SPACE TIME ELECTROSTATIC PROPULSION

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Abstract

The purpose of this paper is to present in general an asymmetric capacitor system with electrically neutral external metallic cover. This system according to the electrostatic field equations is possible to create a thrust when a constant high voltage is imposed. More specifically the purpose of this paper is to present a system which consists of a metallic element, whose one side is wavy while the other side is flat, which is embodied inside a strong insulator that in turn is embodied inside metallic casing of zero potential. The system is a flat plate which consists of two thinner parts which are joined in a whole. The inner metallic element and the metallic casing are formed by metallic deposition on two properly formed casting plastic parts, thus, the thinner parts mentioned being formed. Between the inner metallic element and the casing a high voltage is imposed; according to calculations, a very high thrust is developed when certain geometry and materials used. This thrust, when the system works without having corona effects, leads to over-unity energy production. This can be explained within a physics theory, which is based on the claim for minimum contradictions. According to this point of view a gravitational matter field is created, because of the existing electrical field, which can provide the energy and momentum required for thrust creation and energy production.

1. Introduction

According to Biefeld- Brown effect a constant high voltage capacitor creates a thrust towards the positive pole. This thrust is considerably bigger when the capacitor is asymmetric [1-7]. Frolov's asymmetric capacitor creates a thrust which has been experimentally verified; the version tested has a thrust less than 0,01N [8,9]. Recently the "lifter" device has been reported whose thrust is of the order of 2,5N [9,10]. In this paper a specific asymmetrical capacitor system is described and its thrust is calculated with the aid of the electrostatic field equations; this thrust is of the order of $4.000N/m^2$. When the system is working without having corona effects this means that the energy offered to the system is practically zero. Thus, when according to calculations the system is moving, we have energy production of an over-unity effect. This effect can not be explained with classical physics; it can be explained with a physics theory, which is based on the claim for minimum contradictions [11,12]. According to this theory, space-time is matter itself and it has both mass-gravitational (g) and charge-electromagnetic (em) components. The charge space-time is regarded as an imaginary gravitational space-time, which coexists with the real one, the two of them being interconnected. This point of view permits us to explain the thrust and the energy, of the system mentioned, since there is something material i.e. the gravitational space-time, which offers the momentum and the energy required. In a moving electrostatic system, where there is no charge motion with respect to the existing field, the energy produced could be due to the gravitational space time energy absorbed while the thrust could be due to gravitational space time absorbed momentum change; such a moving system is the system under study.

2. Proposed Asymmetric Capacitors System

2.1 General

Inside a dielectric means 1 (fig. 1) metallic conductors 3 are placed, and are electrically charged in relation to the metallic casing 2, which is electrically neutral. This is achieved by means of high voltage imposed between the conductors 3 and the metallic casing 2. We assume that the electrostatic field equation is everywhere valid, and is concerning isotropic materials with constant specific inductive capacity (dielectric constant). Thus, we have:

$$div\vec{E} = -\nabla^2\phi = \rho/\varepsilon \qquad (1)$$

where $\vec{E}$ is the field intensity, ϕ the potential and ρ the density of spatial charge.

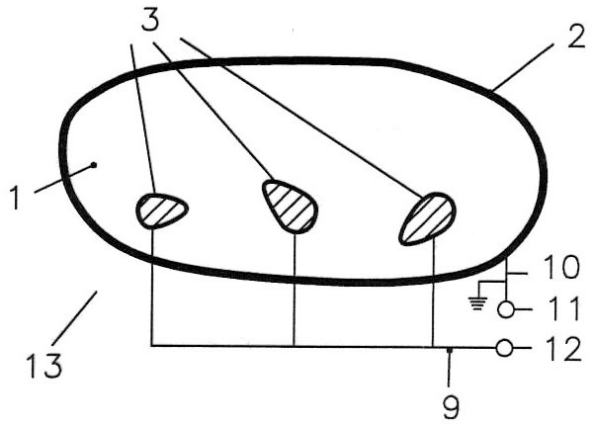

Fig. 1. Zero potential casing asymmetric capacitor system
General arrangement

The force $\vec{F}$ according to equation (1) for an area enclosed by a surface S is[13]:

$$\vec{F} = \frac{1}{2}\oiint_S [\vec{E}(\vec{n}\vec{D}) + \vec{D}(\vec{n}\vec{E}) - \vec{n}(\vec{D}\vec{E})]ds \qquad (2)$$

