{Vor}E) > 0$ ;  $\text{div}(\text{Vor}E) < 0$ .

**1c..The New Axiom for vortex [Markova, 2017]**

It exists a vortex  $\text{Vor}E$  as an open loop of ( $\text{div}(\text{rot}E) \neq 0$ ) in 2D and 3D or :

$$\text{div}(\text{Vor}E) \neq 0 \quad 3$$

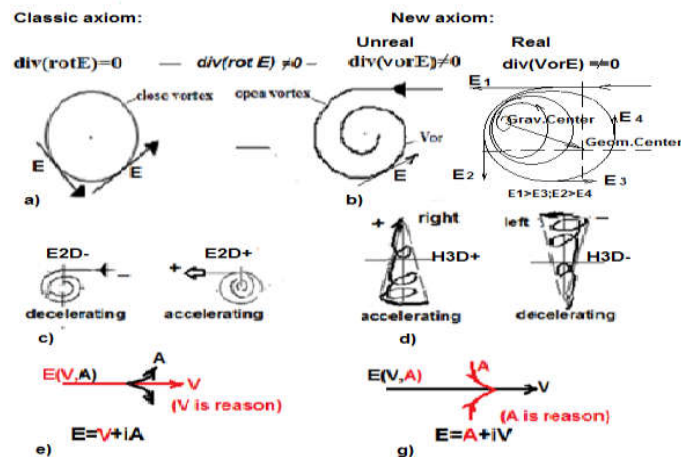


Figure 1A. The classical axiom is replaced by a new axiom

An open loop means that it can exists a decelerating or an accelerating vortex:

$$\text{div}(\text{Vor}E) < 0; \text{div}(\text{Vor}E) > 0; \quad 4$$

**Axiom1.** The motion of vector E along the open loop ( $\text{div}(\text{rot} E) \neq 0$ ) or in vortex ( $\text{div}(\text{Vor}E) \neq 0$ ) is with monotone-decreasing or monotone-increasing velocity for which:

$$\text{div}(\text{Vor}E) < 0; \text{div}(\text{Vor}E) > 0; \quad 5$$

**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 ( $H_{3D-}$ ). (Figure 1A,c,d))[2p. 233] [Markova, 2017].

**Consequence** (of complex vector)

The vector E is not a simple but complex vector. It contains the velocity (V) of the real(reason) flow and the amplitude (A) of the imaginary (result) cross vortices (Figure 1A,e) or the amplitude (A) of the real (reason) cross vortices and velocity (V) of the imaginary (result) flow (Figure 1A,g) .

**3. Expanding of Maxwell’s Law**

**3a. The first Classic Maxwell’s Law**

According to the classic axiom (1), the first classiclaw of Maxwell named “the law of electromagnetic induction” is presented as follows:

$$\text{rot} E = -\mu \partial H / \partial t , \quad 6$$

where (rotE)is the evenly movement of the electric vector E in a closed loop,  $\mu$  is the coefficient of magnetic permeability,  $\partial H / \partial t$  is the variation of the magnetic vector H in time t.

**Consequence** (about the sense of the first Classic Maxwell’s law):

This presentation of Classic Maxwell’s law refers only to *evenly movement* of the electric vector (rot E) that generate a magnetic induction vector (H) in the center of the closed loop.

**3b. Expanded Law of Maxwell**

According to the new axiom (2) ( $\text{div}(\text{rot}E) \neq 0$ ) and the new definition of vortex (3)( $\text{div}(\text{Vor}E) \neq 0$ ),the Expanded Maxwell’s Law is modified like this: a cross vortex in 2D(Vor E) of vector (E) continues in the center as an *one single and simple* longitudinal vortex in 3D (VorH) of vector (H),(Figure 1B, b).

