Torsion Technologies are XXI Age Technologies

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During past three hundred years the science has been known two universal long-range types of field. They are gravitational field and electromagnetic field. The significance of universal long-range fields can be easily proved, for example, by electromagnetic fields. The twentieth century showed clearly that it is difficult to find any technical, scientific or household problem, which could not be solved with the help of electromagnetism. It is electric power industry, electric transport, radio communication, computers, navigation, etc. Not a single universal long-range field has been discovered for last three hundred years; a field that could boast such an impressive sphere of practical application as it is the case with electromagnetism.

In the early twentieth century French scientist E. Cartan postulated the existence of torsion fields in the nature, i.e. fields generated by the angular momentum of rotation [1]. Before the spin was discovered, the nature of torsion field had been connected to the rotation of huge objects. Within the framework of such an approach, torsion field is viewed as a manifestation of gravitational field of rotating huge objects [2]. Later on, the spin, a quantum analog of the angular momentum of rotation, was discovered and it became clear that torsion field at the quantum level is generated by a spin unlike electromagnetic field generated by a charge and gravitational field generated by mass. From this standpoint, torsion field can be viewed as an independent physical object like electromagnetic and gravitational fields. By the mid-1970s, theoretical research on torsion field resulted in appearance of an independent subdiscipline of theoretical physics named Theory of Einstein-Cartan. Practically all experts working within the framework of Theory of Einstein-Cartan consider that torsion field is only a specific aspect of gravitational fields. The most prominent experts working within the framework of this theory are E. Fradkin, D. Gitman, V. Ponomarev, U. Obukhov from Russia, American R. Hammond, R. Hehl from Germany, Italians V. De Sabbata and C. Sivaram, M. Karmeli from Israel and others.

Theory of Einstein-Cartan remained a theoretical discipline that did not find practical application as it proved that torsion field is weak and cannot create visible phenomena or effects. This situation existed until 80s-90s, when G. Shipov created Theory of Physical Vacuum (TPV), which proved that the Theory of Einstein-Cartan is a phenomenological theory, primarily because of its relation to the phenomenological nature of E. Cartan's geometry. A fundamental theory of torsion fields basing on Ricci's geometry was developed in Theory of Physical Vacuum. The theory of torsion field in TPV does not impose any restrictions on the constant of spin-torsion interactions, i.e. torsion field can manifest intensively. We should pay attention to the fact that even Theory of Einstein-Cartan does not impose any restrictions on the constant of spin-torsion interactions regarding dynamic torsion (for radiating torsion sources). This does not prove that torsion field has strong manifestations. It is important in this context that the theory does not require obligatory infinitesimal constant of spin-torsion interactions. In this case the answer to the question whether this constant is small or big and, consequently, whether possible effects are strong or weak can be obtained only by means of direct experimental measurements.

What is the most basic interpretation of the Physical Vacuum? Let's imagine some limited space, where the air has been removed. Traditionally, we would say there is nothing there, which means there is vacuum. However, according to modern understanding, this is physical vacuum since this volume is not empty at all. Let us imagine now that we managed to remove all fundamental particles from this volume and to screen it so that no particles from outside can get inside. But even in this case, from the point of view of modern physics, it is impossible to assert that the volume is empty. The so-called virtual electron-positron pairs can appear in random locations of this volume of space. ***Material objects, electron-positron pairs, cannot appear from nowhere.*** They can be produced only by substance and if we do not register it directly in the specified volume, from which virtual pairs arise, this is bound to be some specific substance that cannot be observed under usual conditions. This specific substance was called Physical Vacuum. Apart from producing electron-positron pairs, Physical Vacuum manifests itself in a number of experimental phenomena.

Physical Vacuum is known to manifest itself in the so-called Lemb shift in hyperfine structure of hydrogen atom radiation and determines the so-called Kazemir's effect. The standard interpretation describes Physical Vacuum as a complex quantum dynamic object, which manifests itself through fluctuations.

With such an approach the scientific description of Physical Vacuum derives from the concept of S. Winberg, A. Salam and S. Glashow. G. Shipov's Theory of Physical Vacuum is based on strict fundamental postulates. This theory provides analytical description of Physical Vacuum on the basis of three vacuum equations: the equation of A. Einstein, equation of Geisenberg and equation of Young-Mills, which are structural equations of R. Weitzenbock's geometry. G. Shipov's Theory of Physical Vacuum allowed us to recognize the structure of the creation. We are an integral part of the reality, which is divided into seven hierarchical levels.

The topmost level, Absolute Nothing, is a level, which has no strictly analytical description within the framework of the Theory of Physical Vacuum. The problem is to be solved by future theories. However, we believe that this level of the reality contains information defining the necessity of generation of the

following level of the reality that determines the way (laws) of how this generation should take place, which determines properties of another level of the reality. G. Shipov called this next level of the reality as a primary torsion field.

