

New Energy Technologies

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Issue #2 (5) 2002

Research on advanced propulsion systems and new energy sources



Professor Kirill P. Butusov
Read new article in this issue

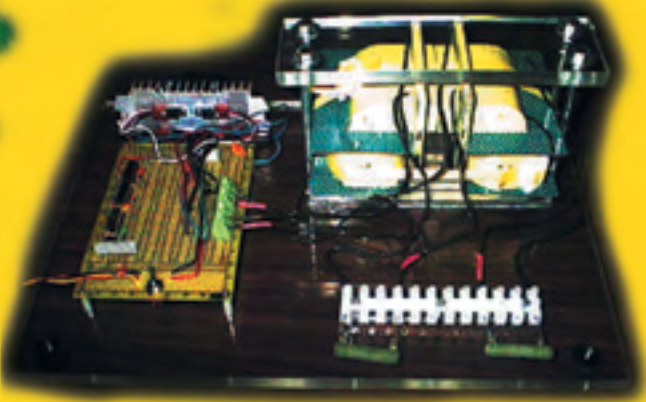


J. Carey

MEG



500% efficiency

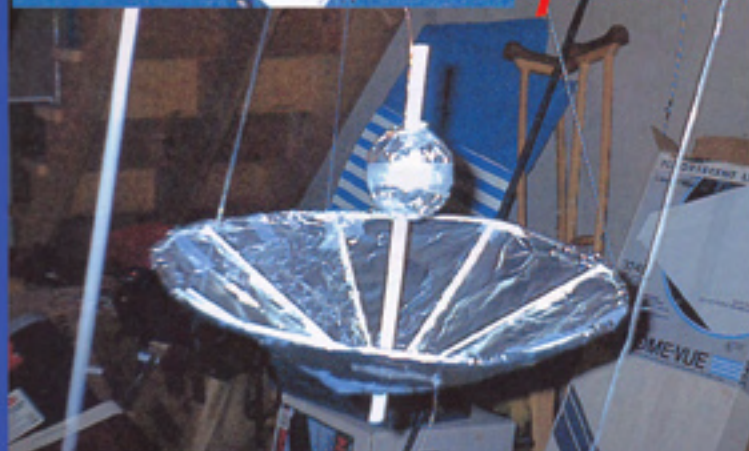


Also in this issue:

- * Experiments with EM solitons
- * Longitudinal waves
- * Ideas on Podkletnov's experiment
- * Vortex energy systems
- * New ether experiments
- * Kozyrev's ideas today

GRAVITATION

*a theoretical and
experimental approach*



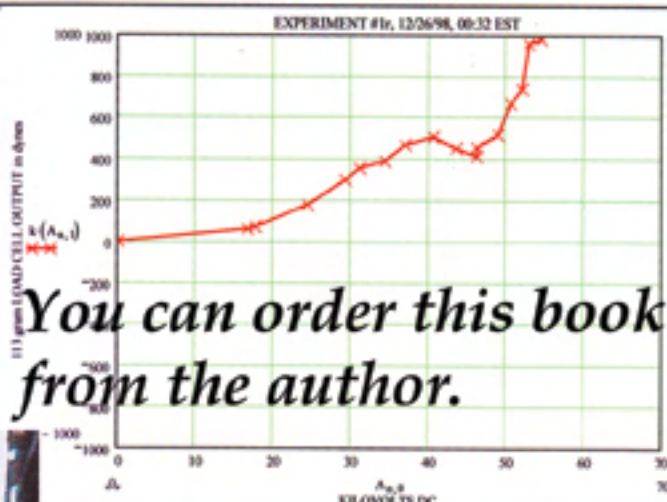
24 gram, 1/4" DIAMETER AIR DIELECTRIC CAPACITOR

EXPERIMENT #1a (continued)

149 (113 gram) LOAD CELL, CAL: 312 microvolts/gram
(12.9 volt exciter input voltage)



- HV



*You can order this book
from the author.*

NEW HORIZONS RESEARCH

H.V. OUTPUT TO - 000 KILOVOLTS D.C.

H.V. OUTPUT TO GROUND - 000 KILOVOLTS D.C.

H.V. OUTPUT TO GROUND - 000 KILOVOLTS D.C.

PRIMARY VOLTAGE 000 VOLTS A.C.

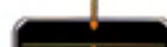
PRIMARY CURRENT 000 AMPERES A.C.

William C. Simpson
600 Meridian Str. Extension,
Apt.#302
Groton, Connecticut 06340,
USA
Tel. (860)405-1157

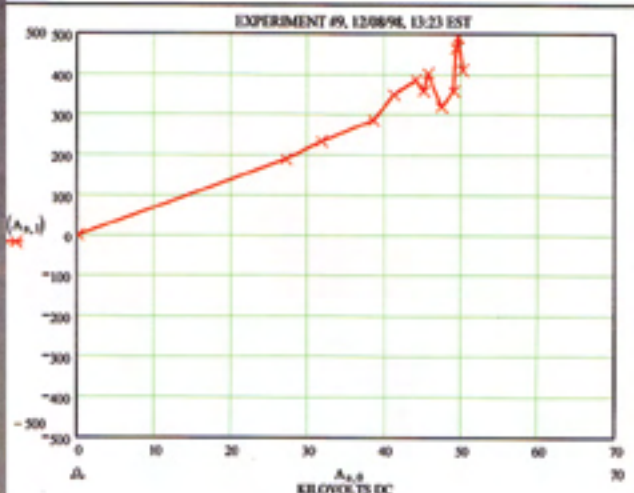
251.8 gram EPOXY DIELECTRIC CAPACITOR

EXPERIMENT #9

109 (227 gram) LOAD CELL, CAL: 118 microvolts/gram
(12.9 volt exciter input voltage)



+ HV





Anatoly P. Smirnov

Patent

"The method of increasing of energy of working medium to produce useful work"

This Patent claims some new method to increase energy of medium. The authors offered to take into account both quantity and quality of energy. New understanding of interaction allows to get gain in force and concentration of energy. Read more in this issue of our magazine.

The keywords are:

"The standard of quality of energy"

The authors of this patent # 2179649 are:

Andreev E.I., Smirnov A.P., Davidenko R.A.

Kuldoshin's Gravitation Theory

Inventor from Orenburg city, Russia, reported about his experiments on new propulsion methods and fuel-less energy sources.

It is related with his original theory of the "Ether Wind".

Read in this issue!



Sensation from Georgia!

Some time ago we have got a video record of TV program from Georgia. The operation of new energy source was demonstrated there. Gela Bezhuashvili sent this record. We had discussed some aspects of possible collaboration with Gela Bezhuashvili and we expressed our interest in development of joint research project. But then our attempts to contact this group were unsuccessful. Here we publish some photos captured from the video materials.



1. The author keeps in his hands 6 batteries of 1.5 V each, i.e. total voltage of the starter battery is 9V. The rotor is not rotating.

2. After the start. The starter battery is now disconnected. Rotor is rotating now.

3. The rotor.

4. On the flank of the body there is a belt-drive from the rotor to a generator.

5. Lamp is an indicator of work produced by the generator.



Faraday Labs Ltd once again states intention to organize joint research and development projects with this Georgian laboratory and other research teams, which develop similar experimental systems.

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Tel: 7-812-380-6564, 7-812-993-2501



NEW ENERGY TECHNOLOGIES #5

1. Over-unity electromagnetic transformer MEG by T.E.Bearden and my F-machine, **Alexander V. Frolov**
2. Fuel less energetics, **N.E.Zaev**.
3. Symmetrization of Maxwell-Lorentz equations. Experimental methods to generate longitudinal waves in vacuum, **Dr. Kirill P. Butusov**
4. Heat Vortex generators, **Dr. Eugene Sorokodum**.
5. Experimental investigations based on the model of electromagnetic solitary waves (solitons), **Mikhail V. Smelov**
6. N.Kozyrev's ideas today, **Dr. Shikhobalov**.
7. Kozyrev on possibility of decrease of mass and weight of the body under the action of Time active properties, Review of experiments.
8. Longitudinal thermomagnetic effect, **Dr. Alexander M. Mishin**.
9. An introduction to gravity, **Lew Price and Mart Gibson**.
10. The physical model of experiments made by E. Podkletnov, V. Roshin and S.Godin, **Anatoly Rykov**
11. Scalar Wars, **T.E.Bearden**
12. The problem of electron and superluminal signals
13. Gravitational Electrolysis

So, at the first glance, the world of elementary particles is a two-polar world. Then, if we consider the inner three-polarity structure of the particles, then this world can be described more clearly as a **multilevel hierarchy organization**. Each three-polar element (quark) can be clock-wise or counter clock-wise rotating structure that provides possibility of quark annihilation and possibility of negative, positive or neutral electric properties of elementary particle (quark complex).

From this we can consider the usual annihilation of positive mass-particle and negative mass-particle (for example, positron and electron) as compensation of inner motion in their three-polarity structures. Energy, which corresponds to this inner motion, should be released and radiated in this process of annihilation. **More deep and powerful annihilation is a compensation of inner structure of each element of the three-polarity complex. It can be called the "quark annihilation". Application of this principle in energetics allows much more powerful energy sources than any modern nuclear plants.**

According to our previous suggestion about 4-polarity, it is possible to assume that **inner structure of any quark consists of four peer elements, which are situated in space as a tetrahedron complex. By analogy with Poliakov's conception of electron, for quark we can assume 4-polar compensation, which**

was discussed above, Fig.3. More detailed description of this level of inner structure of matter requires more deep understanding of physical sense of time. **The technology of annihilation in this case is the time rate control technology.**

To my mind, this multilevel hierarchical approach to the space-time engineering is very easy since it directly follows from geometrical laws and it promises to be productive in the frames of ether conception. In this case, any "changes of density of energy" mean "changes of ether density". Multipolarity or dimensionality of space-time in any process is related with parameters of designed process. Thus, studying of multipolarity becomes an applied science, which allows developing of new technologies with new physical and mathematical basis.

References

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High Efficient Electromagnetic Transformer

Alexander V. Frolov

This month we have very good news from Thomas Bearden and his team. **USA patent #6,362,718 granted on March 26, 2002 for "The Motionless Magnetic Generator"** is one more example of extracting energy from a permanent magnet, i.e. new kind of alternators.

Sure, it is just my own opinion to say that it is an alternator without moving parts. Perhaps the authors are not in agreement with this point. But main fact is that "this system works beautifully and produces COP=500%" as Thomas E. Bearden said. Other inventors are Stephen L. Patrick, James C. Hayes, Kenneth D. Moore. Production and sales will start next year as 2500-Watt system, which will generate electric energy free. There is Magnetic Energy Ltd Company, which will develop this technology.

In description of the principle Thomas Bearden said that it is not usual electromagnetic transformer but a new type of the system, which use longitudinal electromagnetic waves of the vacuum.

In article "MEG Scalar Energy Device..." by Bill Morgan (wmorgan@nycap.rr.com), March 28, 2002 we can read

standard description of the technology: "The MEG provides electrical energy by tapping the longitudinal electromagnetic (EM) waves, which exist in almost infinite abundance in the vacuum of space. This ocean of energy which permeates everything is sometimes called the "zero point" energy..." It is obviously the authors are not interested to disclosure their know-how, even if they have it. Really I wonder in this point since Tom wrote me about his participation in this project (see his letter below). He was included in the team as adviser to find some acceptable scientific explanation for some experimental facts. So, one more time we can see example of empirical science, i.e. priority of experimental work. Only way to find something really new is experiments but not a theory. The theory can predict something new but it will be something that is logically follows from previous technologies and knowledge. The Experiment can produce really new knowledge. **So, it is not a fact that the explanation by Bearden's theory or by other scalar and zero point energy theories can help in development of the technology.**

I have to note that Dr. Gennady Nikolaev and his well-known Russian research team in Tomsk developed the same approach to magnetism for many years. Our magazine New Energy Technologies #2, 2001 have published Nikolaev's article (and some photos from his laboratory) on the longitudinal magnetism. But let's leave the theory since now it is more useful to discuss basic principles of the system than to develop theoretical dispute about scalar and vector potentials.

My own research on this topic was started from investigation of principles, which provide high efficiency of well-known Gramm's Generator (Zenob Teofil Gramm, 1826-1901, Belgium – France). His patent of 1869 describes electrogenerator, which use ring rotor (core of some ferromagnetic material). This rotor is placed between two magnets. Main aspect of this superposition is two opposite magnetic fluxes in the ring core that provide high efficiency of the system due to their mutual compensation.

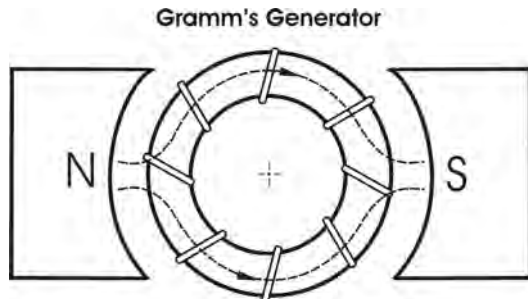


Fig.1

It is obviously that total secondary flux (induced in the generator after the load is connected) cannot produce back electromotive force and back torque to decelerate rotation due to simple fact: in this design the magnetic flux is separated and there are two opposite magnetic fluxes in the ring core. Due to the principle "Let's separate it and we'll take power" rotation in this generator can be organized with small input power and it is not important if the load is connected to the generator or it is not connected. Power output of this system is limited by design of the magnets, their flux (magnetic field intensity) and velocity of rotation only.

At the beginning of electrotechnical age this type of generators was very popular, production and sales were successful. But then other type of generators became more wide applied for industry. It is motor-generators, which use the drum rotor. If we'll power it from external source then it can be used as motor. But just this principle produces back torque in generator (i.e. deceleration of the rotor) in the load mode. So, modern motor-generator of the drum rotor is not over-unity system.

At first I have published my ideas on it in New Energy News magazine, USA, June 1994, p.9. It was article "Description of Φ -Machine and Φ -Transformer". The term " Φ -Machine" is connected with Φ -shape of magnetic flux force lines in the core that is principally important for this type of system.

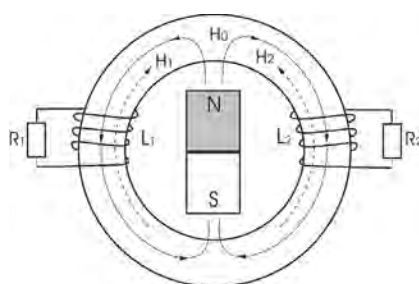


Fig. 2

Fig.2 shows ring ferromagnetic core, two coils L_1 and L_2 , permanent magnet as the rotor. Primary magnetic flux with intensity H_0 is concentrated in ferromagnetic ring. The structure of this field consists of two parts. The directions of two fluxes H_1 and H_2 (generated by coils) are in opposition to each other. So, total effect of secondary flux onto primary source is equal to zero.

The general principle is the creation of a bidirectional process. It is not possible to get free power in one load due to connection between cause and effect but it is possible to create two opposite effects for one cause. Total effect is equal to zero in this case.

Besides two opposite processes it is possible to create three or more processes, which should compensate total effect to remove back torque or back electromotive force (EMF). Multidirectional processes are not a principal theoretical question but just a design aspects.

One more interesting example of the technology was noted by Dr. Harold Aspden in article "Three Experiments on Free Energy," Space Energy Newsletter, Dec. 1993. According to Dr. Aspden this experiment gives the "free energy" answer, but he wrote: "to my surprise, with the coil arrangement shown in the Figure 3 I found that the free energy becomes available well below the knee of the B-H curve at quite normal flux densities! Even at one-fifth of magnetic saturation levels, the excess free energy potential can exceed the input power and give a twice-unity factor of performance".

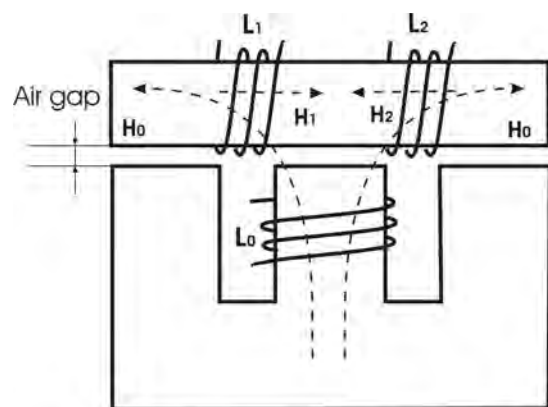


Fig.3

It is clear that Dr. Aspden's idea is one of application of the Φ -principle, which was described above for Φ -Generator. Fig. 3 and Fig.2 show the same magnetic flux superposition. But in this version the principle can be used for small value of the filed, which is part of the saturation level. The air gap also is very important.

Several research teams in Germany also tested this idea with positive results. A toroidal overunity generator was described by Stefan Hartmann in April 1999: "... a toroidal overunity generator has been build according similar to Fig.1 at Frolov's web site www.time-machine.spb.ru/ph-machine.htm (Not by Mr. Frolov in this case, I just use this picture for reference, the source

wants to stay anonymous, until his patent application is done and university verification tests will be done). The claims are: 1200 Watts coil out with about 1076.4 Watts in into the driving motor at 3450 RPM. 8 amps 117volts at no load 9.2 amps 117 volts at full load. The output of about 1200 Watts is already a total overunity operation! As they just increase the input power by about 140 Watts only between idle and load state and they get 1200-Watts output it seems indeed a case, where Lenz law is violated! This generator also has NO motor effect! If you supply current to the coil, the permanent magnet in the center will not rotate; cause the flux just stays inside the toroid core! There you can see, that the back drag does not influence the mechanical rotation of the magnet!" Stefan used very good criterion to prove high efficiency of the design: **There is no back-torque effect! It is most important aspect of Gramm's generator.** You can contact directly Stefan Hartmann: Keplerstr. 11 B, 10589 Berlin, Germany. Tel: +49 30 345 00 497, FAX: +49 30 345 00 498 email: harti@harti.com info@ccard.net (Please, note: Dr. Harman referred to my old web site www.time-machine.spb.ru which is closed now).

So, basic principles of MEG and Φ -machines are the same. It was patented more than 100 years ago. Primary magnetic flux is topologically separated in two (or more) fluxes, which are mutually compensated in the ring core. Advantages of MEG are absence of moving parts since special input coils produce changes of primary flux. Also level of saturation in ferromagnetic material obviously should be corresponding to intensity of primary magnetic field, which is created by the permanent magnet, Fig.4.1.

Besides MEG the same principle can be (and already was!) realized in many other systems. So, there is no any news in the USA patent #6,362,718 granted for "The Motionless Magnetic Generator". What did they claim? You can find it in the patent: "The first input coil and the first output coil **extend around portions of the first**

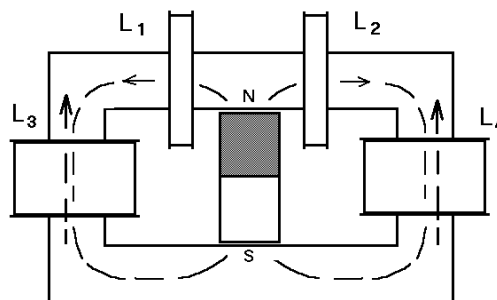


Fig.4.1

magnetic path, while the second input coil and the second output coil **extend around portions of the second magnetic path.**" Yes, it is the same bi-directional principle we discussed above: two parts of the magnetic flux and each coil produce effect to reduce flux due to this superposition.

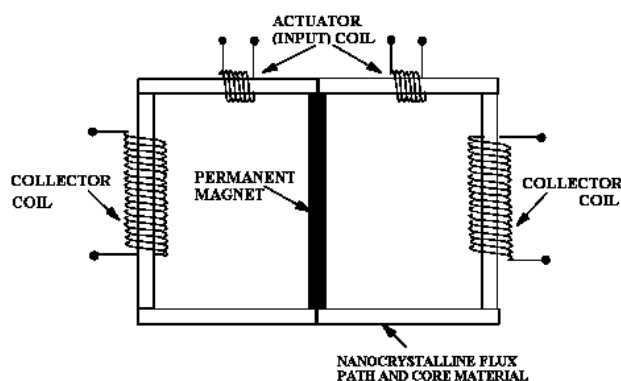


Fig.4.2

Diagram of prototype by Bearden.

In conclusion I'd like to confirm our sincere interest to develop joint work with all new energy research teams if they are not trying to obscure the issue of the technology by means of complex theoretical constructions and common words about zero point energy.

Matter as a Resonance Longitudinal Wave Process

Alexander V. Frolov

Abstracts

There is experimental data on gravitation anomalies for cases of resonance irradiation of the Bose condensates (superfluid helium or superconductor) at 10-100 MHz frequencies. It is developed by the author in frames of his aether theory that can be used for practical applications in aerospace and new energetics.

ZPF or aether fluctuations

The fundamental electromagnetic radiation field (Zero Point Field) ZPF or the quantum vacuum noise is a

recently accepted physical notion. In the article [1] David Noever and Christopher Bremner used it to derive a frequency – dependent version of Newton's gravitational coupling term G. On the other hand we can consider the quantum vacuum noise as aether fluctuations. Dr. Alexander Mishin [2] described experiments on registration of these processes by means of special equipment. Both approaches (ZPF and aether fluctuation) allow to conclude that mass and inertia arise from these oscillations. However if we are considering the oscillation as some aether process then we can assume and describe some physical mechanism of this process.

One of consequence of the vacuum energy model, which is described in [1] is that "the attractive force of gravity becomes reducible to the radiative interaction between oscillating charges..." Let's clarify which kind of radiation can be created by oscillating electric charges.

Fuel-less Energetics (Problems, Solutions, Forecasts)

N.E. Zaev

In memory of P.K. Oshchepkov

Abstracts

Since thermodynamics is a scientific basis of heat generation (and energy production from the heat), the crisis is stipulated by its paradigm: the heat can only be produced from a fuel (coal, uranium, oil) while energy can be produced by heat carrier flows, which is organized between two temperature levels. This results in the recommendations to build monsters such as heat power plants and atomic power plants burning millions tons of fuel covering the earth with entropy darkness.

Such thermodynamics resolutely denies fuel-less energetics based on the new paradigm: heat is valuable as it is at any temperature; **it is convertible into energy of ensembles of particles under external fields control. Fuel-less power engineering takes heat from the environment. It is ecologically clean, autonomous and costless.**

***"There is no any other science, where its creation and application would bring to so many false assumptions and conclusions as thermodynamics".
Bazarov I.P., 1991***

The work was carried out under support of the "Meta-Synthesis" consulting scientific corporation.

Three laws of thermodynamics of fire and steam

It is thermodynamics, "science of sciences", that doomed the Earth to suffocation and overheating, to flora and fauna extinction. Is it science at all? It just looks like a part of macrophysics only...

The following definition is accepted: thermodynamics is a phenomenological theory of macroscopic processes accompanied by energy transformation, i.e. thermodynamics is a science about energy. However, it is then specified that, as the processes represent changes of inner energy stipulated by the movement of the composing particles called thermal movement, then it is a science about thermal movement. It was developed from the analysis of heat-work transformations in steam engines. Being phenomenological it proceeds from experimental data. That is why it is based on the three experimental beginnings or "principles". It is not allowed to call them "Laws". Unlike other sciences, thermodynamics **does not have any axiomatic grounds**. Neither does it have legitimate reasons to be called thermodynamics, as it does not include "time" in the calculations.

Thermodynamics is obviously unacceptable for energy processes, e.g. in electrical engineering. While pretending on the universal nature of its methods, thermodynamics does not offer definition to the clearly different notions of "heat" and "energy". Encyclopedia defines "energy" as a general quantitative measure of movement and interaction of matter. So if we stay within thermodynamics phenomenology then energy is heat in movement. In other words, heat is just potential (not more) energy. Other definitions do not exist. Thermodynamics is not interested in the nature of heat, its genesis; the process "boiler - steam - piston (blade) - refrigerator" is described in the same way both for a nuclear reactor and a locomobile engine with straw burnt in it.

First Principle of Thermodynamics: Sum of all kinds of energy in an isolated system is a constant. It namely is a "law" of conservation of energy. It seems almost trivial but it is hard to apply it to a piece of radioactive substance.

Second Principle of thermodynamics stipulates entropy existence for any balanced system. Clausius (1850) formulated it as follows: Heat cannot spontaneously pass from a cold body to a warm one. Hence, if S is entropy, then in the reversible cycle

$$S_2 - S_1 = \Delta S = \int \frac{dQ}{T}$$

(Q is heat, J , T is temperature, K).

So, physical sense of entropy is reduced heat, i.e. how many Joules falls at $1K$. Actually, it is an elementary, almost primitive, index. (In a general case, according to Carnot $dS = dQ/T$).

Darwin was the first to attack the second principle, he was followed by Maxwell who proposed an imaginary device, which able to separate heat contrary to the second principle. K. E. Ziolkovsky proved the limited nature of the second principle in details and he claimed possibilities for environmental heat usage. Until now neither an equipment for measurements of entropy nor method for its calculation exist; they only satisfy with the difference $\Delta S = S_2 - S_1$.

To imitate accurate science **the Third Principle of thermodynamics** was derived from Nernst-Planck theorems: At the absolute zero temperature the entropy of all substances is equal to zero being in balance, i.e. $T=0$, $S=S_{T=0}=0$.

Principles of thermodynamics, Second Principle, notion of entropy have been provoking endless discussions for a century and a half. Having so limited facilities, three Principles and entropy; thermodynamics has been belligerent trying to cover all the diversity of natural processes. One of the first conclusions that entropy tends to infinity, i.e. equilibrium comes in any system and motion disappears was declared as a proof, fatal prophecy of the Universe heat death coming. V.V. Gubin contributed a lot in understanding entropy, having been

described as “queen of shades”. **Entropy is a consequence of the idealised Carno cycle, establishing maximum efficiency level (η) of heat engine (not exceeding 1).** It is η - subjective criteria of “utility”, interfering into natural relations.

Therefore, ΔS is clearly evaluative, calculated index, demonstrating an obtained level of heat control, management of heat in a machine. This way the phantom of entropy was deprived of the other-world-master-of-natural-processes veil. It is purposeful to stress that second principle has as many as 7 wordings, entropy does more than 5, and “heat” is ambiguous as well.

The concept of “exergy” has been accepted rather recently; it is defined as

$$\tau = Q (1 - T_m/T_h),$$

where T_m is the temperature of the medium, T_h is the heat source temperature, Q is heat. For $T_m = T_h$ heat is definitely unworkable, as $\tau=0$. This formed the basis for the widespread thesis that environmental heat is impossible to use. However, when **fuel elements** which are deliberately mono-temperature units with $\eta=0$, are being squeezed into the bonds of thermodynamics, no efficiency limits are supposed and $\eta > 1$. At that there is an explanation that fuel element converts environmental heat into electrical power, but τ is negative for this case of the concept of “exergy”! (*Editor's note: Just here negative time notion can be applied*). Gibbs's paradox was the frontal part of thermodynamics, again with entropy: entropy of gases mixture was not always to be formed as sum, for example, in a mixture of a similar gases. The fundamental entropy characteristics of additivity had been violated for more than a century. Even nowadays it is half-explained.

One of the postulates of thermodynamics is the thesis about unlimited increase of the inner energy of the body with temperature increase: it was almost an axiom. However, like the Euclidian fifth postulate it has turned out to be disproved. All these patrimonial flaws serve as a basis for aversion of its prohibitions and forecasts rigidity (finality). The importance of recently discovered some (spin) systems are hard to over-estimate. In these systems inner energy asymptotically tends to a limit, for every system element has restrictions in its maximum energy. Within the frames of the second Principle (i.e. for ΔS increasing) the perpetual motion machine is forbidden. Nevertheless under pressure of new facts and permanent criticism new versions of the Second Principle are coming as well as new thermodynamics models, “improving” it (for example, Ulybin's “Phenomenological Thermomechanics”). These models still try to keep entropy even as a passive “witness”. Referring to spin systems thermodynamics already finds it theoretically possible to realize the perpetual motion (PM) machine (for example, Thomson - Plank's PM of second type). Positive work in it is produced periodically only due to the cooling of one

body (Bazarov I.P wrote about it). Thus the prohibition of the evident event is removed.

Magnetics and dielectrics can be considered as such sort spin systems: affected by an intensive factor H, E (field intensity), which is an analogue of T , their energy does not increase infinitely but also it has asymptotic limit.

With all the diversity of heat-energy transformation processes, thermodynamics considers an organized flow of high temperature towards a working elements, directed to a lower temperature level (refrigerator), to be the only possible.

No other power engineering this “technical thermodynamics of fire and steam” is able to offer; its theoretical resource based on the three shaky Principles has been exhausted.

Yet its grave heritage - modern disastrous power engineering - is not its objective, but it is just the unexpected result of the historic engineering development. It can be blamed, though, for the savage more-than-a-century negation of other ways, suppression of any antithesis enjoying the status of academic Science. Monopoly in science as well as in politics always leads to gangrene.

Academicians and Forecasts (Invective)

In 1943 P.K. Oshchepkov (radar's inventor) formulated the task of getting electricity directly from heat. Later he broadened it as a goal to find the way of concentration of this dissipated energy. He had a laboratory in an academic institute in the 50s. He became a follower of Darwin's ideas and Ziolkovsky's in particular. Then P.K. Oshchepkov established the Public Institute of Energy Inversion (PIEI).

The leading idea of this work was the thesis **that energy is impossible to eliminate, but it can be dissipated; energy is impossible to create, but it can be collected.**

Before that there appeared a Central Committee of Communist Party of Soviet Union (CC CPSU) resolution (#715296, 23 June 1960) formulating the following scientific tasks:

- 1.To develop new energy sources.
- 2.To work out new principles of motion without reactive mass flow.
- 3.To develop new principles of protection from nuclear radiation.

As CC CPSU is more important than Government, the State formulated these tasks exclusively sagaciously. The prognosis was a most adequate one, and the reaction was timely.

However, nothing has been done until now. This resolution became a good key to Ministry of Finance

safes for many academic institutes, while the Energy Inversion Institute turned out to be a voluntary executor of the first task. Its permanent leader was P.K. Oshchepkov (1908 - 1992). At first period the Institute of Energy Inversion had more than 1000 engineers and scientists on staff.

The institute's structure exists until now but its activity has dropped since P.K.Oshchepkov's death (there is contact name Mr. Shakirov R.G. phone 7-095-325-78-13).

The Institute held eight all-Union sessions for 20 years. Tendency to make pronouncements for the effect, dogmatism, Marxist classics' and both alive and the late academics' citing featured the reports. The reporters were obviously playing safe refraining from accusations in scientific heresy and ideological sedition. There is no one constructive solution on dissipated energy concentration left for present time. Unaware of that, the Energy Inversion Institute was clear to have been working on the first Resolution task, although it failed to avoid the USSR Academy of Science's criticism.

On 20 November 1959 the USSR Academy of Science Presidium considered articles from a number of newspapers, dealing with dissipation and concentration of energy. It was pointed out "the matter has caused... a morbid sensation ... which has misled a wide range of readers" ("The Pravda", Nov.20, 1959). And now, as if "helping out" the readers, on Nov. 20, 1959 "The Pravda" on behalf of academics L. Artsimovich, P. Kapitsa, I. Tamm held up to shame N. Kozyrev for the claim that there is no power sources in stars and time can create energy. Further they blamed some members of The Metallurgy Institute for their belief that concentration of energy is possible. The academicians also remind "The Pravda" readers that efficiency factor cannot be higher than 100%. Twenty-eight years have passed, the list of academicians has been renewed but the Academy's interdiction spirit is timeless. On June 22, 1987 "The Pravda" informs its readers that academicians of new wave are also preoccupied with the Zsiolkovsky's thesis, which is developed in The Energy Inversion Institute. Acad. E. Velikhov, A. Prokhorov, R. Sagdeev outright blame Oshchepkov's followers for popularization of unscientific ideas since they stated that "nowadays [1987] science does not possess a single fact contradicting the second principle". But at this time Veinik's invention "The source of electro energy" had been known for 9 years...

They suggest closing the Energy Inversion Institute for both the unscientific ideas and taking the institute employee's resources and time, perhaps away of the "bright future" building process. The less prominent scientists such as Doctor of Science V.V. Sytchev, Doctor of Science E.E. Shpilrain ("Energy" N2, 1987), E.E. Shpilrain, Candidate of Science A.M. Semenov ("Energy" N4, 1984), the USSR Academy of Science Corresponding Member L.M. Beberman ("Energy" N1, 1984) also played in public as obscurants. In that way Russian scientific "elite" met and swept away fuel-less energetics.

Such has been academics' (i.e. the State's) attitude to the new approaches: to forbid and to destroy. Genetics was trampled down, in "Voprosy Filosofii" ("Questions of Philosophy" magazine) cybernetics was sneered at, and today any ideas of torsion fields and energy concentration are attacked. They follow to CPSU behavior and no lessons have been taught yet.

The forecasts about energetics collapse coming were true and timely. However nuclear and thermonuclear energies were staked on, alternatives in energetics having been neglected. It was not by chance that E. Velikhov and A. Prokhorov led those programs and gave away fantastic promises to the world... But "the sea has not caught fire" until now... The launch of the first thermonuclear reactor has delayed from 1990 (according to Acad. Velikhov's claim of 1978) to 2050. Now USA refused this chimerical project. On the other hand the outlaws research teams now have already several laboratory prototypes (devices taking energy from the environment).

Due to their social status academicians are never supposed to accept novelty; they have no competitors, they are monopolists. **Fuel-less energetics will arise in design offices and R&D institutes rather than in the academy.**

How will the suggestions of their ancestors' be repudiated in Russian Academy of Science in 2015-2020? Particularly, the latter had been keeping back bringing to life the first task of the extremely wise CC Resolution of 1960.

The Russian Academy of Science will see the strategic turn of the energetics vector from present one to the fuel-less one, from Klausius to Ziolkovsky... Who will join you, new Russian academicians?

Anti-entropy processes in experiments

The well-known Maxwell's demon was the first to show that the processes not involving entropy rise are possible. In the imaginary experiment this demon was standing by the partition gate and sorted molecules according to their velocities, letting in "quick" ones and closing the gate before "slow" (cold) ones. From this the left side of this vessel becomes hot and its right side becomes cold. Since then (approx. 1871) searching for the "partition" has become the task to solve for entropy antagonists. Thermodynamics has been condemning this search in every way.

Presently, there have been found several "partitions" of the kind. Electric, magnetic, molecular fields work there providing generation of negative entropy and anti-entropy, i.e. processes beyond the Second Principles:

1. Due to surface tension (in nearly mono-molecular liquid layer) aqueous tension P above a drop of a liquid depends on curvature of surface. The more the curvature is, the less the drop is and more P is; in other case the surface is concave (like in a jar) and P becomes less

than that above a flat liquid. Thus, **blanket can serve the partition** wanted. If the water is sprayed within the vessel under $T = \text{const}$, eventually the small drops having large P will evaporate and cool, while the big ones will warm up due to the small drops' molecules condensing hence heating up the former. This illustrates passing heat from a cooler body to a warmer one, for T in the vessel being constant. Design of this process of taking energy away of the environment can be made in many ways.

1.1. In 1979 the academician of Byelorussia Academy of Science A.I. Veinik patented "The source of electro energy" (patent #822713). It is described in his book. Small drops are created on the surface of a microporous partition. Points of junction of thermocouples are placed near the flat-water surface and near the drops. Electric load is connected to the thermocouples. The drops seem to receive heat directly from the environment. The "Lazarev ring" is also described there.

1.2. The "Lazarev's ring" is a ring-shaped closed volume with a porous partition filled with a volatile liquid, which is capable to make long-lasting circulating under isothermal conditions without heat inflow. In case work has been done, the external heat comes to the area of evaporation, to the partition.

1.3. In a bigger scale this partition was studied, realized and fully described by E.G. Smenkovsky in his "energy separator". Temperature difference in each stage of partition system was increased up to 0.5°C .