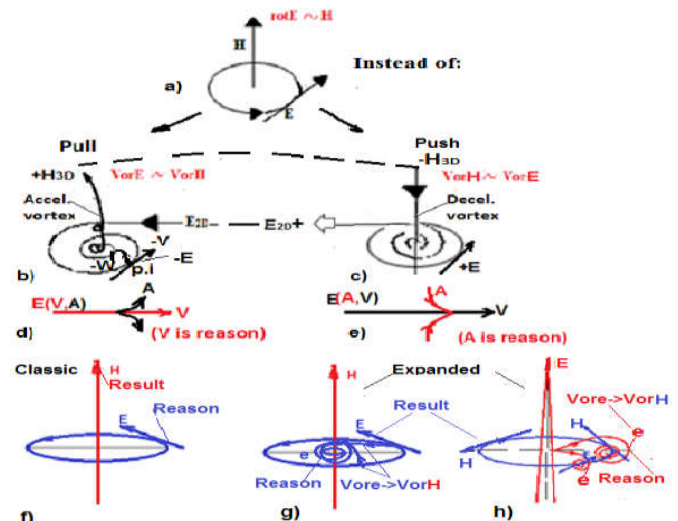


Figure 1B. One pair (in one direction) of complex vortices in 3D

According to the new axiom (2) Expanded Maxwell's Law states that the cross vortex (Vor E) of vector (E) generates an *one single and simple* longitudinal vortex (VorH) of vector(H).

$$(Vor E)_{2D} = k \cdot (Vor H)_{3D}, \quad 7$$

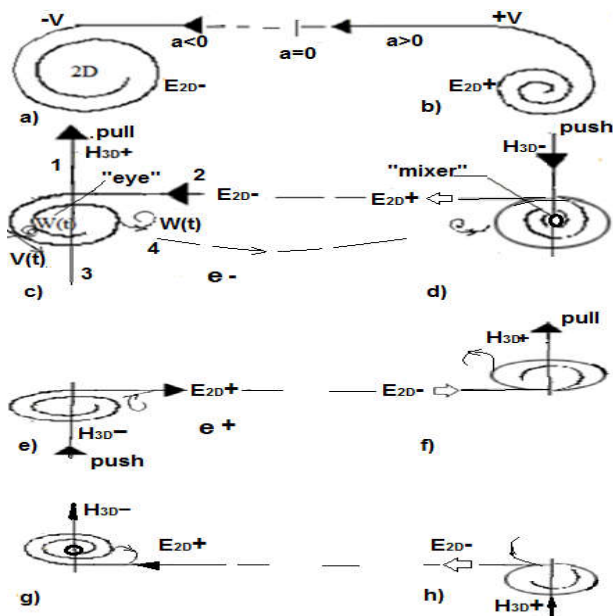
where (Vor E) is a cross vortex in 2D of vector (E); (VorH) is an *one single and simple* longitudinal vortex in 3D of vector (H), (k) is an estimator of medium viscosity.

The direction of the resulting vector (H) is determined by the well known *Right-hand Rule*. If the right hand is facing down and the fingers indicate the direction of the velocity (V)(right), and the thumb indicates the amplitude direction (W)(left), the piercing through the palm will show the upward direction of the vector (H).

**4. Laws of Transformation (transformations Δ1, Δ2)**

**4.1. Laws of the transformation of a cross vortex (E<sub>2D</sub>) into a longitudinal vortex (H<sub>3D</sub>)**

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). The two simultaneous movements (V and W) also exist at all points of longitudinal vortices [Markova, 2017]. The cross vortex (E<sub>2D</sub><sup>-</sup>) in 2D is transformed into a longitudinal vortex (H<sub>3D</sub><sup>+</sup>) in 3D. This is accomplished through a specific operator (Δ1) for cross-longitudinal transformation (Fig1B,b).



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

The introduced operator (Δ1) connects the original in one type (cross) of space with its image in another type (longitudinal) of space, i.e. Δ1 connects two spaces with different qualities.

**Law 1:** The open cross vortex (E<sub>2D</sub>) generates (inward or outward) an open longitudinal vortex (H<sub>3D</sub>) in its center through a cross-longitudinal transformation Δ1: Δ1

$$Vor (E_{2D}) \Rightarrow -- Vor (H_{3D}), \quad 8$$

where Vor (for Vortex, meaning an unevenly vortex) replaces rot (for rotor, meaning closed loop); the cross vortex in 2D (E<sub>2D</sub>) continues its development in 3D as a longitudinal vortex (H<sub>3D</sub>) (Figure1Bb).

While Maxwell's law (6) states that *vector E generates vector H*, the present law (8) postulates that *the cross vortex Vor (E<sub>2D</sub>) of E in 2D generates a longitudinal vortex Vor (H<sub>3D</sub>) of H in 3D*. The sign (-) for Vor (H<sub>3D</sub>) 3D means that E<sub>2D</sub> and H<sub>3D</sub> have opposite dynamics. For example when  $div (Vor E_{2D}) < 0$  (is decelerated),  $div (Vor H_{3D}) > 0$  (is accelerated).

