

New Aerospace Technologies



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This interesting book presents various ways to create the movement of bodies, i.e. changes of position of an object in space - time. The principles of active (non-reactive) propulsion drives are described in the book. New methods do not require reactive mass ejection outside the vehicle. I hope that our reader will have the patience to consider examples of mechanical systems, which are shown at the beginning of the book, so that later they will see analogs when considering electromagnetic propulsion systems of a new type. In both cases, mechanical or electromagnetic technologies, you will see Aether density gradient as reason of the propulsion force.

In the book we'll consider electric propulsion (it is not ionization wind method) and some antigravitation experiments.

Here is presented original four-dimensional (4-D) theory to disclose chroral force technology. This 4-D force can be used for practical needs to accelerate or decelerate any processes in some area of space. In other words, this technology allow us to change rate (or speed) of existence of particles of matter in this area of space. Experiments of the author prove his theory that is based on understanding of *time rate as function of volumetric energy density in some area of space*. It is also new aerospace technology. Propulsion force here is result of Aether pressure gradient. This force is base of new transport technology named as “warp drive” in English literature. Interesting aspect is 4-D resonances of natural elements, described by the author as novelty and discovery. Calculations are presented in the book. The resonance effects in space-time are important part of teleportation technology, so some aspects of teleportation are considered here.

Important calculations on “light speed” value are based on original work of the author. It was demonstrated with great mathematical accuracy the “light speed” is integer number that is confirmation of discrete quantum nature of our space-time structure. It is important tool for any space-time engineering calculations.

The book is intended for engineering specialists and a wide range of readers interested to design a new type of aerospace propulsion system. Constructive information is given to the reader for experimental verification, since the initial information on this topic, in some cases, does not have an official reliable confirmation.

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There is only one true law - one that helps to become free.

Richard Bach

"Jonathan Livingston Seagull"

Foreword

Movement is a change in the location of an object, a process that occurs both in space and in time. We exist in motion, due to the fact that we are on the surface of a planet flying in space around the Sun, and together with it in the Galaxy. On the other hand, each particle of matter of material objects is an Aether-dynamic process, a more or less stable vortex flow of a moving Aether medium, and in addition, there is a process of changing the density of the Aether medium in space (energy density). Thus, in the real world there is nothing stationary, all objects are in motion, as well as in the process of changing the energy density of the object's space.

We notice movement as a change in the location of a position, or another change in the parameters of the process of the existence of matter. The process of movement and development cannot stop as long as matter exists. This is the process of the existence of matter in time. From this point of view, we will consider ways of creating driving force acting on the body, not forgetting that all material objects consist of microparticles, of Aether processes. Speaking about the movement of bodies, it is necessary to understand that in this case, one way or another, a complex of particles of matter begins to move, existing under certain conditions in the area of space that they occupy.

The practical application of the motion process is to move an object from one point in space to another, if possible, with the minimum amount of time. The process of movement usually occurs with a certain speed, but, like any other phenomenon, it has two "limiting cases": in one of them, the body instantly changes its location in space, and in the second case, the body instantly changes its position on the time axis. The first case refers to teleportation, and the second - to travel in time, without changing the position in space. We will consider various directions in the development of technologies for moving in space and time, including these two limiting cases.

The usual methods of movement are well known to us, the main one being reactive. The pedestrian pushes off the support with his feet, the car pushes off the support when the wheel rotates, and at the same time, the support is pushed back, and the vehicle receives a reactive impulse, and moves forward. The boat can be propelled by oars, a water cannon or a propeller, pushing back the water, creating a reactive effect. With this method, the law of conservation of momentum is strictly fulfilled, which is well known to all of us: as a result of reactive interaction, each of the bodies receives the same momentum, which is equal to the product of mass and velocity, for each of the two interacting bodies. Rocket propellers, propeller driven or turbojet aircraft, and other equipment operate in strict accordance with this law of conservation of momentum.

The acceleration of an aircraft, for example, a rocket, depends on how much, and at what speed, fuel is thrown out through the rocket nozzle into the external environment. Note that, to create a driving force, any jet apparatus expends energy to impart accelerated motion to the jet mass.

At the same time, the fuel ejected into the external environment increases the kinetic energy of the molecules of the environment, ultimately increasing the ambient temperature, heating it. In this case, we can say that an increase in thermal energy, the kinetic energy of molecules of the environment, is equivalent to an increase in the kinetic energy of an aircraft, or other moving body using the reactive principle. This is the manifestation of the law of conservation of momentum and energy.

There are other well-known methods similar to the reactive principle. These methods also work in strict accordance with the law of conservation of momentum, but in the opposite direction, namely, by reducing the thermal energy of the environment. For example, a sailboat is set in motion differently from a boat or a boat: it slows down the moving flow of the medium (air) with its sail, which changes (decreases), the kinetic energy of the flow of environmental particles, in order to increase the speed (kinetic energy) of the sailboat.

Since the term “reactive” means “opposing”, the principle opposite to the reactive one can be called “active”, that is “acting”. In jet propulsion, force acting on a vehicle is created in response to an increase in environmental energy. Jet propellers require a source of energy for their work. In active propulsion systems, the acting force is created by absorbing energy from the environment. Due to this property, active drive can serve as sources of energy during their work.

In the chapter on nanotechnology, we will consider a method that allows you to create a driving force without the cost of fuel, due to a special surface relief of the nanomaterial, which ensures the selection of the kinetic energy of air molecules or other environment. This material is named "power active material". The presence of wind, in this case, does not matter, since at a scale of about 100 nanometers, we can say that "there is always wind". Air molecules, at normal atmospheric pressure and room temperature, randomly move at a speed of 500 meters per second, but each of them moves in a straight line, without collisions, only in small sections of its trajectory, about 50-100 nanometers long. This movement can be used to create, by means of modern nanotechnology, a special ordered surface nanorelief.

So, the principles of creating a driving force for accelerating a vehicle known to us work by interacting with the environment, in accordance with the laws of conservation of momentum and energy, and there is no other way. Separately, it can be noted that the implementation of these laws does not require the release of the jet mass outside the vehicle body, including in rocket and space technology. There are known technical solutions that make it possible to obtain a reactive macro impulse acting on the vehicle body when the combustion fuel is ejected from the nozzle into a kind of "muffler" located inside the vehicle body. In this "muffler", micro-impulses of particles of the jet fuel jet lose their kinetic energy, and it passes into the environment in the form of thermal radiation. With this method of creating a driving force, the cooled working reactive mass of the substance can be returned to the combustion chamber, where it will be used in new cycles of "heating - exhaust - cooling - return". It is “closed loop” systems.

Considering movement in the air, in water or on the surface of a support (road), we can describe almost all the designs of vehicle propulsion drives known to us. All of them are reactive or active propulsion drives. The so-called inertial drivers are no exception - devices that use the property of bodies to create a driving force, which we usually call "inertial mass". In the chapter on inertial drives, we will consider the physical mechanism of inertia, during the accelerated motion of bodies, and the options for its practical use, from the point of view of the Aether theory.

Apart from active and reactive methods, it makes sense to show such methods of creating a driving (lifting) force, which are due to the pressure gradient of the medium. The pressure drop causes the balloon to rise upward. The theory of aeronautics is simple: the environment has a density gradient, and since the density of the medium inside the ball is less than outside, the ambient pressure displaces the ball upward. Likewise, the force of Archimedes causes bodies of lower density to float than water. The pressure gradient in the medium, in these cases, creates the planet's gravitational field. For this reason, these forces act in a vertical direction.

The difference in pressure of the medium also arises during the relative motion of the wing, which has a Zhukovsky - Chaplygin profile, and the environment, which

creates lifting force acting on the wing from the side of the medium. The pressure gradient of the medium works in a similar way in the well-known "Magnus effect", which will be discussed in a separate chapter. Forces of this nature can be directed in any direction, which favorably distinguishes this method from the methods of aeronautics.

Physics, like all natural science, is an attempt to study and understand how our world is designed by the Creator. Much has been said in theology about the threefold nature of all things. Using the method of analogies between phenomena in three physical environments, passing from hydrodynamics and aerodynamics to Aether dynamics, we can keep the terminology and talk about Aether of different temperatures, different density, which determines a certain static pressure.

As in gas dynamics, in Aether dynamics it is also convenient to use the concept of "dynamic pressure", which also depends on the flow velocity. Assuming that Bernoulli's law of total pressure is fulfilled in Aether dynamics, we have the opportunity to design technical devices - drive that work not in air or water, but in a vacuum (in an Aether medium). With this approach, we can move from aeronautics to Aether-devices.

The designs of Aether-exchange propulsion drives can use electric forces, magnetic phenomena, as well as the fact that the speed of propagation of electromagnetic waves is not infinitely large. This allows you to get a driving force due to electrical and electromagnetic interactions, since they do not occur in an empty place, but in an Aether medium with known physical properties.

Analogs of the Magnus effect, for the case of the Aether medium, belong to the field of electrodynamics. We will consider several methods of creating a driving force, by changing the density of the Aether in a certain volume of space, and thus creating a pressure gradient of the medium on the Aether propulsion drive.

In the final chapters of this book, we will cover the basics of Chrono-dynamics. This is a new area of physics that studies the phenomena associated with changes in the choral (temporal) parameters of objects, that is, such parameters as the rate of existence of an object. This is the speed of Aether-dynamic processes, as a result of which atoms and all other particles of matter are created. This speed is perceived by us as the speed of the passage of time. It is a relative concept: it makes sense to consider the acceleration or deceleration of the rate of existence of a single material object in relation to the natural rate of existence of objects in near-earth space - time.

In a separate chapter devoted to four-dimensional resonances, it will be shown how the physical parameters of particles of the microcosm and elements of living nature, in particular, DNA molecules, are set by the parameters (sizes) of the planet. This is important for developing an understanding of the processes of existence of matter particles on other planets, as well as for applied aspects, for example, creating conditions for the stabilization of radioactive isotopes, which is achieved by changing the density of the Aether environment.

An increase or decrease in the speed of existence of matter, that is, "the speed of motion in time", can be considered by analogy with the motion of bodies in space. With this approach, it is convenient to use the concept of "chronomotive force", which plays the same role as the electromotive force in electrodynamics for electrically charged particles. The field of action of the force in the area of the gradient of the choral potential, we can call the "choral field" in which the "chronally charged body" moves. In general, the terminology follows from analogies with electrodynamics. The potential gradient creates a driving force in a given direction.

The main conclusion from this analogy is that we can plan experiments on "choral induction": the movement of the "choral charge" generates a field, and the change in the current density of the "choral charge" in the "generator choral circuit"

should induce "chronal currents" in receiving circuits. For constructive ideas on the nature of the "chronal charge", we will consider the works of Kozyrev, Veinik and other famous authors.

At present, it is possible to assume several technically feasible experimental methods for creating a chrono-propulsion force, a chronofield and a controlled change in the chronal parameters of individual objects. These methods, by analogy with reactive methods, as well as with aeronautics, use the concept of an Aether medium that has real physical properties that we can purposefully change to accelerate or decelerate the movement of an object in time.

Thus, moving on to the question of the "time machine", we have to understand not only the possible principles of realizing this dream of mankind, but also its technical characteristics as a promising vehicle. However, practically valuable, in the modern world, may be such an applied aspect of chronal technologies as the possibility of stabilizing radioactive particles, with a small expenditure of energy, and over a large area. In a separate chapter of the book, we will discuss experiments on changing the speed of time, which the author conducted in 2003 together with Dr. Vadim A. Chernobrov.

Considering the range of technologies mentioned above, from well-known to fantastic, we can conclude that, at this stage in the development of our civilization, it makes sense to concentrate the efforts of developers in the field of designing vehicles of a new type, using such active propulsion drives that do not require fuel to create a driving force. All modern space programs are severely constrained because they use the generally accepted but long outdated concept of a jet propellant.

New technologies provide undeniable technological advantages in the field of space, air, land and sea transportation, reducing costs and increasing the range of transportation without limit. These are huge sales markets that are growing, taking into account the plans of aerospace companies for the exploration of near space in 2020 - 2030. The use of new technologies will make it possible to reduce the cost of putting cargo into orbit tenfold.

Reactive principle in a closed system

Let us ask ourselves a simple question: there are billions of people, cars, etc. on our planet constantly in motion. All of them move by a reactive method, pushing off from the surface of the planet. Each of us moves along the road in some direction, imparting a corresponding impulse to the planet in the opposite direction. Does the total sum impulse affect the planet's rotation rate? The answer is obvious: no, it doesn't. The vectors of the forces of the planet's reaction to the actions of individuals, machines, etc. are not ordered, therefore, in the planet's frame of reference, the total reactive impulse in response to a set of chaotically directed impulses is equal to zero.

This situation can be reproduced in a technical device that allows you to create a new type of jet vehicles that require a source of energy (heat), but do not consume the propellant (working jet mass). Consider the circuit shown in Fig. 1.

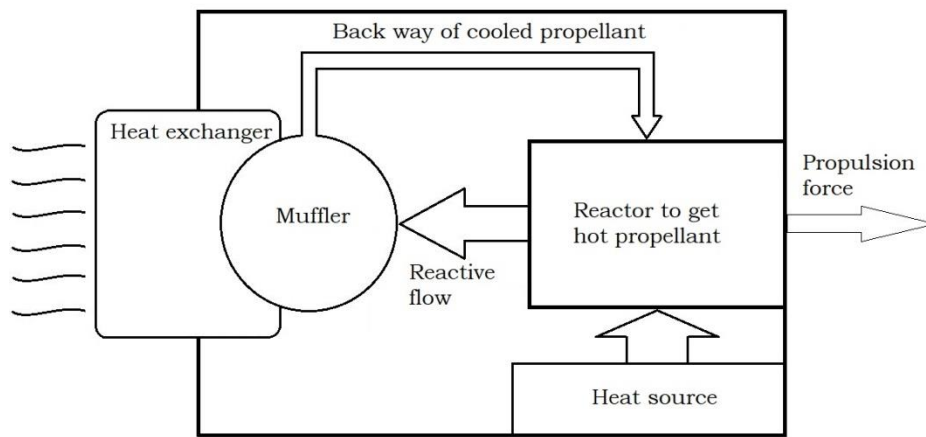


Fig. 1. Closed-loop propulsion device

In this design, there must be a reactor (combustion chamber), in which the working mass is heated by a heat source, expands, presses on the walls of the reactor, and flies out through the nozzle. The automatic control system must ensure the regulation of the pressure inside the reactor, supplying it with the cooled working substance, in the required amount, and regulating the supply of thermal energy from the heat source.

Obviously, the reactive flow of the mass of matter, ejected from the reactor through the nozzle backward, will impart a forward impulse to the entire propulsion body, which will ensure the accelerated movement of the entire vehicle in the desired direction. Unlike conventional jet propellers, it is proposed to direct the jet flow not into the environment, but into a special "muffler", in which the particles of the working mass lose their kinetic energy, giving off heat through the heat exchanger to the environment. Further, using a forced circulation system, the cooled working mass must be returned to the reactor.

The substance used as a reactive working mass should not change its chemical properties upon repeated heating and cooling. This substance is not a combustible fuel, which is used once, changes its chemical characteristics, and is released into the environment. The working substance of a closed-loop reactive cycle is required to rapidly and significantly expand in volume when heated, with minimal expenditure of thermal energy, which will create a powerful reactive flow with high kinetic energy.

It is also desirable that the particles of the working substance have a large mass, since the momentum of a particle is the product of its mass and velocity.

Ancient Aryan manuscripts mention flying machines using mercury in a closed cycle: they called them "Vimana". Modern technologists will be able to select other substances, besides mercury, which are advisable to use in such heating-cooling cycles, moreover, with a large coefficient of volumetric expansion during heating and a large atomic mass of particles. Perhaps these will be metal alloys.

This device, Fig. 1, was first discussed in 1996 [1] in my report at the international conference "New Ideas in Natural Science", St. Petersburg. The device was named "entropy propulsion device" because it creates an entropy gradient during reactive interaction: for a part of the impulse that is transmitted to the propulsion body, it is necessary to provide a minimum of entropy; its impulse is unidirectional vector. On the other hand, for the reactive flow of the working mass, due to the special design of the "muffler", the task is to obtain the maximum entropy by directing the impulses of the particles of the working mass chaotically in different directions. I hope the reader understands the analogy with the previously considered example of the transfer of

reactive impulses to the planet from many objects that chaotically move along the surface of the planet, pushing off from it. In general, the vectorial sum of these chaotic impulses is approximately zero.

The disadvantage of the proposed propulsion drive design is the need for a separate heat source that heats the working mass. In conventional jet systems, the fuel itself burns, combining the functions of a working jet mass and a heat source. However, the undoubted advantage of reactive systems of a closed cycle of the working mass is the possibility of long-term operation, practically unlimited, provided that the working mass is fully returned to the reactor (combustion chamber) and the heat source is operational.

For space technology, these functions are very essential, and if the heat source can be recharged from solar panels, then the flight duration becomes unlimited. For powerful propulsion drives, the source of heat can be a nuclear or thermonuclear reactor, with a reserve of resources for tens of years.

Obviously, such propulsion devices can find application in the submarine fleet, since they do not create noise, although they leave a heat trail behind them.

We discussed this topic, privately, with Academician Vladimir Ivanovich Zubov in 1994-1999. He highly appreciated the idea itself, did not doubt its theoretical basis, and expressed interest in applied research. However, then we were unable to create a working group in the RAS. Perhaps such projects are underway in laboratories in different countries, and I would like to raise this topic again in Russia.

Consider another example of a closed-loop jet propulsion system. Viktor Schauburger, back in 1930, designed his famous autonomous self-rotating generator, in such a way that he created two processes: the rotation of the rotor, which was transmitted to the electric generator, and the axial driving (lifting) force. They are interconnected, according to the well-known rule, "forces arise in pairs." Usually, this design is considered as an energy generator, but we are interested in another aspect of this development.

This generator provided electricity to the inventor's house during several years. The internal structure of the generator can be seen on a model that is kept in the Schauburger Museum in Austria. In the upper part of the rotor, the inlet openings of the spiral tubes are visible, through which a mixture of air and water is fed into the rotor. The rotation of the rotor, through a pulley, is transmitted to a reversible motor - generator. When the rotor accelerates, the motor is powered by batteries, and then, it becomes a generator, and provides electricity to the payload.

In 2010 - 2011, in my company Faraday LLC, Tula, a similar drive design was developed, with a design power of 20 kW, Fig. 2. Calculations are made in the form of a Research Report [2]. A complete set of design documentation was also developed, since it was planned to manufacture this self-rotating drive at one of the Ural machine-building enterprises. In Fig. 2 shows a diagram of an experimental setup with a horizontal rotor axis.

Note that the diagram shows only two spiral rotor tubes, although in a real design there are more of them. The generator is connected to the left side of the rotor shaft.

Here you can see obvious analogies with idea of closed-loop device Fig.1. In this project, the ways of converting low-potential thermal energy of the environment were found, using an elastic working body (a mixture of water and air). One of the tasks of the project was to create a methodology for calculating structural elements, since the self-sustaining process of rotor rotation, like vortex natural processes, can be theoretically modeled and reproduced.

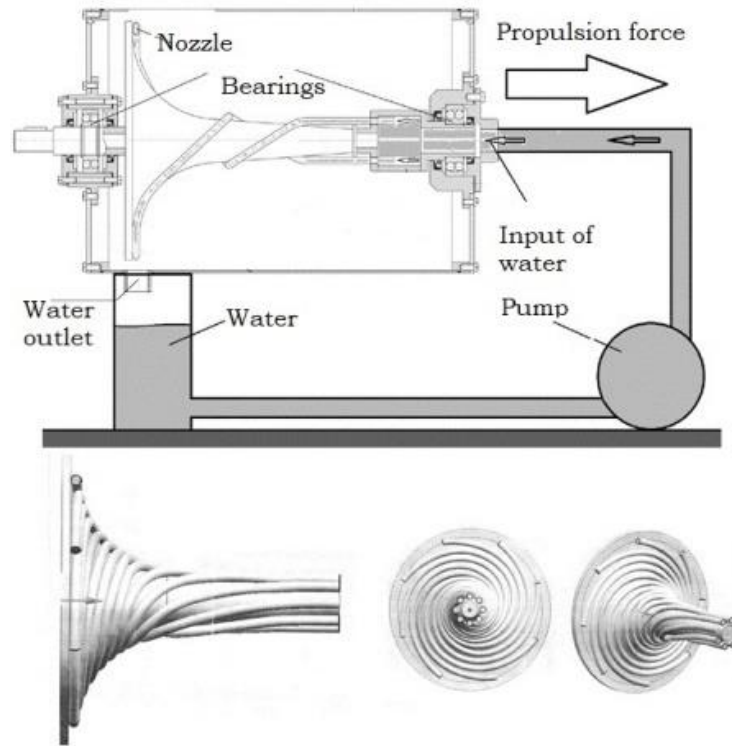


Fig. 2. Frolov's generator by Schauberger scheme.

The main task of this project was to obtain an autonomous energy source, which is, the rotor should go into self-rotation mode, and ensure the rotation of the electric generator. In addition, this design uses a technical solution that allows you to create not only rotation, but also a driving force directed along the axis of rotation of the rotor.

The movement of the working mass occurs linearly along the axis of rotation. The flow of the working mass has a certain impulse equal to the product of its mass by the speed of movement. The body of this device, in this case, receives the same reactive impulse, but in the direction opposite to the movement of the working mass. Similarly, in the Schauberger generator, the entry of a mixture of water and air occurs from top to bottom, along the axis, and the body of the device as a whole receives an impulse directed from bottom to top.

Further, pay attention to the fact that the outlet of the working substance through the nozzles of the rotor tubes occurs in the plane of rotation of the rotor, that is, perpendicular to the axis of rotation. The vectors of impulses of the particles of the working substance flow, forming the reactive flows of each of the rotor tubes, are directed in the plane of rotation, tangentially, which will allow the rotor to spin, and their projection on the axis of rotation is zero, and does not create a reaction on the housing along the axis of rotation of the rotor.

The impulse conservation law, in this design, can be presented as follows: the impulse received by the device body as a whole, in modulus, is equal to the total impulse of the reactive flows of the working substance flowing out of the rotor tubes. The change in the trajectory of movement of the mass of the working substance occurs due to the helical shape of the rotor tubes, therefore, the torque on the shaft of the electric generator and the driving force applied to the generator housing along the axis of rotation of the rotor will always be equivalent, in accordance with the law of conservation of momentum.

Of course, some of the energy will be lost in friction, and will pass into the environment in the form of heat. Power generators using the Schauberger circuit are

operational only if they create a driving force along the axis of rotation, paired with an equivalent rotor torque.

In another scheme of the Schauberger generator, a similar method is used: the motor spins the rotor, then a self-rotation mode is created, in which water is sucked from below along the rotor axis into the vacuum region, then enters the helical tubes, the nozzles of which are tangentially located in the plane of rotation of the rotor.

When the required rotation speed is reached, the power supply to the electric motor can be turned off, since this centrifugal machine becomes an autonomous generator of electricity. The peculiarity of this design is that the radial rotor tubes are in the form of helical spirals. Due to the special shape, the water not only moves radially, but also the water rotates around the axis of the tube. This method was patented by Schauberger [3] as a way to reduce hydraulic losses. Indeed, with the helical movement of water particles through the tube, they do not slide, but roll along the inner surface of the tube. Rolling friction is much less than sliding friction, it is a well-known method that works in bearings.

So, in the Schauberger generator, a reactive driving force acts on the body of the entire machine, directed along the axis of rotation, and its value corresponds to the force that provides the rotor torque. Other similar solutions are known: the input of the reactive working mass is organized along the axis of rotation of the rotor, and its output is in the plane of rotation of the rotor, that is, perpendicular to the axis of rotation of the rotor.

So, the Schauberger principle allows you to get a pair of forces: torque, and driving force acting on the body of the device as a whole. With this scheme, the working substance is not emitted into the external environment, but is used in a closed cycle. With a comparative analysis of the idea shown in Fig. 1 and the Schauberger principle, one can conclude that the second solution is very promising. Instead of absorbing the energy of a linear reactive impulse by a "muffler", Schauberger machines use its transformation into torque. In the event that this torque is not required, it can be eliminated by placing several power plants on one platform, in pairs of opposite rotation.

In 1996 I have meeting with some people of German research team to discuss their experiments on the topic. Their device includes two disks, on the surface of which spiral grooves are made (as on gramophone records), Fig.3.

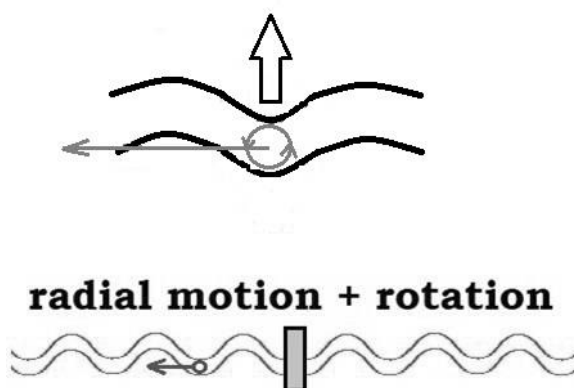


Fig.3. Development of Schauberger's "repulsin". German version of 1996.

The pitch of the spirals is slightly different from each other. One disc is spinning. In the gap between the disks there are spiral grooves, water or a special gel moves radially. Centrifugal force squeezes the liquid out to the periphery. It is important to take into account that the fluid particles rotate and move linearly radially, therefore, different fluid pressures are created on the upper disk and on the lower disk (it is Magnus effect).

This pressure gradient is the cause of the axial lifting force in this design. This is slightly different from Schauberger's discs, which are known as "Repulsin device".

Thus, taking into account the simplicity of Schauberger's scheme, and the history of its development since 1930, it can be assumed that the use of rocket technology for space exploration in the modern world is part of the mass misinformation of mankind about our real capabilities. Next, we will move on to considering other simple, workable designs of a new type of propulsion device, which will give readers additional facts and allow them to draw conclusions. In fact, we are being deceived into believing that there is no alternative to rocketry.

Wing in a closed stream

Consider a simple wing with a Zhukovsky - Chaplygin profile, which was first proposed in 1910. Prior to this invention, aircraft wings were flat and lift was generated by the angle of inclination of the wing, that is, due to the reactive reflection of the incoming air stream. The lifting force of a wing with a Zhukovsky - Chaplygin profile is due to the difference in the pressure of the medium on the wing from above and below, since the pressure depends on the relative velocity of the wing and the medium. In Fig. 4 shows that the upper surface of the wing is flowed around by the air medium along a longer path than the lower one.

The air flow tends to maintain its integrity, therefore, its velocity relative to the upper convex surface of the wing is higher than the relative velocity along the flat bottom surface of the wing. Speed and pressure are linked. The difference in the pressure of the medium on the wing (gradient) raises the wing up (displaces it towards the lower pressure of the medium).

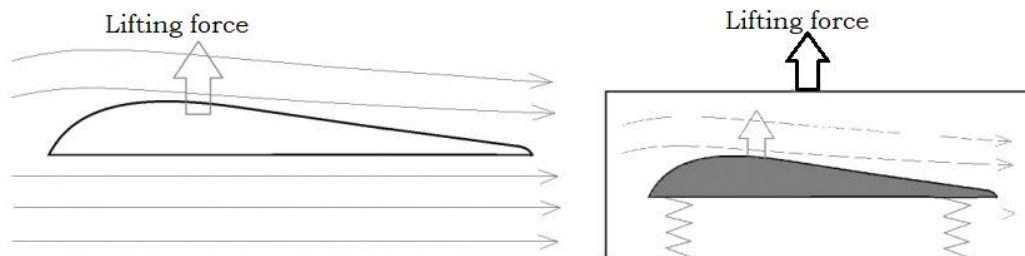


Fig. 4. Lifting force for wing profile.

It does not matter whether the wing is moving in the medium, or the flow of the medium (air, water, etc.) flows around the wing. This system is not reactive; therefore, its application in closed-cycle propulsion systems seems to be very promising. In Fig. 3 (right) shows that a wing mounted inside a wind tunnel on elastic shock absorbers demonstrates the presence of a lifting force when the pipe is blown. In this case, a vertical force acts on the entire pipe body.

Suppose that we have created a circulating flow of a medium (gas or liquid) in a closed body, similar to a donut (toroid). We put several wings inside the flow, radially, as shown in Fig. 5.

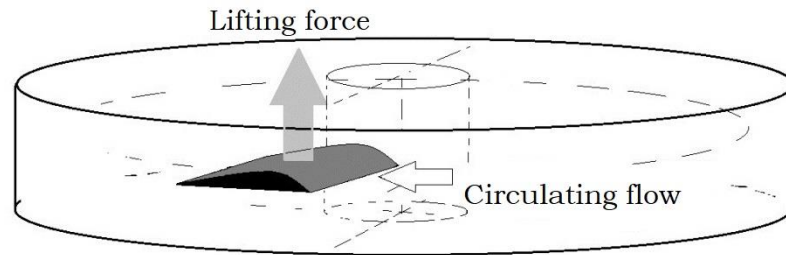


Fig. 5. Radial wing in flow of circulating air (water)

We will get a simple solution that can be tested experimentally and have prospects for implementation in aerospace engineering. There are some technical problems, but they are being solved. For example, passing in the area of the wing, the linear flow of the medium changes, and turbulences appear in it. To equalize the flow, flat or tubular elements (laminators) must be installed behind the wing.

The magnitude of the lift depends on the speed of the flow relative to the wing. The amount of force can be adjusted. Of course, slowing down or accelerating the circulating flow of the medium will require the consumption of energy from the pump, fan or other drive for the movement of the flow of the medium.

Further, we will consider a similar perspective scheme, which is more economical from the point of view of energy than a wing located in a closed circulating medium flow.

Magnus effect and Lorenz force

Similar to the Zhukovsky - Chaplygin wing, the Magnus force arises due to the pressure difference between the flows of the medium on the surface of the rotating cylinder. This effect was discovered by the German scientist H. G. Magnus in 1852. Figure 6 shows a diagram of the addition of the vectors of the flow velocities of the medium and the surface of a rotating cylinder.

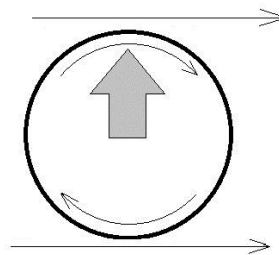


Fig. 6. Magnus effect for a rotating cylinder.

In the upper part of the cylinder (end view), the direction of the flow of the medium and the surfaces of the rotating cylinder coincide, and in the lower part of the cylinder, its surface moves towards the flow of the medium. Since the flow in the lower part of the rotating cylinder is decelerated by its surface moving against the flow, the dynamic pressure of the flow decreases, and the static pressure of the medium on the surface increases, in accordance with Bernoulli's law of total flow pressure. As a result, the pressure of the medium on the top of the rotating cylinder becomes less than on the bottom of the cylinder. A lift arises, as in the effect of a wing with a Zhukovsky - Chaplygin profile.

The Magnus effect is well known to football and tennis players, who use it to create a curved path in a swirling ball. In a "twisted hit", the ball does not fly in a

straight line if it rotates around its axis. In flight, an air stream runs on it, which creates the Magnus effect, and the flight path is curved. As a result of such a blow, the ball flies in a curve, and does not go where it is expected...

Suppose that we have constructed a closed flow of a moving medium (air, water, etc.), in which several rotating cylinders are placed radially, as shown in Fig. 7. Let's assume that the rotation of each cylinder is provided by an independent electric drive with adjustable speed and direction of rotation.

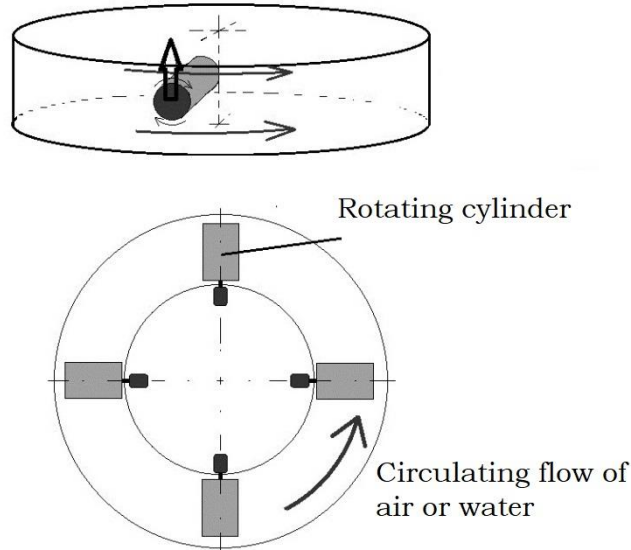


Fig. 7. Propulsion drive based on the Magnus effect.

In contrast to the design with a wing installed in the flow of a moving medium shown in Fig. 5, this scheme has an important advantage: the magnitude and direction of the axial lifting force can be changed by changing the magnitude of the speed and direction of rotation of the cylinders. The speed and direction of the circulating flow can be constant, which gives significant advantages in terms of speed and maneuverability of the vehicle. The propulsion unit of this type can be installed vertically or horizontally, creating a thrust force.

An interesting analogy to the Magnus effect arises when considering the electromagnetic phenomenon known as the Lorentz force. We know that a force acts on a conductor with a current in a magnetic field, in the direction shown in Fig. 8. The reason for the appearance of this force, previously there was no unambiguous explanation. Assuming analogies with the Magnus effect, one can interpret the Lorentz force as a result of the pressure gradient of the Aether medium. In my report at the conference "New Ideas in Natural Science" [1], this was first shown to the scientific community, 1996.

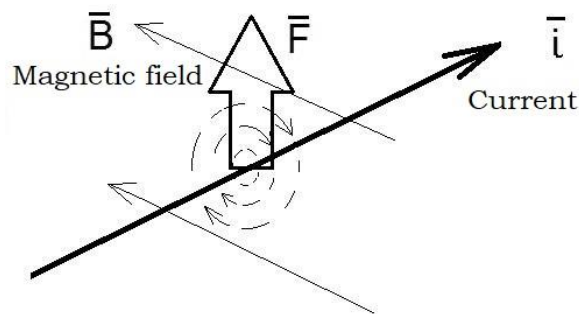


Fig.8. Lorentz force is result of the Aether pressure gradient.

Note that in the diagram in Fig. 8, we get the opposite picture of the superposition of vectors, which was shown in Fig. 7. The Magnus force acts on a cylinder rotating in the flow of the medium in the direction of the coordinated motion of the surface of the cylinder and the medium. In Fig. 8 shows that the Lorentz force acts in the direction of the opposite superposition of vectors. Why?

The fact is that the vectors in Fig. 8 are shown conditionally, according to the accepted designations of the vectors of electric current (flux of positively charged particles) and magnetic field. The direction of movement of real flows of electrons and Aether particles (vectors of magnetic fields) differ from conventional designations. It is fundamentally important to understand that this effect in electrodynamics is created similarly to the Magnus effect! The effect is created due to the gradient of environmental pressure on a moving body, it is due to the different relative speed of the body and the environment, but electromagnetic systems use the Aether medium, not air or water.

Note that an electron or other charged particle that creates a magnetic field when it moves is a rotating object. It would be more accurate to consider its movement as a helical line, right or left spiral, depending on the sign of the electric charge of a given particle of matter. In this case, the Lorentz forces and the Ampere forces are external forces in relation to the conductors with current, on which they act, that is, they can provide their movement in space.

Much has been written about the structure of the electron, but I would like to recommend to the reader the work of the Dr. Spartak Polyakov and his son Oleg Polyakov [4]. These authors considered in their book "Experimental gravitonics" the structure of the electron, and showed that it can be represented as a circularly polarized photon, that is, as a dynamic process of motion of an electromagnetic wave of circular polarization in a closed toroidal space. Later, we will cover this issue in more detail. Here we only briefly note that, with this consideration, the appearance of a magnetic field, when a charged rotating particle moves in the Aether by helical trajectory, has a clear analogy with the perturbation of the physical medium, which arises when a rotating cylinder or ball moves in a some medium. We can say that the interaction of an external magnetic field across which an electrically charged particle moves with its own magnetic field deflects the particle in the same way as the air flow deflects a swirling ball, namely, due to the creation of a pressure gradient of the medium on a particle of matter moving in it.

These interesting experiments provide nice possibility to develop many design ideas for new aerospace technologies.

Electrokinetic propulsion

Based on the concept of "gradient of Aether pressure", let us consider the Ampere effect, that is, the phenomenon of attraction or repulsion of conductors with electric current, Fig.9.

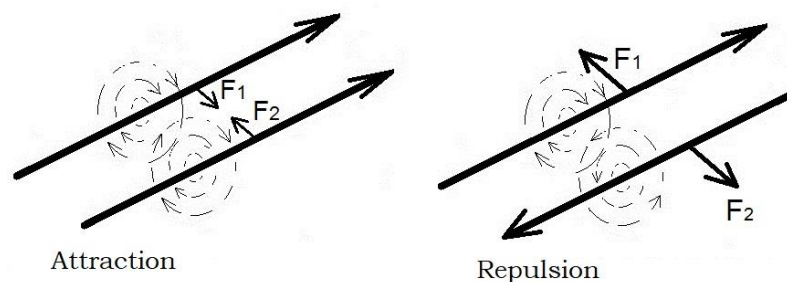


Fig. 9. Ampere effect for current carrying conductors.

It is known that, with the coordinated movement of currents in parallel conductors, they are attracted, and with counter currents, they are repelled. It is obvious that vector addition and subtraction of magnetic fluxes makes sense as an increase or decrease in the relative velocity of the Aether particles, which creates a pressure gradient in the Aether medium. Is it possible to build a propulsion device using this Aether pressure gradient?

According to Ampere, the resulting force, for parallel conductors, is zero. This fact, for quite a long time, was the reason for the inattention of inventors and designers to the electrokinetic propulsion technology.

The analysis of forces arising in non-parallel conductors, for example, in a Y-shaped conductor, was first made in 1844 by the famous physicist - mathematician Hermann G. Grassmann. He showed that the case of parallel conductors, considered by Ampere, is only a special case, and in the general case, the resulting forces for conductors with current may not be equal to zero.

Fig. 10 shows the vectors of forces acting on the sections of the current in the region of the Y-shaped "fork", the formula for the calculation of which was analyzed by Grassmann. In this case, the total force acting on the Y-shaped section of current-carrying conductors is not zero, that is, in this case the conductors form a Y-shaped propulsion drive.

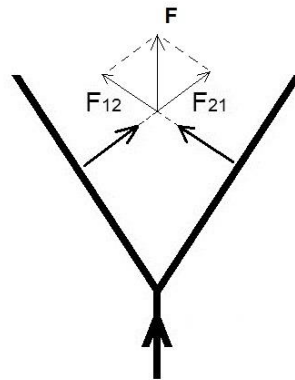


Fig. 10. Forces in the Y-shaped conductor of electric current.

This is another manifestation of force effects arising from the difference in pressure of the medium, that is, the pressure gradient of the Aether.

Using analogies between the phenomena of hydrodynamics, aerodynamics and Aetherdynamics, it is possible to design various propulsion drives. Analogs of the Y-shaped drive are the so-called "Sigalov's electrokinetic propulsion drives" [5], which is a V-shaped or U-shaped section of an electric current conductor, Fig.11.

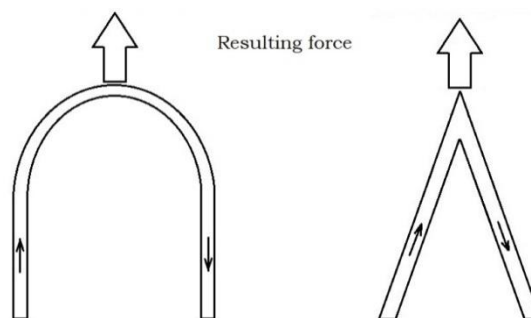


Fig. 11. The Sigalov effect in special electric current conductors.

These phenomena are usually explained as the interaction of currents in a conductor of complex shape with its own magnetic field, that is, the Lorentz force. We have already considered the reason for the appearance of the Lorentz force earlier, as a result of the Aether pressure gradient, the diagram is shown in Fig.8. Consequently, electrokinetic propulsion drives are one of the variants of Aether drives that use the pressure gradient of the surrounding Aether medium to create an active driving force in a given direction.

In the works of Sigalov [4], other complex-shaped conductors are also considered: U-shaped, L-shaped, and so on. I propose to consider another interesting option, this is a conductor with an electric current in the form of a cardioid, Fig. 12.

This current circuit is similar to the V-shaped version, moreover, the repulsive forces of two adjacent sections of the conductor at the current input to the circuit create a force that is co-directed with the resulting force generated in the area of the internal bend of the cardioid. A very promising scheme, to my mind. Experiments in my home laboratory in 1991-1996 have shown fairly good results.

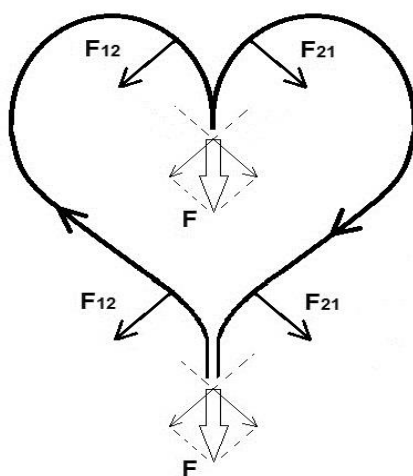


Fig. 12. Forces in a cardioid-shaped current loop.

This circuit can be made as a multi-wires coil. When measuring the driving force, the conductors must be fastened, for example, to a rigid plate.

Experiments with such devices are simple, but they give different results for different experimental designs of the coils. That is, several factors affect the magnitude of the driving force. Mechanical analogies of electrokinetic propulsion drives, which can also have practical application in aerospace engineering, help to understand why the results of experiments with electrokinetic propulsors depend not only on the current strength, but also on the pulsed mode of operation (pulsed current in conductors). It is clear this technology is not energy saving method. It requires very strong currents. May be pulsed mode can have some practical application to create correction of satellite trajectory.

One more simple experimental device I tested in my home laboratory in 1996-1997. It is hermetically sealed cylinder with oil. Central electrode is connected to high voltage source. Other electrode is metallic body of the cylinder, Fig.13. Here is axial propulsion force if high voltage is applied to the electrodes. This device demonstrated possibility to get kinetic energy by means of electrical forces. So we also can name it "electrokinetic" propulsion drive. Here is no external ionization and here is no reactive jet outside of the device.

The force is not powerful in this simple experiment but development of this technology can be applied for nanosatellites and other space projects. Here is serious

advantage. In this device we do not spend propellant. Oil is circulating inside of the device.

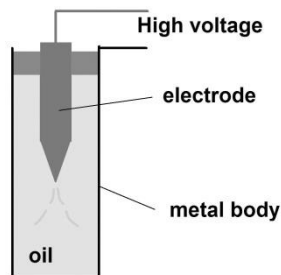


Fig. 13. Circulation of oil inside of the closed volume

In the next chapter, I propose to consider examples of mechanical systems as non-reactive propulsion drives. In some aspects it is similar to Sigalov's electrokinetic propulsion drives.

Curvilinear body movement

Everyone is familiar with the forces of inertia arising from the acceleration or deceleration of a moving body. In terms of Aether dynamics, we can say that "Aether manifests itself" during the acceleration of bodies. However, the existence of an Aether elastic medium can also be detected for stationary bodies, in the processes of their elastic deformation (stretching or compression of interatomic bonds), but we will consider these effects later.

The acceleration of curvilinear motion depends on the curvature of the trajectory (radius), and the centrifugal force F created when measuring the trajectory is determined by a simple formula F.1, it is Newton's second law:

$$F = ma \quad \text{F.1}$$

where F is the force, m is the mass of the moving body, a is the acceleration of the curvilinear motion.

The force F depends on the acceleration and it is a function of the speed and radius of curvature of the trajectory of the body with inertial mass. When the body moves in a circle, the same force F is created in all radial directions. When a body moves along a curvilinear trajectory of variable radius, the magnitude of the acceleration and force will change in different parts of the trajectory. In sum, the resulting force can be non-zero, which creates a driving force in one preferred direction.

This idea can be used by different constructive methods, for example, Fig. 14 proposes a diagram of Academic Veinik's thruster, in which metal balls roll along a curvilinear trajectory of variable radius [6]. In one of Academic Veinik's experiments, in the BM-28 design, 8 metal balls with a diameter of 8 mm moved along a curved trajectory, approximately 45 mm in diameter. Rotation was provided by an electric drive, a "carrier" was installed on its axis - a disk in which 8 radial channels for balls were made.

The balls could freely change their radius of rotation within the channel. Obviously, during rotation, the centrifugal force presses the balls against the outer ring, which is installed with an eccentricity: the axis of the outer ring that limits the radius of rotation of the balls does not coincide with the axis of the motor. The eccentricity of the trajectory of the balls, in this design was 0.7 mm. At a rotation speed of about 21,000

rpm, the device created a driving force of about $1.4 \cdot 10^{-4}$ (N), directed perpendicular to the axis of rotation of the motor, in the direction of the eccentricity of the orbit of the balls.

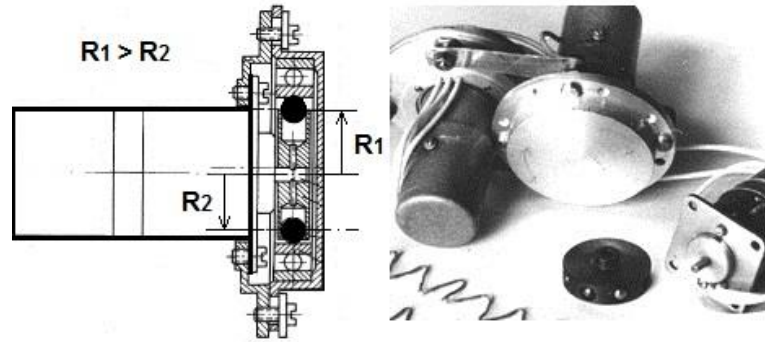


Fig.14. Propulsion drive by Acad. Veinik

The photo (on the right in Fig. 14) shows the twin design of Veinik's propulsion drive. The combination of the two counter-rotating drives compensates for the torque response while maintaining the same direction of the driving force F in both drives. The eccentricity of the orbits of the balls of both drives must be oriented in the same direction.

This experiment of Veinik was reproduced in Faraday Laboratory ltd. in 2002. Note that the operation of the propulsion device developed in our laboratory was accompanied by significant vibration, therefore, it was difficult to increase the eccentricity or rotation speed. The forces acting in this structure were negligible. Theoretically, one of the options for modernizing this scheme was considered: it was proposed to add an elastic connection of the ball to the axis to the structure.

In such a scheme, the ball not only presses on the body, but also pulls it by the axis of rotation, and the thrust force in different parts of the trajectory will be different, since it depends on the radius of rotation. Another option for improving Veinik's engine is the elastic contact of the ball with the body (for example, a rubber gasket on the body or a rubber coating on the ball). Having studied the issue of the reliability of the design and the prospects of this method, it was decided to find another technical solution to the concept of a propulsion device using the curvilinear accelerated motion of a liquid working substance, that is, a liquid inertial mass.

The scheme with the use of a liquid working substance moving along a curvilinear closed trajectory of variable radius was considered by me in 1996, [1]. A liquid working substance, in contrast to metal balls, is more convenient for use in this scheme. Of course, in this case, three factors should be optimized: increase the density of the liquid (the working mass at the same volume), increase the speed of the working mass, and ensure the elasticity of the interaction.

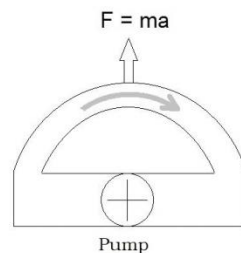


Fig. 15. Centrifugal force in curvilinear trajectory of liquid

Suppose that on the turning section of the pipeline (body), along a U-shaped trajectory, a liquid working substance moves with acceleration, that is, some inertial mass, Fig. 15. It is obvious that the force $F = ma$ acts on the particles of the liquid,

according to Newton's second law. This force presses the working fluid to the inner surface of the pipe at the turning radius. So, all body of this device has got unidirectional propulsion force.

Let's go back to electrokinetic constructions. The Sigalov effects are variants of the manifestation of Grassmann's laws for direct currents in a conductor of complex shape. However, there is also a special case of this phenomenon: a powerful driving force occurs when a current pulse occurs in a V-shaped or U-shaped conductor. To my mind, this case does not relate to the Ampere-Grassmann effect that is, to the interaction of current and magnetic field, but is the result of the emergence of centrifugal force in electrokinetic propulsions, by analogy with the propulsion concept shown in Fig. 15. With this consideration, the pulsed electrokinetic effect can find greater practical application than direct current electrokinetic propulsion drive.

The fact is that the front of the pulse, that is, the wave of displacement of electrons in the conductor when the current is turned on, moves along the conductor at a speed of more than hundreds of kilometers per second. Such a shift of a substance of small mass, but having a high velocity, creates a powerful short-term impulse of driving force. When a constant current is established, the centrifugal forces are very small, since the real speed of the electrons in the conductor is only about 0.1 mm per second.

In this regard, the implementation of the idea with a pump and a liquid circulating working substance, Fig. 15, is of little practical interest. The high-frequency pulse electrokinetic effect, in the presence of a powerful source of electrical energy, can be much more effective than any mechanical device, due to the high speed of propagation of the front of the electric current pulse in the conductor.

The mass of particles of the working substance is the second factor in increasing the centrifugal force, according to formula F.1. Electrons have a very small inertial mass.

It would be interesting to organize experiments to study the pulsed electrokinetic effect in a U-shaped circuit for ions, for example, for protons (ionized hydrogen), since they are 1836 times heavier than electrons. However, a constructive version of a U-shaped impulse electrokinetic propulsion device, the working substance of which is an electrolyte, may turn out to be more convenient for practical use. In this case, the propulsion drive will be like an electrolytic capacitor of an unusual shape, with a switching power supply.