1.4. In 1981-1987 engineer Avakov A.V. together with his son realized their "Open system" method to take heat from the environment applying gas hydrates. The method is based on the ability of water to combine with methane, ethane etc, forming a snow looking pulp at $3-6^\circ\text{C}$. At $16-18^\circ\text{C}$ it decomposes into water and a gas, pressure rising up to 600 atm. This gas is able to rotate a turbine. Inventors overcame the USSR Council of Ministers, "Energy" research and manufacturing company, All-Union R&D Gas Institute, Ministry of Gas... A demonstration device was built, with efficiency of 118%. A project of 100 MW power stations was designed. With the author's death (1912-1996) the work on the "open system" stopped.

2. TMI (thermomagnetic inductance) method was tested and described by the authors of this article, Zaev N.E. It is based on the interaction of charge carriers moving at **thermal speeds** V_x, V_y, V_z . (with magnetic field H_y) in a semiconductor plate. It is necessary to note, H_y being perpendicular to the plate. (The plate has the plate-thick wide diagonal slots in its 4 corners and the slots approximately equal to the thickness of the plate). Lorenz force directs the charges upwards-downwards, leftwards - rightwards according to the vectors V_x, V_z . This causes Electro Motive Forces $V_\perp$ and $V_\parallel$ on the plate edges (if intensity H is not constant along plate height Z). The values $V_x, V_y, \Delta H/\Delta Z, X''', Z''', \pm q$, time of motion τ , length of motion l are necessary for calculations. Thus, for Bi (bismuth) and $\tau = 2 \cdot 10^{-9}$ sec, $H_0 = 15\text{kE}$, $T \sim 300^\circ\text{K}$, $Z_0 = 25$ mm, $V_\perp = 5.5 \cdot 10^{-6}\text{V}$.

Really in the experiment for a much less H the voltage $V_\parallel \sim 3.5 \cdot 10^{-4}\text{V}$ was measured. This shows the reality of energy absorption (**with zero exergy**) converting heat into energy without considerable some ΔT and workability of the heat for any temperature $T > 0$.

3. Electrothermal separation of gas molecules into "hot" and "cold" (ETER) is theoretically developed by the author (Zaev N.E.), who considered the third time derivative of path $(X)'''$, **describing gas molecules radius travel in a coaxial condenser** (in an electric capacitor). In TMI two velocities (V_x, V_z) are effective, in ETER - only one. Point-to-point field intensity change on the way from one electrode to another is taken into account.

A glass coaxial capacitor is used in the experiment. It is filled with either air or air-ammonium mixture (ammonium is polar gas). The experiment is described in the collection of articles mentioned here. Cooling of the external electrode was expected. In the experiment with ammonium it constituted $\sim 0.1^\circ\text{C}$, with air it was $\sim 0.02^\circ\text{C}$. If the core electrode is made pipe-shaped, then the liquid, flowing in ETER, will warm up getting heat from the outer electrode, which will take heat from the environment (please, note there is no power spent on maintaining electric field between the electrodes).

4. On February 12, 1980 at physical section of The Moscow State University the author (Zaev N.E.) made a report on ability of a changing field to cool down some dielectric, with energy generation in this process. In 1892 B.B. Golitsyn proved mutual conversion of dielectric heat energy into electric one, and vice versa; the discovery went by unnoticed. Also Sytchev V.V. described ferroelectrics able to generate energy in the "heating-cooling" cycle with efficiency about 3%-5%. But variconds (ferroelectric capacitors) can work in the same cycle "charge-discharge", taking heat from the environment, with efficiency 126%. Really, for capacitance of 33 mF and frequency ~ 100 Hz, efficiency is measured about 138% (calculated is about 123%); power density of generation $\sim 2.1\text{ kW/m}^3$. **In perspective, variconds based on polyvinylidene fluoride dielectric can provide power density up to 45 kWt/m^3** . Capacitor power concentrator (generator) - **C- cassor** - actually represents the perpetual motion machine of second type. This non-linear dielectric with $de/de > 0$ presents a close analogue of a spin system because its energy increases with E (electric field) rise up to saturation state only. It periodically generates energy, cooling itself. C-cassor is described in "Electrotechnica" magazine, N12, 1998, pp.53-55.

5. On March, 18, 1980 the author (Zaev N.E.) reported at the same Moscow State University on cooling of ferromagnetics with a changing magnetic field, causing energy generation (ferrocassor). Details can be found in "Russkaya Musl" magazine (N2, 1992, pp. 7-28). The latest news of power generation in "M-D" ("Magnetization - Demagnetization) cycles is in the magazine "Electrotechnica", N3, 2000, pp.53-55. (Editor's note: Also see New Energy Technologies, #1 (4) of 2002, p. 40). Efficiency A_m/A_d ("Magnetization"

energy / “Demagnetization” energy) **has reached 150% - 250% for magnetic power** density $W_{\text{den}} H$ 10 kW/ m³, for “MD” cycles frequency about 50 kHz. According to physical phenomena, the ferrocassor is the spin system (as it is generally defined notion) and it is the Thompson-Plank perpetual motion machine (notion of the XIX century), which can generate positive energy periodically cooling itself. (Similar research has started in the UK by Remi).

6. In 1988 engineer D.A. Lachinov while carrying out water electrolysis in a sealed electrolyzer, discovered that power consumption to be usual but H₂ and O₂ gases are produced as very compressed gases (up to 200 atm). Calculations showed that power spent on electrolysis is about 11% of the work, which is necessary to compress the gases! Long-year discussions have led the scientists to the conclusion that the power is taken from the environment (Pfleiderer G.). In 1993 the author (Zaev N.E.) patented the energy complex “Ecozan” (23.02.1993, patent #93,006,256). It consist of a high-pressure electrolyzer, turbines with a generator, heat exchanger to provide heating of the exhaust gases H₂ and O₂, fuel elements (water and energy from them is used in the electrolyzer). All the complex components work taking heat of the environment, **so on the whole its efficiency is more than 100%**.

7. In 1853 Stokes discovered that luminescent light has wavelength longer than the light falling on the luminophor. Soon it was discovered also that this law is not often true: some luminescent light has wavelength shorter than falling light. It became an epoch discovery, which was impossible to explain until M.A. Veinshtein's work of 1960. He calculated light power efficiency ratio: **it was about 160%, i.e. for 1 Joule of the falling light luminophor returns 1.6 Joule. The experiment showed that efficiency could be more than 160%. In Russia Yulia N Chukova successfully developed this phenomenon (topic name is “anti-stokes luminescence”).**

8. Volod'ko Yu.I. established that **laminar air flowing out of an optimum nozzle has excessive energy due to the flow cooling down**. Based on this phenomenon a new flying machine (not consuming fuel) and a powerful concentrator of environmental energy are proposed. Russian Federation Patent #2,025,572 of 23.12.1991. Specific power of this system is about 3.5 kW/kg (without generator weight).

Presently, this concludes the list of known anti-entropy processes realized in experiments. Which of them are to become working technologies will be shown in the nearest future. Most probably it will be apparatus rather than mechanical devices (i.e. the systems without moving and rubbing parts subjected to wear). Such apparatus almost do not need external resources. Their lifetime is more than 50 years (like electromagnetic transformers). Major research with steady financing lies ahead. Non-government forms of the research projects are preferable in this case. New magnetic materials and new polymeric dielectrics are necessary. Also the

physical research of the beyond-the-Second-Principle phenomena will be needed.

Additional information about untested anti-entropy devices

- a) “A device for transforming environmental heat into mechanical energy”, Dunaevsky S.M., Russian Federation **Patent #2,101,521**. Working heat is low-boiling substance (freon, nitrogen etc).
- b) “A device for generating mechanical energy and a way to generate mechanical energy”, Roshchin V.V., Godin S.M., RF **Patent 2,155,435** of 27.10.1999. Based on moving magnetic fields and environment interaction.
- c) **Obtaining of electrical power and thermal energy (“cold” on the cold junction, heat on the “hot” one) in a thermoelectric circuit.** It is based on special mode of the Peltie's effect, after the point of inversion of the sign of heat (+ or –) on the junction of the thermocouple. Details are in Zaev N.E., col. New edges of physics., M. 1996, p. 148-151.
- d) According to Maxwell's calculations Earth atmosphere temperature falls with height (a well-studied fact) due to the gravitation field effect on thermal processes. He, however, had to refuse from this conclusion, called later Maxwell's paradox, for it contradicts with the Second Principle. But yet if he is right, then heat flow and electric power can be obtained using a simple device. For example, two well thermo-insulated 100-500 m height tubes are put next to each other, the one is filled with hydrogen (0.089988 kg/m³) and another with xenon (5.8971 kg/m³); at the base the gases contact with the ground. According to V.F.Yakovlev's theory, who proved Maxwell's hypothesis (and independently K.E. Ziolkovsky's theory) gases would have different temperature at the same height. More temperature being in the tube with xenon having a greater specific gravity. If the top ends of the tubes are connected with a heat-conducting bridge, then heat will flow from xenon to hydrogen. **If thermoelectric circuit junctions (thermocouples) are mounted at the top-ends, the electric current I A will flow through the load R (Ohm) and heat Q=I²·R (W) will be generated in the load. Surprisingly, Maxwell's paradox has been discussed for more than a century but nobody has fulfilled such a simple experiment.**
- e) Referring to M. Faraday's approach to terrestrial magnetism, Zaev N.E., Becker G.P. considered the possibility for heating and cooling substance **due to change of its thermal capacity C**. It can be caused by many factors, including external magnetic field variation. **Changing C by 1% will result in ΔT~3K without any special changes of energy of the substance. Any ±ΔC cyclic processes make it possible to take energy away of the environment.** C-variation can cause descent of “cold” in the North, ground frost due to magnetic field variations. ΔC processes are very slow for they are consequence of polymerizing, i.e. forming structures (swarms) of oxygen molecules in a quiet atmosphere.

- f) Heat pumps also can be considered as examples of fuel-less energetics if they consume environmental energy.

The list of ten tried and half a dozen potentially correct ways of the environment energy concentrating proves that the academicians either to have been insincere when in 1987 they claimed to be unaware of the ways against the second “law”, or they indeed knew nothing of them. This means they hid fuel-less energy possibilities and should be sued for that, or they acknowledged their own incompetence and thus have to take off their academics’ mantles. Anyway, Russian Academy of Science Presidium should openly discuss the situation in the science about physical and technical basis for Russian power engineering.

Philosophic aspects of the new paradigm

The entropy phantom has deeply rooted in philosophic trends tackling the matters of the universe and science on nature and society. There is entropy in thermodynamics, entropy in information theory, biology, statistical physics, entropy of the Universe and the “Time arrow”. So much has been written, so many discussed... That is why proof of its insignificance, using juridical terminology, experimental proof, should have various consequences in scientific and engineering fields.

Entropy phantom seems to stay forever, notwithstanding its consideration as just a calculating parameter. Revealing its actual meaning, removing its mysterious veil, Gubin V.B. still stresses its value as a tool.

The established anti-entropy paradigm “heat is self-valuable at any temperature” is not alternative to the classic thermodynamic paradigm “heat value appears only in its temperature difference or in “double-face nature”. The first lies within the latter. It becomes obvious if “value” is substituted for “workability” because the term “heat” implies the same understanding of its nature in both statements. The difference, most considerable though, between the two paradigms is in utilitarian approach to heat. The first paradigm allows simplifying and reducing the way from heat to energy: instead of conventional “boiler- steam - blade (piston)- refrigerator” we have “boiler- block-work”. Here “boil” represents a source, a volume with workable particles, usually it means the environment. Presence of heat at the beginning of the process (cycle) justifies close relations of final products in both paradigms. Absence of “steam”, “blades”, “refrigerator” is a technical difference only and the main advantage because heat (“exhaust”) of zero exergy is usually consumed by a refrigerator, but according to the new paradigm it is workable in future, as the initial one, having turned into work.

In functioning ferro- and C-concentrators of environmental heat there seems neglected the general philosophical statement that actions is equal to counteraction (this is an inaccurate rephrasing

Newton’s III law that the forces are equal and opposite). Important statement “action = energy x time” is not included into the system SI. In concentrators it is “Charge” C or “ magnetization” (M) that make **initial action**, while **response** is due to “Discharge” (D) or “demagnetization” (D). Although energy inequality of the “initial action” and “response” is a rare case, the philosopher P.V. Florensky generally predicted it 76 years ago. **He introduced a medium with negative viscosity**, which resists every action with its own inner action oppositely directed to external action. It does not consume work but produces it and spends the saved energy. In that way his shrewd mind outdid experimenters for many decades.

The term heat has almost conventional meaning, being collective in physics; it combines all kinds of energy, which is radiant one in its sense for all range of waves. Not in vain Reni Junior in the beautiful story “Fight for Fire” praised flame and bonfire ashes twinkling. Back then the ancestor knew Fire to be the gift and punishment sent by Heavens. Heat needs living beings, it warms, lights, purifies. For economic context the unimportant from theory’s point of view differences under discussions, play great part, since the necessity to possess, obtain and burn fuel disappears. The consequences of this fact are both bright and threatening.

Intrinsic doom of speculative concepts, based on transient Principles of thermodynamics, seems to be proved by the experiment. The Principles, being supported by the officials, had endured for more than a century and a half. They could be neglected, if they had not imposed their aggressive solutions to the whole world: heat can only be obtained by fuel burning; energy can only be transported through heat flows according to Carno cycle (and so on). Kuznetsov’s appeals to scientists to devote their work to entropy growth control and combating Second Principle are very timely now. The best way to diminish entropy and to get rid of Second Principle myth is to develop the fuel-less energetics. Today’s thermodynamics represents a rough copy of the visible essence in steam engines. As long as they grew more ingenious and variable, it simply followed them, but it never having been leading, never having been developing new ideas.

Brownian motion (water molecule, mercury atom) kinetic energy of a particle is connected with temperature unambiguously. But output energy of particle in TMI, ETER methods as well as energy of domains in C-concentrators and ferro-concentrators is a multi-parametric model: output net energy can be affected (besides thermal velocity) by the length of free path, carrier density, $\Delta E/\Delta X$, $\Delta H/\Delta Z$, magnetic and electric permeability. Parameters never before have existed in thermodynamics have included into processes of creation of energy. They are bringing Brownian motion energy instead of smoky bonfire heat.

Social aspect of fuel-less energetics growing

Importance of available power in this or that social structure yet has not been appreciated by social

theories. It still is obvious: in developed countries the power consumption level is ~ 12 kW (~ 17 horse-powers) per each resident. Many centuries life went unchanged, only monarchs and leaders changed while energy was always produced by **“warm machines”** (oxen, horses etc) out of hay and oats. Since the end of the 18 century **“hot machines”** (steam-engines, turbogenerators, pistons) have appeared, using fire, steam, coil, oil and petrol. They have dramatically changed our life for the last two centuries. Here comes the age of fuel-less energetics, the age of energy taken from **“cold machines”**, making use of the environment. At a glance it looks like a sheer blessing:

1. It promises abundance of cheap KWt hours; they will be 15-20 times cheaper than now.
2. Electrical energy production is absolutely harmless and ecological.
3. Fuel-less power is highly autonomous, usually generated near the place of consumption (apartment, farm, ship, military outpost...).
4. Once started, energy concentrators will generate for unlimited long period (more than 50 years) with minimum maintenance effort.
5. This energetics will provide everyone with 15 (and more) kWt, which may raise labor performance and, respectively, improve living standards and comfort.
6. This power engineering will return Nature its rivers, woods, fields, because dams, high-voltage power lines, waste banks near mines and mines themselves, power plant pipes and ashes waste piles will disappear.

However, we should bear in mind the drawbacks of the transition period:

1. Steady shutdown of the fuel and energy industry will begin, i.e. redundancies of minors, railway workers, oilrig and oil refining workers.
2. Fall in demand on chemical current sources will result in dropping orders for lead, zinc, mercury, silver, cadmium which will cause unemployment in non-ferrous metallurgy.
3. Autonomy of new energy systems will lead to fall in demand on wires and cables. Long-distance power lines, high-power cable networks in cities will become useless. Heavy engineering industry (turbines, hydro generators, transformers) will be stopped due to recession in demand.
4. Eventually a recession in motor industry will start: diesel and carburetor engines of vehicles will be replaced by electric motors.

However, fuel-less energetics coming will be followed by intensive structural metamorphosis:

1. Electrical engineering has got long-term orders for a production of a wide range of electric motors replacing combustion engines.
2. Electronic industry will start mass production of micro-concentrators of environmental energy to substitute battery elements in home and portable audio- and video equipment.
3. Contractors will get a huge pile of orders for estates and cottages because of the inevitable drift from the cities to the countryside. Low prices and availability of power allow urban facilities for comfort at any place.

4. Industry is to start mass production of compatible energy systems ranging from 0.5 kW to 50 kW applicable in apartments, farms, blocks of flats, “motorcycles”, motor cars (particularly, electric cars).
5. Eventually ferrofrosters, double-purpose cassors, will come capable to produce both power and cold in the same unit.

Electric energy abundance, its availability will diminish one of the main problems of any civilization: concern about resources ownership and control, fuel mining, i.e. the concern about Heat. Thus the social structure with its functions, purposes and methods will start slowly but steadily evaluate. Struggling unemployment, working day will be reduced up to 6 hours, working week - up to 3 days.

Retirement age will lower down to 40-45 years; the army will tackle civil defense tasks only.

Motivation of labor will weaken; education will lose its attractiveness; then the “atomization” of society will appears, i.e. its fragmentation and personal isolation at farmers, cottages and villas will go up; also individualism, indifference to public matters will come up. New civilization will be set up on the land of new energy Eldorado as if returning to initial harmony with Nature and to the sense of human existence at a different level of the historic spiral.

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Symmetrization of Maxwell-Lorentz equations

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"I could say that Maxwell's followers had changed letters in his equations... Of course, we shouldn't be surprised that anything could be added to these equations, but we should be much more surprised that the additions to the equations are very small."

L. Boltzman,

From notes to Maxwell's work "On physical force lines" 1898 [1]



History of the problem of longitudinal waves in vacuum

A detailed analysis of statistical and dynamic Maxwell's equations for moving and fixed coordinates is presented in this article. The incompleteness of this system is given. The necessity of introduction of one more dynamic equation is proved.

Two new wave equations for densities of electric currents and charges are derived on the basis of new equation. It is shown that new equations together with wave equations for potentials **describe longitudinal waves in free space**. An expression for the density of longitudinal wave energy flow is obtained. The analysis of physical sense of longitudinal waves and method of their producing is given.

"Tractate on electricity and magnetism" by James Clerk Maxwell (1831-1879) appeared in 1873. According to Sommerfeld's [3] point of view: "Its main achievement is the discovery of relation between optics and electrodynamics". Maxwell himself wrote about it: "Equations of electromagnetic field derived from experimental facts show that only transversal oscillations can propagate. If we leave the limits of experimental knowledge and assume a certain density of substance, which we could call electrical liquid, and choose glass or tarred electricity as representatives of this liquid, then we could have longitudinal oscil-

lations propagating in space depending on this density. But we have no data in relation to the density of electricity, and we even don't know, should we consider glass electricity as a substance or absence of substance. Therefore, science on electromagnetism leads to the same conclusions as optics does in relation to the direction of disturbances, which can propagate through a field. Both these sciences state the transverse character of these oscillations and both of them give the same speed of propagation. From the other hand, both sciences are powerless to answer the question of proof or denial of existence of the longitudinal oscillations" [1]. The Hertz's experiments proved the conclusion made by Maxwell on the transverse character of electromagnetic waves.

Further Maxwell's consideration of longitudinal waves was forgotten, and lasting opinion on possibility of only longitudinal waves in vacuum was established in electrodynamics. Obviously, judging by literature, there were no attempts to discover longitudinal waves in vacuum, and above all there were no theoretical premises.

(Editor's note: it is correct in academician science, but there are known Tesla's works and other research results on longitudinal waves).

The following paradigm established in electrodynamics: "Since macroscopic electrodynamics has been a theory of Maxwell's equations, it is a typical axiomatically organized discipline, which does not allow any princi-

pally discoveries in physics. Universality of main electrodynamics laws expressed by Maxwell's equations and their fullness hardly can call any doubt in foreseeable future. Thus, if not to speak about investigation of properties of various mediums, then in essence there will be no place for experiment in electrodynamics: you know, it is practically possible to get an answer on any question on a deductive way. It is enough only to formulate and solve appropriate (usually boundary-value) problem for Maxwell's equations"; V. Nikolsky stated it in "On modern problem statement in electrodynamics" [4]. However, sometimes the idea of longitudinal waves was considered formally. It was, for example, in the problem of resolution of electrostatic field by flat waves [7].

Wave equations for electrical potential (ϕ and magnetic vector potential $\vec{A}$) are quite applicable for longitudinal waves. **But till recently it was considered that these values are simply comfortable for mathematical calculations and nothing more.** The last achievements in the area of quantum mechanics denied this opinion and led to **a conclusion that scalar and vectorial potentials are fundamental values** [8, 10]. This entered into evident contradiction with electrodynamics paradigm.

It is shown in the given work that Maxwell's equations have a high extent of symmetry. Oliver Heavyside [2] repeatedly paid attention on this fact. In 1885 he re-wrote Maxwell's equations in double form so "electrical and magnetic aspects of electromagnetism are symmetrically presented and related". Besides, he considered this symmetry as a supporting mean for calculations based on Maxwell's equations: "This interpretation method of Maxwell's electromagnetic scheme used in the text (it was firstly introduced by O. Heavyside in the article "Electromagnetic induction and its propagation" of January 3, 1885) can possibly be called "duplex-method" as it is characterized by detection of electrical, magnetic and electromagnetic correlations in double form, which is symmetrical relatively to electrical and magnetic aspects. But it is not only the method of detection of correlations previously latent by means of introduction of vector-potential and incidental formulas. It is a working method as well".

The symmetry of Maxwell's equations becomes most apparent in their splitting separately on static and dynamic equations in relation to time as well as relatively to space. Such detailed table of equations immediately detects the presence of system of equations incompleteness. Vacant place in the table requires filling it. I'll do it further in the text of this article.

Editor's note: In original text of the article the author goes on with the following equations

- Equation of static fields in fixed coordinate system
- Equation of dynamic fields in fixed coordinate system
- Equations of static fields in moving coordinate system
- Derivation of the equation for displacement current

- Derivation of the equation for induction charge
- Wave equations for transverse wave
- Derivation of wave equations for longitudinal wave
- Complete system of Maxwell-Lorenz equations
- Equation of energy flow density of the transversal wave
- Equation of energy flow density of the longitudinal wave

Conditions for longitudinal waves' radiation

What are the conditions for longitudinal waves' radiation? It is obvious that as distinct from transverse-wave transmitters (dipoles) having cylindrical symmetry, longitudinal-waves transmitters should have spherical symmetry, i.e. they should be monopoles.

Let's compare the mechanisms of transverse-wave and longitudinal-wave radiation. As an example we take two simplest transmitters, charged plane condenser (analog to dipole) (Fig. 1) and charged solitary sphere (Fig. 2). If the charged condenser has the energy W with the volume V , then **the accelerated decrease of plane condenser volume** will leads to the accelerated decrease of energy content (at the constant charge), i.e. to its radiation:

$$\frac{\partial^2 W}{\partial t^2} = w \cdot \frac{\partial^2 V}{\partial t^2} \quad (1)$$

where $w = \frac{W}{V}$ is the density of condenser field energy.

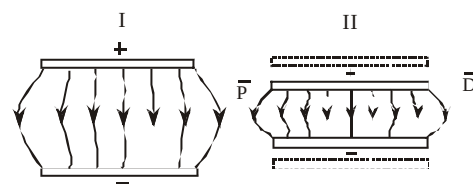


Fig. 1

Energy of condenser field forced out with acceleration by the plate of condenser will be radiated in surrounding space as a transverse wave, since energy flow goes perpendicular the force lines of the field.

With the change of volume taken by solitary charged sphere, Fig.2, the energy of field displaced by this sphere with acceleration from the previous volume will be radiated as a **longitudinal wave since direction of energy flow is along the force lines of the field**. The power radiated in both cases will be equal to the speed of change of the field energy in these systems.

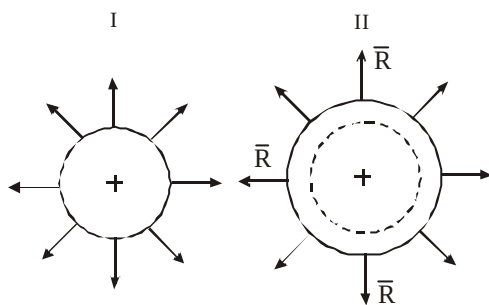


Fig. 2

Other mechanisms of longitudinal waves' radiation are possible. For example, on the basis of equation

$$r = -c^{-2} \bar{V} \cdot \bar{J} \quad (2)$$

To do this it is necessary to pass alternating current in a coil of wire, which is rotating on its axis. That will lead to appearance of alternating induction charge. And to separate the longitudinal wave from concomitant transversal wave, we should place the coil into the conductive screen. This screen will serve as a barrier for transversal wave, but it cannot prevent passing of longitudinal wave through it. The more the square of the coil, number of its turns and speed of its rotation are, the more intensive the radiation of longitudinal wave will be. Sizes of the coil will be limited by chosen frequency of radiation.

Possible physical sense of longitudinal waves

By analysis of known physical fields, more of them manifest only in small volumes near the sources. They are: nuclear field, field of weak interaction, electrostatic and magnetostatic fields, though the latter can spread at the distance of about Galaxy sizes. However, really long-distance fields are only two kinds of fields, electromagnetic waves and gravitational field. Only these fields penetrate the entire visual Universe. And both fields decrease by analogous law, i.e. inversely to the square of distance.

It naturally leads to the thought, if gravitational field is wave field like electromagnetic field. But, unlike the latter, it is some other class of waves, but not transverse, may be longitudinal waves.

In such case the longitudinal waves will be disturbed with pulsation of atomic nuclei. These waves will lead to the exchange with energy between the nuclei and their interaction, which is analogous to Van der Waals forces due to zero energy

$$W_0 = \frac{1}{2} h n_0$$

But in this case there is another law of force decrease with distance. It is not only mechanism of interaction between bodies with participation of longitudinal waves. Pulsations of macrobodies will lead to modulation of nuclei radiation and, therefore, to additional frequencies in the

spectrum of oscillations, which are radiated and absorbed by bodies in the process of gravitational interaction. Most likely, the spectrum of radiation of longitudinal waves by atomic nuclei is discrete, but assembly of macrobodies' atoms may give continuous spectrum analogous to heat radiation. Probably, there is a linear spectrum in the area of low frequencies besides continuous spectrum. Linear spectrum is connected with pulsations of macrobodies. Then in gravitational fields typically wave phenomena are possible, they are diffraction and interference.

To our opinion, the example of observation of gravitational field diffraction phenomena is the case of solar eclipse observation of February 15, 1961 in Yaroslavl city, Russia. It was made by the group of researchers under the leadership of V.V. Radzievsky by means of double horizontal pendulum [9]. The following fact got in experiment can serve as the evidence of gravitational field diffraction: the obtained effect of gravitational eclipse exceeded the estimated calculated effect on 1-2 orders. The duration of the effect was too small and after the end of partial eclipse some additional maximum of pendulum deviation occurred. A possibility of longitudinal waves' connection with the phenomenon of gravitational interaction of bodies requires more detailed consideration of the observed anomalous structures and effects in the Universe since there are big resources of unexpected phenomena, which can appear due to interference and diffraction of gravitational field.

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Editorial notes: You can order the full variant of this article from the author or from Faraday Labs Ltd. Full variant includes 15 pages and 58 formulas.

Vortex Heat-Generators

Dr. Evgueni Sorokodum

Energy production from the environment by means of vortex is principally possible using devices of two different types.

1. Vortex heat pumps

The vortex is generated using some external energy source and by means of aerohydrodynamic and thermodynamic processes environment medium being pumping through the body of this vortex gives part of its low-potential energy to the vortex. Then the vortex gives this energy to consumer. Unlike classical heat pumps, the vortex heat pump does not require chladone and others special gases.

2. Renewable vortex energy source.

In this case energy is applied for the first starting of the vortex, then the vortex utilizes the energy from environment. One part of this energy it consumes for self-support of its movement, another part is given to consumer.

Now there are plenty of theoretical and experimental works, which can serve as a basis to state, that the process of taking of low-potential heat energy from environment (air or water) by means of vortex is a physically real process. But these works are not enough to create theory and methods of calculation. Due to the existing analogy between motion in liquid, electromagnetic field and other little known and quite unknown fields, we can suppose that taking of energy from environment of any physical nature using vortex is also possible. There is some problem: in what extent we know the properties of these fields and methods of taking energy from them (optimum performance, in particular). This field of research is little studied and transcendently difficult to understand. But it is not in contrary to the fact that devices in practice can be very simple for using them (the deeper our knowledge is, the simpler our devices can be).

Nicola Tesla began these researches, and now they are followed by several laboratories and some scientists (see below and the references).

Yu. S. Potapov was the first to create vortex heat-generator. Now more than ten small firms are working on production of the heat-generators. A discussion on physical nature of energy source (or if it is absent), on efficiency (more or less than 100%) and on other questions has been lasting from Potapov's first works up to present time. Often they are rude. Let's be tolerant to each other and remember the following:

1. All kinds of energy sources including heat pumps, vortex heat pump, renewable vortex energy sources

never will have efficiency more than 100%. But from the point of view of the consumer, when he spends the part of energy from electricity supply network, and another part is provided "free" from the environment (that can be several times more than those from electricity supply) it can be very profitable for economy. Efficiency is always less than 100%, but conversion coefficient of energy from electricity supply to the output energy for consumer can be much more than 100%.

2. It is not easy to create a device, which will be able to utilize the energy from surrounding motionless air or water by means of vortex (or other forms of movement), especially if it is the energy from various other fields. This happens because we should call such aerohydrodynamic and thermodynamic processes, which are less studied and investigated ones, are in different fields of science (sometimes in very unexpected). Some engineers ignore this objectively existing situation, and it calls perplexity and regret. They are sure in quick success, but it is equivalency that they should have luck to produce the wonder.
3. These creators of vortex heat-generators, who conquer this problem with enthusiasm, call regard and astonishment to the human nature. They are in the same thankless situation that the airplane pioneers, who rushed to create them without any clear notions on physics of lifting force origin.
4. Vortex heat pumps and renewable vortex energy sources will be created at first with utilization of low-potential heat energy from air and water, then with utilization of energy of other fields. It can happen that mechanical vortex will utilize energy not only of mechanical and heat origin, but also electromagnetic, gravitational and other fields.
5. Resolute and quick success in creation of vortex energy sources in many respects depends on dominating development of theoretical and experimental investigations in this field.

Please, contact Dr. Sorokodum to get data base about research on the vortex heat generators.

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Quasi-Superconductive Technology for Electric Power Transmission

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SUMMARY

Low cost and low losses single-wire electric power system (SWEPS) has been developed. The new technology of electric power transmission uses idle operation mode of the transmission line and reactive capacitive current for transmission of active electric power. Three different SWEPS has been constructed and tested: 230V, 10kV and 100kV each is of one-kilowatt capacity. Resonance mode of oscillation at the frequency from 3 kHz to 30 kHz was used to provide the most efficient power transmission. Frequency converter and modified Tesla transformer were applied at the generator site to generate high frequency reactive capacitive current. Reversal Tesla transformer and standard rectifier and inverter were used at the consumer end to convert the reactive high frequency electric power to standard 50-60Hz electricity. It has been experimentally proved that SWEPS has quasi-superconductivity properties for reactive capacitive current flow along the line even at high operation temperature of the electric conductor. SWEPS has no resistance losses for following tested conductor materials of the line: copper, aluminum, steel, tungsten, carbon, water, and damp soil. Analysis of theoretical calculations and experimental study shows that SWEPS can be applied both for energy transmission from

renewable powerful generation site to a large energy system and for transmission lines connecting different parts of renewable energy system.

DESCRIPTION

Renewable-based electric grids are increasingly being viewed as an attractive alternative for providing power to rural communities. Technology options include small hydropower, biomass-powered generators, small geothermal, solar-thermal, wind turbines and hybrid systems with back-up diesel generator, which may be connected to the local utility. Implementation of renewable-based technologies for rural electrification would contribute to the social and economic growth of the rural communities and would serve sustainable progress of the remote regions. Electric grids face specific problems of non-efficient operations, including transmission losses and the high cost of grid extension in remote sparsely populated areas. For example off-shore wind turbine, micro-hydro or geothermal generator are often located far from consumers and requires costly installation of a long distance transmission line which usually has from 6% to 10% of electric losses.

We propose and investigate single-wire power transmission line systems instead of three-phase lines and apply steel conductor or even non-metal conductive media instead of traditionally used aluminum or copper conductor.

The OBJECTIVE of this project is to implement the original low cost and low-loss single-wire electric power system for renewable-based electric grids. Project program covers design and manufacture of 50 kW single-wire power transmission line. The complete set of equipment contains: audio-frequency converter, resonance generator - mono-stable multivibrator, rectifier and inverter. Transmitted electromagnetic energy has a voltage of 5 kV to 20 kV and a frequency of 1 kHz to 20 kHz.

SWEPS operation principle is the following: In no load operation mode the active current and the magnetic field

of non-linear elements of electric currents in metal conductors, which are bent at some angle.

A valuable information about antigravitational device according to Ph.D. Dokutchaev V.T., was published in 1989[17]. This device had weight less than one gram and it used electromagnetic waves to create propulsion force of about a milligram. It is not the limit for the devices of such type, and a more powerful result can be created. *(Editor's: See the above article "Design of an Engine for Free Space based on the Pondemotor Effect" by Acad. Gennady F. Ignatyev, who got a propulsion force about 60 N, i.e. equivalent to 6 kg-force).*

Space has different reaction on translational motion and rotational motion. Gyroscopes use this property. Member of Byelorussian Academy of Science, Albert I. Veinik discovered these effects during his experiments.

Prof. Kaznacheev made an analogous experiment using the rotating gyroscope and he explained weight changes as a result of the inner lifting force [18].

There are a number of proofs on possibility to create the reactionless space propulsion drive. This problem requires a serious State research program.

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Experimental Investigations Based on the Model of Electromagnetic Solitary Waves (Solitons)

(It is published here in short version)



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Using transceiver of electromagnetic solitary waves [1] and mathematical idea on the nature of electromagnetic (EM) solitary waves (solitons) [9] there were made experimental attempts to find interaction of artificially generated EM solitary waves and natural formations, which contain the same solitary waves. To do this the experiments on influence of EM solitary waves radiation on objects, which have various nature, were made, in particular, on biological processes and biophysical

objects (processes of bioplast fission and neurostructure of brain and others), on ultrahigh frequency plasma, on the process of atomic nucleus decay as well as gravitation. In all of them **we found specifically soliton effects**, which were due to the fact that the mentioned effects and processes contained **coherent spiral structures**. These structures were stipulated by the presence of multilinked (many-sheeted) EM solitary waves.

For example, an effective influence of EM solitary waves was observed on the following biological objects. Growth of food barm in solution of honey kvass increased two times (in comparison with process in standard solution) during radiation by solitary waves of positive polarization (by electromagnetic component). It was made by two transmitting magnetic antennas (MA) shifted relatively each other at 90-degree and 90-degree phase delay. The same barm slowed their reproduction during radiation by solitary waves of negative polarization. Obviously, such effect is related with the change of spiralization threshold. Change of this threshold stimulates the excitation of electron-vibron field (it is some component of triune field of many-sheeted EM solitary wave). At that electromagnetic component of EM solitary wave field (biofield) was observed before as luminescent filaments of mitogenetic (ultraviolet) radiation for process of the cell fission.