**Consequence:** The open *decelerating cross vortex* (E<sub>2D</sub><sup>-</sup>) generates inward an open *accelerating longitudinal vortex* (H<sub>3D</sub><sup>+</sup>) outward. This action takes place in the center of decelerating cross vortex (E<sub>2D</sub><sup>-</sup>) through a particular cross-longitudinal transformation Δ1-(Figure 2c): Δ1-

$$Vor (E_{2D}^-) \Rightarrow Vor (H_{3D}^+). \quad 8a$$

-If the Consequence (8a) of Law1 generates in 3D a *simple and single* longitudinal vortex, it would describe the Expanded Maxwell's Law (7c) and *Magnetic part of Electromagnetic Field*.

**Consequence:** The open *accelerating cross vortex* (E<sub>2D</sub><sup>+</sup>) generates outward an open *decelerating longitudinal vortex* (H<sub>3D</sub><sup>-</sup>) inward. This action takes place in the center of accelerating cross vortex (E<sub>2D</sub><sup>+</sup>) through a particular cross-longitudinal transformation Δ1+:

$$\Delta 1 + Vor (E_{2D}^+) \Rightarrow Vor (H_{3D}^-) \quad 8b$$

**4.2. Laws of the transformation of a longitudinal vortex (H<sub>3D</sub>) into a cross vortex (E<sub>2D</sub>).**

For the opposite transformation a new operator Δ2 is introduced to transform a longitudinal (H<sub>3D</sub>) into a cross (E<sub>2D</sub>) vortex. The physical nature of this Δ2 transformation is *quite different* in comparison with Δ1. The Δ1 and Δ2 are orthogonal each other, rather than symmetrical to each other.

**Law 2:** The open longitudinal vortex (H<sub>3D</sub>) generates (inward or outward) an open cross vortex (E<sub>2D</sub>) in its center through a longitudinal-cross transformation Δ2:Δ2

$$Vor (H_{3D}) \Rightarrow -- Vor (E_{2D}) \quad 9$$

**5. Law of nonparametric movement of the vortex:** Let us consider a decelerating longitudinal vortex with decreasing acceleration of velocity: V<sub>1</sub>, V<sub>2</sub>,..., V<sub>n</sub>, decreasing acceleration of cross vortices and increasing amplitude of the cross vortices W<sub>1</sub>, W<sub>2</sub>,...,W<sub>n</sub> (Figure 2a,c,e,g). Let us consider also an accelerating longitudinal vortex with increasing acceleration of velocity: V<sub>1</sub>, V<sub>2</sub>,..., V<sub>n</sub>, increasing acceleration of cross vortices and decreasing amplitude of the cross vortices W<sub>1</sub>, W<sub>2</sub>,...,W<sub>n</sub> (Figure 2b,d,f,h).

- Obviously the acceleration and deceleration of the longitudinal vortex is a nonparametric process. Accelerating and decelerating longitudinal vortices do not manifest qualitative differences. They only differ quantitatively by their magnitude and sign of the change [Markova, 2017].
- The Law 3(10) shows that when velocity V<sub>i</sub> increases, the amplitude of cross vortices W<sub>i</sub> decreases (or inverse). This



phenomenon is due to *redistribution of the acceleration* of the cross and longitudinal 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 and thus accelerates it (Figure 3Aa).

- The accelerating longitudinal vortex sucks in more cross vortices from outside that accelerate further the longitudinal vortex and so on (Figure 3Ab). Thus the longitudinal vortex *increases of acceleration* and *increases of mass* at the exit which returns as an increase of the acceleration and mass to the entrance. This mechanism of amplification is known in cybernetics as *Positive Feedback*.

**Law 3:** Accelerating longitudinal vortex is accelerated and decelerating longitudinal vortices is decelerated by internal logic as a nonparametric process through Positive Feedback

When, for example, an accelerating longitudinal 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* ( $t=t_n$ ) the positive acceleration of the cross vortex becomes maximum:  $a_{max} \gg 0$ . The mass of this cross vortex is added to the longitudinal vortex accelerating it further (Figure 3Ab).