Variable radius gyroscope

Let us consider separately the design variants of propulsion drives using the "variable radius gyroscope principle". This principle was proposed and described in detail in the book "Experimental gravitonics" [4].

The first stage of experimental research, Spartak Mikhailovich Polyakov made using a mechanical device in which the orbital motion of rotating bodies (gyroscopes) was created, in combination with a change in their orbital radius (precession). The photo Fig. 16 shows the Yolka experimental setup, with four gyroscopes, which was used in 1984-1986 to study force effects in Polyakov's laboratory.

In this design, several gyroscopes was rotated (orbital rotation), and each of them could be turned off or turned on separately, moreover, in two different direction of its own rotation. The total mass of the structure was 32 kg, the mass of the four gyroscopes was 6.4 kg, and the power source for the motors was external, adjustable.

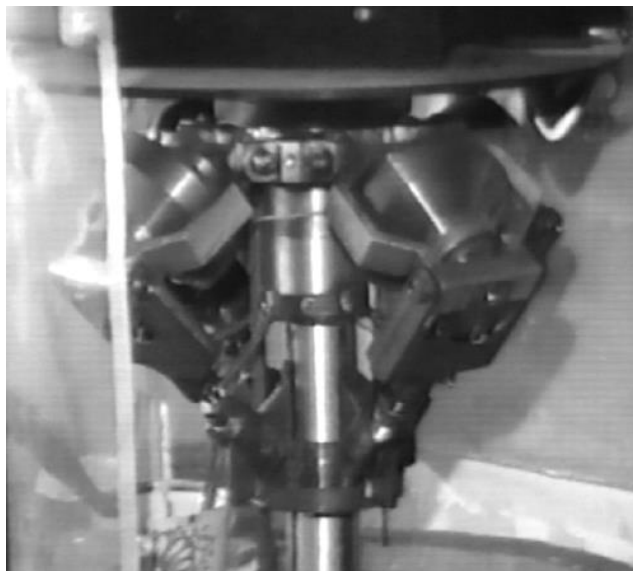


Fig. 16. Experimental setup by Dr. Polyakov

The results of Polyakov's experiments are shown in the graphs Fig. 17. In the presence of axial rotation of the switched on gyroscopes, as well as their displacement in the radial direction of the orbit of rotation, asymmetric force effects of an impulse nature are created.

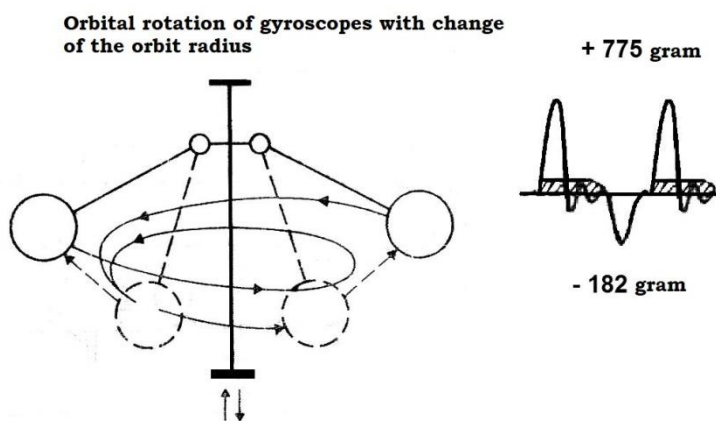


Fig.17. Experimental measurement of forces in Polyakov's experiment

With such a trajectory of the gyroscopes, the entire body of the experimental device is affected by the impulses arising when the orbital rotating gyroscope is moved to a smaller radius of rotation. The measurements showed that the total thrust impulse acting on the device body, taking into account the calibration with respect to the "dynamic zero", is directed upward along the axis of rotation and reached 573 grams.

So, in accordance with Polyakov's method, the working mass (gyroscope) is set in rotational motion, and then the radius of the orbital rotation of the gyroscope, which is a controlled parameter of the working mass rotation, is changed. When the radius of rotation of the working medium decreases, a short-term thrust impulse arises, directed along the axis of rotation. Obviously, the change in the radius of rotation of the working mass in this case can only be periodic in nature, therefore, the generated traction force has an impulsive nature. In the process of returning the working mass to the initial position (maximum radius), there is no thrust impulse.

Such technologies cannot be effectively used in the designs of propulsion drives that require continuous operation, for example, in vehicles. However, they can find application in systems for impulse correction of the orbit of spacecraft.

In April of 1998, Spartak Mikhailovich Polyakov showed me an experiment with another propulsion device, in which the gyroscope precession process was organized, and mercury was used as the working mass. This device and measurement results are shown in Fig. 18.

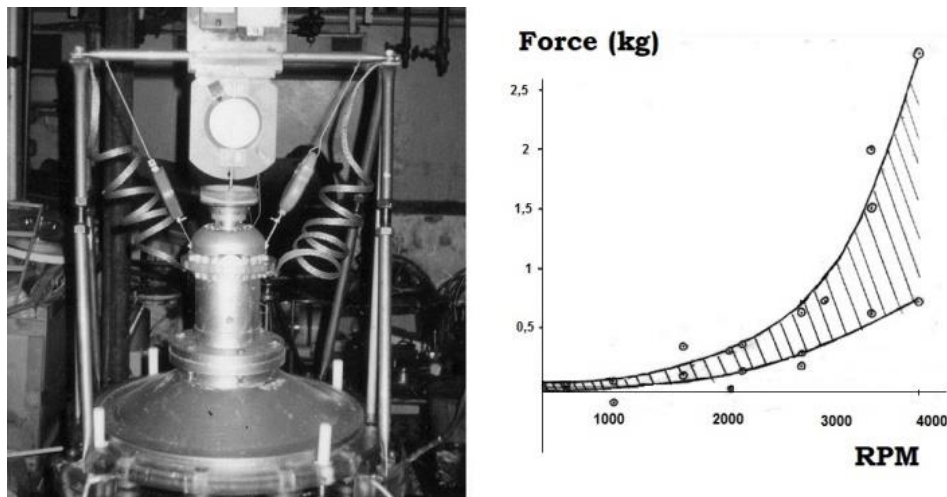


Fig.18. Mercury propulsion drive by Dr. Polyakov, 1998.

The main design details of this experimental device are as follows: a disc-shaped plastic housing, a rotor, an electric motor and a dynamometer. The device could slide up and down on plastic guides. Moving up and down, the rotor exerted a force on the strain gauge, which measured the magnitude of the generated traction force. In this version of the design, Spartak Mikhailovich Polyakov received up to 2.5 kg of traction force, with the consumption of electricity for the rotation of the drive from 100 watts to 1 kW.

The total weight of the device in this experiment was 30 kilograms. The weight of the mercury acting as a gyroscope was about 15 kg.

It should be especially noted that the graph shown on the right side of Fig. 18, indicates the non-linear nature of the function of the dependence of the thrust force on the rotational speed. Consequently, the increase in the effect will very strongly depend on the increase in the rotational speed of the working mass. In his letter on March 20, 1998, Spartak Mikhailovich Polyakov proved to me the prospects of this scheme: "With the same dimensions of the propulsion device, an increase in the power of the electric drive to 10 kW and a rotation speed of up to 10 thousand revolutions per minute will increase the traction force up to 2 tons."

In the development of the proposed concept, considering particles of matter as microgyroscopes, Spartak Mikhailovich showed that in ferromagnetic substances it is possible to create precessional motions of the magnetic moment of particles, and to obtain force effects due to the reaction of the Aether medium. Another application of this technology is the radiation of a directed flow of "gravitational waves", in the formulation of Polyakov. In support of his theory of gravity, Polyakov successfully conducted a series of experiments on deflecting a beam of light using magnetostrictive materials. He proved the connection between magnetism and gravity, proceeding from the model of the electron proposed by him.

Polyakov also proposed several design solutions not only for creating powerful emitters of gravitational waves, but also a receiver for gravitational waves.

Note that "gravitational waves", on the other hand, are longitudinal waves in the Aether medium, which is quite consistent with the mechanism of their creation by the method of forced precession of gyroscopes - magnetic moments of particles of ferromagnetic material.

Polyakov's work was interrupted by a lack of funding and illness. In the photo Fig. 19, Spartak Mikhailovich Polyakov.



Fig. 19. Dr. Spartak M. Polyakov, 1998.

This direction of research has been experimentally studied by group of Moscow developers led by V.A. Menshikov [7]. The results of testing the propulsion device created by Menshikov's group can be read in open sources [8]. During the operation of this device, the electric drive creates the rotation of the rotor, on which a pipe in the form of a conical spiral is fixed. Starting to rotate, the rotor "carries with it mercury", which moves inside the rotor from the top to the base of the cone. The pump provides a return of mercury, along the axis of the device, from the base of the conical spiral towards its apex.

Thus, the mercury continuously moves through the tube, which has the shape of a conical spiral, from the top to its base, and is pumped by a pump along the return axial tube to the top of the rotor cone. Agree that this circuit resembles Schauberger generators, although it has fundamental design flaws. In the article [8], the authors noted that the thrust impulse does not exist for long, from several seconds to one minute. In addition, Schauberger generators could operate in a self-rotating mode, while creating a driving force. According to the design shown in Menshikov's projects [8], there are no such official data about possibility of self-rotation in their device.

Experimental research of methods for creating an active driving force, according to Polyakov's method, which we call a "variable radius gyroscope", were also organized by me at the Faraday Laboratory LLC, in the period from 2002 to 2005. I have filed an application for a patent of the Russian Federation No. 2002128658/06 (030307) dated 25.10.2002. In the proposed technical solution, the disadvantages of analogs [8] were eliminated, since in them the impulse of useful unidirectional thrust disappears when the speed of rotation of the liquid working fluid (mercury) becomes equal to the speed of rotation of the rotor.

In Fig. 20 shows the diagram and the main structural elements of the experimental propulsion device Frolov, described in patent application No. 2002128658/06 (030307), 25.10.2002. The essence of this invention is as follows: the electric drive 6 rotates the conical rotor 3, on which spirals groove). The rotor 3 rotates, forcing the working substance to move to a smaller radius of rotation, and exit through the radial holes 5 into the inner cavity of the body (into the crankcase). This movement of

the inertial mass of the working substance from top to bottom, from the wide to the narrow part of the rotor, is the main reason for the appearance of an axial reactive thrust force, constantly acting on the body of this device, along the axis of rotation of the rotor.

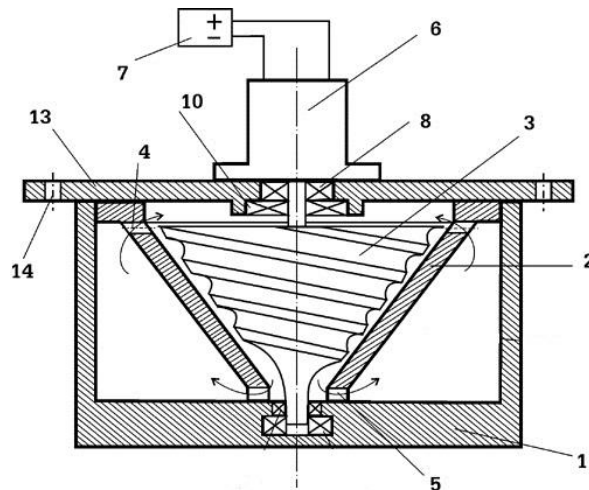


Fig. 20. Frolov's propulsion drive with liquid rotor

Let me explain the idea. When the rotation of the working liquid substance in the conical body 2 occurs without a conical screw rotor, then it leads to a constant increase in the radius of rotation of the liquid, and the liquid rises from the bottom up. This process is due to the presence of centrifugal force, therefore, we can say that it does the work of displacing the fluid rotating in the conical body from a smaller radius to a larger one. In the usual case, when a body rotates in a plane, the centrifugal force is radial, and it cannot perform work along the axis of rotation. Therefore, when the fluid rotates in a cylindrical body, there will be no effect. When the fluid rotates in the conical body, there is an axial force gradient, since the magnitude of the centrifugal force is different for different radius.

In the proposed design, the spiral groove of the rotor 3 (screw mechanism), when rotating in the appropriate direction, displaces liquid particles from a larger radius of rotation to a smaller radius of rotation. This is against the work done by the centrifugal force to displace the fluid rotating in the cone housing (the force try to push the liquid on maximum radius). The law of conservation of momentum is strictly fulfilled here: the axial momentum directed from top to bottom, which is acquired by liquid particles when interacting with the rotor, is equal to the momentum that the body of the device acquires in the opposite direction (bottom up).

To develop some experiments on this theory, the device shown in Fig.21 was designed and manufactured in St.-Petersburg, Russia. The body and main parts are made of aluminum; the drive is electric motor 12 VDC 50 Watt. The main parameters of this device are: the rotor diameter at the base of the cone is 80 mm, and in the area of fluid exit from the cavity of the conical body into the crankcase it is about 20 mm. To create rotation, an electric motor was used, the power consumption was not more than 50 watts. The rotation speed was regulated from 30 to 300 rpm by changing the supply voltage of the electric drive.

Water, oil and other liquids were used as a working substance (inertial mass). The "mercury gyroscope" has not been investigated in my laboratory.

I have to note the radius of this conical device can be increased to get more powerful effect.

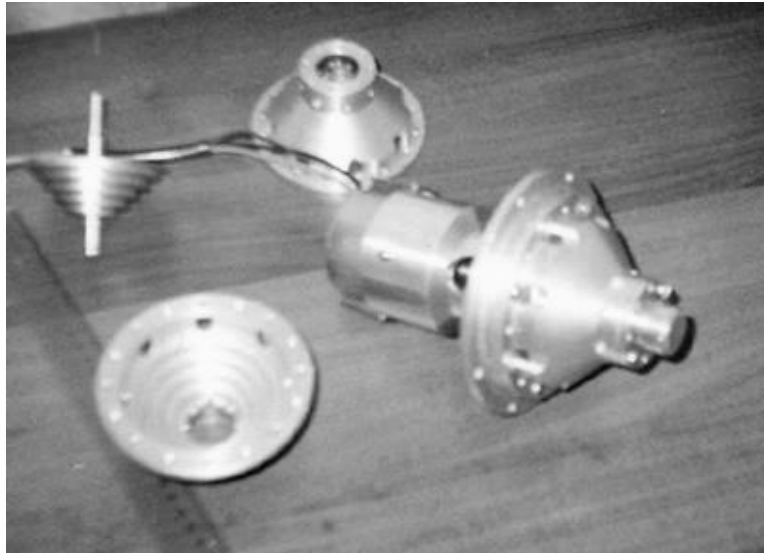


Fig. 21. Experimental propulsion drive, 2002

The measurement of the generated driving force, Fig. 22, was made with an electronic balance, with an accuracy of 0.1 g. An active force of 5 to 15 grams was detected, created in the vertical (axial) direction.



Fig. 22. Measurements of axial force

An application for an invention, which describes in detail a method and a device used to create a driving force, without jet rejection of mass outside the device, by converting rotational motion into translational motion, was filed by me on October 25, 2002.

After a long correspondence, in August 2004, we received a refusal from the experts of Rospatent, which they motivated by the fact that the movement of the device without throwing the reactive mass outside the device body is fundamentally impossible. Thus, they understand Newton's third law. Our arguments that the law of conservation of momentum and energy, of course, is fulfilled, and a reaction with support, in our proposed method, necessarily exists, turned out to be unconvincing. I believe that there was lobbying for the interests of other developers, at a higher level than our small private company. It is known that on May 23, 2008, a rocket with four satellites on board was launched from the Plesetsk cosmodrome. One of them, the Yubileiny satellite, issued by the Information Satellite Systems joint-stock company, is notable for the fact that a new propulsion device is installed on it, which is used to correct the orbit. This is the first

Russian spacecraft, in which the thrust of the orbit correction system is provided by means of the internal "movement of a liquid working fluid along a certain trajectory, reminiscent of a tornado," as the newspapers wrote about this technology. The advantages of this method are obvious: receiving energy from solar panels, such a satellite has no restrictions on the fuel consumption required for long-term operation in orbit. Note that to correct the satellite's orbit, a short-term impulse of the driving force is sufficient. Later I saw nothing about this innovation, also I saw some negative comments and doubts in results of tests for this technology in space.

The theoretical justification for such inventions is a separate issue. Polyakov's works in the field of "experimental gravitonics" had their own prerequisites, and scientists from different countries have long approached the study of this problem. Nikolai Aleksandrovich Kozyrev, whose theory and experiments we will consider in detail in a separate chapter, back in 1963 published an article "Causal Mechanics and the Possibility of Experimental Investigation of the Properties of Time" [9]. In this work, Kozyrev first showed the effects of weight reduction in experiments with rotating gyroscopes on a vibrating suspension, and he pointed out that the effect depends on the direction of rotation. Of the foreign analogs of propulsion devices using precessing gyroscopes, the patent of Professor Laithwaite, United States Patent 5,860,317 January 19, 1999, Propulsion System, Eric Laithwaite, William Dawson is known. For the first time, the effect of reducing the weight of rotating bodies was discovered by Professor Laithwaite in 1975.

Many people call these types of propulsion drives "support-less drives", although this is a fundamental mistake. The support of the drive, more precisely, the "reaction with support", always exists.

This is the most important question that authors need to address constructively. Doubts disappear, and all theoretical issues are resolved if we consider inertia as a property of the space surrounding the body, that is, the Aether surrounding each of the particles of matter, separately. In this view, centrifugal forces are external, in relation to moving bodies. These are the same external forces as the reaction of the support, or the pressure gradient in aerodynamics. Consequently, inertial effects can be used in such a way as to provide "support" and a driving force arising from *the pressure gradient of the Aether medium*.

The reason for the appearance of centrifugal force, with the accelerated movement of matter particles, lies in their internal structure. The formation of particles of matter from the Aether is a process, the study of which provides answers to questions about the nature of inertial mass and the electromagnetic properties of particles of matter. It is advisable to continue work on the development, patenting and implementation of the technology of a devices considered here. The modern field of application of such products includes not only space systems, but also propulsion drives of any transport. This direction opens up new sales markets for advanced high-tech products.

Body weight compensation

Let's consider an interesting idea. Is it possible to obtain a "negative weight" of the body due to the application of centrifugal force? The answer is positive: the force of the weight can be compensated for and overcome by any other force, including the centrifugal force generated by the rotation of the body. This is not anti-gravity, but such power plants may be interesting for the development of space technology.

For example, the rotation of the body in the vertical plane gives full compensation for the weight in the upper half of the trajectory, and an increase in weight by the value of the centrifugal force, in the lower part of the trajectory, Fig. 23.

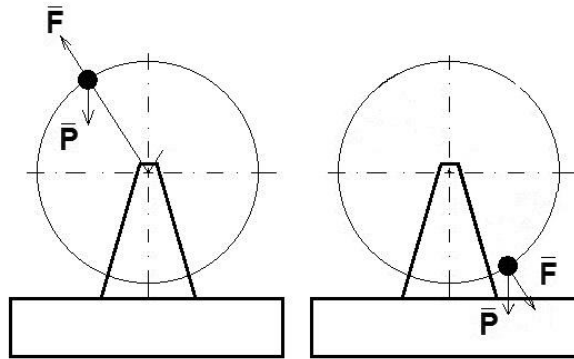


Fig. 23. Change in weight when rotating the body in a vertical plane.

In fact, the rotation of the load in the vertical plane, upon reaching a certain speed of rotation, is capable of lifting the entire propulsion device, lifting it off the ground, during the "upper half" of the cycle. Therefore, there are no fundamental problems. The technical problem is to constructively ensure the movement of the working inertial mass along such a trajectory, which gives the effect of compensation of body weight for most of the movement cycle.

For example, the oscillation of the weight of a conventional pendulum occurs at the bottom of the cycle, as shown on the left side of Fig. 24. The oscillation process of an inverted pendulum is shown on the right side of Fig. 24. The mechanism of action of the "inverted pendulum" is simple, but it has been studied for hundreds of years as an amazing phenomenon!

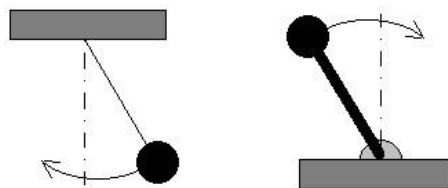


Fig. 24. An ordinary pendulum and an inverted pendulum.

In 1873, the idea of using an inverted pendulum for the construction of a flying machine was considered by Tsiolkovsky, he was then only 16 years old. Tsiolkovsky proposed using two inverted pendulums to create a propulsion device, waving synchronously in opposite directions. This experiment with a pair of inverted pendulums is easy to set up and shows the presence of impulsive forces.

The dynamic stabilization of an inverted pendulum was studied in detail by Academician P. L. Kapitza in 1951 [10]. Experimental device with a crank drive built for these experiments, Fig. 25, was named "Kapitza's pendulum". A feature of the Kapitza pendulum is that the inverted (vertical) position of the pendulum can be stable in the event of rapid vibrations of the suspension.

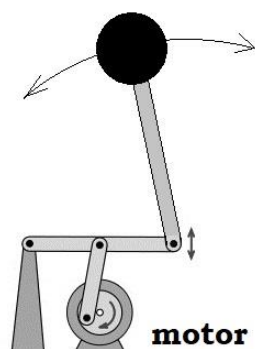


Fig. 25. Academician Kapitsa's pendulum.

The history of the discovery goes back into the past: the first observations of this phenomenon were published back in 1908 by A. Stephenson [11]. Modern studies of similar processes are conducted by Professor Evgeny D. Sorokodum, the author of many scientific articles and interesting experiments on vortex and oscillatory processes [12]. We will not delve into the theory of this process, assuming that the main role in the oscillatory processes of an inverted pendulum is played by centrifugal forces, which partially compensate for the weight of the device.

Strange, but I did not find in open publications by Academician Kapitsa information about weight changes. However, the idea is simple and workable. The magnitude of the traction force, in accordance with Newton's law, formula $F=ma$, depends not so much on the mass as on the speed, since the acceleration is proportional to the square of the linear speed. For this reason, it is advisable to work with a low mass of the pendulum, but at high speed, that is, creating oscillatory processes of high frequency. This raises interesting analogies to the insect world, which uses vibration to fly.

There are similar devices called "vibrating gyroscopes". Usually, they are used to measure the angular rate of turn when curved movement. Another application, the creation of a driving force, is currently little studied, although there are enough examples of vibration propulsion drives in nature to draw attention to them. High-frequency vibration processes can be created by piezoelectric and other drives. Piezoelectric systems are interesting in that they consume little power and can operate at very high frequencies.

Let's move on to another option for using centrifugal forces to compensate for body weight. Let's imagine a simple experiment: mentally place a rotating metal ball in a sphere. Let us assume that it is set in motion not by internal forces, but by external fields, for example, by the rotating magnetic field of a three-phase system of coils located around a sphere. It is also possible to bring the ball into rotation by the circular oscillatory motion of the sphere itself. You can do this experiment yourself by placing a pea in a hemispherical (conical) cup. When creating oscillatory circular motions of the cup, the pea accelerates, rotates along the inside of the cup, rising higher and higher. It seeks to move into an orbit of a larger radius, which is caused by the action of centrifugal force. At a sufficiently high rotation speed, a pea flies out of the cup.

Let's set ourselves the goal of using this effect. Let me remind you of the old circus trick: "motorcyclist in a ball". In Fig. 26 shows three trajectories of a motorcyclist rolling on the inner surface of a sphere. In the first case, the motorcycle moves along the surface of the lower hemisphere, with a gradual increase in radius, and at high speeds it rotates along the equator, the trajectory of the maximum radius.

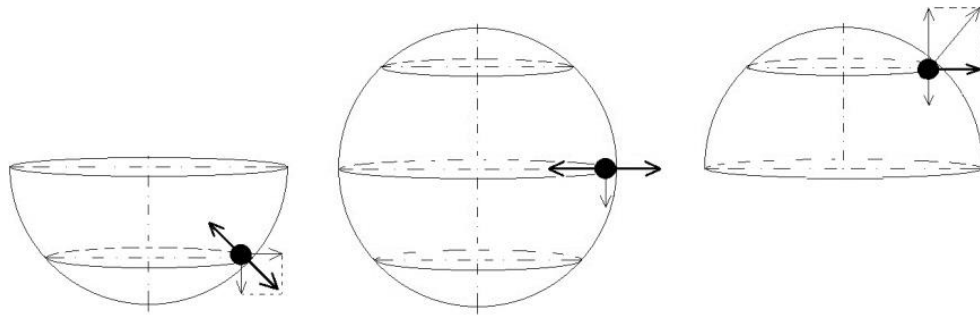


Fig. 26. The movement of the ball on the inner surface of the sphere.

The figure in the center Fig. 26, the trajectory of the motorcycle along the equator of the sphere is shown. In the circus, when a motorcyclist entered the trajectory of the equator, the halves of the sphere were separated, and the lower hemisphere was lowered, which caused sincere delight of the audience! Most of all, we are interested in the hypothetical situation shown on the right side of Fig. 26. With a given trajectory of movement of the "ball", this body must be acted upon by the vertical component of a certain force, which compensates for its weight. In this case, an upward reactive force will act on the device body (hemisphere).

It seems possible to create a propulsion drive using this principle. When designing, it is necessary to take into account the forces of friction at the point of contact of the inner surface of the sphere and the moving working inertial mass (the ball).

Let's consider a few more theoretical models of mechanical devices capable of creating a unidirectional driving force. In Fig. 27 shows a schematic of an impulse propulsion device that uses two or more rotating weights. An electromagnet is located along the axis of rotation, periodically drawing in the core. Since the rotating weights and the core are connected by a flexible rod, the downward movement of the core occurs with an effort, since it is necessary to transfer the rotating weights from an orbit of a larger radius to an orbit of a smaller radius.

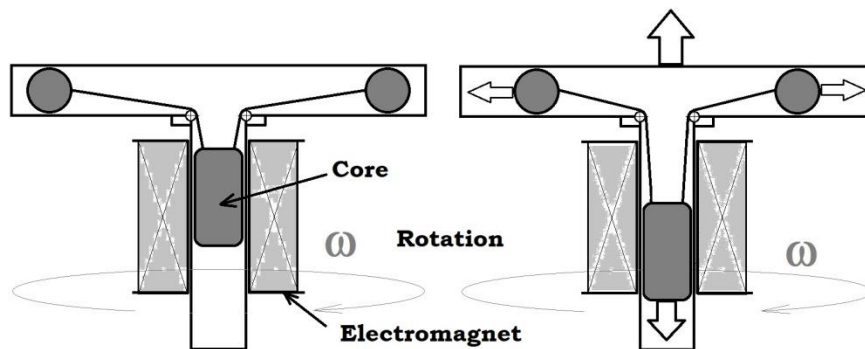


Fig. 27. Frolov's impulse mechanical drive.

The interaction of the core and the coil of the electromagnet occur in accordance with the law of conservation of momentum, therefore, the force to move the core of the electromagnet is transferred to the body, which receives a reactive thrust impulse upward. The return of loads to a larger radius orbit occurs effortlessly if the electromagnet is turned off. Thus, this device is capable of being pulled up by "jerks". I believe that experimental verification of this concept will show good prospects for the implementation of this technology in aerospace engineering to correct orbit of the satellite.

Many more theoretical models can be proposed based on similar principles. The proposed designs are simple, cheap in cost for any drive power; it would be interesting to test them experimentally.

Let's move on to examples of well-known real propulsion drives, already tested in practice, in which inertial effects are used.

Inertial drives

We have already begun to consider the designs of mechanical devices, the driving force in which is due to the application of the inertial property of matter particles, that is, their connection with the Aether. This type of propulsion system is called "inertioids", the term was introduced by Russian engineer V.N. Tolchin, in 1936 [13]. In the photo Fig. 28 shows one of Tolchin's inertioids. The principle of operation is very simple: two weights rotate synchronously, in different directions, which compensates for the torque.

Each of them, in half of the trajectory, is accelerated by the drive, and in the second half of the trajectory, the drive is turned off, and the brake shoe (spring brake) is turned on, the rotation is inhibited.

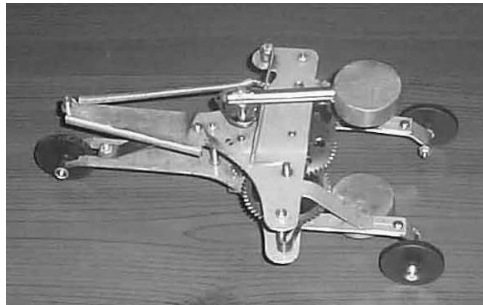


Fig. 28. Tolchin's inertioid.

This "motor - brake" mode allows the reaction to be transmitted to the device body during the entire cycle, both during acceleration of inertial masses and during their deceleration. The diagram in Fig. 29 shows two phases of operation of this a propulsion drive: acceleration of the eccentrics by the drive, and then, their free movement, which is decelerated.

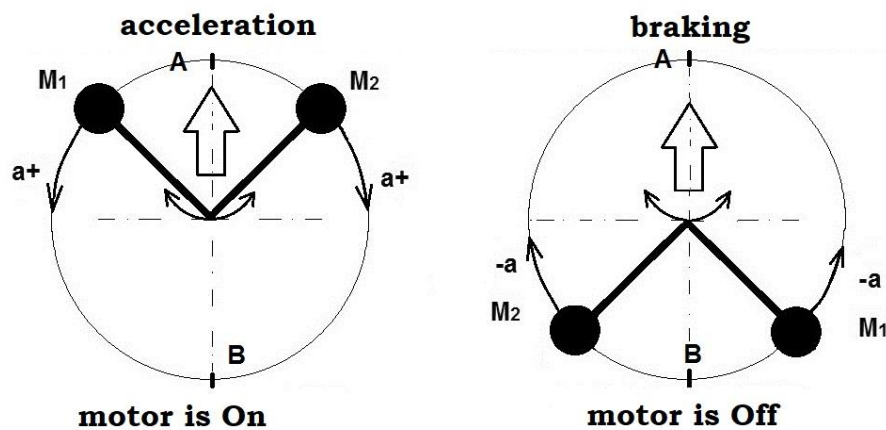


Fig. 29. Two stages of operation process

During acceleration, from point A to point B, the acceleration is positive, and during free movement, from point B to point A, the acceleration is negative (braking). The reaction of the body to both halves of the cycle is directed in one direction, although its magnitude changes, and therefore the device move in jerks.

Note that in Tolchin's inertioïd, the angles of switching on the motor or brake were equal to 30 degrees: the motor worked from 330 to 0 degrees, and braking occurred from 150 to 180 degrees. In general, the acceleration and deceleration phases can be half a cycle.

In his works, A.E. Akimov and G.I. Shipov, disclose the theory of inertia from the standpoint of "torsion mechanics". G.I. Shipov put a lot of effort into the practical development of this topic, back in 1981 he manufactured two inertioïds according to Tolchin's scheme at the Tupolev firm, and then successfully tested them at Moscow State University, installing an inertioïd for testing on an "air cushion platform" [14].

Interestingly, when Shipov tried to apply for an invention in 1991, he received a refusal, justified by the fact that there was a certain Resolution prohibiting the Russian patent office from accepting applications on this topic for consideration. The formulation "movement of the system due to internal forces" can be changed only if the Academy of Sciences officially recognizes the existence of the Aether as a real medium with certain physical properties.

Nevertheless, experimentally, the Tolchin effect and the efficiency of its inertioïd were repeatedly confirmed, even at the time when Shipov worked with the Energeia Rocket and Space Corporation, as well as during joint experiments with American scientists. In 2000, Shipov studied the topic of inertia in a laboratory specially created in Thailand. Finally, in 2002, the Khrunichev Research Institute of Space Systems began to seriously deal with the topic of inertial propulsion systems, as evidenced by the fact that a new system for adjusting the orbit of the Yubileiny satellite was used.

The history of inertioïds, judging by old patent documents, shows the great interest of inventors to this topic. Obviously, there is a demand for this type of equipment. This is partly due to the fact that these devices are quite primitive, do not require electronics, and could have been successfully implemented many years ago. In the article "Free Energy", 1996, I cited dozens of patents on the topic of "inertia" [15]. In 2003, in the journal "New Energy Technologies" was given an overview of the design solutions of inertioïds, according to the schemes of American patents [16]. More than a hundred inertial schemes are reviewed on the popular Internet site www.rexresearch.com/inertial/inertial.htm

The public knows little about the scale of work of government laboratories in this direction, I believe that their data is classified. In the open media, you can find publications about projects of private research firms and inventors. One of the brightest historical examples in this area is "Dean's inertioïd". An insurance agent based in Washington, DC Norman L. Dean was granted US Patent No. 2,886,976 on July 13, 1956.

The device is called "System For Converting Rotary Motion Into Unidirectional Motion". The second patent was taken later, US Patent No. 3,182,517 dated May 11, 1965 "Variable Oscillator System", and the name means "Variable Oscillator System". Critics of Norman Dean's work express their doubts about his results, since having assembled an analogue of his invention strictly according to the description taken from the patent, they do not get a workable device. It is assumed that the author described the principle in the text of the patent in an abbreviated form, without revealing some important design details. Fig. 30 is scheme from US Patent № 2,886,976 about Dean propulsion drive.

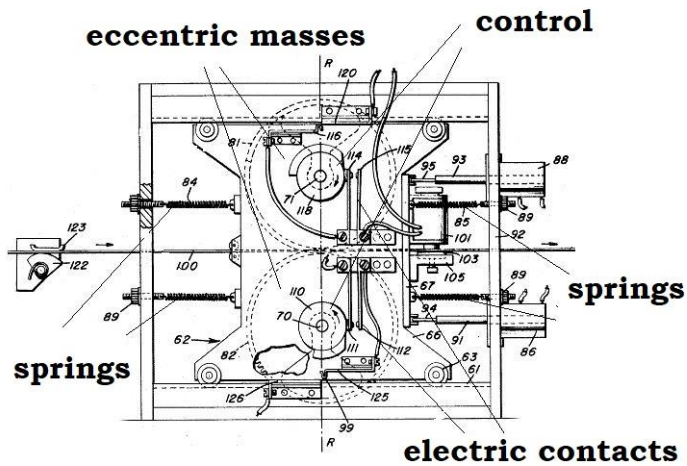


Fig. 30. Norman Dean propulsion drive scheme.

The design feature of the "Dean machine" is that the eccentrics are suspended in the body elastically, on springs. Initially, Dean simply experimented with a pair of eccentrics attached to a bridge that is springs attached to the body of the apparatus, as shown in Fig. 31.

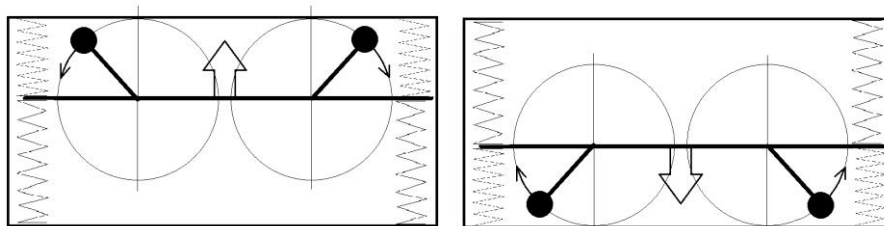


Fig. 31. Compensation of lateral vibrations with two eccentrics.

The jumper and eccentrics is a pair of interacting bodies. Their interaction occurs in accordance with the law of conservation of momentum. The eccentric movement cycle is divided into two half cycles, creating gravity compensation for half the cycle. Let's consider the rotation cycle, Fig. 32. Downward movement of the eccentrics causes a reaction of the support, the upward movement of the web begins. Further, the upward movement of the eccentrics causes a reaction of the support, which manifests itself as a downward movement of the bridge. Since the rotation of the two eccentrics (pair) is counter-rotating, Dean managed to compensate for the lateral vibrations of the body, and the jumper with rotating eccentrics vibrated vertically.

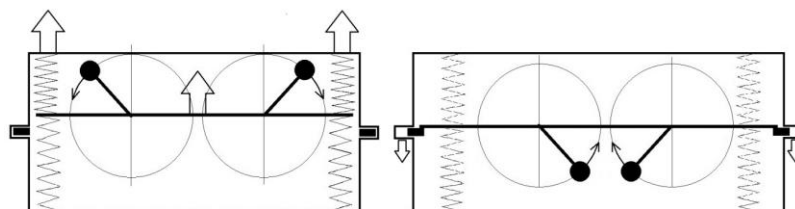


Fig. 32. The idea of the propulsion drive by Norman Dean.

As expected, the total impulse of force acting on the body of this device over a long period of time was equal to zero. Next, Dean created the "cycle asymmetry" that we discussed in Tolchin's diagram. At the right moment, the "brake" is activated in the structure, Fig. 32. At the moment of passage of the crosspiece through the middle

position, it abuts against the retractable transverse brake, controlled by an electromagnet. As a result, interaction forces of different magnitude are obtained for the jumper vibrating up and down, which is connected to the device body.

By choosing the right moment of inhibition of eccentric oscillations, it is possible to obtain a unidirectional total force in the desired direction. The propulsion unit with one pair of eccentrics works in jerks, so Dean connected the six devices together, but shifted the location of the eccentricity on each of them by an angle of 60 degrees. Thus, he received a full cycle of 360 degrees, and a more or less uniform unidirectional thrust force. Analyzing the process of energy exchange in Dean's propulsion device, it is necessary to note the important role of elastic interaction, although this aspect is little discussed in publications on this topic. In Dean's device, there is an elastic impulse transfer from the bridge to the body in one direction (up), and inelastic braking of the bridge against the lateral brake, when moving in the other direction. Theoretically, this problem is well worked out, and refers to the physics of the interaction of bodies.

It is known that the collision of bodies can lead to different results: during an elastic collision of a body and the body of a device, basically, an impulse is transferred to the body, and in an inelastic collision (shock deformation), most of the impulse is converted into heat. The scheme of the experiment that I showed to the audience of the conference "New Ideas in Natural Science", in 1996, is shown in Figure 33. The idea of the experiment was published by the author Harry W. Bull, back in 1935 [17].

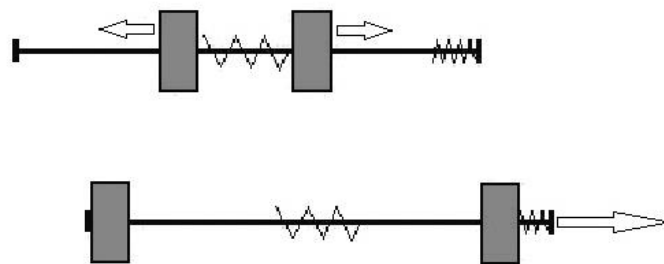


Fig. 33. Experiment on elastic and inelastic interaction.

The author Harry W. Bull wrote: on the one hand, we get significant force from impulse interaction (left side), and on the other hand, we get weak force from impact (right side).

My device of the 1996 experiment is very simple: on the guide rod there are two lead cylindrical weights with a diameter of 15 mm and a height of 30 mm. The weights can slide to the left and to the right. Between them is a spring, which is initially compressed and held in this position by a thread. On the right side of the axle, a 5 mm thick rubber shock absorber was installed. In Fig. 34 shows three consecutive frames from a video recording of this experiment, which was made on a polished table in the auditorium of the conference "New Ideas in Natural Science", 1996.



Fig. 34. Frolov's experiment on the asymmetry of interaction, photo 1996

The essence of the experiment is as follows: the thread that holds the spring in a compressed state is destroyed in some way, for example, it is burned out. The bodies,

pushing off from each other at the central point of the body, slide in different directions, and each of them, in different ways, interacts with the support at the end of its path. On the side where the interaction is elastic (a shock absorber is installed on the right), a greater impulse is transmitted to the support, as a result of which it moves in this direction. On the other hand (left), the body hits the support hard; most of its kinetic energy is converted into thermal deformations. The position of the device on the table, before and after the interaction of bodies with the body, is different: after interaction, the device moves in the direction where the shock absorber is installed. This experience can be easily repeated, including on a suspension, on a floating platform, etc.

In each case, the total impulse transmitted to the body of this device as a result of interaction is not equal to zero, therefore, in a similar design of the propulsion unit, we can receive a unidirectional impulse periodically, moreover, without visible interaction with the external environment, that is, without any reaction with support.

Nevertheless, there is also interaction with the environment, since this experiment is one of the variants of the asymmetric "entropy drive" described earlier and shown in Fig.1. On the one hand, in this experimental device, the entropy is minimal; here a macro-impulse is created, transmitted to the body of the device through the elastic shock absorbers. On the other hand, the entropy of the interaction process is much greater, since the particles of matter receive during the impact interaction, mainly, disordered impulses, and as a result of deformations, thermal energy is released, which is transferred to the environment.

So, movement in space without reactive jet or other reactive method can be created as a result of asymmetric (in space) energy exchange with the environment. Later, in the chapter on nanotechnology, we will return to this issue, showing another method for implementing this principle. Now let's return to mechanical systems that use the inertial properties of a body moving along a trajectory with a variable radius of curvature.

The efficiency of such inertoids can be very high, for example, in the 1980s in Canada and the USA, an inertial drive was tested according to the Thomson scheme (Brandson R. Thomson), in which the eccentrics move along the path of the cardioid. This drive was powerful enough to drive a boat with passengers. In terms of energy consumption, this drive is about 20 times more economical than a gasoline outboard screw motor. The invention is described in detail in US patent 4631971, dated December 30, 1986.

Consider the Thomson inertoid diagram, Fig. 35. Gray circles on the diagram show the position of the eccentric during its movement, which is created by summing up two motions: orbital and proper rotation. The use of a pair of eccentrics eliminates the lateral impulse transmitted to the body.

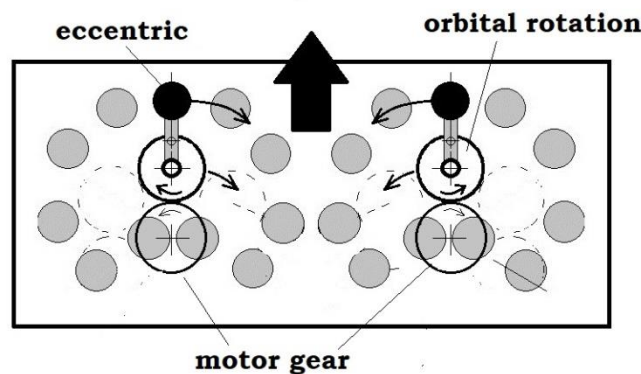


Fig. 35. Thomson's inertoid scheme.

The orbital roller "rolls in" the gear, which is mounted on the motor shaft. There can be two motors, but they must work synchronously. Usually, for each eccentric they create their own drive gear, which is "rolled" by an orbital roller, but both drives are synchronized, since they have one common motor. Experimental data confirming the promise of Thomson's scheme were obtained by my brother Alexey V. Frolov.

At present, computer programs have been developed to simulate the cardioid and construct Thomson's inertoids. In Fig. 36 shows one of the design options in which two movable gears roll around a stationary central gear.

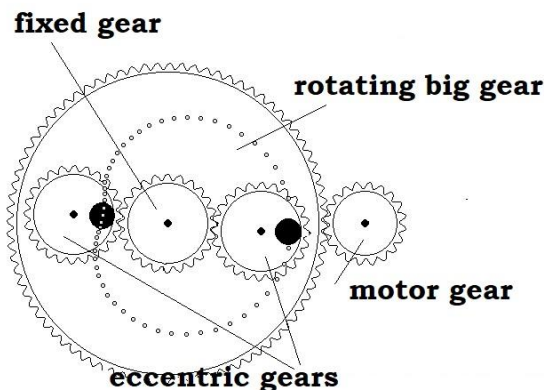


Fig. 36. Computer simulation of an inertoid.

So, if the trajectory of motion of the center of mass has the shape of a cardioid, then the centrifugal force, and the force of reaction to the body of the device, has different values in different directions. The driving force is determined here, as in other similar schemes, by the centrifugal force gradient.

At present, there are a lot of authors of inventions on the topic of "inertia". I would like to tell you about those whom I knew personally. Examples of many years of interesting research work in this direction are the projects of Konstantin D. Shukalov, Ivanovo, Russia. In 1996, he came to St. Petersburg for a conference, and demonstrated his models at work, Fig. 37.

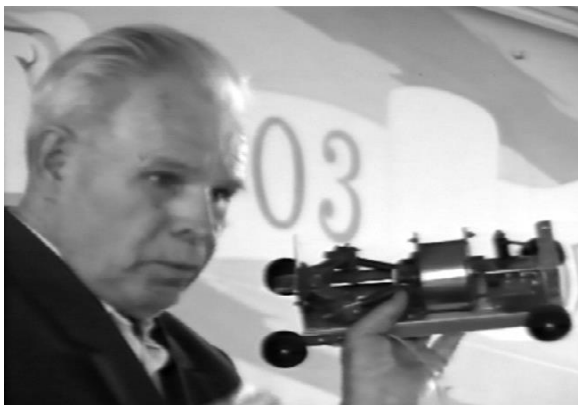


Fig. 37. Konstantin D. Shukalov demonstrates one of his inertoids, 1996.

One of Shukalov's models is shown in Fig. 38. In this drive design, the electromagnet is powered through a wire. Two eccentrics move along a trajectory of constant radius, but their interaction has a peculiarity: in one extreme position, they hit each other, the impulse is "extinguished". In the other extreme position, they hit the springs, transmitting two co-directional impulses to the body.

Regarding the law of conservation of momentum, for the structure under consideration, it should be noted that when the loads collide, their impulse is converted into thermal energy of deformation of the substance from which the moving loads are made. When the springs are compressed, in another phase of the working cycle, the energy is partially converted into heat, but most of the kinetic energy of the moving loads is transferred to the body of the device. This Shukalov scheme seems to be very promising for practical implementation.

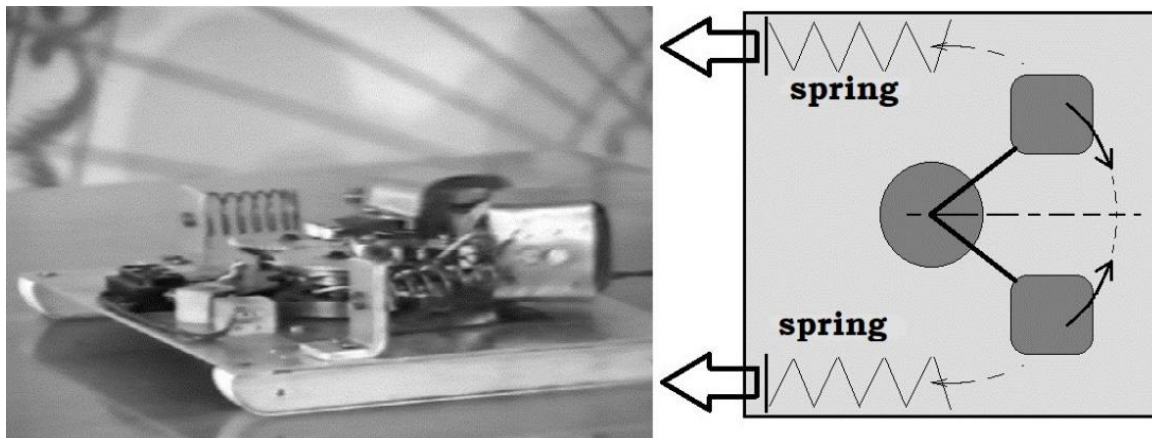


Fig. 38. One of Shukalov's inertial propulsion drives.

The practical application of such drives is possible not only in space, but also as a drive for any wheeled vehicles, and technologically eliminates the system for transmitting torque to the wheels (transmission) and creates a qualitatively new level of technology. All that is required for the implementation of this promising technology in transport is the interest of customers and investors.

Group on Research of Inertial-Less Processes (GRILP)

Let's move on one more real historical example in the field of new propulsion devices in Russia. This example does not disclosure technical aspects but it is important for understanding the ways of developing new technologies.

Russian group of authors, developing the theory of A.V. Murlykin, tested technical solutions that can be used to create workable devices that allow obtaining a driving force by reacting with the Aether. One of the members of this research team, Mr. Mikhalev, made a notarized statement that in 1991 special spacecraft without fuel on board was successfully launched into space. This device works on the principle of energy exchange with Aether.

Murlykin's theory is based on an understanding of the differences between two ways of creating movement in space: active and passive. In one case, the environment is considered as passive, and the propulsion drive must be active, that is, create a thrust force, overcoming the resistance (inertia) of the medium. In another case, as with a simple sailboat, the initiative for movement comes from the environment. It becomes active by moving an object without consuming fuel. According to the terminology of the authors, Aether is "antimatter", since any matter substance is created from Aether. The process of existence of particles of matter with inertial properties is the Aether exchange process.

The scheme of operation of the Aether-exchange propulsive device is described by the authors as follows: it is necessary to ensure "the separation of the Aether (antimatter) component from the nuclear of a chemical element, the accumulation and increase of the Aether density, and then it is necessary to transfer it to the working area of the apparatus. The presence of high density Aether around the aircraft will transfer the

surrounding Aether medium into an active state, and it will strive to "displace" such an object in the direction of decreasing density of the Aether.

In other words, an Aether density gradient is created around the device in the desired direction. In English publications there is analogy with this technology. It is theoretical "warp drive".

"Aether substance", according to the authors, "is taken from the nuclei of atoms." I suppose that the basis of their concept is the Aether-dynamic model of nuclei that exist due to the constant influx of "Aether substance" into particles of matter. In more detail, the technology was not disclosed.

During my communication with a member of this group, Mr. Shcherbak, we discussed the complexity of the implementation of this technology as a biomedical aspect. Obviously, the change in the density of the Aether has a strong effect on the human body. This author has a number of publications [18].