In another experiment a single (for the time of less than 1 second) radiation by EM solitary waves on simple

Principal scheme of transceiver

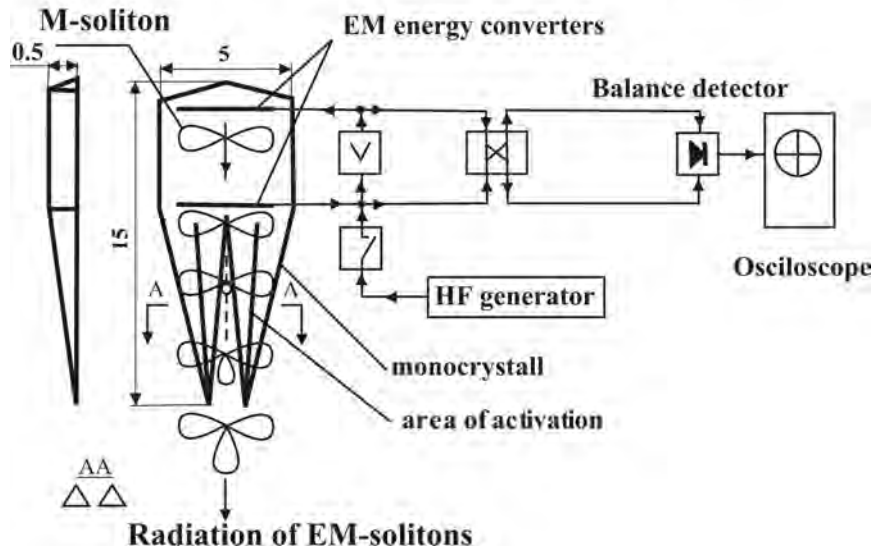


Fig. 1

Principal scheme of EM solitary wave transceiver

water (which was used for plants) led to acceleration of the plants growth and it can be related with homeopathic memorization of space-time torsion by chemical clusters (globules) of water molecules. This torsion is called by EM solitary waves of radiation passing through the water [4].

Analogically it was found [5] that radiation of EM solitary waves (with screened electromagnetic component) called the deceleration of radioactive β -decay of cesium isotope Cs at approximately 5%, it was measured according to the readings of radioactivity meter RUP-1.

Radiation of EM solitons of linear polarization increased the critical temperature of superconductor made of ceramics (disk of 10 mm diameter) at 10%. Such effect may be stipulated by partial re-orientation of electron spin (analogously to [6]) from anti-ferromagnetic state to ferromagnetic state.

Soliton microwave discharge looking like ball lightning [6] had ball shape of about 2 mm diameter, moving towards radiation. In perspective, to create self-sustaining chain reaction, as it is known, one should increase the volume, density and temperature of plasmoid up to some critical proportion.

Thus, in conclusion we can say that considered theoretical scheme of excitation and propagation of EM solitary waves allowed to create principally new technical generators and detectors of EM solitary waves. These devices can be applied for creation of introscopy geophysical devices, radio-relay and space communications systems of practically unlimited distance of operation, speed and density of transmitted and received information.

Generators and detectors of EM solitary waves can be used for principally new level of research of biological objects in medical application.

In context of the research made a possibility of distant radioactivity and gravitation control [10] using the field of standing EM solitary waves (or EM pulse-waves) of higher topological symmetries comes to light.

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relativity). Besides, substance has certain physical properties. It is supposed in the given model that substance and fields, which form our world, are not independent physical realities, but specific structures of such substance (like concentrations, vortexes, etc.) and as a whole our World is a single wave like solitary wave, which propagates through substance in the direction from the past to the future. In frames of the given model we can immediately solve the question formulated above: how the time substance transfers its properties to the physical matter? Since substance and fields are particular states of substance itself, then there is no requirement of special transfer of properties from substance to matter and fields. These objects initially have properties, which are common with substance. In such model the notions of the course of time and its direction get a clear sense, it is easy to prove the statement on symmetry of the World, which is analogous to the known CPT-theorem of quantum theory of field. We have a possibility to show that mirror asymmetry of the World and asymmetry of it regarding particles and antiparticles can be the consequences of spatial-time substance acting upon the World. Development of the given notions was a construction of a model of electron as a structure formed by such substance [6,7]. This model describes the electromagnetic field of arbitrarily moving charge in details (without an application of Maxwell's equations).

Up to the present time many results of theoretical, laboratory and astronomical researches by N.A. Kozyrev found a confirmation and development in the works by other specialists, which used different approaches. Some of these works were published in the collective monograph [8] and in two special issues of "Galilean Electrodynamics" journal [9]. The work of Russian interdisciplinary seminar on temporology permanently acting on the base of Moscow State University (head of this seminar is A.P. Levitch) is devoted to the studying of time phenomenon. Materials of the seminar are placed at: www.chronos.msu.ru/SEMINAR/rindex.htm.

A flow of information on researches, which work out Kozyrev's ideas has been growing during last years; and it is the evidence that this direction of studying of time founded by this outstanding scientist has perspectives. At the same time we should recognize that many problems concerning time are not solved yet, and time remains the mystery of the Universe.

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N. A. Kozyrev's Ideas Today

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(Editor's notes by Alexander V. Frolov)

Introduction

Nikolay Alexandrovich Kozyrev's ideas amaze our imagination. They are full of optimism. For the first time in physical constructions we can see vital, creative principles of the World, which are able to oppose to its heat death foretold by traditional physics to be inevitable.

N.A. Kozyrev came to his ideas by the analysis of the observed data about luminance, masses and sizes of

stars. This analysis brought him to a conclusion that the processes of thermonuclear synthesis cannot serve as a main source of stellar energy. **The scientist made a hypothesis that Time is a source of stellar energy.** According to N.A. Kozyrev, Time has active (physical) properties besides its passive property of duration. Time effect the events in the World due to these active properties. These properties manifest in cause-effect relations and express themselves in the counteraction to the usual course of processes, which lead to the destruction of systems organization. Time influence is very small in comparison with usual destructive course of processes, however it is dispersed everywhere in Nature, therefore **there is a possibility of its accumulation.** Such possibility is provided in living organisms and massive cosmic bodies, in stars at first. **Active properties of Time can provide the interrelation of objects, when there are no usual physical effects between them. Time joins the entire**

World in a single whole. It is the organizing beginning and the source of vital possibilities of the World. [1-7].

For development of his hypothesis, N.A. Kozyrev had been developing his theory more than 40 years and had been carrying out his experimental research more than 30 years. He made a conclusion that in cause-effect link, which contains rotating bodies, the active properties of Time calls the appearance of small additional forces, which are able to change the momentum of the system. The notion about deep genetic relation of Time and causality is a basis of N.A. Kozyrev's ideas. Exactly due to conviction in the presence of such relation, the scientist called his theory of physical properties of Time **the causal mechanics**. N.A. Kozyrev together with his colleague Victor V. Nasonov, who had been helping him to make all experiments during 20 years, created several types of sensors (detectors), which allowed to make distance research of physical processes. During astronomic observations made by means of these sensors they registered signals, **coming from visual, real and future locations of stars** and other astronomic objects [7-11].

We suppose that the reader had already got acquainted with the works by N.A. Kozyrev, and now we will start discussion on the results got by his followers.

During Kozyrev's life, in scientific literature there were no reports on the works of other researchers in the direction founded by him. Such publications began to appear only after the untimely death of the scientist on February 27, 1983. Up to the present time, many results of theoretical, laboratory and astronomic research by N.A. Kozyrev, which recently could seem to be too fantastic, had already got the proof and development in the works of independent specialists.

Laboratory experiments

V.M. Danchakov, the scientist from Novosibirsk, was the first to publish in 1984 the results of laboratory research made as a development of Kozyrev's works [12]. He studied the distance effect of evaporation process of liquid nitrogen on the living objects (microorganisms, seeds of peas and others) and also on some substances of abiocoen.

The experimental system made by V.M. Danchakov is a special chamber of elliptic shape with the distance between focuses about 0,5 m, the inner surface of this chamber is covered with aluminum foil. An active source (a bulb with liquid nitrogen as process of evaporation) is placed in one of the focuses of the chamber, and an investigated object is placed in another focus. If it is necessary, a screen made of aluminum is placed between the focuses. This screen prevents the direct effect of the process to the investigated object. Elliptic shape of the chamber and aluminum as its covering were chosen to study the effect of reflected influence of the process to the object, when hypothetical carrier of influence gets to the investigated object passing over

the screen by the periphery of the chamber reflecting from its walls (that corresponds to Kozyrev's results on focusing of influence by means of aluminized parabolic mirror).

It was found that evaporation process of liquid nitrogen has a distance influence on the condition of investigated objects, and living being has a particular sensibility to such an influence. In particular, it was registered that **influence on microorganisms, which is made in the mode of reflection, stimulates their development, while direct influence depresses this development**. The objects of abiocoen subjected to the mentioned influence during 15-60 minutes keep their changed properties during several hours after the end of the influence. At that time they themselves become the sources of the same influence on other objects.

(Editor's note: It is similar to magnetization or structure changes of matter)

V.M. Danchakov and I.A. Eganova developing the described research in 1984-85 made a detailed study of distance influence of evaporation process of liquid nitrogen on the peas seeds (as well as on the range of other biological objects) [13]. They got statistically significant results, which were the evidence of change in biological cycle of plant development after such an effect. Seed, which was subjected to the effect of the process at a distance of 65 cm during three or six minutes retarded from control seeds by germination, growth of stem and crop, though in their crop the average weight of a separate seed as a rule was some higher. It is interesting that in the case of additional 15 minutes influence of the process on seeds the initial retardation of plant growth from the control ones changes by advancing in three-four weeks after the sowing.

Following the given research, the group of scientists from Novosibirsk (M.M. Lavrentiev, I.A. Eganova, M.K. Lutzet, S.F. Fominykh) made a big cycle of experiments on studying of distance effect of irreversible processes on various substances [14]. A system used in these experiments is close in its design to the system by V.M. Danchakov described above. It is a chamber of ellipsoid shape with the distance of 40 cm between focuses. The chamber was covered with aluminum foil inside it. **An initiating irreversible process was provided in one of the focuses, an investigated substance was placed in another focus**. If it is necessary, the screen separates them. Evaporation of liquid nitrogen, dissolution of sugar in water, cooling of hot water and other physical and chemical processes were used as irreversible processes. Distilled water (change of its density was measured), cooper, duralumin, quartz, glass, wood, sugar, coal and other substances were used as investigated substances (change of weight of the sample treated as change of its mass was determined). It was found that after several minutes of process effect the relative changes of masses of the bodies constitute $10^{-6} - 10^{-5}$, and relative change of water density constitutes 3×10^{-4} (the effect has different sign for

different processes). Returning of parameters to initial values goes very slow, sometimes 24 hours or more. It was found by special experiments that the obtained result cannot be explained by known phenomena, i.e. changes of temperature, electrostatics, absorption and adsorption, changes of Archimedean force and others. The authors of the research note that "all totality of properties of dynamics of changes in mass and density of substance including the mentioned aftereffect (continuation of density and mass change after the influence was stopped) is significant for the change of mass that is not quantitative measure of substance but mass as a measure of its gravitational (inertial) property".

Japanese researches in the end of 1980-s made experiments on weighing of gyroscopes with vertically oriented axis and found that gyroscopes, which rotate clockwise (if we look on them from above) decrease their weight proportionally to the angular speed of rotation. At the same time gyroscopes rotating counter-clockwise do not change their weight [15]. (*Editor's note: Also it is important to note the following: not a gyroscope only but a falling (moving) gyroscope was investigated in this experiments.*) The given result is very close to the result obtained by N.A. Kozyrev [4-7], though Japanese researches didn't make any references on his works. In two months after the publication of the article by Japanese scientists, the articles by American and French scientists appeared. These articles reported that in analogous experiments made by these scientists there was not registered any changes of gyroscope weight [16, 17]. Analysis of these publications made by Dr.R.Ya. Zulkarneev in physics and mathematics on the seminar "Studying of Time phenomenon" in Moscow University allows making a conclusion that really the results of Japanese scientists as well as the results of their American and French opponents are in agreement with the Kozyrev's data. The fact is that according to the theses of causal mechanics, gyroscope can change its weight only with the condition that it is included in some cause-effect link. In other words, this can be only in the presence of irreversible energy exchange between gyroscope and environment. Such energy exchange takes place, for example, during vibration of gyroscope. So, in the system made by Japanese researches there were the out of control vibrations due to the application of spring suspension of gyroscopes; gyroscopes used by Americans and Frenchmen were close to ideal ones (without vibrations).

The group of experimental physicists of St Petersburg University (V.S. Baranov, M.B. Vinnichenko, M.A. Ivanov, A.M. Selivanov, S.V. Skvortzov, A.Z. Khrustaliov) in 1992 made two experimental systems for distance research of physical processes. Sensors (detectors) of these systems were created by N.A. Kozyrev and V.V. Nasonov: in the first system there was asymmetrical torsion balance, in another one there was measuring electrical bridge (Witstone bridge).

Simply speaking, torsion balance is a light rod (beam) with the loads on the ends, suspended horizontally on

the fine vertical thread. Masses of load were chosen in such a way in order to lengths of arms of beam had the ratio of 1:10. The balance was placed in forevacuum chamber with the air pressure inside it about 2 mm of mercury. It was electrostatically screened and together with the chamber it was leveled on a damping platform. The turn of the balance beam in horizontal plane served as a measuring characteristic. This turn takes place if it is made near the system of investigated process. The system gives a chance to register rotatory moments, which act on the balance beam. They correspond to the force of 10^{-6} length applied to the long arm of the balance beam.

Measuring electrical bridge was assembled on four metal-film resistors. One of them is placed at some distance from others. The value of bridge deregulation during the investigated process made near the distant resistor is studied. This system allows to measure deregulation of the measuring bridge with an accuracy up to $2 \cdot 10^{-8}$ V by voltage or 10^{-11} A by current due to the usage of special power source and recording apparatus and provision of high extent of protection in heat, electrostatic and electromagnetic aspects.

Thus, sensitivity of both systems almost in two orders exceeds the sensitivity of analogous systems used by N.A. Kozyrev and V.V. Nasonov.

In the test series of experiments made, it was studied a reaction of sensors on the processes of dissolution of various substances in water, cooling of heated body, thawing of ice and evaporation of volatile liquids (evaporation processes were made in a closed retort with a regulated forced pumping of air and diversion of vapors outside the laboratory). A qualitative pattern of observed effects (their sign, presence of initial lag, long being of input system in saturation mode, slow relaxation and others) repeats the characteristic features of experiments made by N.A. Kozyrev. At the same time, the absolute values of effects about an order smaller then it was noted by Kozyrev (with comparable intensities of the processes). Besides, unlike Kozyrev's data, the processes going without temperature changes didn't show the effect more than limits of error. It was found a correlation of effect sign with the sign of temperature difference of sensor and physical system, in which the process was made. The calculations made by the specialists (L.A. Bakaleynicov, M.G. Vasiliev, E.G. Golovnya) show that heat radiation acting on the sensors makes some contribution in the observed effects. (Heat radiation leads to the heterogeneous change of temperature in fore-vacuum chamber of torsion balance that created a convectional gas flow inside it, which rotate the balance beam. In another system the heat radiation changes the temperature of resistor, near which the process is made. It leads to the change of its electrical resistance, which calls deregulation of measuring bridge). The radiative heat exchange between the sensor and the investigated process is not preventing by the screen made of cardboard, paper, plastic and other materials placed between them, because they are transparent for the

wide spectrum areas of electromagnetic radiation. **However, not all found characteristics of the effects could be easily explained by the influence of heat factor...** (The experiments were discontinued on this the most interesting stage due to the lack of finance).

Research of biological systems

Studying of living systems by means of Kozyrev's sensors is absolutely interesting. N.A. Kozyrev himself made only separate experiments with biological objects including a man. He didn't make systematic studying of living systems in principle. He has explained his position on this question in reports and articles as follows (I give his argumentation almost literally):

Life is a natural phenomenon, but not unnatural. Living organisms cannot create anything that doesn't exist in nature. They can only collect and use what is laid in general properties of the World. At the same time, living organisms are very complex systems. Tens and even hundreds of various physical and chemical processes takes place in them. That's why during experiments with them we have a lot of chances to entangle in the complex pattern of phenomenon and never understand its essence. To find out the essence, origin of the discovered effects and be able to develop a system to describe them, we should investigate the simplest systems of abiocoen. It will give us a chance to rely on the huge experience of scientific knowledge of exact science during our studies, to use all rich arsenals of its ideas and results.

Kozyrev's followers, however, didn't wait for the results of abiocoen studies and began the research of living systems.

V.V. Nasonov, many-years colleague of N.A. Kozyrev, made a big series of experiments with cut plants. He made this research in 1983-84, after Kozyrev's death, in this laboratory in Pulkovo observatory, where earlier they tried to understand the essence of phenomenon together. As sensors V.V. Nasonov used two torsion systems: asymmetrical torsion balance and light disk, hang horizontally by its center of gravity. He studied branches of apple tree, pear tree, lime-tree, chestnut, and also stems of clover, dandelion, bittercress, growing on the territory of Pulkovo observatory. The cut plant was placed by the place of cut or by the opposite end (top) near the side surface of sensor's casing. With this, another end of the plant was placed as far as possible from the sensor. All plants showed the effect on the sensors, the turning angles of torsion balance and disk constituted from ones up to tens degrees depending on season and other circumstances.

It was found that immediately after the plant was cut, its top and place of cutting call nearly the same reaction of sensors. The effect has the same sign that the effects from such processes in abiocoen, which lead to the destruction of inner organization of the system. In some time the plant passes to another state. On this stage the place of cutting continues to show the effect of the

same sign, as it was earlier, and the top of the plant begins to show the effect of an opposite sign. The plant seems to be struggling for life. This process can continue for a long time for some plants. So, once a bittercress in the periods between experiments with feeding it with water "had been struggling for its life" for 14 days, though during this process its stem looked dried and the place of cutting was rot. However, not all the plants showed such an effect and not always. The plants show the most activity in vegetative period. For example, individual apple-tree branches in blossom on the eve of petal abscission called the turn of torsion systems at the angles up to 300° on the stage of "struggle for life", though the common effect of another sign for apple-tree branches lies in the limits of $10-30^\circ$.

V.V. Nasonov reported the results of the given research in December 1985 on the scientific seminar "Studying of Time phenomenon" in Moscow University. Besides, the announcement on this research was made on the scientific-technical meeting "Experience exchange on research of anomalous phenomena in environment" took place in Kiev on May 1986, two month after the sudden death of V.V. Nasonov.

S.P. Mikhailov published the results of research on distance influence of a man on asymmetrical torsion balance on 1992 [18]. A.G. Pakhomov explained the effects discovered by him with sufficient argumentation by the influence of heat factor (the heat from a man heats the nearest part of the chamber with the balance and the temperature difference inside the chamber leads to the convectional flow of air inside it, which turns the balance beam) [19].

N.A. Kozyrev got a lot of letters, in which the enthusiasts announced about their repeat of his experiments and successful application of Kozyrev's sensors to investigate living systems. However, it is not possible to discuss them in this article due to the absence of detailed descriptions of these experiments.

(Editor's note: Several words on link between time and heat. For more deep understanding it is more useful to apply "density of aether" instead of Kozyrev's notion "density of time". In this case we can assume also that ordered heat process, i.e. heat flow in some direction, can be considered also as aether flow due to gradient of its density. In this case it becomes clean the connection of heat processes and experimenting with time. In some cases it is possible absolutely exclude heat electromagnetic influence but the aether flow will produce some effect.)

Astronomical observations

The scientists from Novosibirsk M.M. Lavrentiev, V.A. Gusev, I.A. Eganova, M.K. Luzet, V.G. Medvedev, V.K. Oleynic, S.F. Fominykh were the first who made astronomic observations according to Kozyrev's method. In 1989-91 in Crimea astrophysical observatory they studied the distance effect of stellar processes on physical and biological sensors [20-22].

Physical sensors made by them in their design repeat the sensors made by N.A. Kozyrev and V.V. Nasonov, but they have more sensitivity and have better screening from external effects. The main element of these sensors is a measuring electrical bridge assembled on four metal-film resistors. A value of bridge deregulation called by the influence of star on one of resistors is determined. **This resistor is placed in the focal plane of the telescope. Microorganisms being in anabiosis state serve as biological sensors. The property of microorganisms to form colonies on the solid substrate is used as a test reaction.** The effect of four stars on physical sensors and the Sun on physical and biological sensors was investigated. In the first case the observations were made on 50-inches telescope-reflector, on which Kozyrev and Nasonov worked in their times. In the second case the observations were made on the telescope "MIZAR" TAL-1 (having the diameter of main mirror of 110 mm). In all observations the main mirror of the telescope was fully covered with plastic screen or black photographic paper. It was discovered an effect of three stars and the Sun on physical sensors. With this, according to the results by Kozyrev and Nasonov the sensors react firstly on the **visual location** of stars and the Sun on the sky (i.e. on the places of the sky, where investigated objects were in the past, in the moments of time, when they radiated light reached the Earth during observation). On the other hand, they reacted on their **real location** (i.e. on those places, where the objects though are not observed visually, but really they are located there in the moment of observation). Thirdly, they react on the places of the sky, which are **symmetrical to the visual** ones regarding the real ones (these are the places, where the objects will appear **in future**, in the moments of time, when the light signal from the Earth would come to them, if it was radiated in the moment of observation). The most reaction of sensors was called by real locations of the objects. The weaker reaction was called by visual locations and the less reaction was called by their future locations. Biological sensors demonstrate a strong reaction on the real location of the Sun. After three minutes of projecting of Sun's real location on them, the quantity of microorganism colonies increases in 1,5-2 times in comparison with the case of projecting of neighboring sky areas on them. (There are no statements about presence or absence of biological sensors reaction on visual and future locations of the Sun in this publication).

A group of scientists (A.E. Akimov, G.U. Kovalchuk, V.G. Medvedev, V.K. Oleynic, A.F. Pugach) in 1991 made the astronomic observations by Kozyrev's method in the Observatory of Science Academy, Ukraine and in Crimea astrophysical observatory [23, 24]. By means of Kozyrev's type sensor the registered signals from three cosmic objects: a star, ball congestion and roentgen source (with this a range of other objects had no effect on the sensor). Repeated scanning of the sky area in the vicinity of the observed object proved reliability of the results. The scientists paid attention to the following two factors (both of them took place in Kozyrev's and Nasonov's experiments also). The first is that coordinates of the point on the sky, from which the

sensor takes the signal, are different on several angular minutes from coordinates of the cosmic object, which is considered to be the source of this signal. In this report there is consent with interpretation of this factor accepted by Kozyrev. The second characteristic factor is an absence of full (100%) reproduction of the results: the source, which demonstrates the reliable effect of influence on the sensor in some cycle of observations, sometimes doesn't show the effect in another cycle of observations. In this report there are three hypothetical reasons given without any discussion: variability of the source characteristics; change of the source location (when it is really different from the cosmic object, with which it is identified); **variability of space-time continuum properties in the area between the source and the sensor** (*Editor's emphasis. Also we can assume that average density of aether in space along link between the source and detector is not constant physical value*). A conclusion was made that "Kozyrev's ideas on the possibility on non-electromagnetic influence of stars on resistor, which earlier seemed to be eccentric, found an experimental proof".

In the foreword to the article [23] Morozenko A.V. wrote: "It's not a secret that while reading this work I also had a feeling of aversion. But personal acquaintance with the authors of this work and knowledge of some of them as high-professional astrophysicists-observers made me not to reject this work, but to study it attentively. Having a desire to find a mistake or even a negligence in making of the experiment, I came to an opposite conclusion and made sure in practical perfection of experimental part of the work and was close to believe in reality of existence of interaction effect of possibly unknown energy source with detector. It allowed me to agree working as an editor of this work with an open heart and recommend it to publication. Moreover, I presume to address to the readers not to reject it a priori, at least observational effect, but try to make analogous experiments independently or just answer the question: "What can it be?" We cannot exclude that works in this direction will allow to find a new kind of interaction in the Universe".

Theoretical research

The scientific interdisciplinary seminar "Studying of Time Phenomenon" (under the head of PhD A.P. Levitch, theoretical physicist, candidate of biological science) has been working from 1984 at Moscow State University. It is without a rival in its breadth of material and presence of participants. During 10 years of its work more than 300 reports were made. Physicists, chemists, biologists, geologists, geographers, geophysicists, mathematicians, mechanical engineers, astronomers, psychologists, representatives of other fields of knowledge including non-traditional ones take part in the work of this seminar [25]. V.V. Nasonov spoke on this seminar in 1985. One of 1990 sessions was fully devoted to N.A. Kozyrev and his research works.

A unique two-volume monograph "Time in natural science: interdisciplinary approach" was wrote on the

basis of materials of this seminar. Author's group of this monograph includes 17 Doctors of Science and Doctors of Philosophy of various specialties. One volume of the monograph is devoted to the analysis and development of Kozyrev's ideas. The monograph is fully prepared for publishing, but financial problems delay it's publishing.

N.A. Kozyrev emphasized the notion of causality. He underlined that causality is one of the main properties of nature. It is related with the Time phenomenon, that's why the notion of causality should be included in basic postulates of mechanics. The scientist began to realize this task in his causal mechanics. Kozyrev's notion about causality and its role in natural phenomena fully match with the modern philosophical views on causality. Besides, **in physics this notion appears only in the form of the so-called principle of causality. According to this principle, the Future cannot have any influence on the past** (taking into consideration the theory of relativity it also means the impossibility of motion of bodies with the speeds, which exceed the speed of light in vacuum). **Thus, physics and then other exact sciences ignore the most part of causality notion aspects.** N.A. Kozyrev also failed to formulate an irrefragable physical definition of causality.

Obviously, the first strictly formalized definition of causality can be found in the article by M.L. Arushanov and S.M. Korotaev [26] and in following articles by S.M. Korotaev (member of Institute of the Earth Physics RAS, Troizk town) [27-29]. Simply speaking, this definition is based on the comparison of conditional probability of events: If we take two events, then the effect is the event with probability of realization higher than analogous probability for another event (if realization of another event was made). With this the second event will be the cause.

(Editor's note: in first view it seems strange that probability of cause is less than probability of the effect). Such definition appeared to be consistent with Kozyrev's axiomatics.

The author of this article analyzed the initial postulates of Kozyrev's causal mechanics. In particular, the presence of small additional forces in cause-effect links, which are not taken into consideration by classical mechanics, could be interpreted as a deviation of vectors of usual ("classical") forces from the direction, attributed to them by classical mechanics. Such understanding allowed considering the given thesis of Kozyrev's theory as a natural development of classical mechanics notions [30, 31]. Besides, **the author derived Heizenberg's principle of uncertainty directly from initial postulates of causal mechanics.**

In Kozyrev's work Time is an independent natural phenomenon, which has an active influence on the events in the World by means of its physical properties. **We can say that Time according to Kozyrev is some kind of a substance, which exists along with matter and physical fields** (in philosophy such concepts of Time are just named as substantive concepts).

Editor's note: Really, it seems that Aether can be most acceptable notion in this case.

Developing the scientist's ideas, the author of this article creates a substantive model of space-time, which joins Kozyrev's notion on substantive time and fundamental principle of modern physics. According to this principle, space and time form the unified space-time variety. It is shown that the **notion of time course and its direction get a clear sense in the frames of the given model**, symmetry of the World appears to be just like it is dictated by the quantum theory of field, also the observed mirror asymmetry of the World is explained by the interaction of the World with the space-time substance [32, 33]. Results of the research are fully expounded in three articles prepared for the above-mentioned collective monograph "Time in natural science: interdisciplinary approach".

According to the available data, the scientists from Novosibirsk also work on the theoretical understanding of the problem of Time in the manner of N.A. Kozyrev. We have told about their experiments above. However, the results of their theoretical researches were not still published.

Application of causal mechanics in other sciences

The member of Astronomical Institute of Saint Petersburg University V.V. Orlov in 1993 made a report on the city seminar devoted to the stellar dynamics on the topic "Causal mechanics (according to Kozyrev) in stellar systems: forecasts and estimations". Some observed features of dynamics and evolution of stellar systems, which now have no convincing interpretation, were explained in this report. One of these features is the so-called virial paradox. The essence of this paradox is that there are such velocity distributions of galaxies in the accumulations of galaxies, which can be explained in the frames of known cosmogonical theories only on acceptance of very artificial assumption on existence of some hardly detectable ("latent") mass. This mass many times exceeds the entire observed mass of accumulation. **Introduction of additional force into the calculations, which follows from Kozyrev's theory, allowed obtaining the evaluation of velocity distribution of galaxies, which match the real evaluations. This didn't require engaging the hypothesis of "latent" mass.** Also the observed dependencies of linear speeds of stars rotation on the distance to the center of galaxy were explained for spiral galaxies using Kozyrev's force. These dependences are different from those predicted by classical mechanics. Besides, a similarity of some physical properties of components of double stars was found. This similarity match the analogical data by N.A. Kozyrev, and a number of other results was obtained. The work in this direction has been continued.

M.L. Arushanov and S.M. Korotaev applied Kozyrev's results to the description of geophysical facts, which have no satisfactory interpretation from usual positions. By calculation of the value of Kozyrev's force acting on

the Earth's structures, they particularly explained the asymmetry of geological structure and shape of our planet, asymmetry of atmosphere circulation and some features of distribution of physical fields of the Earth.

Circumstantial data in favor of Kozyrev's theory

Long-term experiments by R. Davis on registration of solar neutrino lead to a **conclusion that the temperature of the central part of the Sun is lower than the temperature, which is necessary to provide its radiance due to the thermonuclear reactions only [34]. This result fully matches to the conclusion made by N.A. Kozyrev.** He came to this conclusion on the basis of the analysis of observational astronomical data. According to this conclusion, the **processes of thermonuclear synthesis cannot serve as a main source of stellar energy.**

At present time the presence of numerous and various solar-earth and moon-earth connections, which cannot be explained from positions of traditional physics, is firmly determined [35-41 and others]. The given circumstance makes us to regard Kozyrev's hypothesis on interrelation of all world phenomena by means of physical properties of Time with attention.

According to N.A. Kozyrev, all planets, which have their own rotation, should be asymmetrical in regard to equatorial plane due to the action of specific forces described by causal mechanics. For the Earth the presence of asymmetry between northern and southern hemispheres is proved by G.N. Katterfield's works and works by other researches (see the article [42] and references in it).

It follows from causal mechanics that influence of Time on our World can lead to the difference in properties of right and left systems, i.e. to the so called mirror asymmetry of the World. Mirror asymmetry is really observed in a number of phenomena. One of its examples is nonconservation of spatial parity during β -decay of atomic nucleus [43]. There are numerous manifestations of mirror asymmetry in living substance. It mostly manifests in the presence of only right swirl of nucleic acids molecules and only left swirl of proteins [44]. L. Pasteur began studying of this property of living substance. It is considered to be one of the main signs of life ([45] and others). Now a satisfactory explanation of mirror asymmetry of the World is still not found in spite of numerous attempts made in the given direction. **Causal mechanics is the only theory, in which mirror asymmetry is a regular manifestation of nature properties, but not the result of occasional concurrence of circumstances.**

In one of his last articles [11] N.A. Kozyrev made a conclusion that results of astronomical observations by means of physical properties of Time [7,8,10] corresponds to geometry of space-time, which is considered by special relativity theory. As we mentioned above, the author of this article derived

Heizenberg's uncertainty relations from the postulates of causal mechanics. It was shown that substantial space-time model, which is the development of Kozyrev's notions, leads to the symmetry of the World, which matches the symmetry dictated by quantum theory of field. The given results are the evidence that Kozyrev's causal mechanics is in correspondence with the theory of relativity and quantum mechanics. It is one more argument in favor of its correctness.

Editor's note: Really, the experimental data is most powerful argument in repute of Kozyrev's theory.

On parapsychological research

Many publications devoted to parapsychological researches contain references on Kozyrev's works. Let's mention only one, the greatest research of such kind.

Scientists from Novosibirsk Institute of clinical and experimental medicine of Siberian Department of Academy of Medical Sciences (V.P. Kaznacheev, A.V. Trofimov and others) in winter 1990-91 investigated **the distance (telepathic) communications** in the systems "man-biosensor" and "man-man" [46,47]. These experiments were made using "the system made according to Kozyrev's ideas", which is a room containing a special system of "mirrors" made of aluminum. It was found that during the allocation of transmitting information operator inside such system and receiving operator inside another system (for distant from the first one at about 100 meters) the effectiveness of perception of transmitted image information increases in 3-6 times in comparison with the case of transmission and reception of information without of these systems.

One of experiments lied in the transmission of image information inside the system, placed in trans-polar village Dixon (North Russia), reception of this information by the group of operators in the same village and by another group at the distance of about 2500 km from Dixon, in Novosibirsk city. There were 14-16 people in each group. They received information without using the mentioned systems. In these experiments the operators of both groups received similar information, which, however, differed from the information sent by transmitting operator and mainly consisted of cosmic symbols. During this, in a number of cases an unusual light effect appeared in the night polar sky above the system, where the transmitting operator worked. This effect looked like a disk with luminous train moving to the north.

Some practical extrasensory individuals express an opinion that a transmitter of distance influence in Kozyrev's effects and transmitter of influence in parapsychological phenomena is the same physical agent. The following facts are given as the ground of such an opinion. At first, the change of temporal parameters in environment takes place in many parapsychological experiments. At second, the

mentioned phenomena have a number of common features. In particular, a characteristic feature of Kozyrev's effects is a sufficiently long stay of the objects in the changed state after they were subjected to the distant influence from irreversible processes. The similar long aftereffect of induced properties takes place also with the "activation" of things made by extrasensory individual. Besides, the sensors used in biolocation look like Kozyrev's asymmetrical torsion balance.

Certainly, the listed facts cannot be ignored. Nevertheless, there is no doubt that these very facts cannot prove the identity of physical transmitters of Kozyrev's and parapsychological effects.

Let's note, that acquaintance with a serious parapsychological literature including those written by physicists and biologists as well as high-grade engineers convinces in the fact that our World is created much more complex then we usually consider it to be [48-55 and others].

Near-science situation

A wide correspondence received by N.A. Kozyrev is the evidence of the interest to his research from many Russian and foreign specialists.

There is information that there was an interest to Kozyrev's works from very specific organizations. For example, a young foreigner visited two Kozyrev's lectures, which he read in 1980 and 1981 in Leningrad (in Geographical Society and in House of Scientists in Lesnoye). He recorded the scientist's speeches on a portable Dictaphone. This man introduced himself as John from Texas and informed that he has a probation period in our country to improve his Russian. Of course, Kozyrev was a good lecturer, but there is a doubt that his speeches devoted to a very special topic really could be interesting to lovers of Russian philology from Texas. And if we take into consideration that this man from Texas recorded also a report made by V.M. Inushin from Alma-Ata devoted to biofields (it was reported in Leningrad House of Scientists named by M. Gorky in 1981), then it becomes very evident that certain foreign organizations watched attentively the new scientific researches in our country. The evidence of the same fact is a publication of two reviews of Kozyrev's works on causal mechanics appeared even in 1960 and 1963. The Institute for the Study of the USSR (Munich city, FRG), i.e. the organization, which in one's time made a contribution in support of cold war spirit [56, 57] prepared these reviews. That's why there are grounds to consider that there were some researches in this direction abroad and may be they are still going now.

Our Russian organizations, which do not like to advertise themselves, also had an interest to Kozyrev's works. They even offered the scientist a material support of his researches. But Kozyrev had to reject this offer since receiving of this support had a condition of security classifying of the works. This condition was unacceptable to the scientist. As a result, the ways of

N.A. Kozyrev and these organizations didn't cross. But it is very evident that such researches were made (and may be still made?) in our country in a secret.

Certainly, the research of physical properties of time, which was began by N.A. Kozyrev, should be made openly. Only in this case we can hope that received results will be used for the welfare but not harmful to Nature and humankind.

In contrast to the mentioned anonymous organizations, USSR Academy of Science didn't support Kozyrev's research, and also periodically put the obstacles on his way. In particular, in November 1959, the year later the book by Kozyrev "Causal or asymmetrical mechanics" was published, three academicians L.A. Arzimovitch, P.L. Kapiza and I.E. Tamm expressed rude attacks on the scientist in "Pravda" newspaper [58]. According to distorted Kozyrev's views made in the article, we can see that its authors were badly acquainted with his works. This article is not a scientific discussion, but a "political shout" for the scientific dissidence. That time it was normal to consider article published in "Pravda" to be a guiding indication. That's why Kozyrev had no chance to publish the results of researches on causal mechanics for a long time.

