Foundations of a Space Time Energy Pump

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Abstract

The purpose of this paper is to show the possibility of the Quantum Spacetime Gravitational Fields to be engineered through a space-time energy pumping process on the basis of the hypothesis of the Quantum Space-Time-Aether[1]; this hypothesis is based on the unification of the physical meaning of the notions which derive either from the GRT or the QM [2,3,4] and it can be regarded as a possible consequence of the claim for minimum contradictions. A possible consequence of all these is that during the approach between $e^{-}+P$, a gravitational space energy absorption takes place[5]. This leads to the concept of a Space Time Energy Pump on the basis of which already existing devices and new proposed devices as well can be regarded as working[6].

1. Introduction

The Hypothesis of the Unified Field began from Einstein's idea to unify matter and field [7]. Many theories have been stated on this subject and therefore the question which theory we could follow is raised.

According to the up to now gained experience, the physics theories reveal various contradictions. Thus, the question is raised of whether these theories are contradictory or the communication system through which these theories are stated, is contradictory itself. The answer to this can be given by the following statement which can be proved as valid.

Statement I: *"Any system of axioms which includes the Aristotle logic and the earlier-posterior axiom leads into contradiction"*. [3,4]

Our basic communication system consists of Aristotle logic and of a hidden axiom which postulates the existence of earlier and posterior. In fact, every word or phrase is constructed in such a way that the letters or the words are put one after another. Thus, the basic communication system obeys the statement I. However, we notice that statement I cannot be stated because it is based on the basic communication system which, according to statement I itself, is contradictory. Thus, statement I imposes the silence. When we communicate, we use another hidden axiom according to which *"what is accepted as truth is what includes the minimum possible contradictions"* since the contradictions cannot be vanished. The systems of axioms we use in physics include the communication system and, therefore, their contradictions are minimized when they are reduced to the communication system itself. Therefore, we have minimum contradictions in physics when it is based only on the basic communication system i.e. on the Aristotle logic and on the 'earlier-posterior axiom'. According to a previous work, the earlier-posterior axiom implies the existence of space-time and vice-versa. This leads to a space-time physics which satisfies the requirement to be based only on the communication system [8]; this physics, on the basis of statement I, is compatible with the hypothesis of the quantum space time (QST)-aether which is based on the unification of the physical meaning of the notions which derive either from the GRT or the QM[1].

According to the GRT, a particle field consists of a particle matter and a spacetime continuum which surrounds this matter. According to the QM, a particle field is described by means of a matter (De Broglie) wave, which includes the notion of a particle matter. If we

want to *unify the physical meaning of the notions which derive either from the GRT or the QM,* the following principles should be valid : *Principle I. "Any infinitesimal spacetime can be regarded as a matter wave". Principle II. "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 [1]. The hypothesis of the Quantum Space-Time(QST) [1] is based on these principles and implies that 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 I,II, 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 too. *According to principle II, 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* [5].
On the basis of the above mentioned and of existing experimental data the following can be regarded as a possible consequence:
During the approach between e^{-} *+ P, a gravitational space energy absorption takes place from the surroundings.*
This is the basis of the concept of a Space Time Energy Pump which in this paper is shown as being applied in already existing devices and in new proposed devices as well.
For the purposes of this work, the following definitions are useful [1]:
i. *As reference spacetime we define a euclidean spacetime to which, through transformations of deformity, any field can correspond.*. Any magnitude of it will be denoted by the subscript $_0$. A point A_0 of the reference spacetime occupies, by the action of the field, a position $A \neq A_0$
ii. *As Hypothetical Measuring Field (*HMF) is defined *a hypothetical field, which consists of the reference spacetime, in which at every point* A_0 *exist the real characteristics of the corresponding point* A *of the real field.*.
iii. *In a* HMF, *we define as relative spacetime magnitude sr the ratio of a real infinitesimal spacetime magnitude ds to the corresponding infinitesimal magnitude* ds_0 *of the reference spacetime*: i.e. $sr = ds/ds_0$. This can apply to any magnitude as follows :
Relative time $tr = dt/dt_0$, where dt is an infinitesimal time of comparison. Relative spacetime magnitudes can apply either to a spacetime continuum, or to a statistical matter field. In the latter case, the above magnitudes are denoted by $\overline{sr}, \overline{tr}$ where the superscript ($^{-}$) denotes the local mean value.