Gyroscope precession

Separately, we can consider the type of inertial propulsion drives using the effects arising from the forced precession of the gyroscope. Let me remind you that Polyakov's method is a special case of the practical use of this phenomenon. The essence of the effect in the classical sense: the gyroscope seeks to preserve the moment of rotation, and any rotation of the axis of its rotation (forced precession) creates a pair of forces, that is, additional torque that compensates for this rotation. It is important to understand that these are Aether effects, as well as the general case of inertia of bodies during acceleration or deceleration of motion.

Scheme at Fig. 39 shows the vector superposition of forces resulting from the forced precession of the gyroscope axis.

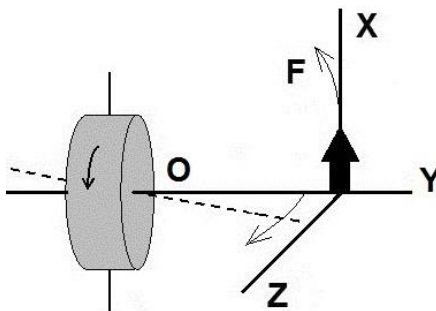


Fig. 39. Forces arising from forced precession of the gyroscope axis.

The resulting force F is so powerful that it can rotate a person sitting on a rotating stool - "Zhukovsky's bench" if he has a small but rapidly rotating gyroscope in his hands. An important feature: the force F is not linear, it creates a rotation of the gyroscope's axis of rotation in the XOY plane, if an external force acts on the axis, turning it in the ZOY plane. Another feature is that the effect increases if the gyroscope rotates faster, and the axis is rotated in the ZOY plane faster.

I hope you see analogies between this situation and the Lorentz force, or the Magnus force. Let's try to find analogies and reasons for the emergence of this force, within the framework of Aether dynamics. In Fig. 40 shows a gyroscope that rotates around the Y-axis and rotates in the YOZ plane.

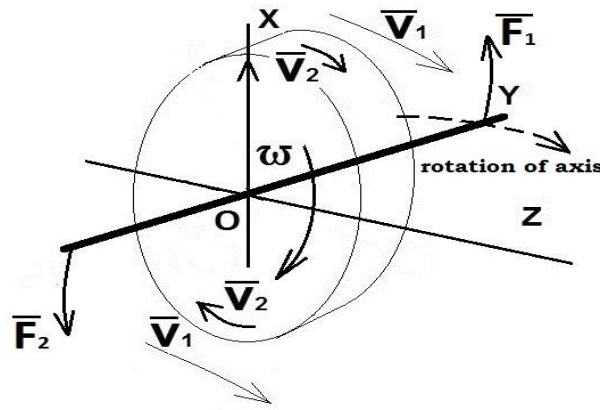


Fig. 40. Vector addition of velocities in the upper and lower parts of the gyroscope.

Here a pair of gyroscopic forces arises: F_1 is directed upward, and F_2 is directed downward, in the XOY plane, from the point of view of an observer who sees the rotation of the gyroscope around the Y axis in a clockwise direction (right rotation). What could be the reasons for the appearance of this pair of forces?

Note the following fact: different parts of the precessing gyroscope move at different speeds relative to the external environment. The speed of movement of the particles of the upper part of the gyroscope, relative to the external environment, due to the addition of the co-directional vectors of the velocities V_1 and V_2 , is greater than the speed of movement of the particles of the lower part of the gyroscope, relative to the medium. As a result, as in gas dynamics, in accordance with Bernoulli's law, the pressure of the external environment on matter particles in different parts of the gyroscope is not the same, that is, there is a pressure gradient of the environment on the precessing gyroscope.

The effect is manifested both in air and in vacuum, so we have a reason to talk about the *Aether-dynamic pressure of the external environment on the particles of matter of the gyroscope*. Thus, a pair of gyroscopic forces can be substantiated by the pressure gradient of the Aether on the rotating particles of the gyroscope matter. Consequently, this is an external force, and we can use it in the designs of active-type propellers. When designing, it should be taken into account that this force does not linearly shift the gyroscope, but rotates its axis in the XOY plane, increasing the gyroscope's torque.

Additionally, let's consider the issue from the other side. In Fig. 41 shows the trajectories of a point on the periphery of a rotating gyroscope, during its precession (rotation of the axis of rotation).

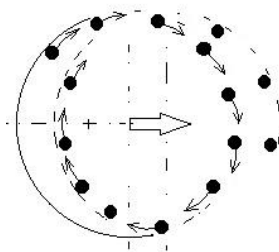


Fig. 41. Trajectory of a point on the precessing gyroscope.

The distance from a given point to the center of rotation of the gyroscope is constant, but taking into account that the center of rotation of the gyroscope itself (during forced precession) moves, then such a trajectory of motion of a point in space is

no longer a circle. Obviously, the curvature of different sections of a given trajectory is not constant, therefore the speed of movement and the acceleration of the curvilinear movement are also not constant. We considered this principle earlier, for example, in the experiments of A.I. Veinik. The centrifugal force acting on the body during its accelerated curvilinear motion depends on the curvature of the trajectory. The radius of rotation sets the amount of acceleration, and, in this case, it is also not the same in different parts of the trajectory. Thus, a force gradient arises, predominantly in one direction.

An example of a practical application of this method is shown in Fig. 42, US patent 3,653,269, dated May 15, 1970, by Richard Foster. In the description of the patent, a design is shown in the form of a trolley, on which the disk rotates, and two gyroscopes are installed on the disk, in the windows (holes). The design has electric motors of three groups, different in purpose: two motors 32 rotate the gyroscopes themselves, moreover, power is supplied to them through brushes and two contact discs.

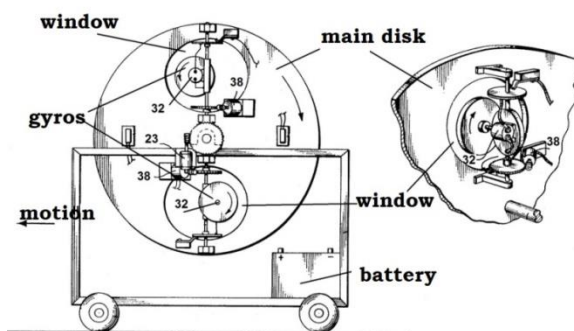


Fig. 42. Propulsion with gyroscopes, by Richard Foster.

The motors 32 are themselves also rotated by the drives 38, which create a precession of the gyroscopes. The gyroscopes are fixed on the axis of rotation, which is located diametrically in the disk window. Motor 23 turns the entire disc, which creates a reaction to the entire body. At one half of the cycle, one gyroscope creates thrust, then it turns off, and the second gyroscope creates thrust. Each of the gyroscopes "runs" for half a cycle.

There are many similar schemes, including patented ones. Practical research can be made even in a small home laboratory; however, one should know an important aspect of the application of such technologies: the reactions arising from the operation of an inertial propulsion drive can affect the health of a person who is near this device. From my own experience, I can note, for example, a change in my arterial blood pressure. From communication with other authors - developers who took the risk of dealing with more powerful disturbances of the Aether, I can give you some example.

In the 1980s - 1990s, in St. Petersburg, experiments were made with a metal gyroscope in the form of a cylinder with a length to diameter ratio of 2 to 1, a mass of several kilograms, and a revolution of thousands of revolutions per minute. Having untwisted such a gyroscope, the researchers sharply turned (tilted) the axis of its rotation using a powerful lever. With such a "forced precession", not only a pair of gyroscopic forces arose. The authors of this experiment noted "pulsed radiation of an unknown nature". This "radiation" or "Aether wave", in one of the experiments, damaged all mechanical and electromechanical clocks in the building where the experiment was made. In addition, the negative impact of this type of radiation on the health of people near the experimental setup was noted.

For us, these facts are interesting because they confirm the assumption about the nature of gyroscopic forces, as a reaction of the Aether medium to its perturbation. According to the Aether-dynamic concept considered in this book, such a disturbance

should be accompanied by a powerful wave of density of the Aether medium, which affects not only technical devices, but also biological objects.

In the future, it seems possible to create, by means of inertioids, impulse disturbances of the Aether medium, moreover, strictly in a certain direction, and to design the so-called "Aether exchange propulsion drives". I believe that in the role of space propulsion drives, such mechanical machines are not very promising, but they may have a chance to be introduced as communication systems and weapons of a new type. High-speed powerful devices of this type can be realized not mechanically, but on the basis of the gyroscopic properties of matter particles, as S.M. Polyakov on the example of ferromagnetics. One more note. Later in this book we'll look at John Searl's technology. Special features of permanent magnets in his designs are precession of the magnetic moments. This precession can be created when the material of the magnets is magnetized by adding a high-frequency component of the field to the constant field. The rollers in Searl generators have this special magnetization. I believe that here we have an obvious analogy with the previously considered variable radius gyroscopes and precession of the gyroscopes.

Modern physics considers the magnetic fields of permanent magnets as a result of the coordinated orientation of the magnetic moments of elementary particles, without detailing the fact that the magnetic moment of a particle is simply a form of describing its inertial gyroscopic properties, which are due to its Aether-dynamic processes. From here, we can suggest ways to create new special properties of magnet materials. These properties must be provided by the physical properties of the material itself, by the specific parameters of the particles of matter, about which we assume that they exist in the Aether medium, as the processes of circulation of the given medium.

So, we must find such forms of the complex motion of matter particles, the process of their existence, which allow us to obtain a purposeful asymmetry of the Aether flowing out and flowing into the particle. This asymmetry will create a difference in Aether pressure and a driving force. Since particles with an ordinary magnetic moment can be considered as microgyroscopes, we should pay attention to the previously considered effects that arise during forced precession of the gyroscope.

For example, it is possible in this way to create a magnetic material, in which the particles create not only a co-directionally oriented magnetic moment, but they also are in precession rotation, Fig. 43.

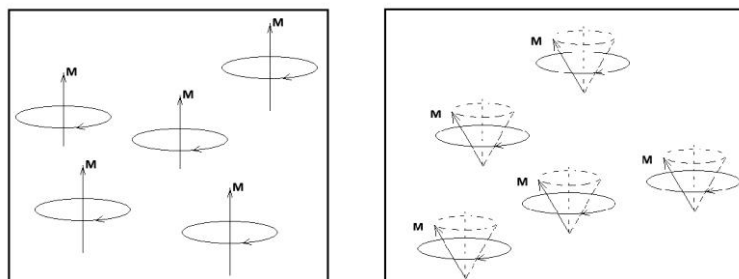


Fig.43. Conventional magnetic material (left) and material with precessing particles (right).

Actually, the very phenomenon of the precession of the magnetic moment of particles of a substance placed in an external magnetic field became known in 1895 as the Larmor precession. Professor at the University of Cambridge Joseph Larmor was known not only as a physicist, but also as a mathematician, in a very interesting field of knowledge: in the study of the process of motion! In Larmor's article "On the dynamic theory of an electrical and luminiferous medium" [19], a theory of transformations of space-time coordinates was published, which describes the transition from one inertial

frame of reference to another. Today, these mathematical transformations of the coordinates of a 4-dimensional vector are known as Lorentz transformations, although Larmor published his work before Lorentz and Einstein, back in 1897.

Currently, a separate branch of physics has already appeared - "gravimagnetism", which studies the special behavior of particles, and the connection between the phenomena of precession of elementary particles with the phenomenon of gravity. The theory of magnetism, in a simplified form, says that the orbital rotation of an electron is an analogue of an annular electric current, and if these elementary currents are aligned consistently, then the material acquires a total magnetic moment - a magnetic field. Briefly, we note that the modern theory does not go deep into the essence of the process, since as of the state of science in 2021, the structure of the electron is not officially known.

Nevertheless, the precession of the magnetic moment of the electron has been studied by physicists in sufficient detail. Today it is known that in order to create a state of precession of the magnetic moment of particles, including electrons, in a substance, it can be irradiated with a weak alternating magnetic field at the corresponding resonant frequency, or a precession of magnetic moments with a short polarizing pulse can be created. At this level of knowledge about the structure of matter, we can already offer some technological solutions for creating special magnetic materials that have anti-gravitational properties.

So, we came to the well-known scheme - the precession of the magnetic moment of the electron, performing functions similar to a mechanical "gyroscope of variable radius". All these schemes do not violate the laws of conservation of the amount of ethereal "working substance" circulating in the "propulsion drive". The law of conservation of momentum is observed, since the total momentum of the inflowing and outflowing Aether streams is equal to zero. Nevertheless, the vector sum of the reaction forces of the Aether medium, in some schemes, is not equal to zero, which allows us to hope that this idea will work.

The dynamic approach to the magnetic field, as to the flows of a circulating medium, opens up opportunities for creating new materials capable of creating Aether flows and a directed driving force, as a reaction of the medium to the asymmetry of the structure of matter particles, or their oscillatory, precessional and other complex motions. The use of such materials is possible both as antigravitation propulsion drive and for solving the problem of "screening" (compensation) of Aether flows.

In some cases, this explains the reasons for the reduction in the weight of free energy generators, although their developers did not set the task of obtaining a driving force. Let's consider such an example of a technical device.

Antigravity in free energy generators

It is interesting to note that a number of scientists studying methods of extracting energy by transforming the properties of space-time note the same features of the work of the experimental designs they have created, including those using magnets. Their works noted the "side effects" of interest to us, namely, the cases in which the extraction of energy from the Aether creates the effect of a decrease in the weight of the device, as well as a change in the weight of other objects located near the area of the experiment to extract the free energy of the vacuum.

In particular, this effect was manifested at the level of 90% weight reduction, in the works of Floyd Sweet from the USA [20, 21]. According to the design diagram of this energy generator, it is useful to note that it used permanent magnets specially prepared

for operation in a trigger mode: their magnetization could change abruptly under external influence, in a weak transverse magnetic field. Thus, the electromagnets of the control system expended little energy to change the direction of the magnetization in permanent magnets. With such an abrupt change in the magnetization of permanent magnets, an electromotive force was created in the generator coils, providing a conduction current and significant power in a useful electrical load. With a power input of several watts, Floyd Sweet's device could provide kilowatts of power in the payload. The author tested his invention in operation for weeks, under a load in the form of lighting lamps.

A diagram of Floyd Sweet's device is shown in Fig. 44. Let me remind you that the main purpose of this device is an energy generator. The technology of preparing a permanent magnet for operation in this mode required its repeated magnetization reversal. As Floyd Sweet noted, good results were obtained by passing an alternating current through a magnet.

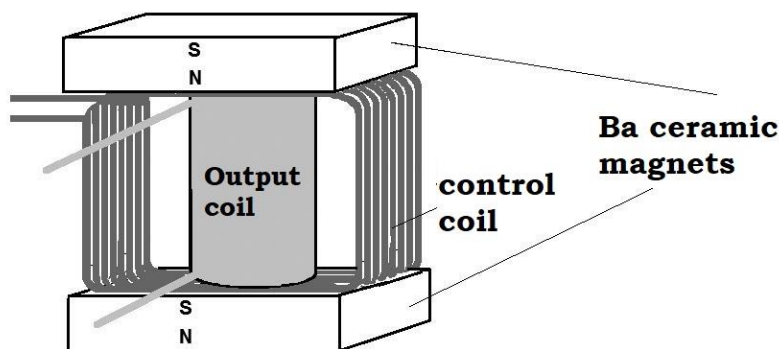


Fig. 44. Diagram of Floyd Sweet's device.

With this magnetization, on each side of the magnet, about 70% of the surface was occupied by one pole, and in the center, about 30% of the surface, another pole was created. With a weak external influence created by the magnetic field of the control coil, the situation on different sides of the magnet changed. I can assume that the magnetic moments of the particles of matter in such a "prepared" magnetic material were in the state of precessing gyroscopes, ready to "flip" abruptly under external influence.

Note that the trigger mode of switching the direction of the magnetic field of the permanent magnet occurred due to the impulse "shock" impact on the magnetic moment of the particles of the substance. In this case, a powerful disturbance of the Aether is achieved, the same as in the case of an impulsive rotation of the axis of rotation of a mechanical gyroscope. As a result of the disturbance of the ether, pulses of the movement of Aether particles appear, which create an induction effect in the area of the generator coils. In addition, a reaction of the Aether medium occurs - an impulse of the driving force, which partially compensates for the weight of the device.

It is not yet very clear whether the change in weight is the result of some "Aether reactive" effect, or the result of a local decrease in the pressure of the Aether medium, which was set in motion. Of course, this environment is inseparable; therefore, Aether from the environment will come to the place of the outflowing stream of Aether. In this case, when analyzing the facts of a decrease in the weight of Floyd Sweet's device, we can talk not about a reactive effect, but about a decrease in the static pressure of Aether in the area around a given energy generator, which occurs with an increase in the dynamic pressure of a stream of Aether, in accordance with Bernoulli's law.

An interesting feature of the Sweet generator operation indicates that such devices are precisely Aether-dynamic systems. Floyd Sweet reported the generator's unstable behavior and spontaneous changes in the output power level. Today we know the

reasons for these "oddities", since the density of the Aether, in a particular place on the planet, is not a constant value. Long-term observations of the physical properties of the Aether medium, including its seasonal and daily changes, were made by Alexander Mikhailovich Mishin [22].

In the chapter on Kozyrev's theory and experiments, the reasons for these fluctuations in the density of the Aether medium will be shown.

Another example of Aether exchange propulsion systems is the "flying power generators" that John Roy Robert Searl is building. These generators work on electromagnetic principles, also using special magnetic materials. The history of the development of the Searl generator began in post-war England. John, at the age of 14, became an apprentice electrician at a factory in the English city of Birmingham. Working with permanent magnets for electricity meters, in 1946 he discovered a new effect of electromechanics, which is not talked about in school. In a rapidly rotating metal disk, which is used in an electric meter, a radial electromotive force appeared, with a vertical vector. To increase the effect, John first magnetized the discs, and then began to use special permanent magnets with special properties.

One day, his model, consisting of several magnet rings connected together, demonstrated large radial electric potential difference during rotation. Then the block of rings broke away from the motor, and hung at a height of 1.5 meters, constantly increasing the rotation speed and it fly away.

Between 1950 and 1952, John created more than ten models of "levitating discs". John Searle's projects became known throughout the world, but commercialization was delayed. In 1968, an event occurred that delayed the development of these studies. On July 30, 1968, John tested the R-11 apparatus weighing almost 500 kg. During the demonstration, the device was no longer controlled, and then took off and disappeared from view at a high altitude in the sky.

The authorities promptly "reacted" to this event. Local electricians have charged big invoice to the inventor with electricity for the past 30 years, although John had his own power plant and did not have to pay anything for electricity. He was unable to pay the huge amount of the fine, so he was arrested, tried, and jailed for 15 months. During his absence, all equipment and devices were destroyed, and the house was burned.

Later, in the 1980s, there was a lot of buzz about Searle in the press as the "father of flying saucers." Then all the talk about this talented inventor stopped, as if someone had given such a command. Currently, John Searle is open to contacts, films are made about him and books are written. He really deserves to study his theory and technology for making "special magnets". Photo Fig. 45 shows a photograph of a small experimental setup in John Searl's modern laboratory (republished with permission from John Searl).



Fig. 45. One of the modern Searl generators.

On the left in the photo, the rollers do not rotate, and on the right in the photo, rotating rollers are shown. By giving the rollers an initial rotation by hand, one can obtain a mode of self-acceleration of their orbital motion. This generator is not designed for flight, but its weight is reduced during operation. The question arises: Why are the rollers capable of self-acceleration and the weight of the system as a whole decreases?

It should be noted that this is not a matter of mechanics. John Searle made a fundamental discovery in the field of magnetism, which is that the addition of a small component of a weak alternating current (about 100 milliamperes) high frequency (about 10 MHz) in the process of making permanent magnets gives them new and unexpected properties. Based on these magnets, John created his own generators.

We have already recalled this method as a way to create the Larmor precession of the electron magnetic moment. An assumption was made about the role of the precession of magnetization of magnetic materials for the creation of gravimagnetic effects. A similar concept of precessing gyroscopes, the role of which is played by particles of the material of a ferromagnetic, was considered by S. M. Polyakov. The process of preparing a magnet for operation in a trigger mode, as noted by Floyd Sweet, also includes processing it with alternating current, with the addition of a high-frequency component of current.

So, this aspect is main point for gravimagnetic phenomena, since it is based on the Aether-dynamic inertial properties of precessing gyroscopes, which are played by matter particles.

Searl's technology can be applied not only in the energy sector. In Fig. 46 shows the structural elements of the vehicles that John Searle and his team built for flight. The diameter of the disc is about 7 meters.

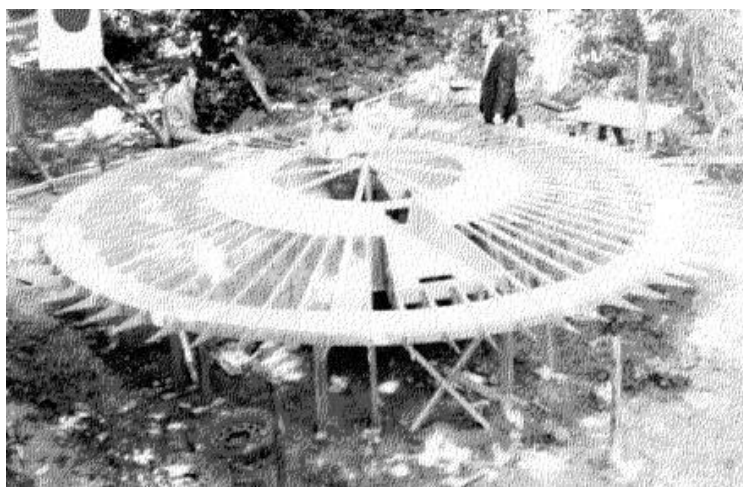


Fig. 46. One of John Searl's apparatus in the making.

In addition, considering this topic, one can refer to the experiments of Roshchin and Godin, who in 1992 at the Institute of High Temperatures, Moscow, built a similar generator. The project was called "Astra". The installation diagram is shown in Fig. 47. In this design, peripheral magnets (rollers with axial magnetization) rotate around a central ring-shaped magnet, also axially magnetized. The rotation was created by an externally powered electric motor.

Unlike Searl's designs, the magnetic rollers are mounted on a common disc rotor. The rollers also had freedom of rotation around their axis, which provided radial inserts into the rollers and into the stator. In general, such an attachment resembles the

rotation of small gears around one large gear: the roller rotates around its axis and in orbit. The situation is analogous to the process taking place in the world of elementary particles of matter, which have both their own (spin) and orbital rotation.

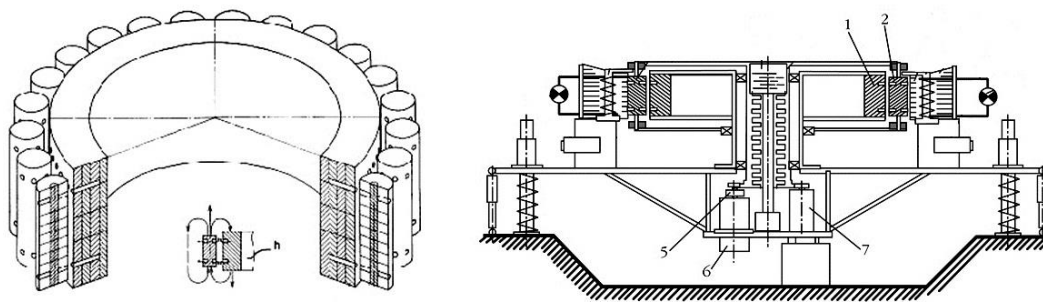


Fig. 47. Experimental device ASTRA made by Godin and Roshchin in 1992.

The diameter of the magnetic system of the Godin and Roshchin converter (in the Astra project) was about 1 meter. The authors reported that at more than 500 rpm, self-rotation began, and the machine switched from the primary drive to the generator with a load of up to 7 kilowatts. In the process of work, the presence of axial vertical lift was noted, that is, a decrease in weight by 35%, and strange concentric "magnetic walls" were noted around the installation - areas of changes in the magnitude of the magnetic field and the temperature of the medium. The distance between these "magnetic walls" was about 50 - 60 cm; the thickness of the "walls" was about 5 - 8 cm. The temperature inside the "walls" was lower than the ambient temperature by about 6-8 degrees.

Concentric "magnetic walls" and associated thermal effects began to appear noticeably at about 200 rpm, and increased linearly with increasing rpm. For more details, read about this project in the article by V. Godin and S. Roshchin "Experimental study of nonlinear effects in a dynamic magnetic system", [23]. This method is patented in Russia: "A device for generating mechanical energy and a method for generating mechanical energy", Roschin V.V., Godin S.M., RF patent No. 2155435 dated October 27, 1999.

Unlike the works of John Searl, in publications on the works of Roshchin and Godin, I did not find any mention of the need for special magnetization of the material, which, in other cases, allows explaining the appearance of gravimagnetic effects. When communicating with S.M. Godin in 2001-2003, we discussed the design details of their generator, including the second version. Taking into account that the effect of weight loss of the apparatus depended on the "polarization voltage", it is possible to explain the appearance of the lift force in this case using the well-known concept of "pondemotor forces". We will consider this issue in a new chapter.

Pondemotor effects

So what are "pondemotor effects"? These are force effects that occur in crossed magnetic and electric fields. The so-called "polarization voltage", in the "Astra" design, Fig. 46, reached 20 kilovolts, and was created in the radial direction, between the stator and the electrodes mounted on the periphery, at a distance of 10 mm from the outer surface of the rotating rollers. The stator appears to have been grounded. In such a scheme, in fact, the rollers having axial vertical magnetization rotated in orbit around the annular stator, passing across the radial electric field. A diagram of such a process is shown in Fig. 48.

As a result of such a superposition of vectors, the usual pondemotor forces arise, acting on a moving object from the side of the surrounding Aether medium. Earlier, such effects, in particular, the Lorentz force, were proposed to be considered a consequence of the creation of a certain gradient of Aether pressure. In this case, the Aether-dynamic phenomena in the "Astra" project, for example, a change in weight and concentric walls (standing waves of the density of the Aether medium) that arise around the rotor of the "Astra" installation, are quite understandable.

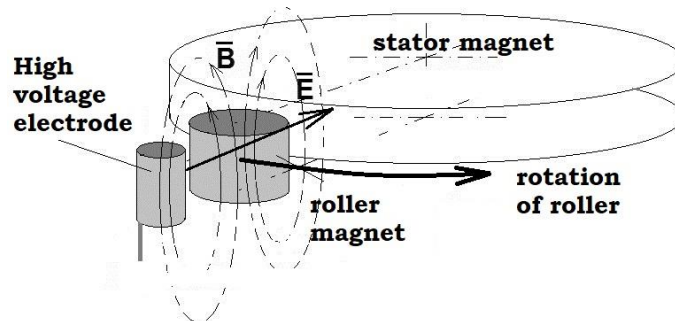


Fig. 48. Diagram of crossed electric and magnetic fields in ASTRA project.

The direction of action of one of the components of the pondemotor force shown in Fig. 48 is orbital. With the correct consideration of the direction of the electric field E and vector B (roller magnetization), this force will accelerate the roller in its orbit. Thus, self-rotation of the rollers, constant torque, and the possibility of autonomous operation of the generator under load are provided. The possibility of using this technical solution as a propulsion drive appears because the rotation of the rollers changes the density (pressure) of the Aether in the area of operation of this device. In this case, an axial (vertical) force arises, which was detected by a change in the weight of the "Astra" installation.

There may be several design solutions that implement this principle. The tasks of the designer include increasing reliability by reducing units and parts, as well as reducing energy consumption. In 1995 I conducted a simple experiment on this topic, Fig. 49.

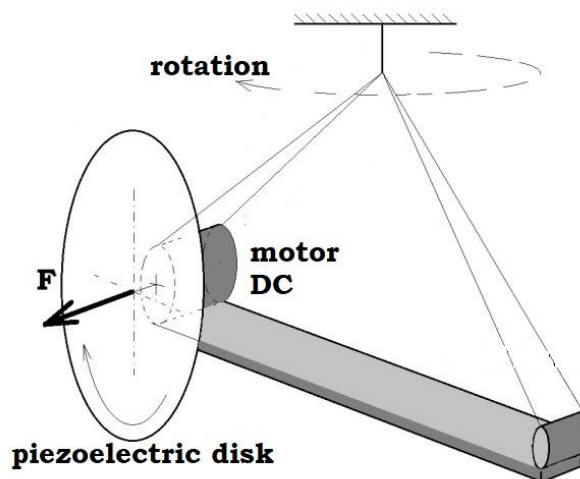


Fig. 49. Frolov's experiment with a piezoelectric disk.

RADIAL STRESS OF PIEZOELECTRIC ROTOR

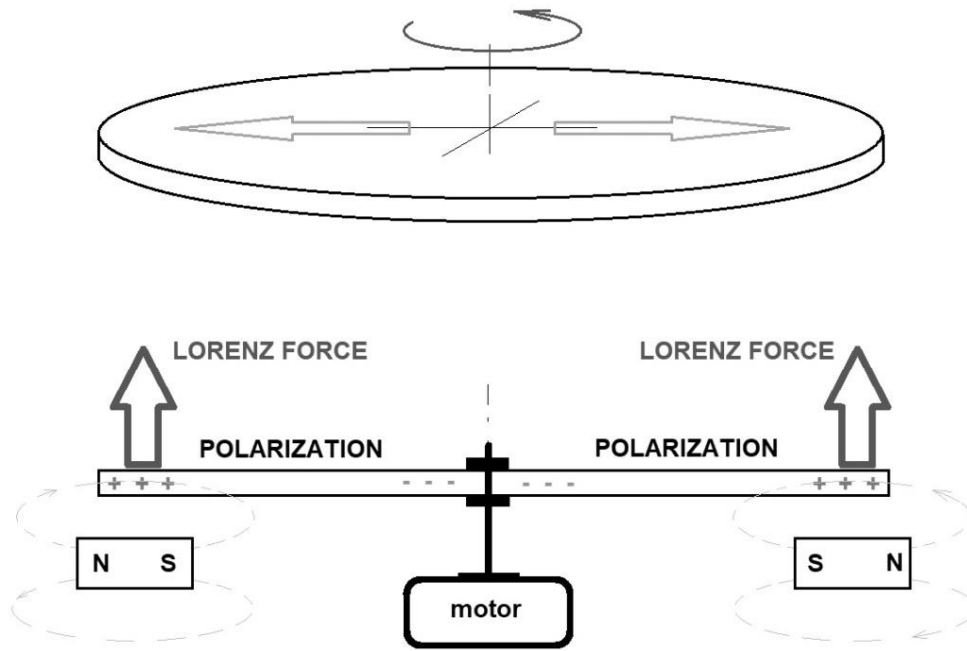


Fig.50 Frolov's experiment with piezoelectric disk cross magnetic field

An ordinary computer CD of 1995-1996 with a diameter of 120 mm was fixed on the axis of the electric motor. As it rotates, the disc material undergoes radial deformation. The material of most CDs was piezoelectric, therefore, upon deformation; a radial electric field arises in it. As a result, at high rotations of the disk, the smell of ozone appears in the air near the rotating disk, and the edges of the disk begin to glow in the dark.

Tests of this device on a suspension, according to the diagram shown in Fig. 49 have shown that this device creates a certain traction force directed along the axis of rotation. It was not powerful force, but it turned the device and twisted the suspension, on which the wires from the 12 VDC power supply for the electric motor were also fixed. When the direction of rotation of the disk is changed, the force that turns the given propulsion drive changed its direction to the opposite.

To obtain a greater effect, it is necessary to ensure that the electrically charged material of the compact disc interacts with the magnetic field of the permanent magnets. The minimal effects were observed even without additional magnets, since there are already magnets inside the electric motor. The effect was greatly enhanced when additional permanent magnets were installed on the motor housing, Fig. 50.

In theory, a simple rotation of a charged dielectric disk around its axis should also provide similar force effects, since charged particles on the surface of the rotating disk create their own magnetic field, which interacts with them. Similarly, that is, the interaction of currents with their own magnetic field explains the effects of reducing the weight of a rapidly rotating electrically charged ball.

The advantage of this scheme is a simple method for obtaining a high electric potential on the surface of a rotating disk, which does not require an external source. It should be noted that in this experiment, the disk did not work for long, since its vibrations during rotation led to the appearance of microcracks, and after several tests, the high voltage disappeared. In this regard, it was necessary to change the disk. Nevertheless, the experiment is reproducible, and its development and improvement of

the scheme can become a new promising technology for creating propulsive devices applicable for space technology.

Let's note the high voltage potential on the disk can be created by well – known method of friction, it works in electrophorus machines. The metal segments will be charged by friction and the charges will interact with them magnetic field.

A similar principle, but in a different technical implementation, was proposed by Academician Gennady Fedorovich Ignatiev. Let's consider his "ponderolet" in a separate chapter. Name “ponderolet” means “Pondemotor flying device”.

Ponderolet by Academician Ignatiev

The general idea of the flow of energy in space, namely, in elastic bodies, was introduced by Russian Professor N. A. Umov in 1874. Later, in 1884, this concept for electromagnetic energy was developed by the British physicist John Poynting.

I believe that it would be correct to accept the understanding of the Aether medium as an elastic medium for the propagation of longitudinal waves, that is, areas of compression and decompression of a given medium moving at the speed of light. It is for such flows of energy that Professor Umov introduced the concept of a flow vector. The essence of this vector S is that it indicates the direction of propagation of the energy flow. In Fig. 51 shows a diagram of the interaction of crossed vectors of electric and magnetic fields, in which there is an "energy flow of the electromagnetic field.

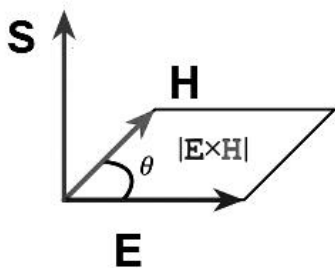


Fig. 51. Umov-Poynting vector S

The Umov - Poynting vector S is defined through the vector product of the vectors E and H , and its modulus is equal to the amount of energy transferred through the unit of surface area perpendicular to the vector S .

The reaction of such an elastic environment as air to the emergence of a directed flow of energy in it is well understood. The reaction of the medium will correspond to the density and speed of the flow created in it, and is directed in the opposite direction. Similarly, when creating a directed flow of energy in the Aether, a reactive driving force will act on the structural elements that create this flow.

These forces are called pondemotor forces, and they act in any radio transmitter antenna that emits electromagnetic waves. The total forces for a cycle of oscillations are usually zero, since almost all antenna systems are symmetrical, and the power supply has the form of a sinusoidal current. With such a power supply of the antenna electromagnetic system, the energy flow vector (Umov - Poynting vector) has the character of linear sinusoidal alternating oscillations, "forward - backward", without creating a unidirectional transfer of energy in space. Other variants of electromagnetic "antennas" allow you to get more interesting effects than the excitation of an alternating electromagnetic field.

Academician Gennady Fedorovich Ignatiev, chief designer of the Geofizika Central Design Bureau, laureate of the State Prize, taught physics at the Krasnoyarsk University in the last years of his life. One of his favorite research topics, both in theory and in practice, was a space propulsion system of a new type, operating on the basis of the well-known Umov-Poynting effect. Academician Ignatiev proposed the scheme shown in Fig.52, conference "New Ideas in Natural Science", 1996, St. Petersburg.

In Ignatiev's scheme, it was proposed to create a rotation of the composition of the vectors of the electric and magnetic fields. Each field is created independently, but they are located at an angle of 90 degrees in relation to each other, and when rotating, the crossed vectors E and H retain this angle.

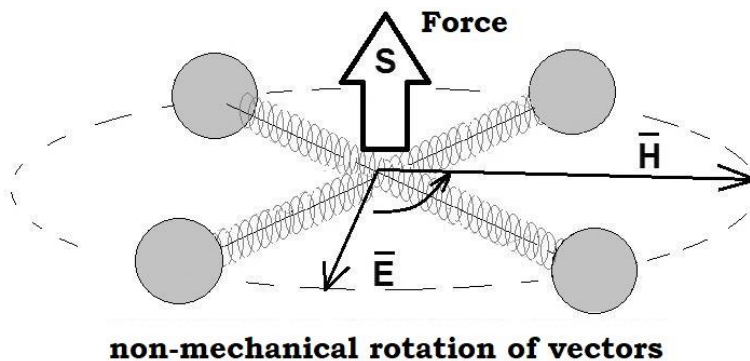


Fig. 52. The Umov - Poynting vector in the design of the Ignatiev propulsion system.

Note that this is a non-mechanical rotation of the fields. An electric rotating field is created by four solitary capacitors (these can be spheres or toroid), and a rotating magnetic field is created by four coils. This is not a mechanical rotation of a system of coils and capacitors, but a rotation of vectors created by shifting the phases of the power supply. Likewise, a rotation of the magnetic field is created inside a three-phase electric motor.

In the photo Fig. 53, an experimental setup, built by Academician Ignatiev, is shown, the principle of which is based on the creation of an Aether flow in the axial direction.

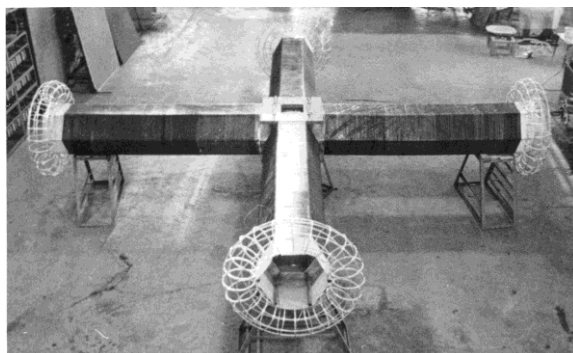


Fig. 53. Photo of Ignatiev's ponderolet.

In this scheme, the Umov - Poynting vector is not pulsed or alternately directional, as in a conventional radio transmitter antenna, but this energy transfer vector has a constant direction along the rotation axis of the superposition of electric and magnetic fields. The corresponding impulse of reaction of the surrounding Aether medium creates a propulsion force and changes the weight of the device. The calculation of the generated force can be made according to the law of conservation of momentum, taking the speed of the energy flow in the Aether equal to the speed of light; according to

the pondemotor force formula, it is necessary to divide the modulus of the Umov - Poynting vector by the value of the speed of light.

A report by Academician Ignatiev on this topic was published in 1996 [24]. The experimental propulsion device shown in Fig. 53, had a maximum size of about 4 meters, an operating frequency of 80 kHz, and when consuming 10 kW of electricity to create a current in the coils, it created a rotating electric field with a strength of 10 kV / m, and a magnetic field strength of about 200 kA/m. These parameters made it possible to obtain an energy flux density $S = 10^{10}$ (J/m²c) and a driving force of the order of 60 Newtons. This device cannot fly since it could provide only 6 kg lift force, with a total weight of the device was about 30 kg.

In his 1996 report, Academician Ignatiev offered the audience calculations for the design of a spacecraft with a diameter of 40 meters, capable of lifting its own weight, having a lifting force of more than 300 kg. Theoretically, Ignatiev's space drive could develop the speed of light.

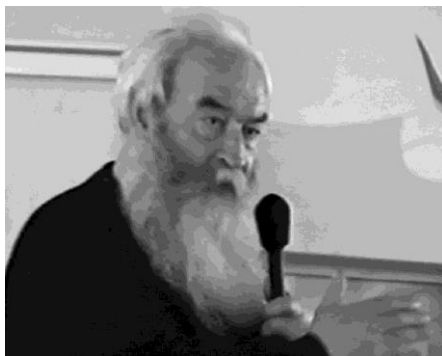


Fig.54. Academician Gennady F. Ignatiev

When considering the scheme proposed by Ignatiev, its advantages and disadvantages are obvious. This circuit requires a powerful source of electric current that creates a rotating magnetic field. In addition, a high voltage source is required to power the capacitors in the Ignatiev circuit. Let's try to find other solutions...

Let me remind you of such a simple method for obtaining an electric field of high intensity (electrical potential difference), as the previously considered deformation of a piezoelectric disk that occurs during its rotation. The magnetic field can be provided by permanent magnets, and the energy consumption in this version of the propulsion drive is only needed to create the process of mechanical rotation. In Fig. 55 shows a variant of the design of a rotating platform, on which the electric field is generated by a pair of charged bodies, and the magnetic field - by a pair of permanent magnets.

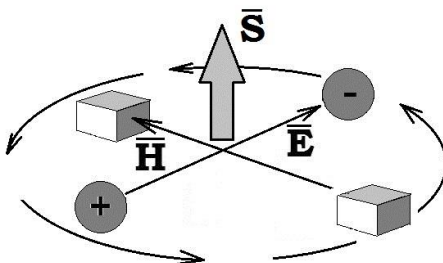


Fig. 55. Mechanical rotation of disk with ExH fields

The disadvantage of this design is the limitation of the speed of mechanical rotation. In Ignatiev's ponderolet, the rotation of the vector superposition $E \times H$ is created due to the multiphase power supply of the coils and capacitors, and practically has no restrictions on the speed (frequency) of rotation. This gives the Ignatiev scheme a

significant advantage, since the energy flux density (the modulus of the Umov - Poynting vector) depends on the angular velocity of rotation of the vectors $E \times H$.

In 2019-2021 there is new author on the topic. His name Alexey Chekurkov, Russia. His device can fly (you can see video on YouTube). There are rotating magnets and high voltage source. I am not sure if this device was tested by independent experts, so be critical to his video.

Considering this topic, we can conclude that the concept of the strength of an electric or magnetic field is conventions that we use to describe real physical processes in the Aether medium. In a sense, the electric field is a linear deformation of the elastic Aether medium, as a result of which, in the medium, some potential energy is stored. The magnetic field is an analogue of the vortex flow of the Aether medium, which has kinetic energy. Electromagnetic processes, in this case, are "rotation and linear transfer", as Hermann Weil wrote, that is, *helical deformations and displacements of the medium*.

With the superposition of the electric field, for example, at an angle of 90 degrees, to the lines of magnetic field strength, we get such a deformation of the medium that the rotation of this deformed region of space creates an energy flow in the known direction of the Umov - Poynting vector.

From a mechanistic point of view, we can say the following: due to this superposition of $E \times H$ fields, an analogue of a mechanical screw mechanism is created in the Aether medium, which, when rotating, works by analogy with a propeller screw (Archimedes' screw) and pushes the Aether medium away from itself. So, this method can be considered as reactive propulsion. Here is reaction of the electromagnetic "screw" with Aether.

Another invention, which well complements the topic of propulsion systems using pondemotor effects, was patented in 2001 by Russian authors of G.P. Ivanov and Yu.G. Ivanov, Patent N 2172865.

The essence of the Ivanov's invention is shown in Fig. 56. On a cylindrical non-conductive ferromagnetic core, two metal electrodes (inside and outside) are placed. An alternating magnetic field is created in the core, which, when interacting with an electric field, provides a driving force.

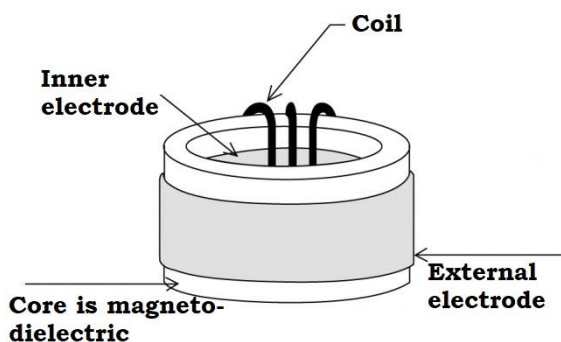


Fig. 56. Ivanov's propulsion drive

In this case, the vectors E and H are crossed, as in the scheme of Fig. 50. Vector H is directed along the circumference of the ferromagnetic core, and vector E is directed radially, from one electrode to another. The driving force is directed along the axis of the cylindrical core, that is, along the Umov-Poynting energy transfer vector.

The advantage of this circuit is that the ferrite core amplifies the magnetic field tens of thousands of times, which makes it possible to create compact and powerful

propulsion devices. The development of this technology requires the creation of special magneto-dielectrics, that is, such materials in which optimal conditions for the formation of both powerful magnetic and strong electric fields are created. The shape of the core can be not only toroidal, the main aspect is to provide conditions for the creation of a unidirectional flow of energy, or, in other words, the flow of the Aether medium.

Developing the question of the possibility of creating a propulsion force due to the deformation of the Aether medium, let us consider the internal structure of the electric field as some area of space with deformations of elastic Aether medium.

Inner structure of electric field

Next, we will consider electrical propulsion drives, such as asymmetric capacitors. To understand their principle of operation, it is necessary to consider the structure of the electric field.

Aether, like any physical environment, the existence of which we can accept, together with Mendeleev, has certain physical properties. Mendeleev wrote about the elasticity of this medium in the article "An Attempt at a Chemical Understanding of the World Aether" [25]. Aether, according to Mendeleev, also has mass, although "one should speak not about weightless Aether, but only about the impossibility of weighing it."

Of the many works of modern researchers of the properties of the Aether, I recommend the reader to study the theory and experimental results of Alexander Mikhailovich Mishin [22]. His book includes works of authorship containing original research materials on the multidimensional and fractal properties of space-time of the world Aether. Mishin's scientific search is based on the results of laboratory experiments and field observations. Alexander Mikhailovich Mishin developed a new empirical concept of Aether, and confirmed it by means of "devices with an artificial biofield." He revealed to us the unknown laws of Aether dynamics. The main conclusion that I made from Mishin's theory is the understanding that the Aether reacts to the impact (or electromagnetic impulse) in different ways, depending on the parameters of the impact on it. It can react like a gas, or like a liquid, but when it is quickly exposed to it (a steep pulse front), it behaves like an absolutely solid incompressible body.

So, the electric field, externally observed by us as a static situation, can be considered as "stress", that is, deformation of the structure of the Aether, its polarization, compression or decompression, leading to a change in its density. However, there is another approach to the structure of the electric field, which assumes its dynamic structure, the statics of which is explained by the balance of two or more processes. For example, Whittaker's concept considers electric potential as a bi-directional flow of energy [26]. His mathematical approach to the relationship between electromagnetism and gravity, in 1991, was analyzed in detail by the American scientist T.E. Bearden.

Bearden wrote in his book Gravitobiology [27] about the physical meaning of Whittaker's mathematical constructions: "Space-time, in a certain sense, can be considered as a conglomeration of potentials, including scalar electromagnetic potentials. Therefore, the simplest structure of electromagnetic scalar potentials (captured electromagnetic energy) is a composition of spin-2 gravitons. "

The structure of an electric or gravitational potential field, according to Bearden, consists of paired photons and antiphotons (gravitons and antigravitons). Antiphoton is the same electromagnetic process of Aether density fluctuation as a photon, but in reversed time. Consequently, the potential field can be considered as a bidirectional electromagnetic process - anti-process. Hence, the assumption follows that the power

received by some technical device due to any potential field can be obtained only due to the creation of changes, an imbalance in the internal structure of the potential field.

An interesting conclusion: the photon and antiphoton are waves of energy density in the Aether medium. However, the photon propagates into the future from the past, moving away from the radiation source. The antiphoton, in this case, must come to the "receiver" of antiphotons from infinity. This idea of the flow of energy flowing into matter from the vastness of the Universe has been presented by many authors as the basis for a model of gravitational interaction. The stream of "antiphotons" must have energy, and we can use it for practical purposes.

Tesla, for example, believed that to extract this type of energy, it is enough to simply create "conditions for the sink of energy." In such an energy converter, antiphotons flowing into the "working body" will be absorbed, and the balance of photons and antiphotons will change. What will be the consequences when the structure of the electric or gravitational potential field changes?

Obviously, in the vicinity of this energy converter, the rate of processes should change, including the process of existence of particles of matter, which, with small deviations from the balance, will manifest itself as changes in the physicochemical properties of matter, and large changes in the balance of photons and antiphotons should lead to the transition of matter to "another level of existence." We will come to the question of the technical implementation of these ideas at the end of the book.

In this concept, you can get interesting conclusions. If the time for the process A is considered as the direct time $t +$, and the time of the process B is considered as the reversed time $t -$, then we will obtain a new formula for the law of conservation of energy for such paired processes. Formula F.2. takes into account the assumption that processes in any potential field always proceed immediately in forward and reverse time:

$$dA / dt + = dB / dt - \quad F.2$$

Conclusion: Space-time is a source of energy of unlimited power. There is no limit to power extraction if changes in power in process A correspond to changes in power in process B. In the new formulation, the law of conservation of energy takes on the meaning of maintaining the balance of the structure of processes. The energy of the processes in direct time must be equal to the energy of the processes in the reversed time. This formulation generalizes the laws of mechanics (action-reaction) and the law of conservation of energy. In general terms, we can talk about the law of balance.

Similar ideas were presented by Academician Gustav Johannovich Naan in 1964. He wrote that you cannot get "something" from "nothing", but you can get two processes of any power if you create "something" and "anti-something". It is Law of Symmetry of The Universe.

Note that the zero state is not "nothing". This "something" is a balanced structure known as the "internal structure of zero" in ancient Indian mathematics. In general, we should consider a balanced multipolar state, F.3

$$0 = A + B + C + \dots + N \quad F.3$$

The structure of the time flow can be more complex than the bidirectional combination of time and reversed time flows, and its internal structure can be viewed in a multidimensional form. I will add here a brief explanation of the "multidimensional time". We usually think of time as a sequence of events. Linear time is a sequence of events. However, the development of events in the world has many options, thus there is a multivariate universe and many timelines. The plane of time is a two-dimensional

structure (sheet), in which the time lines of parallel spaces are located. All the time lines of these spaces have someone unchanging parameter that sets the positions of the time lines in the plane, where they have different directions, but do not intersect. Different planes (sheets) form an "event tree", that is, a set of parallel spaces.