where $\vec{D}$ is the electric displacement and $\vec{n}$ the orthogonal unitary vector on the surface S directed outside the area enclosed by the surface S. Consequently, the resultant force $\vec{F}_{tot}$ on the whole system, according to equation (2) will be:

$$\vec{F_{tot}} = \frac{1}{2}\oiint_{out2} (D\vec{E})ds = \frac{1}{2}\oiint_{out2} (dq/ds)\vec{E}ds = 0 \qquad (3)$$

where ds is an elementary surface unit and dq the surface charge corresponding to the surface ds. The force $\vec{F}_{tot}$ is equal to zero because the field intensity $\vec{E}$ on the outer surface of the casing 2 is equal to zero. From equation (1) it is derived that:

$$\frac{d\varepsilon E}{dx_n} = \rho, \quad d\varepsilon E = \rho dx_n = dq_n, \quad \varepsilon E_2 - \varepsilon E_1 = q_n \tag{4}$$

wherein q_n is the charge per surface unit (in a specific area) enclosed by two adjacent equipotential surfaces whose orthogonal distance at various points is very small but not equal to zero and which correspond to field intensities E_1, E_2. Concerning the forces $d\vec{f}_n, \vec{f}_n$ exerted on the charges dq_n, q_n, it will be:

$$\begin{aligned} &df_n = Edq_n = E\rho dx_n = E\frac{d\varepsilon E}{dx_n}dx_n = \frac{1}{2}d\varepsilon E^2, \\ &f_n = \frac{1}{2}(\varepsilon E_2^2 - \varepsilon E_1^2) = \frac{1}{2}\varepsilon(E_2 - E_1)(E_2 + E_1) = \frac{1}{2}q_n(E_1 + E_2) \end{aligned} \tag{5}$$

If $-q'$ are the inductive charges on various areas (per surface unit) being developed on the end of the dielectric means 1 due to the charges q existing on the metallic surfaces 2in, 3out (where the indicator "in" corresponds to an inner surface and the indicator "out" to an outer surface), then the charges $q, -q'$ will be distributed between field intensity limits E_1, E_2 (metal) and E_1', E_2' (dielectric means 1) in such a way that[14]:

$$E_1 = 0, \quad E_2 = E_0, \quad E_1' = E_0, \quad E_2' = E \tag{6}$$

wherein E_0 is the field intensity in the gap between the surfaces 2in, 3out and the dielectric means 1. $q, -q'$, E_0, E, are correlated by the equations:

$$q - q' = \frac{q}{\varepsilon_r} \quad \text{and} \quad \frac{E_0}{E} = \varepsilon_r, \tag{7}$$

wherein ε_r is the specific inductive capacity (dielectric constant) of the dielectric means 1 [15]. Due to the equations (5, 6, 7) the total resulting force per surface unit that is exerted on the charges $q, -q'$ will be the following:

$$\begin{aligned} &F_{q,-q'} = \frac{1}{2}(E_1 + E_2)q - \frac{1}{2}(E_1' + E_2')q' = \frac{1}{2}E_0 q - \frac{1}{2}(E_0 + E)q' = \\ &= \frac{1}{2}Eq[\frac{E_0}{E} - (\frac{E_0}{E} + 1)(1 - \frac{1}{\varepsilon_r})] = \frac{1}{2}Eq[\varepsilon_r - (\varepsilon_r + 1)(1 - \frac{1}{\varepsilon_r})] = \frac{1}{2}\frac{Eq}{\varepsilon_r} \end{aligned} \tag{8}$$

Due to the equation (8), the total resulting force $d\vec{F}$, exerted on the charges $dq, -dq'$ corresponding to a surface element on the surfaces 2in or 3out, will be:

$$d\vec{F} = \frac{1}{2\varepsilon_r}\vec{E}dq = \frac{1}{2\varepsilon_r}\vec{E}\frac{dq}{ds}ds \tag{9}$$