2. The e^{-} + P Approach

a. Consequences of the QST hypothesis [1,5]
For the purposes of this paper, the following consequences of the QST hypothesis are useful:
1. In a closed system, which contains both gravitational and electromagnetic energy, the conservation law is valid. [9]
2. A gravitational spacetime energy E_g can be converted into an electromagnetic spacetime energy E_{em} only by means of photons and vice versa.
3. In a closed system , the conservation principle can be applied as follows:

$$\overline{E}_g + \overline{E}_{em-g} = \text{constant} \qquad (1)$$

where the em-g index indicates a gravitational space energy in such a way that $\overline{E}_{em} = i\overline{E}_{em-g}$ and the dash ($^{-}$) indicates the mean value; it is stressed that the energy of a system is a stochastic quantity, thus the mean value is meaningful .

4. Schroendinger relativistic equation describes the HMF of a particle field and the corresponding probability density function P(**r**, t) is positive for matter and negative for antimatter in both the (g) and the (em-g) space. Thus, in the couple $e^{-}+P$, the negative sign of P(**r**, t) in the (em-g) space can correspond to protons and the positive sign to electrons

b. Cosmological Consideration [5]
If we consider the Universe as a closed system which has been derived from zero, then the following equation applies:

$$\overline{E}_g{}^U + \overline{E}_{em-g}{}^U = 0 \qquad (2)$$

where the superscript ^{U} indicates Universe quantities. In a particle field, the following equation is valid according to the QST hypothesis:

$$\langle E \rangle \langle V \rangle = hc \qquad (3)$$

i.e., the product of the energy expectation value of a particle field multiplied by the expectation value of the volume which contains that energy, is equal to hc. In general, it can be proved that the volume $\overline{V}_g$ increase of a matter space-time system has as a result the energy $\overline{E}_g$ decrease and vice versa. Thus, when $\overline{E}_g{}^U$ is very high, the volume $\overline{V}_g{}^U$ that contains $\overline{E}_g{}^U$ will be very low. Universe's expansion means increase of $\overline{V}_g{}^U$ and decrease of $\overline{E}_g{}^U$ as well as increase of $\overline{E}_{em-g}{}^U$ according to the equation (2). From the equation (2) it is derived that for positive value of $\overline{E}_g{}^U$ the $\overline{E}_{em-g}{}^U$ value will be negative. Thus, the Universe evolution is a process reverse to that of the Universe creation, and during this evolution the quantity $\overline{E}_g{}^U$ decreases tending to zero, while the quantity $\overline{E}_{em-g}{}^U$ increases tending also to zero. According to the density probability interpretation in 2.a. proton's charge can be regarded as negative energy while electron's as positive. According to existing measurements and data , the proton charge is 4,803206815x10^{-10} esu, while the electron charge is $e = \sqrt{\alpha \hbar c} = 4{,}80319626 \cdot 10^{-10}$ esu [10]; this means that the couple e^{-}+ P as a whole can be regarded as a negative energy. The electron charge, if considered as an imaginary mass, is not constant but it varies with its velocity; thus, when the electron approaches the proton, it will have a trend to neutralize it; therefore the e^{-}+ P approach results to the increase of $\overline{E}_{em-g}{}^U$ and due to equation (2), to the decrease of $\overline{E}_g{}^U$. Consequently, we may draw the following conclusion I:
Conclusion I: "During the approach between e^{-} + P, a gravitational space energy convertion into electromagnetic energy takes place ".