It is interesting that an article by T. Margerison, which contained a detailed analysis of principles of causal mechanics, appeared in English magazine "New Scientist" just four days after the publication in "Pravda". This article was written in very respectful manner regarding N.A. Kozyrev. It contained the words in witness for the scientist from unfounded accusation made by academicians [59].

One more scandalous example how Kozyrev was persecuted for his dissidence in our country was an order to annihilate an edition of printed collection "Problems of the Universe research. Issue 9" due to Kozyrev's articles included there. Academician-secretary of General Physics and Astronomy Department of AS USSR A.M. Prokhorov signed this order in the end of 1982. An editor of this collection Dr. A.A. Efimov made self-sacrificing efforts to save this book from extermination. (A.M. Prokhorov's order was recently published in the issue 16 of the same collection [60]). We can also cite the other examples of negative attitude to Kozyrev and his research from the direction of USSR Academy of Science leaders. In any case, as the author knows it, none of the researches covered in the present article was initiated or supported by Academy of Science.

A regular result of such an attitude of Academy of Science to the development of new scientific orientations (appeared not only regarding Kozyrev's work) is a remarkable anniversary of 1994. It is a 30th anniversary of the date from which Russian physical science hadn't got Nobel Prize! It is a style of work for many academic scientific institutions to polish the background of science and always be in overtaking position, and it's a pity.

Sometimes we can hear from venerable scientists-physicists that now construction of physical science is practically finished. A general theory of field must be finally developed tomorrow or the day after. Some secondary problems, which remained unsettled, will be solved, and the Temple of theoretical physics will be presented to humankind in all its glance of perfect forms [61 and others].

However, it was already so. In the end of the last century, in 1878 or 1879 a known physicist, 70-year old Professor of Munich University Philip Jolli said to the graduating student of the university who expressed a desire to go in for theoretical physics: "Young boy, why do you want to spoil your life, you see that theoretical physics is mainly over... Is there any sense to do this hopeless business?!" This young man was Max Plank [62]. We cannot allow repeating the same mistakes permanently.

Nowadays, when observational astronomical data while accumulating are less and less good to be in accordance with the frames of existing cosmological theories [63], when the number of facts in favor of existing of the so called "fifth force" grows [64], when we fail to register gravitational waves [65] and solar neutrino are difficult to pick up in necessary quantity [34], when **the definitions of life, consciousness, free will are absent in physics** and an essential definition of time was not formulated, when even a consistent theory of electron was not created, a statement on completeness of theoretical physics looks less convincing, then in the times of Philip Jolli. Formerly theoretical physics really described practically all known experimental facts. That time it seemed that even the attempts to develop a model of human organism based on the achievements of mechanics, theory of electromagnetism and chemistry were close to success. Did one really could allow that time that may be such an insignificant fact as unconformity between theoretical and observed radiation spectrums of absolutely black body can lead to revolution in physics, to creation of an absolutely new physical theory, i.e. quantum mechanics? And the first step in development of this science made just the young graduate of Munich University, Max Plank, whom Philip Jolli dissuaded from going in for theoretical physics.

Attempts of individual scientists to convince people in completeness of theoretical physics are actually a tendency to bury physics, to make the building of science to be a monument for their former achievements. Obviously, it is a psychological effect only, a protective reaction of human mind on age-specific property to create new scientific ideas. By this way little by little a man can come to the idea that today there are no new ideas any more.

It is clear that subjective tendency to bury physics is not related with objective course of science development. Nature is infinite, and variety of phenomena, which take place in it, is unlimited. **That's why physics as a science about mechanism of natural**

phenomena can never be completed. As distinct from its creators, it is forever young.

Scientific community opinion

Many scientists (physicists, mechanics, biologists, astronomers, mathematicians, philosophers, representatives of other sciences) consider it necessary to make comprehensive scientific researches in the direction founded by N.A. Kozyrev. Academicians A.D. Alexandrov, V.A. Abarzumyan, V.P. Kaznacheev, M.M. Lavrentiev, a number of members of Russian National Committee on theoretical and applied mechanics, many Doctors of Science and Doctors of Philosophy are among them. Due to the support of these specialists and leaders of Saint Petersburg State University one succeeded to publish a collection of selected Kozyrev's works in 1991. This collection included most of his works on research of physical properties of time [7].

Of course, specialists express some notes during the discussion of Kozyrev's works. These notes concern the organization of the experiments and theoretical developments made by the scientist. **However, not one in the mentioned defects can cancel his theory.** Moreover, some defects can be improved without distortion of general direction of Kozyrev's reasoning. Many of the expressed remarks were born by the incompleteness of his researches. The words by Academician Alexander Danilovich Alexandrov are the best to summarize the results of these discussions. Sometime he was active to assist in edition of Kozyrev's books "Casual or asymmetrical mechanics..." and "Selected works". His words were simple and constructive: "We should investigate!"

Of course, Kozyrev's ideas have both followers and opponents. We should underline, however, that Kozyrev's opponents didn't make verification researches, that's why their negative attitude to scientist's works is a reflection of their subjective position, but not a result of objective analysis.

Let's pay attention to two circumstances concerning Kozyrev's theory.

There are two conceptions of time known in philosophy, which are relational and substantive [66-69]. According to the first conception there are no time in Nature as a separate entity and time is a specific manifestation of properties of physical bodies. The second concept, vice versa, suppose that time is an independent natural phenomenon, as if a substance of a special kind, which exists along with matter and physical fields. Their followers found no indisputable arguments in favor of one of these conceptions during two thousand years.

Editor's note: If we'll assume the Aether conception of time then both above mentioned conceptions are correlated. The Aether can be considered as substance of some specific properties, which depend on the element of matter. Generally, the matter itself is considered as Aether vortex or other disturbance of Aether.

Now physics is on a position of relational conception of time, it doesn't consider any temporal substance. With such an approach to description of reality it is principally impossible to determine by the logic way only, if the substance of time exists or not, because it is impossible to determine the presence or the absence of something that was not determined. Therefore, Kozyrev's idea that time is an independent natural phenomenon cannot be rejected from positions of modern physics. It is the first circumstance to note.

The second circumstance is that Kozyrev's theory, which assumes the presence of additional (physical) properties of time along with the property of duration, cannot appear to be mistaken; its only risk is to turn out to be abundant. Actually, if the real time has no properties except duration, then with assumption of all characteristics, which conform to additional properties, in the equations of this theory to be equal to zero, we will get a theory supposing the presence of the only property of time, i.e. duration. Let's note that the counter statement is wrong: none theory based on the assumption of presence of the only time property of duration will not be able to describe reality, if time really has the other properties.

On the sense of "theory" notion

The term "theory" is used in science in two senses. In a wide sense it means the complex of views, notions, which allow making some conclusions about any phenomena and these conclusions are qualitative in a great extent. In this sense the term "theory" is allied to the term "World view" or "Weltanschauung". In more narrow sense the term "theory" is used in exact sciences, where it means a system of definitions, axioms and theorems and corollaries derived from them according to the rules of logic. They give a possibility to make a quantitative description of some range of phenomena.

Certainly, Kozyrev's ideas form a theory in the wide understanding of this term. They express a certain system of views on the Universe organization and allow making qualitative conclusions about a range of phenomena. As a vision they already influence on our notions about outward things. But for the time present Kozyrev's ideas haven't become a theory in the sense, in which it is understood in exact sciences. They do not form a system of strictly formalized notions and statements, which could allow obtaining quantitative solutions of a wide range of specific problems. That's why we should do a lot on the way of their improvement and development.

Possible directions of research

It will be expedient to begin theoretical research from specification of causal mechanics theses, which are not enough comprehensively covered in N.A. Kozyrev's works. In particular, it is reasonable to do the following:

- to analyze, which geometrical model of space and time should be used in the theory (if it should be three-dimensional in essence Euclidian space and scalar time as it is in Newtonian mechanics, or it should be four-dimensional pseudo-Euclidian space-time as it is in special theory of relativity, or some other model. Relating time here we speak only about its geometrical property of duration);
- to specify the notion of cause-effect link used in the theory (because not any two interacting bodies form the cause-effect link. For example, two similar electrical charges interacting by Coulomb forces evidently cannot be subdivided into the cause and the effect. Here we can rely on the results of the works [26-29];
- to work out in details the definitions of basic values in the theory, i.e. the spatial and temporal distances between the cause and the effect (Kozyrev indicated them as δx and δt) and the course of time $c_2 (= \delta x / \delta t)$, namely to specify if they have statistic or determinate character and if they are scalars or pseudoscalars (pseudoscalar character of c_2 postulated by Kozyrev makes us to consider δx or δt to be pseudoscalar, which does not correspond with the natural sense of the notion of distance).

The next steps in development of causal mechanics can be:

- generalization of the expression for additional forces acting in cause-effect links in the case of arbitrary pair of interacting elements (in Kozyrev's works the expression for additional forces is given only for a particular case, when one of the interacting bodies is close to the rotating ideal gyroscope);
- introduction of quantitative characteristic of time density (N.A. Kozyrev determines this property of time as qualitative one only). According to the theses of causal mechanics the entry characteristic should be of such kind that information about time density change will spread in space immediately (as if the process of spreading was described by the equation of parabolic type);
- development of physical model of substantial time;
- continuation of research how causal mechanics interact with the theory of relativity, quantum mechanics and other parts of physics.

The most important research, which is necessary to be realized, is that one should make a detailed analysis of modern astronomical observational data by means of method developed by N.A. Kozyrev in his doctoral thesis [2,3,7]. This method allows making certain conclusions on the nature of stellar energy without using a priori assumptions on the source of this energy. It is surprising that specialists in astronomy still have not made such research and have not checked the scientist's conclusion on the modern observational material though these conclusions have principle significance for

understanding of Universe creation, and the work itself technically is not very difficult.

It is necessary to continue laboratory experiments along all the spectrum of researches made by N.A. Kozyrev including the following:

- to make experiments with rotating gyroscopes on detecting of weight changes;
- to make experiments with oscillating loads using mechanical scales for measuring of additional forces acting on these loads (according to Kozyrev, additional forces registered on these devices gives a total force, which is parallel to the axis of the earth rotation. That's why the results of the given experiments are important not only for the development of causal mechanics itself, but also for application of its results in geophysics and planetary studies);
- to continue the studying of distance influence of irreversible processes on sensors developed by N.A. Kozyrev and V.V. Nasonov;
- to continue the perfection of Kozyrev's sensors and development of sensors for distance determination of physical properties characteristics of a new type.

Experiments, which use mechanical systems, i.e. systems with rotating gyroscopes or oscillating loads, torsion balance and so on, allow to determine the value of additional forces (moment of rotation) predicting by causal mechanics. Experiments using other systems, as we can hope, will allow finding out a physical mechanism of distance influence of irreversible processes on condition of surrounding bodies.

It is necessary to organize systematic astronomical observations of the sky according to Kozyrev's method. Obviously, these experiments are the only ones to give a final answer on the question, if the signal registered by Kozyrev's sensors is propagated in space immediately or not.

Also one should continue the work on application of results of causal mechanics to solve the problems of astrophysics, geophysics and other sciences, in particular those, which have no satisfactory solution now.

Of course, the given list of possible directions of research is not irrefragable. Also we can mention other problems, which require solution. It is also clear that a lot of new questions, which require solution, will appear in the process of solution of the listed problems.

The final result of the research should be a completion of causal mechanics development. Only after this we will be able to make an objective judgment in what extent Kozyrev's causal mechanics corresponds to reality and what place this theory fills in the system of our scientific knowledge. To obtain this result, we

should make a complex research on a high professional level and with serious state support.

On genius

The author happened to hear the opinions about Kozyrev's genius from the followers of his ideas as well as his opponents.

From the near-science epos we know two signs, which differ genius from a talented man. One of them is expressed by the aphorism: "A talented man hit the target, which cannot be hit by anybody else. A genius hit the target, which even is not visible for anybody".

Another sign is described by the following simple model (the author heard about it on one scientific seminar from Prof. Popov L.E., Tomsk). Let's all theses, which meet the generally accepted scientific paradigm, are described by the vectors of some linear space. To be simple, let's consider that this space is two-dimensional (Fig. 1). On the Fig. 1 this space coincides with the plane of the drawing. Letters O with the indexes $i=1,2,\dots$ indicate the vectors of professional activity of usual specialists. A talented man is able to advance in development of some direction and the corresponding vector T is significantly longer. But a genius can bring principally new ideas in science, which is beyond the existing paradigm. These ideas change our notion about outward things and give a new impulse to the development of science. It is reasonable to picture these ideas as the vector G, which is orthogonal to the pictured plane (see Fig. 2, where the same plane is shown in axonometric projection). Thus, the second sign, which differs a genius from a talented man, is that a talented man advances new ideas in the frames of common paradigm, and a genius generates new ideas beyond these frames.

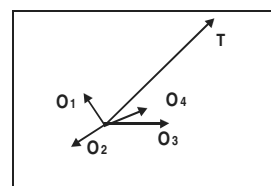


Fig.1

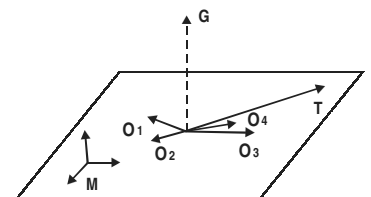


Fig. 2

This model is particularly good with reference to N.A. Kozyrev since it simultaneously illustrates the subject of his research. If we interpret the plane on the Fig. 2 as a space around us, then the vector G will indicate direction of time, which N.A. Kozyrev studied.

The given model also explains some psychological effects. It is known that talented people sometimes are hostile to geniuses. Here is a classical example: Saliery's relation to Mozart (how Pushkin interpreted it [70]). Fig. 2 visually demonstrates one of psychological reasons of this phenomenon. The vector of psychological mood

having the more value is very difficult to be derived from the plane of traditional views and turn it at 90° so that it will take on the direction of the vector G (not in vain they say that human mentality is the very inertial phenomenon of nature). Young people beginning their scientific way are in different situation. They can easily develop their mind in both traditional and new directions (vectors M on the Fig. 2). That's why, however it is sorrowful, but the known aphorism is true: new ideas win in science not by way of making the followers of traditional views to change their minds, but by way of generation change. An old generation, which confesses a settled paradigm, dies. A new generation, which changes an old one, immediately knows that new idea is true.

Geniuses are very rare to be born. We should take care of them and consider their opinion (even when at first glance it seems that they are not right).

Of course, there are some uncertainties in Kozyrev's works, and very often logic is substituted by intuition. However, let's remind: "Intuition of genius is more trustworthy, than deductive proof made by mediocrity". These are the words by Moris Kline, professional mathematician, the former dean of mathematical faculty of New York University and the head of one of the Mathematical Institute departments named by R. Courant. He wrote them in the best book devoted to the history of mathematics "Mathematics: the loss of determinacy" [71, page 195]. If it is true in mathematics, the most exact science, then it even more so true in physics. That's why it is really possible that finally Kozyrev will appear to be right, but not his opponents.

Kozyrev showed a new way in science and outlined a number of key moments by his genius. But a continuous chain of reasoning does not connect these moments. We can say that there are logical gaps between them (that's why we marked the vector G of the Fig. 2 by dotted line). A task for scientist's followers is to eliminate these gaps. Even the first steps in this direction gave positive results.

Curriculum vitae

Nikolay Alexandrovich Kozyrev was born on September 2 (August 20 according to an old calendar style) 1908 in Saint Petersburg. He graduated physical and mathematical faculty of Leningrad University, then he passed post-graduate course under the direction of Academician A.A. Belopolskiy. From 1931 he had been working as a member of Central astronomical observatory in Pulkovo (this observatory entered the Academy of Science in 1934). Kozyrev wrote the first article in the age of 15-16. A total quantity of his published works is about a hundred (sixteen of them were written together with V.A. Ambarzumian in 1925-1933, two of them were written together with D.I. Eroshin in 1935 and 1936 and two were written together with V.V. Nasonov in 1978 and 1980, the other works he wrote without co-authors). A list of scientist's

publications is given in the collection of selected works [7, page 432-437]. From November 7, 1936 till December 14, 1946 N.A. Kozyrev was subjected to repression (he was rehabilitated in February 1958) [72]. There are four Kozyrev's sons.

N.A. Kozyrev is one of the pioneers of Russian theoretical astrophysics and skillful astronomer – observer. In 1934 he developed a theory of distant photospheres of stars, which was generalized by S. Chandrasekar and got the name of Kozyrev-Chandrasekar theory. N.A. Kozyrev had developed a theory of sun-spots. In 1953 he discovered molecular nitrogen in Venus atmosphere and in 1963 he discovered hydrogen in Mercury atmosphere. He came to a conclusion on high temperature (up to 200000°) in the center of Jupiter. There are known Kozyrev's achievements in studying of other planets, which belong to solar system. The most significant result in the field of observational astronomy was the receiving of spectrograms of moon crater Alphons on November 3, 1958, which were the evidence of gas outflow from the central hill of the crater and of volcanic phenomena on the Moon. In 1969 N.A. Kozyrev was rewarded with the golden medal by International Academy of Astronautics for his discovery of moon volcanism [73, 74]. In our country this achievement of the scientist was registered as a discovery (#76 of 30.12.69, priority of 3.11.58) [75-77]. A small planet was named after Kozyrev [78-80] and an application for naming of the moon crater after him was submitted.

Kozyrev himself considered determination of stellar energy nature to be the main goal of his scientific activity. On March 10, 1947 he defended his doctoral thesis on the topic "The theory of inner structure of stars as the basis for the research of stellar energy nature". In this work he made a conclusion on the absence of energy sources including thermonuclear sources inside the stationary stars [2, 3, 7, 82]. He put forward a hypothesis that the current time serves as a source of stellar energy. At first the scientist published this hypothesis in the book "Causal or asymmetrical mechanics in linear approach" [4, 7], which appeared in summer 1958 (in the year of his fiftieth anniversary). By that time during twenty years he had been theoretically developing a hypothesis and had been carrying experimental researches for more than seven years. Even his discovery of moon volcanism was not a result of occasional luck, but a result of the purposeful search of signs of inner activity of cosmic bodies (according to his hypothesis, any sufficiently massive bodies should have such activity). While developing his hypothesis, the scientist laid the foundation of principally new science, a **theory of physical properties of time** or, as it was called by its creator, **the causal mechanics**. Kozyrev devoted more than four decades to development of this science. He made a huge theoretical and experimental work. Nevertheless, the scientist had no time to finish the development of the theory.

N.A. Kozyrev died on February 27, 1983. He is buried on graveyard near Pulkovo observatory.

Facts from biography of the scientist are given in reference books and articles [83-86].

Conclusion

A review of the works, which continue the researches began by Kozyrev, are given in the present article. Certainly, some of the works remained unknown to the author, that's why they are not reflected in this article. The author sincerely regrets about it and will be thankful to anybody who will inform him about these works.

The possible directions of further researches also indicated here as well as some observations in favor of Kozyrev's theory.

Can Kozyrev's ideas appear to be wrong?

Yes, it is possible in principle. Insurmountable obstacles can be met on the way of their further development. Even a complete theory may appear to be not in correspondence with reality (as, for example, appeared to be Ptolemy's system of the World and theory of thermo-substance, which were rejected by the science. It happened in spite of that both of them made a quantitatively correct description of certain natural phenomena). However, the analysis of initial principles of causal mechanics didn't uncover any inner contradictions in it, and even the first attempts of further development of this theory showed that it corresponds to quantum mechanics and theory of relativity. The given facts together with all results obtained by N.A. Kozyrev and his followers allows to state that scientist's ideas are obviously true. But the final answer on the question can be obtained only after the completion of causal mechanics development. That does why in conclusion let's repeat the words by Academician A.D. Alexandrov: "We should investigate!"

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Some words in addition

S.M. Korotaev, a member of Troizky branch of the Institute of Physics of the Earth named by O.Yu. Shmidt RAS (we mentioned his works above) in 1993 defended doctor thesis on the topic “Causal analysis and its application to processing and interpretation of marine electromagnetic research data”. An incentive to set this research was Kozyrev's works. The following words are the evidence of it. These words were cited in the abstract of the thesis: “The author gives due to blessed memory of N.A. Kozyrev. Acquaintance with his works, direct watching of experiments and discussion of problems of asymmetrical mechanics with him exerted a great influence on scientific ideology of the author and induced to own investigation of cause-effect relations in geophysical processes.” [87, p.5].

A scientific conference “Human ecology, energy information science and Kozyrev's works” took place in Moscow State Technical University named by N.E. Bauman on April 4-6, 1994. In particular, the following results were reported:

Scientists from Novosibirsk (M.M. Lavrentiev, I.A. Eganova and others) reported on continuation of laboratory research of distance effect of irreversible processes on the state of living and abiotic systems as well as continuation of astronomical observations according to Kozyrev's method. The obtained results are in correspondence with the results mentioned above in the present review.

V.S. Barashenkov, M.V. Lyablin (Dubna), Ya.G. Galperin (Moscow) presented the results of investigation of distance effect of sugar solution process (in water) on the density of distilled water. Density of water was

determined by interference method; accuracy of measurements exceeded the accuracy obtained in analogous experiments made by researchers from Novosibirsk. A conclusion was made that the effect of water density change is of thermal nature (the temperature of solution during dissolution of sugar falls at 1,5-3°; compensation of this temperature change by corresponding heating of solution excludes the effect).

A.E. Akimov reported on researches, which have been carrying out during 8 years according to a special state program (signed by N.I. Ryzhkov). About 120 organizations took part in realization of this program; scientific head of this program was the speaker. Generators and recorders of **torsion field**, a field, which is different from all known now physical fields, were created in the frames of the given program. (The speaker didn't inform about the structure of generators and recorders, but he promised that it would be done within the nearest time, after they would be patented).

Numerous examples of torsion field effect on various physical systems were presented. So, the fifteen-minute irradiation of metal melt by this field leads to the fact that the structure of metal becomes not crystalline after its solidification, but it is close to amorphous one. Theoretical description of torsion field [88-90] is based on the identification of it with torsion of affine adhesion space (in analogy that gravitation is identified with the curvature of Riemannian space in general theory of relativity). The calculations predict that torsion field doesn't diminish at a distance; it practically cannot be screened and propagates with a speed, which much exceeds the speed of light. **The speaker underlined that all properties of this field are in correspondence with Kozyrev's theory** and advanced an opinion that effects discovered by Kozyrev are stipulated by the action of torsion filed in particular.

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The following publications were also devoted to N.A. Kozyrev and development of his ideas

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Kozyrev on Possibility of Decrease of Mass and Weight of the Body Under the Action of Time Active Properties

(Review by Kozyrev's article, edited by Alexander V. Frolov)

Kozyrev's experiments showed that Time has active properties besides its passive property of duration. These active properties are: direction of its course and density, which stipulates the extent of its activity. As a result, Time can act on these processes and on the condition of substance as some physical reality. During this, an interaction takes place, which leads to the situation that density of Time itself will change under the action of the processes taking place nearby. Relation between different processes can be provided through this change of Time properties.

By Kozyrev, all comes to the Future from the Past, and only Time enters the Present from the Future. A common course of processes leads to the system entropy increase. That's why a reversed action of Time active properties should bring a vital origin to the World. This origin counteracts to the common tendency of destruction and death. Experience shows that near the processes, which increase density of Time, organization of substance really increases. But some mechanical actions are required for such reorganization. That's why mechanical change in substance should be observed but not only a physical change.

To find out the essence of these mechanical changes,

... decrease of the weight of the bodies should be discovered in the processes of a big increase of entropy.

N. Kozyrev considered a simple scheme with irreversible phenomena, which should appear with absolutely inelastic collision of the bodies. Let's assume that two bodies with the masses m_1 and m_2 collide. They move with the speeds v_1 and v_2 . We will use international coordinate system. One of these bodies is immovable regarding this coordinate system. Let it be the second body, and therefore, $v_2=0$. Then the total impulse of the system P and its kinetic energy T before the collision will be defined by their values for the first body:

$$P_1 = m_1 v_1 \quad T = \frac{P_1^2}{2m_1} \quad (1)$$

The bodies get total speed after the inelastic collision. According to the law of momentum conservation, there is still

$$P = P_1 \quad (2)$$

Kinetic energy of joint bodies T will be different. Let's designate their total mass as M. Then

$$T = \frac{P^2}{2M} \quad (3)$$

From this according to (1) and (2) we can find

$$T = \frac{m_1}{M} T \quad (4)$$

Then $T < T_1$, and therefore, the inelastic collision is possible only in the case, when a process of reconstruction of bodies structure takes place. This process absorbs their mechanical energy. The entropy of the system increases in this phenomenon, which combines mechanics and thermodynamics. **The process of reconstruction of inner structure of the bodies should develop not only in Time, but also with its active participation.** With this, the law of momentum conservation will remain in force, because it is based on general properties of causality. From these properties it follows that with any changes of causal relations the equality of action and counteraction should be fulfilled, and therefore, compensation of all inner forces of the system. In other words, Time does not carry impulse and cannot break total impulse of the system. That's why, whichever the role of Time was, kinetic energy after the collision will be defined by the same expression (4) as in the classic case of common, non-active Time, because its derivation is based only on the law of momentum conservation. Time activity prevents from dissipation of energy and increase of entropy. That's why mechanical, i.e. kinetic energy of the system should be more than the value, which follows from the formula (4) with $M=(m_1+m_2)$. **But as it follows from the formula (4), increase of T is possible only in the case, if the decrease of total mass of the bodies takes place in the process of their joining up:**

$$M < m_1 + m_2 \quad (5)$$

This conclusion inevitably follows from active properties of Time and the law of momentum conservation. It should be proved by experiment, and then it will be the second proof of existence of Time active properties after astronomical observations of instantaneity of processes. This proof will be decisive and especially obvious.

Of course, **decrease of mass takes place not due to the decrease of quantity of substance, but due to decrease of inert mass, i.e. coefficient of acceleration in the second Newton's law. Time is included in this law, that's why the value of the coefficient can depend on its properties.** Now it is important to note only this principal possibility. If it will be proved in experiments, then we can investigate the mechanism of the

phenomenon on the basis of this possibility. According to Einstein's principle of equivalence, gravitational and inert masses should be identical with each other. That's why the decrease of weight Q should take place with an elastic collision according to the expression $Q=Mg$. **This conclusion allows to make a simple experimental test by comparison of weight of the body before and after the collision.**

We should also note, **that due to the decrease of weight, i.e. acting of the Earth on it, conservation of momentum is not broken, because the acting of the body on the Earth decreases on the same value.** Even the first experiments showed, that during the collision of bodies with irreversible deformation **the decrease of their weight really takes place.** It was made a weighing of the bodies with the weight up to 200 g on the analytical balance with a scale factor of 1,4 mg (it is the limit of normal work of this weighting machine). To control and weight heavy bodies up to 1 kg, the technical weighting machine of the first class with a scale factor of 10 mg was also applied. During these experiments it appeared that decrease of weight doesn't disappear immediately after the end of collision process, but remains and gradually diminishes with the time of relaxation about 15-20 min. This very important circumstance makes the experiments much simpler. We have enough time for an accurate weighing and we get a possibility to observe the gradual weight recovery. In further experiments we weighted a hard elastic body (ball bearing) after the collision with non-elastic plate (lead) and, vice versa, we weighted lead after its collision with a hard base (masonry floor). Then we made the experiments with weighing of deformable box after numerous sharp shakings of the hard bodies placed in it and, vice versa, weighing of the lead grit after the strikes in a hard box. We determined the weight of the box with all its contents as well as the weight of the box and the weight of its contents separately. **These experiments showed that the only body that losses its weight is the body, in which the process of irreversible deformation takes place.** We should expect such result according to general theoretical ideas. According to these ideas, the difference of causes and effects could be found only in irreversible processes and, therefore, the course of time with its active properties. The diagram of weight decrease of a tin box having the weight of 108 g after numerous shakings of small steel balls placed in it is shown on the Fig. 1 as a typical example.

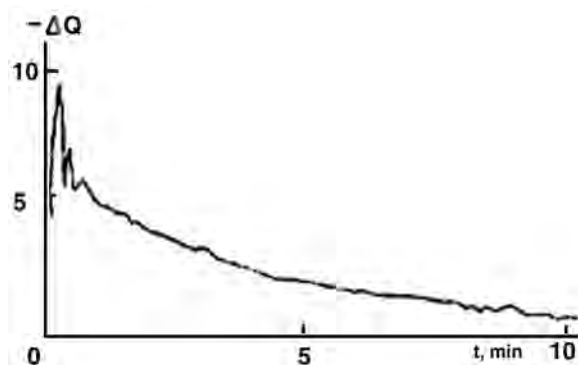


Fig.1

We can see here the decrease of weight of the body as a result of non-elastic collision and its gradual recovery. For this experiment the technical weighting machine with dampener was used. Decrease of the weight is given on the ordinate axis, and time of weighing is shown on the abscissa axis. This time was counted out from the moment, when the effect on the box took place. The weight recovery (really not full) took place here and in other experiments during about twenty minutes. The remaining small difference from the initial weight disappears only in ten hours. The full recovery of readings of weighting machine gives the control of experiment accuracy and shows the real loss of weight, which was observed.

Perhaps, the delay in changes of weight is called by the fact that increase of weight and inert mass should lead to the gradual increase, a consumption of additional energy is required for the weight recovery to the normal condition. Due to dispersion of speed, slow particles can take this energy from interaction of the particles of higher speeds and thus recover their mass. **The loss of total heat energy occurred due to this process will lead to the inflow of heat from environment and to the gradual recovery of mass of all particles of the body.**

Editor's note: This statement is one more correlation link between "heat" and "time", which follows from the aether's conception of time.

The time necessary to this process should be rather more though it is considerable with the time of heat relaxation in the body that was really observed. Another feature of the weight recovery lies in the asymptotic approach of the weight not to its initial condition, but to somewhat smaller value, which remains much more period than the time of relaxation.

Thus, the body can exist in some another condition besides its usual condition of the mass. This condition is almost stable, but with smaller mass and weight.

This stability is possible in principle, if the recovery to the bigger mass itself represents the process, which leads to its decrease. Since during the collision only a body that losses its weight is the body, in which the process of irreversible deformation takes place, so it should be connected with the physics of the deformation itself. That's why the effect of lightening should be observed with any irreversible deformation independently on its reason.

This conclusion is fully proved by experiment.

A record of oscillations of indicator of analytical balance is given on the Fig. 2. This record was made after the vastly crumpled thin copper sheet having the weight of 40,2 g was placed on the pan of the balance.

As we can see from this figure, the initial effect of lightning of the sheet reached 6-7 mg with the gradual recovery to its common weight in 15 minutes. The usual weight is shown by the lower line of recording. In the case of reversible deformation the change of weight of the body is not observed. So, compressed rubber or compressed steel spring shows their common weight. We should expect such result, because the **entropy of the system doesn't change with reversible processes** (as well as with elastic collision). That's why **decrease of the weight of the bodies should be discovered in the processes of a big increase of entropy**. It appeared, that initial heating of the bodies really leads to the very significant decrease of their weight.

Studying of this phenomenon gave a big material, which allows deeper understanding of the way, how active properties of time call decrease of mass and weight of the body.

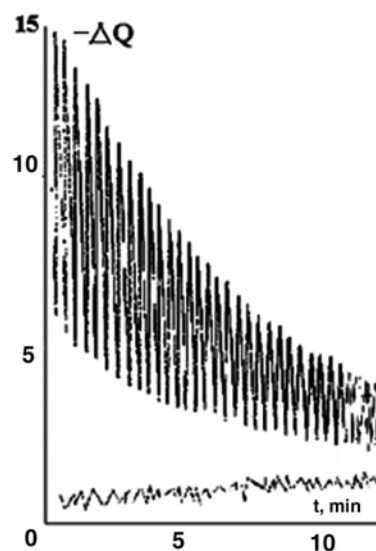


Fig.2

The Causal Mechanics

by Kozyrev N.A.



Review by Alexander V. Frolov

This is a short review on research work of the well-known Russian scientist Nikolai A. Kozyrev. Most of these papers are not yet published in English. There are important practical applications for new technologies, which are based on Kozyrev's theory and we'll be discussing this in our book. There is a project to publish an English language book about the time rate control technologies that will include all Kozyrev's papers devoted to this topic.

"The Nature of Stellar Energy Based on Analysis of Observational Data"

A conclusion about stellar energetics was made from astronomical observations: any given star is a machine that transforms incoming energy into heat radiation; there is no inner source of energy inside the star. The possibility of using incoming energy-flow exists in all area of space-time. ***It is proposed that through the power of some active properties, time can influence the energy of matter, and thus, time is a source of life in our universe.*** The density and other parameters of stellar matter in the mode of transformation (time-flow energy into heat energy) are calculated. It is concluded that output-energy depends on the volume of matter. It was proposed that time is not simply spreading, but being created throughout the universe at any given moment and for this reason telecommunications by means of time-properties can be produced as instantaneous signal instead of electromagnetic methods, which have some limited velocity.

"Cause or Asymmetrical Mechanics in Linear Approximation"

N.A.Kozyrev calculates the qualities of stellar matter where it is a transformer of time-form energy into heat-energy. It is concluded that the transformation involves several electrodynamic processes, but, generally, any closed mechanical system can also produce energy if it is an asymmetrical system. ***The asymmetry for mechanics according Kozyrev is a cause-effect asymmetry and if the mechanical system includes the non-reversible cause-effect connection it can take the energy from time-flow.*** (In my opinion, this is the theoretical basis for any kind of over-unity systems. Editor)

Longitudinal Thermomagnetic Effect

Alexander M. Mishin

Abstracts

A phenomenon of anisotropy of thermal conductivity of electrical conductors, which take place along the force lines of magnetic field, is theoretically predicted and experimentally proved on the basis of etherodynamics law discovered earlier. About 20% of total thermal flow go towards South Pole during the heating of the middle part of metal magnet. It is supposed that this effect explains the fact of thermal asymmetry of the Earth's and the Sun's hemispheres.

In modern physics there is a known thermomagnetic effect, which characterizes the behavior of thermal flow in solid conductor placed into constant magnetic field. This Rigi-Leduke effect can be detected in the conductor with temperature difference, which is placed into constant magnetic field. This field is perpendicular to the thermal flow. Due to the effect a secondary difference of temperatures appears in the direction perpendicular to the initial thermal flow and to the field. The effect is explained by the influence of Lorentz force on motion of current carriers in magnetic field. Let's underline that the indicated physical phenomenon is observed in the plane, which is perpendicular to the vector $\vec{B}$. In this sense, this phenomenon as well as all known galvanomagnetic and thermogalvanomagnetic phenomena can be called transverse, as all classical electrodynamics in general.

However, a publication [1] appeared in 1988. This publication described longitudinal galvanomagnetic effect, which involves the interaction between electrons and magnetic field along the lines $\vec{B}$. The author of this publication found a steady (on average) electrical current between the poles of conducting horseshoe-shaped magnet using sensitive microamperemeter (north pole had negative polarity, south pole had positive polarity).

An attempt to repeat this phenomenon in my laboratory gave negative result. Perhaps, the complexities with repeating became the reason of the fact that the experiment by A.K. Sukhval that is very important for theoretical physics, had not due response in official science. Besides, the non-less interesting results by G.V. Nikolaev, who studied longitudinal electromagnetic effects [2], also were ignored.

I became particularly interested in longitudinal galvanomagnetic and thermomagnetic phenomena after **I succeeded to understand fine etherodynamic structure of magnetic field basing on fundamental properties of ether** and main law of etherodynamics [3-5]. It followed from my

theoretical model that any real electromagnetic system, which includes metal conductors and magnetic circuits, i.e. solid physical bodies, is an autonomous system in ether sense. It has its own center or gravitational axis. Therefore, the notion of "left" and "right" in the formation of quasimaterial ("Yan") and antiquasimaterial ("In'") structures of free ether [5] can be applied to the ether multibeam vortical-wave radiation excited by electrical currents. It is important to understand that we speak about "topological subharmonics" of classical electromagnetic processes; formation of these processes is closely related to atomic-molecular structure of usual substance.

A piece of cylindrical conductor is shown on the Fig. 1.