Consequently:

$$\vec{F}_{tot} = \frac{1}{2\varepsilon_r}\oiint_{2in,3out}(dq/ds)\vec{E}ds = \frac{\vec{F}_M}{\varepsilon_r}, \tag{10}$$

wherein $\vec{F}_M$ is the total resultant force exerted on the conductors 2, 3, being derived if we assume that equation (2) is in force. Then $\vec{F}_{tot}$, according to equation (3) should be equal to zero. When however the total resultant force $\vec{F}_M$ exerted on the metallic elements 2,3 is not equal to zero, then, according to equation (10), $\vec{F}_{tot}$ will also not be equal to zero. The aspect that, according to equation (3), $\vec{F}_{tot}$ is zero, is compatible with the fact that the work of $\vec{F}_{tot}$ must be equal to zero when the externally offered energy is equal to zero (constant voltage and absence of leakages). However, the equation (3) does not take into consideration the exact forces which are exerted on the sum of the charges $dq, -dq'$, as it has already been mentioned at the equations (4-10). Eq.(10) takes into account the forces and the particularities of the boundary conditions between the surfaces 2in, 3out and the dielectric means 1. At the same time Eq.(10) calculates $\vec{F}_{tot}$ on the basis of the simulation being derived if it is assumed that the equations (1,2) are in force, i.e. on the basis of the classic solution of the field of fig.1 (boundary conditions of constant voltage on the elements 3, zero voltage on the casing 2 and dielectric constant of element 1).

Thus, the question is raised whether the classical approach, where $\vec{F}_{tot}$ is zero, or Eq.(10), where $\vec{F}_{tot}$ can be non-zero, is valid. From Eq.(1) it is derived that there are charges in the whole extent of the dielectric 1 if the potential second derivative is not zero; this usually is valid in asymmetrical capacitors and it can be verified by the aid of finite elements calculation in various systems and more specifically in the system proposed as it will be later described. According to the classical point of view [Eq.(2)] the charges in dielectric 1 are virtual and used only for the purposes of the electrostatic field solution. Obviously, this point of view is arbitrary; therefore Eq.(10) is more consistent since it takes into account the existing real charges. Besides, the electric field acts with intensity E on charges $dq, -dq'$ and because of Eq.(7) it acts on equivalent charge dq/ε_r ; from this derives Eq.(9) without having the coefficient 1/2 which is due to $dq, -dq'$ distribution. In this way, substantially, Eq.(10) is derived.

2.2 Specific Arrangement [16]

The specific arrangement proposed is depicted in fig.2. The elements 3 (3.1 and 3.2) are formed by metal deposition (e.g. by means of the "e-beam evaporation technique") on the strong insulation solid dielectrics 1a and 1b, excluding the surfaces 8, in which the elements 1a and 1b are formed by casting plastic material, e.g. polyethylene. The surfaces 8 may be covered by a mask. In the case of metal deposition they can be cleaned and remain uncovered by using a technique like

lithography. On the contrary, all the remaining surfaces of the sections 1.a and 1.b are covered by a metallic substance e.g. chrome or nickel. The sections 1.a and 1.b are joined along the surface 8 by insulation adhesive forming plates of dimensions e.g. 5 mm X 300 mm X 300 mm. In the case of metal deposition on dielectric, the developed cohesion is high enough to exclude the creation of gaps, which could be the cause of voltage breakdown; voltage breakdown is also avoided due to the curvature of the lower parts of element 3. The metal elements 3 and 2 are connected to the high voltage ends 11 and 12 through the conductors 9 and 10; conductor 9 is electrically isolated in such a way that electrical leakages are avoided. In this way a thrust is created mainly due to the electric interaction of the element 3.1, the element 2.1 and the interposed dielectric 1a.