c. Field and Mass Energy Conservation
We denote by E the energy level of an electron, excluding its rest energy, in a radius r in the hydrogen atom and by E_{el} the kinetic energy that the electron acquires during the free fall from radius $r = \infty$ to radius $r = r$. According to the QST hypothesis, matter is the spacetime itself and the energy E_{el} is the energy-matter of the space within which this energy exists. According to Classical Mechanics, the transfer from one energy level E_{el} to a higher one takes place through action of the proton field on the electron i.e. through energy offered by the field. Thus, the question is raised*: which is the mass of the energy offered by the field? According to the QST hypothesis, there is no action from a far distance and the energy increase is caused only by matter increase; otherwise the mass-energy conservation principle is not satisfied.* Therefore, during the transfer from one level of energy E_{el1} to a higher level of energy E_{el2} which corresponds to a smaller radius r, we should have,

according to the QST hypothesis, absorption of energy-matter by something that exists out of the space which encloses energy E_{el1}. Since the increase of E_{el} has as a consequence the decrease of the radius r, this means that this increase corresponds to $e^- + P$ approach. According to what was mentioned above, the $e^- + P$ approach has as a consequence the absorption of (g) space energy-matter δE_g; this energy according to the QST hypothesis, causes the increase of the level of energy E_{el} and therefore participates in the action of the field.

d. Energy Balance
In a closed system, because of eqn(1) we have:

$$d\overline{E}_g + d\overline{E}_{em-g} = 0 \qquad (4)$$

Let as suppose that this system does not include any gravitational (g) energy and that it consists of opposite charges. During the opposite charges approach eqn(4) has no meaning since there is not any energy $\overline{E}_g$ in order to be offered for the increase of $\overline{E}_{em-g}$. In this case eqn(4) has meaning only when it is applied for an open system for which $d\overline{E}_g$ is the energy inflow.
During the e^-+ P approach and on condition that we are far from the area of the weak force action we have an increase of the electron gravitational energy (mass energy) at the expense of the em energy since the gravitational forces are weaker than the em ones. Taking into account the Conclusion I, we have that the e^-+ P approaching requires a gravitational energy to be converted into em space; according to Eq(4), this energy is the energy inflow $d\overline{E}_g$ when the couple e^-+ P is regarded as not including any gravitational energy. Thus the e^-+ P approach requires an energy $d\overline{E}_g$ for both the electron mass energy increase and for the opposite charges approach. Therefore we may draw the following conclusion II:

Conclusion II: "During the approach between e^-+ P, a gravitational space energy absorption, from the surroundings, takes place ".

Conclusion II constitutes the basic concept which the present paper is based on.

e. An experimental argument
As it is known the following reaction is valid[11]:

$$e^- + P \rightarrow n + \text{neutrino } -0{,}783MeV \qquad (5)$$

which is endothermic. Reaction (4) describes an e^-+ P approach process and reveals that it cannot be realized only by means of the elements of the couple e^-+ P regarded as a closed system; it needs an external energy and this seems to be in agreement with statement II.

3.Space-Time Energy Pump

On the basis of statement II what is shown in fig. 1.a. takes place. During the opposite process it is expected that, for the same reasons mentioned in section 2, what is shown in fig. 1.b. will take place i.e. emission of the absorbed energy $\delta\overline{E}_g$.

Taking into account what was mentioned in section 2.a.2 i.e. that the (g) space can be converted into (em) space only through photons and vice-versa, we have that for the energy $\delta\overline{E}_g$ there are the following probabilities during the distancing of $e^- + P$.

1. Probability of photon emission.
2. Probability of photons conversion into mass (gravitons) which can be converted into useful work.
3. Probability of photons to be reconverted into a gravitational space energy of the surroundings.

On the basis of the aforementioned analysis, we can compose a Space-Time Energy Pump which can convert the aether's space-time energy into thermal energy or into mechanical or electrical work, through approaching-distancing of the couple $e^- + P$. This can take place on condition that probability 3 is avoided.

The Space-Time Energy Pump, which has been described, operates for any approaching-distancing $e^- + P$. It can also be applied for any set of electrons-protons on condition that the aether absorbed can be emitted. This means that we can have a Space-Time Energy Pump for any approaching-distancing of positive and negative electric charges on condition that it is possible for the absorbed gravitational energy $\delta\overline{E}_g$ to be emitted in the form of quanta. When the available level of energy emission is $E_{emission}$ then $\delta\overline{E}_g$ must be an integer multiple of $E_{emission}$ i.e. the condition that the energy $\delta\overline{E}_g$ can be emitted is:

$$\delta\overline{E}_g = kE_{Emission} \qquad (6)$$

where k is an integer. Later, it will be shown that eqn (6) is satisfied in already working devices.