The primary torsion field is a special form of existence of substance, which is a quantum vortex, which does not possess energy and does not transmit energy. These quantum vortexes have informational interaction. As there is no quantum vortexes interaction energy in the primary torsion field, the perturbation transfer rate in the medium of this level can only be equal to infinity. The primary torsion field also has to contain information defining the necessity of generation of the following level of the reality that determines the way (laws) of how this generation should take place, which, in turn, determines properties of another level of the reality. This level of the reality is known to modern physics as Physical Vacuum. Physical Vacuum might have a lot of components and various structural elements. Physical Vacuum, as well as the primary torsion field, contains ring vortex structures, which do not transfer energy. Perturbation propagates instantaneously in Physical Vacuum, i.e. its speed is equal to infinity. Properties of Physical Vacuum should contain information, which defines the mechanism of origination of specific virtual pairs rather than some random particles and antiparticles.

Particles, which were originated from Physical Vacuum, form the new level of hierarchy of the reality, i.e. the plasma. Properties of such particles as electron, proton and neutron, coupled with those of Physical Vacuum, with which they interact, determine appearance of specific rather than random atoms generated from the specified particles. These atoms and molecules, which they form, constitute the following three levels of the reality depending on the state of the phase - gases, fluid and solids.

G. Shipov called the four lower levels of this seven-level structure of the reality the objective physics, which is a subject of standard physical schools. The upper two levels were called the subjective physics. A number of theoretical experimental results prove the fact that these two levels together with the level of Physical Vacuum are responsible not only for many physical phenomena and processes, but also play a primary role in human consciousness. It is possible that Absolute Nothing is a level connected with the global manifestation of the Spiritual.

The level of the Spiritual should be creative and volitional. Inevitability of existence of creative base, i.e. the Spiritual level, is determined by the fact that the whole vertical structure and properties of all the horizontal levels should at first be "formulated" at the level of Absolute Nothing. Inevitability of something volitional on the Spiritual Absolute "Nothing" level is determined by the fact that there should be an impulse, which would start the mechanism of creation of the above levels of the reality. In the end it turned out that

the Theory of Physical Vacuum, as well as constructed physical models, not only gives ground to set up physics of consciousness, but also allows us to suppose the physical understanding of the Spirit.

Phenomenological models of Physical Vacuum appeared in Russia in the early 1980s and later turned out to correspond to the conclusions of the Theory of Physical Vacuum. Also it was important that these models did not contradict to official experimental results.

When models of Physical Vacuum were created it was deemed expedient to return to the electron-positron model of P. Dirac, which is changed in some aspects. This approach may be considered as justified if it allows us to formulate conclusions, which do not follow directly from standard notions.

At the same time, taking into account that physical vacuum is a state without particles, and, proceeding from the model of the classical spin by Ya. Frenkel and I. Ternov as ring wave packet (circulating energy flow, according to Belinfante's terminology [6]), we shall consider the vacuum as a system consisting of ring wave packets carrying information on the properties of the particles, rather than system of electron-positron pairs. It follows from the above suggestions that the true electro neutrality of such electron-positron vacuum will only be possible in case ring wave packets of electron and positron are enclosed into each other, as you see on Fig.1A.
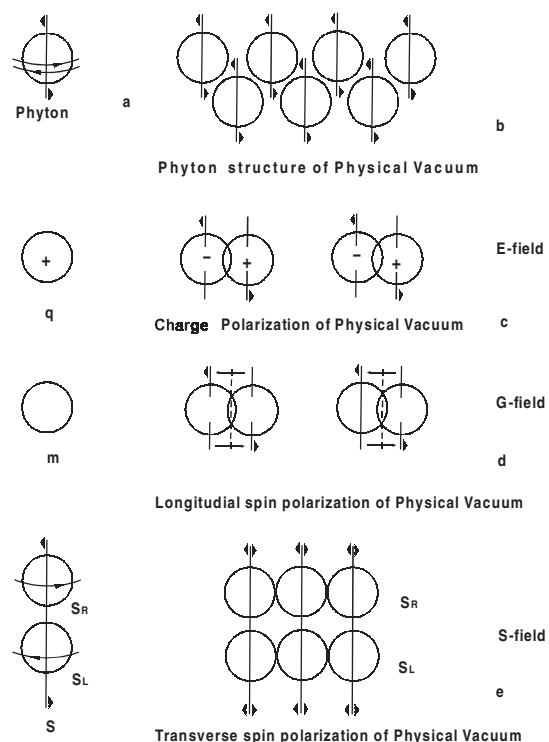

Fig.1 Diagrams of polarization states of Physical Vacuum

If the spins of these enclosed ring packets appear to be opposite, such system will be self-compensated not only with respect to charges, but also to the classical spin and magnetic moment. The system comprised by the enclosed ring wave packets, as is shown in Fig.1a, *will be referred to as a fiton.* Let's consider the most

practically important cases of Physical Vacuum perturbation by different external sources within the framework of the proposed model. This may help to demonstrate a feasibility of the suggested approach.

1. Let the charge (q) to be the perturbation source. If vacuum has fiton structure, the activity of the charge will be expressed in the charge polarization of Physical Vacuum, as it is shown on the Fig.1C. This case is well known in terms of quantum electrodynamics. In particular, the Lamb shift is traditionally explained through the charge polarization of the electron-positron Physical Vacuum.