Theoretically, according to the concept discussed above, any amount of energy, and any driving force, can be created by structuring the Aether medium. The limitation for design is the law of balance, which requires the creation of any energy process in conjunction with a counter-directional process. Mutual compensation of two or more processes can be organized both in space (spatial separation) and in time (chronal separation). From here, we get two technical solutions:

1. The asymmetry of spatially opposite paired energy processes provides the technology for creating an active propulsion force acting in space axis.
2. The asymmetry of paired energy processes counter in time gives the technology for creating a propulsion force acting along the time axis.

Both technologies can be combined in one device, providing controlled movement of the vehicle both in space and in time. Let's move on to considering examples of the technical implementation of these ideas.

Thomas Brown effect in electrical capacitors

Currently, the Biefeld - Brown effect is often mistakenly referred to as the reactive ion wind effect. We will not consider devices that fly due to air ionization. In the schemes proposed here, ionization can occur, but it is not main cause of the propulsion force.

The Biefeld-Brown effect refers to electrokinetic effects, and is not reactive. These are active-type electric propellers. This technology, as well as mechanical drives of active type (inertioids), is capable of ensuring the movement of a vehicle in any given direction, without jet mass ejection. The technology is based on classical electrical interactions, organized in such a way that the Aether pressure gradient and propulsion force appear.

Background note: The discovery was made by Thomas Townsend Brown, and since he worked in the laboratory of Dr. Paul Alfred Biefeld, Denison University, Granville, Ohio, the effect is named after Professors Biefeld and Thomas Brown.

The essence of the Brown effect, discovered in 1921, is as follows: the opposite forces of the Coulomb attraction of two or more bodies may not be equal to each other. As a result, in a system of electrically charged bodies (dipole), there can be a total nonzero *acting force directed from the negative electrode to the positive one.*

Note an important feature of this method: Brown worked with electric capacitors, which have a solid dielectric of a special shape. In order to describe these physical processes in a few words, the author used the term "we create stress in a dielectric", that is, there was compression and deformation of the substance under the action of an electric field. The greatest effects were noted by the author at such voltages of the high-voltage power source, which were close to the voltage of breakdown and destruction of the dielectric. I believe that in this case, the elasticity of the dielectric material plays a large role in creating the driving force, although Brown did not note this factor.

Later, we will consider the theory of the author Yuri Belostotsky, Russia, and show the role of elastic stresses in the material for the formation of its own gravitational field. Let me briefly note that constant elastic deformation and constant elastic stress in the

body creates a constant "own gravitational field", and variable elastic deformation creates a "gravitational wave". For magnetic materials, as Polyakov showed, similar effects arise during magnetostriction. In general, it is quite understandable as one of the methods of creating longitudinal waves in the Aether medium.

On the other hand, in my opinion, the Brown effect for a capacitor with a dielectric can be interpreted as a result of the bending of the electron orbits in the dielectric material, similar to the diagram shown in Fig. 57. In this case, inertial Aether-dynamic effects arise. *The curvature of the electron's orbit, in a strong electric field, should acquire asymmetry*, and this should lead to the appearance of uncompensated centrifugal force acting towards the positive electrode. Sure, the orbit is not flat but in will be similar to egg shape in the case of asymmetry. I presented this idea at the conference "New Ideas in Natural Science", 1996. There are many technical ways to achieve this effect.

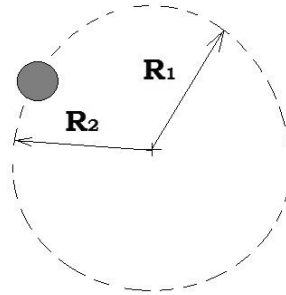


Fig.57. Asymmetry of electron orbit in external electric field

In his patent "A device for the production of force or motion by means of electrodes", a patent application dated April 15, 1927, [28] Thomas T. Brown described the design of an elementary device - a "gravitator", showing its use not only as a propulsion device for transport, but also in power engineering, for rotation of the rotor of an electric generator, Fig. 58.

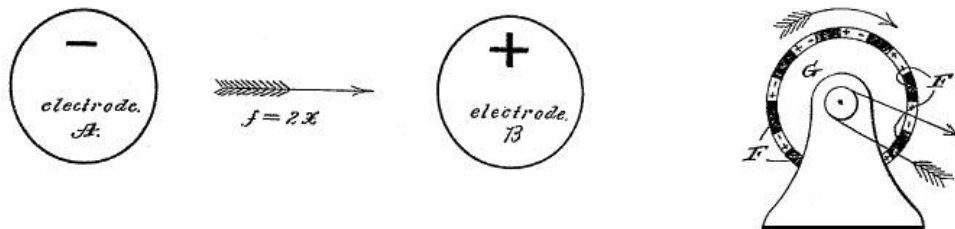


Fig. 58. Diagram of the Brown effect and its application in electric generator.

According to the effectiveness of this method, we can say that it is "infinitely large", since the driving force is created when the external power source is disconnected, and acts as long as the capacitor is charged. Real leakage currents in a capacitor limit efficiency, so it is only "thousands of percent," according to Brown. I can only add that modern dielectric materials make it possible to create the most efficient designs of such propellers, with minimal charge leakage.

In my experiments, I observed the Brown effect for electrets, and this gives great commercial prospects for the development of this technology.

The study of the Brown effect in the USA was organized in serious laboratories. For example, in a report by US military experts [29] Thomas Bader and Chris Phasie write that Brown's patents consider both an ionic electrokinetic effect and another effect that creates a driving force of an unknown nature. It is noted that the ionic effect is too small to explain the thrust generated. Studies organized in a number of other

laboratories have confirmed the presence of the Brown effect in a vacuum, where ionization is excluded.

Analysis of the information, according to Brown's later patent No. 3187206, 1965 [30], allows us to conclude that the main condition for the manifestation of force effects is the asymmetry of the force interaction of a system of electrically charged bodies. This asymmetry can be created in an air capacitor, due to the shape of the electrodes, or in a capacitor with special dielectric.

In Fig. 59 shows the various shapes of dielectric that allow the creation of the Brown effect due to the electric field gradient ($\text{grad } E$).

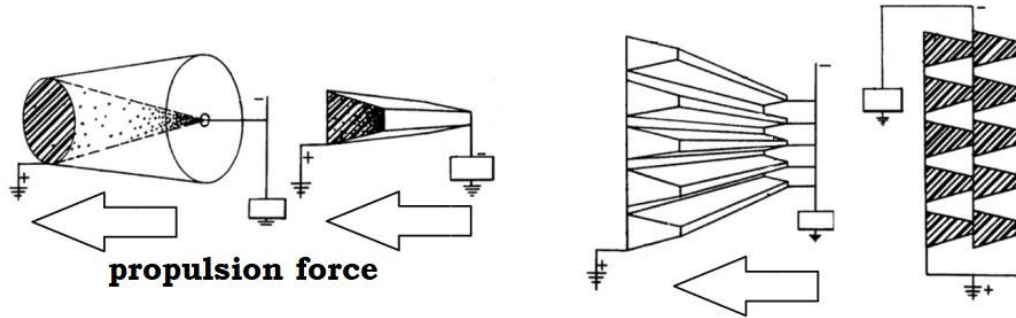


Fig. 59. Gradient E-field is created by means of special shape of dielectric member.

On the left side of the figure, a small-area point electrode and a large-area flat electrode are shown. In this case, the electrode of the large surface is connected to the positive terminal of the potential difference source, and the small electrode is connected to the negative terminal. In this case, the driving force is directed towards the electrode of the larger surface. Emphasizing the asymmetry of the area of the electrodes, Brown proposes to create a dielectric of a special shape, with a trapezoidal cross-section located between the strips of a small electrode area (negative) and an electrode of a larger area (positive).

This simple technical solution has great possibilities! The essence of this solution is that with distance from the electrode on the wide side of the trapezoid, the electric field strength increases. The gradient of the electric field strength creates a driving force. The miniaturization and stacking of such electrode pairs into multilayer capacitor banks is shown on the right side in Fig. 59.

The most common model of a triangular circuit, made according to Brown's scheme, which is often described as a "flying capacitor" "lifter" includes one electrode made of a thin wire and a second flat electrode (a plate or strip foil). In Fig. 60 shows the structure of the electric field created in such a system of electrically charged bodies. Here you can see the gradient of E between the wire and the foil.

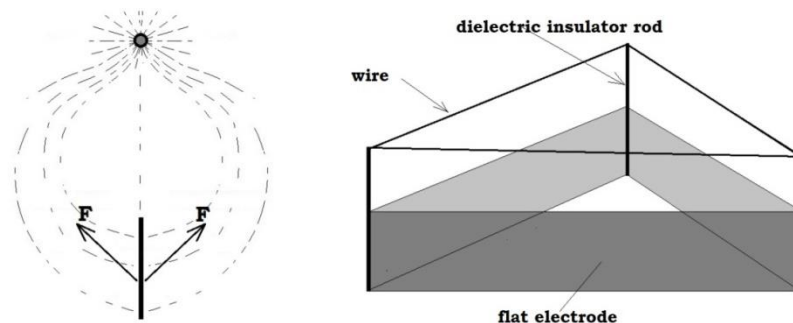


Fig. 60. The field in the LIFTER design.

The geometry of the vectors of the electric field, in this case, is such that approximately the same modulus of Coulomb forces act on the wire in all directions. The vector sum of these forces has a nonzero value, but it is much less than the vector sum of the forces acting on the flat electrode. For flat electrodes, they are acted upon by Coulomb forces directed mainly upward. Of course, ionization effects take place here, since a thin wire creates powerful ionization, and this fact is a technical obstacle to the development of this direction of design.

Jean Louis Naudin, France, has achieved great experimental success in the design of asymmetric capacitors of this type. His work is shown in detail at <http://jnaudin.free.fr>

Jean Louis Noda began his experiments from the simple "triangular apparatus" Lifter, collecting them in sections. In 2003 he demonstrated a device with a total weight of 250 grams, which could lift 60 grams of payload.

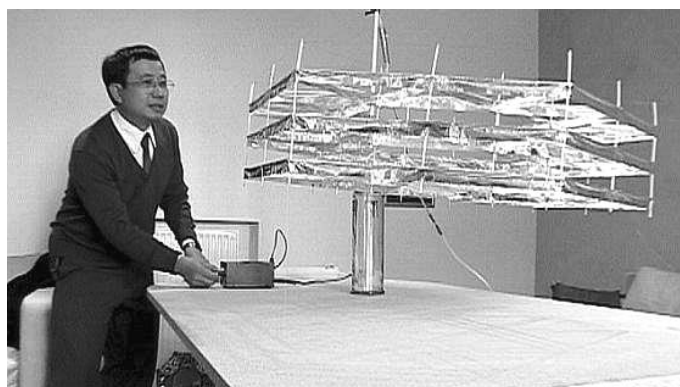


Fig. 61. Jean Louis Naudin and his LIFTER.

Unfortunately, this type of drive did not arouse much interest among investors. At that time, I corresponded with potential investors working in the field of aerospace technology, and tried to interest them in this topic. Most of them reacted skeptically to proposals for the development of this direction, believing that these are simple ionization effects. Of course, this is not the case. Air ionization can be completely eliminated, and this is confirmed by experiments with some design options in a vacuum chamber.

My developments in this area are sometimes considered an analogue, or even a development of the work of Jean-Louis Naudin. However, the story of our communication with Jean began after my publication in the USA, in the *New Energy News* magazine, May 1994. Then, in 1996, I spoke at the conference *New Ideas in Natural Science*, St.-Petersburg, Russia and published a video of my experiments, which Jean reproduced in his own, and named one of the versions of the design "Frolov's hat" - a cylindrical capacitor in the shape of a hat.

It should be noted that Jean Louis Naudin misunderstood my ideas and developed his device in his own way. In my concept, propulsion effects are obtained without ionization, so Frolov capacitors can be made from non-metallic electrically charged elements, and even from electrets that retain their charge without an external power source. In my designs, the propulsion force exist even the power source is off, as the reason of this force is not ionization. Let's consider my ideas on asymmetric electrical capacitors in more detail.

Asymmetrical capacitors by Frolov's design

The first experiments, in my home laboratory, were made by me in 1991-1992, oddly enough, even before I got acquainted with Brown's works. At that time, I set the task of obtaining a driving force by creating an asymmetry of the Coulomb forces. Having

published the results of experiments in 1994, I received many letters, reviews and information on analogues, including the work of Thomas T. Brown. Initially, I suggested the circuit shown in Fig. 62. This is a diagram of a "Frolov capacitor" from a 1994 publication [31].

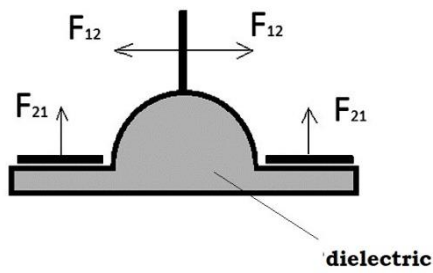


Fig. 62. Frolov capacitor, 1994. Asymmetry of interaction of charged bodies.

In this variant, the structural elements (plates) are charged differently, and are placed as shown in Fig. 62. Asymmetric forces of electrostatic attraction arise between them. The sum of the forces F_{12} acting on a vertical charged element, with vector summation, is equal to zero. The sum of the forces F_{21} acting on the horizontal electrodes, and through them, on the body of device, is not zero, and this provides a propulsion force.

It is important to take into account that forces act between flat electrostatically charged elements. These are not metal elements. In electrostatics, Coulomb forces are always directed perpendicular to a flat surface.

Demonstration of these forces are presented by school equipment, it is forces in electroscope, Fig.63.

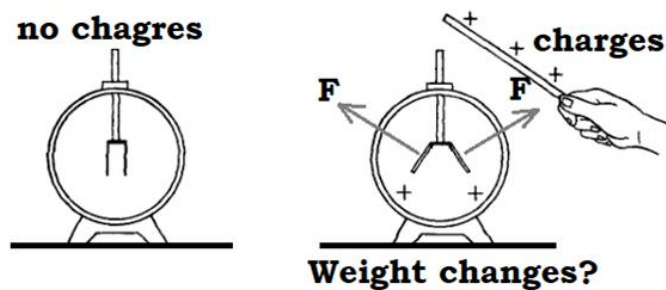


Fig.63. Forces in electroscope.

Later, another scheme of an asymmetric Frolov capacitor was published [32], its version is shown in Fig. 64. In a classic flat capacitor (left in Fig. 64), the boards are arranged in parallel and are attracted to each other with equal and opposite forces. The sum of the forces acting on the system as a whole is equal to zero.

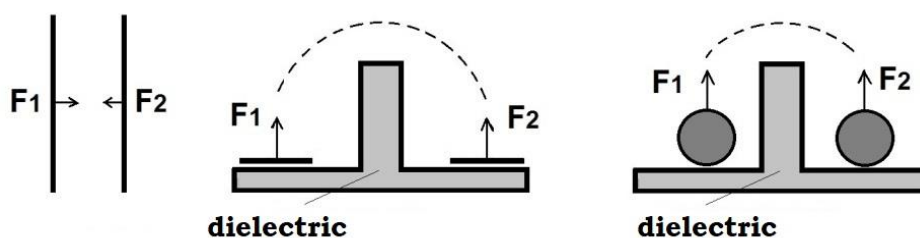


Fig. 64. Conventional capacitor (left) and Frolov capacitor (right)

In the "Frolov capacitor" with a T-shaped dielectric shown in Fig. 64, two oppositely charged interacting bodies (flat or spherical) are located in the same plane, and are separated by a "dielectric wall" to exclude electrical breakdown along the minimum distance between the electrodes. Due to this, a nonzero total vector of the interaction force of charged bodies is formed. Spherical or hemispherical (curved) charged bodies are more convenient, since the leakage of charges is reduced. At flat electrodes, charges leak from the sharp edges of the plates. Good effects are obtained by using cylindrical electrodes with rounded ends. However, the ends of the electrodes can be insulated to reduce leakage, Fig.65.

It is more interesting to observe the effect of mutual attraction in the "Frolov capacitor" if two interacting charged bodies are fixed on a dielectric base by means of elastic elements capable of stretching. In such a design, when the source of the potential difference is turned on, the charged bodies move towards the partition and rise noticeably, which makes the effect (the presence of a lifting force) obvious.

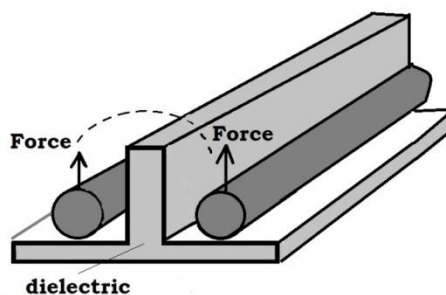


Fig.65. Two cylinders in Frolov's propulsion capacitor

Developing Thomas Brown's circuit, I did some experiments with a liquid dielectric (oil). The construction diagram is shown at the top of Fig. 66.

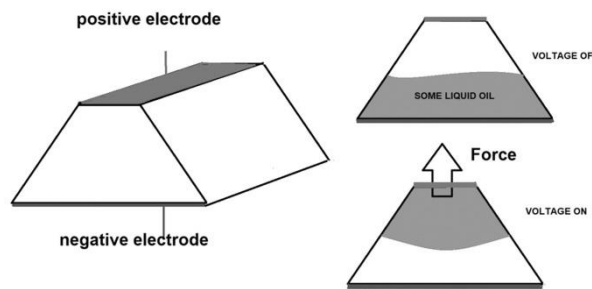


Fig. 66. Development of the idea.

In this device the body is made of some dielectric. Two different size electrodes provide gradient of electric field. Oil is moving if the voltage is ON. It works in pulsed mode of operation.

Important direction of research is elastic deformations of the dielectric in gradient electric field, Fig.67. Pulsed mode of voltage can provide periodical deformations of the elastic dielectric and some kinetic momentum to this device. It is new method to be tested and patented. Author is interested to work with interested investor on this topic.

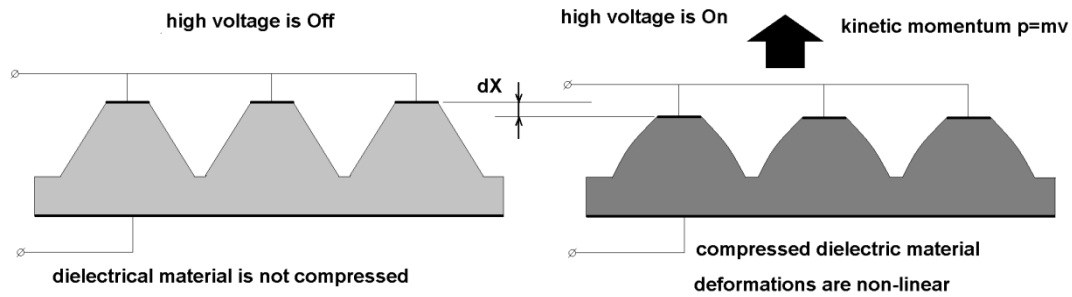


Fig.67. Elastic deformations of dielectric.

Currently, the "Frolov capacitor" is better known as a combination of two flat ring metal electrodes separated by a cylindrical dielectric partition, Fig. 68. In English, this design option is called "Frolov's Hat" (offered by Jean Louis Naudin).

Note that the dielectric disk and the cylindrical baffle must be made of a single piece of dielectric material, otherwise breakdown through the gap may occur between the electrodes. The dimensions of the device depend on the voltage used between the electrodes. An increase in the voltage over 10 kV is undesirable, since this increases the ionization losses, and the consumption current increases.

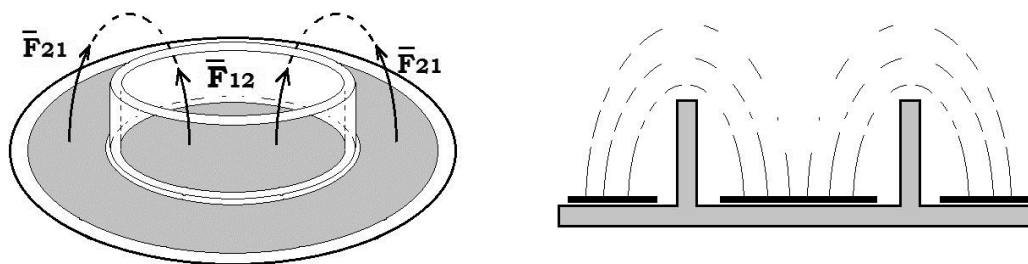


Fig.68. Asymmetrical capacitor with cylinder wall between electrodes.

In development of this topic, a design option is proposed that can be performed by modern microelectronics manufacturers, with small dimensions of elements, for example, less than one millimeter. It is known that electrical breakdown occurs in an air gap at a voltage of about 1000 volts per millimeter. Small dimensions allow working at low voltages, without air ionization. In addition, the Coulomb forces grow rapidly with decreasing distance between bodies, here is a quadratic dependence function.

Common mistake to believe that charged structural elements in these propulsion drives can only be metal electrodes, like Brown's. In most of the designs of electrokinetic propulsion devices I proposed, charged dielectrics or electrets can be used. Metal elements also give some power effects, but charges from them quickly "flow into the air." This side process is reactive, and it distorts the main idea. Reactive effect can be stronger than the main effect. It is necessary to avoid this side process by constructive methods, for example, by giving the electrodes a spherical or cylindrical shape, providing surface polishing, etc.

It would be optimal to develop structures from dielectrics. Left side of the Fig. 69 shows a variant of such a design proposed by me in 1994 [31]. In this case, we consider the Coulomb forces between several dielectric elements of the same electrical sign. Here is a flat electrode (base) and a set of cylindrical charged elements (tubes). Due to the fact that the forces acting on the surface of an electrically charged dielectric are always perpendicular to the surface, the forces F_{21} acting on the plate are co-directed and summed up. At the same time, the forces acting on each cylindrical element F_{12} , from different sides, are mutually compensated. It is proposed to use these features for the

design of electric propellers that create an active force due to a nonzero vector sum of Coulomb forces.

Different idea is shown at the right side of the Fig.69. It is also real propulsion device with nanostructures made of some dielectric, for example it can be nanowires or dielectric nanohairs. Here is another principle. Dielectric nanostructures will get attractive force to positive plate of the capacitor.

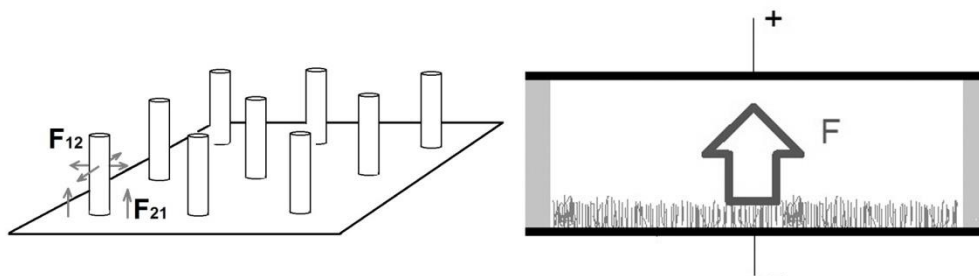


Fig.69. Force vectors in electrically charged elements.

Modern nanotechnology makes it possible to implement the concept shown in Fig.69, using small dielectric elements, about 100-200 nm size.

In primitive experiments that were made in my laboratory with T-shape capacitor, a small force was found, at the level of 10^{-5} (N). In 1996 - 1998, I reported on these results at conferences, sent documents on this project to the Khronichev Central Research Institute, but did not find the interest of Russian organizations in this topic. In 1998, representatives of the aviation department of Toyota Corporation came to St. Petersburg, to get demonstration of my experiments. Later, after 2002, representatives of a Russian military research institute visited my laboratory in St. Petersburg, but my primitive experiments with "charged balls" did not convince them of the promise of the proposed method. I will be glad to develop this topic with an interested customer who has its own scientific and technical base.

The most interesting fact is that the lifting (driving) force is maintained when the power source is off, gradually decreasing as the capacitor self-discharges. By minimizing the leakage currents through the dielectric, and also by reducing the operating voltage due to the miniaturization of structural elements, we can eliminate the effects of ionization and charge loss. Conservation of the potential difference ensures the presence of a driving force. Electrets, as a special type of dielectric, can be used in such designs. This will allow you to receive active power without the consumption of power from the primary source, while the electrets retain their charge. Modern electrets can hold their charge for years. The prospects are interesting!

In Nature, there is a combination of static electricity and amazing aerodynamic qualities, for example, in butterflies, bees, bumblebees, etc. By the way, the material from which their structure is made does not have metal elements, but is a dielectric, and has electret properties. The electric charge on the surface of a "living dielectric", in this case, is due to the friction of moving parts, and the movement of air.

Let's go back to Brown's ideas. The problem of creating a propulsion force is solved by him not only due to the geometric asymmetry of structural elements. The force, as Brown wrote, acts "in the direction of the greater intensity of the lines of force of the electric field." In Brown's patent No. 3187206, there is a mention of the fact that the propulsion force can be created due to the geometric asymmetry of the electrodes, and

also, due to the *progressively changing dielectric constant of the material between the electrodes*.

Brown also noted the possibility of using a gradient of electrical conductivity and semiconductor materials, but these methods of creating a driving force are more energy intensive than "gradient electrostatics".

The method based on the gradient of dielectric properties seems to me to be more technological and promising than geometric asymmetry. Let's consider this issue in more detail.

In theory of dielectrics, there is an interesting remark about the force *acting on the particles of a substance located between of two dielectrics* of different dielectric constants, Fig. 70. Different properties of the dielectric medium give a different electric field E_1 and E_2 , in the region between the two plates of the capacitor.

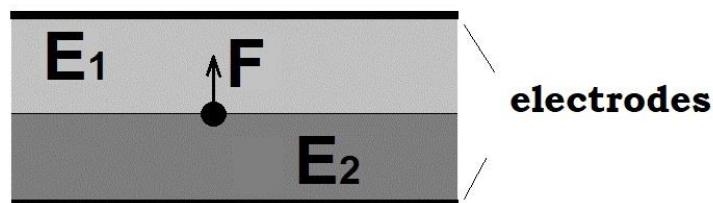


Fig.70. Force is area between two different dielectrics.

This force F acts in the direction of the maximum electric field strength E_1 , and "is directed along the normal to the interface between dielectrics", as B.M. Tareev wrote in his textbook on dielectrics [34].

Taking into account this important remark about the normal direction of the force vector, it is possible to design active (non-reactive) type propulsion drives, in which a nonzero total vector of acting electric forces is created.

The strength of the electric field, as is known, is the gradient of the electric potential, decreasing with increasing distance from the surface of the charged body. The natural gradient of the electric potential, in particular, created around the charged ball, is shown in Fig. 71. A particle of paper, for example, is attracted at the surface of a charged ball, precisely because of this gradient of electric potential: it moves towards a higher intensity of lines of force, to the area of maximum potential.

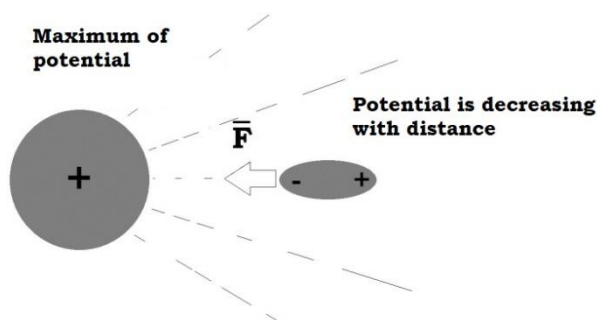


Fig. 71. Attraction of a particle to a charged ball in a natural electric field.

It is important to note significant aspect about the forces acting on some substance that is placed between two different dielectrics. Fig.72 shows this idea in details. I think some dielectric powder can be used here as the substance, for example barium titanate. The effect can be increased by summarizing many two-layer capacitors in one propulsion drive. Remember, the force is *acting on board between two different dielectrics*. So, we can get powerful force from many layers. To my mind, device of 100

layers can provide propulsion force about 1000 kg per sq.m. surface for potential about 10kV. In 1998 I reported about this technology for conference in Petergoff, Russia. Report was published by Russian Academy of Sciences in 1999 [34].

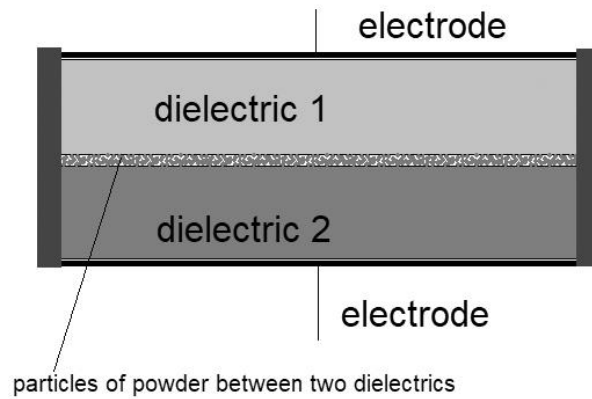


Fig.72. Important: substance between two different dielectrics.

By creating an artificial (non-natural) electric potential gradient due to the properties of the dielectric, we can get interesting effects. In Fig. 73 shows a variant of the proposed design, in which the convex surface of the high-voltage electrode is covered with a special gradient dielectric, in which the dielectric constant changes layer-by-layer or smoothly, with distance from the electrode surface. The outer layer of the dielectric, for our purposes, should have a minimum value of the dielectric constant, and the inner layer - the maximum value of dielectric constant. In this case, in area near the electrode, the potential value will be minimal, and with distance from the electrode surface, the potential value *will not decrease, but increase*. This creates a "reverse electric field" effect.

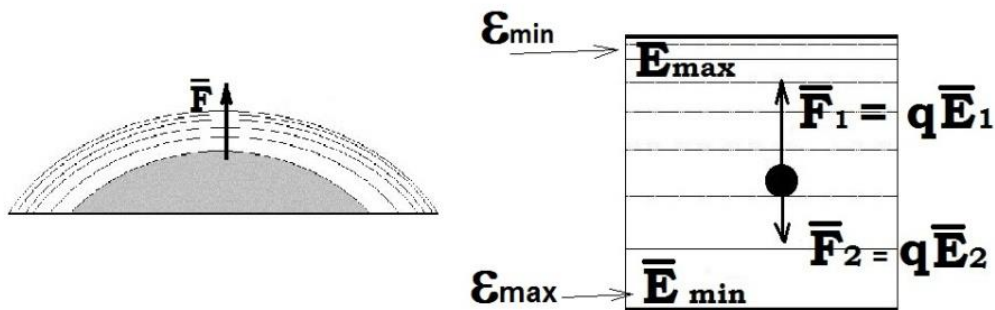


Fig. 73. Gradient of electric field in special dielectric provide non-zero force.

Let me remind you that the lower the dielectric constant of the medium, the stronger the electric field strength in a given region of space. Under certain conditions, a force directed towards a dielectric with lower dielectric constant acts on a particle located in the region of a gradient dielectric. In an ordinary electric field, all particles are attracted to the electrode, trying to move to the region of maximum field strength. In the "reverse electric field", Fig. 73, the particles of the dielectric substance will tend to move away from the electrode, since the artificially created gradient of the electric potential forces them to shift towards a higher intensity of the lines of force.

A decrease in the value of the dielectric constant, which can be created smoothly or in layers, in the thickness of the dielectric, with an increase in the distance from the electrode surface. Special conditions are that we must not only reduce or compensate for the natural decrease in the magnitude of the electric potential, but ensure that, with distance from the charged surface, the field strength changes faster than the natural

decrease in potential occurs, with distance from the electrode. As Thomas Brown wrote, it is necessary to create a "progressively varying" dielectric constant.

As you know, Coulomb's law has a quadratic function. Consequently, the function of changes in potential with distance from the electrode, which we set by constructive change in the dielectric constant of the dielectric substance, must have steepness greater than the quadratic function. In this case, for dielectric particles located in the thickness of the dielectric, the direction of increasing the electric potential will be directed away from the charged surface. In such a situation, they will be acted upon by a force directed towards the maximum value of the potential, that is, outward from the electrode.

The technological problem of creating a multilayer dielectric, or a material with a progressive gradient of the dielectric constant, is quite difficult, but promising. The application of this technology in the energy and defense industries has great prospects. Such materials, according to my calculations, can provide active acting forces of about 100 tons per square meter of the surface of a special capacitor, with electric field strength of about 10 kilovolts. Such powerful force effects, without taking into account the side ionization of the air, must be explained by some workable theory.

Let me say briefly on the theory of the process. There are several theoretical approaches, and all of them are based on the assumption of the presence of a medium in a vacuum, which, when exposed to it, can acquire some structure, since it has certain physical properties, including energy density.

Coulomb's law in quantum electrodynamics is described as the exchange of energy of virtual photons between charged particles. Bearden [27] considers similar ideas. In Fig.74 shows a diagram of the interaction of two electrically charged bodies, from the point of view of Aether dynamics.

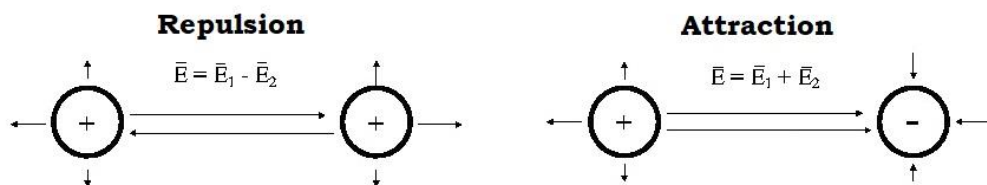


Fig. 74. Electric interaction as Aether gradient.

From the analysis of the vector sums of these interacting bodies, we get a simple but important conclusion: a charged body in the presence of another charged body is surrounded by a total gradient electric field, which is the reason for the appearance of repulsive or attractive forces.

It is important to understand that the force interaction occurs not between bodies, but between each body separately and the particles of the Aether medium surrounding it, which transmit their impulse to the body, which is perceived by us as an electric field.

In quantum electrodynamics, they say in a slightly different way: "vacuum polarization" and "the formation of virtual electron-positron pairs" take place here. This does not change the essence of the matter: the Aether pressure, that is, the total momentum of the Aether particles acting on an electrically charged body from different sides, can be symmetric (isotropic) or asymmetric (anisotropic).

Usually, the total momentum is symmetrical and there is no driving force. This is optional. Active force acting on a charged body can be created for a solitary charged body

due to its special shape, or due to the anisotropy of the properties of the dielectric around it, Fig. 75.

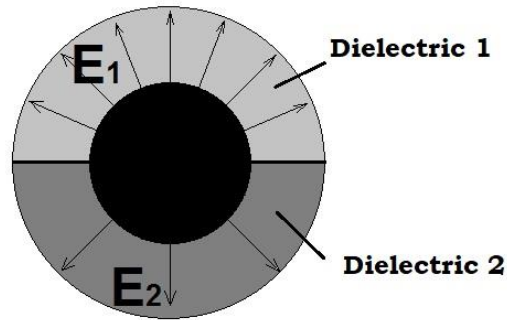


Fig.75. Solitary charged body is surrounded by different dielectrics

In this case, due to the asymmetry of the structure of the medium, a driving force arises in space.

The concept proposed here was considered earlier in [35]. The mathematical background was proposed by Professor Athanasius Nassikas, University of Larissa, Greece [35].

For the critics who assert that “statics cannot create motion,” I will clarify an important nuance: do not forget about Aether dynamics and elastic forces, as well as the possibility of a pulsed mode of operation. By creating pulses of an electric field in the area of a gradient dielectric, we create a kinetic impulse (mechanical movement of particles of an elastic dielectric). The power depends on the frequency of the cycles. It is advisable to use a variety of small capacitors to work with high-frequency pulses. The switching power supply also makes it easy to adjust the traction force.

Any substance is "connected with Aether", and the elasticity of a substance is an electromagnetic Aether-dynamic phenomenon: elementary particles of a substance are attracted or repelled from each other, with the elastic interaction of their electric and magnetic fields. In turn, electric and magnetic fields are certain processes in the elastic Aether medium. We call elastic deformations or waves of compression and relaxation of an elastic Aether medium. In the designs of asymmetric capacitors, it is necessary to ensure elastic interaction with the medium, as in the mechanical devices we discussed earlier.

So, a gradient elastic dielectric is a way of creating active force acting due to the pressure gradient of the Aether, moreover, a force that does not require energy to maintain it. Adjustment of the magnitude of the total driving force, in this method, is easily achieved by changes in the characteristics of the pulsed mode of operation. Adjustment of the total driving force, which arises when using asymmetric electret materials, can be provided by mechanical rotation of a part of the propeller elements. For example, full thrust is created with 100% consistent direction of all elements, and by directing 50% of the elements against the other half of the elements, we get full compensation for the thrust force.

In Russia, on this topic, an application was filed for this invention: "Method and device for creating a driving force", application No. 2004105178 of 20.02.2004, author Frolov Alexander Vladimirovich. Unfortunately, a refusal was received for a well-known reason: "the movement of bodies due to internal forces is impossible." It is proposed to re-patent the proposed key technical solutions at the international level for their commercialization.

I repeat that, in this design, there are no conduction currents or ionization of the medium. It is an active (non-reactive) active force. With such propellers, one can not only

fly into space, but also rotate electric generators, with an efficiency of "thousand percent", as suggested by Thomas Brown in 1927.

The importance of this direction for cosmonautics is obvious: the delivery of cargo to any orbit will have a cost price ten times lower than today.

Transport applications are likely to start in aviation. Imagine a fuel-free passenger plane with a conventional battery as the primary source of power and unlimited range.

I hope that the reader is not very tired of speculations about the Aether-dynamic phenomena occurring in asymmetric capacitors. I propose to move on to a new chapter, which will show the method of creating a driving force by taking energy from air molecules, or another medium. This will help to understand the concept of asymmetric capacitors, which create similar power effects, but at the expense of drawing energy from the Aether medium. The consequences of such energy exchange should be the same as in gas dynamics.

Active Force Material

Let us turn to the consideration of methods for creating an active driving force, for which ordinary air, the so-called "atmospheric ocean", is considered as the environment.

A few words about the terminology that came to us from the English language. We call "active propulsion drives" devices that work due to the "active forces" of interaction with the external environment (air, water or Aether). The word "reaction" means re-active action, i.e. answer on some action.

Reactive forces, by definition, arise from the opposition of some propulsion drive and some support from which it repels. As a result of the reaction, the thermal energy of the medium increases, correspondingly to the increase in the kinetic energy of the drive. In contrast to this principle, active forces act on the vehicle's drive by absorbing the kinetic energy of the medium. This process should lead to a cooling of the environment.

An ordinary sail, as we noted earlier, works precisely as an active propulsion device using the energy of the wind flow. What is wind? This is an ordered flow of air particles, predominantly moving in one direction. The sail slows down the directional flow of the moving medium, thereby imparting acceleration to the transport. In fact, this sail decrease kinetic energy of the air molecules.

Using specially designed nanomaterials, at present, it becomes possible to work with each air molecule, taking kinetic energy from it, and transferring the total impulse to the vehicle's propulsion device. No matter if here is macro wind or not. As a result of such interaction with the environment, for example, with air, it is possible to provide a different air pressure on a plate of material, one side of which has a nanorelief of a special shape.

The dimensions of the nanorelief, which are necessary for the implementation of the proposed concept, are in the range of 1 - 500 nanometers. These dimensions depend on a characteristic of the medium, which is called the "free path" of the molecules movement. This characteristic changes when the pressure and temperature of the gas environment changes.

The concept proposed here was previously considered at the Moscow Aviation Institute by A. Titarenko as "partial screening of pressure forces" acting on an object. In a more precise formulation, "shielding the pressure force of the medium" means the task of "absorbing" a part of the kinetic energy of the molecules of the medium (air) from any one

side of the body, which will create a difference in pressure acting on it, and a unidirectional driving force.

In a slightly different form, the idea was expressed by Mikhail Profirievich Beshok, St. Petersburg, published in the journal "New Energy" [36]. Fig. 76 shows the concept proposed by this author.

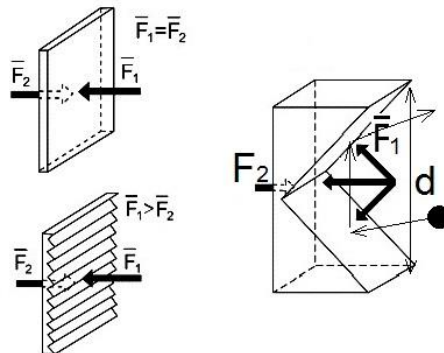


Fig. 76. The idea of Mikhail P. Beshok on the use of air energy.

Mikhail Beshok explains this principle as follows: If the size of the relief elements is more than the free path, then each of the molecules, after hitting the plate, immediately returns to surrounding medium. If the size of the relief elements is less than the free path, then some of the molecules will hit the plate in the microrelief region more than once before returning to their own environment. Thus, an additional force arises from the side where the plate has a relief with small size elements, and the balance of forces is disturbed. As a result, there is driving force acting on the plate.

Let's consider this idea in more detail. It is known that air molecules always move, moreover, chaotically, colliding and changing direction. At the mean free path, the trajectory of each molecule is rectilinear, as shown in Fig. 77.

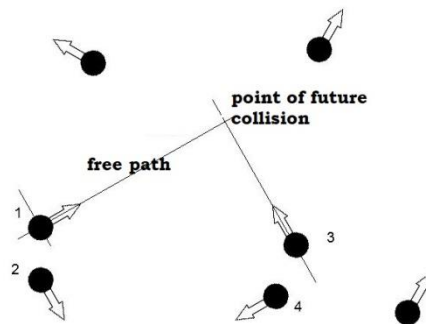


Fig. 77. The mean free path of gas molecules.

The speed of movement of an air molecule, at normal atmospheric pressure and room temperature, is approximately 500 m / s. The mean free path is defined as the distance that a gas molecule flies from the site of one collision to another. For example, molecules 1 and 2 collided and changed their trajectories. Similarly, a pair of molecules 3 and 4 have already collided, and now they are moving in a straight line for some time, along their trajectories. The distance that molecule 1 flies from the point of collision with molecule 2 to the point of collision with molecule 3 are called the "free path".

With the usual dimensions of the relief irregularities, which are much larger than the mean free path, the process of motion and collisions of gas molecules with the surface of bodies is chaotic. It does not matter whether one surface of the plate is polished, or it has large irregularities, since the vectors of impulse impacts of air

molecules on the surface have a statistical probability distribution of the direction of the impulse. In such a situation of "statistical equilibrium", the pressure of the medium on both surfaces of the plate will be the same, and the total momentum is zero.

In another case, if one side of the plate has a surface with regular relief elements, the size of which is less than the mean free path of a molecule, then we can use the predictable rectilinear motion of molecules on short trajectory segments.

The problem is solved either by partial selection of the kinetic energy of environmental particles, or by partial ordering of their chaotic thermal motion. Partial extraction of energy from particles must be accompanied by heating of nanoelements; for example, nanowires will be heated due to their deformations. Arrangement, that is, laminarization, can be organized in different ways: due to the relief, the predominant vector of motion of particles along the surface of the plate or perpendicular to the plate is created. Accordingly, the pressure of the medium on the relief side of the plate either decreases or increases.

One embodiment of this solution is nanotubes in which air molecules lose part of their kinetic energy during lateral inelastic collisions with the tube walls. As a result, the air molecule will transfer part of its momentum to the nanotubes, which reduces the component of the momentum of the molecules, which is directed perpendicular to the plate surface, Fig. 78. Obviously, total vector sum of all collisions is not equal to zero.

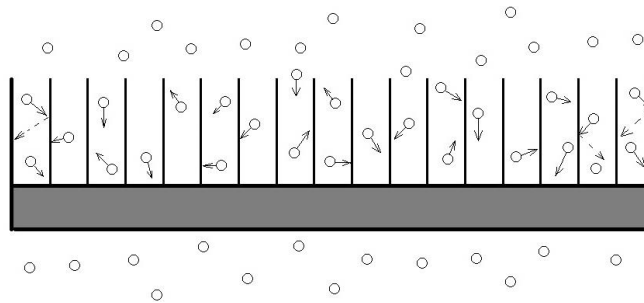


Fig. 78. Air molecules and nanotubes.

One of the options for the selection of a part of the kinetic energy from air molecules is collisions with nanowires, which will deform, taking on part of the momentum of the molecules, Fig. 79. Elastic deformations of nanoelements will allow the kinetic energy of molecules to be converted into thermal energy, which is accumulated by the substance of the plate. The principle is simple, but the complexity of this technical solution lies in the fact that on the "elastic side" of the plate, it is necessary to ensure interaction not for tennis balls, but for air molecules, the mass of which is very small, and the speed is very high.

It can be assumed that nanostructures in the form of thin nanotubes or cylinders (nanowires), oriented vertically, and located on the surface of the plate with the required gap, will be able to elastically interact with individual air molecules, that is, absorb kinetic energy during deformation and convert it into thermal vibrations atoms of the substance from which they are made.

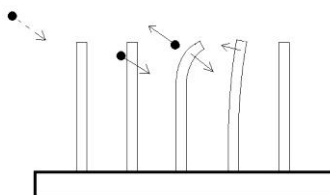


Fig. 79. Deformations of nanoelements when interacting with air molecules

At this stage of the project, it seems simpler to me to laminarize the movement of molecules. We can make the chaotic movement of particles in the environment more orderly by "shaping the wind." Since such a "wind" in the area near the plate surface can be oriented parallel or perpendicular to the plate, respectively, we obtain two options for the second solution: reducing the pressure of the medium on the surface of the plate, or increasing the pressure of the medium on the plate in a certain place.

Fig. 80 shows a variant in which the chaotic movement of air molecules is transformed into a partially ordered one, that is, into a "wind flow", after they pass a "nano-elements" with vertical channels (nanotubes). The same will work with particles of the medium and a package of flat plates located with a gap. A simple version of the relief is grooves in the thickness of the plate, 500 - 1000 nm deep and 50 - 100 nm wide. The options for implementing the idea depend on the capabilities of the technologists.

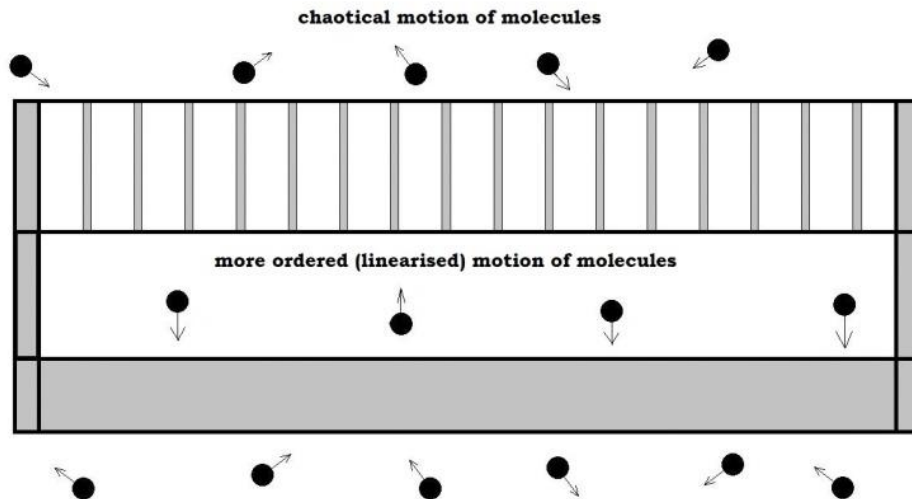


Fig.80. Method to get more ordered (linearized) motion of gas molecules.

Thus, a flow of particles is formed, the total velocity of which has a larger velocity component directed perpendicular to the surface of the plate than in the case of chaotic motion. It can be expected that this effect will increase the static pressure on the surface of the body plate from the applied side. The search for optimal solutions for the "nano-elements" structure capable of partially ordering the chaotic movement of medium particles (air or water) is an interesting task.

Fig. 81 shows another solution that can be used to laminarize the movement of the molecules of the gas in area of special nanorelief (upside on the picture).

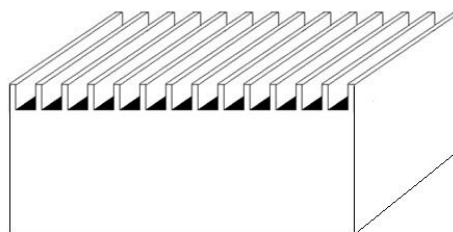


Fig. 81. Ordering of gas molecules motion.

Other variant on Fig. 8 show some relief forms for predominant flow of particles of the medium along the surface of the plate. In this case, by increasing the dynamic pressure and decreasing the static pressure, we obtain a pressure gradient on the plate.

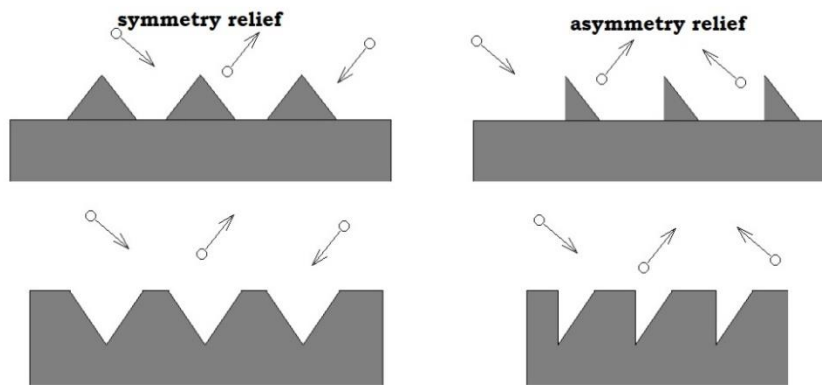


Fig.82. Creation of linear motion along the surface.

There are different ways of obtaining nanorelief, including modern methods of nanoelectronics, used in the manufacture of elements of microcircuits. In mass production, methods of photo printing and etching, the technology will have a low cost.