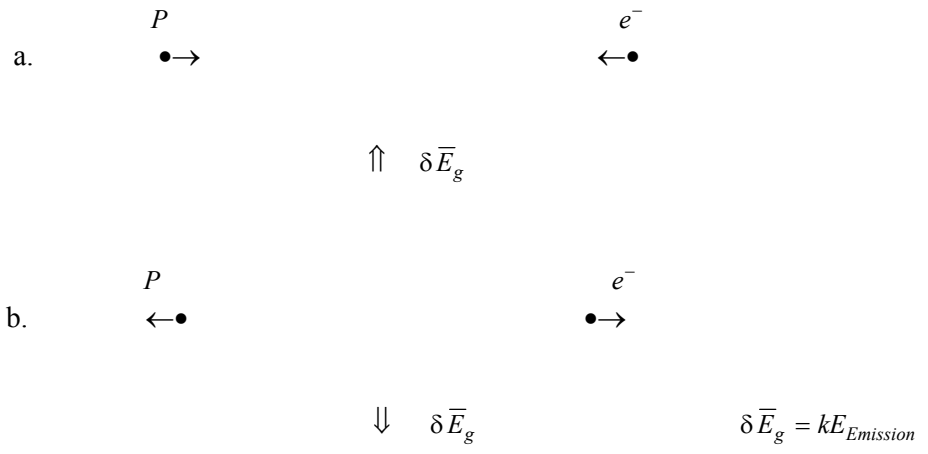

Fig. 1

4. Phenomena Interpretation

On the basis of the described Space-Time Energy Pump we can explain the following phenomena whose interpretations are not regarded as generally accepted.

1. Kozyrev Radiation

According to Kozyrev 's observations, the stars on which no nuclear reaction take place, are radiant and this radiation is proportional to the electrons density at the radiating area [12,13]. This shows a relation between the radiation and the said electron-proton couples. However, because of the stability of the atoms structure there is no approach between electrons and protons. Thus, the star Kozyrev radiation , according to all the above mentioned, can be interpreted as follows:

During the approaching of $e^- + P$ in the radiating star atoms, we have a gravitational energy absorption $\delta \overline{E}_g$ which is converted into radiation during their distancing. The gravitational space energy absorption is compatible, as it has been mentioned, with the gravitational space energy reduction trend because of the Universe expansion.

The approaching-distancing of $e^- + P$ takes place by means of unstable states that have a probability to exist, while the electron energy eigenvalue remains constant due to the structural stability of the atoms in the radiating stars.

2.Cold Fusion

a. reactionless process

During the heavy water electrolysis, heavy hydrogen is formed on the cathode and oxygen on the anode. When palladium is used as a cathode, the heavy hydrogen is absorbed inside the palladium. Because of the negative cathode potential, the heavy hydrogen electron is on the 1st level. Due to the electrolysis we have $e^- + P$ approaching –distancing and unstable states in the same way as it has already been mentioned for the Kozyrev stars radiation. These unstable levels are probable to exist while the energy eigenvalue will remain at the permitted energy level E_1 of the 1st fundamental state. In this way, a space-time energy pump will be formed, having as a result the gravitational space energy pumping and the production of photons that heat the whole electrolytic system.

b. reaction process

The aforementioned concern an excess heat generated without any reaction. However, during the cold fusion phenomena there is detection of nuclear reaction products. The explanation given by Conte according to Mizuno [11] covers the whole range of nuclear reactions which take place during the cold fusion, i.e. neutron, helium and tritium generation reactions, transmutation phenomena, etc. We can notice that the explanation of Conte-Mizuno is facilitated as well on the basis of the space-time energy pump mechanism and especially on the basis that "during the approach between e^- + P, a gravitational space energy absorption, from the surroundings, takes place ".

Indeed, according to Conte-Mizuno explanation, the following reaction takes place during the approach between electrons and protons [11]:

$e^- + P \rightarrow n +$ neutrino -0,783MeV (7)

$e^- + D \rightarrow 2n +$ neutrino -0,783MeV (8)

The energy of 0,783 MeV according to Conte-Mizuno explanation, is covered by the electron capability to have – according to quantum mechanics – a presence probability under high energy as well as by the developing of an excess potential in very small distances between electron and proton. However, the energy of 783000 ev is difficult to be handled by means of low voltages. Thus, it is expected that the reactions (7,8) are significantly facilitated by the gravitational space energy absorption during the approach between e^- + P, which is not rejected but it is used for the creation of the next stable state (n + neutrino).