2. Let the mass (m) to be the perturbation source. Unlike in the previous case, where we face a well-known situation, we will come up with a hypothetical suggestion here. Perturbation of Physical Vacuum by the mass m will be expressed in symmetric oscillations of fiton elements along the axis on the center of the object of perturbation, as it is shown on the Fig.1D. Such state of Physical Vacuum can be characterized as gravitational field (G-field).

If the mechanism of gravitation is really connected with longitudinal spin polarization of Physical Vacuum, we will have to admit that the nature of gravitation excludes the antigravity existence.

3. Let the classical spin to be the perturbation source. Presumably, the activity of the classical spin on Physical Vacuum will consist of the following. If the source has a spin oriented in a manner shown on the Fig.1e, spins of fitons that coincide with orientation of the source's spin, retain their orientation. Spins of fitons that are opposite to the source's spin are subjected to inversion due to the activity of the source. As a result, Physical Vacuum will change in a state of the transverse spin polarization. This polarization state can be interpreted as a spin field (S-field), the field generated by the classical spin, i.e. torsion field. The above approach is similar to the notions about the torsion fields as a condensate of fermion pairs.

The S_R and S_L polarization spin states are in contradiction with the Pauli's exclusion. However, according to the concept of academician M. Makarov [7], the fundamental physical laws at densities close to Planck's ones can have other physical sense. Rejection of Pauli's exclusion in a specific material medium, such as Physical Vacuum, is permissible, and probably to no less extent than in the case with the concept of quarks. *According to the above approach, we can state that the uniform medium, Physical Vacuum, can exist in different phases, or, to be more precise, polarization states, i.e. EGS states.* This medium in the state of charge polarization manifests itself as an electromagnetic field (E). The same medium in the state of spin longitudinal polarization manifests itself as a gravitational field (G). Finally, Physical Vacuum in the state of the spin transverse polarization manifests itself as a spin (torsion) field (S). Thus, EGS-fields correspond to the EGS-polarization states of Physical Vacuum.

In the early 1980s, A. Akimov predicted and experimentally confirmed the existence of a special class of torsion fields – electrotorsion fields [9]. In the mid-1990s, the author of the Theory of Physical Vacuum, G. Shipov, gave fundamentally strict substantiation of electrotorsion fields [3]. The model of polarization states of Physical Vacuum allowed us to find out an important circumstance. It has already been reported that torsion field can be registered in cases when Physical Vacuum has the state of the spin transverse polarization. However, we can formulate a more general approach based on the synergetics criteria. Presumably, torsion field can be registered in all cases when Physical Vacuum is in non-equilibrium spin state.

It is clear that the charge scission of fitons also causes spin spatial scission in case of the charge polarization of Physical Vacuum, as you can see at Fig.1c. *As a result, the spins appear to be non-compensated, which is an equivalent of the torsion component in electromagnetic field.*

Gravitational and torsion fields manifest themselves "purely", whereas electromagnetic fields always contain the torsion component, which is an important fundamental fact. Torsion field can be observed both in electrostatic field and in electromagnetic radiation.

Inability to understand this fact frequently resulted in that many phenomena of psychophysics generated by electromagnetic sources were explained with electromagnetic phenomena. In this connection it is necessary to mention the works of investigator Dzen Kanzhen, inventor Hideo Uchida, etc. Thus, Hideo Uchida experimentally proved [8] that *the device, which he had designed, reacted when the generator was switched on at the frequency of 13.0 GHz, with the detector shielded and waveguide outlet closed by a metal blank flange.* It is possible to explain this phenomenon considering the fact that the electromagnetic signal in the waveguide excites a torsion signal at the same frequency and the signal is not screened.

It is noteworthy that the reaction of biolocation operators to electromagnetic radiation is probably connected with the specified ability of electromagnetic field to generate the torsion component.

G. Shipov's fundamental theory of torsion field [3], which allowed us to prove intensive manifestation of torsion field, and, hence, provided us with an opportunity to observe strong effects, and, consequently, to solve a wide range of applied problems, played a very important role in the new revolution in physics. Creation of the world's first torsion generators in Russia in the 1980s [9] was a landmark of the new revolution in physics. Torsion generator is a device generating static torsion fields and wave torsion radiation. A number of laboratories, which have been united under the International Institute of Theoretical and Applied Physics (Russia, Moscow), which is carrying out a

considerable amount of works together with TORTECH USA, have made more than 20 torsion generators of different design during 20 years.

The developed torsion generators form two groups of devices. The first group includes torsion generators that create static torsion fields of variable intensity and spatial configuration, with different spacing and range.

The other group consists of torsion generators that create wave torsion radiation of various intensity, different frequencies (with frequency range from fraction of hertz up to hundreds of gigahertz), different frequency spectrums, different types of modulation, different methods of sending information to different objects. Universal torsion generators have been designed, which, apart from wave torsion radiation, can also create the static torsion fields and torsion currents. In some practical situations different types of torsion generators should be used simultaneously.

During 20 years torsion fields and torsion generators have been widely used to create torsion energy sources, torsion transport, torsion metallurgy, torsion systems of data transfer communication, torsion systems of medical diagnostics, etc. [10].