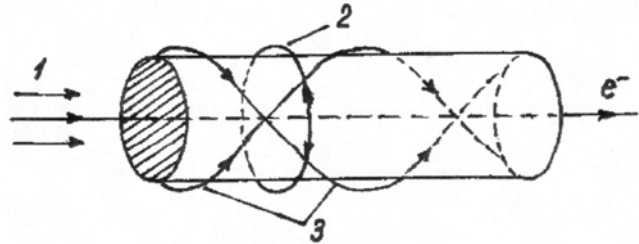


Fig.1

Electrical current flows through this conductor (the direction of electrons movement is shown). The following ether waves are excited inside the conductor and around it:

1. First, it is the longitudinal wave 1, which coincides with the direction of electron current.
2. Secondly, these are two longitudinal waves 2 of electromagnetic type ("topological" electromagnetic waves), which propagate right and left at a right angle to the electron current in opposite directions and phases. These waves form closed circular trajectories around the conductor and they are self-compensated.
3. The main waves are the longitudinal-transverse waves 3, which propagate at the angle of 45° to the vector of current: quasimaterial wave (yan) goes left and anti-quasimaterial wave (in') goes right. Such waves form two screw flows crossing at the angle of 90° , which are the ether "phantom" of classical magnetic field.

Lines on the Fig. 1 show only the direction of movement of waves, which really fill all bordering space. The weaker longitudinal-transverse waves, which propagate at other angles, as well as insufficiently known waves in radial plane are not considered here for model simplification.

If the conductor is winded round ferromagnetic core in the form of solenoid, then the **autonomous center of gravitation** coincides with the axis of magnetic core. In this case the longitudinal-transverse waves together with longitudinal wave form a single rotating toroidal vortex, which includes two counter-directed screw

flows of in' and yan types, as it is symbolically shown on the Fig. 2.

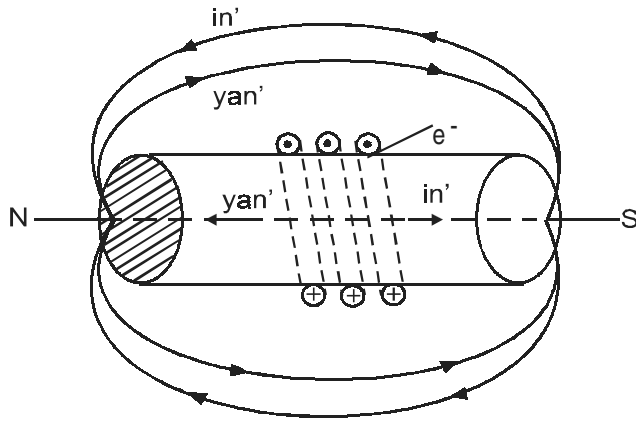


Fig.2

(The direction of electron current is shown on the cuts of the conductor). So, we get a vortical system of solenoid size and consisting of elementary quasiparticle and anti-quasiparticle enclosed in each other. The trajectories of total flows are shown on the Fig. 2, though really these are screw movements with the angular step of 45°.

The inner structure (space-time spectral composition) of vortical-wave toroidal screw flow is sufficiently different in air and in ferromagnetic, that's why the specific potential barriers appear on the boundaries of poles, which can be easily controlled by extrasensory method. **An excess of right-handed vortices (in') is formed on the external side on the North Pole, and an excess of left-handed vortices (yan) is formed on the South Pole.** It is naturally that the most concentration of ether flow is observed inside the ferromagnetic core. That's why due to the difference of in' and yan essences the magnetized rod for certain physical processes should have anisotropy along the force lines. Of course, these properties are inherent to any constant magnet.

Similar theoretical reasoning became the basis to carry out laboratory experiments to find out the indicated anisotropy. There was no reason to suppose that the magnet itself can generate significant Electro Magnetic Force (EMF) or thermo potential, **but it was expected that spatial ether anisotropy is able to create the asymmetry of direct and reverse thermal flows created by external energy source in magnetized ferromagnetic.**

The main experiment included the following (Fig. 3).

A horseshoe-shaped metal magnet with the magnetic intensity of about 400 Oersted (from the magnetron IM-58) placed on a laboratory table was heated in its middle part up to the temperature $T_M = 30^\circ$ or 40° C by means of wire glazed resistance $R = 2\text{K}\Omega$. A pulsating current was passed through the resistance from the

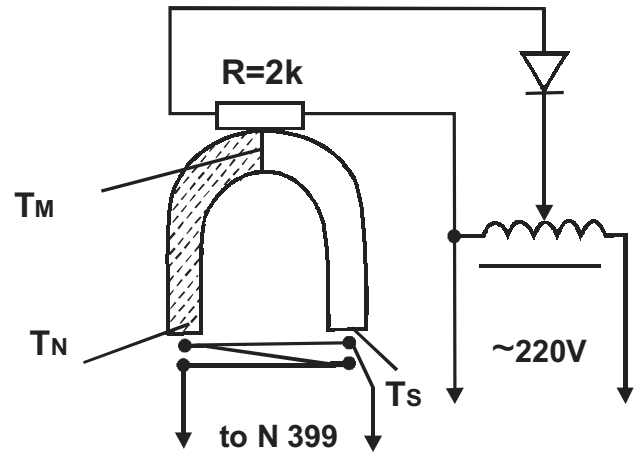


Fig.3

autotransformer plugged to the supply of alternating voltage 220 V. The heaters were removed from the magnet at a distance of more than 1 meter. The temperatures of magnet poles T_N , T_S and the temperature of its middle part T_M was measured by thermometer to within $0,1^\circ\text{C}$. Besides that, the ends of thermocouple (of 0,3 mV per degree sensitivity) were pressed to the poles of the magnet by means of special iron shoes. The voltage from this thermopair was delivered to the self-registering microammeter N399.

The first experiments gave striking results. With the temperature in the laboratory $T_L = 20^\circ\text{C}$ and heating of the middle part of the magnet up to 40° the **difference of temperatures between North Pole and South Pole was discovered as $\Delta T = T_S - T_N > 1^\circ\text{C}$ and the thermal flow was directed to South Pole.**

To find the value of longitudinal thermomagnetic effect we introduced the **coefficient of thermal asymmetry (CTA)**, which weakly depends on the temperature of the environment:

$$CTA = \frac{T_S - T_N}{T_M - T_{Av}}, \quad T_{Av} = \frac{T_S + T_N}{2},$$

where T_S , T_N are the temperatures of South and North poles of the magnet, T_M is the temperature of middle part of the magnet and T_{Av} is the average temperature of the poles.

For $T_M = 40^\circ$ and values of the effect (they were stable during first days) $T_N = 34,5^\circ$ and $T_S = 35,5^\circ$, we got $T_{Av} = 35^\circ$ and the coefficient is:

$$CTA = \frac{35,5 - 34,5}{40,0 - 35,0} = 0,2$$

The difference in thermal flows going to the magnetic poles appeared to be 20% and in certain cases it reached 30%! The oscillogram of the value $\Delta T = T_S - T_N$ is given on the Fig. 4.

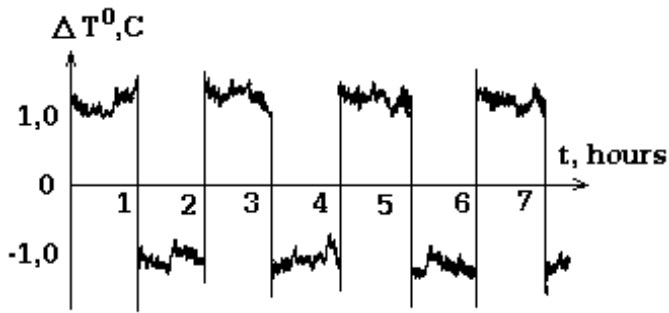


Fig.4

The change of sign of the signal here was obtained by turning over the thermocouple every hour that is equivalent to the change of magnetic poles. Let's note that usually intensity of other parapsysical phenomena was decreasing in two times during three hours after start of the experiments [6].

After a week (for the second week) of the experiment the effect became less stable. It was discovered that the value ΔT is influenced by splashes on the Sun (disturbance in the center of the Universe [5]) and magnetic storms as well as anisotropy of space in area of immovable magnet, which is changing due to rotation of the Earth.

Longitudinal thermomagnetic effect while existing proves that vortical-wave structures of free ether described in the beginning of the article has a great influence on heat transport in the body of metal magnet along the force lines of magnetic field (by the vector). This means that the quasimaterial particles **yan** and **in'** are able to interact with electrons and influence the heat transport directly or indirectly. New thermodynamic processes are qualitatively different from the classical ones in dependence on the external cosmophysical factors as well as its laboratory specificity. For example, an anomalous fact of **temporary loss of thermocouple sensitivity (disappearance of Zeebek effect!)** was found during long contact with poles of the heated magnet. After removal of the magnet, thermoelectrodes doesn't react to the temperature difference (even 10°) during about one minute (the sensitivity of 0,3 mV per 1 degree, limit of scale on the device N399 0 is 1 mV). Galvanic shorting of poles of the magnet made by any conductor influences on value of the effect.

It is significant that asymmetry of thermal flow is not observed in dielectrical ferrite materials placed into magnetic field.

Gradient of temperature in the body of metal magnet should create the difference of electrical potentials between North and South poles like Thomson effect. This new thermogalvanomagnetic effect waits for its researchers. At that North Pole should have negative potential like in A.K. Sukhvalov's galvanomagnetic experiment.

Reviewing laboratory experiments we give the formula of the discovery:

Previously unknown phenomenon of asymmetrical propagation of thermal flow in the direction of metal magnet (electromagnet) poles while heating of its middle part was experimentally established. At that South Pole heats up more than North Pole. Thus, thermal conductivity of magnet or conductor placed into magnetic field depends on the direction of thermal flow along the magnetic field force lines.

The new phenomenon was called the longitudinal thermomagnetic effect (longitudinal to the force lines of magnetic field).

In the applied problems new thermomagnetic effect gives a **technical possibility to control a certain part of thermal flow in conductive materials by means of magnetic field**. Special investigations should be made to find out specific circumstances of use of this discovery, its technical and economic appropriateness. It can be so that the mentioned effect has **main perspectives as a detector of nontraditional ether disturbances**. Finally, it is really important to know that such physical phenomenon does exist in nature and techniques to take into account its influence on traditional processes. Essentially, that anomalous behavior of thermal flows in magnetic field is the most steady among all studied parapsysical phenomena.

Another result is not less actual and perspective for Weltanschauung. The effect of asymmetry in propagation of thermal flows should be observed in the body of the Earth and other heavenly bodies having magnetic field. If there is really an iron core in the center of the Earth, then the Earth as a magnet is allied to our laboratory model. **As a result, North geographical Pole, which corresponds to South physical Pole, should be warmer than South Pole. It is observed in reality.** It is known that geophysical equator is shifted to the North at 6° relatively to the geometrical equator, and the northern hemisphere is different by its higher volcanic activity. We should expect that concentration of **yan**-essence and negative electrical potential on North Pole will be concerned with the nature of Aurora Borealis. In perspective, on the basis of discovered effect the methods to forecast the tendencies of latitudinal thermal flows changes can be developed.

Astrophysical observations show [7] that **northern and southern hemispheres of solar photosphere also have different temperature** (differential of brightness) particularly in the periods of the increased solar activity. This difference in brightness differential reaches 15% in maximum, and exceeds 150° by the temperature difference. The unsteady character of the observed processes is mentioned in the work [7], but connection with magnetic field of the Sun is not considered.

The discovered effect together with other experimental results [6, 8] serves as a basis for some very important observation: The Earth planet as an integral ether system is analogous to the solenoid (magnet) described above, since it includes two really observed spatially combined toroidal screw vortexes. The flows of these vortexes intersect at the angle of 90° . On the surface of the Earth the vortical-wave flow **yan** is directed from northeast to southwest, and the flow **in'** is directed from southeast to northwest. Naturally, there is also the longitudinal wave from east to west as well as transverse wave, all in full correspondence with the main law of etherodynamics [5]. It was empirically determined for sure that **"interference" of ether waves creates a steady vortical grid of recurring staggered core vertical vortexes and antivortexes known in parapsychical literature as Hartman grid.**

Generalization of this phenomenon for all spatial-time (scale) hierarchy of etherodynamic systems was made in the work [5], i.e. for stars, galaxies and entire Universe. But it will be logically to extend this generalization on the smaller scales. Correctness of such course of argumentation again is proved by empirical fact, i.e. **existence of "Hartman grid" on a human body in the form of well-studied Chinese and Indian system of acupuncture.** Therefore, solenoid and constant magnets also should have stable and specific vortical grid for these systems.

The author has experimentally proved that parapsychical systems work more stable in the knots of Hartman grid. This implies that effective detector on non-traditional ether waves will be created by a person, who will discover "acupunctural" system of vortexes on the body of constant magnet (electromagnet) and will learn to use it. It is possible to establish a determined connection between material world and the world of "topological harmonics" only through this stable structure of macrovortexes that is obviously demonstrated by biosystems.

The obtained results expand the limits of theoretical physics. The new effect proves that standard model of electromagnetism needs serious revision, because stereodynamic multidimensionality of ether was not taken into consideration during its development. Free ether exists along with physical vacuum. It was called "free ether", because in contrast to material level for the "free ether" there is no fractal "pressure" from our Galaxy. Due to this reason, free ether presented by macroscopic structures acts regarding material world as a "phantom" medium, which doesn't manifest stable inertial properties. Exactly this explains the existence of energy-informational barrier between world ether objects of the different scales.

In conclusion, let's underline again that my parapsychical experiments in contrast to phenomena and laws of classical physics, which relate to "flickering" physics of free ether, presented in material world by **the known phenomenon of flicker effect.** Randomicity of the latter is explained by total action of "flickering" laws, which

characterizes the interaction between superfluid medium and objects of common world.

The laboratory system with magnet described above demonstrates one of the kinds of non-traditional interaction. ***Increase of magnet sizes can proportionally increase the average value of CTA that follows from the main property of flicker effect (increase of intensity with increase of time period and spatial scale of the process).***

Elementary scientific logic makes to recognize that vortical-wave objects of other spatial-time levels are required to explain the longitudinal thermomagnetic effect besides macroscopic ether structures of the "physical vacuum". These vortical-wave objects are symbolically called **"topological subharmonics" of classical material processes.** The nature of flicker effect, which is incomprehensible for orthodox scientists, is explained by the influence of the mentioned objects onto our world, and the discovered thermomagnetic effect is the clearest window to the new physical reality.

However the "elitist" science wants to hide in a comfortable niche of primitive materialism, evolution inevitably will turn the pages of history and will light the divine rainbow of other worlds on the sky of natural science.

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Followers of possibility to create antigravitational forces in rotating co-ordinate system now got a reliable support for their scientific research. Even skeptical scientists recognized Ponomariov's idea to be very interesting, because they should oppose mainly Einstein's theory but not only the new notion of antigravitation, to disprove it. That's why it is natural that nobody suggested a generally recognized and well-founded theoretical refutation of potential model of antigravitational interaction of bodies.

Followers of Ponomariov's idea from various cities organized a wide network in the Internet to distribute materials on proposed theory. So, it became known that some interest in potential model of antigravitational interaction of bodies already appeared from NASA.

The most important thing is a postulate stated by Ponomariov that antigravitational interaction between two bodies can be obtained if material points of one body are moving along elliptic trajectories relatively to material points of another one. This postulate brings us to the attentive and more serious consideration of such phenomenon as UFO.

Talks and disputes on existence of alien civilizations and their presence on the Earth have been holding for few decades. Many publications on histories of eyewitnesses, hypotheses of scientists are devoted to this problem; radio and TV programs often announce about it. The grounds to all these announcements are the "inexplicable" phenomena observed in atmosphere, traces of UFO presence on the Earth and so on. Of course, in most cases some astronomic, atmospheric or man-caused phenomena were recognized as UFO. But there are some announcements about UFO, which are not

explicable in such a way. Let's ask a question, why the main shapes of observed UFO are discoid or spherical objects. It is not occasionally that the phrase the "flying platform" got assimilated and is known for everyone.

If we suppose a hypothesis that "flying platform" is a reality and they are the vehicles of aliens, than it is natural that their shape should be explained to a greater extent by technologies used by aliens. So, we can inscribe a disk or a system of disks in most shapes of UFO.

But a conclusion from the cumbersome definition of antigravitational wing given by Ponomariov is the following: antigravitational wing can be a material body of any shape, which rotates around its axis with a certain angular speed, or a material body, in which the motion of electrically charged particles is registered. That's why the most acceptable shape of antigravitational wing for technical usage is a disk or a system of disks (any elements of disk) in any modification.

We should note, basing on the rates of spreading of the work by Dmitry Ponomariov and Roman Shibeko and interest to it in the world, that big hopes are connected with potential model of antigravitational interaction. It gives us the possibility to create an antigravitational wing in the near years.

All information on possible variants of cooperation please send to Ponomariov D.V. to the address: vredir_ls@mail.ru.

AN INTRODUCTION TO GRAVITY

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From the theory developed by Lew Price
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[Author's Note: This article is condensed and abbreviated from a series of small books. It's concepts cause most minds to make major adjustments over a time. To understand these concepts, it is advisable to read the article several times with at least one full night's sleep between each reading.]

Possibly, the first being on this planet to seriously contemplate the existence of gravity was the first to attempt to walk on land after it emerged from the ocean. Similar occurrences have led only to the conscious



discovery of the existence of gravity. The discovery of the nature of gravity must come from at least a slight understanding of electromagnetism and light. So a small part of the nature of light is what will come first in this introduction to gravity.

For over three centuries, two views of the nature of light have been competing: (1) light travels as a wave through a medium, and (2) light is the result of particulate packages traveling in a vacuum. In the late 19th and early 20th centuries, a number of experiments were performed which attempted to establish the existence of a medium called "luminiferous aether" through which light travels as a wave. These experiments were all based upon the premise that the earth moves through a stationary aether. Thus, the velocity of the aether relative to the earth's surface should be a combination of three motions: (1) the rotation of the earth, (2) the movement of the earth in its orbit about the sun, and (3) the movement of the sun about the galactic center.

Although a relative aether velocity was established immediately and eventually shown to have seasonal variation, the magnitude of this velocity was considerably less than predicted by theory. (See "Dayton Miller's Ether-Drift Experiments: A Fresh Look" by James DeMeo in Volume 7, Issue 38, 2001, *Infinite Energy Magazine*.)

In 1914, Sagnac proved the existence of aether by measuring aether velocity relative to a rotating apparatus. His measurements were precisely what was predicted by theory and no fault was found with his experiment. (See two articles in Volume 7, Issue 39, 2001, of *Infinite Energy Magazine*, one by A. G Kelly and the other by the Paulo N. Correa and Alexandra N. Correa.)

Meantime, Einstein's theory of relativity had been established as an alternative to aether, and those subscribing to relativity were fearful of being proven wrong. Consequently, all experiments favoring aether theory were either discredited, denied, or suppressed by the scientific community.

In the early 20th century, it was acknowledged that the electron has innate spin. This spin is always present, is essentially the same for all electrons, and does not appear to be altered by their traumatic experiences. Therefore, the electron must have a source of energy allowing it to continue to spin at a constant rate. The discovery of Electron spin was a blow to accepted theory at the time. However, the proponents of relativity and empty space bandaged their theories as best they could and offered a rather complex and weak explanation for electron spin.

In 1964, while attempting to discover the true nature of light, I realized what I believed to be the only reasonable explanation for the energy behind electron spin. Apparently, the electron is not a particle, but a vortex. Vortices such as the whirlpool, the waterspout, the tornado, and the hurricane all have innate spin and their energy is provided by the pressure difference between the medium of which they are composed and the relative vacuums at their centers. This revelation led me to examine sources other than the accepted ones in regard to aether, including the papers Einstein was working on just prior to his death. My efforts resulted in a

complete unified theory (then known as the *unified field theory*).

My theory was not even considered worth examining by the physicists of the time. My brother and Mart Gibson were the only ones who understood any of it. Both became allies in its development, but Mart was more instrumental as a partner and the bulk of the theory development was the result of his help.

A Russian physicist recently provided an interesting anecdote. While he was a student in Russia, he customarily worked with his physics instructor after classes were over for the day. They were using unusual configurations of electromagnets. Although they did not develop a complete theory, they became convinced that 21st century physics would be based upon "whirlwinds".

If the electron is a vortex, it is composed of a medium which permeates space. This medium would be the aether in a dynamic form. The dynamic aether would be flowing into the electron. If the electron is a vortex, then it is likely that other subatomic entities are also vortices or combinations of vortices, with the exception of neutrinos and any similar entities that may be discovered.

At the subatomic level, the inflow of aether is configured as vortices and the geometry is such that the rate of inflow is relatively weak. I call this inflow "micro-gravity". If we were to place a subatomic entity alone at the center of a large theoretical sphere, the instantaneous velocity of the inflowing aether at the surface of the theoretical sphere would be very small. If we were to place many subatomic entities at the approximate center of the same sphere, the instantaneous velocity of the inflowing aether at the spherical surface would be very large. This is what our planet is: a large collection of subatomic entities. The large flow of aether into it produces gravity.

We can theorize many spheres having different radii (no two alike) and a common center, all nesting within one another. We can place our planet at this common center. Now the aether will be flowing through the surface of each sphere. The same amount of aether must flow through each of the spherical surfaces. Because the surface area of the larger of these spheres is greater than the area of the smaller, the instantaneous velocity of aether is less at the surface of the larger spheres and more at the surface of the smaller spheres. This is analogous to the water in a river flowing slowly where the river is wide and deep, and quickly where the river is narrow and shallow.

There is one of several differences between aether and water which should be mentioned at this point. Water is not compressible in the usual sense and is, therefore, used to test high-pressure tanks to avoid having the tanks explode. On the other hand, aether is very compressible and causes high-intensity electromagnets to explode.

The compressibility of the inflowing aether causes it to increase in density as it is forced through the lessening areas of the theoretical spheres surrounding a planet. This is analogous to forcing marshmallows through a greased kitchen funnel. The marshmallows both accelerate and compress as they move through the funnel. At the top of the funnel, they move slowly and are not compressed. At the bottom, they move quickly and are very compressed. From this point on, the funnel analogy will be used by calling the gravity well of a celestial body a *gravity funnel*. The area of the theoretical spheres will be called *funnel cross-sections*.

There is a self-evident law regarding a gravity funnel. I call it the "Mass Equivalence Law" (MEL) and it states: "*The same amount of aether must move through every cross-section of any particular gravity funnel within any given length of time.*" This is logical because a gravity funnel has no sides. Therefore, there are no places for aether to enter or leave the funnel except through its top which is at an infinite distance from the mass creating it.

Aether has "Mass" with a capital "M" as opposed to "mass" as we know it. The "mass" we know is the result of "Mass" moving into subatomic entities. The more "Mass" moving into a subatomic entity or a group of subatomic entities within a certain period of time (such as one second), the greater the "mass" of the entity or group of entities. Mass moving into a subatomic vortex creates a dynamic geometry from which a mass/energy equivalency equation can be derived that is identical to Einstein's.

Aether Mass has the quality of inertia. Inertia is a passive quality meaning that something is going to continue to do whatever it is doing until something changes it. This is logical because there is *no reason* for a change to occur unless something causes it. A vortex forms because of inertia. The vortex' medium is forced to take a turn at ninety degrees to its original direction of motion. Inertia prevents an abrupt ninety degree turn, so a curved path must be taken, and this is the path we call a vortex. A vortex that is a subatomic entity such as the electron is not possible unless the incoming aether has the quality of inertia.

Because aether in a gravity funnel moves into smaller and smaller areas, it is compressed in the two dimensions perpendicular to its inflowing direction. This compression may be expressed in mathematical form as a function of the spheres' radii. Because each theoretical sphere has aether moving through its surface at an instantaneous velocity, each is an energy level for the incoming aether. This allows the velocity to be expressed as a function of the spheres' radii. The instantaneous velocity at any point is the result of the force of the aether pressure and the vacuum working against aether inertia. The velocity is the reciprocal of a radial decrease in aether density because both are consequences of the same forces. Therefore, the aether density decrease (expansion) may also be expressed as a function of the spheres' radii. Lastly, the product of

the aether compression and the aether expansion is the overall aether density.

I am not attempting to overwhelm the reader with mathematical terms. I am simply explaining that mathematically we have shown that the MEL can be satisfied by the density, velocity, and area equations mentioned in the foregoing paragraph. We have also shown that the Inverse Square Law (ISL) for gravity is the result of the math in the foregoing paragraph.

The ISL has been known for many years and is often considered to be a form of explanation for gravity. In reality, it is a mathematical convenience, a consequence, and a veil. The real cause of gravity is the inflowing dynamic aether which has qualities which include inertia and compressibility. Although the ISL is only a consequence, the fact that it can be derived from the math of the inflowing dynamic aether is a strong argument in favor of this theory of gravity.

I have been using the term *instantaneous velocity* for aether in a gravity funnel because there is no aether velocity as such in the funnel. True velocity is a distance divided by a time. In a gravity funnel, a distance divided by a time is not even an average velocity because the acceleration known as gravity is increasing with the decreasing distance inward. What we really have in a gravity funnel is acceleration, and only acceleration at any given distance from the center. Otherwise, we have increasing acceleration (sometimes called "jerk") as the aether moves inward. The term *instantaneous velocity* means what the velocity would be if we could extend a point and a time so that we can have a distance divided by a time. Instantaneous velocity is a theoretical velocity.

Gravity is an acceleration of aether and its effect is not distinguishable from the effect of acceleration in "free" space. Einstein showed that if a man were in an elevator in deep space, moving "upward" with an acceleration of one "g", he would have the same feeling of gravity that he would have if the elevator were standing upright on the surface of the earth. In deep space, the elevator would be accelerating past the aether, so that the aether *would seem* to be accelerating past the elevator. Motion in deep space is relative. On the surface of the earth, the aether *is actually* accelerating past the elevator.

Aether is a perfect non-particulate fluid and is frictionless. Once it is in motion, it will remain in motion until a force changes that motion. All objects are composed of dynamic aether. At the subatomic level, as the aether inflow into an object in a gravity funnel adjusts itself for the instantaneous velocity around it. If this object is dropped off a cliff, it maintains the same adjustment during free-fall, so that the aether instantaneous velocity near it remains the same while it and the aether accelerate together toward the earth below.

At this point, we need to examine some loose ends and some associated areas in dynamic aether theory. These lead to some startling conclusions that will not be mentioned, but which you can discover on your own.

Aether Velocity

The instantaneous velocity of aether in a gravity funnel is the same as the escape velocity of a rocket from that point in the funnel. Escape velocity is determined by the impact velocity of an object which has fallen from an infinite distance. The impact velocity can be found because it is part of the impact energy, and the impact energy is equal to the potential energy. The potential energy can be found and this allows us to find the impact energy which allows us to find the impact velocity. To escape from the gravity funnel, the same potential energy is needed as was lost when the object fell from an infinite distance. So the impact velocity is equal to the escape velocity. The aether which falls into a gravity funnel has also fallen from an infinite distance. So the velocity of the aether at a point within a gravity funnel is the same as the escape velocity of a rocket at that point.

The Fourth Dimension

The math definitely indicates that aether flows into matter, and that the flow accelerates as it approaches matter. But where does the aether go after it arrives at each subatomic entity? My research into electromagnetism shows very clearly that it disappears into a single dimension that is at right angles to all three of the dimensions with which we are familiar. This fourth dimension is able to swallow the aether and still be hungry for more. There are several theories as to what this fourth dimension is, but no real evidence. However, there appear to be at least six types of time, and this dimension strongly resembles one of these.

The Neutrino

Neutrinos are bits of rotating aether left over from the interactions of other subatomic entities. They have spin, but no inflow. They continue to exist only because (1) aether has inertia and is frictionless, and (2) they cannot interact with other subatomic entities unless they collide with them. Inflow is the cause of charge and micro-gravity. In the case of most subatomic entities it is also the cause of spin. Without inflow, a neutrino has no charge and no micro-gravity. Neutrino spin is localized so that only a direct impact with another subatomic entity will allow its presence to be known. Therefore, the neutrino cannot interact at a distance with other subatomic entities. This is why they are so difficult to detect.

The Universe

The universe is composed entirely of dynamic aether. It appears that this aether began in a very concentrated form at one point within a volume of nothingness. An explosion is caused by something under extreme pressure being released into a volume of lesser pressure. When the universe was created as a point of aether pressure within a volume of nothingness, there was and still is an explosion. We live within a continuing explosion as the aether expands outward into the nothingness.

Any explosion is limited by the inertia of its medium, so that its medium expands with time as an acceleration. The relatively recent discovery that the universe is expanding as an acceleration is proof that we live within an explosion of dynamic aether. In a sense, this is "dark energy" because a dynamic aether contains energy throughout its entirety. Without our vessel of aether, there would be no energy because the motion of the dynamic aether is the energy. Many of our physicists have blinders on so that they continue to blame "dark energy" for the accelerating expansion. If they would take off their blinders and acknowledge the existence of aether, they could face the real cause this expansion and begin to tell the truth.

The Typical Subatomic Entity

When we speak of the electron or any other subatomic entity which is a constituent of matter, we are actually speaking of its center. Its true body is the entire universe because a vortex reaches outward to infinity. Our bodies are made of matter which means we are made of vortices which extend to the limits of the universe. So we are all viewpoints within a common body we call the universe.

The Einstein, Podolsky, Rosen (EPR) Experiment

The most sensational practical application of aether theory is the enlightenment and use of the principles behind the EPR experiments in which faster-than-light (FTL) communication seemed to be occurring. This subject is too long to explain in a short article and the preparation needed to understand it becomes very mathematical even though only algebra is used. Suffice to say, FTL communication is possible and is probably being used by a galactic society. Our own endeavors to use radio for intergalactic communication are analogous to nations tossing bottles into the ocean for communication between continents.

This article would be excessive in length if it were continued. More detail as well as many mathematical proofs may be found in my series of small books called **Behind Light's Illusion**. In this series, dynamic aether is called nether which comes from Greek mythology. The name nether was used to separate the qualities found in dynamic aether from those ascribed of the old aether. For those of you who are interested, **Behind Light's Illusion** is available through me at lewprice@softcom.net. Please give me some idea of your background and your math expertise and I will send you a list of books and their contents and possibly more information on gravity.

The understanding of aether as the cause of gravity leads to a full understanding of the nature of light and all the other puzzles and paradoxes of contemporary physics. In fact, these puzzles and paradoxes become nothing more than logical proofs for the existence of a dynamic aether. The physicists of the future will undoubtedly look back on our 20th century misconceptions either with horror or humor. Or perhaps these misconceptions will be called horribly humorous.

The Scheme of Physical Model of Experiments by E. Podkletnov, V. Roshchin and S. Godin

Dr. Anatoli V. Rykov

A summary of the known parameters in the frames of the given model of the experiment made by E. Podkletnov is the following: The scheme of flash chamber is shown on the Fig. 1. The device is shown vertically, though in real experiment it was located horizontally.

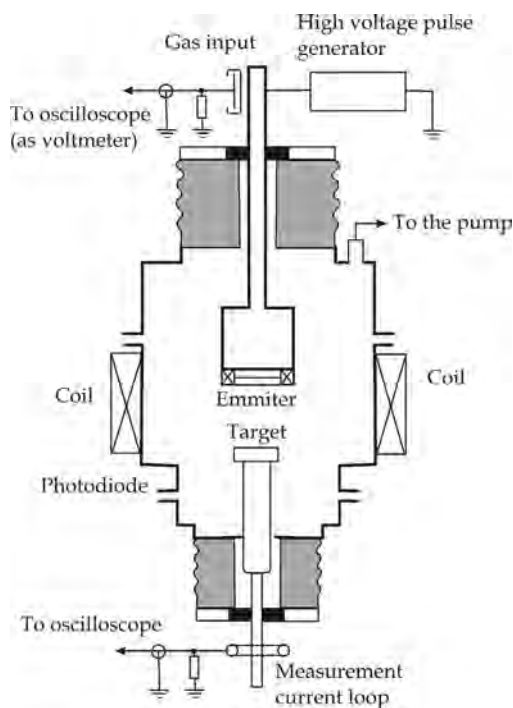


Fig.1

The flash chamber (it was made in Russia), which allows to create low pressure (vacuum) inside it and to fill the volume with any gas, was made of quartz glass. It consisted of 3 parts. It had the shape of cylinder with the diameter of about one meter and its length was of 1,5 m. Two connecting flanges allowed to change the emitter easily. The distance between electrodes could be changed from 0,15 to 0,40 m to find an optimal length.

An external solenoid with the inner diameter of 1,05 m, width of 0,3 m and thickness of 10 cm was placed around the flash chamber and was used to concentrate the discharge on the smaller square of target. The coil of solenoid was coiled round in several layers by cooper wire having the diameter of 0,5 cm and provided the density of magnetic flux of 0,9 T. One more "small" solenoid was placed around the emitter. It allowed the "trapping" of magnetic field inside the superconductor.

Later, when it was found that parameters of Gravitational Impulse appeared with the discharge are proportional (in some extent) to magnetic field, which is created inside the superconductor, then this "small" solenoid was replaced by a powerful constant magnet

(NdFeB) with the diameter corresponding to the diameter of emitter and the thickness of 20 mm.

The system of cooling of emitter contained the quantity of liquid nitrogen or helium, which is necessary for long work. The losses of gas because of vaporization in the device were minimized due to high vacuum in the chamber and, thus, better heat insulation.

An accurate measurement of voltage was made by memory oscilloscope connected to the capacitance-type transmitter (see upper part of the Fig. 1). A Rogovsky loop (electrical loop of coaxial cable around the target electrode connected with oscilloscope (see lower part of the Fig. 1)) was used to measure electrical current. A photodiode connected to the oscilloscope and placed in the translucent wall of the chamber served for the measurement of discharge parameters.

Diameter of the emitter is 0,02 m, spark distance between the emitter and the target is adjusted in the limits from 0,15 to 0,40 m. Longitudinal magnetic field of the emitter is about 0,9 T and serves for constriction of electron flow during the charge. Disruption voltage is 2 MegaVolt, current is equal to 10^4 A, time of discharge lies between 10^{-5} and 10^{-4} sec.

The length of pendant of trial pendulum (Fig.2) is from 0,5 to 0,8 m that accordingly defines its own period 1,4192 – 1,7952 sec. Or the frequency of the pendulum is equal in average to 0,6 Hz, which was taken during the estimation of pendulum response on the supposed "Gravitational Impulse". Maximal deviation amplitude of the pendulum is 0,014 m.

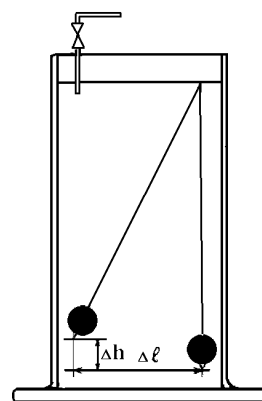


Fig.2

Supposition: the superconducting emitter and magnetic field trapped into it provides extension in time of the magnetic impulse. Magnetic impulse is concentrated around discharge plasma of 0,02 m diameter. Extension of the supposed "Gravitational Impulse" in time provides the necessary sensitivity of the pendulum, which according to its frequency characteristic grows by the square of signal period and reaches maximum with the period more than own period of the pendulum.

In our opinion, *Gravitational impulse becomes excited just by the derivative by time of magnetic impulse,*

which generates electrical voltage $E_{\uparrow} = \ell \frac{dB_{rot}}{dt}$ in the structure of vacuum. This voltage generates Gravitational Impulse itself $G = 4\pi E_{\sigma} S \cdot (\Delta r_g)^2$, where $\Delta r_g = e_0 \frac{E_{\uparrow}}{b}$.

The supposed "Gravitational Impulse" in the experiment by Podkletnov is modeled by a quarter of cosine curve.

Duration of this curve is determined by the decrease of magnetic field "trapped" into the superconductor due to the partial heating of semi-conductor emitter after plasma passed the discharge of 2MV with the current strength of 10000 A. The formula of the model is the following:

$$X'' = A e^{-2\pi f_0 D_0 t} \cos(2\pi f_0 \sqrt{1 - D_0^2} t) \quad (1)$$

the calculation is made for the frequencies of 30, 3, 0,3 and 0,03 Hz and acceleration of 12 m/sec², which appears for the mass of the pendulum 30 g with the force horizontally to gravitation 0,03·12=0,36 N.