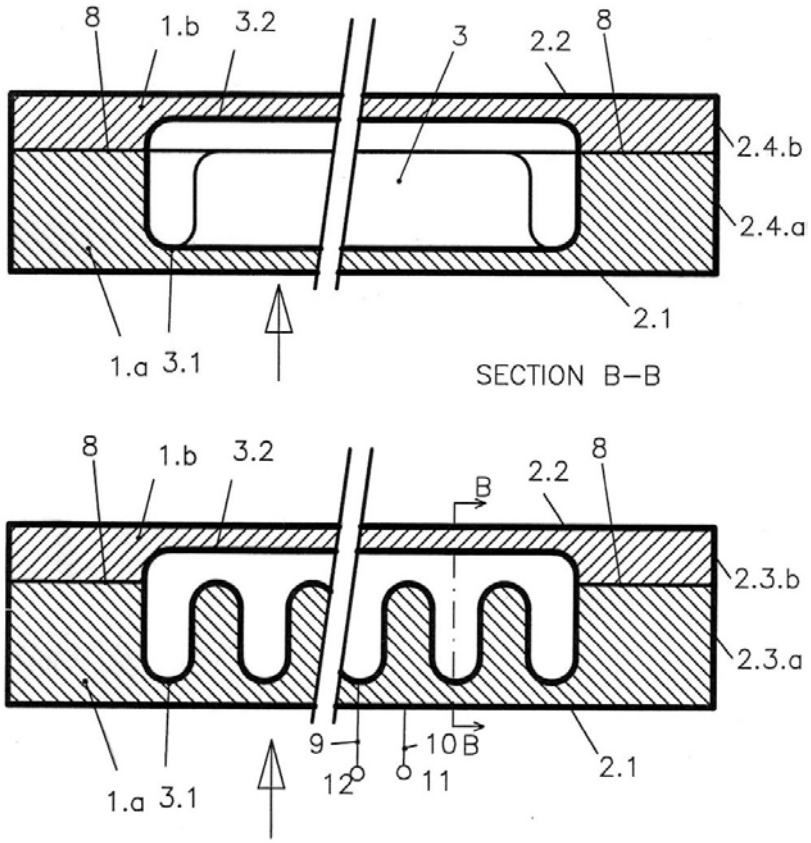

Fig. 2. Zero potential casing asymmetric capacitor system
Specific arrangement

We use the method of finite elements for the arrangement of figure 2 with the following boundary conditions[13]:

- The voltage on the elements 3 is 20.000 V
- The voltage of the casing 2 is equal to zero.
- The specific inductive capacity of the dielectric means 1 is ε_r=1,
- The teeth height of the elements 3 is 2 mm
- The minimum distance between the elements 3 and 2.1 is 1 mm
- The minimum distance between the elements 3 and 2.2 is 1.5 mm

- The distance between two consecutive corresponding points of the teeth of elements 3 is 2 mm
- The curvature radius of the lower parts of the elements 3 is 0.5 mm,

On this basis, a resultant upward thrust $\vec{F}_{tot} = 4{,}17 gr^* / cm^2$ is found. The reduction surface of $\vec{F}_{tot}$ is the projection surface of the elements 3 on the inner surface of the element 2.1. This force is calculated-simulated according to the finite elements theory, on the basis of Eqs.(1,10). Using the same method for various dielectric means 1 we notice that the force $\vec{F}_M$ exerted on the metallic elements 2 and 3 increases with the dielectric constant, not happening the same concerning the thrust $\vec{F}_{tot}$, because according to the equation (10), this force is inversely proportional to the dielectric constant. Thus, it is:

For $\varepsilon_r = 1$, $\vec{F}_M = 4.17 gr^* / cm^2$, $\vec{F}_{tot} = 4.17 gr^* / cm^2 = 41.7 Kp / m^2$

For $\varepsilon_r = 2.3$, $\vec{F}_M = 9.6 gr^* / cm^2$, $\vec{F}_{tot} = 4.17 gr^* / cm^2 = 41.7 Kp / m^2$

For $\varepsilon_r = 5$, $\vec{F}_M = 20.85 gr^* / cm^2$, $\vec{F}_{tot} = 4.17 gr^* / cm^2 = 41.7 Kp / m^2$

For $\varepsilon_r = 100$, $\vec{F}_M = 417 gr^* / cm^2$, $\vec{F}_{tot} = 4.17 gr^* / cm^2 = 41.7 Kp / m^2$

In the case $\varepsilon_r = 2.3$ the dielectric means 1 may be polyethylene (PE). The maximum developed intensity is 230 kV/cm and lies under the limit at which the corona phenomena for the PE start. In this context, we observe that in order to have a high force $\vec{F}_{tot}$, it is significant that, the dielectric means 1 is a strong insulator, independently of its dielectric constant. Indeed, it is then possible for the same mimimum distance between the elements 3 and 2.1 to appear higher allowable imposed voltage and consequently capability for higher thrust.

A simple and obviously working asymmetrical capacitor is the Frolov's one[8,9], depicted in figure 3. According to this figure the forces exerted on the central metallic plate are eliminated, while the remaining forces are achieving an upward thrust. This capacitor is an open-type one i.e. it exists within an electrical field, which is extended to the infinity.