Feasibility and practical effectiveness of torsion fields was experimentally proved in a number of areas of application. In some areas, such as nuclear wastes salvaging with the use of torsion technologies, there is scientific substantiation and preliminary experimental results. Technological experience was gained in some areas.

Peculiar features of torsion field's properties define a significant efficiency of torsion technologies and simplicity of physical and technical methods, which implement these technologies. I will only outline their basic properties. However, it is noteworthy that all the properties of torsion fields were predicted theoretically and have been confirmed experimentally.

1. The classical spin or macroscopic rotation is the source of torsion fields. Torsion field can be generated by torsion of space or arise as a consequence of perturbation of Physical Vacuum of a geometrical or topological nature. It also can arise as an integral component of electromagnetic field. Torsion field can have self-generating nature.

The above cases describe torsion field generated at the level of matter. However, according to the Theory of Physical Vacuum, there are primary torsion fields that are generated by Absolute Nothing. Similar to the initial material of the matter world, i.e. the fundamental particles, which appear from Physical Vacuum, the Physical Vacuum itself arises from primary torsion field.

2. The tordions are quanta of the torsion field. We believe that tordions are neutrinos with energy as low as unities of eV. These neutrinos form a special class.

3. As torsion field is generated by the classical spin, its influence on some object can result only the change of its spin state (state of nuclear or atomic spins).

4. Different from the sources of electromagnetic and gravitational fields, which create fields with central symmetry, sources of torsion field create **fields with axial symmetry** as it is shown on the Fig.2. The spinning object establishes polarization in two spatial cones corresponding to left torsion field (S_L) in one direction and right torsion field Fig.2 (S_R) in the other. Moreover, there is an area of torsion field that looks like a disk, which is perpendicular to the spin axis and passing through the spin center. Axial torsion field appears in the areas described as cones (T_a), while radial torsion field (T_r) arises in the disk. Each of these torsion fields can be either right (T_{aR}, T_{rR}) or left (T_{aL}, T_{rL}).

5. Different from the electrical charges, torsion charges having the same sign (like classical spins ($S_R S_R$ or $S_L S_L$) attract to each other, while unlike charges ($S_R S_L$) are repelling.
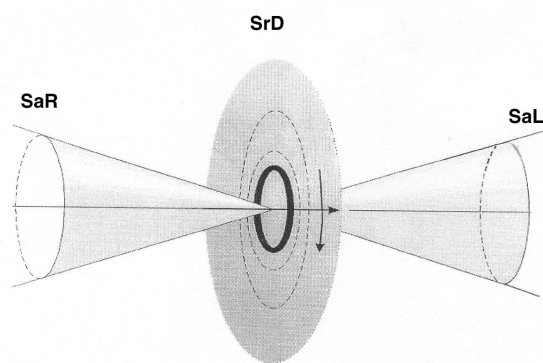

Fig.2 Spatial diagram of static torsion field of the spinning object. SaR, SaL - right and left axial torsion fields. SrD - radial torsion field of the spinning object

6. A stationary spinning object creates static torsion field. If the spinning object is non-equilibrium, for example change of angular rotational velocity, precession of massive objects, its nutation or the object has the moments of greater order, also the gradient distribution of mass along the spin axis, then such a dynamic spinning object creates wave torsion radiation.

7. Static torsion field has a limited range r_0 where the intensity of torsion field may slightly vary remaining almost the same as you can see on the Fig.3. Conventionally by analogy with electromagnetism, though physics of processes is different here, we can call the r_0 range as a *short-range zone*. The r_0 range does not limit the wave torsion radiation and its intensity does not depend on the distance.

8. The potential of torsion fields is identically equal to zero, which proves that they are not of energy nature. This is one of the factors which explain, why torsion signals (torsion influence) are transferred informationally rather than energetically, i.e. without

transmission of energy and their speed is overlight (infinite).

9. Physical Vacuum is the medium, where torsion radiation propagates. It is the holographic medium in relation to the torsion waves. In this medium torsion waves propagate through the phase pattern of the hologram. This is the second fundamental physical factor that explains informational rather than energetic nature of signals transfer, as well as indefinitely great transfer speed.

10. The constant of spin-torsion interactions for the static torsion fields for the case of the Cartan's spinning is less than 10^{-50}, according to the existing assessments, i.e. such fields cannot produce effects that can be observed in reality. Theoretically, the constant of spin-torsion interactions for the wave torsion fields of the Cartan's spinning (dynamic torsion) is not limited. Also the torsion fields of Ricci's or Weitzenbock's spinning have no restrictions on the value of the constant of interactions, and, hence, the intensity of manifestation of these fields is unlimited. Torsion fields with spinning generated as a component of electromagnetic fields (electrotorsion interaction) have the value of the constant of interactions about 10^{-3} - 10^{-4} [3]. This is a theoretical value that has been experimentally confirmed by professor R. Kuzmin.

11. Since the constant of electrotorsion interactions (10^{-3} - 10^{-4}) is slightly less than the constant of electromagnetic interactions ($\sim 7.3 \cdot 10^{-3}$), in natural conditions such torsion influence can cause observable changes only in objects with non-equilibrium state, for example, phase transitions that attenuate the electromagnetic connections.