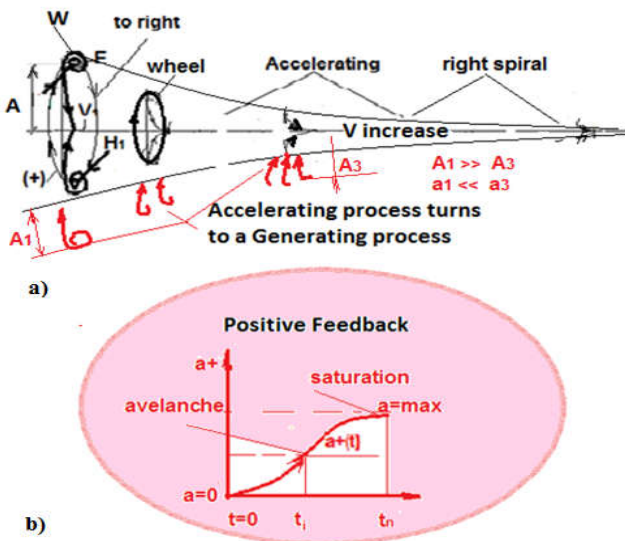


Figure 3A. Positive Feedback

-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, [Markova, 2017].

**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.

**6. Law of the constant Power of the vortex[Markova, 2018]**

As we saw above there are two *qualitatively different* movements at each(i) point p (i) of the decelerating vortex E: longitudinal vector velocity (V) and cross vortex with amplitude (W) (Figure 1B,b).

- It is known that in Classic Mechanic the simultaneous operation of two homogeneous vectors *is equal to the sum* of these vectors.
- According to Law 3, the transforming one vector (V) into a vortex (W) and vice versa is a *nonparametric process*. Transformation is done by internal laws but not by setting parameters from outside. The nonparametric transformation of two variables V (t) and W (t) is mathematically described by the product V (t) .W (t) of these variables.
- The simultaneous operation of two qualitatively different vectors V (t) and W (t) *is equal to the product* of these variables V (t).W (t). 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,b).

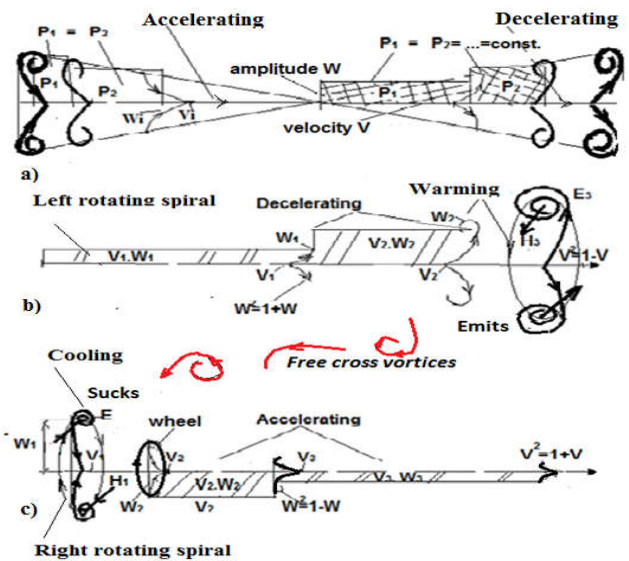


Figure 3B. Accelerating and decelerating vortices

- 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 (Figure 3Ba,b). The product (V-).(W+) is proportional to the power(P-) of the decelerating longitudinal vortex .
- 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 (Figure 3Ba,c). The product (V+).(W-) is proportional to the power (P+) of the accelerating longitudinal vortex .

**Law 4:** For an uneven (accelerating or decelerating) longitudinal vortex with current velocity ( $V_i$ ) and current amplitude of the cross vortices ( $W_i$ ), the product  $(V_i) \cdot (W_i)$  is a constant:

$$(V_i) \cdot (W_i) = \text{const.} \quad 10$$

where  $i = 0 \div \infty$  and the product  $(V_i) \cdot (W_i)$  is proportional to the power of the uneven longitudinal vortex (P).

**Consequence:** The complex action of velocity (V) and the amplitude of the cross vortex (W) at a given moment (t) is equal to the product (10):  $V(t) \cdot W(t)$ .