This technology is called AFM – Active Force Material, or AFNM – active force nanomaterial. The use of plates of an AFM in power engineering is not limited to machine rotors. In all the considered variants of the design of the material, when the energy of the environment is taken away, a temperature difference is created; this technology opens up qualitatively new prospects in the design of energy sources consisting of AFM plates of nanomaterial and conventional thermoelectric converters to get electricity from temperature gradient.

The application of this technology in space projects is also possible. I believe that this nanomaterial will create a lifting (driving force) in any closed volume of a gaseous medium, cooling it during operation, Fig. 83.

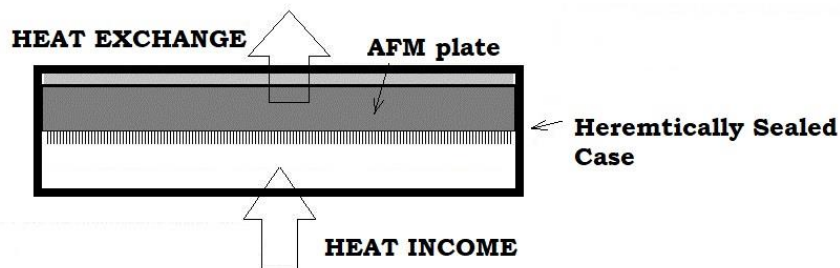


Fig.83. Design of propulsion space drive with Active Force Material

The disadvantage of this technology is the need to organize heat removal from one side of the plate, and heat supply to the gas medium from the opposite side of the body. Heat can be circulated using heat exchangers. Part of the thermal energy will inevitably be dissipated in the environment, and it must be replenished with an external energy source.

The advantage of closed systems is that you can create any pressure of the gaseous medium, as well as change its value, thereby increasing or decreasing the driving force. For example, with a gas pressure inside the body of about 10 atmospheres, and a 10% pressure drop on the sides of the plate, a force of about 10 tons will act per 1 square meter of the SANM plate. Thrusters designed for high pressure gas will be more compact and powerful.

However, even in an open atmosphere, this technology has great prospects. Rough calculations of the magnitude of the active force that will act on the plate when creating a 10% difference in atmospheric pressure, show that at atmospheric pressure of about 1 kg per 1 square centimeter, a lifting force of about 100 grams per 1 square centimeter is created. A sheet of 1 square meter can lift 1 ton. CAM sheets can be stacked, providing air access to the layers of material. It is easy to imagine a power plant (propulsion device) with dimensions of about 1 cubic meter, consisting of 100 sheets, capable of lifting a load weighing 100 tons, Fig. 84.

LIFTING FORCE IF WE CAN GET 10% pressure gradient

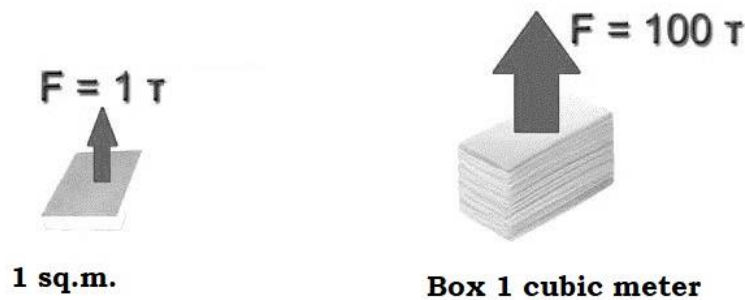


Fig. 84. Estimated effect for 10% pressure gradient.

These technical characteristics fundamentally change the concept of designing air and sea transport, and also open up fantastic possibilities for creating new types of flying objects with a carrying capacity of millions of tons. For example, a propulsion platform with dimensions of approximately 50x100 meters and a thickness of 2 meters, consisting of 200 layers of 10 mm AFM plates, with only 10% atmospheric pressure drop, can be an active propulsion device for a vehicle with a carrying capacity of 1 million tons, Fig. 85.

LIFTING FORCE 1 MILLION TONS

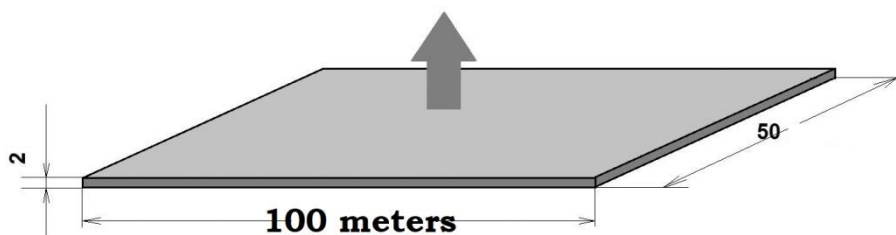


Fig. 85. Idea on 1 million tons flying transport.

This transport can seriously compete with the entire industry of shipbuilding and aviation. Obviously, there are prospects for changing the concept of all road and rail transport.

Other applications of the AFM technology are also possible, for example, repeaters of a television signal, communication systems, etc. flying at the required height. The need to put communication satellites into geostationary orbit is reduced if it becomes possible to place communication repeaters at any altitude, and maintain a given position in space for an unlimited time, without fuel consumption.

A project on this topic does not require large financial costs. The first stage of research is to test the assumptions that regular nanostructures of a certain shape can "take" kinetic energy from air molecules, or order their movement. We will need

programmers to develop a program in which we can analyze different surface reliefs and simulate the resulting force in a computer, before we order the manufacture of real plates with nanorelief.

Simplified, the algorithm for compiling a computer simulation program is shown in Fig. 86. With the development of technological methods, other solutions will arise. It is advisable to organize experiments in an existing nanotechnology laboratory.

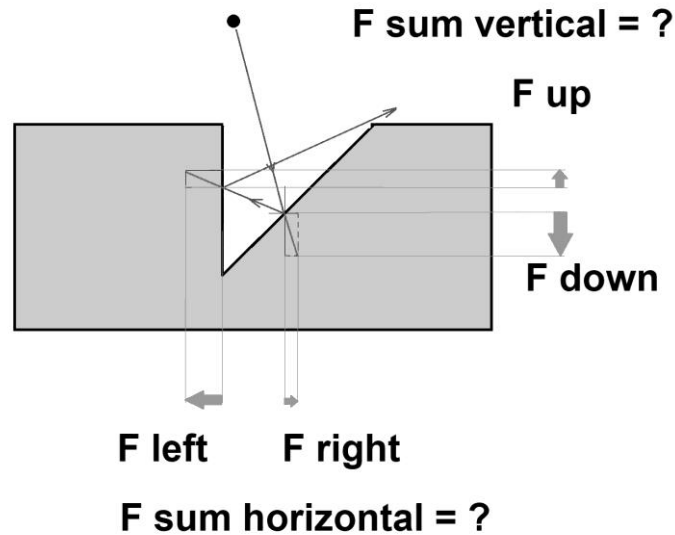


Fig. 86. Algorithm for calculating the total vector

Let's make an important note on this topic. The concept of Mikhail Beshok does not take into account the fact that the reflection of gas molecules from any surface is mainly of a diffusion nature. The molecules are not reflected mirrored. This must be taken into account in computer modeling of the nanorelief, which should provide the desired effect.

Next, we will consider technologies that belong to the border area of modern science, but have already received the official name "gravimagnetism". The application of these technologies goes beyond propulsion drives. One of the most popular aspects of gravimagnetism in modern society can be its use to suppress radioactivity, including the cleaning radioactive wastes of large areas, in soil or water and all objects on the ground. Of course, gravimagnetism also has a number of medical applications. So, next section of the book is about gravimagnetic effects.

Gravimagnetic field

In the previous chapters, methods for obtaining a driving force were considered, which have common features: the active force in special nanomaterials can be created by taking energy from the environment, which leads to the appearance of a corresponding temperature gradient in it. In subsequent chapters of the book, the theory of chroral propulsion force will be considered, based on a similar concept of density, pressure and temperature of the Aether.

Let's move on to considering electromagnetic phenomena as one of the options for Aether dynamics.

Michael Faraday made the first experiments on electromagnetic induction, based on an important understanding of the inextricable connection between Aether and matter. In a letter to Sir Richard Taylor, [37] he wrote: "The difference in the degree or even in the nature of the force, combined with the law of continuity, I can admit, but the difference between the supposed small solid particle and the forces surrounding it, I cannot imagine. I will point out a few important differences.... According to the latter view, the mass of matter consists of atoms and an intermediate space between them, according to the first, matter is present everywhere and there is no intermediate space not occupied by it. From this point of view, matter is completely continuous, and considering its mass, we should not assume a difference between its atoms and the intermediate space. The forces around the centers give them the properties of the atoms of matter... One can imagine atoms to be highly elastic instead of considering them extremely solid and unchanging in shape... "

In this concept of Faraday, the centers of atoms are the centers of vortex Aether processes, later described in the atomic theory of Helmholtz, Kelvin and Thomson. From here we get an understanding of the connection between electromagnetic and gravitational effects, their general Aether-dynamic nature. The mass of a particle of matter, including its inertial properties, should be considered as characteristics of the Aether-dynamic process that forms a particle of matter. These are not the properties of the centers of particles, but the parameters of the Aether-dynamic process.

From here begins the analysis of the possibility of creating ways of movement in which no inertial forces arise during accelerated and curvilinear motion, instant acceleration and turns of a moving body at any angle are possible, without the usual rounding of the trajectory. This concept of matter, as a set of interconnected centers of vortex processes, allows us to consider the possibility of teleportation, which we will come to at the end of the book.

So, in modern physics, the term "gravimagnetism" is adopted, denoting the phenomena that arise during any movement or rotation of a body that has an inertial mass. The calculation of the emerging forces, or the magnitude of the strength of the gravimagnetic field, can be made according to formulas similar to electrodynamics. Note that the movement of any particle of matter creates an analogue of a magnetic field in the surrounding space, regardless of whether it is electrically charged or not. The structure of this gravimagnetic field is the same as that of the magnetic field that occurs when an electrically charged particle moves. This field is weaker than the electromagnetic one, but interacts with any electrically neutral matter, as well as with photons. When charged particles move, a more powerful field (magnetic) is formed, since a larger amount of Aether is associated with charged particles than with neutral particle of matter.

This understanding of the nature of electricity was very accurately expressed by Nikola Tesla in [38]. He wrote: "We must remember that we do not have any evidence of the existence of electricity at all, and we cannot hope to get it if there is no 'gross matter' in consideration. Thus, electricity cannot be called Aether in the broad sense of the concept; however, nothing can prevent electricity from being called Aether, combined with matter, or bound Aether. In other words, the so-called static charge of a molecule is Aether connected in a certain way with a molecule... The rotation of molecules and their Aether causes ether tensions or electrostatic deformations, equalization of Aether tensions causes Aether movements or electric currents, and the orbital movements of molecules produce the effects of electric and permanent magnetism. "

Further in the book, we will consider electricity, according to this concept of Tesla, that is, as Aether, combined with matter. The electric field, in this case, is a static deformation of Aether elastic medium, its compression or discharge. The magnetic field is the circulating vortex streams of the Aether medium. Earlier, we have already noted that

inertial effects can also be considered as manifestations of the Aether, combined with matter. In this concept, electrically charged and uncharged particles of matter differ only in the amount and structure of the Aether associated with them, which participates in the process of existence of a given particle. This approach opens up the possibility of controlling the processes of existence of matter through electrodynamic processes, relying on the fundamental ideas of Michael Faraday, Nikola Tesla and other classics of Aetherdynamics.

So, any vortex disturbance of the Aether medium can be called a gravimagnetic field. An interesting question arises: what is the difference here with the ordinary magnetic field, which is created by the flow of electrons from the gravimagnetic field? First of all, the gravimagnetic field acts on all particles of matter, and not only on electrically charged ones. On the other hand, using the methods of gravimagnetism, by means of ordinary magnetic fields created by currents of electrons, it becomes possible to create a force effect on electrically neutral particles.

An example is the well-known experiments of William Hooper US Patent 3,610,971 All-Electric Motional Electric Field Generator. [39]. He wrote that his method "combines electricity, magnetism and gravity", obtaining the effect of changing weight, that is, the forceful influence of an electromagnetic device on electrically neutral objects. In the diagram Fig. 87 shows the technique of Cooper's experiments.

In fact, Cooper's devices are circuits of bifilar coils, parallel laid wires, in which the current flows in the opposite direction. By placing such contours above or below the objects to be weighed, Cooper detected changes in the weight of the objects.

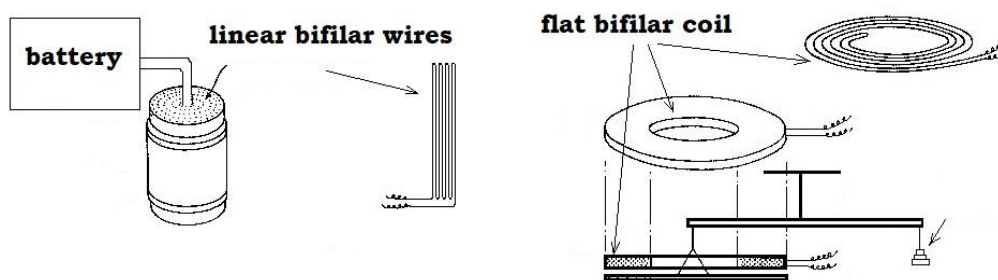


Fig.87. Experiment with Cooper coils.

In this case, electric currents in bifilar wires create currents of Aether, which eliminates their component, which we perceive as a magnetic field. The magnetometer does not notice such a field, and it does not affect the test magnets. However, the streams of Aether are not eliminated with such "compensation". They continue to exist and change the state of the Aether surrounding the bifilar coils. These changes were detected by Cooper when weighing test bodies.

Here it is necessary to draw an important conclusion: the test body changes its weight in the area of space near the Cooper coil because in this area the natural density or static pressure of the Aether medium on the particles of matter is changed.

I note that when conducting such experiments, strong medico-biological effects arise. The researcher may notice a headache, increased blood pressure, etc.

Changing such a parameter as the strength of the electric current in the Cooper coil (the number of charges per unit of time) increases or decreases the effect. Other factors by which gravimagnetic effects can be enhanced are the mass of the moving particles and their speed. If, instead of electrons, heavier charged particles of matter

move, then the characteristics of the disturbance of the Aether medium will differ from the usual magnetic field.

For example, protons are known to be 1836 times heavier than electrons. This makes it possible to create a powerful gravimagnetic field due to the ordered motion of the proton flux.

According to this idea, several implementation options can be proposed. For example, in 1994 I published my proposals [40] on a unipolar generator of electricity, in which protons were proposed as carriers of electric charge. At that time, there were serious discussions about the prospects for cold fusion, experiments were discussed, which required metals with an affinity for hydrogen. One of these metals, capable of absorbing hydrogen atoms (protons) from water, is palladium, but nickel and titanium are also quite workable. It is advisable to use porous materials as a proton storage ring. In [40], it was proposed to use a porous disk cathode of an electrolytic cell in the role of a rotating proton storage device. At the same time, it was noted that *such a rotating proton storage device can be one of the methods for creating a gravimagnetic field excited in a medium around a circuit in which a proton current flows.*

Another option for creating a gravimagnetic field is a plasma flow, rapidly rotating in an orbit. However, this method is much more difficult to implement for practical purposes than the previous one. In fact, the circulating flux of protons is a flux of hydrogen ions that can be accelerated in a vacuum, along a circular path, to a very high speed. The technology is complex, but promising. The diagram is shown in Fig. 88.

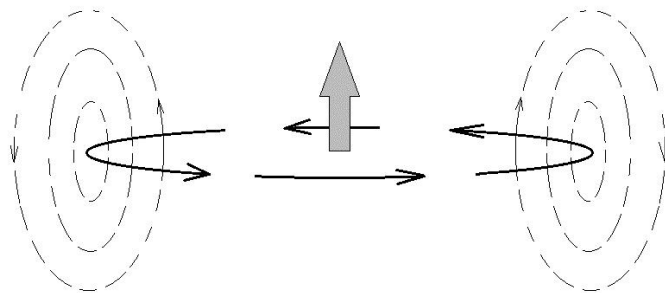


Fig. 88. Gravimagnetic field of the rotating flux of protons (hydrogen ions).

The creation of a gravimagnetic field is possible not only in the process of movement or rotation of matter particles, but also by rotating a circuit with an electric current. This method, in particular, is described by Professor K.P. Butusov in article [41].

In 2002-2003, under the leadership of K.P. Butusov, we made a number of experiments in my Faraday Lab Ltd Co., to study the effect of Aether disturbances generated during the rotation of a solenoid in which an electric current is created on the degree of radioactivity of the material, Fig. 89. Weighing of test bodies and other studies of anti-gravity aspects of this technology has not been made.

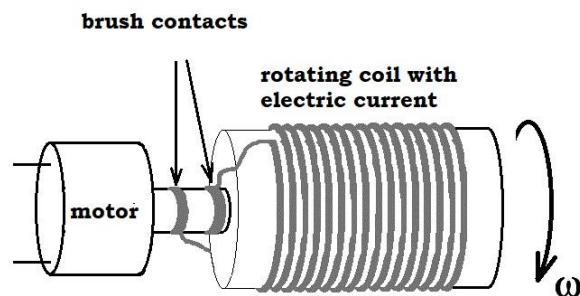


Fig.89. Experimental setup to generate gravimagnetic field.

The experiment was made in one of the laboratories of the University of St. Petersburg, whose specialists had permission to work with radioactive materials. In this experiment, isotopic radioactive material was placed at a distance of about one meter from the rotating coil with electric current. Two main directions were investigated - axial and radial, in relation to the rotor. Minor but measurable effects were found, confirming the influence of the gravimagnetic field on the degree of radioactivity of isotopic materials.

Separately, it can be noted that the degree of these effects depends on the direction of mechanical rotation, more precisely, on the coordinated or opposite direction of the electric current in the coil relative to the direction of mechanical rotation of the coil. In one case, the speed of mechanical rotation of the coil is added to the speed of movement of the current of electrons in the wire, in the other case, it is subtracted. The disadvantages of this technical solution are limits on the speed of mechanical rotation, and limits on the strength of the electric current supplied to the rotating circuit through conventional carbon contact brushes.

It is known that powerful electric currents can be easily generated in a superconducting material. Accordingly, by exciting a strong electric current in a rotating disk made of superconducting material, we can expect more powerful gravimagnetic effects. This method is similar to the principle shown in Fig. 86, but the current in a superconductor can be much stronger than the current that can be created in a coil of a conventional wire.

For the development of this topic, in 2007, at the Faraday Laboratory Ltd., experiments were organized to study the gravimagnetic effects arising from the rotation of a current created in a disk from a high-temperature superconducting (HTSC) material. We believe that these effects should be associated with fluctuations in the density of the Bose condensate. Experiments were made to confirm the theoretical conclusions of Dr. Christopher Bremner about the frequency spectrum of the gravitational field [42].

In general, the experimental work was organized to test the assumption that in the range 10-100 MHz, under certain conditions in a superconducting medium, anomalies in the mass (weight) of test bodies can be detected, placed next to a superconducting material, which was specially affected. In this work, important conclusions were made about the nature of gravitational impulses and the method of their creation.

The use of a superconducting material is advisable not only because a powerful electric current can be created in it, and it will circulate without loss for a long time. Another important aspect is the use of a special state of matter, which is called "Bose condensate".

Bose condensate is a state of aggregation of matter in which a large number of atoms are in a quantum state of minimum energy. In this state, quantum effects in matter begin to manifest themselves at the macrolevel, since all atoms of the matter behave coherently.

Coherence is the form of several oscillatory or wave processes. It is precisely the synchronism of oscillations of matter particles emitting photons in a strictly coherent manner, in one phase that provides a qualitative difference between lasers and ordinary light sources. Analogies with laser technologies suggest that in an experiment with a substance in a Bose condensate state, a more powerful gravimagnetic field will be created than in an ordinary conductor, due to the coordinated behavior of matter particles that disturb the Aether medium.

An experimental approach in this area of research was previously described by Dr. Evgeny Podkletnov in his article [43]. He found the effect of reducing the mass (weight) at the level of 0.05% - 0.07% for a non-rotating disk made of high-temperature superconducting (HTSC) ceramics, which is in a state of levitation in an alternating magnetic field. Rotating the disk, in Podkletnov's experiment, increases the effect.

It is important to note the following fact: the Podkletnov effect was maximal (from 2% to 4% of the weight change) when the disk rotation speed was changed. This gives rise to reflections on the Aether nature of the gravimagnetic effect, its connection with the usual phenomena of inertia arising during the accelerated motion of bodies, and connection with the phenomena of electromagnetic induction, which, in general, are interpreted as the reaction of the Aether medium to changes in the energy density in a certain area space. By analogy with effect of electromagnetic induction we can name this effect as gravimagnetic induction. So, we can build some gravitation generators with understanding of this principle of gravitation induction.

Another experiment of Podkletnov is known, described in article [44]. In this case, the HTSC disk was created as a two-phase material: in the operating mode, the upper layer of the disk is in a superconducting state, and the lower one is in the usual one. We can say that this constructive solution provides the boundary region of the phase transition between the two layers. The phase change in state of matter provides generation of the effect.

Another important step in understanding this effect was made by the researcher G. Modanese [45], who was the first to suggest that the mechanical rotation of a high-temperature superconducting disk is the motion of a Bose condensate, analogous to an electric current in a superconductor. The reaction of the Aether medium to such a movement is the gravimagnetic field. Modanese's hypothesis is consistent with our ideas, since it is the coherent behavior of all electrons in a superconducting rotating disk that distinguishes their flux from an ordinary electric current in a conducting disk, and from the rotation of an electrically charged dielectric disk.

The next experiment by Podkletnov and Modanese was called by the authors a "pulsed gravitational generator" [46]. The authors created an electric discharge, the current reached 50,000 Amperes per pulse, with a voltage of 1 million Volts. The discharge hit a "target" of high-temperature superconducting (HTSC) material in order to create a "nondissipative force beam" or, in other words, a "gravitational wave" propagating along the discharge line for an unlimited distance. The authors stated that they managed to obtain a forceful effect at a distance of more than a kilometer to the target; moreover, it was a blow of such force that "it was able to destroy a brick wall."

In a number of countries, research work is underway in this direction, for example, Boeing repeated the effect and reported that at a discharge of 2 Megavolts, the

target receives a blow with a force of about 1 kg. Read more in the journal *Rocket Science* [47]. The gravitational pulse generator is being developed by Phantom Works, a Boeing facility in Seattle. Phantom Works CEO George Muellner reaffirmed his company's interest in Podkletnov's work, and said they believed the work had a solid scientific basis.

Static experiments on the topic of "gravimagnetism" were mostly ineffective, but it is important for us to note the data of John Schnurer [48]. The effect of gravimagnetic action on the detector (pendulum) was discovered by him for a non-rotating HTSC disk levitating over a permanent magnet, moreover, only during the phase change of the HTSC material, that is, during its transition from the state of superconductivity to the ordinary state (heating above T_k). Since the phase transition of a material usually takes a few seconds, the Schnurer effect can be detected at this time.

The following explanation of this effect is proposed: during levitation over a permanent magnet, as is known, circulating currents of Bose condensate already exist in a superconducting disk. The very process of levitation of superconducting materials over permanent magnets, or levitation of magnets over cooled superconducting materials, is a simple repulsion of two magnetic fields. In a levitating state, an externally immobile, stationary HTSC disk is a circuit with a current, moreover, a current of Bose condensate. This stream of coordinated electrons draws the Aether into motion relative to the crystal lattice of the disk substance, and to a much greater extent than the current of the same strength circulating in an ordinary conductor. When the phase state of matter is changing, the Bose condensate turns into an ordinary stream of electrons, and the current quickly dies out. The speed of the relative motion of the Aether changes sharply, and at this time a single change in the density of the Aether is created, which generates a pulse of the gravimagnetic field, the duration of which is equal to the duration of the phase transition of the HTSC material from the superconducting to the ordinary state.

The mechanical rotation of the HTSC disk, in which the currents of the Bose condensate are created, produces similar powerful effects, since the relative velocity between the crystal lattice of the disk material and the Bose condensate differs from the speed of movement of electrons in an ordinary non-superconducting material. We have already noted that the change in the speed of rotation of the disk (in particular, its deceleration) in the experiments of Podkletnov produces the maximum gravimagnetic effect. This is understandable, since in this case, different inertial properties of the Bose condensate and matter (crystal lattice) are manifested, which leads to a powerful disturbance of the Aether medium.

Note that the special HTSC material considered by Podkletnov [45] with two-phase layers shows more stable effects than a single phase transition, since it is in the boundary layer that the external electromagnetic field is capable of creating high-frequency phase transitions, at which not a single disturbance of the Aether medium is generated, but high-frequency fluctuations in the density of the Aether.

Experiments with a rotating HTSC disk described in Ref. [49] are another example of obtaining a gravimagnetic field created by a rotating superconductor in the form of a ring. This result was presented at ESA's European Space and Technology Research Center (ESTEC), which took place in the Netherlands on March 21, 2006. The ESTEC results confirm the assumption made here that the gravimagnetic effect is due to longitudinal waves in the Aether medium.

Note one more important aspect that arises in experiments with HTSC materials: in the superconducting state, they have a low temperature relative to the environment, therefore, there is an intense heat transfer between the HTSC material and the environment. When organizing accurate measurements, air flows produced by a

temperature gradient can be shielded, but we must take into account effect of *thermogravity*, which manifests itself in *any orderly transfer of heat or cold*.

For example, Dotto (Gianni A. Dotto) described this phenomenon in a patent [50]. In Dotto's experiments, it was shown that *intense directional heat transfer, for example, in a ring, from a heating element to a cooling element, creates a gravimagnetic effect*. In fact, in the metal ring of Dotto, a wave of Aether density is moving, created not by the electromagnetic method, but due to the temperature difference between a warm source of energy and a cold sink of energy.

The main area of application of the created constant gravimagnetic field, Dotto considered biomedical aspects, for example, rejuvenation, treatment of cancer and other diseases by the effect of the density wave of the Aether medium on vital processes in the cells of the body. It is obvious that a change in the density of the Aether affects any cellular processes. For the tasks of designing propellers, this method does not seem promising, since large energy consumption is required. In addition, a constant gravimagnetic field is created, and we are looking for ways to test the assumption about the presence of resonant frequencies of the gravitational interaction.

So, the analysis of previous experiments and theoretical premises suggests that the gravitational effects observed in the experiments of different authors are due to changes in the density of the Bose condensate, which creates a perturbation of the Aether medium in the form of longitudinal waves. A single change occurs during a single phase transition from a superconducting state to an ordinary one, for example, in Schnurer's experiment. Since, in this case, the change in the phase of the entire volume of the disk material from superconducting to ordinary is gradual and takes some time, this effect is rather weak and is detected within a few seconds. The experiment to create a "gravitational impulse", described by Podkletnov and Modanese in [43], is one of the methods for creating an instant (fast) change in the phase of the Bose condensate, moreover, in the entire volume of the HTSC material, which makes it possible to create a short but powerful effect of a pulsed character. The destruction of a superconductor when exposed to a high-voltage pulse is not necessary, since it is enough to bring it out of the state of superconductivity to create a gravitational pulse. The nature of this gravitational impulse is a longitudinal wave in the Aether medium.

An important conclusion about the reason for the appearance of a gravitational wave when the phase state of matter changes: at different phase states of matter (superconductor or non-superconductor), different amounts of Aether are associated with particles of matter. During the phase transition, Aether is either absorbed from the environment or released into the environment. We will consider similar methods, but with phase transitions of ordinary matter (evaporation, crystallization, etc.) later in the chapter on the works of Nikolai A. Kozyrev on generation of "waves of Aether density".

Note that there is an earlier analogy to Podkletnov's experiment known as the "Morton Beam". Charles R. Morton was engaged in similar experiments in the 1960s [51]. In Fig. 90 shows a schematic diagram of Morton's experiment. The discharge of a high-voltage Van de Graaff generator was made through a glass tube - an insulator, onto a metal ring mounted on the end of the tube. The voltage that such generators could create back in the 1930s reached 10 million volts.

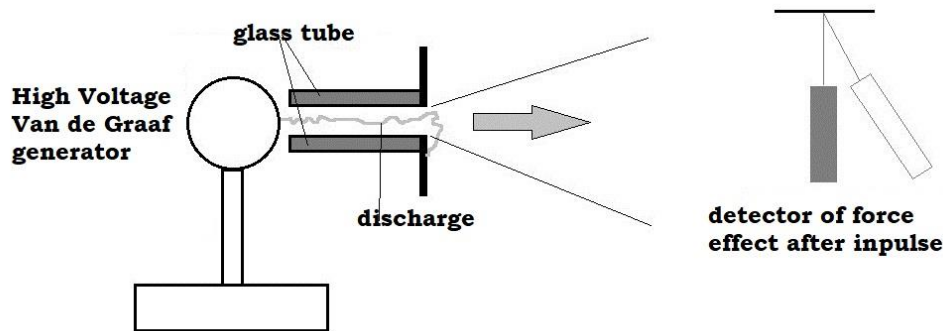


Fig.90. Morton beam generator.

When using a superconducting material in the experiment of Podkletnov and Modanese [43], instead of a simple metal that Morton subjected to an electric discharge, the power of the effect increases significantly due to the coherent behavior of electrons in the HTSC material. Nevertheless, as Charles Morton showed, the disturbance of the Aether medium arising from sharp electrokinetic effects in a simple metal is also capable of creating a directed wave of Aether density.

Studying the assumption about the wave nature of the gravitational field in space near the surface of our planet, we can formulate the problem of compensating this natural oscillatory process by some artificial process. The maximum effect is expected in the case of an external field with a frequency corresponding to natural fluctuations in the density of the Bose condensate in the HTSC material. In case of coincidence of frequencies, we can expect full compensation of the natural gravitational field.

So, I repeat once again... Having considered the above experiments, we can formulate the assumption that matter in the state of Bose condensate (in superconductors) is associated with Aether to a different extent than ordinary matter. In this regard, phase transitions of a substance from a state of superconductivity to an ordinary state and back release or bind a certain amount of Aether. Such phase transitions, produced with high frequency, can be a way of generating high-frequency coherent longitudinal waves of the Aether density.

It is advisable to search for resonant conditions in the frequency range 10 - 100 MHz, predicted by the authors David Noever and Christopher Bremner in their article [42]. Assuming that the natural gravitational field of a planet is not monochrome (single-frequency), but is a spectrum of frequencies, it is required to determine several main resonant frequencies that allow to obtain the most complete compensation for the gravitational field of this planet.

A number of experiments were organized at my Faraday Laboratory Ltd., St. Petersburg, in 2007. A high-temperature superconducting disk was purchased from CAN company [52], material $YBa_2Cu_3O_{7-x}$ with Y_2BaCuO_5 additives. The critical temperature is 90K. Disc diameter 56 mm, height 16 mm. Cooling of this disk was made by the liquid nitrogen. To detect changes in weight, an HL-100 digital balance with an accuracy of 0.01 g was used.

In a stable part of the laboratory room, where external vibrations were minimal, a balance scale was built with weights at the ends weighing 50 g. Later, the weights were increased to 500 g each, and the scales were balanced so that on the HL-100 equipment side there was an overweight of about 20 d. The rotation of the HTSC disk was provided by an electric drive at a speed of up to 3000 rpm.

Note that this experimental setup is very primitive and does not allow long-term measurements of a rotating HTSC material in a superconducting state. In this installation, the HTSC disk is placed in the rotor, and then cooled with liquid nitrogen, while, after the evaporation of nitrogen, it can be brought into rotation, but the superconducting state was maintained for no more than 20-30 seconds. For this reason, many spinning tests could not give reliable results.

In June 2007, attempts were made to repeat Schnurer's experiment, but no noticeable effects on digital scales were found for the case of a phase transition of the HTSC disk material from a superconducting to an ordinary state. To refine the results, a torsion balance was built. The scheme of the experiment is shown in Fig. 91. The torsion weights were made of wood, the weights were made of plastic. A piece of glass in the central part of the horizontal bar reflects the laser beam onto the wall (distance 2 meters), which makes it possible to detect the rotation of the torsion balance with high sensitivity. The suspension thread is made of tungsten wire with a diameter of 0.05 mm. The whole structure is placed under a glass cover to eliminate the influence of air currents.

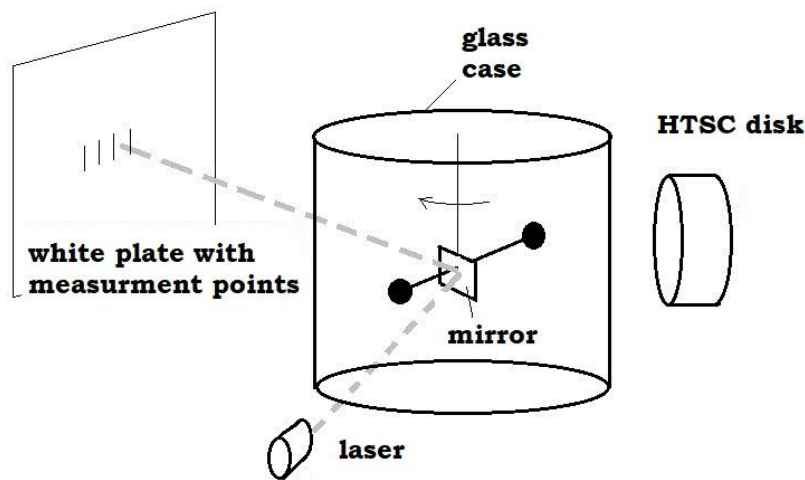


Fig. 91. Experiment with torsion balance

Our experiment to test the Schnurer effect consisted of placing a precooled HTSC disk near a torsion balance. After 30-40 seconds, when the disk heats up and a phase transition occurs, one of the weights of the torsion balance is attracted to the HTS disk (the torsion balance rotates). After 3-5 minutes, the scale returns (rotates) to its original state. The maximum effect is observed when the HTSC disk is placed with the plane facing the torsion balance. The experiment was repeated 4 times. It is difficult to give quantitative characteristics, it is necessary to improve the measuring equipment.

It is interesting to note that the onset of the force action on the torsion balance corresponds to the expected moment of the phase transition of the HTSC material of the disk into a non-superconducting state, but the end of the force action is extended in time by several minutes. Possible errors in understanding the effect can be associated with the presence of powerful heat (cold) flows around the cooled HTSC disk, that is, with the phenomena of thermogravitation. The glass cover only eliminates convection air currents. However, it does not interfere with thermogravitation forces.

To test this assumption, additional experiments were made with a non-superconducting material. A metal disk, which has about the same mass as the HTSC disk, was cooled with liquid nitrogen and placed next to a torsion balance. In this case, the effect of attraction of the load of the torsion balance to the cold body was also found,

but to a much lesser extent than when using an HTSC material. It would be interesting to organize further experiments in this direction.

Another experiment was organized on June 23, 2007 to study the gravimagnetic effects arising from the creation of a high-voltage discharge on a cooled HTSC disk. The schematic of this experiment is shown in Fig. 92. A high-voltage pulse (discharge) was applied to a cooled HTSC disk immediately after the liquid nitrogen was evaporated. Significant changes in weight were found (up to 0.3 grams, which is 0.5% of the weight of the load). The negative electrode was connected through the table and the body of the container with liquid nitrogen to the HTSC material. It is difficult to speak correctly about the quantitative characteristics of the observed effect, since in this scheme of the experiment, made without an HTSC material, some changes in the readings of the balance, which were caused by a spark discharge, were noted. Also it was not possible to completely eliminate the influence of high-voltage equipment on digital scales. The experimental technique needs to be improved, although some effect of a change in the weight of the test body upon exposure of the HTSC disk to a spark discharge was reliably detected.

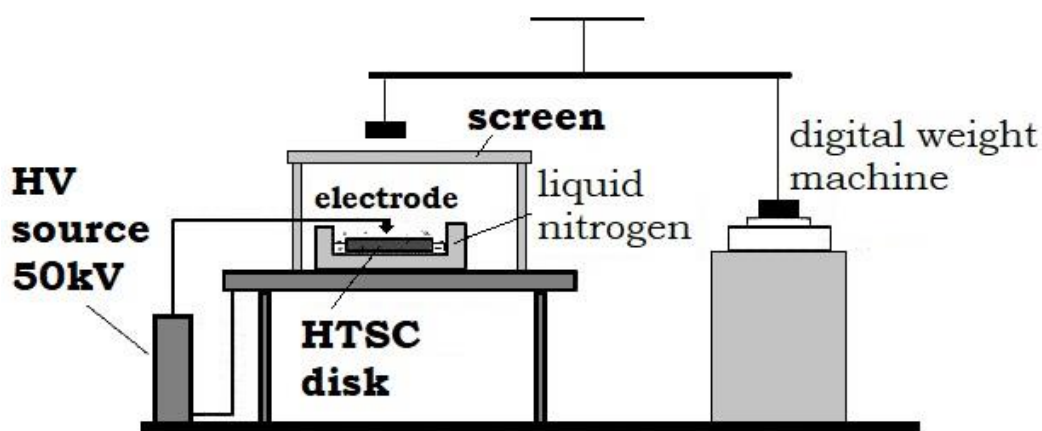


Fig. 92. Diagram of Frolov's experiment on the effect of an electric discharge on the phase state of the cooled HTSC material.

In July 2007, experiments were made with a permanent magnet installed near a rotating HTSC disk. In this experiment, we tried to test the possibility of creating a Bose condensate density gradient and generating a gravitational wave using the Lorentz force. The magnetic field was created both in the radial direction and coaxially with respect to the rotating HTSC disk.

The rotation speed of the HTSC disk reached 2000 rpm. We used a permanent magnet with strength of the order of 1 T, NdFeB material, and a cylinder 25 mm in diameter and 24 mm in height. The distance from the magnet to the edge of the HTSC disk was about 7 mm.

In experiments with the coaxial arrangement of the magnet, small changes in weight of 0.02 g were found, which is about 0.04% of the weight of the load. I believe that this change in test body weight is too small to be considered a reliable result.

The most interesting part of this series of experiments concerns the study of the influence of an electromagnetic field on a rotating or stationary HTSC disk. The sinusoidal signal was fed to a transistor current amplifier, the load of which was a coil. Different coils were used for different frequencies: for low frequencies 10Hz - 100Hz, the

coil had 500 turns of 1 mm diameter wire wound on a U-shaped transformer iron core. For frequencies from 100Hz to 10 KHz, another coil was used, wound on a ferrite core.

A positive result was found when the HTSC disk was rotated in an alternating magnetic field with a frequency about 1 KHz. However, the percentage change in weight was only 0.04%.

The experiments at frequencies from 10 KHz to 3MHz were organized using an output coil on a coreless frame placed above the HTSC disk. The measurements, in this case, were ineffective, that is, no confirmation was found that the interaction of the electromagnetic field with a rotating or stationary HTSC disk, at these frequencies, in this design can produce significant gravitational effects.

In the higher frequency range, from 3MHz to 40MHz, the electromagnetic field was created by the power amplifier of a conventional adjustable RF signal generator, the output power in the coil reached 30 watts. The high-frequency generator was installed above the HTSC disk immersed in liquid nitrogen vapor. Significant weight changes were found, reaching 0.06 g, at a frequency of about 30 MHz, for a stationary HTSC disk. *The weight change was about 0.01%. This result falls within the predicted frequency range of 10 - 100 MHz and can be considered as the main result of a series of experiments to identify the wave nature of the gravitational field.*

In another version of this experiment, a rotating HTSC disk was placed in a high-frequency field of 3 MHz - 40 MHz. We didn't get the expected effect. It is possible that in this case, important data was lost due to the short (20 seconds) duration of the superconducting phase of the rotating disk. Another possible reason for a negative result is that in this design, the high-frequency field could be dissipated on the metal parts of the rotor and the drive structure.

So, the found minimal effects, in general, can be considered as convincing data. Some positive results, for example, in the case of rotation of a cooled HTSC disk in a constant magnetic field oriented across the plane of rotation, may be due to the action of the Lorentz force, which creates a local density gradient of the Bose condensate. Oscillations of this density occurring during the rotation of the HTSC disk can generate a gravitational wave in the axial (vertical) direction in the region above and below the permanent magnet.

I repeat that the main task of this project was to check the resonance conditions at frequencies of 10-100MHz. Minor weight changes were found for fields with frequencies around 1 KHz and around 30MHz. To obtain more reliable data, it is advisable to increase the power of the electromagnetic field used in this experiment.

The experiment with a high-voltage pulse, which gave quite reliable results, allows us to conclude that the destruction of a superconducting material when creating a gravitational pulse is not a necessary condition for generating a longitudinal wave. The effects are observed without the destruction of the material, since *the Bose condensate is coherently displaced in space under the action of an electric impulse, creating a powerful longitudinal wave in the Aether medium.*

These findings are consistent with Podkletnov's experiment, which is a variant of Charles Morton's experiment. With this variant of the experiment, the destruction of the "working fluid", which excites the Aether density wave, does not occur. Therefore, for practical purposes, high-frequency generators of coherent gravitational radiation can be created using this effect.

One technical proposal on this topic is to use many small elements made of HTSC material instead of a single HTSC disk. This direction of design will reduce the discharge voltage, as well as increase the pulse frequency in the generator operating according to the Morton principle. The technology has great prospects for gravitational wave telecommunications technology, since modern superconducting materials have a low cost, and technologists are working to reduce the critical temperature.

Also we can note here some interesting patents: Nassikas Athanassios A., 2015. "Magnetic propulsion device using superconductors" USA patent 8,952,773. Nassikas Athanassios A., 2013 "Apparatus for generating a propulsive force using superconductors", PCT patent application no. WO2013/110960 A1. Nassikas Athanassios A., 2016. "Mechanism creating propulsive force by means of a conical coated tape superconducting coil", PCT patent application no. WO2016/142721 A1. It is not theory. Professor Nassikas organized reliable experimental tests to confirm the theory.

I invite interested partners for the development of this research project, although the gravimagnetic propulsion device for aviation and space technology at low power do not provide a significant propulsion force. The method of creating gravitational waves considered here is an effective tool for cleaning (deactivating) radioactive wastes and terrain, creating gravitational communication systems and for new medical technologies. Powerful propulsion force effects can be created in the case of resonance with pulsations of own gravitation field of the planet. It is topic of future research work.

Time delay method for propulsion drive

Let us continue the consideration of new methods of creating a propulsion force, which are related to inertial propulsive devices. There are a number of workable, experimentally tested designs of technologies, in which the principle of "equality of action and reaction" can be bypassed through the use of such a factor as time delay.

In the well-known technical solution, which is used by many inventors of inertioids, the impulse action of the vibrating element and the body occurs when the impulse of the interaction of two bodies is asymmetric. Kinetic momentum, as you know, is equal to the product of mass and velocity. The mass of a vibrating element is a constant value, but the speed of its movement in one direction (to the right) may differ from the speed of movement in the other direction (to the left).

In Fig. 93 shows a diagram of such an inertioid. The technical implementation of the idea looks quite simple: a permanent magnet is placed on springs inside an electromagnet solenoid. The speed of movement of the vibrating element to the left V_1 is greater than the speed of its movement to the right V_2 . Accordingly, the p_1 momentum transmitted to the device body is greater than the p_2 kinetic momentum.

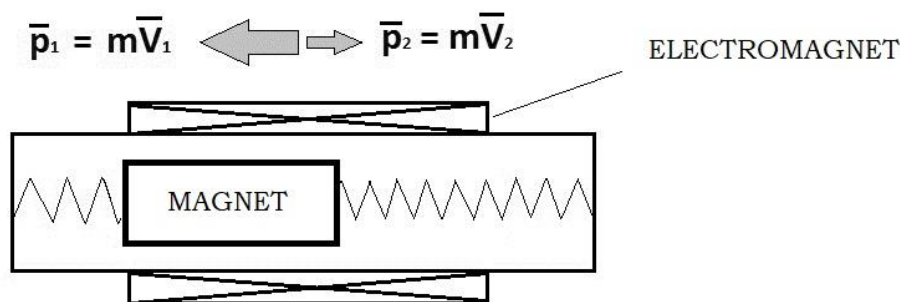


Fig.93. Asymmetry of kinetic momentum in inertial propulsion drive

So, the secret lies in the shape of the electromagnet power pulse, which ensures the movement of the core at different speeds in different directions. The law of conservation of momentum is strictly fulfilled here, as the equality of the value by which the momentum of the vibrating element decreases and the value of the momentum acquired by the body as a result of their interaction. Nevertheless, for a complete cycle, the device body receives a nonzero total impulse because the movement of the vibrating element in a different direction occurs at a different speed.

Nature, this asymmetry can be found in the movements of birds, fish and insects. In one of the TV programs a trick on this topic was shown: a bus with a team of rowers was rolled onto the stage, and they successfully set the bus in motion, using only "internal forces"! At the command of the coach, synchronously, the rowers slowly bent and sharply straightened in their chairs, resting their feet on the floor of the bus. As a result, the bus came into unidirectional accelerated motion. Surprisingly, even after showing such simple experiments, patent office refuse to accept applications for inventions of propulsion devices with internal forces.

Let us consider another option for using the time factor in propulsion drive, which was previously proposed by many authors, but still awaits its practical implementation. It is known that two electromagnets, fixed on a common body, either mutually attract or repel with equal forces. The total impulse acting on the body will be zero. The solution that allows you to create a non-zero total impulse, when two electromagnets interact, is that the electromagnets are spaced by the distance that the electromagnetic wave travels in a time comparable to the pulse duration.

The speed of propagation of an electromagnetic wave in a vacuum is known to us, it is not infinitely large, and therefore high-frequency electronics can provide the required conditions for two electromagnets spaced at a sufficiently large distance from each other.

Suppose that two ring circuits with electric current are located side by side, and are turned by the plane towards each other. Let's say that the distance between the wires (circuits) is about 1 meter, and the speed of the control circuit can reach 333 MHz. The electromagnetic wavelength at this frequency is approximately 1 meter. In this case, the speed of propagation of the electromagnetic wave in the space between the circuits plays an important role, and the delay in the reaction by one hundredth of a microsecond fundamentally changes the situation.

In modern computers, processors are much faster, and this concept is quite realistic for real high frequency equipment. An example of one of the possible modes of operation of such a system is shown in Fig. 94.

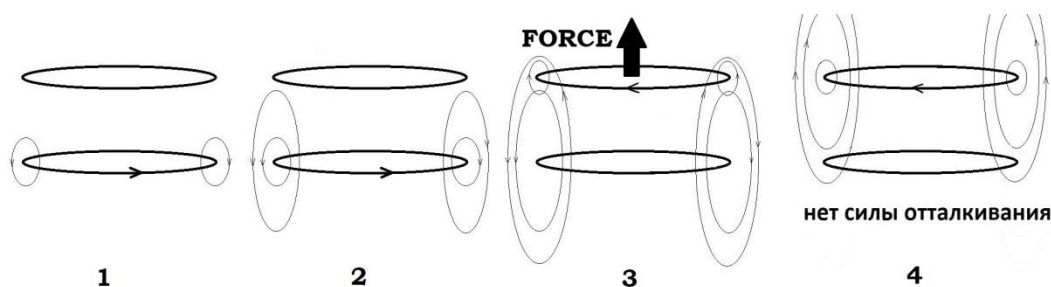


Fig.94. Two electromagnets in different stages of impulse interaction

Let us assume that a short current pulse is excited in the lower coil, and at the moment of this current excitation, there is no current in the upper circuit (stage 1). The field from the lower coil (the front of the longitudinal wave) propagates at the speed of light in all directions (stage 2). When the magnetic field of the current pulse of the lower

coil reaches the plane of the upper coil, a short current pulse can be created in it (stage 3). Accordingly, a magnetic field of the current of the upper coil will appear which will interact with the field of the lower coil, creating a force effect, for example, pushing the upper coil upwards and transferring an impulse to the entire body of the propulsion drive.

It is important to understand that the field of the upper coil repels from the magnetic field of the lower coil, that is, from the longitudinal wave of the Aether medium, and not from the lowest coil wire.

The task of the designer is to ensure that the current in the lower coil is turned off until the front of the wave excited by the current in the coil loop reaches it (stage 4), and not to turn on the current in the lower coil as long as the field of the second coil still exists in its region. After waiting for the necessary pause, you can repeat the cycle, exciting a short pulse in the first circuit, and so on. In this case, the interaction of two pulsed electromagnetic fields gives a periodically repeating non-zero impulse of unidirectional driving force.

These examples are considered to understand the role of such a factor "time delay", and its application in the design solutions of a new type of propulsion drives. Interaction impulse asymmetry is a key technology for this type of propulsion system.

We also note that instantaneous wave propagation is possible only theoretically, for an absolutely solid medium of wave propagation. The term "propagation" itself implies some speed of the process. An instantaneous change in the location of an object can be viewed as cases of teleportation, but this interesting question will be posed at the end of the book. In a real situation, for any process in our real space and time, there is always a certain rigidity of the causal relationship, which is determined by such a parameter as the speed of time. Let's move on to the analysis of Kozyrev's theory and his experiments on studying the "active properties of time".

Kozyrev's "waves of time density"

With the works of Nikolay A. Kozyrev I have known since 1991, mainly from collection of his publications [54]. Photo in Fig. 95 published with permission from relatives, and provided by Lavrenty S. Shikhobalov.