12. *Torsion fields pass through the natural mediums without any losses.* This is a normal factor considering that neutrinos are the quanta of torsion fields.
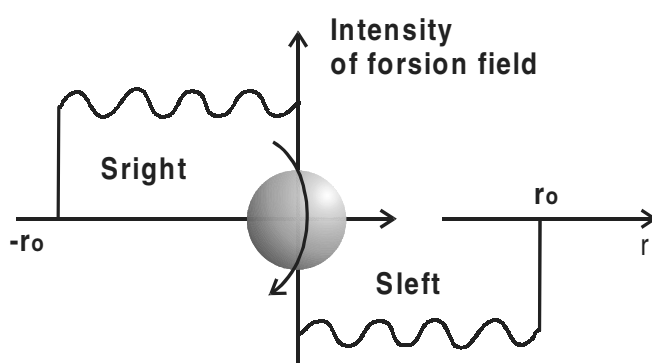

Fig.3 Intensity of static torsion field as function of r

13. Theoretically, as it has been pointed out above, the speed of torsion waves is equal to infinity. Overlight speeds are not unusual in physics. It was presented in Newton's theory of gravitation, and it forms the basis of *the concept of tachyons*. There would be no Goldstone's theory of spontaneous disturbance of symmetry without them. Overlight speeds were experimentally observed at first by N. Kozyrev [11], and later confirmed by two other teams. Zeilinger [12] confirmed it at the quantum level. We should mention that Soviet physicists noticed more than a decade ago that spin perturbations in spin medium are propagating in such a way that they cannot be screened, which in those times had no relation to the torsion fields. It means that there is a possibility of underwater and underground telecommunications, as well as communications through any other natural medium.

14. All organic and inorganic bodies consists of atoms, most of them have non-zero atomic or nuclear classical spins. Taking into account that all bodies are placed in the magnetic field of the Earth, considering the presence of magnetic moments of atoms and nuclei caused by the classical spins, and charges, there is a precession, which generates wave torsion radiation. *Thus, all bodies have their own torsion fields (radiation).*

15. Since different bodies consist of different chemical elements and different chemical compounds with different stereochemistry, i.e. different spacing of atoms and chemical compounds in these bodies, *each body has unique torsion field (radiation), i.e. typical frequency and spatial-frequency torsion field.*

No matter how unusual properties of torsion fields may seem, they should not only be accepted, but also exactly obeyed, since these properties are an objective reality of nature confirmed experimentally.

Many properties of torsion fields, since they have been formulated, almost automatically allow finding a property, which can be used as the basis for any specific application of torsion fields, according to the given formulation.

We can demonstrate peculiar properties, and, hence, manifestations of torsion fields by the following example. It is usual to think that physics knows everything about mechanics. In particular, many scientists speak about inertia, but there is no definition of inertia. Orthodox physics not only lacks interpretation of inertia, it cannot even explain whether the forces of inertia are internal or external with respect to moving bodies. Theory of the Physic Vacuum showed it clearly that inertia is a manifestation of torsion fields in mechanics [13].

It follows from the fact that if torsion fields can be controlled, it is also possible to control forces of inertia and, on this basis, make universal propulsive devices, which do not use the reactive thrust or friction.

Presumably, Newton's mechanics is based on Euclidean geometry, where torsion fields derive from Ricci's geometry, i.e. geometry of spinning. It is, therefore, quite obvious that Newton's mechanics cannot be applied to systems with spin, just as it cannot be used to describe objects moving at relativistic speeds. In this case the theory of relativity based on Riemannian geometry should be used. It is a special sort of mechanics, torsion mechanics, which should be applied to systems with

spinning rather than Newton's mechanics. Russian physicist-theoretician Gennady Shipov laid the basis of torsion mechanics. Torsion mechanics observes effects that are impossible from the Newton's mechanics view; also it is impossible in the case with quantum mechanics.

The most unusual factor is the possibility to create, not only theoretically, but also practically, systems that can be moving by their own internal forces.

The Fig.4 shows a picture of a device that employs the above principle.
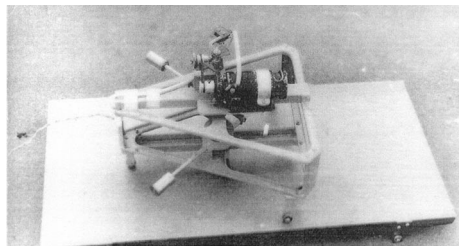

Fig.4 Tolchin's inertial drive (inertioid)

Since the first half of the 1980s great attention was paid to experimental and practical work aimed at **changing properties of different materials by the torsion field influence to these materials when they are in various phase states.** An example of such work is a research on influence of torsion waves to metal melts.