**7. Laws of the velocity of the longitudinal vortex (V) and the amplitude of the cross vortices (W), [Markova, 2018]**

Law 4 (10) claims that in the decelerating vortex vector velocity (V) is transformed according to *internal law* (by Positive Feedback) into the amplitude of the cross vortex (W) (Figure 3Bb) and in the accelerating vortex the amplitude of the cross vortex (W) is transformed according to *internal law* into a vector velocity (V) (Figure 3Bc).

**Law 5:** For a decelerating vortex in 3D exists a system of three equations in which the longitudinal velocity (V) decreases in (n) portions  $(1/\psi)^n$  times, while the angular velocity (w) and amplitude (W) of cross vortices increase reciprocally in (n) portions  $(\psi)^n$  times:

$$V^2 = V_0(1 - V), \quad 11a.$$

$$w^2 = w_0(1 + w) \quad 11b.$$

$$W^2 = W_0(1 + W), \quad 11c.$$

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

**Consequence:** A decelerating vortex( $E_{2D-}$ ) with a velocity vector (V) emits to the environment decelerating vortices with increasing amplitude (W)

**Consequence:** The amplitude (W) increases in *perpendicular direction* to the velocity vector (V).

**Consequence:** In decelerating longitudinal vortex, the amplitude (W) increases only if it is directed from the inside to the outside, so that the decelerating vortex emits outward cross vortices with increasing amplitude (W),(Figure3Bb).

**Consequence:** According to the *Law1(8) and Rule of the Right Hand*, the decelerating vortex of (E) continues like a longitudinal vortex of(H)rotating to the left. Therefore, the entire decelerating longitudinal vortex twists left-counterclockwise (watched against the movement) (Figure 3Bb).

**Consequence:** Decelerating longitudinal vortices rotates counterclockwise (-),(Figure3Bb).

**Consequence:** Two or more decelerating longitudinal vortices are repelled, due to the emission of cross vortices.

**Consequence:** Because of increasing of angular velocity (w) it forms decelerating, thickening and expanding ,left rotating Funnel in which :  $V_0 = V_{\max}, w_0 = w_{\min}; V_n = V_{\min}, w_n = w_{\max}$

**Law 6:** For an accelerating vortex in 3D exists a system of three equations in which the longitudinal velocity (V) increases in (n) portions ,  $(\psi)^n$  times, while the angular velocity (w) and amplitude (W) of cross vortices decrease reciprocally in (n) portions ,  $(1/\psi)^n$  times:

$$V^2 = V_0(1 + V), \quad 12a.$$

$$w^2 = w_0(1 - w) \quad 12b.$$

$$W^2 = W_0(1 - W), \quad 12c.$$

where  $v_n, w_n$  and  $\omega_n$  are periodic roots with period n that fulfill the requirement for orthogonality :  $v_n \cdot w_n = V_0 \cdot w_0$  ,  $v_n \cdot \omega_n = V_0 \cdot W_0$  ;  $n = 0 \div \infty$ ; the roots  $v_n, w_n$  and  $\omega_n$  are expressed as:  $v_n = (\psi^n) \cdot V_0$ ,  $w_n = (1/\psi^n) \cdot w_0$ ,  $\omega_n = (1/\psi^n) \cdot W_0$  ; linear velocity  $V_0$  is the starting value of  $V_n$ , angular velocity  $w_0$  is starting value of  $w_n$ , amplitude of cross vortex  $W_0$  is the starting value of  $\omega_n$ ;  $\psi$  is a number that fulfills the requirement:  $\psi - 1/\psi = 1$ . -The first positive root of the first equation (12a) is:  $v_1 = \psi \cdot V_0 = 1,62 \cdot V_0$ . The periodic roots of the first equation (12a) are obtained from the expression:  $v^n = V_0 \cdot (v^{n-1} + v^{n-2})$ .

The first positive root of the third equation (12c) is:  $w_1 = (1/\psi) \cdot W_0 = 0,62 \cdot W_0$ . The periodic roots of the third equation (12c) are obtained from the expression:  $w^{n-2} = W_0 \cdot (w^n - w^{n-1})$ .

**Consequence:** When velocity (V) increases, the amplitude (W) decreases so that at each step (i) (according to Law 3) the product  $(V_i) \cdot (W_i)$  is a constant.