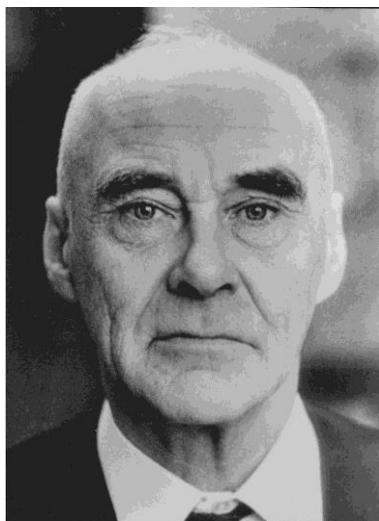


Fig.95. Nikolay A. Kozyrev

Nikolai Aleksandrovich Kozyrev was born on September 2, 1908, in St. Petersburg. His father was a mining engineer, a native of peasants, who conscientiously earned the rank of actual state councilor, which gave him and his descendants the privileges of a

noble rank. Mother N.A. Kozyreva came from the family of the Samara merchant Shikhobalov.

Nikolai Aleksandrovich graduated from the Astronomy Department of the Physics and Mathematics Faculty of Leningrad University, and was accepted as a graduate student at the Pulkovo Observatory. In 1931, N.A. Kozyrev and his friend Ambarzumyan together participated in the creation of theoretical astrophysics that is a new science of the processes of energy transfer on the scale of stars and planets, which required a mathematical analysis of the issues of gravitating and radiating processes.

The career of Nikolai Alexandrovich Kozyrev was difficult. While still a graduate student, he often criticized the leaders of the Observatory for their bad work. In 1936, he was fired from the staff of the Observatory, because he arbitrarily received funds for a business trip to Tajikistan from the Tajik branch of the Academy of Sciences. In fact, Kozyrev made a number of important studies of solar activity, but outside the work plan of the Pulkovo Observatory. His trip was agreed with the deputy director of the Pulkovo Observatory, since the director was on a business trip abroad. Kozyrev's fault was that he used the funds of an outside organization for a business trip, although this was the general structure of the USSR Academy of Sciences.

Further, a battle began in court for Kozyrev's reinstatement at the Pulkovo Observatory. The Commission of the Presidium of the Academy of Sciences dealt with the conflict, and expressed a serious reproach to Kozyrev for "individualism, incompatible with systematically organized work", and to the management - a comment for "intolerance of criticism."

The Observatory leadership naturally defended its prestige with all its might. All possible methods of struggle were used, which took place against the background of repressions and arrests of that time ... In October 1936, Kozyrev was arrested, along with several other employees of the Observatory, under the article "for counter-revolutionary activities." Later, in 1937, the leaders of the Pulkovo Observatory were also arrested.

Over the next few years, the arrests of "enemies of the working people" took place throughout the country. Now we understand that this was part of a sabotage war that was waged by Russia's enemies before World War II. In this hidden war, methods such as incitement of class hatred were used to destroy qualified military specialists, talented leaders of production enterprises, etc. Including, scientists were destroyed, as their activities could strengthen the country's defense.

Many employees of the Pulkovo Observatory were shot in the case of the "Leningrad terrorist organization." Later, in the report of N.S. Khrushchev "On the cult of personality and its consequences", spoke about the reasons for such high-profile cases. Their scenarios were developed in order to "cleanse the party ranks of class alien elements" and to "whip up the fear of the intelligentsia" before the workers 'and peasants' government. The noble origins of some scientists, as well as their "espionage connections", about which their correspondence with foreign scientists "irrefutably" spoke, gave the investigating authorities every "reason" to fabricate criminal cases [54, p.21].

Nikolai A. Kozyrev was sentenced to ten years in prison. Some of his memoirs were included in the book by A.I. Solzhenitsyn's "Gulag Archipelago". All the years of imprisonment and camps, he was threatened with execution.

The petition for the early release of Kozyrev was received in 1944, since the country needed to restore the observatories destroyed by the war in Pulkovo, Kharkov, Odessa ... In June 1945, Kozyrev was transferred to Moscow, where it turned out that he was a talented scientist proposed a new theory of the structure of stars, recognized by scientists in the USSR and abroad.

In 1946, Nikolai A. Kozyrev was released, and in 1958 he was fully rehabilitated.

In March 1947, Kozyrev defended his doctoral dissertation, the main part of which he prepared while still in the camps. The dissertation was entitled "Sources of stellar energy and the theory of the internal structure of stars." The conclusions from this work are as follows: the star is not a thermonuclear reactor, its temperature is insufficient for thermonuclear processes. The lifetime of stars exceeds all possible periods that can be calculated using the usual method of "burning" fuel, that is, the consumption of stellar matter.

Stars, according to Kozyrev, are not furnaces and reactors, but "machines" that convert a certain type of energy into electromagnetic radiation of the thermal range. The substance of the star, in this case, is not consumed. Kozyrev wrote: "The absence of energy sources shows that the star does not live by its reserves, but due to the arrival of energy from the outside." Further, regarding this source of energy, given its ubiquity in space, Kozyrev proposes to consider time as a kind of physical medium that is capable of influencing matter, imparting energy to it and "being a source that supports the life of stars" [54, p. 198] ...

Kozyrev's works are of great importance for understanding the essence of the Aether-dynamic effects associated with changes in the density or speed of the Aether medium. Studying his articles, I did not immediately understand why he could not write the term "Aether density wave", but used the term "time density wave". Later it became clear that Kozyrev could not pose the question in this way, since the Aether did not exist at all in the Soviet scientific school!

So, I will give here an exact quote from Kozyrev: "The following, very important conclusion is obtained: the heat output of a star is determined only by heat transfer. Thus, the mechanism of energy release by stars is not of the type of reactions, but of the type of energy release during cooling or the release of gravitational energy during compression" [54, p. 134]. Further, Kozyrev writes: "The matter of a star can produce as much energy as is required to cover the expense. In other words, stars are energy-generating machines; heat transfer is the power regulator of these machines" [54, p.39].

Later, understanding Kozyrev's term "time density wave" as "longitudinal waves in the Aether", it was possible to develop many applied technologies. It is enough to connect the concepts of "time density" and "Aether density" in order to draw conclusions about the nature of stellar energy: the star converts the potential energy of elastic compression of the Aether medium, and emits light, that is, longitudinal Aether waves with kinetic energy.

Assumptions have already been made about the difference in longitudinal waves in the Aether medium in the chapter on the internal structure of the electric field. It is assumed that any potential field, including the gravitational one, is formed by counter streams of photons and antiphotons. Photons and antiphotons are the same in nature, they are density waves in the Aether medium. However, the photon propagates "into the future from the past", moving away from the radiation source. The antiphoton comes to the "receiver" of antiphotons from infinity. The flow of "antiphotons" must have energy, and when creating "conditions for energy drain", antiphotons will constantly flow into the "receiver", which creates the effect of energy accumulation in the "receiver" area.

An obvious analogy emerges with Kozyrev's ideas. In the stellar converters of the potential energy of elastic compression of the Aether into the kinetic energy of photons, antiphotons flowing into the "working body" should be absorbed, and photons should be emitted in the frequency range known to us. Changing the terminology, and taking into account that antiphotons have all the features of gravitons, we can say that the star "absorbs time" and releases heat.

The difference between photons and antiphotons is not in their internal structure, but is set by the parameters of the process of changing the volumetric energy density of the Aether medium. In one case, it is a process of radiation, and in another case, it is a process of energy absorption.

Moving from astrophysical scales to general questions of mechanics, Kozyrev adds: "The nature of the conditions ... shows that energy in stars is obtained as a result of certain electrodynamic processes. However, the principle that a closed system can produce energy must be so deep as to be contained in simple laws of mechanics. Therefore, first of all, the following questions should be posed: how can a closed mechanical system produce energy and where will this excess energy come from?" [54, p. 237].

Further, Kozyrev proposes such a solution: if two physical systems cannot be combined by rotating the coordinate axes, without mirroring the time axis (direction of rotation), then the mechanical properties of these systems, in asymmetric mechanics, should be different. Of course, their kinetic energy does not depend on the direction of rotation, but the values of the potential energy in these two systems can be different.

Note that the difference between the two physical systems in potential energy can be detected by the degree of entropy of processes in these systems: photons heat bodies, that is, they increase the entropy of matter, and antiphotons reduce the entropy of matter.

Kozyrev writes: "The asymmetry of the laws of mechanics in relation to mirror images can have an astrophysical test ... Time has some asymmetric property. This property of time can be called directionality or course. Due to this orientation, time can do work and produce energy. So, the star is only an apparent perpetuum mobile: the star draws energy from the course of time" [54, p. 238].

Having changed the terminology, imagining the connection between the concepts "time" and "the rate of flow of Aether-dynamic processes", we can repeat after Kozyrev's conclusion that the process of existence of particles of matter has an "asymmetric property", it is directed from the past state into the future. This direction is the vector of time. Assuming that time has physical properties, like a flow of matter or energy, we can formulate the following task: it is necessary to design a technical device capable of receiving a propulsion force or power by "taking from the flow of time" some of its energy.

Actually, this has already been discussed earlier, but the role of such a flow of energy was considered Aether, flowing from space into the center of the planet, the Sun, and other macroscopic bodies, which creates the attraction of all bodies to each other (gravitational effect) due to the effect of mutual screening of bodies from the external stream of Aether, according to the theory of Fatio [55].

On the other hand, not only the Sun and stars absorb antiphotons and emit photons, this is a common property of all particles of matter. The stream of Aether flows into each particle of matter, which allows it to exist at a certain energetic level. This concept makes it possible to create new special materials for gravitational propellers, for example, using a change in the balance between the Aether flowing into the nucleus of an atom and the Aether emitted by the atom in the course of its existence.

So, passing from macro-bodies to particles of matter, it is obvious that each of the particles of matter is a "machine" that transforms one type of energy into another. Each nucleus of an atom is analogous to a star. Particles of matter exist as a process of a certain speed, absorbing and transforming the Aether. Time for them has the meaning of the speed of existence, which depends on the parameters of the surrounding Aether medium.

Regarding the asymmetry of the laws of causal mechanics of Kozyrev, it is necessary to clarify the following: the mechanical motion of bodies in space, for example, helical motion and rotation, really has two different "mirror" options that are incompatible with the geometric method of transfer. We call them "clockwise rotation" and "counterclockwise rotation". Nevertheless, these are conventions ... Both processes go from the past time to the future time. There are other options for organizing two physical processes that are incompatible with the method of geometric transfer. For example, it can be the process of increasing the density of the Aether and the process of decreasing the density of the Aether in a given area of space. With this formulation of the question, the course of time is set not by a geometric parameter, but by the direction of change in the value of the energy density in space. In such a process, the future state differs from the past in a known way: the value of the energy density increases or decreases.

The study of the "active physical properties of time" provides an understanding of such a physical property of our real world as "causality". The main work of N.A. Kozyrev on this topic is called "Causal or asymmetric mechanics in the linear approximation" [56]. The study of the foundations of "causal mechanics" is necessary for the development of the applied aspects of Aether dynamics, since, from the point of view of Aether dynamics, the physical properties of time are the properties of Aether. Their change means a change in the very conditions of existence of particles of matter, which is perceived by us as a slowdown or acceleration of the process of existence of material objects. The causality of all processes, including the stability of the existence of matter particles, in this consideration, depends on the parameters of the Aether medium, for example, its density, pressure and temperature.

Let us consider several well-known experiments of Kozyrev and his theory of "causal mechanics", assuming the replacement of the terms "time density waves" with the concept of Aether density waves. Kozyrev formulated several postulates of causal mechanics, from which conclusions about the physical properties of time follow:

1. In causal relationships, there is always a fundamental difference between causes and effects. This difference is absolute, independent of the coordinate system.
2. Causes and effects always differ in space, therefore, between them there is an arbitrarily small, but not equal to zero, spatial difference δx . Causes and effects arising at the same point in space (in ordinary mechanics) cannot differ, and are identical concepts. Only from the fact that the effect is in the future with respect to the cause, we can find their difference.
3. 1. Causes and effects always differ in time. Therefore, between their manifestations there is an arbitrarily small, but not equal to zero, temporary difference δt of a certain sign. Hence, the natural direction of the passage of time - from cause to effect.

So, Kozyrev's time has a special property that creates a difference between causes and effects, which can be called direction or course. This property determines the difference between the past and the future. The course of time c_2 (in Kozyrev's theory) is a pseudoscalar, positive in the left-hand coordinate system. The pseudoscalar character of c_2 means that the course of time has the meaning of the linear rate of rotation, and in our space-time it is uniquely specified.

Quote Kozyrev: "The course of time existing in the World establishes in space the objective difference between the right and the left" [54, p. 248]. Examples from biology, as well as the structure of plants, as Kozyrev showed, prove the fact that all life on earth has an asymmetry, a helical structure, which allows living organisms to use the "active properties of time", so to speak, the flow of Aether, relative to which our planet moves along a complex, spiral helical trajectory.

These postulates are naturally perceived from the point of view of an astrophysicist who understands the fact that we are on the surface of a planet moving at a tremendous speed in space, together with our Sun, the entire solar system and the galaxy...

Causal mechanics, unlike ordinary mechanics, is called so precisely because it takes into account the real course of time. In Kozyrev's theory, a new physical concept is introduced about the numerical value of the "speed of time", which is denoted by " c_2 ", and has the meaning of "transition of cause into effect", formula 4

$$c_2 = \delta x / \delta t \quad \text{F.4}$$

In classical mechanics, δt is equal to zero, so the speed of time is considered to be infinitely large. In quantum physics, by contrast, δx is zero. In this case, there is no time, its speed is zero. Kozyrev writes about this: "We can say that Newtonian mechanics is a world with infinitely strong causal links. Atomic mechanics, on the other hand, is another limiting case of the world with infinitely weak causal links. Mechanics that meet the principles of causality in natural science can be developed by refining Newton's mechanics" [54, p. 297]. So, in real World we can see some causality and some speed of time flow.

By the magnitude of the Kozyrev speed of time, we can draw some conclusions about the nature of this concept. In the early works of Kozyrev, this speed was numerically equal to 700 km/s [54, p. 246]. Kozyrev's calculations are given in formula 5. Here, the symbol " α " denotes a certain dimensionless factor, Planck's constant is denoted by the symbol " h ", and the electron charge is denoted by the symbol " e ".

$$c_2 = \alpha(e^2/h) = \alpha 350 \text{ (км/с)} \quad \text{F.5}$$

Why is Kozyrev introducing the " α " coefficient? It can be assumed that he wanted to show the possibility of changing a given speed, under various conditions. For normal conditions of near-earth space, Kozyrev indicates that the coefficient " α " is approximately equal to two. Hence, the speed c_2 is approximately equal to 700 km/sec. We are aware of natural processes at such a rate. This is the growth rate of the prominences of the Sun, so to speak, the "steepness of the impulse front", which creates the movement of the particles of the Aether, the longitudinal wave of the Aether, emitted by the Sun.

Other astrophysical processes, which have a speed of the order of 700 km/s, are associated with the rotation of the entire solar system in the Galaxy, as well as the movement of the Galaxy itself in the Universe. Considering these analogies, it can be concluded that the engineering approach to the control of the speed of time, that is, the rate of existence of matter, should be based on the laws of Aetherdynamics of astrophysical processes.

An interesting coincidence: Kozyrev designated this coefficient with the symbol " α ", which also denotes the famous "fine structure constant". In later works, he came up with a different formula for calculating the "speed of time", which includes " α " as the famous "constant of fine structure".

Let's move on to Kozyrev's research on the topic of this book, namely, to the issues of changing the weight of bodies and creating a propulsion force. Kozyrev organized a number of experiments, studying additional forces that appear along the axis of a rotating gyroscope, moreover, suspended on a vibrating elastic suspension. Depending

on the left and right rotation, different values of the forces added to the mechanical system were detected, as Kozyrev believed, "due to the contribution of the energy of the flow of time."

He believed that at a speed of rotation (movement) of bodies of about 100 meters per second, these additional forces can give changes in weight up to 10^{-4} , that is, at the level of 0.01%. These are quite measurable quantities, and they were found by Kozyrev not only in laboratory-scale experiments with gyroscopes, but also on the example of careful measurements of the parameters of Jupiter and Saturn [54, p. 299].

Experiments with gyroscopes have also been made in Japan by Hayasaka and Takeuchi [57]. In these experiments, rotating gyroscopes were dropped from a height of several meters, and the time of their movement in free fall was accurately recorded using laser sensors. The initial data of Japanese scientists confirmed Kozyrev's theory, since the speed of the fall of the gyroscopes differed, depending on the direction of their rotation. This meant that the asymmetry of left and right rotation objectively exists, and the "passage of time" can change the total energy of the mechanical system. Later, in additional studies at different latitudes of the planet, it was shown that the discovered asymmetry effects can be explained by the influence of the planet's rotation on the experimental conditions. Nevertheless, these experiments led to a significant development in the level of knowledge.

It is important to note the following conclusion made by Kozyrev from his experiments: "The energy of a system of bodies that are not in equilibrium can not only be increased, but also decreased by changing the course of time. Therefore, the reverse process of the transition of the energy of the system into the course of time is possible" [54, p. 259]. This means the possibility of designing technical devices that can, figuratively speaking, speed up or slow down the passage of time, adding or taking away part of its energy. Such technical devices can work both as propulsion drives and as energy generators.

So, in experiments with gyroscopes, Kozyrev came to a new conclusion that the "speed of time" is about 2200 km/s [54, p. 367] and its calculation can be done using a simple formula:

$$s_2 / \pi = 700 \text{ (km/s)} \quad \text{F.6}$$

Kozyrev writes: "Thus, the ratio of c_2 to the speed of light c_1 turned out to be roughly equal to $1/137$ - the fine structure constant of Sommerfeld. Therefore, we can assume that the course of time is related to other universal constants in the following way"

$$c_2 = c_1 / 137 = 2200 \text{ (km/s)} \quad \text{F.7}$$

Here c_1 is the speed of propagation of an electromagnetic wave in a vacuum, the speed of light.

This conclusion shows the relationship between the electromagnetic form of energy emitted by the Sun, for example, and another form of energy, which Kozyrev called "waves of time density" flowing into stars and creating gravitational effects.

In this place, it will be useful to remind the reader about the theory of Spartak M. Polyakov, and consider his models of a photon and an electron [4].

Starting the development of his theory with the assumption that a photon is a particle that has both electromagnetic and gravitational mass hidden from us behind a superluminal barrier, Polyakov proceeds to the concept of creating matter particles with inertial mass from photons moving along a closed trajectory.

As the basis of his reasoning, Polyakov takes the fact that the annihilation of an electron-positron pair gives rise to two photons with an energy of 0.511 MeV each, the equivalent mass of which is exactly equal to the mass of the original particles (electron and positron). Therefore, we can assume that the electron, positron and 0.511 MeV photon are three different states of the same physical object. From the point of view of Aether dynamics, these are three different forms of the same wave process in the Aether medium.

Further, Polyakov draws attention to the fact that the classical electron radius of $2.8 \cdot 10^{-13}$ cm is much less than the 0.511 MeV photon wavelength, which is $2.426 \cdot 10^{-10}$ cm. He calculates the circumference corresponding to the classical electron radius $L = 1.755 \cdot 10^{-12}$ cm, and concludes: "In order for at least one wavelength of a photon with an energy of 0.511 MeV to fit on the circle of the classical radius of an electron, it must be compressed by a factor of 137" [4, p. 34].

This ratio, which is equal to the fine structure constant, is the ratio between the electromagnetic and gravitational forms of electron energy.

So, Polyakov's formula F.8 reflects the relationship between the electromagnetic "E" and the gravitational "W_e" form of the electron energy. They are connected by a constant fine structure [4, p. 35]

$$W_e / E = 1 / \alpha = 137 \quad \text{F.8}$$

In this form of formula F.8, we got an obvious analogy with Kozyrev's formula 7, and we can say that the *constant of the fine structure corresponds to the ratio of the energy of radiation fluxes of energy (photons) and its absorption (gravitons), in the process of existence of matter particles.*

The parameters of the process of existence of particles of matter at a given speed of time are characterized by a constant of fine structure, as shown by N.A. Kozyrev.

How can we influence these parameters by technical means? The successive phases of the transformation of a photon into an electron, or into a positron, depending on the direction of folding, are schematically shown by Polyakov in Fig. 96.

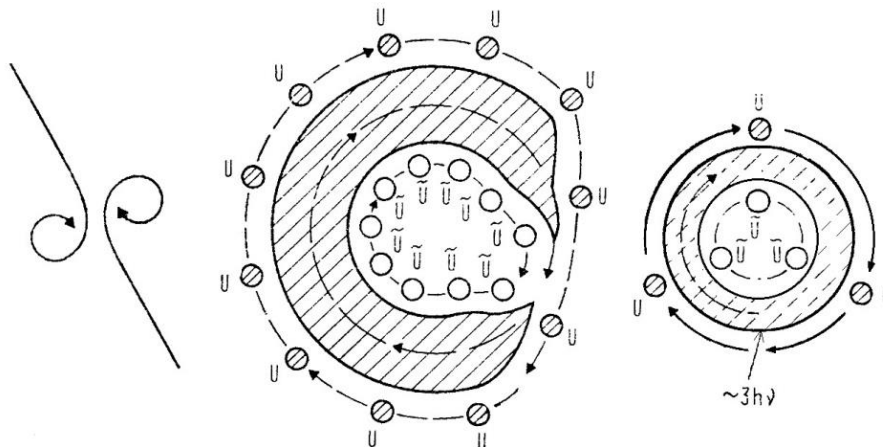


Fig. 96. Compression of a photon and the formation of an electron, in the Polyakov model.

For a photon, in the Polyakov model, there is an unambiguous direction of the world line, the axis of its propagation, relative to which it rotates when moving. For such a photon, there is a fundamental difference between the right and left versions of folding into a toroidal form, which we perceive as a particle of matter. Depending on this, when it folds into a closed trajectory, an electron or a positron is obtained.

In Fig. 96 shows that after folding a photon into a particle, three “uniquants” remain in its outer orbit, and three “anti-uniquants”, indicated in Fig. 96 symbol U. This assumption of Polyakov about the internal structure of the electron may find its confirmation in the future, if it is possible to prove the fractionality of the electric charge $1/3$. This theory is consistent with the hypothesis of the existence of quarks.

Proceeding from these premises, Kozyrev's time is speed of the existence of matter, as a "transition of cause into effect," has the meaning of *the ratio of the gravitational and electromagnetic forms of the energy of a particle of matter*. A change in the value of the fine structure constant will mean a change in the rate of existence of matter. We believe that this task is realized by decreasing or increasing the density of the Aether in the area of existence of a particle of matter. Technically, these problems relate to Aether dynamics, and are solved by electromagnetic and other methods.

When comparing the ideas of Kozyrev and Polyakov, another interesting assumption arises: the course of time for particles of matter with different signs of electric charge is opposite. This explains the annihilation of particles of different signs of charge, in which all their energy is converted into the form of photons.

The conclusions that Polyakov makes about the essence of the gravitational field are very interesting. They write: “It turns out that not the speed of the photon itself depends on the gravitational field, but the magnitude of the “superluminal barrier”, and as the field grows, the barrier value of the speed decreases. The photon itself is a special object, and its speed in free space is a world constant.” [4, p. 37].

Let's return to the “energy of stars” and nuclei of atoms ... In Kozyrev's concept, stars, like machines, transform one type of energy into another, although both types of energy are longitudinal waves of the Aether, or areas of compression and discharge of an elastic medium. In this case, the question arises: What is the difference between the gravitational form of energy and the electromagnetic one?

Polyakov has an answer: the gravitational form of energy is hidden from us inside a particle of matter, at a small radius of rotation of a photon, since at such a radius of curvature it moves at a speed faster than light. The gravitational part of the total energy of the particle is about 137 times greater than the form of energy available to us for measuring outside the particle of matter, where the wave moves with subluminal speed, at a large radius of rotation of the photon. With this consideration, both forms of energy really have the same nature, and are longitudinal waves of the Aether.

A particle of matter does not cease to be a photon, curling up into a toroid, but it acquires a gravitational form of energy, including inertial properties and rest mass, due to the fact that a part of its wave structure moves along a small radius with superluminal speed.

The relations of Kozyrev F.7 and Polyakov F.8 more fully reveal the essence of the constant fine structure, as the ratio of the internal energy of a particle, which has nothing to do with its movement in space as a whole, to its external energy. Physicists usually define it as the ratio of a particle's spin to its orbital angular momentum. From the standpoint of Kozyrev's causal mechanics, the internal energy of matter and its external energy correspond to the energy of the flow of time and the energy of electromagnetic radiation. For Polyakov, the internal form of energy and the external form of energy of matter correspond to the gravitational form and the electromagnetic form of energy. More generally, the internal form of energy can be represented as potential energy, and the external form as kinetic energy. A change in the parameters of space, in particular, the rate of existence of matter, should manifest itself in the form of changes in the parameters of photons, namely, the magnitude of the superluminal barrier. At the same time, the fine structure constant should have a different meaning.

Polyakov's concept describes the processes of creating particles of matter from photons, that is, it leads us to "technologies of materialization". Assuming that there is no difference between the Aether medium and the particles of matter, as Faraday [38] and Tesla [39] wrote, the particles of matter are not some solid objects, but exist as processes of the relative motion of the Aether medium. Speaking about longitudinal waves, that is, areas of compression and decompression of the Aether medium, one can proceed to the question of creating particles of matter from wave processes in the Aether.

The parameters of the particles are set by the conditions of their folding and the energy of the photons. Usually, for practical purposes, they consider the process of decay or synthesis of nuclei of particles of matter, which gives us a way to obtain nuclear energy, but this does not mean that the creation of particles of matter will require spending the same amount of energy. The reverse process can take place without energy consumption, in resonance conditions and with the appropriate design solutions required to "twist" the Aether flows into particles of matter. Calculations of resonance conditions will be shown in a separate chapter on 4D resonances.

The creation of isolated objects in a gaseous or liquid medium that have momentum and are able to move is a well-known area of classical physics. As in a gaseous medium, in the air these structures must have certain parameters that allow them to be stable. For example, a demonstration experiment on the formation of a toroidal vortex in air is well known. On impact on the back wall of the box with a hole [58] filled with smoke, the smoke ring flies out through the hole in the wall of the box, Fig. 97.

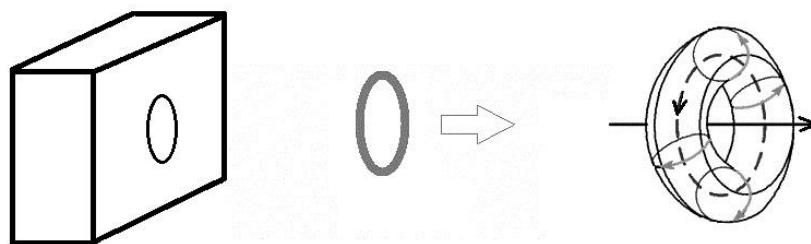


Fig. 97. Toroidal vortex and its motion.

In general, without the use of smoke, such an "experimental device" creates vortex toroidal structures moving in a straight line, invisible in the air, capable of "miraculously" extinguishing a candle at a great distance, or performing other tricks.

Pay attention to the rotation of air particles in the toroid, Fig. 94. They revolve not only in the orbit of the donut, but mainly around the middle circle of the toroid. This impulse is given to them by interaction with the edges of the box opening, in the initial period of the toroid formation. The gyroscopic properties of such an object define its "world line" - the straightness of its movement.

Likewise, the *gyroscopic effect ensures that the photons move linearly*. They exist and spread, just like rapidly rotating objects. Since such an effect requires the presence of an inertial mass in the body, Polyakov's assumption about the double mass of a photon (gravitational and electromagnetic) makes it possible to substantiate this fact.

Let us return to the consideration of the experimental part of the works of Nikolai A. Kozyrev. One of the "active properties of time" (the speed of time flow), we have already considered, showing its connection with the constant of the fine structure, and the relationship between the internal (own) gravitational form of energy of particles of matter and the external (electromagnetic) form of energy. Another parameter that characterizes time in Kozyrev's "causal mechanics" is called the "density" of time. From the point of view of Aether dynamics, all Kozyrev's experiments on the generation of "time density

waves" are fully explainable as ways of creating longitudinal density waves of an elastic Aether medium.

These waves can propagate in space, but they can also be standing waves, that is, moving or stationary, alternating areas of compression and decompression of the Aether medium. In some cases, the process of compression (compaction) or decrease in the density of the Aether medium, which occurs in a certain area of space, is taken as a wave.

The essence of Kozyrev's experiments on this topic, and important results are described in the work "On the effect of time on matter" [59]. Kozyrev calls "density" the degree of activity of time. To my mind, in the Aether dynamics, this means that, *depending on the density of the Aether, the rate of existence of matter, the rate of all processes, the activity and energetics of matter particles increases or decreases*. It was at first proposed by the author of this book.

Kozyrev discovered in his experiments that a "wave of time density" is created during all irreversible processes, but in one case, "the processes weaken the density of time and "absorb time". Others, on the contrary, increase its density, and, consequently, "radiate time." For example, the cooling of the body and the crystallization of water "absorb time", and in the vicinity of this process "the density of time decreases".

The effect of increased time density is weakened by the inverse square law of distance, shielded by solid matter with a thickness of the order of centimeters, and reflected by a mirror according to the usual law of optics. A decrease in the density of time around the corresponding process causes the "pulling" of time there from the environment. The effect of this phenomenon on the detector is shielded, but not reflected by the mirror. Last property (mirror reflection) is important to understand technologies of "Kozyrev's mirrors".

Further, studying various materials that can best reflect or screen streams of "time density waves", Kozyrev concluded that polished aluminum (aluminum-coated mirrors) is the optimal material. It is interesting to note that this metal is not the only material that makes sense to use for working with natural Aether longitudinal waves. The fact is that waves of different lengths have different properties, and the reflection (or absorption) coefficient depends on the wavelength.

Experiments have shown that processes that cause an increase in entropy (heating of a body, evaporation of a liquid, etc.), as Kozyrev believed, "emit time", to my mind it is process of Aether wave generation. At the same time, in a substance located near this process, its structure is ordered (entropy will decreased) [54, p. 386]. Interesting practical applications can be proposed here, for example, some medical anti-entropy processes in area of Aether waves.

Let me add some note on this terminology, talking about "radiation of time density waves by matter" is not entirely correct. In order to "emit" some substance, the source of this radiation must have a supply of emitted substance. For example, the cathode of a vacuum tube emits electrons as a result of thermal emission. In irreversible processes, there is a process of Aether exchange between the area of space, in which some irreversible process in matter takes place, and the surrounding Aether medium. Aether exchange creates a wave of Aether density, that is, a longitudinal wave in the Aether, its densification or rarefaction. The substance (matter), in this situation, is not "emitted". It would be more correct to speak of the creation of density changes in the Aether medium by some process taking place in the matter particles. In the same way, we understand the creation of electromagnetic waves by vibrations of the atoms of a heated lamp filament.

In Kozyrev's experiments simple electronic devices, for example, the Wheatstone bridge, were the detectors of "time density waves", that is, longitudinal waves of the Aether medium. Such a detector is capable of responding to a change in the electrical resistance of one of the circuit elements, which happened when the Aether density in the sensor area changed. In later experiments, the researchers used quartz sensors, since the resonant frequency of a quartz resonator is very stable, and its change indicates changes in the physical properties of the quartz substance.

Quartz crystals, which are part of a circuit of frequency counters, electronic clocks or timers, are very convenient for taking readings in the form of "time dilation or acceleration", as a percentage of the normal state in which they were calibrated at the factory of producer. For the experiment, you must have at least two identical timers (clocks). Before the experiment, the timers are synchronized, and then, one of the timers is affected. After the experiment, the difference in the clock readings is measured, which indicates changes in the physical properties of one of the quartz resonators, as a result of exposure to it. These changes are irreversible and a new pair of timers will be required for each measurement.

Kozyrev's experiments were organized with such entropic processes as melting ice, dissolving sugar, evaporating liquid (acetone), wilting plants... In the course of such processes, the "density of time", that is, the density of Aether in the environment, streamlining the structure of surrounding objects. In the opposite case, for anti-entropic processes, such as cooling of a heated body, crystallization, etc. the density of the Aether in the environment decreases, and the entropy of all material objects in the vicinity of this process increases.

Earlier in this book, we considered similar processes of the release of Aether or absorption of Aether during phase transitions of the state of matter in a superconducting material. Kozyrev's views on the nature of "time density waves" are consistent with the experiments of Podkletnov, Modanese, Schnurer and others, in which phase transitions of matter from a superconducting state to an ordinary state create a gravitational wave. From this point of view, the gravitational wave is also a longitudinal density wave of the Aether.

From this, the following conclusions can be drawn: the density of the Aether is a parameter on which the rigidity of the bonds between particles inside the Aether substance depends, and these bonds are nothing more than flows of Aether. An increase in entropy in the structure of an object, for example, dissolving a piece of sugar, means the release of an appropriate amount of Aether into the environment, which leads to its absorption and use by other bodies to reduce their entropy.

Thus, we can formulate the law of conservation of the amount of Aether in a given volume of space: *a decrease or increase in the density of the Aether involved in the interatomic bonds of a material object leads, respectively, to an increase or decrease in the density of the Aether in the surrounding space.* These are obvious conclusions based on the assumption that the Aether is an indissoluble elastic medium. By compressing a given medium in one place, we create an equivalent stretching of the medium in the vicinity of the compression process.

Briefly, we note that there is an obvious connection between the magnitude of the gravitational field and the rate of time. Let me remind you that the unit of measurement of length "1 meter" was introduced as the length of the pendulum, which makes a half-period of oscillation in 1 second, at 45th latitude. The point here is not mechanics ... This concept very accurately reflects the interconnection of the concepts of space and time.

A simple experiment is also known when a comparison of the readings of an accurate atomic clock on the roof of a skyscraper and the same clock in its basement

gives a significant difference in the speed of counting time intervals. From the standpoint of the concept that we are considering here, these results can be explained by the difference in the density of the Aether medium, which depends on the height above sea level, and creates gravitational anomalies in some places of the planet. On the surface of the planet there are several such "anomalous zones" in which, in one way or another, differ from the usual rate of processes, the weight of bodies, etc. In such places, strange phenomena are observed associated with violations of causality and changes in the usual speed of existence of material objects. All this can be created by a controlled artificial change in the density of the Aether medium, that is, by means of technical means. We will look at options for several designs of such devices in another part of this book.

Variations in the density of the Aether medium can be not only local, in separate areas of space, but also be created throughout the planet, as a result of global natural and astrophysical processes. Working with a telescope, in the focus of the mirror of which the sensitive element of the Wheatstone bridge was installed, Kozyrev noticed the presence of natural fluctuations in the density of the Aether, both daily and seasonal. Similar processes were noted in the works of A. Shapovalov, a biologist from Dnepropetrovsk [54, p. 393], who wrote: "From the end of May to autumn, the dark current of the photomultiplier increased by two orders of magnitude, which indicates a weakening of the obstacles to the escape of electrons, and, consequently, weakening the organization of the photocathode substance".

Other examples of seasonal variations in Aether density: the polymerization reaction is more difficult in spring than in autumn or winter. Modern experiments in the study of diurnal and seasonal changes in the properties of the near-earth Aether medium, for many years, were made by Alexander M. Mishin, St. Petersburg [22].

Powerful seasonal and daily fluctuations in the density of the Aether can be the basis for the creation of generators of thermal and electrical energy, if we learn to use them in the same way as we use the wind today, changes in atmospheric pressure or tidal processes in the energy sector.

Experiments to study the "influence of irreversible processes" on biological objects are very interesting, but hazardous to health. In the 1990s, I had a lot of correspondence on this topic with other researchers. For example, a group of authors told me about the results of their experiments, but asked not to disclose their names. They were interested in studying the "effects of decreasing entropy", including in biological organisms. The design of their experiment was as follows: dry ice was laid between its walls in a cylindrical household electric boiler with a volume of more than one cubic meter. Then, electric heating is turned on, and the ice quickly evaporates. In such an experiment, to my mind, a powerful irreversible process takes place inside the two walls of a cylindrical cauldron, powerful Aether wave is created, and the Aether medium is compressed towards the center, more precisely, towards the axis of the cylinder. The density of the Aether in the central part of the device increases for some time. Since the Aether in the cylinder cannot be in a static state of compression, then with such compression of the elastic medium, in the vertical direction, up and down along the axis of the cylinder, a directed flow of Aether is formed. Outside the cauldron, an Aether wave spreading from it is formed. The movement of the Aether medium inside and outside the given "Aether exchange apparatus" continues as long as the process of compression and expansion is going on, accompanying the evaporation of the "working fluid", that is, and a change in the phase state of the substance. The authors of the experiment took the risk of placing human inside this experimental setup, but noticed a sharp change in his health. The results of this experiment can be called subjective, since the authors did not carry out accurate instrumental measurements.

This technology is quite suitable for medical experiments, for example, on the topic of "anti-aging". Of course, form of this experimental device can be not only in a

cylindrical, but also in a spherical form to obtain the isotropic pressure of the Aether flow acting from all sides towards the center of the sphere, as shown in Fig. 98.

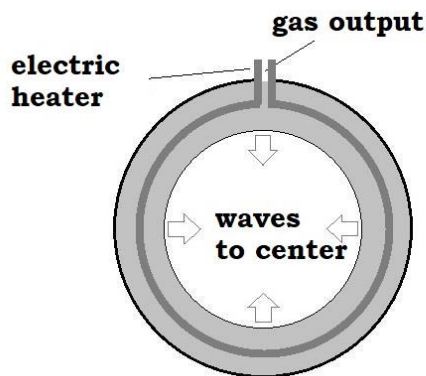


Fig.98. idea on experiment with spherical two-wall device.

I believe that the processes of accelerated evaporation of any low-boiling liquids, including liquid nitrogen or liquid air, can give good results. The installation of a cylindrical shape can be horizontal, similar to modern magnetic tomography equipment. All this is interesting medical application research; however, it is not the main topic of this book.

Let's return to the issue of a new type of propulsion system. Let us assume that a powerful irreversible process will create such an "additional flow of time", which largely compensates for the natural flow of time. In such a situation, a weakening of causality in the vicinity of this process is assumed, since there is a local decrease in the speed of the natural time flow.

According to Einstein's principle of equivalence, to compensate for the gravitational interaction, that is, to create weightlessness, it is necessary to create a corresponding acceleration of the frame of reference in space. Similarly, *we can formulate the principle of equivalence for motion in time: the creation of a state of "chronal weightlessness" will arise when the corresponding artificial time flow process is organized, which compensates for the natural time flow process.*

The third important fact found by Kozyrev is the possibility of instant communication through the "properties of time". The conclusions on this topic were so revolutionary that even the assumption of such a possibility became the reason for the scientist's removal from office in 1979.

The observations were made by Kozyrev with telescope and specially designed sensors that detected "time density waves". Kozyrev observed stars, galaxies and other astrophysical objects. For each of the objects, he recorded signals coming from three places in the celestial sphere:

- 1) From the place where the visible position of the object is, that is, from the past position of the object, from which it has already left, but we see it in this place, because photons propagate from this place in our direction for some time;
- 2) From the place where the object is at the moment of observation;
- 3) From the place where the object will be, when the light signal from the Earth, emitted at the time of observation, comes to it.

These observations are extremely interesting, and on this basis it is possible to create not only new communication systems. Facts 2 and 3 make one think... Instantaneous signal propagation is, in principle, impossible. The term "propagation"

itself, as we have already said, provides for a certain final speed of motion. The fact that Kozyrev's sensors recorded the true calculated position of the star, except for its past position, suggests that *everything in the World is already interconnected, at some level of the multidimensional structure of the Universe.*

The speed of light is our "local" parameter; it can change, because it depends on the parameters of the Aether medium. The instant connection of all objects in the Universe can only mean that they are all at the same point, if we consider them from a space of a higher dimension. This interesting conclusion requires more detailed consideration, and is very useful in the design of teleportation systems, which will be done later.

Case 3, that is, receiving a signal from the place where the observed object (star) will be located in the time required for light from the place of observation to reach there, speaks of the symmetry of the Universe. An assumption arises that the material world was created as a balanced structure of two mirror twins moving along the time axis in different directions, relative to each other, but each of them moves into its own Future. This concept has analogies with the structure of the DNA molecule, which will be discussed below.

So, when getting acquainted with the works of Kozyrev, a new, simpler, and at the same time, deeper understanding of the real world arises. According to his ideas, the active properties of the time flow can bring an organizing principle into our world, that is, resist entropy. Understanding the waves of time density as Aether-dynamic processes, we can say that the concentration and transformation of "waves of time density" is in use by all living organisms, stars and atoms in the process of their existence.

"Time is life, apart from its content," as the German philosopher Georg Simmel said. Life is possible only due to the fact that the "flow of time", that is, the structure of our space - time is able to transfer energy and information from the past state to the future. Aetherdynamic processes are not only energy without fuel and new propulsive devices for space transport. Multidimensional processes are capable of transferring information about the state and direction of development of the elements of matter. Kozyrev wrote: "Using the time flow to get a job is interesting, but not the main consequence of causal mechanics. The ability to intervene in existing causal relationships means that you can master the time flow to strengthen the processes that act against the increase in entropy, that is, the processes of life... discover and study the cause of the life of the Universe. "

Concluding this chapter, it can also be noted that in 1958, for the first time in the world, Kozyrev discovered "volcanic activity" on the Moon. In one of the craters, he recorded a gas release, and took its spectrogram. This discovery was not immediately recognized, but in 1969 the Committee for the Discovery of the USSR awarded Kozyrev a "Diploma on the Discovery of the Tectonic Activity of the Moon". Modern researchers of the activity of the Moon admit the possibility that the facts discovered by Kozyrev refer not to tectonic, but to technical activity on the Moon. This is a scientific fact, and does not apply to the results of the activities of our civilization. From this point of view, Kozyrev's statements about "volcanic activity" on the Moon were a harbinger of the concept of «hollow moon inhabited», which was first voiced by Russian scientists Mikhail Vasin and Alexander Shcherbakov in 1968.

One more comment on Kozyrev's concept of the speed of time as a "pseudoscalar" that has the meaning of a linear rate of turn. This parameter is important because it reflects the real situation in the world, namely, the movement of our planet in the stream of Aether. Nevertheless, it seems to me more correct to introduce the concept of the *speed of time, as the rate of the process of existence of matter*, relying on such a property of space as the density of energy in space. To my mind, an increase or decrease in the density of the Aether, and its other physical characteristics, in particular, temperature

and pressure create new conditions for the speed of existence of vortex processes that form particles of matter.

In addition, it is assumed that the speed of time in a particular process of existence of particles of matter can have only some discrete values, and matter can exist only at certain levels of energy. This is what quantum physics studies, considering the energy levels of the atom, the orbits of electrons, etc. The transition of particles of matter from one level of existence to another level occurs instantly, in a jump, and is accompanied by the emission or absorption of a quantum of energy from the environment. It is assumed that in the macrocosm, transitions between different levels of existence of material objects, for which the conditions of existence are changed, have a similar discrete (quantum) nature.

We have already spoken about the relationship between gravity and the speed of the flow of time. Next, we will consider the relationship between gravity and elastic deformations of bodies. It is obvious that elastic deformations of bodies also create deformation of the Aether medium. In the article "On the possibility of reducing the mass and weight of bodies under the influence of the active properties of time" [60], Kozyrev showed that the weight of bodies decreases after irreversible deformations of objects. For example, in his experiments, a box of steel balls was weighed before and after repeated shaking. The weight of the box changed, although this is impossible if we consider the box with balls as a closed physical system within the framework of Newtonian mechanics. In another experiment, the weight of the copper sheet changed significantly after it was deformed. I also made some experiments with deformation of sheets of various metals, wires, as well as sheets of ordinary paper... The weight changes after deformation! It should be noted that the amount of weight change in these experiments is not constant. The change is maximal immediately after deformations, then, the weight gradually returns to the initial value, but some weight difference remains. So, it is some wave process with some duration time.

What are the reasons for these phenomena? For an answer, I propose to consider the theory of Yury G. Belostotsky.

Gravitation and elastic stress

In most detail, this topic is disclosed in the works of Yury G. Belostotsky, St. Petersburg. We were familiar with him at conferences, and I conducted a number of experiments on his method in 1996-1998. Belostotsky wrote in his book "What is Time?" [60] the following: "Nature is built in such a way that a change in any quantity generates a new physical quantity. So, a change in speed generates acceleration, a change in the strength of an electric field - an electromagnetic field, etc. Nature, as it were, compensates for the change in one parameter by the appearance of another parameter..."

This feature of the behavior of interconnected real processes is called the "principle of compensation". Based on this "principle of compensation", Belostotsky draws the conclusion that "Gravity always leads to elastic deformations, and, therefore, to elastic stresses... Elastic stresses in a body necessarily lead to the appearance of an additional gravitational field around it". In other words, "the gravitational field is an elastically distorted Aether" [60, p. 47].

Great conclusion! Especially considering the elastic properties of the Aether medium and such an assumed quality as its continuity. Hence, creating an increase in potential energy in an elastic material body, by compressing or stretching, we create a corresponding increase in the potential energy of the environment. In this case, the type of deformation does not matter, since a medium without deformation has a lower amount of potential energy than a medium in a compressed or stretched state. It is obvious that variable deformations of the body will create Aether (gravity) waves in the medium.

The mechanism of gravity, according to Belostotsky, is very simple: the gravitational field of the planet deforms the body, creating elastic stresses in it. This leads to the appearance of an additional own gravitational field, which is directed away from the planet. The fields of the planet and the body are added together, and a denser medium pushes the body towards the planet, where the medium is less dense, as shown in Fig. 99. In this case, an attraction is created in the center of the planet.

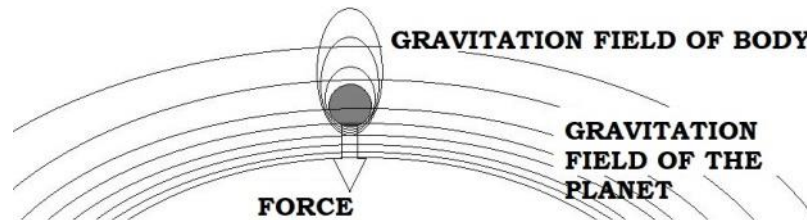


Fig. 99. Explanation of gravity in the theory of Belostotsky.

In Belostotsky's concept, motion in space where there is no external gravitational field can be created by forming its own gradient gravitational field around the propulsion drive, Fig. 100 by means of its internal elastic deformations.

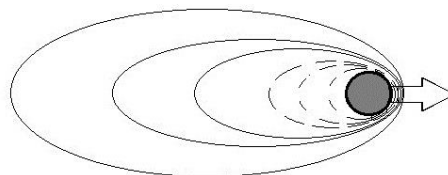


Fig. 100. A propulsion drive with its own gradient gravitational field.

In this regard, let me remind you that when considering the Biefeld - Brown effect, I made the assumption that this effect is associated with elastic deformations created in the capacitor when electrostatic forces are applied to the dielectric. Dielectric deformations are present in any capacitor, but the driving force is created in the presence of a gradient of elastic stresses, that is, in gradient deformation.

According to Belostotsky's theory, let me make a small remark: gravity acts on all bodies, but we do not consider all bodies to be elastic. This concept should be considered at the atomic level, where the elasticity of atomic bonds is a common phenomenon for all types of matter. Thus, we should not talk about the elastic deformations of the body as a whole, but about the deformation of the elastic bonds of atoms in the substance of the body, which is in the area of action of the external gravitational field.

It is interesting to note that Nikolai Kozyrev's works on the active properties of time have much in common with Belostotsky's concept precisely in the aspect of studying the elasticity of matter. In addition to this analogy, we can cite the ideas of Japanese authors about a "time machine" that uses a "rubber motor", so to speak, that is, an elastic working body that is periodically deformed, thus creating changes in the properties of the surrounding space-time. Periodic deformations of the body, like any oscillator, create a wave in the surrounding space-time. In this case, we can call it the Aether density wave.

So, taking into account the concept of Belostotsky, it is possible to explain the changes in weight in the experiment with a box of metal balls, etc., during elastic

deformation of bodies, and also to design gravitational-type propellers. Propellers of this type can use elastic stresses in the working medium, which are created by applying centrifugal forces to a rotor of a special shape, or in another way. Of the most common methods, electrostriction and magnetostriction can be noted.

In Fig. 101 shows a diagram of Belostotsky's experiment on generating a centripetal gravitational field, formed by four L-shaped emitters, which are elastically deformed during rotation.

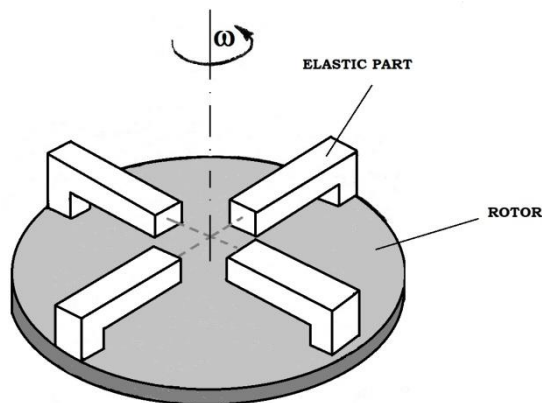


Fig. 101. Formation of the gravitational field in the central part.

At the center of this structure, Belostotsky placed a gravimetric sensor, measuring the effect obtained during rotation. He noted that the additional gravitational field is created *most intensively during the rotor acceleration period*. In the mode of constant rotation speed, the effect is there, but much weaker. This fact indicates the presence of an induction effect similar to electromagnetic induction: a change in the state of the Aether inside the substance creates an equivalent compensatory change in the Aether around the area of elastic deformation of the substance.

Similarly, during a change in the phase state of a substance, the Schnurer effect, Kozyrev's "time density wave", etc. are created processes of changing the state of the Aether medium. Consequently, the pulsed mode is more promising for the operation of gravitational propellers and generators of longitudinal waves in the Aether medium.

In the experiment Fig. 101, the additional gravitational field is symmetrical about the axis. There is no gradient of the field of wills of the axis of rotation, therefore, there is no driving force along the axis of rotation in this design. To form the axial traction force, I propose to modify the Belostotsky scheme and make inclined elastic elements, as shown in Fig. 102.