The scheme of the experiment is shown on the Fig.5. A standard laboratory Tamman's furnace was used to melt metals. Tamman's furnace is a metal cylinder of 60 cm diameter.
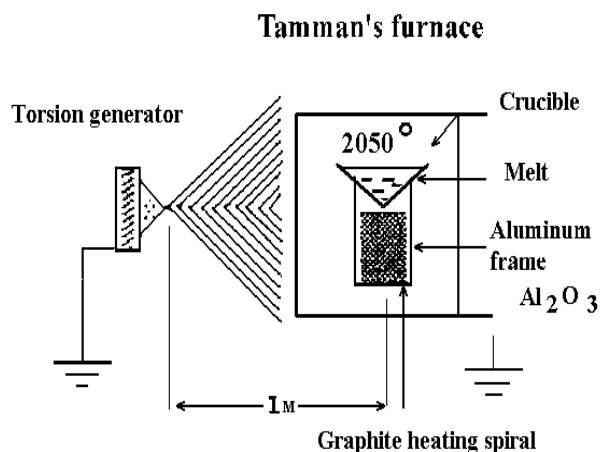
Tamman's furnace

Fig.5 Torsion field influence

The metal furnace body is earthed, i.e. such body is the Faraday cylinder that prevents any electromagnetic influence on molten metal. Metal in this furnace can be melted in vacuum or in any gas. Inside Tamman's furnace there is a graphite-heating element that makes metal melts when the currents is equal to 900 A.

Each experiment includes two sorts of melting, a test and experimental ones. In both cases the conditions remain the same. The only difference is that in the second case a torsion generator producing torsion waves from 1 to 150 Hz influences the metal and it is placed about one meter from the Tamman's furnace. The time of influence is 15-20 minutes. As soon as melting was over, each furnace was left to cool down. Then ingots were removed from the crucible and sections were taken to study the structure of metal. The results of such melting procedures were given on the screen.
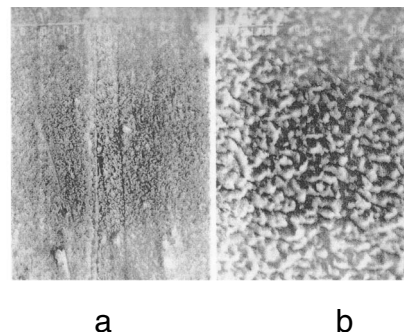

Fig.6 a- control melting
b- melting with torsion field influence

On the Fig.6a you can see the structure of tin after test melting. It is clear that the dimensions of metal grains are differing greatly. The structure of the metal is not homogenous. These factors cause low characteristics of metal, such as strength and ductility. On the fig.6b we can see the structure of tin that was influenced by torsion field while being melted. The difference between two pictures is so obvious that we can ignore any comments. However, we would like to point out that torsion field made metal grains almost identical with respect to their dimension, they became bigger, and the structure of metal became almost completely isotropic. Such metal is stronger and more ductile. The results you have just seen were obtained in the late 1980s. In the ensuing years, a number of alloy production torsion technologies were developed and patented**. Torsion modes were established, which helped to reduce the size of grains, and in some cases they can change the crystal lattice.**

Torsion technology for metallurgy was developed in Russia [14]. It is a torsion technology of silumin production, silumin being a mixture of aluminum and silicon. Unlike standard silumin production technologies, torsion technology does not require employment of alloying additives to increase the metal's strength. Nor does it require special chemical additives to fix gases in silumin. If torsion technology is used, torsion waves of a certain spectrum alone make gas bubbles out and increase strength by 1.3 and ductility by 2.5 times**. Simultaneous increase of strength and ductility by means of torsion radiation is impossible from the point of view of standard technologies.** These torsion technologies were shown in the city of Tejong, South Korea, in 2000. Now you can compare the results of test melting made in Russia and in Korea. Fig.7a shows a section of a test silumin ingot made in Korea. There are numerous bubbles and large structures here.

On the Fig.7c there is a section of a test silumin ingot made in Russia. This one also features numerous bubbles. Some structures are not visible here because of a poor photocopy.
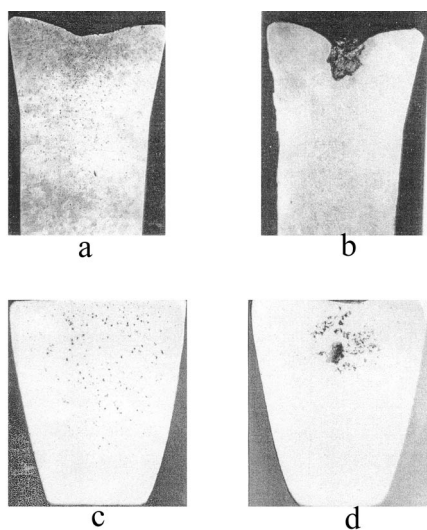

a   b

c   d

Fig.7

Fig.7b shows a section of a silumin ingot made in Korea with the use of torsion technology. On the Fig.7d there is a section of a silumin ingot made in Russia also with the help of torsion technology. Both ingots have no small bubbles scattered throughout the ingot. However, a specially performed deviation in the melting process carried out under torsion influence allowed us to observe the process of bubbles expulsion, they're joining together and making up large hollows. It was due to express cooling of the metal mould done in Tejong, which is not allowed in standard technology, that large hollows stopped short of piping, which is seen in the top right-hand ingot.