It can be supposed that it is necessary to make more careful solution of the problem to find the effect on the pendulum by its reaction, which is known from experiment. We should apply the more correct use of spectral method of solution of differential equation for the pendulum with setting of impulse effect. Further, having the recording of temporal function of magnetic field by Hall-effect devices and using Maxwell formulas,

we should find electrical field acting in physical vacuum. This field will give us the force of gravitational impulse.

The experiment by V. Roshchin and S. Godin is simpler for physical modeling (Editor's note: the author assumes it is simpler than Podkletnov's effect). All input and output parameters are known to the authors, i.e. force of the magnets, frequency of variable magnetic field in the local place of space vacuum, change of gravity. Furthermore, there are known cylindrical formations of magnetic "loops" around the device and their approximate arrangement with the intervals divisible by the half of rotor radius. Effects of temperature decrease at 8° C in cylindrical atmospheric formations can be simply explained by adiabatic decrease of air pressure due to the decrease of gravitation between molecules of air. Formulas for estimation of decrease of gravitational and inertial forces are the same that for Podkletnov's experiment:

$$E_{\uparrow} = \ell \frac{dB_{rot}}{dt}, \quad (2)$$

$$G = 4\pi E_{\sigma} S \cdot (\Delta r_g)^2, \text{ where } \Delta r_g = e_0 \frac{E_{\uparrow}}{b}. \quad (3)$$

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New Sources of Energy from the Point of View of Unitary Quantum Theory

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Abstract

The Unitary Quantum Theory (UQT) is a new version of the field quantum theory, which has been developed by the principal author (Prof. L.Sapogin) of this paper

for over 25 years. The theory is directly related to the problem of new energy sources, and this paper can be of interest for Journal of New Energy for it is the UQT (and not the classical Newton mechanics or the modern standard quantum mechanics) that provides a theoretical basis for the development of new sources of energy and for the explanation of the operation principles of the existing and functioning over unity devices.

The fundamental provisions of the UQT and a number of results received on the basis of it were published in many scientific journals and reported at international conferences (see [1-6], etc.). Generally, the UQT as expressed by the language of formulae and equations represents a new mathematical model of interaction and movement of elementary particles in the form of a complicated system of non-linear integral-differential equations, an important property of this model principally defines the trajectories and velocities of the particle movement in space (unlike the standard quantum theory, which directly defines only the probabilities of the presence of the particles at a certain point in space). Another, and the most essential (for the problem of new energy sources) property of the UQT is the absence of the energy conservation laws and the

scandalous energy grid which now envelopes our planet, by investing in the production and marketing of small energy generators for individual households, factories, transport etc.

Once such a generator has been acquired by the consumer, his further energy requirements will be covered for *FREE*, giving him independence in terms of

energy as well as increased buying power any other economic development.

However, before industry will move, Science and the Individual in society must join hands and raise a highly visible flag, proclaiming the desirability and the feasibility of such technologies.

Nicholas Moller, August 2001.

Scalar Wars The Brave New World of Scalar Electromagnetics

Bill Morgan

"Electric power is everywhere present in unlimited quantities and can drive the world's machinery without the need of coal, oil, gas, or any other of the common fuels." Nikola Tesla

"At any point and at any time, one can freely and inexpensively extract enormous EM energy flows directly from the active vacuum itself." Tom Bearden

(Published in short by Alexander V. Frolov's edition)

Editor's note: In this very interesting article you can find important Bearden's idea on scalar electromagnetism and its relation with MEG (motionless electromagnetic generator). I removed from original text most of text about weaponization of this technology.

For the past six months I have been undergoing the greatest **paradigm shift** I have ever had to go through. It has rattled my nerves and shaken my bones. This intense adjustment of my "world" has come about by studying the information given by Col. Tom Bearden at his website Cheniere. The new knowledge there has necessitated a total revision of my ideas about physical reality, the world we live in, and the future of humanity. This paradigm shifting even actually made me dizzy on certain days as I tried to absorb and digest Bearden's vast amount of information. I am not a scientist at all, just a layman, and I have little comprehension of the math and high physics of this new science called "**Scalar Electromagnetics**." But there is a great deal of information at Cheniere which needs to become common knowledge as fast as possible, for the sake of the survival of life on earth. To that end I have put together this small primer of Bearden's ideas, as a kind of "beginner's guide" to his website. (I have tried to underline certain words and phrases which are part of the new "jargon" of talking about these "new" phenomena. Also I have taken the liberty of holding certain words and phrases to help them stick in the mind).

(Note: Throughout "**EM**" means "**electromagnetic**," and "**LW**" means "**longitudinal wave**")

1. New waves discovered

Longitudinal EM energy fills vacuum of space, the time domain of spacetime, time as compressed energy, $E=tc^2$, waves of time, phase conjugate wave pairs.

Some Immediate Implications

The implications of successful engineering of the longitudinal waves are enormous, and will change the world as we know it, one way or another. Among other things, these discoveries mean that:

1. The **solutions to the energy crisis and the "oil problem" are in hand**. These oil wars are unnecessary. There is endless energy available freely from the domain of time.
2. **Unbelievably powerful weapons** are not only possible, but are already operating in several nations. The many powers of these weapons are unprecedented and mind-boggling.
3. The cure of diseases such as cancer and AIDS, in fact nearly any disease, has become possible within a few years of sufficient funding. Everyone can be made healthy and stay healthy.
4. **Mind control on a mass scale** has now become possible, and the machines to do it are already in place in certain nations. It has become possible to mentally enslave whole populations with the twist of a few dials. **So the layman will need to understand that there is a new kind of electromagnetic energy that is altogether different from what he knows, e.g. radio, TV, cell phones, etc. The ordinary EM waves that we have known about are called transverse EM waves, to distinguish them from the new longitudinal EM waves. These scalar waves do not actually exist in our "material" world, but exist only in the vacuum of empty space, or the time domain. And we must keep in mind that this vacuum of space we speak of exists all through everything. Even our bodies are mostly empty space between atoms and molecules. So the gateway to this seething ocean of energy can be there at every point in the universe. This seething ocean of energy is all around us and all through us.**

Emptiness is Full

This amazing discovery announces that the "emptiness" of empty space is in fact not empty, but a great ocean of seething energy!

Col. Bearden refers to this ocean of energy as being of the "time domain." It seems like something from Star Trek but this is where scalar electromagnetics has come to. And where it is going may be beyond anything Star Trek could have dreamed of.

We live in a 3-dimensional world, which physics calls "3-space." But there is also spacetime, or 4-space, or the "4th dimension." Then suddenly comes this amazing new knowledge that time itself is actually compressed energy. And it is energy which is compressed by exactly the same factor by which matter is considered compressed energy: the speed-of-light-squared!

So we have a new companion to the famous $E=mc^2$. It is now paired with $E=tc^2$ (where t is actually "delta- t ," or change in time). Or (amaze your family and friends and) say:

*"E equals em-see-squared"
and
"E equals delta-tee-see-squared"*

It has a nice ring to it, like some freedom bell announcing a new era.

And as the atomic bomb released the compressed energy in matter, so can we now unleash the tremendous energy that is compressed into time itself. It gives a completely new meaning to the term "time bomb."

Some New Terminology of Scalar Electromagnetics

"Scalar EM is the brainchild of Lt. Col. (retired) Thomas E. Bearden, a systems analyst and wargames specialist who has been advocating a view of electromagnetics which is based on the notion of a vast, unseen background of scalar energies (as opposed to vector energies) which underlie all physical reality.

"If Bearden is correct in his Scalar EM theory, then we can build devices which would enable us to alter gravity, time, inertia, and the apparent mass of an object. This of course has ENORMOUS implications for military applications, space-vehicle drives, time-travel, teleportation, paranormal phenomena, and just about every other area one can think of."

http://twm.co.nz/Beard_scalem.html

"Time-energy, time-currents, and time-structuring play the dominant role in electromagnetics. Time-as-energy eventually becomes engineerable, as easily as is spatial energy now. We are always dealing with spacetime and with spacetime curvature."

Bearden: <http://www.cheniere.org/techpapers/Vision20paper.doc>

The scalar energy discovered in the vacuum of space is sometimes called "zero-point" energy. Thomas Valone explains how this term came about.

What does "Zero Point" mean?

"Boyer traces the historical "creation of the vacuum" as proceeding in stages in parallel with the historical development of ideas about the vacuum. To paraphrase, he says that in the 17th century, it was thought that a totally empty volume of space could be created by simply removing all matter and, in particular, all gases. That was our first concept of the vacuum. Just get rid of all the gas. Late in the 19th century, it became apparent that the region still contained thermal radiation. But it seemed that the radiation might be eliminated by cooling. So the second concept of getting a real vacuum is to cool it down to zero temperature. Just go all the way to absolute zero. Then we've got a real vacuum. Right? Well, since then, both theory and experiment have shown that there is a non-thermal radiation in the vacuum and that it persists even if the temperature could be lowered to absolute zero. Therefore, it was simply called the "zero point" radiation." Thomas Valone said in his article:

<http://www.seaspower.com/InsideZeroPoint.htm>

"For our very survival, it is absolutely imperative that informed citizens be aware of this dramatic change, which is just now starting. The powerful new science and engineering must be controlled and used for humanity's benefit, not its detriment. Else it will eventually be let loose unrestrainedly, to destroy all life on earth - a possibility indicated by Nikita Khrushchev in 1960." - Bearden

2. Tapping the waves

Endless free energy, Tesla's radiant energy, the dipole as the gateway to the energy of the void, MEG in one year, Bedini, Yakuza, etc. End of Oil, geopolitical chaos, rogue groups

Move Over G.E. & Big Oil, Energy is Everywhere!

Third-world nations set to rise

"Certain powerful interests did not wish the extended electromagnetics to be discovered or taught. That, after all, would lead to free energy and loss of economic control of the citizens. That was precisely why Nikola Tesla had already been suppressed ... Today it is still being suppressed by the orthodox establishment."

<http://www.cheniere.org/books/ferdelance/s25.htm>

The vast seething ocean of energy of the vacuum, the longitudinal scalar EM waves of the time domain, can now be tapped and "transduced" into ordinary (transverse) EM energy in our 3-Space world. The process can be compared to putting a paddlewheel into a river. The energy acquired is free, since the river is there flowing whether we tap it or not. And it is a mighty river, and is not diminished by our paddlewheel.

This means that a permanent solution to the “energy crisis” is at hand, if only those who hold it so secret would give it up to humankind.

It means our species' insane use of oil is no longer necessary. We can make automobiles that need no fuel at all. We can build motors that power themselves. It means that unlimited electrical power can be available for free anywhere in the world. Every house and even shack can have its own power supply.

Of course there is the cost of the equipment at first, but the energy flow is free for the presumably very long life (no moving parts) of the generator. It will probably take decades to shift over to scalar power.

But the ability to tap the scalar (longitudinal) EM waves of the vacuum (which exists everywhere) also means that unbelievably powerful weapons can be, and already have been developed. In fact these weapons are so dangerous that the fear engendered becomes a psychological obstacle to the grasping of the facts.

I struggled with this myself for months, and even though Tom Bearden had completely convinced me already, it is hard to accept the fact that for everyone on earth the “worst that might happen” has suddenly gotten much worse. It takes time to deal with that, to realize it and get over it.

Indeed, the possibilities of these new weapons, which are tapping the huge energies of time, are so terrifying it is natural for the mind to simply say: “I don't want to hear about that.”

And the government, likewise, pretends these weapons do not exist and tries to keep it secret from the people. Because most people would indeed be truly alarmed to know the actual situation. Col. Tom Bearden has decided that the people need to know the truth anyway. As a People on a Planet we must face this now, and ban the use of scalar weapons in war or in mass mind control. The current deployment of these weapons is a world emergency which we must all face.

The physics and mathematics of the longitudinal waves and the time domain are clearly beyond the layman, but I recommend scanning through them anyway just to get a sense of the wonder and the elegance of it all and some of the exotic terms which are used. Two of the most important papers by Col. Bearden are:

Giant Negentropy from the Common Dipole The Final Secret of Free Energy.

Despite the complexity of the science involved, Bearden sums up the essential secret of it all in a few words.

“There is no problem at all in extracting all the energy one wishes from the active vacuum, anywhere in the universe, at any time. Just make a dipole.

The problem is in (1) catching some of that freely gushing EM energy in a circuit containing a load, and (2) dissipating the caught and collected EM energy in that load to power it, without using half the caught energy to destroy the source dipole's).

That is the ONLY real energy problem on the planet, and always has been.”

A dipole could be a battery, which is polarized into negative and positive. Or the terminals of a generator. Or any magnet with its two poles. Or an atom with its positive and negative charges. Or the earth's magnetic field, the sun, and all heavenly bodies. Even a galaxy must be some kind of mega-dipole. Wherever there is a dipole there is already immense scalar EM energy ushering out of and back into the vacuum. And there have already been demonstrated a number of diverse methods for tapping that energy as it flows. (John Bedini, Edwin Gray, Bruce de Palma, and others). Bearden provides what he calls a “partial list” on his website.

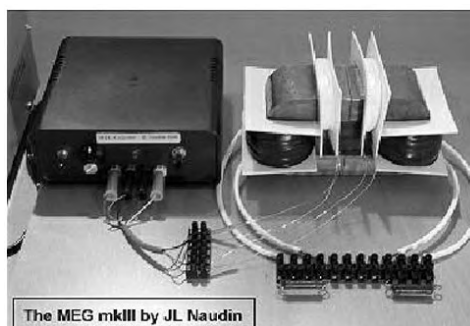
“In other words, nature then gladly gives us as much EM energy flow as we need, indefinitely — just for paying a tiny little bit initially to “make the little dipole.” After that, we never have to pay anything again, and nature will happily keep on pouring out that 3-flow of EM energy for us. This is the giant negentropy mechanism I uncovered, performed in the simplest way imaginable: just make an ordinary little dipole.”

Bearden

How to Buy a Free Energy Machine?

**Answer: Just wait one more year! 2003.
Then get off the Grid!**

Perhaps the most eagerly awaited event now is the marketing of Bearden's Motionless Electromagnetic Generator (MEG) scheduled to begin in about a year's time. This is when the proof will hit the fan. Many people have said to me, when talking about free energy, “I'll believe it when I can go to the store and buy one.” Hopefully in a year's time they will be able to order their own MEG. And then they will believe, because it works and is working.



Says Bearden: "I will admit that the chief scientist of an important experimental group in a large company was rather stunned at the type of output we were able to obtain. The MEG may look like just a transformer, but it is not. It is a completely different breed of cat."

(Bearden : <http://www.cheniere.org/correspondence/011202.htm>)

Soon the cat will be fully out of the bag. The first MEG units will supply 2.5 kilowatts of free electricity. Forever. Units can be connected together to double or triple the wattage. After that gets going, 10 kilowatt generators are planned. Energy will flow freely from the time domain indefinitely, and there are no moving parts to wear out.

This manufacturing project is a heroic effort and will change the world as we know it. For once people are in possession of such devices there can be no further denial from anyone, including the government and/or "secret-government."

The Motionless Electromagnetic Generator
(Successfully replicated here by J. L. Naudin)

The physics of how the MEG works is explained in the paper "The Motionless Electromagnetic Generator: Extracting Energy from a Permanent Magnet with Energy Replenishment from the Active Vacuum."

The device was successfully replicated by J.L. Naudin in France, and others, like Steve Utne, are also working on their own models. But Magnetic Energy Limited's MEG is actually scheduled for production soon and looks to be the first commercially available free-energy generator in history!

I imagine it will not take long for tinkerers to put them into their electric cars and make the first fuelless automobiles since Tesla's unheralded (and unheeded) experiments. Or for builders to begin building houses powered by MEG's. Houses which will never see electric bills. How can they ever make enough of these to meet the demand that will suddenly be there? Bearden is right, it needs to be an all-out crash program of the government on the order of the Manhattan Project.

I must include here that Bearden is quick to point out that he is not himself the inventor of the MEG, but is a partner and advisor in bringing it to the public market through Magnetic Energy Limited, Inc.

I must also admit that I am praying for the success of this venture, and the ending of the absurd and criminal withholding of this technology from the people by the black-ops military-industrial people. This secrecy has cost the planet over 30 years of unnecessary pollution.

The first units off the assembly line, which is being set up in a "friendly" unnamed nation, will usher the public at last into the new era of scalar electromagnetics. As of December, 2001, the situation with the MEG was described by Bearden in a letter.

"What we presently have with the MEG is a successful laboratory experiment. At least a year's very hard research will have to be done before we will be ready to put a commercial power supply into production.

"Consequently, we have made an agreement with a foreign partner (the National Materials Science Lab of the National Academy of Sciences of a friendly foreign nation) to do that year's research. At the same time, we are trying to make an agreement with one or more large financial partners here in the U.S."

Bearden

"So we are hopeful that we will be able to start introducing units on the market about a year from now. Quite simply, we will either succeed or we will fail. But we will give it our very best effort."

Bearden: <http://www.cheniere.org/correspondence/012202a.htm>

Motionless Electromagnetic Generator patented !

"In Magnetic Energy Limited, all business discussions and arrangements are taken care of by Dr. Lee Kenny, Managing Partner. There are five of us who are co-inventors of the MEG, and two of the others are really the principal inventors."

Bearden

Free Energy has been Suppressed Secret Government Aware of Free Energy

"In this world of contemporary times, all the agencies, CIA, FBI, KGB, NSA, Electric Power Research Institute, DARPA, Brookings Institution, Henry Kissinger, Edward Teller, et al., all are aware of [free-energy researcher Bruce] DePalma and his ideas.

"Because these individuals and institutions are employed by the ruling elite to forecast the future and satisfy present needs and demands, it is clear that free energy is a threat to the world order constructed by business and the mindset of those who want to own the world.

"Free energy represents Man's aspirations and dreams of freedom and equality, uniform division of resources and the ability to choose one's own future.

"The fact that free energy is suppressed speaks to the greed and self-interest of a ruling elite which, even in the face of an emergency of global starvation, resource depletion and environmental pollution, will not give one inch if it means loss of control. This is an attitude of paranoid delusion and fantasy which can only arise from the alienation of a class of elitists who, through their money, are completely insulated from the reality of the day to day fight for existence of the common man."

<http://depalma.pair.com/Absurdity/Absurdity07/ProblemOfFreeEnergy.html>

Bearden describes one case of suppression when the Yakuza killed the Kawai engine in his very presence in Huntsville, Alabama.

"That night a jet arrived from Los Angeles, with a Yakuza on board. The next morning Kawai no longer controlled his company, his invention, or his own fate. The Kawai party was in fear and trembling. The Yakuza coldly dissolved the agreement, they packed up the two Kawai engines we had, and left. And that was that."

So it is not only governments who are keeping this revolutionary technology from seeing the light of day. Our "leaders" need to be honest about what is going on, otherwise they look foolish, acting out a kind of "Alice In Wonderland" script before the public, a script that has become completely unbelievable.

Concerning the criminal withholding of this scalar technology by the military black-budget people, and the cover-up of the actual situation regarding scalar weapons throughout the world, Tom has this to say:

"The high government officials of the United States of America grossly violated our constitution and their sworn oaths of office. Our constitution specifically charges the government of the United States to defend the people of the United States. That means our officials are specifically charged with defending our people. Yet they deliberately agreed not to do so, and they deliberately sacrificed us in advance.

"They committed treason of the highest kind, by deliberately surrendering us to total destruction anytime the big balloon goes up."

Bearden: <http://www.cheniery.org/books/ferdelance/s75.htm>

Energy Crisis Solved

One of the "must read" documents at Cheniere is "[The Unnecessary Energy Crisis: How to Solve It Quickly](#)," especially since the "oil wars," which Bearden has foreseen for decades, have now already begun.

Here are some clips from that Document:

"To avoid the impending collapse of the world economy and/or the destruction of civilization and the biosphere, we must quickly replace much of the "electrical energy from oil" heart of the crisis at great speed, and simultaneously replace a significant part of the "transportation using oil products" factor also.

"The technical basis for that solution and part of the prototype technology required, are now at hand. We discuss that solution in this paper."

And although the solution to the energy problem and the oil wars may be at hand, Bearden suggests there is still an urgent rush that needs to be made to save human civilization from collapse.

"Once the technology hardware solutions are ready for mass production, even with a massive worldwide deployment effort some five years are required to deploy the new systems sufficiently to contain the problem of world economic collapse. This means that, by the end of 2003, those hardware technology solutions must have been completed, and the production replacement power systems must be ready to roll off the assembly lines en masse.

"The 2003 date appears to be the critical "point of no return" for the survival of civilization as we have known it.

"Reaching that point, say, in 2005 will not solve the crisis in time, and the collapse of the world economy as well as the destruction of civilization and the biosphere will still almost certainly occur, even with the solutions in hand."

"The good news is that we now know how to easily initiate continuous and powerful "electromagnetic winds" from the vacuum at will. Once initiated, each free EM energy wind flows continuously so long as the simple initiator is not deliberately destroyed."

On page 9 he explains the concept of the dipole, and how there is already huge scalar energy flowing in the time domain around any dipole. Hold a magnet or a battery in your hand and you hold a stress in time and a beautiful flowing loop of longitudinal waves!

Bearden decries the scientific community in the West for being unable to let go of their dogma long enough to see that the greatest discovery in human history lies at their feet, but for their stubborn ignorance.

"The present energy crisis then is due totally to that "conspiracy of ignorance" we referred to, that is maintained by the scientific community, and that has been maintained by it for more than 100 years.

"This is the real situation that the environmentalists must become aware of, if they are to see the correct path into which their energies and efforts should be directed — to solve both the energy crisis and the problem of gigantic pollution of the biosphere."As far as anyone in the legislative branch of government ever understanding the profundity of the discovery and engineering of scalar waves, Tom Bearden says they are at a great disadvantage in doing so.

"The nontechnical person — e.g., a Senator or a Congressperson — is operating under a distinct disadvantage. If he or she takes the stance that much better electrical power systems can readily be achieved, he or she is in fact opposing almost the entire set of University, Government Technical, Power Company, Battery Company, and Organized Science communities. Further, in most cases his technical advisors are themselves from one or the other of those communities, and likely to go back into that community or those communities when the Senator

or Congressperson leaves office, or even before. So the Congress and the non-technical government community at large operate at a great disadvantage...BeardenNational Emergency Declaration is Needed

"The Government Non-Technical community (the Senate and the Congress, in particular) are in far better shape than the Government Technical community, to appreciate the world implications of the pending economic disaster. I am hopeful that both the environmentalists and the Government Non-Technical community will rapidly unite in a common goal to get this vacuum energy program launched, under a National Emergency declaration. If so, then they can solve the energy crisis and the pending economic crisis, in fairly short order, and permanently."

In the conclusion of his paper The Unnecessary Energy Crisis: How to Solve It Quickly Bearden again states the urgency of replacing our centralized power grids with highly dispersed and local taps on the freely flowing energy of the active vacuum. Given the abilities of the Tesla howitzers, the power grids of all nations are sitting ducks.

"Personally, the present author regards the increasing energy crisis as the greatest strategic threat to the United States in its entire history. I will do anything within my power to help prevent what I perceive to be the looming economic collapse of the Western world, preceded or accompanied by a sudden, explosive, all-out and continuing exchange of the WMD arsenals of most of the world.

...In the name of all humanity, let us begin! Else by the time this first decade of the new millennium ends, much of humanity may not remain to see the second decade."

3. Weaponization

Scalar interferometry, Tesla howitzer, Tesla dome, heat/cold, dudding, 10 nations have them, dead-man fusing & Insane Systems, scalar strategy, earthquakes and weather wars, solar storms, mind attacks, leased to Yakuza, many examples of testing, quantum potential weapons.

Warfare has been changed forever by the development of these scalar energy longitudinal wave howitzers. To get a basic understanding of scalar waves is to have the imagination suddenly run wild as all the implications and possibilities regarding warfare fall into place. One realizes with a certain horror that the world has totally changed, and that there are some very fearsome possibilities. Remember, the power for these weapons comes from the time domain, longitudinal EM waves in the vacuum of empty space, and the power is tremendous and mind-boggling.

Being able to blast away at any target from a distant control booth is something that has never happened

before. This is incredible power to be in control of and it divides the history of weaponry into "before" and "after." And the destructive power of these weapons is delivered instantaneously to the target from the local vacuum at the place of the target.

From an interview:

Questioner: "Are you saying that real energy can be transmitted faster than the speed of light?"

Bearden: "Yes. But hyperspatially. Not through 3-space, but "around" it. Again, this means that it's possible to produce energetic changes in a distant system at a distant place, without transmitting energy "through space" in the normal sense. You transmit "around" space, so to speak, and directly in time or through a higher dimension, depending on the model you're using to understand this. Further, the speed of the internal EM energy transmission is not limited to the speed of light."

(Editor's note: We omitted author's text about weaponization of the technology. You can contact him directly or visit his web site)

http://twm.co.nz/beard_interview.htm

4. Healing powers of longitudinal waves

Healing via longitudinal waves, time reversal of cells (de-differentiation), Priore's machine, Bearden's proposed "blanket" version, using the electric power grid for healing waves or for broadcasting disease patterns. Scalar Biowar.

The good news!

"Any sort of disease whatsoever - physical or mental - will be rapidly curable, simply and cheaply. It will be possible to reverse aging and rejuvenate the person. It will be possible to regrow limbs and straighten misshapen spines - and directly remove the causes of mental diseases and cure them as well. Lifespan will be staggeringly increased, without 'old age's debilitation.' AIDS, cancer, leukemia, and genetic diseases will be completely conquered. The potential for a true golden era is upon us, for all humanity."

Bearden: http://twm.co.nz/beard_interview.htm

Proof of the healing powers of longitudinal waves from the vacuum is seen in the work of Antoine Priore who produced longitudinal scalar waves using a gigantic glass tube filled with plasma. He himself did not understand why it worked or how it cured cancer in animals.

"The Priore team cured terminal tumors, trypanosomias, and other dread diseases in laboratory animals in France, in the 1960s and 1970s, under rigorous scientific protocols by eminent scientists. The Priore project was funded by the French Government to the tune of several millions of dollars (equivalent).

"... Prioré's machines concretely demonstrated a nearly 100% cure of all kinds of terminal cancers and leukemias, in thousands of rigorous laboratory tests with animals. These results were shown to medical scientists as early as 1960."

<http://www.cheniere.org/priore/index.html>

Bearden has stated that the longitudinal EM waves can have a healing effect because they always come in pairs called "phase conjugate pairs" and one of the pair is time-reversed. This enables engineering of the waves to "pump" the cells of the body (with waves from the time domain) and actually time-reverse the cells back to a previous healthy condition. The scalar cure of cancer does not involve killing the cancer cells but rather pumping them with time energy into a previous condition. I know, this seems miraculous, and is it not?

Priore and his giant plasma tube

This healing power in the longitudinal waves of the time domain is a mind-boggling thing to face. It took me months to get through it, and to suffer the fact that the cure for cancer and AIDS was right there, in this new scalar electromagnetics technology, and that it has been kept back from the people for so many decades now.

Bearden has a great deal to say about the work of Priore, who himself did not understand why his machine worked. Priore did not know about the longitudinal scalar waves of the time domain. In fact, Tom Bearden has supplied, at last, the missing explanation as to how that big giant two-story glass tube consistently cured cancer in animals.

"The medical implications are enormous. By just reversing the damaged cells back to a previous physical state, this gives a physics mechanism for controlled cellular dedifferentiation, in biology terms. Physicians will time-reverse diseased, damaged or aged cells back to an earlier healthy condition, including all the cellular genetics. Normal cells are just reversed to a slightly younger condition."

"We believe this mechanism explains the revolutionary but baffling electromagnetic cures achieved by a team of outstanding French scientists in the 1960s and early 70s, working with inventor Antoine Prioré. In lab animals, cures were achieved for terminal tumors, infectious diseases such as trypanosomiasis, and atherosclerosis. In addition, deliberately suppressed immune systems were dramatically restored.

"We hypothesize that this is the long-sought mechanism of how the living body heals itself. In short, the body's cellular control system induces cellular reversal by weak time-domain pumping of the damaged cells and the affected area. The cellular regeneration system performs all healing of cellular damage in the body; the immune system heals nothing, not even its own damaged cells).

"For the first time medical science can develop as a science of healing rather than a science of intervention. And it will develop as a science of unlimited healing, since no pathogen can resist action by curved spacetime engines." Bearden

Bearden has extended the Priore work, with the previously missing knowledge now in place, and designed a revised system (for irradiating the body with longitudinal waves) which gets rid of Priore's giant glass plasma tube and uses instead an antenna unit which surrounds the body. He has also provided the missing explanation of how it works. There is an article from "Explore" magazine.

In fact, Bearden has presented to the U.S. government a plan to use a portable version of a Scalar Healing Blanket where wire channels in the blanket act as a scalar antenna, which can both send and receive scalar electromagnetic waves. A two minute treatment of the waves is sufficient to restore the body to its earlier healthy condition. Thus even thousands could be treated easily and quickly in a biowar mass attack situation.

"To defend against things like anthrax attacks on our civilian population centers, we also have recommended to the U.S. Government the crash development of small, portable treatment machines—using similar "antiengine-forming" and cellular reversing "porthole technology".

Such portable machines could be developed cheaply and quickly, and present government facilities could be used to massively attack the correlate database production problem. "The portable treatment units could be cranked out by the hundreds of thousands and flooded down through emergency response agencies such as the police forces, the National Guard, emergency hospitals, emergency response teams, etc."

5. Psychoenergetics

Mental entrainment, inducing hypnogogic trance, mind control, broadcasting thoughts and feelings, the Ant World, education via EM [LW] mental download, the "Feelies," revolution in spirituality, "enlightenment machine?" Scalar churches?

Psychoenergetics is simply using the scalar interferometers to manipulate and engineer the human psyche. To me it is the most mind-boggling and frightening aspect of longitudinal wave engineering.

The mind is electromagnetic in nature, and itself of the time-domain. It is not observable in 3-space. There is no thing you can point to that is the mind. As Bearden says, **"The mind is time-like."**

The longitudinal scalar EM waves are also of the time-domain. By overlaying certain infolded patterns (oscillations in time) on the longitudinal waves, a thought or feeling may be made to arise in a person or

persons who are in the **interference zone** (where the wave beams cross).

The person will not notice anything, feeling that this thought or idea is his or her own idea. The longitudinal wave pattern might be a wave of panic or fear that spontaneously sweeps over you, perhaps inexplicably. It could even be in the form of a sudden intense patriotism. It could be explicit words and phrases, which everyone would think they had thought of by themselves. Or it could be rage and hatred, angry and violent. On the other hand It could also be a continuous sense of docility and placidity. This is the brave new world of psychoenergetics and the coming "Mind Wars."

Scalar Psychoenergetics in its most primitive form simply "entrains" all minds in the target area into a deep hypnogogic trance. In this state of mind people would be suddenly extremely suggestible, and would likely believe anything they are told, and would obey any orders given. Talk about winning the hearts and minds of the American People!

Tom Bearden makes me think of **Paul Revere**, who heroically conveyed important warnings for the sake of the new nation. But the words of the famous phrase have now strangely and curiously mutated into the once-inconceivable: "**One if by land, Two if by mind.**"

Indeed one strategy in a Mind War would be to simply take over the minds of the "leaders" of the enemy nation. The targeted leader would not be aware that anything was amiss, although he might begin to make unexpected changes in policy.

And are, in fact, any of our "leaders" already having secret thoughts that are not their own? Who knows? Frighteningly, we can no longer be sure. The new sciences of scalar electromagnetics and psychoenergetics are even now plunging humanity into a sudden science-fiction-like world beyond anything in humanity's previous imaginings.

"The Russians reached the point in the mid 1990s that they could take over control of a person's mind, with modified longitudinal EM waves including some time-polarized EM waves, and with a team of specialists (estimate 25-30 per transmitter, and one transmitter and team per controlled person)."

Bearden: <http://www.cheniere.org/misc/time.htm>

And ultimately psychoenergetic warfare goes to the very heart of human identity itself. For if my thoughts might no longer be "mine," then who and what am I? Can my very sense of being "me" be hijacked by some nefarious psychoenergetic scheme?

Will the "secret government" eventually dictate directly into your mind how you feel about yourself? Or what you think you are? Or what you should do?

How Does Longitudinal EM Mind Control Work?

The physics of scalar psychoenergetics as expounded by Col. Bearden seems even more arcane and over-my-head than that of extracting energy from the vacuum. I can't understand it, but I look through it anyway. Each time another tiny understanding might occur, or a term might fall into place. I know the mathematics is forever beyond me.

One paper to begin with is "[Mind Control and EM Wave Polarization Transductions](#)" This is such serious stuff that Bearden includes a strong warning about misuse of this knowledge. Psychoenergetics weapons can mentally maim and physically kill.

Warning! (From "Mind Control and EM Wave Polarization Transductions")

"This article refers to experimental research techniques which can be detrimental or lethal in the hands of any but highly skilled, qualified experimental scientists proceeding under proper laboratory safety procedures. The purpose of this article is strictly for information to properly qualified and authorized scientists in certified laboratories. We do not propose or condone any use of these procedures for nonapproved practice of medicine without a license. Neither the publisher nor the author are responsible for accidents or outcomes in the use of these experimental procedures and techniques. Any researcher who performs these procedures and experiments is acting on his or her own volition, and is solely responsible for insuring safety, qualifications, and legality of the acts and their results. We neither suggest nor condone unauthorized experimentation on human subjects. Such is a criminal violation of the constitutional rights of the subject under Federal and State laws, and is both illegal and immoral."

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol1/p01.htm>

After the serious warning comes the description of the paper. This is heady stuff for the layman.

"Calling full attention to the special note above, in this paper we present a high-level over-view of the novel electromagnetic nature of mind operations, mind and body coupling, and intent - the induction of physical 3-space EM energy changes into the brain and nervous system, and into every cell of the body, from the mind's time-like coherent operations. We summarize the time-polarized electrodynamics used to engineer and affect mind operations and the mind-body coupling loop. Transduction mechanisms whereby differing EM wave polarizations can be transformed one-into-the-other are presented."

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol/p01.htm>

I will leave it to the technically astute to try to understand the mechanisms of operation which are described in scientific language. But there are tidbits for the layman. Here he speaks of the difficulty Western scientists have in opening up to the "immaterial" (longitudinal wave) nature of the human mind.

Western Science Remains Largely Materialistic

"Ironically, most Western scientists are materialists and consider "mind" as a mystical and nonscientific concept. They tend to consider mind operations and functions either to be simply "meat computer" operations and functions, or at best to be very weak ordinary transverse-wave EM operations and functions in the brain and nervous system. This serious self-limitation exists because in the body we measure only weak TW [transverse wave] EM operations and functions correlated to biological behavior and brain operations. We simply do not know how to measure "mind operations" directly.

"With no mind measurements possible and no instruments, it is understandable that Western science considers only the physical side of the mind-matter interface.

"Presently our scientists do not measure the longitudinally-polarized EM wave operations and functions in the body and around it in nature. Few of them are aware that a maelstrom of such LW [longitudinal wave] functions exist in the body and in all of nature in general."

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol/p05.htm>

Western methods of influencing the mind with EM waves have only used transverse waves, not the longitudinal waves of the vacuum. If only transverse waves are used one pretty well has to hit the target mind with a sledgehammer of waves.

Western Science knows only transverse EM waves Brute Forcing Time Functions versus Fine Control Methods

"Ironically, Western mind control researchers using transverse EM waves for mind control research, are using a brute force method of evoking and using vacuum engines (spacetime curvature engines) and a special form of general relativity, although they do not appear to realize it.

"These "fitted brute-force models" certainly can be very powerful, and certainly can produce the exact results shown in the experimental verifications of the fittings. However, they do not of themselves allow sophisticated design for example of the necessary time-polarized wave assemblies for engineering the entire human collective unconscious simultaneously, or for engineering the entire collective unconscious of all species on Earth (i.e., Gaia's collective unconscious), or even for precisely engineering the memory and knowledge base of an individual.