**Consequence:** 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 3Bc)

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

According to the Consequence of Law1 the direction of the resultant vortex (H) caused by an accelerating cross vortex (E) is from left to the right. Therefore, the entire acceleration vortex will twist to the right – clockwise (+), viewed against the movement (Figure 3Bc).

**Consequence:** Accelerating longitudinal vortices wind clockwise(+) (Figure3Bc).

**Consequence:** Two or several accelerating longitudinal vortices, due to the suction of free cross vortices, are attracted.

**Consequence:** Because of angular velocity (w) decreases it forms accelerating, stretching, ,narrowing, right rotating Funnel in which :  $V_0 = V_{\min}, w_0 = w_{\max}; V_n = V_{\max}, w_n = w_{\min}$

### 8. Imitation of accelerated motion by using a conventional Electromagnetic field

#### 8a. Alternative

According to the Law1 the generation of a longitudinal accelerating vortex requires quite new and many complicated technology [Markova, 2018]. But we can use a very simple alternative. The alternative includes a simple Electromagnetic field and an antenna vibrator .Therefore we can avoid using complicated technology by applying a very familiar and common Electromagnetic field .This alternative can be realized through imitating an accelerating shrinkage of a standing wave inside an asymmetrical antenna vibrator.

*The similar approach was used by Nikola Tesla in the creation of a “free energy” generator that was installed in “Pierce –Arrow” car instead of previous gasoline engine.*

The block diagram of the “free energy “generator includes very common electrical assemblies, such as amplifier, modulator, generators, and so on [Markova et al., 2019].

#### 8b. Shape of input signal

- The secret is in very unique form of input to antenna signal that imitates an accelerating shrinkage of a standing wave inside an asymmetrical antenna vibrator (Figure 4).
- There is generator of linear signal and generator of sine wave. Sine wave is modulated by linear signal and this forms saw-tooth signal (Figure 4a).
- The first, sloping part is preparatory part and the second, steep part is working part. In working part the signal front very fast comes to zero. In working part the signal has very steep front (Figure 4 b).

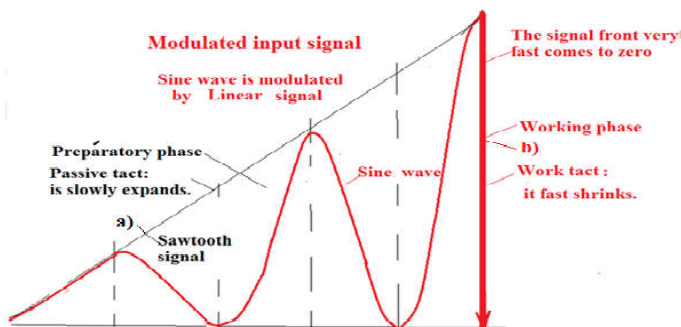


Figure 4. The shape of input to asymmetrical antenna vibrator

#### 8c. The term of “free energy”

- Nicola Tesla has used the term “free energy” in the sense of environment’s energy. In the current report, this term is expanded as the free cross vortices, which fill the environment around the matter and around for example EM circuits. If an acceleration movement passes through this space it sucks in this cross vortices, they add their masses and energy to it and accelerate itself much more.
- Tesla has known in advance this phenomenon, because he is a genius . Although he has not explained, he has used it in a perfect way in generator for his famous electric car. *It must be emphasized that Tesla's car has nothing to do with Ilon Musk's car the Tesla company*

- But you do not have to be a genius and “see” beyond the visible world to observe and understand very simple and ordinary phenomenon .Tesla has observed in nature: If a river *spills into the plain*, it emits water vortices from inside to outside, forming sediments, shallows and islands. If a river *descends on a steep slope*, it sucks small water streams from outside to inside, undermines the shores of the slope and it forms canyons.