3. Light Water Electrolysis

According to a Mill's light water electrolysis patent[14] the energy production results from the formation of shrunk hydrogen atoms (hydrinos) which have fractional electron energy level number. The energy released is removed by means of energy holes offered by the catalyst of the electrolysis system.

However, hydrinos have not been detected. Thus, Mills' patent could be explained on the basis of the concept of the space -time energy pump. The above mentioned in section 4.2.a about a reactionless process are also effective in the case of light water electrolysis given that exactly the same mechanisms are being activated for both the heavy and the normal hydrogen.

It is noted that in Mill's experiment with catalyst K_2CO_3 there are, according to Mills, energy holes which absorb approximately $40{,}8eV$ [14]. Due to the negative potential of the cathode, the permitted electron state in the hydrogen atom is the 1st fundamental one. According to the present point of view, in order that an energy can be emitted from the state E_1 it must be emitted in the form of quanta of energy: $h\nu = E_\infty - E_1 = -E_1$

Thus, according to eqn (6), the aether energy absorbed should be an integer multiple of $-E_1 = 13{,}6\ eV$. We may notice that the energy absorbed by the energy holes is an integer multiple of $13{,}6\ eV$ i.e. $40{,}8\ eV = 3\text{x}13{,}6\ eV$. This verifies eqn (6).

Probably, the plasma electrolysis, as it has been developed by Ph. Kanarev, can be explained with the concept of the space time Energy Pump [15,16]. However, the explanation of this phenomenon in details is out of the limits of this paper.

5. Proposed Experiments

In order that the present point of view is verified the experiments with following arrangements are proposed:

Arrangement I [5,6]

According to the QST hypothesis, we have that the gravitational acceleration $\vec{g}(\vec{r},t)$ at a point $(\vec{r},t)$ of the HMF is [1, 17]:

$$\vec{g}(\vec{r},t) = \frac{c^2}{P(\vec{r},t)}\nabla P(\vec{r},t) = \frac{c^2}{\overline{tr}(\vec{r},t)}\nabla \overline{tr}(\vec{r},t) \qquad (9)$$

where $P(\vec{r},t)$ is the probability density of a matter system considered as a whole and $\overline{tr}(\vec{r},t)$ is the mean value, due to uncertainty, of relative time which correspond to $(\vec{r},t)$ of the HMF; $\overline{tr}(\vec{r},t)$ is proportional to the HMF ether density at the point $(\vec{r},t)$. Because of eqn (9), what is shown in Fig.1a will take place, that is the attraction on an object is attributed to the fact that the space time-aether under the object attracts the object more than the upper one and that $\overline{tr_2} > \overline{tr_1}$ [1]. If we reduce the ether energy density under the body[1,17] i.e. if we succeed in having $\overline{tr'}_2 < \overline{tr}_2$ then a weight loss of the object will take place as it is shown in Fig.1b