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol1/p09.htm>

The seemingly magical operations of psychoenergetics, sometimes called "psychotronics," cannot be achieved with ordinary transverse EM wave energy. But they are possible with longitudinal scalar waves because the mind itself is scalar in nature.

"We note that all mind operations are time-like, i.e., they are comprised as scalar EM photon functions and scalar EM wave functions. Thus the mind is a very special kind of electromagnetic system, existing in the time domain..."

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol1/p08.htm>

The engineering of the mind can only be accomplished with the waves of time.

The course of psychoenergetics development necessitates the building of a vast database of settings and patterns which bring about given mental and/or emotional states. A kind of "genome" of the psyche. Bearden describes the process of the decoding of this "genome."

"Now the scientists would perform many phenomenology experiments, making one little change at a time and profusely recording the data. Each time, they would establish the physical change(s) that occur in the body and/or the mental and emotional changes that occur in the mind for each spectral reinsertion back through the "ship's portholes". They would simply but painstakingly (over some years) build up an extensive database of those individual correlates.

"In these experiments, the experimenters will eventually be able to provoke any body or mind change they wish. Strong emotion. Intense pain. Intense pleasure. Painful thoughts. Images. Memories. Perceptions. Dreams. Visions. Memory losses. Memory changes. Personality changes. Etc. The "delta" in the emission spectrum (the changes from zero reference spectrum) represent the precise totality of all mental, physical, organic, chemical, etc. changes and interactions."

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol3/p01.htm>

"A second stage in the research would be to test the correlates and porthole insertions upon a statistically significant cross section of ordinary people, and/or specialized populations (such as toughened soldiers). The program would evolve a highly complex, very effective, ever-improving science and technology of mind and behavior control and engineering mechanisms, complete with finished database and developed applications equipment."

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol3/p02.htm>

Summing up his paper Bearden speculates on what the actual situation the science of psychoenergetics probably is. The intense secrecy with which this knowledge has been kept from the public has led to the current farce of the "government" pretending it all does not exist, and this secrecy may have now put us at great risk.

"The implication is that in the West one or more highly classified, sustained, heavily funded developments in advanced mind control programs, probably exists and probably has existed for some time. Due to loose formation of rogue groups inside such programs, they may have dual or triple purposes, may not operate under very much legitimate government control at all, and may operate specifically for the purposes of the rogue group or groups that have gained control.

"In a nutshell, that's what may be going on in the clandestine mind control projects in several Western governments. The involvement of at least some rogue groups, some being "cowboys" who operate well outside all laws and ethics, could also result in such things as assassinations, clandestine testing on individuals without their consent, etc. In short, it could account for what seems to be actually occurring. As also is "usual" in such a mess, one or more of the rogue groups eventually may become very powerful because their secret weapons are very powerful. They may become confident, thinking they have the "best in the world." They may actually believe they are ahead of the Russians..."

"Remember that, in every large and powerful human organization, the basis for rogue groups is power and secrecy. They are always seeking to increase their power, control, influence, prestige, etc. Nothing else. Patriotism and mission are—to rogue groups—often just idle words. They have their own agendas. And being rogue groups, they may well bring in unethical, immoral tricks: assassination, bribery, entrapment, disinformation, plausible deniability, etc. A certain percentage of a highly secret rogue group will wind up using all these things and more. It's a human characteristic, the old primate dominance game. Only now disguised and hidden under deep classification." "The Russians, with their additional knowledge of the actual mechanisms in the transforms, will be much more advanced than the West, because their fundamental psychoenergetics science is far more advanced, so long as we continue to use the old U(1) electrodynamics. Further, the Russians have decades of use of longitudinal interferometry beams to reach right through the earth and ocean and produce stringent EM effects at a distance. So they will also be able to do the same things here in "mind control" with LW [longitudinal wave] interferometers, through intervening mass."

Bearden:

<http://www.cheniere.org/explorearticles/mindcontrol3/p05.htm>

The paper "Mind Control and EM Wave Polarization Transductions" ends with the most chilling and

frightening possibility of all: the psychoenergetic engineering of the human species as a whole.

The Feelies at Last!

Psychoenergetics will be able to bring about at last, for better or for worse, Aldous Huxley's fanciful idea in his novel "Brave New World," an entertainment format which he called "The Feelies." Those were something you went to, like going to the movies, but you would experience all the actual feelings themselves, as if the depicted events were actually happening to you. Although our "leaders" seem too dim to grasp what is going on in the world of scalar electromagnetics, it should not take some young Hollywood genius too long to understand that The Feelies are now possible, and that the immense megabucks of potential profit more than justify heavy investment in bringing it to market.

One can imagine that first "Feelie" theater, "The Huxley" perhaps, a large comfortable area surrounded by nine giant screens (not just one screen!), which become 3D if you put on your headset. And The Huxley is fitted with the finest sound, and oh, by the way, a modest sized scalar interferometer with computer. And there are one or more new tracks now recorded on the film next to the sound track. These are the digital patterns of thoughts, feelings, and ideas to be fed into the theater's interferometer. And these thoughts and feelings and ideas will be felt by the audience as if they were their own thoughts and ideas. It is an entirely new art form. Psychevision.

As important (and no doubt famous) as the actors would be the "feelers," those from whose minds the feelings were lifted in the original programming of the Feelie tracks. Because, for example, Brad Pitt might be a good and handsome actor, but can he really feel it? Like the dubbing of foreign language films, it might be necessary to dub the "emotional track" using a deeper and more profound person's feelings, thoughts and ideas. It might even be engineered so that if you sat on one side of the theater you would feel like the hero, and on the other side you would feel exactly like the bad guy! What would that lead to?

We have all cried at a movie some time, most people have, though they might not want to admit it. But this would be deep sobbing and a flood of tears, if the director so desired it. You would feel it at your core. Or, take a big chase scene, you would be terrified. They are breathing down your neck! You would be gripped by panic.

For that matter, the whole genre of Horror-Feelie would be too much for many people to take. Do I really want to feel that an actual vampire is tearing at my throat with his fangs?

A Religious Feelie would make you feel the exaltation of a saint at his prayers, or give you the definite feeling that you are Christ suffering on the cross. All the pain could be there too. The stickiness of the blood. The very

feeling itself: "Why hast thou forsaken me?" Who among us could come up that despair for scanning? Had this been developed a bit earlier we might watch a documentary of, say, Mother Theresa, containing her own actual deep sense of compassion, which we would feel arising in us as our own.

Then again, a Psychedelic Feelie could induce an LSD-like state and simply blow the audience's minds.

Even in its simplest most primitive mode, the hypnogogic trance induction with its increased suggestibility, would completely alter the experience of even ordinary current movie going.

6. As it Stands - 2002

"Anyway, it's presently a "Mexican stand-off" with the various parties maneuvering with check and countercheck. That is the real "balance of terror" that is held by such a fragile balance."

"You can see the implications if such weapons fall into the hands of the radical terrorists. Ordinary positive energy EMP shooters can be made fairly readily and cheaply from nearly just Radio Shack parts or surplus parts. It just takes some know-how... When and if the Yakuza [Japanese mafia] gets those (and they will, it's just a question of time), you can begin to appreciate some of the turns this present terrorism and our war on it will take."

The very thought of the building of one of these howitzers by "some lone-nut gunman" from Radio Shack parts makes one realize how serious it is for humanity to face the crisis it has come to.

Once again, as at the dawn of the nuclear era, humanity finds itself at the crossroads of Heaven and Hell. As a species, we must stop and consider. And there is at least one real difference between this visit to the crossroads and the last: this time there is a very real possibility of a true "earthly heaven" on the Heaven side.

The poor nations could come to a good life. Disease could be largely eliminated. Fossil fuel pollution could end. Global warming could be solved, and the weather could be managed in a humane way, bringing water where there is drought, and sunny skies where there is flood. Scalar interferometry would be there to avert any possible hits by asteroids or comets. Mars could be colonized and terraformed. Everyone would be highly educated through psychoenergetic downloading of knowledge. And the wisdom of the wise could be realized directly through scalar connection to their minds and hearts.

These stunning sudden possibilities give me pause to think: if our species has reached this crossroads in such a short span of centuries, then surely other species in this vast universe have passed this way before and long ago. And of those who chose the path to "planetary

heaven," what is their life like now? It might be good if some of them were with us now, to guide us through this last struggle over this pesky old good-and-evil problem. It is our last chance to choose the path which benefits the whole species, and not just some elite group or faction.

The Disclosure Project

One person working tirelessly to bring to bring these technologies into the open is Dr. Stephen Greer of the Disclosure Project, which is calling for congressional hearings into the issues of UFOs and the free energy technology that was, perhaps in part, reverse-engineered from them.

"Once abundant and nearly free energy is available in impoverished areas for agriculture, transportation, construction, manufacturing and electrification, there is no limit to what humanity can achieve. It is ridiculous — obscene even — that mind-boggling poverty and famine exists in the world while we sit on classified technologies that could completely reverse this situation. "So why not release these technologies? Because the social, economic and geo-political order of the world would be greatly altered. Every deep insider with whom I have met has emphasized that this would be the greatest change in known human history. The matter is so highly classified not because it is so silly, but because its implications are so profound and far reaching. By nature, those who control such projects do not like change. And here we are talking about the biggest economic, technological, social and geo-political change in known human history. Hence, the status quo is maintained, even as our civilization hurtles towards oblivion..."

"With the types of weapons currently in the covert arsenal — weapons more fearsome even than thermonuclear devices — there is no possibility of a survivable conflict. Yet in the darkness of secrecy, actions have been taken on behalf of every human that may endanger our future. Only a full, honest disclosure will correct this situation. It is not possible for me to convey in words the urgency of this."

Dr. Stephen Greer:

<http://www.disclosureproject.org/ES-DisclosureImplications-2.htm>

Greer and his team have assembled hundreds of witnesses, many of whom are military or ex-military, who are ready to testify to congressional hearings what they know about the covert black projects which have kept free-energy and antigravity propulsion technology secret from the people.

Greer points out the need to regulate these technologies so they are limited to peaceful uses, but this is of course difficult when the government simply chooses to pretend they do not exist. In the meantime, as the President and the Defense Department continue the charade of war-as-usual, those scalar (longitudinal wave) installations which DO exist continue to fall into

ever more sinister hands. And there is no reporter in the press brave enough to ask, "Mr. Secretary of Defense, what steps are you taking to defend our MINDS from attack by the big Russian longitudinal interferometers?"

Latest Update from Tom Bearden - March 2002

The whole situation is changing so fast that when I asked Tom to look over this article he mentioned the seeming contradiction when some of the above statements are taken together. At different times the information he has is updated so one has to keep a kind of running track. He was kind enough to clear up the confusion here with the situation as it stands as of March, 2002.

"We knew of three nations having the QP weapons for some time. Then we found out last year that five nations had it. So that explains my using the figure "three" first (which represented what I knew at the time). Later I found out about the other two nations. China, e.g., only deployed its QP weapon this past year. So that explains the apparent contradiction between me using "five" in later papers and "three" in earlier ones. It was the best information I had at that time. Might mention that so the reader will understand the apparent discrepancy." Tom Bearden

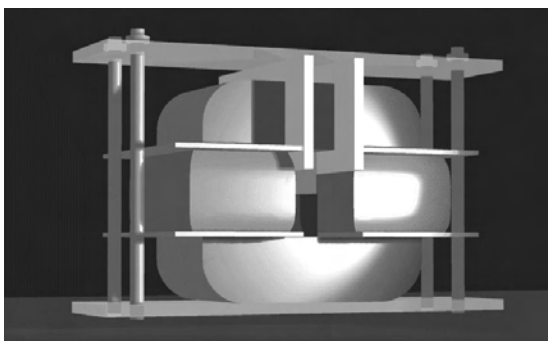
Afterword

Because of the extreme seriousness of the topics brought forward in this article, I asked Tom Bearden to look it over to make sure I had not gotten anything too terribly wrong or mixed up. I did not want to pass on any misunderstanding of my own. I felt a little nervous writing to an eminent scientist, and hoped I had not presumed upon his time.

But Tom was so kind as to answer immediately, and to my relief I had not gotten anything too terribly wrong. Here is his letter, in which he clears up a misunderstanding, and reports on his current health treatment, and gives a call to the young grad students to turn themselves loose in the whole new field of scalar electromagnetics and free energy.

Update:

Motionless Electromagnetic Generator Patent Granted



This message is from Jean-Louis Naudin, the French scientist who successfully replicated the Motionless Electromagnetic Generator (MEG) in France. He announces the granting of the patent to the MEG Builder's group at Yahoo.

From: jnaudin509@aol.com, March 26, 2002 2:20 PM

Subject: The Tom Bearden's MEG IS PATENTED

Dear ALL,

GOOD NEWS !!!!

The Motionless Electromagnetic Generator from Tom Bearden is now PATENTED US 6362718 granted on March 26, 2002

US Patent 6,362,718 :

Motionless Electromagnetic Generator (MEG)

Abstract: An electromagnetic generator without moving parts includes a permanent magnet and a magnetic core including first and second magnetic paths. A first input coil and a first output coil extend around portions of the first magnetic path, while a second input coil and a second output coil extend around portions of the second magnetic path. The input coils are alternatively pulsed to provide induced current pulses in the output coils.

Driving electrical current through each of the input coils reduces a level of flux from the permanent magnet within the magnet path around which the input coil extends. In an alternative embodiment of an electromagnetic generator, the magnetic core includes annular spaced-apart plates, with posts and permanent magnets extending in an alternating fashion between the plates. An output coil extends around each of these posts. Input coils extending around portions of the plates are pulsed to cause the induction of current within the output coils.

Inventors: Patrick; Stephen L. (2511 Woodview Dr. SE., Huntsville, AL 35801); Bearden; Thomas E. (2211 Cove Rd., Huntsville, AL 35801); Hayes; James C. (16026 Deaton Dr. SE., Huntsville, AL 35803); Moore; Kenneth D. (1704 Montdale Rd., Huntsville, FL 35801); Kenny; James L. (925 Tascosa Dr., Huntsville, AL 35802)

Appl. No.: 656313

Filed: September 6, 2000

For some technical info see my web site at :

<http://jnaudin.free.fr/html/meg.htm>

Best Regards,
Jean-Louis Naudin

Email: JNaudin509@aol.com

Main Web site : <http://jlnlabs.org>

Site France : <http://jlnlabs.multimania.com>

MEG Scalar Energy Device

Patented - Production Starts Next Year

From Bill Morgan
wmorgan@nycap.rr.com
03-28-2002

Patent was granted on March 26, 2002 for "The Motionless Magnetic Generator," (MEG) US Patent 6,362,718, which is likely to become the first commercially available free energy device in history in about one year from now. The machine will provide free electricity from the vacuum, for the life of the device, which should be a very long life since it has no moving parts. You can see a picture of scientist Jean-Louis Naudin's MEG replication model at:

<http://jnaudin.free.fr/html/meg.htm>.

It has strong magnets, coils, and a controller unit with the electronics. Naudin made the announcement to the MEG-builder's Yahoo group. The announcement has significance since the patent office has always been skeptical of devices which seem to "get-something-for-nothing." But according to the new science of scalar electromagnetics, the MEG does not break the law of conservation of energy. It's just that the energy is conserved in the fourth dimension, time, and not our 3-space world.

The MEG provides electrical energy by tapping the longitudinal electromagnetic (EM) waves which exist in almost infinite abundance in the vacuum of space. This ocean of energy which permeates everything is sometimes called the "zero point" energy, since it remains there even at absolute zero temperature.

Four inventors are listed: Stephen L. Patrick, Thomas E. Bearden, James C. Hayes, Kenneth D. Moore.

Tom Bearden has explained the operation of the MEG on his website Cheniere.org, and also speaks about the new fearful weapons that can and have been made using the same "longitudinal waves" of the vacuum.

The complicated physics of how the MEG works is explained in the paper "The Motionless Electromagnetic Generator: Extracting Energy from a Permanent Magnet with Energy Replenishment from the Active Vacuum," which can be found at Tom Bearden's website:

cheniere.org (<http://www.help4all.de/energy/MEGpaper.pdf>)

The first MEG units to be produced for sale will output 2.5 kilowatts of free electricity. Forever. They should be in production about a year from now. Facilities for manufacturing the device are being set up in an unnamed "friendly nation."

This free electricity will flow indefinitely, without much, or any maintenance. The units may be hooked together

to provide more wattage, so four of them would provide 10 kilowatts. After some production experience units will be made which output 10 kilowatts each. With a couple of those units a house could get off the electrical grid.

Tom Bearden, one of the inventors has said "I will admit that the chief scientist of an important experimental group in a large company was rather stunned at the type of output we were able to obtain. The MEG may look like just a transformer, but it is not. It is a completely different breed of cat." This cat, it would seem, is out of the bag now.

The ordinary EM waves we are familiar with are called "transverse" waves, to distinguish them from the new "longitudinal" EM waves of the vacuum. Bearden has explained in depth on his website cheniere.org that wherever there is a dipole (battery, generator, magnet) there is an unseen flow of longitudinal EM waves in that local vacuum, the only problem is in tapping that energy and "transducing" it to electricity. Bearden says that the problem with all the electrical circuits we have is that they are two-wire circuits, a loop by which half the energy goes back to destroy the dipole. In the MEG that closed loop is never made. So the dipole is not being destroyed.

Patents are not granted on devices which do not work, so in a sense this announcement proclaims a new era. The MEG device itself proclaims and proves that energy is abundantly available everywhere, for free. We only have to build the devices to tap it. MEG type devices could be put into a car with an electric engine to make a truly fuel-less automobile. Electricity can be available in very remote places. People will be able to get off our very terrorist-vulnerable power grids. In an era of terrorism a highly dispersed power system would be most desirable rather than our centralized systems.

What is somewhat astonishing to me is the discovery by Bearden et. al. that time itself is actually compressed energy, and that this free energy is actually coming from the time domain, the ocean of longitudinal EM waves which fill the empty vacuum of spacetime. In fact, time is energy compressed by the same factor that matter is compressed energy: the speed-of-light squared. Thus there is a new companion to Einstein's $E=mc^2$. Can you say "E equals delta-tee-see-squared?" The "tee" is time and delta-tee is change in time.

A company has been set up to manufacture the MEG called Magnetic Energy Limited.

The ramifications of free energy are enormous. The oil wars are not necessary. If we threw as much money at this technology as we are spending on the oil wars we would be free of the need for oil in less than a decade. With fuel-less cars air pollution will be greatly lessened. Third world nations can raise their standard of living eventually. And the energy is free. And it never runs out.

I have put together a kind of "Bearden for Beginners" article which explains some of the basic concepts of the current state of scalar technology.

http://www.prahlad.org/pub/bearden/scalar_wars.htm

The granting of the MEG patent is the herald of the new era of scalar electromagnetics, and the free energy which flows forever and never runs out.

Bill Morgan
wmorgan@nycap.rr.com

Do the magnets run down after a while?

Further developments: Tom Bearden clears up a question

When the MEG patent was released many questioned the patent language which seemed to imply that permanent magnets of the MEG would "wear out" after awhile. I myself wondered about the same thing so I put the question to Tom, and here is his reply.

Dear Bill,

Thanks for the kind words; much appreciated.

I'm not up to going on radio or TV, and won't be for quite some time. Still suffering from hypoxia, though very slowly improving, and will still be on antibiotics for 10 more months at least (maybe longer).

Obviously an extensive dialog developed between the Patent office and our patent attorneys. As best I can understand it, the Patent office accepts the fact that a permanent magnet produces and emits energy, or has a history of accepting it. They do not appear to be at all cognizant of the broken symmetry of opposite charges, and hence of a dipole. So in their opinion (which seems to be vague), the magnet has to use itself up very gradually, or some such. So some rewrites were essentially required by the Patent office.

All I can say is that a magnet is a very durable thing, so long as you don't heat it up too much or shock it to much. Certainly one will make a good 20 years, and of course there are plenty of magnets that have been around awhile longer.

That said, in our earliest experiments we did "measure" some such effect, or so we thought, until we found that a particular instrument was bad and giving erroneous readings. So with a new instrument, we have not observed since then any such readings.

Out of all that fuzziness came the inclusion of "using up the magnets gradually". So far as we are aware (after correcting those early readings on a defective instrument), we have seen no such measurements or effects since then at all. Nonetheless, just in case there is some very small effect in that respect, at least it's in there.

Actually, as you are aware, capacitors and solid state components are the major concerns for failure, and any system does require maintenance, both periodic and whenever malfunction or failure occurs. The MEG is no different from any other device in that respect, so of course it will have a component failure rate and maintenance required from time to time, just as any other electromagnetic device. But without moving parts, it can be ruggedized and made very durable indeed.

Please give Jeff Rense my regrets, and I do admire his work and his show. He's laying it in there.

The depth of the scientific mindset against $COP > 1.0$ is inexplicable, particularly when physics itself already has $COP > 1.0$ validated experiments (such as Bohren's experiment, which outputs 18 times as much as one inputs by Poynting calculations), and it works every time. Any competent university optics lab can perform the experiment.

Also, even the conventional texts admit that a charged capacitor or electret laid on a permanent magnet, so that the E of the cap or electret and the H of the magnet are at right angles, is a "free energy machine". That silly thing will just sit there and pour out Poynting energy $S = EXH$ indefinitely. Years and years and years. If you wait just a single year, that silly thing has changed the energy density of a volume of space a light year in radius, reaching out well beyond the solar system. Now that's a WHALE of a lot of EM energy that beast poured out in that year, and it will still be going strong and pouring it out at a steady rate. The charges and dipoles in original matter in the universe have been pouring out EM energy in that fashion for some 14 billion years, give or take a billion or so.

It's also easy to see that, prior to Lorentz's ARBITRARY symmetrical regauging of the Maxwell-Heaviside equations, those equations prescribe both EM systems in equilibrium with their active environment, and EM systems not in equilibrium with it. The latter systems are permitted by the thermodynamics of open disequilibrium systems to perform five magic functions: (1) self-order, (2) self-oscillate or self-rotate, (3) output more energy than the operator inputs (the active environment inputs the rest of it), (4) power itself and its load (the active environment inputs all the energy, like a windmill), and (5) exhibit negentropy. That is a well-established thermodynamics. Lorentz arbitrarily discarded all such open disequilibrium EM systems in order to get simpler equations having analytical solutions and not requiring numerical methods. So he simply scrapped all the really interesting and challenging EM systems in Maxwell's theory. ARBITRARILY!

That our scientific establishment continues to teach only that "half" of the theory, and not point out the rest to the young students, and not fund research into developing such systems that take energy from the vacuum, is simply inexplicable. It's a matter of total dogma, not science at all.

But hopefully it is changing a little bit. At least now we cite chapter and verse when these things were done, and what they are, and the young grad students and post docs can go check the papers and make up their own minds.

That is the real hope of the future: that we get a generation of young fellows, with excellent skills, who now know where all the skeletons got hidden in the closet, and understand that the electrical engineering model arbitrarily assumes an inert vacuum environment (falsified for more than a half century in particle physics) and a local flat spacetime (falsified for nearly a century by general relativity).

Once they know that past history, and go read into what broken symmetry of opposite charges means for a dipole and for all dipolar EM circuits, they will set to and change that more than a century of error. In that case,

we shall have numerous solutions to the energy crisis rather quickly, popping up all over.

Good thing. It will certainly displace some great energy barons, but it will also free the populace. One can extract all the EM energy from the vacuum one wishes, anywhere, anytime, with ridiculous ease. One can produce that "electrical wind of energy" at will, by making a simple dipole and then letting it alone. The only energy problem is in how to then intercept some of that energy flow and "catch" it in a circuit, discharge it in a load to power it, and not use half the "caught" energy to kill that dipole that is gushing out the extracted EM energy from the vacuum.

Very best wishes,

Tom Bearden

The Transdimensional's Lifters Experiment

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In June 2001, Transdimensional Technologies has presented the *Lifter1* and *Lifter2* devices. The *Lifter1* device was built with three capacitors joined so as to form a triangle assembly and the *Lifter2* is three time heavier and three time bigger than the *Lifter1*. These devices are able to lift their own weight and they are a "modern version" of the Townsend Brown Electrokinetic Apparatus. The Lifters are using the Biefeld-Brown Effect to generate the main thrust to self levitate. I have already built some similar devices in April 1999, with "EHD Flying Saucer v1.0 ".

In Townsend Brown Electrokinetic Apparatus described in the US Patent N°2949550 filed on Aug 16, 1960 and titled "Elektrokinetic Apparatus" you will find the full description of the main principle used in Lifter devices:

It is therefore an object of my invention to provide an apparatus for converting the energy of an electrical

potential directly into mechanical force suitable for causing relative motion between the system and surrounding medium.

It is another object of this invention to provide a new apparatus for converting electrostatic energy directly into kinetic energy.

It is another object of this invention to provide a vehicle propelled by electrostatic energy without the use of moving parts.

Another goal of my invention is to provide a self- propelled vehicle without moving parts. It is a feature of my invention to provide an apparatus for producing relative motion between structure and surrounding medium. This apparatus includes a pair of electrodes of appropriate form held in fixed spaced relation to each other and immersed in a dielectric medium and oppositely charged.

It is another feature of my invention to provide apparatus which includes a body defining one electrode, another separate electrode supported in fixed spaced relation by said body, and a source of high electrical potential connected between the body and the separate electrode.

(Extract from US Patent N°2949550 filed on Aug 16, 1960 titled "Elektrokinetic Apparatus")

The Lifter v4.0 specificationsThe Lifter v4.0 uses 36 asymmetrical T.T. Brown capacitors joined (called cells) so as to form a hexagonal assembly. Each asymmetrical capacitor is built with one electrode made with a thin corona wire placed at 30 mm from the main rectangular electrode constructed "ala" Townsend Brown.

- Weight : 32 g
- Size: 820x 700 mm and 40 mm high made with a thin aluminium sheet.
- Mounting legs: 30-mm length.
- Main frame: balsa wood 15/10 mm thick and 2 mm wide. The construction of the frame is lighter than the previous versions (half of the lower balsa frame has been removed).
- Power required to compensate the weight : 81.4 Watts (40.5 KV at 2.01 mA)
- Power required for a stable flight above the ground : 132.9 Watts (44 KV at 3.02 mA)

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The Problem of Electron and Physical Properties of Time: To the Electron Technologies of the 21st Century

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*"...it is necessary to periodically subject to the
deepest revision the principles, which were
recognized as final and were no longer discussed".
Louis de Broglie*

Abstract

The results of an approach based on the synthesis of standard quantum electrodynamics and of the ideas of self-organization in physical systems are briefly outlined. The quantum model of electron as an open self-organizing system is constructed, with the physical mechanism of self-organization consisting in the back influence of the own field created by electron on the same electron. The own field is considered as a physical property of electron, intrinsically inherent in electrically charged matter, which is included in the definition of the particle from the very beginning. The own field of electron endows the particle with wave properties and represents a bearer of superluminal signals, which can be used for the creation of qualitatively new communication systems. Because of the inseparable link between space and time, the force in relativistic mechanics is the cause of change not only of the velocity of particle, but also of the course of time along the particle's trajectory. For this reason the flow of time in some area of space depends on the character of physical processes, occurring in it, and, therefore, time can be controlled by slowing down or accelerating its course with the help of material processes. The conclusions of the paper are not in conflict with the special theory of relativity (STR); they are a direct consequence of relativistic equations of motion and represent an

essential development of the generally accepted notions about space and time. At present all the necessary prerequisites are available, both theoretical and technical, for the practical mastering of the own fields of particles and of the physical properties of time.

1. Introduction. The Problem of Electron and Future Outlook

Electrodynamics, what is this? What is its value for man? Electrodynamics is the theory of electromagnetic interaction, one of four interactions existing in nature. Its role in the life of society is seen from the fact that the most part of natural phenomena, which we encounter at every step, is of electromagnetic origin: it is due to the interaction of electromagnetic field with electrically charged particles entering into atoms and molecules. It is fair to say that electromagnetism plays a crucial role in the life of mankind as it determines the ways of technical advance of society [1].

The key problem of quantum electrodynamics is the problem of electron, which can be formulated as follows: to construct from the first principles a non-contradictory model of electron, which takes into account experimental facts, i.e. to find the dynamical equation capable of describing the unique physical properties of electron, its internal structure, its behaviour when it interacts with electromagnetic field.

Electron was discovered a little more than 100 years ago, in 1897. With discovering the electron the revolution in physics began, which has resulted in unprecedented technical advance of society. The summit of development was reached in the middle of the 1950s and then the long period of evolutionary development followed, when new physical principles were used to describe various physical processes and phenomena. The violent development of physics became slower in the 1970s and was replaced by stagnation in the subsequent years. The stagnation in electrodynamics continuing already over a period of several decades is gradually giving place now to a new ascent. The new scientific revolution is starting, which is associated with electron again, much as it happened hundred years ago. The reason is that electron is the most unique particle storing in itself the deepest mysteries of nature and the degree, to which they are disclosed, determines the

technological level of development of society. The gist of the processes taking place in science during the period, when the overwhelming majority of explorers sincerely trusts in the verity and finality of the generally accepted system of views about nature, is expressed well enough by the known historian L. Gumiljev in the following words: "The End and the Beginning again". Those views and conceptions that appear to the majority of specialists as the final truth, as the summit of development, prove to be merely a completion of some stage of development, the beginning of a new, difficult ascension leading to a radical change in the conventional views and conceptions.

An analysis of the newest development of quantum electrodynamics demonstrates that we are on the threshold of revolution in engineering. Already now, when one is at the very beginning of the new ascension, it is possible to indicate with certainty the following trends of development in engineering in the 21st century.

Firstly, there will be created the essentially new means and systems of communication working on superluminal signals whose bearers are the own fields of material bodies. By their physical characteristics – by the speed and range of information transfer, by the capacity to penetrate through obstacles, by their reliability in service - the new communications facilities will be much superior to the now existing ones. As is known, within almost hundred years superluminal signals were tabooed in physics and everyone was confident that such signals cannot exist in nature. The special theory of relativity (STR) imposes a prohibition on the motion of material bodies with the speed exceeding that of light in vacuum, but, as is shown in our papers, does not prohibit superluminal signals whose existence follows directly from the Maxwell equations. It appears, moreover, that superluminal signals are the most important element of structural organization of the world, which provides its stability. At present there are everything required for the practical mastering of the own fields of particles and for the creation of electronic devices and technologies using superluminal signals. The devices and the technologies indicated above will find various applications in many areas of science and engineering and, in particular, in medicine. With their creation the medicine will have an opportunity to investigate in detail the energetical body of a person (energetical shells, biofield, aura). It will give a potent impulse to the development of alternative (nontraditional) medicine as the most effective methods of medical treatment of men.

Secondly, the physical properties of time, whose existence was indicated by N. Kozyrev almost half a century ago, will be used for practical purposes. According to Kozyrev, time is of an active nature, the events not only exist in time, but also take place with its participation. We managed to show that the Kozyrev hypothesis is a direct consequence of relativistic mechanics. The existence of the physical properties of time is manifested in that the course of time in some

material system depends on the nature of physical processes going on in it. This means that the physical properties of time are of dynamical origin. This fact is of considerable importance since it indicates that it is possible, on the one hand, to control the course of time in some area of space with the help of electronic processes and, on the other, to influence the behaviour of a physical system by changing the course of time in it.

In this paper the results of investigations on the problem of electron are briefly outlined carried out by the author and his colleagues for the last years and published in the monograph [2].

2. Self-Organizing Electron

The standard formulation of QED proceeds from the assumption that electron is a structureless point particle. This assumption results in a serious difficulty – the divergence of the self-energy of electron. One more difficulty of the conventional approach is that quantum mechanics is unable to explain stability of the point-like electron. Really, the wave packets, which could have a claim on the role of the wave functions describing the behaviour of a free point-like electron, spread out in time, which contradicts the experimental fact of stability of the particle.

The difficulties mentioned above are very serious. According to Dirac, the difficulties of QED "in view of their fundamental character can be eliminated only by the radical change of the foundations of theory, probably, radical to the same extent as transition from the Bohr orbits theory to modern quantum mechanics" ([3], p.403). "Correct conclusion is that the basic equations are erroneous. They should be changed in such a way that divergences do not appear at all". As an analysis of the problem shows, one should abandon all attempts at using the notion of point-like electron and should take into account that the self-action of electron is the key to constructing a consistent quantum model of the particle.

One of the boldest ideas concerning the physical nature of electron belongs to E. Schrödinger who suggested the historically first physical interpretation of quantum mechanics. According to Schrödinger's hypothesis, the quantity $e|\Psi(\mathbf{r})|^2$ is the density of spatial distribution of electron's charge (e and $\Psi(\mathbf{r})$ are the charge and the wave function of electron, respectively) and thus the dimensions of electron are the same as those of atom [4,5]. However, the attempts to substantiate this interpretation failed and, for this reason, Schrödinger's idea was rejected by the majority of physicists [6].

The interest in Schrödinger's interpretation has been revived during the last few decades in connection with the new approaches to calculation of radiative corrections [7-9]. A. Barut and his collaborators formulated and developed the quantum theory of electromagnetic processes based entirely on the self-

energy picture (the Self-Field QED). As is pointed out by Barut [7], “the correct quantum equation of motion for the radiating electron is not the Dirac or the Schrödinger equation for a bare electron, but an equation containing an additional non-linear self-energy term”.

New lines of approach to the problem of electron are proposed in [2,10-15]. The approach represents a synthesis of conventional quantum electrodynamics and the ideas of the theory of self-organization in physical systems [16]. The physical mechanism of self-organization consists in the back action of the own field created by charged particle upon the same particle. It is described by the model of open system with the wave function belonging to indefinite metric space.

The essence of the approach developed is that the own field of electron is considered as a physical property intrinsically inherent in the particle and, when formulating the theory, the own field is included in the definition of electron from the very beginning. This means that we adopt as zero approximation not a “bare” electron, but an electron capable to create the own field and to “feel” its back influence.

Mathematically, taking into account the back action of the own field created by particle upon the same particle results in the non-linearity of dynamical equation describing the behaviour of electron. Thus, electron becomes a self-organizing system, whose physical properties, geometrical shape, and linear dimensions may be determined in a self-consistent way from solutions of the basic dynamical equation. Electron is a quantum (elementary excitation) of the field of charged matter localized in a bounded region of space and subject to the Coulomb self-action.

Since electron represents a clot of electrically charged matter, creating the long-range Coulomb forces in surroundings, its environment turns into a medium, which can have a determining influence on physical properties of the particle. In view of the long-range character of the Coulomb field, electron becomes **an open system** inseparably bound with the environment. In a sense the whole universe takes part in the formation of electron as a physical system.

The own field responsible for transformation of electron to an open self-organizing physical system can be imagined as a web of electric lines of force emerging from the particle and of magnetic ones enclosing the particle. All the bodies in the Universe are shrouded in the web and as a result the surrounding space and the time as well are endowed with physical properties.

Obviously, to describe electron as an open system one should introduce into quantum mechanics a radically new point, namely: one should replace the model of isolated system described by harmonic oscillator, which is at the heart of modern physics, with the model of open system. It is pertinent to note here that the theory of quantum particles based on the use of the models of

isolated system is, strictly speaking, physically meaningless. Really, any observation conducted on a system represents a process of interaction of the system with the means of observation. In the case of microparticles (quantum particles) this interaction is not weak, and consequently it is inadmissible to neglect it, i.e. the microparticles should be necessarily considered as open systems.

As open system has the richer physical contents in comparison with isolated system, the essentially new mathematical ideas are needed for such a system to be described. To take into account that real electron, being considered as an open system, is inseparably linked with surrounding medium, we should first of all increase the number of dynamical variables describing it. Really, real electron can be imagined as a system consisting of two components: one of them should correspond, in a sense, to the particle alone (to the “bare” particle) and the other to the surrounding medium, in which the particle moves. Therefore, in the simplest model of open system one should double the number of dynamical variables. To each dynamical variable of the “bare” particle there should correspond two dynamical variables, which should be considered as components of the wave function describing the quantum state of particle. Besides, the system under study should be subordinated to a condition for openness expressing the fact that real electron is indissolubly bound to environment and its interaction with environment cannot be weak. The condition for openness can be formulated as follows: the open system should make sense only in the event that there are simultaneously both components – the particle alone and the environment, and these components should be equivalent.