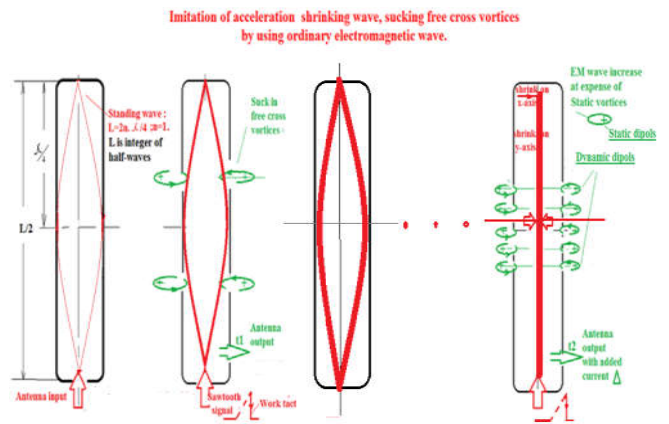
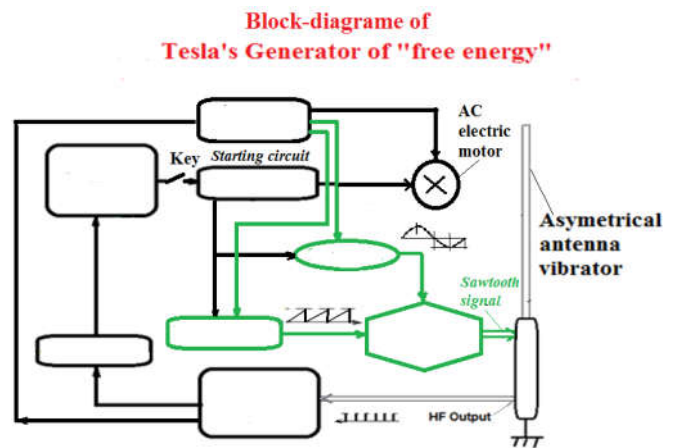


Figure 5. Creation of shrinking standing wave by using Electromagnetic field



#### 8d. The essence of “free energy” as static and dynamic dipoles

- So called” free energy “are manifestation of free cross vortices that exist in environment. The free cross vortices exist *around every electromagnetic devices* including of electromagnetic antennas [Markova, 2017].
- The free cross vortices are created by decelerating main cross vortex in generation process of the matter and exist *around every matter particle*. Every matter generation process is decelerating process .The reason is that the matter is created by decelerating cross vortices and decelerating cross wave is spreading crosswise with energy loss [Markova, 2019].
- *Therefore free cross vortices exist around every matter in our space-time where time is constant (t=const.),* [Markova, 2016].
- The free cross vortices exist around every electromagnetic devices too(including of electromagnetic antennas).
- Usually free cross vortices are similar to eccentric vortices that are the real vortices in reality (Figure

1A,b). These dipoles look like to *static dipoles*. But when accelerating motion occurs near them, they turn to *dynamic dipoles*. They open and move towards the suction motion (Figure 5c).

### 8e. Algorithm of imitation

- We're creating a standing wave inside the antenna. This is easily achieved by knowing the antenna parameters and the frequency of the input sine wave (Figure 4).
- Then we modulate the sine wave with a triangular signal and we get a saw-tooth signal (Figure 4a).
- The working part of this signal (Figure 4b) acts sharply shrinking the standing wave of the antenna from outside to inside and from up to down (Figure 5).
- The sharp contraction of the standing wave imitates an accelerating movement (Figure 5a,b,c).
- The acceleration being negative both along the standing wave (Figure 5c,1) and perpendicular to it (Figure 5c,2).
- At the accelerating shrinkage of the standing wave, there are sucked up the free-standing cross vortices existing as dipoles around the antenna.
- Usually these dipoles are *static dipoles*, but when accelerating motion occurs near them, they turn to *dynamic dipoles*. They open and move towards the suction motion (Figure 5c).
- -The dynamic dipoles add their mass and energy to the main wave and increase her energy at each step more and more (Figure 5c).

### Conclusion

- We can construct panels of *cascade connecting antennas* that are similar to the photovoltaic panels.
- Instead of antennas we can use waveguides that can be created through nanotechnology carbon pipes. They can work in panels of *cascade connecting waveguides* too [Markova, 2017].
- According the Law 6 after first stage we receive 1.62 time increasing of input power ,after the second -2.62 times, then 4.24;6.86;11.11;18;29.17;47.25;76.54;123.99;...[Markova, 2016].
- Theoretically ,after the tenth step we can receive almost 124 times increasing of input power (Coefficient of Power Generation -CPG) [Markova, 2018].
- In reality experiment we get around 80 CPG (64 per hundred). But it is completely enough for generation of energy for working AC electric motor.

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