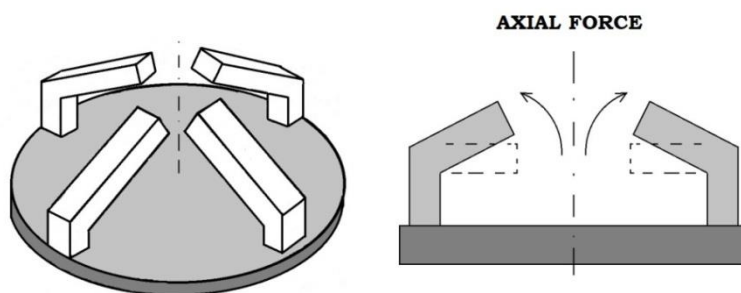


Fig. 102. Propulsion drive with elastic elements, in a state of rotation.

During rotation, these elastic elements will deform in such a way that a gradient proper gravitational field should be created, having a gradient along the rotor axis. For such a scheme, there is an axial component of the gravitational field gradient, and it is possible to obtain an axial driving force.

Another idea is the simple diagram shown in Fig. 103, interesting effects arise with the elastic deformation of the rotor elements.

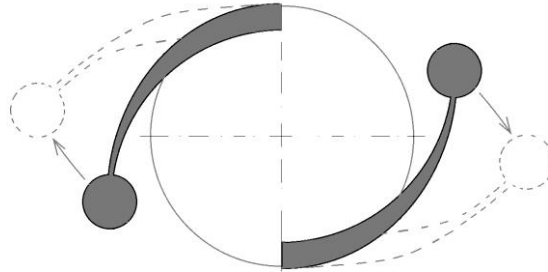


Fig.103. Rotor with elastic elements.

Earlier, we considered a gravimagnetic field, the energy of which has the form of kinetic energy circulating in space in the form of an energy flow. When the flow of the Aether medium moves, as in aerodynamics, it is possible to create a pressure gradient of the medium, since with an increase in the dynamic pressure of the flow, the static pressure of the medium on the body decreases. We can say that this is an indirect method of obtaining the gradient of the ambient pressure on the body.

Belostotsky's ideas relate to direct methods of changing the static pressure of the medium. The potential energy of the gravitational field, and the pressure of the medium on the body, change when elastic mechanical stresses are created in the body, since they are compensated by changes in stresses in the elastic surrounding Aether medium. This creates, so to speak, an additional potential gravitational field, an analogue of the electric field around an electrically neutral body. Hence, a conclusion arises about the nature of the electric field as one of the forms of elastic deformation of the Aether medium. It is not by chance that Tesla and other classics considered the electric field as "stress" - "stress" of the Aether medium, and the formulas for electrostatic and gravitational forces are very similar.

Rotation (centrifugal force) is not the only method for creating elastic deformations. For the pulsed mode, it is more convenient to use electrical and magnetic interactions. Electrostriction and magnetostriction can create high-frequency deformations of bodies that generate gravitational waves.

Further, in the theory of the energetics of stars, Belostotsky agrees with Kozyrev, and believes that the Sun is not a thermonuclear reactor. Belostotsky's theory sounds very similar to Kozyrev's theory, and is based on the assumption that there are two balanced energy flows in the system of a star and its planets: centripetal gravitational radiation is directed from the planets to the center of the solar system, and from the Sun in all directions there is a flow of thermal electromagnetic radiation.

In other words, gravitons, formed by the motion of planets, move towards the Sun, while the Sun emits thermal photons. However, as we have already discussed, the difference between gravitons and photons lies only in the parameters of the Aether-dynamic process, therefore, their mutual transformations are possible.

Belostotsky understands "time" as "the process of transformation of matter into a field," and notes that different planets must have different speed of time, since it depends

on the mass of the planet. For example, on Venus, the rate of time should be less, and on Mars - more than on Earth. These assumptions have already been confirmed, since research spacecraft on Venus gave out telemetry information at a slower rate, and an accelerated rate of chemical reactions was found on Mars.

Regarding the reversibility of time, Belostotsky defined the "natural" direction of the course of time as the process of "transformation of matter into a field," or, in other words, entropy processes. According to Kozyrev, "time is radiated" in such processes. Accordingly, the process of transformation of the "field into matter" is the opposite direction of the flow of time, that is, an anti-entropic process. In general, this approach is fully consistent with the everyday understanding of processes: aging is the usual passage of time, an entropic process, and rejuvenation and anti-entropic processes are a "turn of time backward". Note that all these considerations concern processes in matter, not abstract space and time.

There is neither space nor time if there is no material object in consideration. Kozyrev said on this occasion the following: "Time cannot be considered separated from matter" [53, p. 290]. Therefore, it makes sense to consider the parameters of time only in connection with the specific process of existence of a particle of matter. This process of existence has a certain speed, which is supposed to depend on the energy density of the environment.

For us, the global process of existence of matter is our spiral Galaxy, its matter. Hence, the assumption arises that the natural process of decreasing the density of the Aether medium, which occurs during the unwinding of the spiral of the Milky Way Galaxy, is our usual direction of the passage of time "into the future." Anti-entropic processes in matter, including living matter, are associated with an increase in the density of the Aether medium.

By analogy with aerodynamics and hydrodynamics, we can formulate the question of the energy density of the Aether medium, and reveal it in detail: find the temperature of the Aether in near-earth space, the total pressure (static and dynamic) of the Aether flow, the potential energy of compressed or rarefied Aether, its density... There are many ideas about technical solutions based on the principles of electrodynamics, which make it possible to create an Aether medium with some specified characteristics.

Let us consider some of the features of the formation of longitudinal waves in an elastic medium, which can open to us the prospects for their practically useful application in the technique of movement in space and time.

Asymmetry of longitudinal waves

Longitudinal waves in the Aether create any oscillatory process of matter: thermal vibrations of atoms, a change in the density of an electric current in a conductor, and even any process of a change in the density of matter (energy density). For example, a periodic change in the volume of a container filled with gas creates a change in the density of the gaseous medium inside this container, and the corresponding longitudinal wave of the Aether density. How can we get the driving force through the use of such processes?

Obviously, ordinary sinusoidal oscillatory processes do not create a total displacement of the Aether medium, since the impulse (product of mass and velocity) transmitted by the wave to the medium forward and backward will be equal, and the integral impulse is zero. The following solution is proposed: by analogy with the method of creating impulse asymmetry for inertoids, the steepness of the front of the

longitudinal wave of the Aether medium should differ from the steepness of the decay of this wave.

For example, the front of the wave can be fast and the decline is smooth. In this case, the momentum transferred to the environment when the wave moves forward will be greater than the momentum transferred by the wave to the medium when it moves backward. As a result, the wave pushes the medium away from the wave source. The opposite situation is also possible, when the front of the longitudinal wave is smooth, that is, it grows slowly, and the decay of the wave is fast. Such a wave "pulls" the medium back to the source of the wave.

Variants of the asymmetry of longitudinal waves, as alternating areas of compression and discharge of the medium, are conventionally shown in Fig. 104.

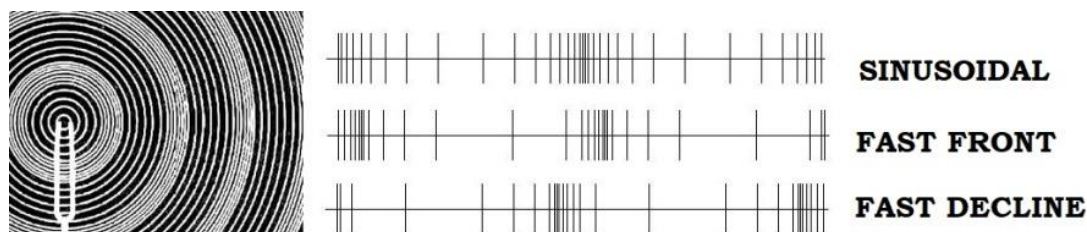


Fig. 104. Sinusoidal, "pushing" and "pulling" waves.

This method allows you to create in any medium, including in the Aether medium, the flow of the medium of one predominant direction, from the source or to the source of the wave. For the development of propellers that use Aether exchange processes, this method can be useful. In another application, as a method of concentration or dispersion of the Aether, its "pumping" or "discharging", this method of asymmetry of the process speed will allow creating areas of increased or decreased Aether density.

The principle of the asymmetric cycle of volumetric compression - expansion of the working fluid of the "Aether pump" is also similar to the work of the inertoid, in which the impulse asymmetry "forward - backward" is created. The essence of this principle is that the impulse transmitted by a spherical wave to the environment during the expansion of the working medium may not be equal to the impulse transmitted by the wave to the medium when the working medium is compressed, or vice versa. This method is proposed for the development of a new type of Aether-exchange propulsion technology.

We have already noted at the beginning of this book that in addition to reactive methods, there are methods for creating a driving force, which work due to the gradient of the medium pressure on the propulsion drive. It is this effect that is created in the case of the formation of an Aether region of high or low pressure. In English literature, this idea is called a "warp drive".

Let's move on to the analysis of Academician Albert I. Veinik work, the scientist who introduced the concept of the chronal (temporal) properties of any substance. It is necessary to develop our understanding of links between time and gravitation modifications and then to discuss some real experimental work on this topic.

Chronal dynamics

The foundations of the theory, as well as the experiments of Albert I. Veinik, are described in his book "Thermodynamics of Real Processes" [61] and "Complex Determination of the Chronophysical Properties of Materials" [62]. In total, he has written 23 books, more than 150 articles and received 29 copyright certificates for inventions (patents).



Fig.105. Albert I. Veinik in 1960.

A.I. Veinik was born on October 3, 1919, in 1944 he graduated from the Moscow Aviation Institute. In 1947, he defended his Ph.D. thesis on the topic "Heating and cooling of solids", in 1953 he became a doctor of technical sciences, and in 1956 he received the title of Corresponding Member of the Academy of Sciences of the Belorussian Republic. Official site <http://veinik.ru>

We have already cited Veinik's propulsion scheme as an example of the development of the theory and practice of inertial propulsion systems. The device is remarkable for its simplicity of implementation, but we are much more interested in his experiments in the field of studying the so-called chroral effects. In that part of Aether dynamics, which considers the effects of changes in the rate of processes, it is convenient to use the terms "chronodynamics", by analogy with the terms of electrodynamics.

At first, Veinik introduced the concept of a chronic phenomenon that determines the rate of all processes. The term "chroral", according to Veinik, is the most important characteristic of any object, organism or object, which, like pressure, temperature or electric potential, can be changed by external influence. By controlling the chroral of an object, its "intensity of existence," according to Veinik, one can control the speed of real time of the given object. The degree of activity of a substance is characterized by "intensities", for example, momentum, temperature, electric charge or magnetic moment.

In this matter, we must note that the particles of matter exist in the Aether medium, as its inseparable part. Therefore, a change in their parameters always occurs due to the corresponding changes in the energy density of the surrounding Aether medium. It is this "induction" effect that enables us to change the properties of space - time at our intention. *We can work with Aether indirectly, that is, through the substance.*

Further, the chroral substance, as Veinik believes, endows the body with the properties of the duration of processes and the order of sequence. Bodies, in which there is no chroral substance, exist outside of time, as if "smeared" over time. In physics, this is called "uncertainty."

Space, according to Veinik, is a metric substance. A body that does not contain metric matter, does not have dimensions and mass, is "smeared" over the entire space...

Actually, these strange ideas caused rejection of Veinik's theory among many scientists until it became clear that the correction of terminology within the framework of Aether dynamics gives us useful constructive technical ideas.

Dividing the levels of the universe into different in "subtlety of matter", Veinik uses the term "paren" for one of the states of the Aether. He writes: "Let's agree on a special name for the simplest macro phenomenon. It was called a boy. In Latin, paren is giving birth, giving life, creating ... " [62, p. 71]

Veinik believes that, in essence, a paren is a "substance without behavior", it is also called "absolute vacuum". Due to this property, it cannot be measured, since it has no effect on devices. The detection of a paren occurs when some kind of "behavior" is imparted to it, then the substance manifests itself from an unobservable state to an observable one. Quote: "Paren is an inexhaustible source of matter", "an absolutely solid body", "an ideal fluid without friction", "has no energy, but is an inexhaustible source of matter" [62, pp. 322-323].

Veinik also examines the reverse process of transition of matter from an active state to an unobservable "paren", with the disintegration of all connections of matter and the disintegration of its particles.

In general, the concept is familiar to many scientists... This process is often called "vacuum polarization" and the manifestation of virtual particles in our real world. One can argue about the "inexhaustibility" of the vacuum as a source of the matter we are accustomed to. Based on the value of the Planck wavelength, which sets us a reference point for the maximum oscillation frequency, we can estimate the energy density in "empty space" at the level of 10^{127} Joules per cubic centimeter. There is a lot of energy, but not infinitely much. In terms of mass, this is 10^{93} grams per cubic centimeter. Note that the densest substance on Earth is osmium, a cubic centimeter of which weighs about 22 grams. When comparing these values, we see how relatively little energy is "materialized" in our world, since most of it remains free for use. Relying on these calculations, it is difficult to expect significant measurable chroral effects in the vicinity of operating Aether-exchange propulsion drive or some free energy generators, with generated powers in Megawatts (10^6) and Gigawatts (10^9), which are achievable at the current level of technical implementation.

Nevertheless, theoretically, the vacuum is really inexhaustible if from the "paren" it is possible to obtain not only the usual types of matter, but also higher-frequency processes, more "subtle matter". In addition, when using the principle of "mirror twins", that is, when creating a pair of material objects from a "paren" moving along the time axis in different directions from the moment the pair was created, it becomes truly inexhaustible. Earlier, this principle was shown on the example of the structure of the electric potential field, formula F.2.

So, the development of Veinik's ideas about the nature of various phenomena is in full agreement with the theory of Aether dynamics. For example, his reasoning about "electrical" matter completely coincides with Tesla's concepts that "electricity is Aether associated with matter."

Veinik's important conclusion on energy: the total change in the energy of the environment and the material system is always zero, that is, as the energy of the system increases or decreases, the energy of the environment decreases or increases just as much. This law of conservation of energy is generalized for the processes of absorption or emission of Aether, in any processes.

Veinik made interesting remark that a body (substance) is able to exchange not only energy with the environment, but also to structure it [62, p. 187], so to speak, "charge" it with its structure, is very useful when considering many phenomena, for

example, water activation , or "shape effect". The space around the substance of some object is capable of "being charged with a chroral," as Veinik writes. What does this mean?

"Paren" is an absolute zero of the chroral charge of a substance, there are no processes and the speed of time rate is zero. Any substance has some "behavior", it is a certain process and its rate of existence is determined in terms of the chroral charge "chroror". Veinik introduces the unit of the amount of "chroral substance" - chroror. By his definition, one chroror is such an amount of chroral substance that charges 1 kg of water per unit chroral, that is, to such a state in which the course of real time in this water differs from the usual speed of time by 1 second [62, p. 239].

This term appeared for the first time, at least in Russian-language literature. This is a new unit of measurement of the parameters of space-time and matter, which determines not the duration of time intervals between some events, but the degree of change in the rate of existence of matter in space-time, in comparison with the natural rate of existence in near-earth space.

Let me make a comment about this term. Assuming that some object exists faster or slower than in ordinary space - time, its chroral characteristics should be measured in such a unit of measurement as "second / second". For example, a 10% accelerated existence of an object means that its "second" is 10% faster than an ordinary second. This can be written as + 0.1 seconds per second, or 0.1 (s/s).

Accordingly, the deceleration of the processes of existence by 10% is written as minus -0.1 (s/s). An increase in the speed of the time flow twice is recorded as +1 second per second, and a complete stop of the passage of time corresponds to a value of -1 second per second. Since this system of chroral measurements is relative, it must be tied to a specific point on the surface of the planet, to a fixed point in altitude above sea level, latitude and longitude of the area. The speed of the passage of time, at a given point in near-earth space, will be considered a standard. However, seasonal changes in the density of the Aether complicate this issue significantly. For the reference, it is necessary to select a point on the terrain where such changes are minimal.

So, the essence of Veinik's theory is that we can "control the chroral, and hence the speeds of real time flow, in the same way as we control other intensities: pressure, temperature, electric potential, etc. This means that by increasing the chroral, we can accelerate all processes in living and inanimate bodies within a wide range: physical, chemical, atomic, nuclear, etc." [61, p. 235]. For example, for practical purposes, you can accelerate the combustion process and the power in an internal combustion engine, or the growth of productive plants and animals ... By reducing chroral, we can slow down all processes. Thus, according to Veinik, we have a chance to multiply the process of a person's life.

The most important applied aspect of chroral technologies, which Veinik noted in his book [61, p. 239], relates to methods of controlling the degree of radioactivity of isotopes: "Clocks, mechanical, electronic, radioactive, etc. - placed in a zone with increased or decreased chroral activity, they will behave like any objects of nature: the speed of all processes in them will accelerate or slow down, that is, the clock will either rush or lag behind. For example, in the first case, in a mechanical watch, the gears will begin to rotate faster, in an electronic quartz plate it will accelerate its vibrations, in a radioactive one, the decay of isotopes will accelerate. In the second case, with reduced chroral activity, on the contrary, all these processes will slow down. "

In our laboratory, in cooperation with the University of St. Petersburg, such experiments were made to reduce the degree of radioactivity of isotopes. We used generators of longitudinal waves, that is, Aether density waves. This is also one of the ways to influence the speed of the time flow and gravitation, Fig.86.

Veinik believes that "the Earth's chronal is gradually decreasing" [62, p. 240]. I completely agree with him, from this it follows that it is necessary to correct the isotopic method of dating past events, since in the past isotopes decayed much faster. I believe that the correction should take into account the discreteness of the levels of existence of matter, and the correction coefficients can only be integers: 2, 4, 8, etc.

Regarding the generators of energy that use the flow of time, and the "time machine" itself, Veinik writes the following: "We can use time in a chronal engine that converts chronal into pressure, and also create "time machines"... its past or future by artificially raising or lowering its chronal " [62, p. 242]. This remarkable statement is also related to the theme of the design of propulsion drives, in which the pressure of the Aether medium is used not only to change position in space but also to move it in time axis.

Technologically, as Veinik believes, it does not important which of the energy parameters of a particle of matter we change to control the chronal. We can change the speed of movement, rotation, vibration frequency, temperature, electric or magnetic potentials... He writes: "By influencing any of these intensities, one can change the system chronal. As a result, between it and the environment, there will be a difference in chronals. Under the influence of this difference, an exchange of chronal substance will take place, and the system will turn into a generator of a chronal field. For such a generator to work for a long time, it is necessary to repeat the change of the chronal field many times in the corresponding circular process" [61, p. 328].

In the experimental part of Veinik's research, one can find analogies with the works of Kozyrev. For example, Veinik explains the necessity of introducing vibrations along the axis of a rotating gyroscope: "Vibrations are interesting in the sense that they not only generate a field, but also discharge a chronal charge from the body, just as a blow of a hammer can demagnetize a body" [61, p. 330]

To my mind, from the point of view of Aether dynamics, the rotation of the gyroscope draws the Aether into motion, and its vibrations along the axis of rotation are necessary for the periodic destruction of this connection, which leads to a new cycle of drawing the Aether into motion, with its subsequent release. In this case, the Aether-dynamic effects of reducing the weight of the gyroscope appear much stronger than a simple spinning gyroscope. A vibrating gyroscope, like a gyroscope in a state of forced precession, becomes a *powerful generator of the Aether flow directed along its axis*.

Veinik writes that the simplest generator of chronal radiation is any "luminous flux accompanied by a flux of entrained chronons." Likewise, nuclear reactions, electron flow, magnetic field, etc. are chronal generators. TV, according to Veinik, is a generator of "harmful chronal radiation". Perhaps we are talking about the fact that old televisions had kinescope tubes that emitted a stream of electrons from the cathode towards the viewer. The electrons themselves lingered on the light-emitting layer, losing their kinetic energy, and creating a luminous point on the screen, but the stream of Aether that accompanied them continued to spread towards the viewer. Similar emitters of "radiant energy" were used by Tesla, they were called "Crookes tubes", known in X-ray technology.

This reasoning may seem far from practical use, so it is worth considering in more detail several applied aspects of the so-called "chronal technologies". Among the works of many researchers, Veinik noted in his book the patent of J. Ravatin [63] on "A device for enhancing emissions caused by forms", Fig. 106.

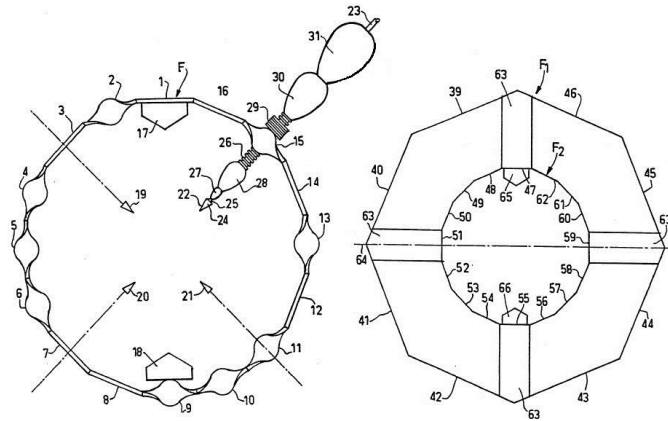


Fig.106. Scheme of Ravatin device.

The device is a wooden frame, about 3 meters in diameter, and four high-voltage electrodes. The figure shows one of four electrodes, with high voltage insulators. A constant voltage from 60 to 300 kilovolts is applied to the electrodes. As expected, creating a change in the density of the Aether medium within the frame, this device inductively changes the parameters of the medium around it. Experiments have shown not only the presence of a lifting (anti-gravitational force), but also a powerful effect on chemical reactions, an increase in the growth rate of plants by 10 times, etc. chronal effects. In this case, the "activation of the environment" time was 30 minutes of work after switching on, and then, within a radius of tens of meters around the device, unusual effects began to be noted: the effect on the magnetic field, the degree of gravity, the refractive index of air, the growth rate of plants, etc.

It should be noted that the ideas of Ravatin in 1973 "on the activation of space" were based on earlier analogs. There is Canadian patent No. 580548 (German number DE 868592 and English GB 685522) with the title "Method and apparatus for influencing reactions and changes in the states of matter", 8 April 1954 [64]. The authors are inventors from Russia, Leon Sprink and Maria Sprink, proposed a simple square frame, at the corners of which four high-voltage electrodes were installed.

The history of this invention is very interesting. Leon Sprink worked at a cement plant in France, and proposed this method to improve the quality and speed up the preparation of cement. The main parameters of the "activation device" were as follows: the field strength between the electrodes ranged from 1 kilovolt to 5 kilovolts per meter. The activation time for the 60-meter zone of space around this installation was about 2 weeks. As a result, the reaction time in the containers with the future cement, placed around the plant "in the correct way, *with the exact orientation of the sides to North and South*", was reduced from 24 hours to 3 hours. Note that electrostatics does not play a role here, since the metal containers with cement were grounded. The value of the orientation of the containers in the directions of the magnetic field lines indicates that in this case, the main role is played by the natural flows of Aether in the near-earth space. Actually, the high-voltage "activator" itself, for several days of work (about 2 weeks), created from natural streams of Aether a more ordered stream of Aether, in the area of space around it. Thus, the effect is caused not by the generator itself, but by its influence on the flow of the near-Earth Aether.

Another important property of the so-called "chronal radiation", which Veinik noted, relates to the transmission of information, including genetic information. He writes: "No less impressive are the works of Yu. V. Jiang to develop new varieties and species of plants and animals. Here, too, the essence of the observed changes in biological objects is explained by the influence of not electromagnetic, but chronal radiation emitted by the generator created by him. It is the chronal field that acquires and transfers from one object to another the information it contains" [61, p. 331].

Let me briefly recall the essence of Jiang Kanzhen's experiments, although they are not directly related to the issues of creating a new type of propulsion system. These experiments show the practical value of Aether dynamics, since longitudinal waves of the Aether medium are capable not only of creating force effects, but also carrying and transmitting genetic and other biologically active information from one biological organism to another one.

In 1957, Dr. Jiang presented his "Field Control Theory" to the scientific community at the Chinese Medical University [65]. He believed that information between biological objects, including people, is transmitted by waves of an electromagnetic nature of a certain frequency. Later, he left for Khabarovsk, where he created a "biotron" - a device for rejuvenation. The essence of the rejuvenation process was the transfer of information from actively growing young objects to an aging body. A side effect was that the rejuvenated organism became like a young donor.

In addition to rejuvenation, Jiang's experiments showed the possibility of transferring biologically active information from one type of living organism to another. For example, if a duck served as a source of information, and chicken eggs served as a source of information, then as a result of such energy-information exchange, chickens with a flat beak and webbed feet were obtained.

Today, stem cell rejuvenation techniques are very popular. However, as Jiang showed, it is possible to work without injections, it is enough to organize the process of transferring information from the growth processes of young organisms to an aging organism to obtain the effect of rejuvenation. However, his method of using an incubator with eggs is not much different from the well-known technique of the legendary Cleopatra, who periodically performed anti-aging procedures, spending a lot of time with babies. The difference is that Dr. Jiang built large and small "resonance chambers" of a certain geometric shape (hemispheres or regular polyhedrons), and connected them with waveguides (copper tubes), Fig.109. In this device, which has a natural regular geometric shape, several cone emitters are directed to the center of the chamber. Energy-informational radiation from some source is supplied to cone emitters through waveguides. Perhaps such a source was an incubator filled with fertilized chicken eggs, in which the embryos of living organisms developed. It should be noted that critics of this technique were actively looking for a reason to prohibit Dr. Jiang from working in Khabarovsk, however, none of their 160 patients had any complaints against the doctor. All of them showed a positive effect, and the improvement in their condition continued for 2 years after undergoing the course of procedures.

Let me offer some additional idea. Structurally, information exchange can be provided without waveguides. In a general case, the experimental setup could look like the bifocal resonator shown in Fig. 107.

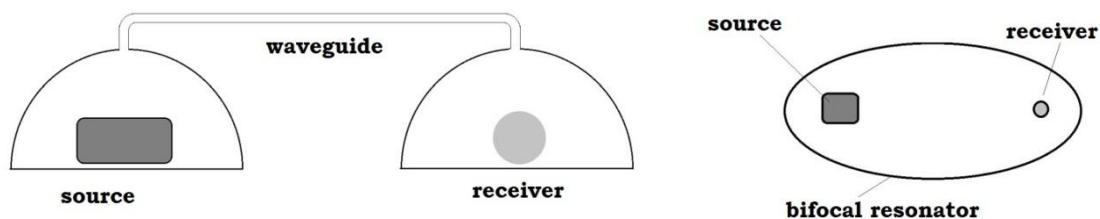


Fig.107. The idea on bifocal resonator.

In one focus of such an elliptical resonator of longitudinal waves, the emitter (growing organism) is installed, and in the other focus the receiver (aging organism) should be installed. An ellipse can be constructed of sheet metal, but an elongated,

spherical, egg-shaped design should work much better. Kozyrev noted the best material for this case is polished aluminum mirrors.

By the way, in the general case, the polygonal geometry of the resonator shape allows you to "mix" signals from several sources, and direct them to the object of influence.

In the development of the technology of biologically active energy exchange, it is proposed to use "information accumulators", in the role of which water, sugar, etc. can be used. With such a scheme, the radiation from the development of embryos can be enhanced by focusing in a small volume, where the "information storage" is located.

Let's note an important aspect: the water activated in this way must be diluted. The fact is that all living organisms have a kind of protection: cells have a perception threshold, and they do not respond to signals whose amplitude is higher than this threshold. For this reason, the water activated in the pyramids has a beneficial effect on plants only if it is diluted, approximately 1 in 100.

There is another important aspect of this technology: containers for water activation must be made of quartz glass that transmits a certain high-frequency wave spectrum. In this topic, the priority of the discovery belongs to Alexander Gavrilovich Gurvich, who in 1912 introduced the concept of "biofield" and the term "mitogenetic rays". The source of this radiation could be any processes of rapid growth of plants, for example, onion roots. The first experiments were performed back in 1923, at the Crimean University. The radiation generated by a separate onion root, being directed at another plant, caused an increased cell growth in this place. Gurvich found the wavelength range in which this radiation is generated. It turned out to be in the "shortwave" part of the spectrum occupied by ultraviolet rays, almost on the border with X-rays. These are wavelengths from 190 - 330 nanometers [66], which correspond to well-known biochemical reactions accompanying the growth and development of cells of a living organism. They are shielded with ordinary glass, but are let through by quartz. Since the DNA molecules of all living organisms on the planet have similar parameters, it is not necessary to use the processes of development of human embryos for these purposes. Let me remind you that in the role of powerful anti-entropic processes used to treat humans, Dr. Jiang used the development of chickens in incubator eggs. The wavelengths at this frequency are about 200 nm, that is, $2 \cdot 10^{-7}$ (m). Considering this, work with these types of waves should be in the line of sight, either with waveguides or using quartz glass.

Note again that this radiation has a very low intensity. According to modern data, it is on the order of tens of photons per second per square centimeter of the emitting surface. More powerful radiation is not perceived, since the cells have a "threshold limiter" of incoming signals.

Nowadays, P. Gariaev's group and other researchers are working in this direction [67].

Note that direct (optical) observation of mitogenetic rays emitted by all living organisms, including plants, as well as their photograph is possible. This requires the presence of a spark discharge that is, mixing of waves of mitogenetic rays with high-frequency electromagnetic waves. This discovery was made by Semyon Davidovich Kirlian in 1939. I believe that the essence of this phenomenon lies in the fact that when mixing vibrations of the Aether of different frequencies (mitogenetic and broadband radiation of an electric discharge), harmonics of such frequencies appear that fall into the visible spectrum, and can be photographed or filmed with a video camera. By a similar method, in radio engineering, waves of the required frequency are obtained in an electromagnetic wave mixer device.

So, what is energy-information exchange, from the point of view of the theories of Kozyrev and Veinik? The work of Gurvich showed why cells emit especially strongly during mitosis (division and reproduction): in these processes, the disintegration of complex intracellular structures, for example, the cell nucleus occurs. Taking into account our knowledge about the processes of formation of density waves in the Aether medium, we can understand the essence of these processes and draw important analogies.

Obviously, the processes of cell division and growth that accompany the development of the embryos of plants or animals are powerful irreversible processes that are accompanied by a "wave of time density," in Kozyrev's terms. Kozyrev obtained similar effects when studying "waves of time density" created not only by the processes of changing the phase state of matter, but also by the growth and development of plants, or by the process of wilting of plants. The signs of the effect, for growth or wilting, are different, as for crystallization or dissolution processes. Accordingly, in such processes, a certain amount of Aether is absorbed or emitted in the environment, and its density changes. Veinik wrote about this as preserving the amount of "chronal substance". On the other hand, all types of irreversible processes, phase transitions occurring in matter, for example, melting of ice or crystallization of water, can be considered by analogy with processes in living matter. In contrast to the mitogenetic rays of Gurvich, these processes will have a different frequency spectrum of the density waves of the Aether medium.

This concept can explain the cases when a simple increase in the density of the Aether in the region of space, located next to a certain irreversible process, affects the physicochemical characteristics of the detector, decreasing or increasing the entropy in the structure of its substance. The sign of the effect is set by a change in the density of the Aether, creating entropic or anti-entropic effects in the space surrounding the irreversible process (phase transition of matter from one state to another).

However, this general idea of the conservation of the amount of Aether does not reveal the principles of information transfer by such waves, and it remains unclear how the longitudinal wave carries *information* that the process of growth and development is taking place in the source of the Gurvich mitogenetic wave (for example, from germinating plants), not wilting. How, in Jiang's experiments, does the wave transfer genetic information from the duck to the embryos of chickens? The answers can be found in the analysis of the nature of longitudinal waves in the Aether medium.

Let us assume that the Aether density wave is a process that goes beyond the dimensions of space available to our perception, and it has a chronal holographic structure. In this case, the transfer of information by such a wave is quite understandable. We will look at this aspect later, in the chapter on 4D holograms.

Understanding the mechanism of information transfer by means of longitudinal waves of the Aether medium is necessary not only for the development of space technology. One of the global challenges facing humanity is the fight against viruses. A new method is proposed based on the creation of virophages specializing in certain viruses that harm humans. Virophages known to us, which exist in nature and parasitize on viruses of their own type, can be "modernized" by wave transfer of genetic information, so that viruses of COVID, influenza, herpes and other diseases become their "food".

This direction of work is very interesting, but it is not complete to consider it in detail in this book. Interested organizations can contact me for consulting of virus topic.

Let us continue to consider the results of the research by A.I. Veinik. If Kozyrev studied the processes of evaporation of liquids or crystallization of water, then to create a wave of density of the Aether medium, Veinik used such powerful phase transitions as melting and solidification of a metal (bismuth) [61, p. 27]. The sensors used by Veinik are

similar to those of Kozyrev's devices. Veinik wrote: "The melting of bismuth is accompanied by an increase in chronal activity, an increase in frequency... Solidification of bismuth - a decrease in chronal..."

Let us note here the analogies with the theory and experiments of Belostotsky on elastic deformations and gravity. Veinik [61, pp. 30 - 31] wrote: "The change in the stress state of the material is accompanied by chronal radiation, and the intensity of these radiation increases with the rate of change in the load. The intensity from the side of compressed fibers is more than an order of magnitude higher than that from the side of stretched fibers. "

The chronal field changes the electrical characteristics of the material; therefore, an ordinary light bulb with a tungsten spiral connected to an ohmmeter was used as a sensor in Veinik's experiments. Sensors that use the effect of changing the parameters of the microcircuit included in the pulse generator are more sensitive. Veinik also used biological objects as sensors. He refers to the experiments of S. G. Smirnov, who used a cactus with two electrodes as a measuring device [61, p. 343]. Note that a similar method using an "artificial biofield" was also developed and applied by Alexander Mikhailovich Mishin [68].

The most famous experimental device, which is called Veinik's Hedgehog, can create a stable Aether vortex formation. In Fig. 108 shows a diagram of this device [61].

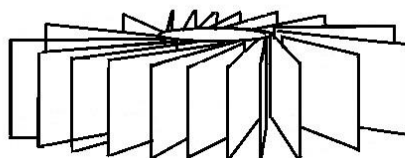


Fig.108. Experimental device by Academician Veinik.

Around this device, in a few hours, a region of space with altered chronal characteristics is formed. In the center of the "hedgehog" the most powerful effect of "space twisting" is created.

After 4 days of operation of the device, it creates the maximum change in the parameters of space - time at the level of 0.2 seconds per day. This influence persisted for 6 months of the experiment. This device was made of cardboard and mounted on a textolite disk with a diameter of 735 mm. The diagram is simplified, since a total of 70 cardboard plates were installed, measuring 350x70x21 mm. The principle of action, as the author writes, is based on "reception from the surrounding space, accumulation (concentration) and subsequent emission of chronal substance." I suppose it is Aether flows.

Note that Veinik uses the term "seconds per day" to evaluate the effect and quantify the effect. In normalized form, relative to the natural rate of existence of matter, 0.2 seconds per day means 2.3148 microseconds per second. Such small effects have already had a profound effect on the experimenter's health and well-being.

From my point of view, this device creates directed streams of Aether, giving it rotation, which leads to the formation of self-closed vortex Aether structures. This also explains the fact that after some time, you can remove the structure itself, and observe the effects of the changed chronal parameters of space, in the same place. Careless experimenters should be warned that working with such devices is very dangerous to health. Veinik noted that in his case, the deterioration in health consisted of an increase

in pressure, and even at a distance of 7 meters, in the next room, people showed a general breakdown, headaches and a drop in immunity. Even after disassembling the device, it took several months to normalize the situation in the area of this experiment.

It is no coincidence that the so-called "geopathogenic zones" are associated with the emergence of self-closed streams of Aether, which can be explained by the features of the terrain, the flow of rivers, underground currents, or some natural or short-term man-made processes that leave their mark in the Aether environment for a long time. In this case, a variety of "reflectors" or "activators" can restore the normal environment, if used correctly.

The effect of the "circulating Aether", which is created in the central area of such a device, in 2006, was confirmed by Petr Lukin, an engineer from Vitebsk. The stator he assembled consisted of 330 steel plates, each of which had dimensions of 1200x800x1.2 mm. The stator weighed about 3 tons. The rotor was a split ring (to avoid the induction of electric currents) with a diameter of 40 cm, made of a copper tube filled with lead, weighing 4 kg. The ring was suspended by a thread 7.2 m long. As a result of the action of the circulating stream of Aether on the ring, the rotor rotated in one direction. This example is one of the facts confirming the possibility of creating a closed toroidal flow of the Aether medium.

A similar device was developed and patented in 1991 by Boris Petrovich Dodonov, patent N 2005505 for "A device for the accumulation of biological and space energy." It is interesting that the optimal material for the manufacture of Dodonov's biologically active devices, usually, was wood (a cut of wood several centimeters thick). The shape of Dodonov's various "biofield correctors" used in practice is shown in Fig. 109.

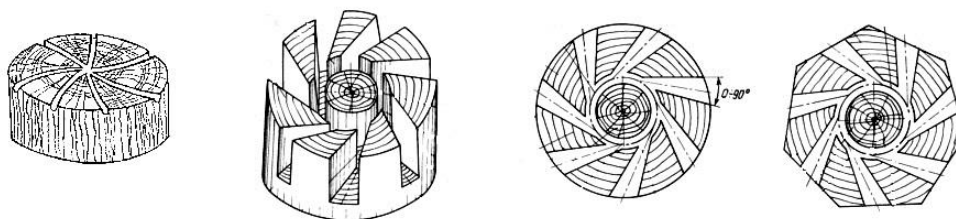


Fig.109. Dodonov's wooden device.

The essence of his work is described by the author in the patent with the following simple phrase: "The effect of mutual screening of gravitational masses in a hole of a special shape creates a vortex energy field." From the point of view of Aether dynamics, this device forms a self-sustaining vortex Aether process. By means of this device, in particular, it was possible to treat kidney stones and other diseases. For scientific purposes, this is an interesting invention that allows you to study the different biologically active properties of different types of wood. Most researchers of this technique recommend using birch. It matters, for different purposes, the right or left direction of rotation of the cuts is made in wood. Dodonov made devices up to 6 meters in size, from wood and metal. Experiments have shown that in the center of the device an active force effect of the Aether vortex on objects is created, which is capable of rotating the rotor. However, for the purpose of creating a propulsion force, like Veinik's hedgehog, this invention is not applicable.

An interesting remark about the properties of "chronons" will allow us to draw analogies with the works of Tesla. Veinik wrote: "Due to the mutual attraction of the chronons of the same name, the chronal ray not only does not dissipate in space, but, on the contrary, is pulled tightly into a bundle ("trunk"), and is also enriched at the expense of the chronosphere. This radically simplifies the transmission of energy and information wirelessly over long distances." [61, p. 358]. This is another defensive "beam weapon" technology.

Indeed, Tesla reported on the creation of similar "beams of Aether particles". In the article "Tesla Invented the Rays of Peace," the reporter writes: "Tesla offers a new type of weaponry, so powerful that no aggressor would dare to start a war. Tesla described this weapon as thin beams of particles concentrating in a beam thinner than a hair a power of hundreds of thousands of kilowatts ... spreading at tremendous speed over a distance of more than 200 miles. Provided that all countries possess such weapons, any, even the smallest country, will be able to repulse the aggressor. This weapon, according to Tesla, could become the guarantor of peace on the planet" [69].

In my opinion, the mutual attraction of "chronons" can be transferred to the entire interaction of Aether particles, which do not repel each other, but mutually attract. By creating beams of such particles, for example, using high-voltage Tesla equipment, Crookes tubes, etc., one can expect their "self-focusing", which gives undoubted advantages over laser and other beam technologies.

Studying the issues of isolation of streams of "chronons", Veinik noted polyethylene and paraffin as the best materials available to him for work. At the same time, he recommended separating the layers of polyethylene with paper. The polyethylene layer, according to its measurements, reduces the flow of "chronons" by 20-100 times, but its insulating and reflective ability gradually decreases, and it must be changed every six months. Polished sheets of metal and mirrors, according to Academician Veinik, reduce the effect of the flow of "chronons" by 20-50%.

These methods reveal the physical properties of the Aether density waves. Passing through polyethylene, especially if it is "stretched", that is, deformed (stretched), the wave spends part of the amount of Aether to restore the deformed bonds of polyethylene molecules. The optimal polyethylene screen can be assembled from alternating layers of "stretched" material, laying them in turn, lengthwise and across, as in plywood sheets. By the way, plywood is an excellent absorber of Aether density waves. When reflected from polished metal, or a mirror, the wave behaves according to the laws of optics.

Another method of shielding, or rather, compensation of Aether density waves, is to alternate layers of different materials. Each of the layers has its own parameters, and compensates for the waves of its range. For example, such a combination of layers as coal dust, lime, a layer of fine sifted quarry sand, a layer of sawdust, a layer of expanded clay, etc. is known. Layers of backfill material used to compensate for the density waves of the Aether should consist of many elements of a *disordered (chaotic) structure*. A layer consisting of identical elements, on the contrary, creates a coherent powerful re-radiation of the density waves of the Aether.

We have already considered the "Veinik's inertoid", that is, a device with an eccentricity of the orbit of the balls, but at the same time, we did not say that it is the difference in choral potentials that creates the driving force. In this simple mechanical design, the centrifugal force gradient is the result of the different speed of the balls, at different parts of the trajectory. Now, in terms of chronodynamics, we can say that the cause of the propulsion force is the difference in "intensities", that is, different intensity of the process of movement in different parts of the trajectory of the balls.

Returning to the main theme of the book, I will quote Veinik: "I know that many enthusiasts, trying to create an unsupported propulsion device capable of flying, rotate all kinds of bodies, are sophisticated in giving their ingenious devices the most intricate movements, etc., in order to circumvent the laws of mechanics Newton. Whole institutions are engaged in this. However, I have to immediately upset all these enthusiasts: in principle, it is impossible to deceive Newton's mechanics. There is only one way to achieve what you want - to influence the speed of time, God did not provide for another way" [61, p. 445].

An interesting conclusion follows from this: all Aether-exchange devices, even simple inertioids, *create a propulsion force in space only when paired with some propulsion force along the time axis!* Any inertioid can create a chronal effect.

In connection with this conclusion, I propose to move on to a more detailed consideration of the issue of the controlled "motion of particles of matter in time", that is, to the theory of changing the parameters of the existence of matter in space and time. This is important, since it directly relates to the effects arising from the operation of many active-type propulsion drives.

Chronal Motive force

Let me introduce new terminology for Chronal Motive Force (CMF) by analogy with EMF (electromotive force). The use of the difference in chronal potentials should lead to the manifestation of a chrono-motive force that displaces the object (or some free energy generator) relative to our natural flow of time into a state of accelerated or slowed-down existence.

Electric voltage U , as you know, is the potential difference between two points located at some distance from each other in space. The voltage U between points A and B corresponds to the work of moving the charge, and is a derivative with respect to the magnitude of the potential. Work and power depend on the voltage U , since the potential gradient means a change in the amount of energy (energy transformation) that occurs when the observer moves from point A to point B. In general, this is the elastic tension of the Aether medium between two points in space, we call this the usual potential electric field.

In the case of an equipotential surface, at any point, the potential has a constant value, and there is no change in energy when passing from one point A to another point B. Suppose that the size of the equipotential surface tends to zero, that is, we consider its transition to some point C. In this case, at a given point C, there is only one way of movement, that is, a way of changing the amount of energy: this is movement in time.

Let's consider some movement in time from time C_A to time C_B . If the potential at the moment A is not equal to the potential at the moment B, then we can talk about the potential gradient at the point C. However, such a gradient is located not in space, but in time axis, this voltage is like a chronal potential gradient. This field is also potential, and is associated with time-varying elastic deformations of the medium occurring at a given point in space. Of course, one point cannot perceive the deformation of the medium otherwise than as a change in the energy density of the medium.

So, the chronal potential difference can be called "chronal tension" or "chronal voltage". The chronal gradient corresponds to a certain intensity of the chronal field, which is created if the electric potential is a function of time. In this case, the change in the energy density at one point in space, moving in time, also creates work, therefore, a chronal field located at one point in space can be used as a source of power for a payload, and as a way to create a driving force. The work done in the payload depends on the chronal voltage, and is defined as a time derivative, and this work has the meaning of moving a material particle along the time axis.

The result of the action of the Chronal Motive Force on matter particles, as well as on all processes located near a given generator of electricity, is their chronal acceleration or deceleration, which occurs relative to the natural course of time in near-earth space. The nature of matter, its process of existence, demonstrates to us a unidirectional natural movement from the past to the future. We can say that the constant Chronal Motive

Force acts on all the matter we observe, which at any point in space is the result of a unidirectional change in the magnitude of the chronal potential over time.

This change is global, since the effect (the so-called natural flow of time) is found in all points of our space - time. Hence, the conclusion follows: for all particles of matter in our world, with a constant speed, some "intensity", a value that characterizes the activity of the behavior of matter, changes. Only the density of the Aether can be such a common "intension" for all matter. We have already noted that the global process of changing the Aether density in near-Earth space is the process of motion of the planet and our star in the expanding arm of the Milky Way Galaxy.

The density of the Aether medium in the center of the Galaxy is maximum, and decreases with distance from it to the periphery of the Galaxy. Consequently, technologies for *changing the volumetric energy density in space* can serve as a universal method for creating a controlled Chronal Motive Force to move the objects in space and in time axis. We have already considered examples of such technologies, and we will continue their analysis in the next chapter on thermogravitation, since changing the temperature of a substance is the most simple way of changing its "intensity", its internal energy.

Thermogravitation

So, the temperature of a substance characterizes the energetic state of the particles of a substance, their "intensity" is the chronal activity of behavior. Note that these states are quantized. Upon reaching a certain value, the substance changes its phase state, for example, evaporates or crystallizes. In this case, as shown by the experiments of Kozyrev, Veinik and other researchers, a wave of Aether density is created, as I believe, as a result of the release or absorption of a part of the Aether, which corresponds to intermolecular bonds in the substance.

In the experiments with high-temperature superconductors, which we considered earlier, it was shown that it is possible to create not only single, but also high-frequency phase transitions that generate Aether waves of any frequency.

In this chapter, we will consider the concept of thermogravity, which is not related to phase transitions. Here, atoms and molecules act as a source of vibrations of the Aether medium, regardless of the phase state of the substance. When considering this issue, we will assume that the phase state of a substance, when its temperature changes, does not change. For example, if the working fluid is chosen to be solid, then it remains so, at any considered temperature.

So, any vibrations of the atoms of the crystal lattice of a substance create vibrations of the Aether medium. When the body is heated, the thermal vibrations increase and, accordingly, the vibrations of the Aether medium around the hot body increase. Hot bodies are known to emit photons in the infrared range of the frequency spectrum of electromagnetic radiation. The energy of the waves, at a given frequency, is very high, but they do not have a noticeable force effect on the surrounding objects, since they are not coherent. This means that each particle of matter vibrates regardless of the vibrations of other particles. The result of such fluctuations is statistically averaged, creating a heat flux such as infrared photons.

The direction of an ordinary heat flow, for example, a ball, goes from the center of the body isotropically in all directions. Cold bodies, on the contrary, attract particles of the Aether of the environment, creating the opposite effect. In both cases, using ordinary sources of heat or cold, it becomes possible to create directed flows of the Aether medium and some propulsion force. In a number of projects, such space propulsion drives are called photonic drives, although it is more correct to speak about the creation of a

directed stream of longitudinal waves of the Aether medium, which performs the same role as the flow of the rocket's reactive mass.

In an interesting book by A.P. Shchegolev, "The Spiral of Knowledge" [70], a thought experiment was proposed to create a thermogravitation propulsion device. The essence of the experiment is as follows: a ball made of a high-temperature material is heated by an external source to such an extent that its thermal radiation allows it to overcome its weight and float in the air. On this principle, it is quite possible to create spacecraft. Shchegolev's real experiments confirm his concept, since he confidently detects a change in the weight of any heated bodies, even a simple cloth iron.

Regardless of the shape of the body, thermal radiation is able to partially compensate for the flows of Aether, which cause the forces of attraction of a given body to the center of the planet. It is advisable to create an anisotropic heat flow and orient it in the desired direction. In this regard, it is necessary to make some comments on the formulation of Shchegolev's experiment. In Fig. 107 shows a cross-section of a ball in which a tapered recess is made. Heating such a body, as shown by Shchegolev's experiments, has a clear effect of reducing its weight.

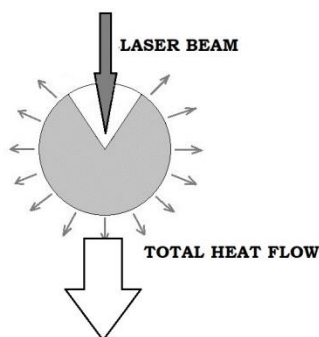


Fig.110. Static thermogravitation with hot body.

We discussed this aspect with Shchegolev. They believe that the notch in the top of the ball is only needed to allow the laser beam to reach the center of the ball. To my mind, it is the notch in the ball that creates the effect of the asymmetry of the heat flux coming from the body of such an "apple" shape. The absence of matter in the upper part of the sphere (conical notch) determines the anisotropy of thermal radiation, that is, a nonzero total heat flux that forms from the central point downward. An ordinary sphere, obviously, has an isotropic heat flux that spreads in all directions.

In the development of this technology, it is proposed to miniaturize and assemble "thermogravitators" into sets placed on a flat plate, as shown in Fig. 111. Note that such a set of elements generates in the lateral directions opposite to each other waves of Aether density, which leads to their mutual compensation, in the plane of the plate. In this case, the waves of a plurality of emitters are added in the direction perpendicular to the plate.