From the action principle, the basic dynamical equation is derived taking into account the relativity principle and describing the self-acting electron as an open self-organizing system [11-15]. By its appearance this equation coincides with the usual Dirac equation for a charged particle in an external field described by 4-potential. However, in reality, it differs essentially from Dirac's equation. The distinction consists in that the equation derived is non-linear and non-local, with the non-locality being of spatial and temporal character.

It should be noted that the potential and vortex components of the 4-potential entering into the dynamical equation differ from each other by their physical nature: the first describes the own field and is expressed in terms of the wave function components of electron, and the second describes the vortex electromagnetic field and is uniquely determined by the electromagnetic field variables. From the formal point of view, the content of the QED formulation developed here is that these two essentially different quantities are integrated into a single 4-vector.

As a detailed analysis shows, solutions to the basic dynamical equation of electron describe the clots of self-acting electrically charged matter, localized in space,

i.e. electron is a soliton. The self-acting electron can be in different quantum states characterized by internal energy, dimensions, and geometric shape. The internal energy spectrum of electron is discrete with an infinitely large number of levels. To each value of internal energy there correspond certain linear dimensions and geometric shape of the region of localization of electron's charge. Dimensions and the number of extrema of wave function increase with increasing the value of internal energy.

The distribution of electric charge of electron in the ground state consists of the range of basic localization with the linear dimensions of the order of Bohr radius a_0 ($a_0 \sim 10^{-10} m$) and of the tail stretching up to infinity. Owing to the non-linearity of the dynamical equation of electron, the wave function does not obey the superposition principle. In virtue of this electron acquires the properties of absolutely rigid body: the perturbation acting on electron at an instant t in the range of basic localization becomes known at the next instant $t + \varepsilon$ ($\varepsilon \rightarrow +0$) at any distance from it.

3. The Own Field of Charged Particle

According to the generally accepted point of view, the velocity of light in vacuum is the greatest possible velocity of transfer of a signal existing in nature. This conclusion was formulated by A. Einstein as a consequence of the special theory of relativity (STR) as follows: "... There is no way of sending the signals which would propagate faster than light in vacuum " (see [17], p. 157). At the same time the astronomical observations conducted by N.A. Kozyrev and others [18-20] have shown that there exists in nature some mechanism of action-at-a-distance of one body on the other resulting in the superluminal transfer of a signal.

An attempt to find in electrodynamics the physical mechanism of superluminal transfer of information is undertaken in [21]. It is noted here that the physical bearer of superluminal signals is the own field of an electrically charged particle. This field is of a dual nature: on the one hand, the own field is governed by the Maxwell equations and consequently it is an electromagnetic field and, on the other, it is created by a charged particle and cannot exist when the particle is absent, i.e. it represents in some sense a constituent part of the particle. It is not surprising that the own field of particle considerably differs by its physical properties from the field of electromagnetic waves: it is of a purely classical character and cannot be reduced to the set of photons. The own field seems to be responsible for the wave properties of particle, which are manifested in experiments on diffraction of electrons. The function of the own field of a charged particle is to transform the environmental space to a physical medium with the properties of an absolutely solid body. One of the physical properties of this medium is that it is capable of transferring a signal, connected with a perturbation occurring at some point of space, instantaneously to arbitrarily large distances.

According to [21,22], the transverse vortex electromagnetic field consists of two components significantly different from each other by their physical characteristics - the electromagnetic waves and the own field of charged particles. To these components of electromagnetic field there correspond two mechanisms of transferring a signal (information): (1) the instantaneous transfer of a signal via the own field of charged particles, representing the standing waves of matter rigidly linked with particles and going from them to infinity or to other particles, the own field being capable of transferring a perturbation both with the speed of light and instantaneously; and (2) the transfer of a signal with the speed of light by means of electromagnetic waves, which are emitted by particles when they move with acceleration and then separate from the particles. It should be stressed that both mechanisms of transferring information mentioned above work simultaneously as though duplicating each other.

The existence of instantaneous signals necessarily follows from both the laws of electrodynamics and the most general considerations. As the own field of electron is inseparable from the particle, electron and its own field should be considered as a single physical system. In view of the long-range character of the own field, this system fills in the whole space. In order for such a system to be stable, a physical mechanism should exist combining its parts into a unit. The instantaneous transfer of information via the potential and vortex components of the own field of electron is, apparently, such a mechanism. By other words, the instantaneous signals are indissolubly related to the processes of self-organization, resulting in formation of the internal structure of charged particles.

To specify the physical mechanism of superluminal transfer of information, let us turn to the quantum theory taking into account self-action. According to [11-15], electron represents a soliton - a clot of electrically charged matter having the physical properties of absolutely solid body (because of the violation of superposition principle). It is a complicated dynamical system consisting of a region of basic localization, with the sizes being of the order of Bohr radius for the ground state of particle, of a tail, extending up to infinity, and of the own field.

The presence of the tail manifests itself in that the charge density of the self-acting electron proves to be distinct from zero (though rather small in magnitude) far outside the region of basic localization of particle. The oscillations of the charge density, occurring in this region, are instantaneously transferred along the tail via the own field of particle to any distances and excite the oscillations of electric and magnetic fields at each point of space. This process ensures that information about a physical event occurring at some point of space can be gained immediately from a measurement conducted at any place of the universe. It should be noted that the effect is absent for a point-like particle.

As is known, the presence of an environment capable of transferring an oscillation from one point of space to the other is a necessary condition for the existence of waves. For electromagnetic waves, such an environment is, apparently, the own field of particle. The latter is similar to the elastic strings that bind electric charges to the environmental medium and endow it with properties of an absolutely solid body. These strings are inseparable from the charged particle, they are not of photon structure and consequently they cannot be destroyed without destroying the particle, with which they are connected. When a charged particle moves with acceleration, a photon field is split out of its own field, the vortex own field of the particle being deformed and losing its axial symmetry.

Generally, the own field of particle contains four components according to the four now known types of interaction - electromagnetic, weak, strong, and gravitational. Each of these components is a classical field linking the particle to the surrounding world via superluminal signals.

The inference about the possibility of superluminal transfer of a signal with the help of self-field of charged particles is in the obvious contradiction with the standard point of view, which for the first time was formulated by A. Einstein as a consequence of the special theory of relativity [17]. A detailed analysis of the problem shows, however, that our conclusion is in agreement with STR. The standard point of view is true only at first sight; it cannot be proved within the framework of STR. As is obvious from the analysis of the superluminal excitation transfer through the own field of particle [21,22], the statement that the transfer of signals with faster-than-light speed is impossible is in essence an additional postulate contradicting Maxwell's equations.

The generally accepted standard proof that superluminal signals cannot exist in nature is erroneous. The fallacy in the proof consists in that the causal relationship between two events is analyzed within the framework of kinematics without using the equations of motion. The causality problem is, however, a problem of dynamics, because the case in point is the transfer of interaction from one event to the other. Hence, it can be solved only by the analysis of solutions of dynamical equations subordinated to proper boundary conditions. Remaining in the framework of kinematics, it is impossible in principle to solve the causality problem. In the generally accepted reasoning relating to superluminal signals, dynamics is not considered at all and consequently the conclusion about impossibility of superluminal signals is not justified.

In [22] the phenomenon of relativity of physical processes caused by superluminal signals is predicted. The heart of the phenomenon is that the points of view of two observers situated in the different inertial frames of reference on an event, occurring at some space-time point, can be essentially different. The effect is a result of peculiarities of the space-time geometry, which are

manifested in the presence of superluminal signals. The phenomenon has its origin in the fact that some space-time barriers can be formed in the 4-dimensional space, which are capable to hide for a while a part of information on physical process.

4. Physical Properties of Time

Time is among the most common concepts, which are used permanently both in science and in everyday life. This is because all events and processes in the world happen in space and develop in time and, hence, the laws that govern space-time connections are the most general and hold for all forms of matter. From the point of view of common sense, time characterizes the duration of events and processes and indicates their natural sequence, at which the present, going away to the past, is replaced by the future.

I. Newton gave a clear-cut characteristic of the concept of time, to which the majority of physicists adheres: "The absolute, true, and mathematical time in itself and by virtue of its nature flows uniformly and regardless to any other object ...". Though, according to Newton, time flows equally and uniformly and does not depend on the processes, occurring in the world, the daily experience favours the opinion that the course of time is not uniform. Depending on circumstances in our history, it seems to us that time either flies swiftly or hangs heavy on our hands; sometimes it even changes by leaps. There are a lot of poetic images indicative of the non-uniform, uneven flowing of time: "the minutes fatal" (A. Pushkin), "the instants of life" (V. Brjusov), and "starry hours of mankind" (S. Zweig). The minutes of inspiration familiar to the people engaged in creative work may also serve as an example of a sudden change in the course of time when the problems, which did not yield to solution for a long time, are suddenly solved in a flash. These are the rare moments of truth exciting and unforgettable. In connection with these speculations the question arises: Whether the subjective sensations of non-uniformity in the course of time familiar to everyone have an objective basis?

In Newtonian mechanics time is of an absolute character, it does not change as one passes from one inertial reference frame to another and represents merely a parameter, the change of which at the will of explorer results in the change of state of a mechanical system in accordance with the equation of motion.

In relativistic mechanics time remains a parameter describing the development of system. Now, however, time and space are intimately linked with each other to form a single whole – the 4-dimensional space-time. In going from one inertial frame of reference to another, time gets entangled with spatial coordinates, so that time in one reference frame represents a "mixture" of time and coordinates in the other. Time ceases to be universal, the same in all inertial reference frames; it takes on a relative character. This circumstance, combined with the conception of physical field, results in the fact that time now gains a new quality, which

was not available in classical mechanics: it becomes a bearer of physical properties. This point, in view of its fundamental importance, deserves some more discussion.

According to the conception of physical field, which was called by Einstein the most important discovery in physics after the times of Newton, if a body generates in surrounding space a force field, the space turns into a physical medium, which is capable to interact directly with other bodies and gains, thus, physical properties, becoming an active participant of physical processes. In view of the fact that space and time are indissolubly related to each other, the presence of a force field in space must necessarily result in the appearance of physical properties of time caused by the motion of a body in this field.

Thus, from the synthesis of the notion of space-time and of the idea of physical field it follows with necessity that the course of time in a given area of space should depend on physical processes in this area, i.e. time, as well as space, should have physical properties.

It should be emphasized that in STR time and spatial coordinates are independent and formally equal in rights quantities, which determine the position of elementary events in space-time. On the other hand, time stands out in relation to spatial coordinates. The special role of time is due, from the viewpoint of geometry, to the pseudoeuclidicity of geometry of the 4-dimensional space. From the physical point of view, it is associated with the dynamical principle (causality principle), according to which the state of motion of a physical system at an instant of time t uniquely defines its behaviour at the following instant of time $t + 0$. The significance of dynamical principle lies in the fact that it relates the temporal evolution of system to the physical processes caused by force fields and in doing so it allows one to determine the course of time in the system, its possible dependence upon the character of physical processes, and not just the sequence of events and their duration.

The idea about the existence of the physical properties of time belongs to N. Kozyrev [18]. By introducing into mechanics an additional parameter taking into account the directivity of the course of time, Kozyrev has formulated the causal (asymmetrical) mechanics, from which it follows that time has physical properties. According to the results of theoretical and experimental investigations conducted by Kozyrev and his followers [18-20,23,24], events can proceed both in time and with the help of time, information being transmitted not only through force fields, but also via a temporal channel. Note that in [23,24] the problem is stated of direct experimental research of the physical properties of time with the purpose to ascertain the relations of a new type between phenomena and discover new methods of changing the state of substance.

With the aim of constructing a rigorous and consistent theory taking into account the possible appearance of the physical properties of time, one should turn to

dynamics. As was noted above, it is the dynamical principle that relates the evolution of a system in time to the action of the force fields. As A.A. Logunov underlines, "if for some form of matter we have the laws of its motion in the form of differential equations, then these equations contain information on the structure of space and time" [25]. Obviously, dynamical equations should contain information not only about geometrical properties of space-time as a whole, but also about physical properties of space and time, taken separately [2,26,27].

According to [26,28], the conclusion that there exist the physical properties of time strictly follows from relativistic mechanics, without introducing any additional hypotheses. The physical properties of time are of purely dynamical nature: their existence is a direct consequence of dynamical principle (principle of causality).

The theory given in [28], which holds only for a point-like particle, can be generalized to arbitrary physical systems, both classical and quantum. One can demonstrate with specific examples that information on the physical properties of time is contained in dynamical equations, with the help of which the course of time in one inertial reference frame can be uniquely determined from the course of time in the other. The spatially-extended systems – the scalar field described by the Klein-Gordon equation, the electron-positron field described by Dirac's equation, and electromagnetic field interacting with electric currents and charges - are investigated in detail [29].

Our main results concerning the physical properties of time can be formulated as follows. The course of time in any physical system considered from the point of view of the inertial reference frames moving relative to each other depends on the nature of material processes taking place in the system. The relation connecting the course of time in one inertial frame to the course of time in the other can be derived from relativistic equations of motion for any kind of matter. One can easily derive also the relation connecting the course of time between different points of space, lying on the trajectory of motion of particle and considered in the same inertial reference frame. Note that the case in point is the local time, i.e. the instants relating to the separate points of three-dimensional space.

As is seen from the results obtained, the notion of time as of an entity given from above, which is independent of natural processes, established in the minds of the majority of explorers, is erroneous. Time plays an active role in physical processes. Its flow depends on the state of motion of physical system. The change in the course of time along the trajectory of motion of particle is conditioned by the force acting on particle in a physical field. Apparently, the change in the course of time, in its turn, by virtue of dynamical equations, exerts back influence on the particle's behaviour. The basic difference of relativistic mechanics from Newtonian mechanics consists not only in that time in Newtonian

mechanics is of an absolute nature, whereas time in STR flows differently in different inertial frames. In relativistic mechanics the force is not only the cause of acceleration of particle in an inertial reference frame, but also the cause of change in the course of time along trajectory. It should be pointed out that the connection between the force and the course of time is due to the existence of the inseparable link between space and time.

Any material system is capable to influence the course of time in that region of space, where it is placed. The ability to change the course of time during the process of motion represents one of the most fundamental properties of physical system, which can be referred to as "the feeling of time". Apparently, "the feeling of time", internally inherent in any form of matter (both particles and fields) by the very nature of things underlies the specific time structure of the material world, whose existence is discussed in [18,23,24].

Thus, the space-time arena, in which physical processes proceed, undergoes continuous changes and deformations as a result of interaction between fields and particles. These deformations, in their turn, can exert some influence on the physical properties of a system. Space and time cease to be passive and become active participants of physical events. The course of time in a certain region of space depends on the character of physical processes occurring in it. The results obtained indicate that the physical properties of time are not preset a priori, they are inevitably created by material systems owing to their movement under the influence of the force fields.

5. Conclusion

The results of the investigations briefly outlined here allow one to gain a more penetrating insight into the true nature of those factors, which operate the world. As electron, the elementary brick of the microworld, is an open self-organizing system, which via the long-range own field is indissolubly related to the whole universe, it is natural to make a conclusion that there works in nature an universal dynamical principle - The Principle of Self-Organization, which can be formulated as follows: any material object represents an open self-organizing system whose internal structures are formed with the participation of the whole universe. Apparently, the Principle of Self-Organization, incorporated in nature as one of the integral properties of matter, is nothing more nor less than a spirit (or absolute idea, or creator) which operates the world and creates all its variety. It seems to be physically meaningless, however, to tear the property mentioned above away from matter and to ascribe to it a self-dependent existence independent of matter: it exists only to the extent to which the matter does.

As is seen from the results received, any physical process with the participation of charged particles is accompanied by emission in the environmental space of superluminal signals, which transfer information

about these processes to the surroundings. Apparently, such an information interchange between material objects provides a possibility of their stable coexistence and is, thus, the most important element of self-organization in the universe.

The ability of electron for self-organization and for information interchange with the surrounding bodies, no matter how far they are spaced, point to the fact that electron is an elementary microsystem possessing the rudiments of reason and all those properties which as a result of the evolution of matter lead to the beginnings of life.

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The Principle of Self-Organization, which can be formulated as follows: any material object represents an open self-organizing system whose internal structures are formed with the participation of the whole universe. Apparently, the Principle of Self-Organization, incorporated in nature as one of the integral properties of matter, is nothing more nor less than a spirit (or absolute idea, or creator) which operates the world and creates all its variety.

Physical Mechanism of Nuclear Reactions at Low Energies

V.P. Oleinik* and Yu.D. Arepjev

*Tell me what the electron is,
and I shall explain to you everything else.*

W. Thomson

Abstract

The physical mechanism of nuclear reactions at low energies caused by spatial extension of electron is considered. Nuclear reactions of this type represent intra-electronic processes, more precisely, the processes occurring inside the area of basic localization of electron. Distinctive characteristics of these processes are defined by interaction of the own field produced by electrically charged matter of electron with free nuclei. Heavy nucleus, appearing inside the area of basic localization of electron, is inevitably deformed because of interaction of protons with the adjoining layers of electronic cloud, which may cause nuclear fission. If two or more light nuclei occur "inside" electron, an attractive force will appear between the nuclei that may result in the fusion of nuclei. The intra-electronic mechanism of nuclear reactions is of a universal character. For its realization it is necessary to have merely a sufficiently intensive stream of free electrons, i.e. heavy electric current, and as long as sufficiently a great number of free nuclei. This mechanism may operate only at small

energies of translational motion of the centers of mass of nuclei and electron. Because of the existence of simple mechanism of nuclear reactions at low energies, nuclear reactor turns out to be an atomic delayed-action bomb, which may blow up by virtue of casual reasons, as it has taken place, apparently, in Chernobyl. **The use of cold nuclear reactions for production of energy will provide mankind with cheap, practically inexhaustible, and non-polluting energy sources.**

Introduction

Nuclear reactions at low energies, occurring in physical and biological systems, and, in particular, the cold fusion (CF) of nuclei, attract ever increasing attention (see review articles [1,2]). This is explained by the fact that research on CF (in what follows, by cold fusion we shall understand any nuclear reactions at low energies) opens up the way to the solution of the problem which was set more than 50 years ago in the field of controlled thermonuclear reactions (CTR) and which has not been solved that is the problem to provide mankind with cheap fuel. An important point is that CF allows to create not only cheap, but also non-polluting energy sources, as nuclear reactions at low energies are not accompanied by radiations dangerous to health (γ -radiations, streams of fast neutrons and other particles). Note that the energetic problem facing mankind is presently of special interest in connection with the fact that, according to expert evaluations, the oil-and-gas resources in the world will suffice only for some decades. For this reason the study of CF is among the most important problems of physics.

Hydrogen Energy

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Editorial: in this work Studennikov and Kudymov develop the problem of hydrogen energy. Their electrical hydrogen generator (EHG) is realized as a prototype of 150 KWt heat power. The authors create an artificial gravitational field by means of rotation. With this they produce cheap hydrogen and electric input is very small. Really, we believe that the authors are modest, because effectiveness of their system is more than 100%. The excessive power produced by their generator is compensated by environmental heat.

Letter to editor

Dear Alexander Frolov!

Thank you for your complimentary estimation of our modest work. You are right we should have more publications. Let's publish our work. Lenin sometimes gave wise thoughts such as "Idea that got the control over people masses, is a material force".

Situation with hydrogen energy in Russia is very inauspicious. To make sure that it is right, let's try to brows for "hydrogen energy" in Alta Vista Internet search system. As a result you will find thousands of websites devoted to this problem. In Russia this problem is worked out only by Kurtchatovsky Institute and our Institute. Energy Department of USA spends 200 millions dollars annually to finance R&D work on this problem. We do all this work on our enthusiasm only. The most interesting fact that now we are in the vanguard of this research. Of course, we are not able to keep our positions for a long time. In this case a critical situation can appear in Russian economy, because it is based on the export of energy resources.

With regard,
Studennikov V.V.

Introduction

It became absolutely evident in the last decade that the further intensive development of modern energetics and transport lead humanity to the large-scale ecological crisis. A rapid reduction of fossil fuel resources on a background of natural annual growth of energy consumption constrains industrially developed countries to extend the system of atomic energy installations. These installations increase the damage of their exploitation in a higher extent. The problem of recycling of radioactive wastes is sharply increasing.

Taking into account this alarming situation, many scientists and experts support the more rapid search of alternative non-traditional energy sources and application of new energy resources in energetics and transport. In particular, they draw attention to hydrogen. Resources of hydrogen in the waters of World Ocean are inexhaustible. Besides, the indisputable advantages of this fuel are the comparative environmental safety of usage, acceptability for heat-engines without any considerable changes in their design, high calorie content, possibility of long-term storage, transportation by existing transport network, non-toxicity, etc. However, the essential problem to get over up to the present day is the problem of diseconomy of its production. More than 600 firms, companies, concerns, university laboratories and social scientific and technical organizations of Western Europe, USA, Australia, Canada and Japan are working hardly to make hydrogen cheaper (see the magazine "Avtomobilny Transport" / "Motor Transport", #4, 1992, p. 38). Successful solution of this problem will revolutionary change all world economy and will improve our environment.

Description

There are numerous known ways to decompose water. They are chemical, thermochemical, electrolysis and others, but all of them have one big shortcoming. A very expensive and high-grade energy is used in the technological process of hydrogen production. In its turn, to produce this energy we should spend the unprofitable fossil fuel (coal, natural gas, oil products) or electrical energy produced on electric power stations. Suffice it to say that during the traditional electrolysis in industrial conditions the electrical energy consumption to produce one cubic meter of hydrogen constitutes 18-21 MJ and total energy consumption (taking into account the production of electrical energy itself) exceeds 50 MJ. It makes hydrogen to be very expensive (about 2\$/m³).

At the same time, our planet literally bathes in the flow of heat energy, produced by the Sun, earth bowels and human activity. The problem is only to introduce this inexhaustible source of free low-grade heat to the industrial technology of hydrogen production. Now the hypothesis is developed and its theoretical scientific validation is given. According to this hypothesis there is a principal possibility to transform the heat of any origin directly to the potential chemical energy by means of water decomposition into hydrogen and oxygen in the solution of electrolyte placed in the strong artificial inertial field. ***Thereby, we can replace the traditional energy in the common energy balance of electrochemical process of water decomposition to the heat of external source and mechanical energy of inertial field.*** This natural physical and chemical phenomenon got the name of ***gravitational electrolysis***. An efficient device, electrical hydrogen generator (EHG) was designed and patented according to RST system (international application RU98/00190 of 07.10.97) to provide this electrolysis.

It is operated by mechanical drive and works with a common temperature in the mode of heat pump. This device absorbs the necessary heat from the environment through its heat exchanger or utilizes the heat wastes of industrial or transport energy installations. In the process of water decomposition the excessive energy applied to the drive of EHG can be transformed into electric energy on 80%. This energy then can be used in external active load. During this process from 20 to 88 energy units of low-grade heat are absorbed for every unit of consumed power. It depends on the given operation mode. This process compensates the negative thermal effect of water decomposition as a chemical reaction. In the generator of one cubic meter of operation volume (for the optimal mode with efficiency of 86-98%) we can produce 3,5 m³ of hydrogen per second together with about 2,2 MJ of direct electric current. Unit heat power of EHG can vary from few tens Watt up to 1000 MWatt dependently of the technical task. Designed specific energy consumption to produce gaseous hydrogen constitutes 14,42 MJ/ m³. Since we use only free heat in this process, the cost of production of 1 cubic meter of hydrogen decreases up to 0,0038\$ and becomes 2,5-3 times cheaper than the total cost of production and transportation of equivalent volume of natural gas.

The wide range of control and nonordinary specific performance of this process allows applying the invention in big and small energetics with a guaranteed success. The application is possible in various kinds of transport, in agriculture, in municipal economy, in chemical, cement, pulp and paper, refrigeration, atomic and space industries, non-ferrous and ferrous metallurgy, for the water desalination, welding fabrication, etc.

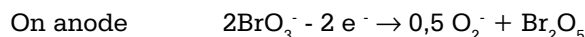
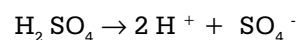
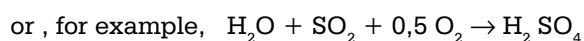
Physical essence of the operating process of EHG is very simple and it is a logical development of the known physical experiments by Tolmen and Stewart made in 1916. It is known that electrolyte dissociate in ions, which are hydrated by molecules of water, during its solution. As a result, hydrated shells of different density are formed around them. Energy of interaction of hydrated unlike ions with each other sharply decreases and becomes closer to the energy of Brownian motion of water molecules (with 18°C $Wk = 3/2 KT = 6 \cdot 10^{-21} J$, where K is Boltzmann constant, T is an absolute temperature). If we place the concentrated solution of dissociated electrolyte having a significant difference of anion and cation masses to the strong artificial gravitational (inertial) field (for example, to rotate it into the EHG reservoir) and the effective rate of rotation for various electrolytes and parameters of the device is 1500-45000 rpm, then ions will begin partly separating.

Heavy ions influence each other with their electrical field and they will move to the periphery of the reservoir. With this their kinetic energy will be close to the energy of heat movement. For example, for the ion BrO₃ having the mass of $m = 21,26 \cdot 10^{-26} kg$ and with the peripheral velocity $V = 330 m/s$ (the inner diameter of the reservoir is 0,14 m, rate of rotation is 45000 rpm), kinetic energy will constitute $W = 0,5mv^2 = 11,57 \cdot 10^{-21} J$. The extreme

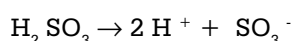
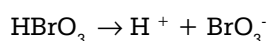
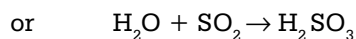
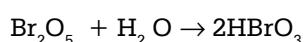
ions will press to the inner surface and will create the spatial concentrated electrical potential. **With this the resulting centrifugal force acting on ions pressed to anode (anions) will destroy their hydrate shells as the weakest ones.** The light ions are less responsive to gravitation and they surrounded with more strong shells. That's why they cannot give their molecules of water to the heavy ions. Due to these circumstances they will concentrate above the heavy ions and in the area of rotation axis (near cathode) forming the electrical potential of the opposite sign. Free electrons in anode will move to cathode under the action of spatial (volumetric) anion charge (it is a known property of Faraday cage). For some minimal (threshold) rate of rotation with given electrolyte, i.e. for some critical value of electrical potentials on electrodes, the balance of charges will be broken. Electrons will leave cathode and will ionize the molecules of hydrated shells, and these shells will pass charges to cations. **In other words, the electric disruption of this electrolytic condenser will take place and discharge of ions will begin. During this process free hydrogen will form on cathode and oxygen and anodic gases (deposit) will form on anode.**

Thus, due to the action of natural principle of energy reversibility, gravitational field will create an electrical field energetically adequate to it, which will overcome the energy of aquation and will provide an electrolysis. This process goes with the absorption of heat through the heat exchanger and it requires a constant dilution with water to get the initial concentration of the solution. Its principal energy scheme in many respects is similar to the scheme of traditional electrolysis, but in this scheme the external expensive electric current is not necessary. The environmental heat or other sources is used here.

Some formulas:



In the near-anodic space the reaction of deposit with hydration water



Here we should note four very essential features of gravitational electrolysis.

First, the work of mechanical inertial field, which is spent to the precipitation of water molecules, light and particular heavy ions, is almost fully returned to the system. It is a kinetic energy of hydrogen, oxygen and anodic gases floating to the axis, because their density is smaller than the density of solution. As a result, the sum of angular momentum of initial and final products of electrolysis becomes close to zero, i.e. mechanical work of EHG drive is consumed mainly against frictional force. The anodic deposit and floated gases react again with water and oxygen to form the initial composition of the solution.

Secondly, intensive self-cooling of the solution provides the condition for the absorption of heat from environment or other sources to compensate the endothermic effect of decomposition reaction of water, i.e. the work in the mode of high-efficiency heat pump. Flora of the Earth have been used heat for hundreds millions years to decompose water and carbonic acid gas for built-up of hydrocarbon biomass. It is known from practice that this process goes in the conditions of full darkness, for example, in old mines, caves, cellars of houses or metro tunnels. Therefore, the spontaneous thermochemical process of transition or transformation of heat to the potential chemical energy is principally possible in nature. The second law of thermodynamics proves this fact and point out the increase of entropy of the system.

Thirdly, it is able to produce direct electrical current on the external load in the case, if the rotation frequency of the reservoir is more than minimal necessary (threshold) one. Then EHG shows the properties of electric generator with voltage-current characteristic of condenser type (voltage on the clamps is in direct proportion to the external load).

Fourthly, EHG simultaneously is an electrical generator of direct current and electrolyzer.

And at last, the use of free heat of environment, heat waists of industrial, energy systems or transport in the process of hydrogen production sharply decrease production cost of this gas. All this features provide incomparable higher efficiency of the gravitational electrolysis, and therefore, higher economy.

Application

The electric hydrogen generator is simple in construction and matches the assembling of various powered propulsion systems of transport, for example, automobile, bus, agricultural implement, diesel locomotive or tractor. It is good in unitizing with all these systems, with heat turbines in particular. Along with the solution of main technical and economic problem, a precondition to create the principally new, more perfect transport in near future is formed. It will be a mass

electric vehicle with big fuel distance, working on the heat-mechanic source of current.

Application of EHG as a utilizer of heat on numerous compressor plants of gas-main pipelines will allow 2-2,5 time increasing of fuel efficiency of turbounits due to the utilization of their heat waists and heat emitting during compression of natural gas to produce hydrogen, which can fill up the consumption of hydrocarbon fuel in 60% and thus provide its tangible saving, i.e. to increase the sales volume without increase of production.

The idea to cool the cargo natural gas up to the minus temperature seems to be promising. It will allow applying the elevator (gas-static) principle of creation of additional excessive pressure in the gas-main (approximately in 6-8%) as well as to increase the throughput capacity and lifetime of the pipeline. Heat extracted from natural gas can be transformed and used to the needs of economic organizations, which are situated along the trace of gas pipeline...

Energy advantages of this method are evident, especially in the mountain conditions of gas pipeline laying. Equipment of drivers of road-building techniques and various self-propelled machines with EHG will 1,7-2 times decrease the consumption of diesel or gaseous fuel. It will entail the decrease of cost of construction work.

Conversion of railway transport to systems with EHG application promises a sharp decrease of exploitation costs on the technical service of electric mains and considerable saving of electric power.

EHG on the sea crafts and riverboats can use the heat of outboard water and it will give a chance to change the atomic energy installation. It will allow increasing the efficient tonnage and ecological safety of vessel exploitation with an actual unlimited autonomy of navigation. Together with this, instead of traditional screw we can use the direct transformation of chemical energy of burnt hydrogen and oxygen to the mechanical kinetic energy of the uniflow water-jet propellers. It will simplify the design of propulsion engine of the vessel. Floating mobile electrogas generator stations can provide big coastal settlements, industrial or agricultural objects with free heat and electrical power. Design value of production of 1 MJ of heat in Russia will constitute 0,00027-0,0004 \$ and production of electrical power will be 0,0008 - 0,0011 \$.

EHG can be applied for aircraft also. In this case heat exchangers additionally should include the onboard condenser of water steam of auxiliary gas turbo-prop engine, which works on pure hydrogen-oxygen mix. It will give a chance to multiple usage of minimal recycle water in the closed circle as well as to adequately provide the vehicle with electric power. Such design will entail the decrease of the flight weight due to decrease of fuel storage, and therefore, will increase the load capacity of aircraft.

EHG on the space stations can replace gyroscopes and traditional solar batteries as well as provide the space jet engines with effective, much more cheaper and safe fuel.

Utilization of excessive heat in coalmines liquidates a sharp problem of coal mining safety. Underground burning of coal remains in unpromising mines and using of the received heat to produce hydrogen fuel and electric power will decide social problems of coal-mining regions.

Various modifications of power range of EHG can be applied in small stationary and mobile energetics, particularly in the field of energy supply of remote settlements, military and industrial objects, expeditions, farms, drying machines, greenhouses, etc. In the last case the perennial gross production of crop production in the regions of cold climate will be possible. The energy source for EHG can be the heat of any reservoirs, industrial and household drains, heat from rubbish burning and organic wastes, inner or outer air (for example, from metro, mines, residential and public constructions), various industrial vapor and gases including those from metallurgy, chemistry and heat-and-power engineering, compost pits in agriculture as well as solar, wind and geothermal energy.

Application of this invention on the acting heat and nuclear power plants will substantially increase their profitability due to the effective use of heat losses.

There is a real possibility of conversion of heat power plants to use hydrogen as a fuel. This hydrogen is produced from the transformation of heat of nearby water reservoirs. In this case the cost of electric power production will 1,5 times decrease. In ferrous metallurgy hydrogen will replace the expensive and scarce coke. It will allow organizing more effective ladle process of steel production, to heat furnaces and apply oxygen, secondary emitted during the reaction of water decomposition, in convectors, but not produce it especially for this purpose. With this, tubes of metallurgical plants will stop to release the hundreds thousands tons of carbonic acid gas to the atmosphere.

This invention is the most interesting one for specialists, which work with the problems of separation of various inorganic materials, for example, with uranium enrichment. The suggested method allows dividing isotopes U235 and U238 continuously, simply and effectively, simultaneously extracting them from the water solution as a metal powder, i.e. to combine these two different processes in one high-performance and compact device.

The simplicity of EHG design to the industrial plants gives a possibility to develop a production run of some the simplest modifications of this generator for needs of small energetics during few months and without any particular technical-organizational efforts and significant investments. Modernization of active freight automobile and bus parks in the country can be the

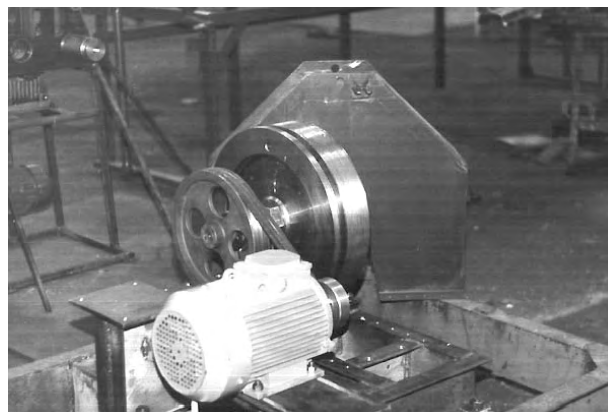
first stage of a large-scale application of the invention on transport. Some more spending and time will be required to develop EHG for other kinds of transport and powerful energy complex. But final qualitative results will be much more higher here. With serial production run of the generator in specific Russian conditions the cost of production of this device is evaluated to be 25-28\$/KWt of heat power. The estimated profitability of investment into the mastering of innovation constitutes more than 100% with the payback period of less then 1,5 years. The annual economic effect of application of the generator constitutes of about 87 \$/KWt of its heat power.

Prototype

You can address the authors for the detailed scientific and technical validation of operation process of gravitational electrolysis, comments and references of scientific institutions as well as design documentation and see the prototype of the generator.

Main features of the prototype of electrical hydrogen generator.

1. Rotation frequency of the rotor, rpm	13000
2. Electrical drive capacity, kWatt	5
3. Productivity on hydrogen, liter per second	12,3
4. Heat power, kWatt	150
5. Mass, kg	143



Editorial: below there is an information on interesting organizing aspects in the deal of development of the "Gravitational Electrolysis" technology.

On January, 2002 Mr. Studennikov presented a press release about GenOil Inc. He claimed that deal between Hydrogen Solutions Inc. and GenOil Inc was illegal. The new company Hydrogen Solution Inc. was created without participation of Dr. Studennikov who was one of principal co-authors of the technology. This fact violates author's rights, which officially belong to EHG Technology L.L.C. (co-owners are Mr. Studennikov and Mr. Kudimov).

Dr. Studennikov has an intention to appeal against Hydrogen Solutions Inc.