Considering the pressing nature of the global energy crisis coupled with impossibility of the radical solution of this crisis by means of the energy of the sun, wind, thermal sources etc., there are quite frequent suggestions that the energy of Physical Vacuum should be used instead. Physics-theorists have two points of view regarding this issue. One point of view is the statement, that since Physical Vacuum is an object with minimum energy, the idea to use it as an energy source makes no sense.

The other point of view recognizes that elements of Physical Vacuum, oscillators, do not interacting with each other, have energy, which is infinite. A number of Russian physicists, including Academician Y.Zeldovich [15], pointed out that this infinite energy was usually overlooked, announced it unobservable and called it zero level making this indefinitely high level a benchmark, for example, to calculate energy of particles. J.A. Wheeler [16] is known for his estimation of energy fluctuations of Physical Vacuum, which can be viewed as the lower boundary of this energy amounting to 10^{95} g/cm^3. For comparison we shall note, that nuclear energy (density of the nucleus) is equal to 10^{14} g/cm^3, and energy produced by burning oil is about 1 g/cm^3.

If the energy of Physical Vacuum is large, then increasing in power consumption for needs of the Earth, without mentioning the problem of heat balance, with the help of energy of Physical Vacuum cannot affect it in any way.

Recognizing that the theory gives us a possibility to develop energy from Physical Vacuum, the problem consists detection of physical principles which need to be used as a basis to make equipment capable to solve the problem and subsequent search of technical solutions of appropriate commercial nature. The above physical principles are in the focus of a number of research groups. However, now it is unknown if anyone solved this problem. At the same time, there are a lot of devices, which, according to their inventors, have efficiency greater than 100 percent [17].

Usually, the psychological power of school physics asserting that efficiency cannot exceed 100 percent appears to be stronger than data obtained in higher educational institutions. Any standard course of thermodynamics contains strict proof that closed systems truly can never have efficiency greater than 100 percent. However, if the system has an open type and thus can get energy from outside, such system can have arbitrary large efficiency. Thus, if an inventor asserts that he has designed a system with efficiency more than 100 percent, it seems senseless to discuss the question whether it is possible or not. There are only two questions in this matter. The first question is whether the procedure is correct and whether the equipment complies with the requirements for definition of a system's efficiency. In a great number of cases inventors declare more than 100% efficiency because either the method of measurement or equipment were improperly chosen or used.

If efficiency of the system is measured correctly and efficiency is indeed more than 100 percent, this automatically means that the system is of an open type and this is the case when the second question needs an answer: what kind of energy gets into this system and through what channel? When the research finds the channel and the kind of energy and as soon as the revealed energy is incorporated in the total system's energy balance, its efficiency again drops below 100 percent.

Thus, when the measured efficiency of a system is more than 100 percent, it only means that we do not know well how does this system work. In this connection there is a proposal, that it would be more logical to use the term "effectiveness ratio" rather than efficiency when dealing with the open type systems. In terms of standard terminology, some systems of electrostatic, magnetic, electromagnetic and thermal type are known to ***have efficiency up to 500 percent.*** In most cases inventors in patents declare the figure. In one patent,

for example, the device was declared to have efficiency of 3,000 percent. However, as a rule, independent expert evaluation does not confirm such high figures. This might happen if inventors conceal know-how or because the system is hard to produce.

Russian inventors, as well as in CIS, focused their attention on thermal systems with efficiency greater than 100 percent. Among the great number of such systems there are ones, whose **efficiency reaches 400 percent**. However, there is only one design of a thermal system, whose mass production variants passed independent expert evaluation several years ago, proved to have efficiency more than 120 percent. A production variant of a similar system with efficiency of 150 percent was shown last year in Russian. Construction of such system with efficiency up to 200 percent is planned for 2001.
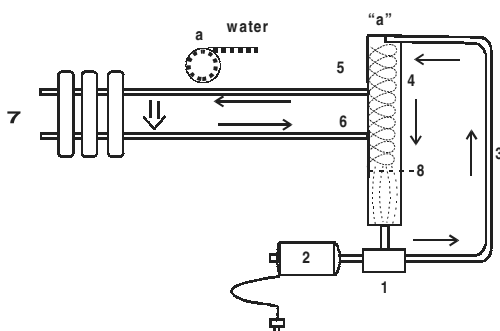

Fig.8

All types of systems with efficiency greater than 100 percent have a **main element with the spin** and specific demands to the performances of this spin. Fig.8 shows the general diagram of a thermal system, whose efficiency is more than 100 percent. Water flows from the heat exchanger (4) into the electromotor-operated (2) pump (1). A standard set up would feature a water-heating element at this stage, which is not the case with this one. After the pump the water flows back into the heat exchanger by specific pressure.

Now, a standard system would have the water get into the heat exchanger through its upper butt. The present

Vacuum to be shared with the object that generates torsion field of the system, i.e. the water spiral. This makes the temperature of the water to rise. One could think that the water heats itself. Considering that energy that heats the water is caused by torsion effects, and also taking into account that this mechanism is implemented through spiral, vortical process, and that the system is designed to obtain extra energy, this thermal heating set up was called the Torsion Vortex Generator (TVG).