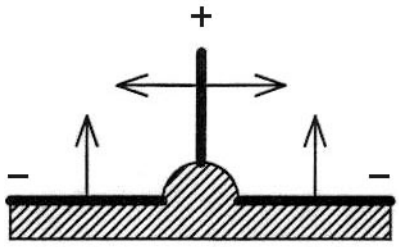

Fig. 3. Frolov's asymmetrical capacitor

The proposed asymmetrical capacitor system is investigated both for theoretical and for practical reasons. This system is restricted by an electrically neutral casing, which implies that the electrical field created is also restricted within this casing. Thus, if the system works, it does mean that it is not due to an electrostatic phenomenon; the system is rather gravielectrical as it will be later explained. The

feature of metal deposition on wave formed strong insulation solid dielectric as indicated in fig.2 provide, for reasons mentioned above, a high thrust and a safe operation; this implies the existence of great measurable magnitudes which can assure an over-unity operation. Because of the fact that the elements 2.1 and 2.2 of fig.2 are metallic and electrically neutral, there is the possibility of multiplication of the resultant thrust force by means of two or more systems proposed by consecutively placing the next one on the former one, as depicted in fig.4 where the purpose is the energy production.

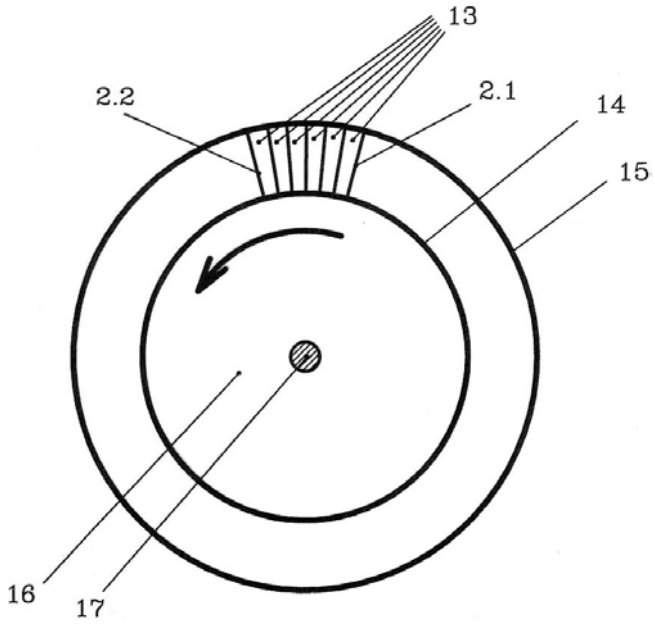

Fig.4. Zero potential casing asymmetric capacitor system
Energy production arrangement

3.Explanation Basis

When the system is working without having corona effects this means that the energy offered to the system is practically zero. Thus, when, according to calculations, the system is moving, we have energy production of an over-unity effect. This effect can not be explained within classical physics; it can be explained with a physics theory which is based on the claim for minimum contradictions [11,12].

Our basic communication system, which consists of the Aristotle logic and the Leibniz sufficient reason principle, and the claim that there is anterior-posterior in our communication, are contradictory [11,12]. Thus, any consequences of this system can derive with the aid of a claim for minimum contradictions. On this basis, a physics theory is least contradictory when it is described in anterior-posterior and in extension in space-time terms. This leads to a matter space-time aether in which things exist and from which things are made. Lorentz's transformations derive on condition that a perfect (non-contradictory) physics theory can be stated; in this case, space-time is regarded as continuum. However, a physics theory is contradictory since it is expressed through the basic communication system. This leads, on the basis of the claim for minimum contradictions, to a stochastic matter space-time. The Claim for

Minimum Contradictions, though being completely general, can lead by itself to the statement of minimum contradictions physics theory [11,12]. As it was mentioned according to this theory space-time is stochastic and it can be regarded as matter - aether. However, matter can be either mass or charge. Thus, there exist both mass-gravitational (g) and charge-electromagnetic (em) spacetime. The (em) spacetime behaves as a (g) spacetime , since both are spacetime and obey the same principles but it is not. Thus, any time interval in the (em) spacetime is incomprehensible with respect to a coexisting (g) spacetime and it can be regarded as an imaginary number which is incomprehensible as well. A basic conclusion of this theory is that *"The energy of any oscillating infinitesimal spacetime is equivalent to its internal time";* where as internal time is defined a time τ of a phenomenon of comparison. *According to this conclusion the energy of an infinitesimal (em) spacetime can be regarded as imaginary since it is equivalent to an (em) time interval. Therefore, in general, the electromagnetic energy can be regarded as imaginary.* A gravitational spacetime energy E_g can be converted into an electromagnetic spacetime energy E_{em} by means of photons and vice versa; this being compatible with the first thermodynamic axiom. In extension (em) mass and momentum are imaginary as well. Because of the fact that the interactions between the (g) and the (em) space-time take place through photons, we may assume that the momentum conservation principle is valid [17].