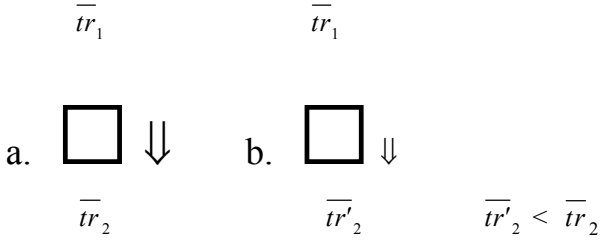

Fig. 2

These can take place through the arrangement of fig.3.a [5,6]. We create two metallic zones 1 and 2. Zone 1 consists of a metal with a very small hydrogen solubility e.g. copper. Zone 2 is made of a metal with large hydrogen solubility e.g. nickel. These zones are connected in a solid continuous way (e.g. we can have copper plating (zone 1) on a nickel plate (zone 2). The metal zone 2 is hydrogenated according to the prior art (e.g. by means of electrolysis). Under zone 2, there is zone 3 which is a copper plating on the lower part of zone 2. The plates 1 and 3 are connected through the cables 7 and 8 with the device 6, which comprises power supply and circuits for the generation of electric pulses and the adjustment of their characteristics.Through the insulating bars 4 the whole system lies on scales 5 . Through a production and regulation electric pulses system 6 electric pulses as in fig.3.b are exercised on the plates 1 and 3. When the temperature of plate 2 is greater than $250\,^{0}C$, the hydrogen absorbed ionizes and , therefore, we will have an $e^{-} + P$ approaching-distancing between the hydrogen nuclei and the pulses' current electrons. Thus, according to what was mentioned in chapter 3 and sections 4.2.1-4.3 aether absorption will take place in the area 2. Aether will reach the area 2 through the less attracting area of copper plating 3. Thus, it is expected that what is shown in fig.2 will take place i.e. a weight loss which could be measured with scales 5.

Arrangement II
We use plates 1 and 2 as cathode in Mill's light water electrolysis with K_2CO_3 as catalyst. We also use a proper metallic plate as anode so that a homogeneous field will be created. According to what was mentioned in arrangement I, a force is expected to be created due to aether absorption in the hydrogenated area 2 of the cathode.

Arrangement III [6]
According to what was mentioned in chapter 3, we can have a Space-Time Energy Pump for every approaching-distancing of positive and negative charges if the emission conditions of the aether energy absorbed are satisfied. According to this arrangement, we have approaching-distancing of positive and negative electrical charges when we have a negatively charged plate 1 placed on a rotating rotor 2 and a positively charged plate 3 steadily connected to a stator 4 as it is shown in fig.4. Behind the plates 1 and 3 there are insulating materials 5,6 which together with the insulating material 9 make sure that undesirable effects between the stator and the rotor are avoided. During the approaching of opposite charged plates 1, 3 we have, according to the mentioned, absorption of gravitational energy. Since during this approaching we do not have free fall of electrons but movement in accordance with the movement of plate 1, there will be a Space-Time Energy Pump where the electrons from the free fall energy level will return to the level which is imposed by their connection with plate 1 resulting in the conversion of the absorbed gravitational energy $\delta\overline{E}_g$ into photons-gravitons which supply the necessary mass-energy for the increase of the rotor's kinetic energy. In this case, the condition of regulation of $\delta\overline{E}_g$ in a way that it can be emitted in the form of photons-gravitons is self-satisfied because of the connection of electrons with plate 1, taking into account that movement of electrons from plate 1 to plate 3 is practically impossible because of the very large resistance of the between them air. When plate 1 is on the same radius as plate 3, the approach stops and distancing begins. Because of the insulating elements 5,6, we have an abrupt interruption of the field between 1 and 3 which has as a result the fact that the absorbed gravitational energy doesn't return to the surrounding gravitational space, as it would if elements 5 and 6 did not exist, but it continues to be incorporated in the rotor, being converted, finally, into useful energy. The charge losses of the plates 1, 3 are faced, according to the prior art, through a source of direct current through cables 7 and 8.

Arrangement IV [6]
According to this arrangement, the charges approaching are depicted in fig.5. The stationary charge 1 attracts the opposite charged particle 3 of initial velocity $\vec{\upsilon}_1$ which while approaching increases its kinetic energy because of absorption of gravitational space energy $\delta\overline{E}_g$. Without the existence of insulation 2 and without the existence of any other influence the particle 3 returns to its initial position making an elliptic orbit. If we impose insulation 2 while the particle 3 is in point A of the orbit in fig.8, then it will leave the field of charge 1 with a velocity $\upsilon_2 \rangle \upsilon_1$. The same will be valid in the case that the insulation 2 has always the place shown in fig.8, i.e. it will be valid that $\upsilon_2 \rangle \upsilon_1$ due to the fact that the particle 3 during its approach with charge 1 absorbs gravitational energy and therefore its kinetic energy increases. Thus, this arrangement can work as an accelerator of charged particles. The absorbed energy $\delta\overline{E}_g$ can be converted into useful energy by means of decrease of kinetic energy of particles 3 , e.g. with the use of magnetic fields, according to the prior art; thus, particles 3 can be led to their initial position making a circle; during decelerating of particles 3 through the said magnetic fields a force is created which can be exploited for any kind of motion production.

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