It follows from the above that the Torsion Vortex Generator has two energy sources: they are electric mains supplying power to the electromotor, which is necessary to pump the water through the system, and Physical Vacuum giving out energy to heat the water. Later, when efficiency of such systems is considerably higher, i.e. more energy is taken from Physical Vacuum, part of the thermal energy, taken from Physical Vacuum, might be transformed into electrical energy and supplied to the electromotor.

In this case the mains will not be necessary any longer and such thermal system will become completely independent. Such system will become an independent source of energy.

When it happens, it will be a revolution in power engineering in general. It's not important whether this system is going to be thermal, electric, magnetic or of any other construction.

An important direction of work connected with Physical Vacuum and torsion fields consists on fundamental and applied medicobiological research. It was a research of great importance about the influence of static torsion fields and wave torsion radiation on various kinds of living organisms, as well as research of integral and characteristic torsion fields inherent in various living organisms. The latter became possible due to creation of highly sensitive quantum systems recording torsion radiation and its frequency spectrums.

A database containing spectrums of torsion radiation of different tissues at various stages of different diseases

… as a result, the water, which gets into the heat exchanger hits the tube wall and adopts a downward spin movement. With certain parameters added to the water spiral, such system can have more than 100% of efficiency.

design makes the water flows into the heat exchanger laterally. As a result, the water, which gets into the heat exchanger hits the tube wall and adopts a downward spin movement. With certain parameters added to the water spiral, such system can have more than 100 percent of efficiency.

Since spiral movement generates the torsion field, which is registered by torsion field measurement devices, it can serve as the grounds to consider that interaction of the system's torsion field with torsion fields of spin clusters (clusters of fitons [18]) of Physical Vacuum causes a small part of fluctuation energy of Physical

has been collected for a long time. It gave an opportunity to make equipment to check the man's health condition, measuring characteristic spectrums of torsion frequencies of specific groups of cells or tissues of any part of a human organ and comparing them with the respective spectrums of healthy cells or cells with different degrees of pathology.

A system designed to diagnose a man basing on the records of his torsion fields was named as a Torsion Diagnostics system (TORDI). To understand correctly how does it work, a number of things should be explained. Van Hoven's theory gives the following

conclusion: in order to obtain complete information about any system, it should be destroyed. However, destruction of tissues of the man in order to get information about their state is a too high price to pay for the information about his health.

However, the above Van Hoven's criterion can be satisfied with the minimum influence, when the cells are not destroyed and the atoms of these cells, being primary sources of torsion spectrums to be registered, are bring into the non-equilibrium state by means of outer disturbing influence.

In order to choose the frequency of the disturbing torsion influence correctly, it is necessary to take into account the role of water in physical and biochemical organization of tissues of the human organism.

At the same time, it is necessary to take into account the resonance torsion frequencies of various human organs. Finally, it turns out that the signal of torsion disturbance should be rather sophisticated considering both these factors. The TORDI system is a ready-to-use production device. Nevertheless, it is important to understand that the model is not the limit of scientific and technical potential incorporated in it and that enhanced variants of the system will appear with the course of time.

Summing up, I would like to draw your attention once more to the fact that work on torsion technologies is not limited by the directions that were discussed here. Actually, as it was pointed out in the beginning, on-going development includes all branches of economy, industry, agriculture and medicine, as well as all problems of everyday life. Technologies that we mentioned are the forerunner of the fact that the mankind is on the threshold of the age of torsion technologies, which, we believe, will change our life in the 21st century more than all the scientific and technical revolutions of the 20th century.

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The Electrical Vortex Non-Solenoidal Fields

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A mistake was found in the electrodynamics: it is detected that all electrodynamics' postulates corresponds to the experimental facts, but vortex electric fields has unclosed inductive lines.

When the magnet is moving, then the current of magnetic induction is moving together with it. From known velocity of motion **v** and the value of magnetic induction **B**, it is possible to calculate the intensity **E** of appearing vortex field according to electrodynamics formula of transformation of fields **E=vB**.

If to change the E=vB on induction $D = \varepsilon_0 E$ in formula of fields' transformation, that will get $D = \varepsilon_0 Bv$, where D is electric induction, B is magnetic induction, v is velocity of motion, ε_0 is electric constant.

Herewith the appearing electric induction is always transverse to the direction of motion. It is possible to formulate the rule of origin for electric induction under the condition of rectilinear motion: if to dispose the right hand palm so four fingers shows the motion direction of the magnetic flow (the field), connected with moving magnet, and the vector B fells into palm, then the moved aside big finger will indicate the direction of vector D. The given rule is like the rule for Lorenz' force, but on the contrary (the difference is in frame). In the first case the charge moves, but the magnet rests. Here the magnet moves, but the charge, which points the direction for lines of force of electric induction, is immovable. So, there it is the rule for left hand, but here, on the contrary, it is the rule for right hand. Thereby, if the charge moves, but the magnet is immovable, then the rule of left hand uses for determination of the force. But if the magnet moves, but the charge rests, then the rule of right hand uses for determination of the force.