On this basis, a space-time-matter field in general, behaves locally as a particle-space-time field; if we put $c = \hbar = 1$ the following equations are valid[11,12,13].

$$\partial_{xi} \frac{\Box\Psi_g(\vec{r},t)}{\Psi_g(\vec{r},t)} = 0\,, \quad \partial_{xi} \frac{\Box\Psi_{em}(\vec{r},t)}{\Psi_{em}(\vec{r},t)} = 0 \qquad \text{(i=1,2,3,4)} \tag{11}$$

$$\partial_t \left(\frac{\partial_t \Psi_g(\vec{r},t)}{\Psi_g(\vec{r},t)} + i\alpha \frac{\partial_t \Psi_{em}(\vec{r},t)}{\Psi_{em}(\vec{r},t)}\right) = 0 \tag{12}$$

$$\partial_t \left(\frac{\nabla\Psi_g(\vec{r},t)}{\Psi_g(\vec{r},t)} + i\alpha \frac{\nabla\Psi_{em}(\vec{r},t)}{\Psi_{em}(\vec{r},t)}\right) = 0 \tag{13}$$

$$\vec{g}(\vec{r},t) = \frac{c^2}{P(\vec{r},t)} \nabla P(\vec{r},t) \tag{14}$$

$$\vec{g}_{em}(\vec{r},t) = \frac{i\alpha c^2}{P_{em}(\vec{r},t)} \nabla P_{em}(\vec{r},t) \tag{15}$$

where α is the fine structure constant, Ψ_g, Ψ_{em} are the gravitational and the electromagnetic space-time wave functions, which are identical with equivalent particle Ψ functions, and $(\vec{r},t)$ is a point of a hypothetical measuring field(HMF)[11,12,13] . Eqs.(11) describe Schroedinger relativistic equations; Eq.(12) describes the energy conservation principle; Eq.(13) describes the momentum conservation principle. Eqs(14,15) describe the gravitational acceleration of the (g) and the (em) space-time; the probability density $P_g(\vec{r},t)$ is function of Ψ_g, Ψ_g^*, and

their time partial derivatives; the probability density $P_{em}(\vec{r},t)$ is function of Ψ_{em}, Ψ_{em}^*, and their time partial derivatives. Geometry of (g) and (em) space-time can be defined by means of $\Psi_g, \Psi_g^*, \Psi_{em}, \Psi_{em}^*$ and their time partial derivatives[18].

Eqs(11-13) describe any kind of energy and momentum interactions between the (g) and the (em) space to the whole extent of a system including its surrounding space. We don't know if this equation system can be solved since it rather refers to a fractal space[11,12]. However, we can get useful information for gravielectrical problems.

In a circle motion of a particle e.g. electron, an outside momentum is always required so that its momentum is continuously changing; this could take place through gravitational energy absorption which would imply a momentum interaction. Since electron's energy remains constant the energy absorbed should be radiated. This is compatible with Kozyrev radiation[19]. It is also compatible with electron's radiation as it has been described by C. Whitney[20].

Eqs(14,15) show that the gravitational acceleration of the (g) space-time is interconnected with the gravitational acceleration of the (em) space-time since they are functions of $\Psi_g, \Psi_g^*, \Psi_{em}, \Psi_{em}^*$ and their time partial derivatives which, because of Eqs(11-13), are interconnected. Thus we can state that an electrical field creates a gravitational one and vice versa.

The photon emission, because of energy level swift of an electron in the hydrogen atom could be due to gravitational energy absorption and not due to potential difference in proton's field; thus, the energy produced in various chemical interactions could originate from something material (matter space-time absorption) and not from a pure mathematical notion, as the notion of potential does[21].

On this basis we can explain the thrust and the energy of the system proposed, since there is something material i.e. the gravitational space-time which offers the momentum and the energy required. In a moving charge within an electrical field, the energy produced is due to the gravitational space time energy absorbed; the force exerted is due to gravitational space time absorbed momentum change. In a moving charge within an electrical field, the energy produced is due to gravitational space time energy absorbed; the force exerted is due to gravitational space time absorbed momentum change. In a moving electrostatic system, where there is no charge motion with respect to the existing field the energy produced could be due to the gravitational space time energy absorbed while the thrust could be due to gravitational space time absorbed momentum change. If this is the case radiation might exist for energy balance. A gravitational field can be created because of the existing electric field; this gravitational field can provide the energy and the momentum required.

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