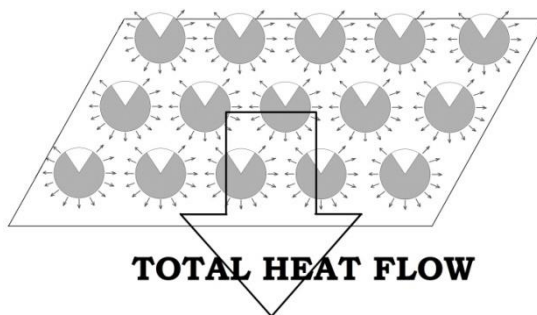


Fig.111. Miniaturization of the thermogravitators.

At the same time, in the direction of the "conical notch", the total wave is less than in the opposite direction. By reducing the size of "thermogravitors", we will come to the need to use nanotechnology, and then to the possibility of creating a special substance, the molecules of which have the asymmetry we need. Layers of such a substance, the molecules of which will be ordered, will be able to generate Aether density waves, mainly in one given direction, which should create a powerful thermogravitation effect.

So, thermal radiation is high-frequency longitudinal waves created by vibrations of atoms in the Aether medium. Usually, they are incoherent, but even so, they can be used to partially compensate for body weight. The creation of coherent thermal vibrations of the particles of a substance will make it possible to obtain a directed heat flux, which gives stronger thermogravitation effects, at the same body temperature. To create coherent gravitational radiation by the atoms of the body, they must perform synchronous oscillations. In this case, by concentrating and directing them in a given direction, it is possible to create not only some propulsion force, but also force effects at a great distance.

This coherent thermal vibration does not require a high body temperature. The development of grasers (gravitation lasers), that is, directional emitters of high-frequency longitudinal Aether waves, can be solved by the same technical methods that are used in laser technology.

Further, in order to create propellers, it is proposed to consider the issue of *induction of a thermogravitation field*, the effects of induction that arise during accelerated motion along a closed loop of a flow of a hot or cold mass of matter. The analogy with the electromagnetic induction effects discovered by Michael Faraday leads to the conclusion that thermomagnetic induction phenomena must also exist.

It is obvious that any material object with a temperature much higher or lower than the environment, during its movement, creates a gravimagnetic disturbance of the Aether medium. Actually, this idea is a special case, and any ordered (linear or circular) movement of matter particles causes a reaction of the environment Aether, which try to compensate for the change in the state of equilibrium of the environment, its rest.

For electrical phenomena, we consider conditionally positive and conditionally negative charges that create magnetic fields during their movement. By analogy, for the phenomena of thermogravitation, we can expect that cold and hot bodies, when moving, will cause an opposite reaction of the medium, that is, currents of "thermal charge" of different signs should create gravimagnetic fields of different directions.

These fantastic assumptions can explain some strange phenomena, for example, the unusual behavior of water droplets, which, flowing down the outer surface of a vertical hot water pipe, do not flow straight down, but spiral around the pipe. Simple experiment can be made with any hot substance flow, for example, with water or vapor, Fig.112. When the hot substance is moving along some pipe, it is possible to detect the gravimagnetic field by simple way. Any drops of water or oil of external surface of this pipe will be moving down by spiral trajectory instead of vertical linear trajectory.

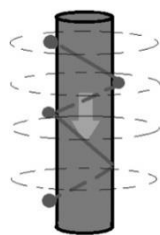


Fig.112. Gravimagnetic effect with thermogravitation.

Here we can assume analogy with electromagnetic Lorenz effect but in this case it is thermogravitation effect. Within the framework of the proposed concept, it can be assumed that any ordered (directed) heat flux creates a thermogravitation field around itself. The difference with a magnetic field is that a thermogravitation field is capable of exerting a force effect on all particles of a substance, and not only on electrically charged particles. In this case, by analogy with electromagnets, it is possible to design ring circuits or solenoids from tubes through which streams of hot or cold matter flow. Powerful gravimagnetic field can be created by circulation of hot substance (plasma) in toroid case. It is analogy with process of creation of the magnetic field by electric current in some coil of wire.

We have three factors for increasing the intensity of the thermogravitation field: the temperature of the moving stream, its speed and its mass. Structurally, it is possible to provide a high speed of rotation of hot plasma in orbit, in a hollow toroid, which will create a powerful thermogravitation field.

Returning to the theory of A.I. Veinik, it can be noted that any temperature difference between two bodies made of the same substance is already a difference in the speed of the processes of their existence, a difference in the speed of time. Particles of matter of different temperatures have different energy density, the strength of interatomic bonds, and therefore, their energy exchange in the surrounding Aether medium proceeds with different intensity.

The question arises: why do we not notice the difference in the course of time relative to hot and cold objects? They exist in our world at the same rate of time, otherwise, any heating or cooling of an object would cause it to disappear from our "present" time position.

To explain this, it is necessary to use the theory of discrete quantum energy levels of the existence of material objects, which is well known in the physics of elementary particles. An electron, for example, cannot arbitrarily occupy any energy level, and its transition from one level to another exactly corresponds to the absorption or emission of a photon (energy quantum) of a certain wavelength. Similarly, it is assumed that the transition of matter particles to another level of the rate of existence is possible only upon absorption or loss of a certain amount (quantum) of internal energy, the amount associated with a particle of the Aether medium.

An indirect confirmation of this concept can be the information [71] about experiments in the USSR to create a "time machine". They also used the method of heating a spherical object, using several emitters of high-frequency waves. In general, there is nothing unusual in this, the metal ball was heated in the same way as any object is heated in a modern microwave oven. The heating process was filmed by the experimenters on a movie camera, which recorded the fact of a short-term disappearance of the ball, its absence in our world, and then, a sudden appearance in the same place, moreover, in a very cold state (covered with frost). Let us consider the reasons for this phenomenon, assuming that it really took place in real experiments. In any case, even as a fiction, this idea gives rise to useful confirmation on quantum effects in the macro levels of the World.

So, the heating of an object increases the speed of thermal vibrations of the atoms of the substance, its "intensity", as Veinik said. An increase in the speed of vibrations of atoms leads to an increase in the Aether exchange with the environment. At the same time, the density of the Aether decreases. With a certain degree of heating of the body, the density of the Aether in area near the ball decreases so much that it leads to a jump-like transition of this area of space-time, and all material objects in it, to "another energy level of existence." At this level, apparently, the Aether has a lower energy density.

While the object is at this new level, we do not observe it in our world, but only until it “cools down” there. The cooled substance of the object ceases to absorb Aether from the environment, and moreover, its activity (“intensity”) ceases to correspond to the parameters of the surrounding space-time. The substance of the object begins to work as a source of Aether, releasing it into the environment, which has a relatively low density of Aether.

Then, at a certain level of energy, the Aether in the vicinity of the object emitting “extra” Aether is compacted (compressed) so much that it is displaced by the environment to the corresponding level of energy density. At this moment, the object jumps to the previous level of existence, and appears in our space-time, moreover, in a much cooled state.

The peculiarities of this process indicate that the degree of cooling of the body, after this “double transition” and return to the initial level, must correspond to the degree of its heating. In other words, a quantum of energy that must be transferred or taken away to transfer an object to another level of existence is equal to a quantum of energy, which, respectively, is released or absorbed when it returns to its previous level of existence. A complete analogy with mechanics: the energy spent on acceleration of a body can be obtained during its deceleration.

Let us note once again that the essence of the phenomenon is not in the heating or cooling of the body, but in the *changes in energy exchange with the surrounding Aether* medium. It is with a sufficiently strong degree of change in the energy density of the Aether shell surrounding the body that this area of space and all the particles of matter that is in it “shift” into the past or into the future.

Of course, all these assumptions have the character of speculative conclusions based on analogies between the microcosm of elementary particles and the macrocosm of material objects, and they have not been confirmed by reliable experiments. The only conclusion that is consistent with this concept can be drawn from the theory of the expanding Universe, considering the process of motion of stars in the arm of the Milky Way Galaxy. This movement is real, and it occurs from the state of a denser Aether to a state of a less dense Aether. The Aether has the maximum density in the central region of the spiral Galaxy, respectively, there are younger stars. As the distance from the center increases, the age of the stars increases, and the density of the Aether decreases. On the other hand, there is a well-known general rule: in any process going from the past to the future, the physical system tends to occupy a state of minimum energy.

Based on these assumptions, when considering technical issues and analyzing the direction of the “arrow of time” in our real world, it is proposed to consider the course of time as the usual “positive” direction, corresponding to the natural decrease in the energy density of the surrounding Aether medium, which occurs as a result of the expansion of the Universe, and the motion of the Solar Systems from the Galactic Center. The reverse direction of the “arrow of time” can be called “negative” and the process of increasing the energy density of the Aether medium must correspond to it.

De Broglie Matter Waves

Further, we will reveal in more detail the essence of the phenomenon of thermogravitation, since it is closely related to the concept of “de Broglie's waves of matter”. Usually, it is believed that these waves are always created by particles of matter, at any temperature. However, this is true only within certain limits of body temperature variation, since within the framework of our quantum theory of chronodynamics discussed above, discrete transitions of matter from one level of existence to another are assumed.

In 1924, Louis de Broglie, in his dissertation, suggested that all bodies and particles of matter are capable of emitting "waves of matter", which were later called "waves of de Broglie". From our point of view, distinguishing particles of matter from the Aether medium of their existence only by their structure, these waves of matter are longitudinal waves of density of the Aether medium.

A new type of propulsion drives, which use longitudinal waves in the Aether, can be built on the basis of such "waves of matter" created by cavity (cellular) structures. Sensational evidence that the scientist-entomologist V.S. Grebennikov built and successfully tested an aircraft operating on these principles, and is still awaiting verification.

In the book of V.S. Grebennikov's "My World" [72] shows simple experiments that are accessible to any researcher and do not require special equipment. In Fig.113 Grebennikov showed the effects of repulsion of two sources of "matter waves", for example, freshly cut grass stalks. Force interaction, in this example, can be "touched by hands" by making two "waves emitters" and turning them with their ends towards each other. It is these simple experiments that *provide the key to understanding* the technology of creating Grebennikov's "flying platform".

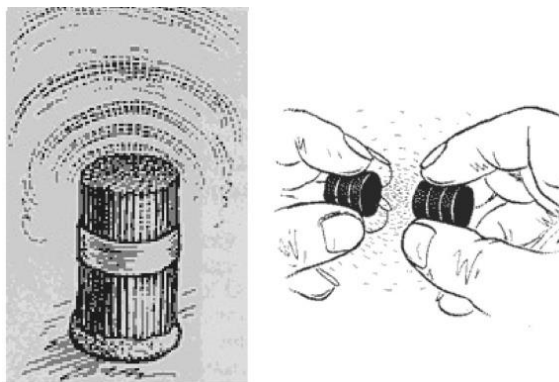


Fig. 113. Repulsion of two stems or bundles of grass due to the interference of de Broglie waves.

Fig. 114, my explanation of the cause of this effect is proposed in a simplified form.

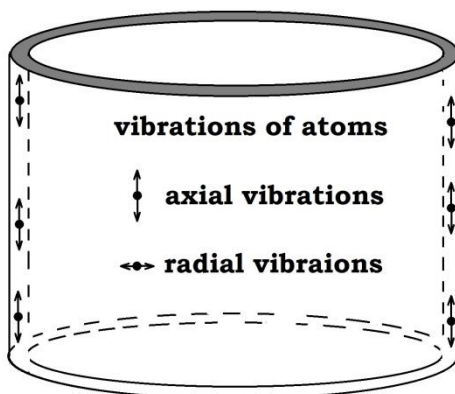


Fig. 114. Vibrations of atoms in one element of cavity structures.

The elements of cavity (honeycomb) structures are thin-walled tubes, due to which the vibrations of atoms create longitudinal waves in the Aether, mainly in the axial

direction. Obviously, in the radial direction, the sum of vibrations of atoms is much less. A bundle of parallel tubes creates coordinated vibrations of the Aether medium, mainly in the direction of the end of the tubes. Tubes can be made of any material, metal or paper. The diameter of the tubes sets the distance from the end of the tube to the region of "focusing" of waves created by individual atoms. The calculation will be shown below, in formula F.11.

In general terms, this effect is the interference of longitudinal waves of the Aether medium, emitted by coordinated vibrating particles of matter that forms the walls of the tubes. The radiation of the particles is added in such a way that the main component is directed along the axis of the tubes. The interference of longitudinal waves formed by a multitude of tubes - sources gives in the space above the honeycomb (cavity) structures *ordered areas of compression and discharge of the Aether medium*.

In such a concept, the important role of aligning the ends of all tubes assembled in a package becomes clear. Smooth cut of each tube and tube package, as a whole, provides the addition of wave antinodes in one area of space, summing up the effect of compression or rarefaction of the Aether medium.

Separately, we note that an ordered relief in the form of a package of nanotubes also will create "the effect of cavity structures but for very short wavelengths.

The technical device for this effect discovered by Grebennikov and Zolotarev is possible by various methods. Known article "Calculation of the effect of multi-cavity structures" [73], which was transferred to me by Professor V.F. Zolotarev in 1992, together with other unpublished materials for the study and development of this direction. In this article, we are talking about the discovery of V.S. Grebennikov and V.F. Zolotarev named as "The phenomenon of interaction of multi-cavity structures with living systems", priority certificate for Discovery of USSR Number 32-OT-11170 of 3.9.1985.

Let's consider some of the conclusions from this article that are useful in designing a new type of propulsion system.

According to Professor Zolotarev, the coordinated movement of electrons in a solid matter will generate waves of de Broglie matter, and the cavities of tubes or honeycombs, for example, turn out to be resonators. These resonators are powerful sources of *standing waves of de Broglie matter*, which are created in the direction of the axis of the tubes or honeycombs. A material structure built from rhythmically located cavities in space (honeycomb or bundle of tubes) greatly enhances the effect. Interaction with Aether can be enhanced by means of vibrations.

Note that we are talking about standing waves of Aether density, which are fundamentally different from the moving "thermogravitation" waves of Aether density, which are emitted by a hot body. Standing waves of Aether density do not transfer energy in space, but can exert a forceful effect on objects located in the area of wave antinodes or at the nodes of waves. Standing waves of density of the Aether medium can interact with each other in points of interference. For the same reason, it is correct to say that the standing waves of de Broglie's matter are "created" in space by a certain source, and not "emitted" by a certain generator. The source, in this case, does not require power and energy supply. We can say the geometry of the material object "works" in this case to provide force effects.

Professor Zolotarev writes in article [74] that the length of the standing wave will be twice the size of the "potential well", that is, the size of the cavity. In his calculations, Zolotarev refers to the formulas of "self-oscillatory quantum mechanics" by Rodimov [74].

Quote: "The walls of multi-cavity structures are usually viewed as the boundaries of a potential box of electrons. This is true for both dielectrics and metals. The coordinated movement of electrons is accompanied by a system of standing de Broglie waves in a potential box with classical frequencies according to F.9

$$F_{\text{classical}} = n h / 4 m L^2 \quad \text{F.9}$$

and quantum frequencies according to F.10

$$f_{\text{quantum}} = n f_{\text{classical}} \quad \text{F.10}$$

where n is a natural number, L is the size of the potential well, m is the effective mass of an electron. "

Calculation example: for $n=1$ and $L=1$ centimeter, the frequency is approximately 2Hz. This frequency is in the range of pulse repetition rates of the human central nervous system. Therefore, for the design of cavity structures for power purposes (propulsion drives) that create a mutual repulsion of wave antinodes, it is necessary to choose such wave source parameters that do not affect the human body.

The author of "self-oscillatory quantum mechanics" Boris N. Rodimov, Doctor of Physics and Mathematics, worked as a Professor at Tomsk Polytechnic University. His main scientific work at the Research Institute of Nuclear Physics was associated with induction electron-betatron accelerators. In recent years, he has devoted much of his time to developing a new aspect of quantum mechanics. In 1976, his book "Self-Oscillating Quantum Mechanics" was published, dedicated to this new direction in science.

Rodimov's book sets out the foundations of self-oscillating quantum mechanics, which makes it possible to solve new problems. This refers to the interpretation of spin forces, forces of weak and strong interaction, the structure of elementary particles. This theory has important applied aspects, for example, in 1981, Rodimov filed a corresponding application to the State Committee for Inventions and Discoveries of the USSR for the "Method of obtaining nuclear energy by an alternative method", and this patent was obtained in 1982.

So, Professor Zolotarev in his article [73] gives the formula F.11, which will be very useful for designers to calculate the location of the antinodes of de Broglie's matter waves. He writes: "The regularity of the location of the antinodes of de Broglie waves at a distance D from the tubular structure is calculated by the formula F.11

$$D = 2L (N+1)2^K, \text{ where } N \text{ and } K = 0, 1, 2\dots \quad \text{F.11}$$

L is the circumference of the tube, N is the number of the harmonic of standing waves of de Broglie matter, K is the number of the antinode " [74].

The maximum force effects, in such devices, are observed precisely in the region of wave antinodes. We can interpret these antinodes as areas of compression of the elastic Aether medium. For example, for a tube with a radius of 1 millimeter, its circumference will be approximately 6.28 mm. For the first harmonic $N = 1$ and the first antinode $K = 1$, we obtain the distance from the end to the first antinode of the matter wave about 50 mm, please calculate $D = 2 \cdot 6.28 (1 + 1) 2^1 = 50$ mm. In this case, force interaction of two bundles of 1 mm radius tubes should be expected if they are located in such a way that the antinodes of their waves coincide, that is, at a distance of 10 centimeters between the ends of the bundles of tubes.

Note that from the practice of high frequency electromagnetic equipment engineering, the most powerful are the third and seventh harmonics of the fundamental frequency. However, for longitudinal waves of matter, plays the role of completely different laws. Professor Zolotarev wrote about this: "The resonant nature of the interaction presupposes the multiplicity of wavelengths and frequencies, which determine the geometric dimensions of the interacting structures. Hence - the geometric proportions, including the "golden ratio". Therefore, the manifestation of the "golden section" in nature is not accidental, since it is based on de Broglie waves. "

In practice, this important remark of Professor Zolotarev should be considered as a recommendation to the designers of technical systems using the effects of cavity structures (ECS).

The use of the effect of cavity structures is advisable not only in the new type of propulsion drives, but also for telecommunication systems, since the standing waves of matter are not screened. Zolotarev writes in this regard: "Since the impact of cavity structures occurs passively through quantum fields in the conjugate world (vacuum), then there should be no shielding of the effect of cavity structures. In Zolotarev's experiment, shielding was tested with iron sheets, cloth, plastic, cardboard, wood, brick walls. In accordance with his theoretical conclusions, it was not possible to detect the screening of de Broglie's matter waves" [73].

Interesting conclusions are obtained if we imagine the operation of such communication systems. At first, in the area of the information source, it is necessary to create a standing wave of energy density, calculating the location of its antinodes and nodes so that the antinode (the area of maximum change in the density of the Aether medium, its maximum deformation) falls into the receiver area information. Further, by superimposing some modulating signal on the standing wave, information transfer can be ensured. The "receiver" area can be placed at any distance. This technology is very similar to Tesla's ideas about the practical use of standing waves of electrical field, however, waves of matter are a more general case of using Aether-dynamic phenomena.

In the 1990s, we tried to organize a project with Professor Zolotarev, in which it was planned to obtain a "curvature of the trajectory of a ray of light" by a special method. Unfortunately, we were unable to find a suitable technical base in any University, and this experiment was not organized.

There is an interesting fact: in 2000, a joint book of the authors V.F. Zolotarev, V.V. Roshchin and Godin S.M. was published [75], which considered the issues of changes in the properties of space that arise during the operation of free energy devices. I hope the reader will remember that in the ASTRA project (an analogue of John Searl's generator) Godin and Roshchin showed the presence of "side effects" in the form of "concentric walls" of low temperature formed around their working experimental setup. This phenomenon has much in common with the effects of cavity structures, since it also represents one of the variants of standing waves of Aether density, analogs of de Broglie's matter waves.

Scientific interests of Professor Zolotarev were related not only to the effects of cavity structures. In 1996, at a conference in St. Petersburg, Professor Zolotarev demonstrated an interesting experience to the conference Fig. 115. In a glass jar with a capacity of 3 liters, a coil is placed on the suspension, consisting of several dozen turns of optical fiber. When the light source is Off, this device does not react to external influences. When the light source is On, the coil rotates when exposed to a permanent magnet or cellular (honeycomb) structures made of paper.

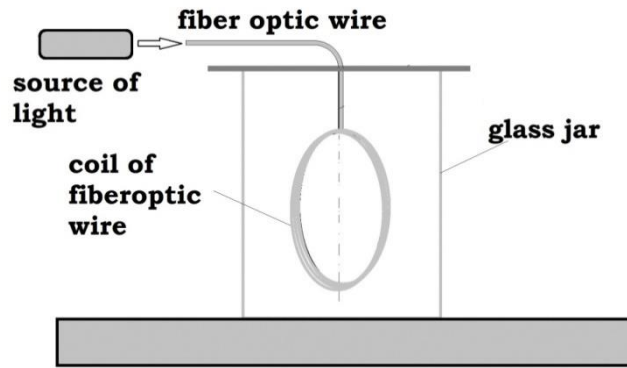


Fig. 115. Zolotarev's experiment with a coil made of an optical fiber.

Moreover, the coil “feels the biofield,” as the author asserted. The conference participants, who approached this device, with great interest tested their abilities, their “biofield strength”, according to the degree of rotation of the coil when exposed to it by a human hand, from a distance of 10 - 50 centimeters. There was no explanation of this effect, or some publications on this topic, so I offer my version here.

Suppose that the movement of photons along a ring in a given coil creates an analogue of the effect of electromagnetic induction that occurs when electrons move in a wire. The photons in the Zolotarev coil, in this case, create a gravimagnetic vortex disturbance of the Aether, similar to a magnetic field. The nature of this vortex field, as in other similar cases, is Aether-dynamic. Therefore, such a field is capable of interacting with any Aether-dynamic processes, and not only with permanent magnets, but also with any waves of matter (standing waves of Aether density) created by cavity (honeycomb) structures. From this point of view, the biofield is also a kind of complex of ether density waves, and the Zolotarev coil reacts to it. I hope that this method will receive its development and practical application in technology, and not only in the role of detectors of ether disturbances.

To obtain a powerful force effect, that is, to reduce the weight of the coil, and even to create a practically valuable propulsion force in this device, it is necessary to increase the number of turns of the coil and the energy of the photons circulating in it. The energy of photons is known to depend on their wavelength (frequency). A diagram of such a propulsion device is shown in Fig. 116. I believe that the vortex disturbance of the Aether medium will have a form similar to the magnetic field of a coil with an electric current.

In this case, a coil or solenoid containing a sufficiently large number of fiber turns, in the presence of a powerful source of high-frequency photons, can create a practically useful force effect.

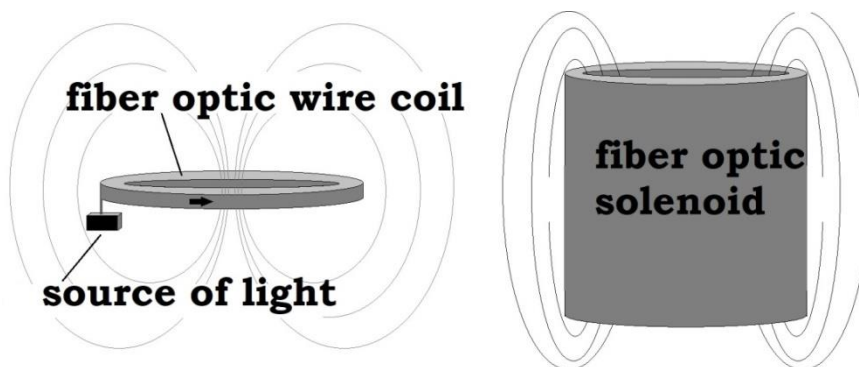


Fig.116. Fiber-optic coil and solenoid.

Of course, this device must have medical applications and also applications for suppressing the radioactivity of isotopes (deactivation of radioactivity wastes).

Further, it is known from electrodynamics that only a change in current strength (energy density) creates induction effects in the surrounding space. Taking this fact into account, it is necessary to study the possible gravimagnetic effects of the proposed propulsion scheme when using a pulsed photon source. Modern electronics makes it possible to create the necessary changes in the energy density of the light flux in the light guide coil, with a high frequency. Here, the frequency of the pulses also matters if the intended inductive effect will create a pulse of driving force with each pulse of light.

This method is also convenient in that it allows you to work with any shape of pulses, including those with a steep edge and a smooth fall, or vice versa. These capabilities of the technology facilitate the design of high frequency and high power "Aether pumps".

Let's return to the basics of Zolotarev's theory, which are presented in the book "Physics of Quantized Space - Time" [76]. In it, the authors, V.F. Zolotarev and B.B. Shamshev describe the basic properties of space, that is, the physical vacuum, assuming that it is quantized. In such a model, the structure of space is similar to the structure of a living multicellular organism. Each "cell" of such an organism can be occupied by only one particle of matter, or a photon. Note that this approach is very constructive, especially for thinking about new technologies for moving in space and time, and the invisibility of material objects, when a ray of light "bypasses" a region of space in which the properties of its quanta are changed.

Later in the chapter on the structure of space and time, we will consider my calculations on this topic. The resonant nature of all processes in space-time will be obvious.

We have already wondered about the mechanism of invisibility: the light beam should not only be deflected, but also return to its previous trajectory after it has gone around the region of the altered state of space. In Fig. 117 quanta of space are conventionally shown as flat hexagons. In reality, for three dimensions, they should have the form of volumetric elements.

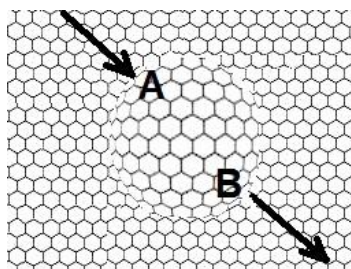


Fig. 117. Photon bending around the area of changed Aether medium.

This situation is understandable. Parameters of quanta of isotropic space, at the same speed of time in all its regions, must be constant. A ray of light travels in a straight line. However, it can be assumed that the sizes of quanta of space depend on the volumetric energy density of space. In this case, the speed of the passage of time, as the speed of transitions between quanta of space, will change in those areas of space where it is deformed, compressed or rarefied. A ray of light will bend around such areas along their boundaries, where the deformation has the opposite sign, for example, a shell of a compressed medium is created around the region of expansion of quanta (rarefied Aether of reduced density). As a result, passing along a longer path than usual from point A to point B, bending around the area of rarefaction of the Aether medium, the light beam propagates in compressed space, and hits point B in the same time, as if there was an

ordinary isotropic space. This is possible only when the principle of compensation of elastic deformation of the Aether medium is fulfilled, inside and outside the area of space, in which changes in the density of the Aether (sizes of quanta) are created: compression (compaction) of a certain area of space causes a decompression of the environment, and vice versa. The sizes of objects and the speed of processes change accordingly.

Note that there are Ural legends about strange places where the size of objects decreases or increases, and time there "shrinks" or "expands". After spending several hours there, and returning from such places, the traveler is surprised that they have been looking for him for several days. In these tales there is a very useful idea that the dimensions in some special areas of space and time in this special areas of space are interconnected.

The main conclusion of the theory of quantized space and time is that the material world is not continuous, it is discrete, both in space and in time. The material world, so to speak, "flickers", and thus coexists with other material worlds located in the same space, but with a relative shift of the flickering matter of different worlds in the phase of the impulse of its "materialization". It is possible that there are several such parallel worlds, and then their number should correspond to the structure of a multidimensional object. Let's consider a variant of such a structure. In the works of theorists, for example, in the book by I.M. Gelfand [77] assumes that a four-dimensional cube has 8 three-dimensional elements, that is, eight ordinary cubes, divided along the time axis. In this case, the rhythm of "flickering" of matter in time should have eight measures, and the ratio "impulse - pause" is equal to one to seven.

It makes sense to take these assumptions into account when designing transport systems for multidimensional movement and teleportation. This concept allows us to understand the nature of not only simple movement in space, but also to suggest possible ways to move between parallel worlds.

So, according to Zolotarev's theory, matter particles are processes of cyclic transformation "matter - photon - antimatter". Any movement of matter particles in this quantized space include some "zero point", in which a particle of matter exists without inertial properties, only as a photon. It is in this state, like a photon, that a material particle can pass from one quantum of space to another, in order to then be realized again in the form of a particle of matter. All such transitions are related with the speed of light. At the same time, it is necessary to take into account the conclusions of Polyakov and Kozyrev, that the ratio of the internal energy of matter particles and their external energy is approximately 137. In other words, in any particle of matter there is both a photon and a graviton at the same time, in a ratio of 1/137.

The works of Professor Zolotarev, including the study of the effect of cavity structures, are important world-class discoveries that he made together with Victor Grebennikov. Consider the known information about the project, which went down in history as the Grebennikov flying platform, using the effect of cavity structures.

Antigravity flying platform by Victor Grebennikov

We come to the amazing story of Viktor Stepanovich Grebennikov, an entomologist from Novosibirsk, who managed to build a "Gravitoplane" that works on the action of cavity structures. Many believe that this story should not be taken seriously ... Others, casting aside doubts, study all the subtleties of this technology, the design of "Gravitoplane", its analogues and conduct experiments.

Grebennikov described his discovery in the book "My World" [72]. In the summer of 1988, while examining the chitinous integuments of insects through a microscope, he found the rhythmic microstructure of one of the rather large insect details. These cells on the inner surface of the elytron were not required for strength. Then he accidentally put the exact same wing part on this part and something unusual happened, namely, force effects appeared. Wing parts repelled each other. Grebennikov tied several parts with metal wire and found that such a chitin block design could repel other objects. At the same time, the objects may disappear from view for a while.

Let me make some comments at this point. The repulsion effects described by Grebennikov would not look surprising for permanent magnets. As we imagine, two magnets are repelled by the same poles, since the Aether flows of each of them condense the Aether medium in the area of space between them. The manifestations of these effects for a pair of sources of de Broglie matter waves, which, apparently, are chitinous plates with a porous ordered micropattern, are in good agreement with the theory of the effect of cavity structures. In such a situation, two antinodes of standing waves, that is, areas of compressed dense Aether, interacting with each other, are repelled.

More interesting for us is Grebennikov's description of the "object disappearing effect", which was tied to the "chitinoblock". It is obvious that the compression of two or more mutually repulsive sources of standing waves of matter leads to the expulsion of the Aether outward, where a region of increased Aether density is created. Accordingly, any object placed in this area behaves "strange", disappearing from view. Invisibility, in such a situation, means the deflection of light rays falling on the area of space of increased or decreased density of the Aether medium. Such a change in the optical properties of space is analogous to a change in the density of any optically transparent substance. In optics, in such a situation, it is said that the refractive index changes. In quantum space - time, this means a change in the properties of a quantum, energy density and its size.

In 1991, Grebennikov created his own gravitoplane, and began to fly on a "silent aircraft". But photo Fig. 118, the author is shown on his apparatus resembling an easel. The device, as the inventor writes, turned out to be inertialess and invisible. In Fig.119 shows the alleged effects of "light bending around a region of space", which is created by the Grebennikov apparatus. People who watched it from the ground saw a "bright ball", "disk" or "a cloud with sharply outlined edges." Here it is appropriate to remind the reader of the theory of quantized space and the principle of compensation for deformations of the Aether medium.



Fig.118.Victor Grebennikov and his device.

It is appropriate to note here that the issues of invisibility of objects are seriously considered by technical specialists of various organizations.

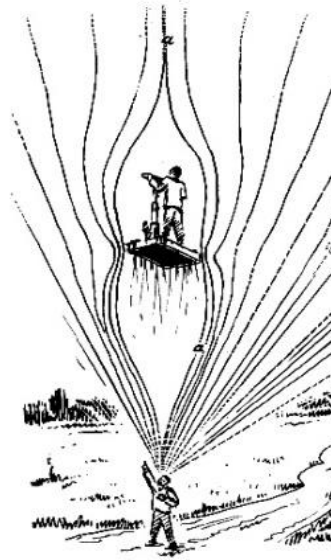


Fig.119. Invisible object.

Invisibility means that a ray of light bends around a certain area of space along a curve, but then returns to its straight line again. We'll look at the reasons for this behavior of photons later, in the chapter on quantizing space and time.

The Grebennikov apparatus was controlled by simple mechanical movement of "fans" - elements in the lower part of the apparatus. The displacement of the "fans" relative to each other, as the author describes, was provided by means of a mechanical handle with rods, changing the magnitude of the driving force in one direction or another. A detailed description of the construction of the gravitoplane, Grebennikov was not allowed by censors, and his book was published in a "greatly reduced form." I remember one phrase of the author, which may turn out to be important for construction: "... my apparatus is made almost entirely of paper." In April 2001, Viktor S. Grebennikov died of a massive stroke. Many believe that the deterioration in health was caused by his "flights" on the gravitoplane and experiments with cavity structures. Currently, many enthusiasts are trying to replicate this technology to create their own "gravitoplane". I believe that it is premature to fly on such a "propulsion device" until the effect is studied in sufficient detail. It is necessary to determine the boundaries of the area of space in which a living organism can be without the danger of disrupting life. It is possible that the power plants should be placed separately, placing them in a triangle in a plane, or in a circle around a central "living compartment".

In 2017, videos of experiments on this topic appeared on the Internet. The authors investigated the properties of the beetle elytra, including the "bronze", about which Grebennikov wrote. In one of the films, the author uses a high voltage source. The spark between the electrodes has a length of several centimeters, that is, a field source of tens of kilovolts is used. The video shows how the beetle wing is placed in the spark gap. Obviously, this "dielectric treatment" creates an electret, since chitin is an electret material.

Further, the video shows how two elytra are repelled; the effect of levitation or rotation is created (with a tangential arrangement of elements). At the same time, there is a high voltage source on the table and a metal plate that is connected to it. These effects seem like ordinary electrostatics, but when the filmmakers show powerful repulsive forces acting on a ceramic cup or a lead-acid battery, it makes you think that the power effects in this structure are not only created by electrostatics.

I fully admit that the combination of cellular cavity structures and a high voltage source enhances the Grebennikov effect. Also the *effect of cavity structures is enhanced by vibrations*. Grebennikov was an entomologist and he understood this, since insects almost always have vibrations. We can say that the *vibrations "shake off" the Aether* from the cavity (honeycomb) structures. There are analogies with gyroscope vibration experiments to reduce weight of the gyroscope.

The effect of cavity structures is sometimes rediscovered by various authors. For example, Bogdanov from Bashkiria [77], was interested in rejuvenation, he saw in a dream and created a model of a device that allows changing the properties of a substance placed in it, Fig.120.

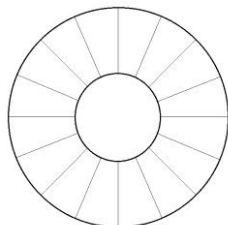


Fig. 120. Bogdanov's capsule of rejuvenation (cutaway).

The device consists of a spherical complex of cone radiators located around a central sphere. In fact, these are conical cavity structures, oriented in such a way that a focusing effect is created in the central part. The model was made by Bogdanov from cardboard and glued with epoxy glue. The diameter of the model is about 50 cm.

A real device, according to Bogdanov, should have a diameter of an outer sphere of 30 meters and a diameter of an inner (empty) sphere of 8 meters, inside which a person can be. Checking the "shape effect" of Bogdanov's design, at one of the Moscow laboratories, showed that inside the model, in the central part, there is a structuring of a solution of potassium permanganate (crystals are combined into a ball). From the point of view of Kozyrev's theory, this means a decrease in the value of entropy in the central part of the device, as a result of a change in the "time density".

On the other hand, it is obvious that this design belongs to the field of resonators of Aether waves (de Broglie waves of matter), and allows you to greatly enhance the effect of cavity structures due to focusing - a superposition of standing waves in the central part of the device. It is obvious that the addition of antinodes of waves in the center greatly enhances the effect of changing the density of the Aether.

I can add the following to Bogdanov's idea: the number of elements of such a structure can be any, but in nature there are certain rules for the structure of objects. The minimum regular volumetric object is a tetrahedron. A structure with a maximum of equal vertices is called an icosahedron, it is built from 20 identical triangles, has 30 edges and 12 vertices. I believe that symmetry matters, for this reason, the arrangement of the elements of the Bogdanov sphere, and their number may be important.

A similar structure was built by the author from Riga Janis Kalninsh. It is not a gravity propulsion device, but there are some force effects here as well. The photo Fig.121 shows its construction. Effects of impact on biological objects are created both in the center of the installation and outside, in the surrounding space.



Fig. 121. Kalninsh sphere

So we see that cellular cavity structures are capable of giving us amazing technologies. Let us consider separately the methods of focusing the streams of Aether, which may be important for the design of Aether exchangers. There is the so-called "shape effect", the technology of influencing the streams of Aether by means of material objects of a special shape.

Effect of the shape

Returning to the history of the development of the Aether theory, it should be noted that the term "shape effect" was introduced by French researchers Leon Chaumri and André de Belisal in the 30s of the last century [78]. The most famous is the shape effect for pyramids, the essence of which is well illustrated by Grebennikov's drawing, Fig. 122. In this case, only the edges "work" with the Aether, without the participation of the planes of the pyramid.

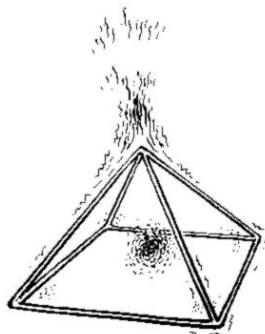


Fig. 122. The emergence of streams of Aether near the pyramid.

In space, near this material structure, two interesting areas of the altered state of the Aether appear: the condensation in the center of the pyramid, as well as the flow above its top. Detectors placed in these areas will note the effects of acceleration or deceleration of processes, changes in the entropy state of a substance, for example, a change in its electrical resistance, etc. For the famous Cheops pyramid, the proportions of its sides are such that the maximum deformation of the medium (focusing of Aether streams) occurs at a point located inside the pyramid, at the level of one third of the height. The orientation of the sides to the North and South is essential, since it is associated with the direction of the natural streams of Aether created on the surface of our planet.

It is known that large pyramids form a column of ionized air above their top, extending in height for kilometers [79]. It is possible that this was one of the tasks of the ancient pyramids ... In this case, they played not so much a religious cult as a functional role in some technological process.

According to anti-entropy effects, the fact of sharpening of razor blades placed in the pyramid at the level of one third of the height has been reliably established, and even a patent was issued for such a method. Evidence for the existence of the effect was the photographs of the blades under an electron microscope, which clearly showed the change in their geometry, before and after exposure in the pyramid. The results of an experiment at the Russian Research Institute of Graphite on the effect of a pyramid model on a graphite plate with dimensions of 25x10x1 mm, placed inside the pyramid are known. After 24 hours of exposure, the electrical resistance of the sample doubled. The influence of pyramid models on the oscillation frequency of a quartz resonator was also established [80].

The shape effect has been known for thousands of years, as ancient history shows. There are legends about the Etruscan pyramids. Their civilization was not numerous, and very highly developed, they were referred to by the ancient Greeks as their ancestors. Figure Fig. 123 reproduced by me from the stories of the experts in ancient history. Sure, I wonder if it was real design but the scheme is very interesting to consider possible "shape effects" around this pyramid. Considering the structure of this pyramid, or other ancient structures that create a "shape effect", an important conclusion can be drawn about the role of "void areas of space" in the body of the structures. It is the "emptiness" that represents the "working bodies" when performing the task of focusing or transforming the Aether streams, massive stone structural elements, reflecting and focusing elements.

Perhaps some of readers will build small model of this pyramids as experimental setup to test possible effects around the device.

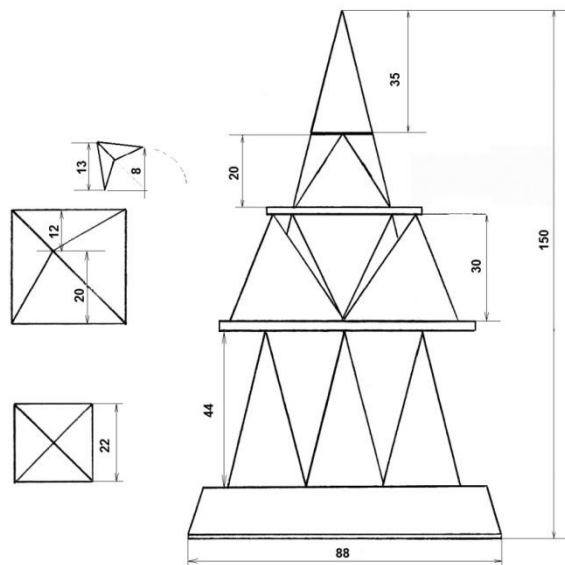


Fig.123. Ideas on The Etruscan pyramids

This point of view is consistent with the concept of creating particles of matter from the Aether medium. With this consideration, the *Aether medium*, in which there is no matter, is more energetically dense than the area of space that is filled with matter.

For example, an elementary "focusing element" looks like an obelisk, Fig. 124. The top of an obelisk made of stone or other substance "works" with Aether, like any pyramid, creating elastic deformations in the area of "active emptiness". As a result of these deformations, the effects of reflection and concentration of Aether flows passing through this "working void" of the deformed elastic Aether medium should appear. The focusing of streams is determined by the shape of the pyramid or obelisk. Certain forms may not concentrate the flow, but radiate it upward along the axis.

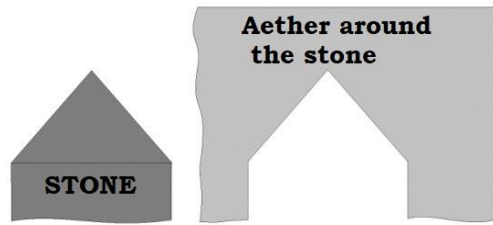


Fig. 124. The truncated obelisk and its "active part" on the air.

In a similar way, all Aether-exchange structures made of matter work. They can direct, concentrate or twist the Aether currents in the desired direction. Elastic deformations of the Aether medium, created by cavity structures as a result of the interference of de Broglie's matter waves, have the same nature as the "active void" in the area of pyramids and other material objects.

These flows can be used not only to create force effects and propellers of a new type, but also in medicine. For example, more than 100 years ago, Dr. Otto Korschelt discovered the effect of a positive effect on sick patients of simple devices that created "eddies of Aether flows" going from the Sun to the center of the planet [81]. For this reason, Dr. Korschelt's "Aether apparatus" were positioned in such a way that the line of action would pass from the Sun through the patient to the earth.

Note that in the experiments of other authors on Aether dynamics, it was also recommended to use the Aether stream (Aether wind) coming from the Sun. Modern researchers can use streams of Aether that are established in a room over time, for example, between a heat source and a refrigerator.

The parabolic heat heaters of the old type are very convenient for research, with a metal reflector and a heating coil (spiral) in the focus of the parabola. They create a heat flux that carries information from the source of longitudinal waves to the receiver. In the diagram shown in Fig. 125, the informative component of the signal is superimposed on the constant stream of Aether accompanying the *unidirectional thermal radiation*. The source of information, for example, the processes of development of plants or embryos, or any other anti-entropic process, can be placed on the back of the reflector, since it is here that the Aether is "taken away" for its directed transmission towards the receiver.

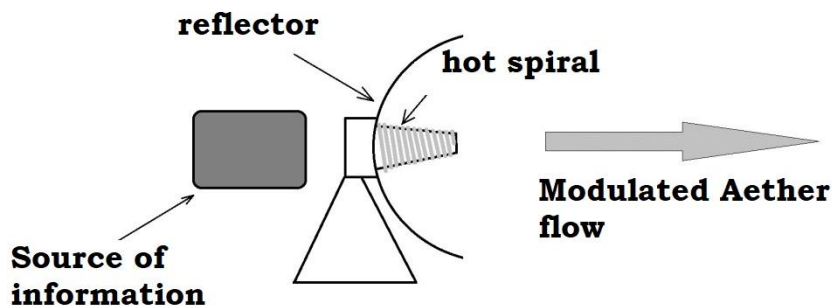


Fig. 125. Modulation of a constant stream of Aether by an information signal.

As a result of the influence of the "modulated Aether flow" on material objects, a change in entropy can be expected. When influencing various physical and chemical processes, one should expect not only a change in the rate of processes, but also the results of chemical reactions. The result depends on what kind of information we put

into the stream of Aether. A detailed review on this topic was given by V.A. Zhigalov (zhigalov@gmail.com) in the book "Characteristic effects of non-electromagnetic radiation" Project "Second Physics" <http://www.second-physics.ru>. This work by Zhigalov contains a review of experiments on the targeted production and detection of non-electromagnetic (torsion) radiation. In particular, he examines the torsion generators of Akimov, Bobrov, Shpilman, Kaznacheev, Montanye, Shakhparonov, Lunev, Krasnobryzhev, Panov and Kurapov, Parkhomov, Melnik, Shnol and other authors.

Experimental data on the effect on matter and the transfer of information by the *methods of structuring the Aether*, obtained from various sources of information, show that the structure of matter and its physicochemical properties should be considered taking into account the presence of the Aether medium surrounding the particles of matter and taking part in the process of their existence. Understanding the complex of a part of a substance as a process in an Aether medium enables us to influence its properties.

Thus, through the Aether medium, we can change not only the physicochemical properties of a substance known to us, or the parameters of the cells of biological organisms. More important is that the rate of existence of matter and the orderliness of its structure (the degree of entropy) depends on the density of the Aether. This is quite understandable, since the particles of matter themselves are not something isolated from the Aether medium, but can be considered as vortex Aether-dynamic processes.

Let's consider the basics of the theory of the structure of space - time, including some examples of calculations of the resonant parameters of the elements of matter. The development of this concept will allow the design of completely new types of vehicles and the development of advanced technologies for movement in space and time.

Space-time design

“Action is curvature of the World”

Pavel D. Ouspensky, 1991.

We have already assumed analogies of the quantum structure of the microcosm and the macrocosm, under certain conditions. Further, the laws of the resonant structure of our World will be shown, with specific examples. The proposed calculations and conclusions were first found by the author of this book in 1991, and reported to the scientific community at the international conference "New Ideas in Natural Science", June 1996, St. Petersburg.

The discrete structure of matter is generally recognized today, we study at school the concept of molecules, atoms and other "particles of matter". The wave properties of "matter particles" are clear to specialists in the field of quantum physics.

The calculations, which we will consider later in this book, give an understanding of the nature of "matter particles" as wave (vortex) processes in the Aether medium, capable of self-sustaining only under certain resonant conditions. Such conditions are created with a certain design (geometry) of space. Consequently, the emergence and stable existence of "particles of matter" is due to certain parameters of the space filled with the Aether medium.

The epigraph to this chapter is the phrase of the famous Russian philosopher Pavel D. Ouspensky, from his famous book "New Model of the Universe", published in 1911 in English [82]. The meaning of this phrase is that "action" is any process in time, characterized by the geometric curvature of our world of three-dimensional objects. Any

"action", for example, the process of moving a body or a chemical reaction, occurs along the time axis, along a trajectory of a certain curvature. Curvature, in this case, is already a four-dimensional geometric parameter, a characteristic of the speed of this process, the rate of change, etc.

Ouspensky made another important observation about the structure of space and time. Our mind is trying to understand the surrounding reality within its capabilities, therefore it separates all objects and events in space or time. However, the reality is not what it seems to us. We see only its projection at the moment of our existence and the sequence of projections.

We usually think of time as a fourth dimension, and we use the term "four-dimensional object" to describe processes. However, it makes sense to briefly supplement the "generally accepted" views on the structure of the space and time around us. First of all, let me remind you that it makes no sense to consider abstract space - time, since its parameters are always associated with matter. Abstractly, we can model any space, but in the real world, we can only talk about space - time of some object.

We can say that the parameters of a material object, which is a certain Aether-dynamic process, set the parameters of the space of existence of this object. Hence, objects can have different dimensions.

Up to this point, we have considered the familiar concepts of "time" as the fourth coordinate of space - time. Usually, back in school, we are taught the Cartesian coordinate system as a convenient way to design objects and set coordinates in space.

The convenience of the Cartesian system of rectangular coordinates is that it uses the concept of "height" of an object, as a size along the line of action of gravity. This system is based on an orthogonal group of vectors, and it includes three positive axes and three negative axes, for a total of *six coordinate axes*. We are told that there are only three of them, so time, as a parameter for changing some function, is set as the fourth coordinate. This is already a logical error, in the order of the axes; time is the seventh axis in this system. Taking into account the "plus" and "minus" time, we get a total of *eight coordinate axes*.

The question of the coordinate system, or the structure of an imaginary space, can be developed depending on the author's imagination, for example, in the geometry of Lobachevsky, even parallel lines can intersect, in a certain case. We are now interested in the system of views on the structure of space-time, which reflects the real geometry of our world of material things and processes. To answer this question, let us turn to natural material systems, for example, to the structure of crystals.

The flat world is well studied in ordinary geometry, in it a triangle is an elementary figure, and the position of a point on a plane is uniquely set by three coordinates, as the distance "on flat terrain" to three "reference points". This method is practically used in radio direction finding methods, that is, to search for a source of radio emission.

For volumetric space, the method is similar, but uses four reference points. Buckminster Fuller showed that the *natural coordinate system in space is the tetrahedral system*. The development of this concept is currently made Joseph Hasslberger, website www.hasslberger.com

The real structure of space is reflected, for example, in the structure of a diamond crystal, by the bonds of carbon atoms. In space, an elementary geometric figure is a tetrahedron, and the position of a point inside the region of this tetrahedron is uniquely set by four coordinates, as shown in Fig. 126. Here coordinates in space are the distances to four points of reference.

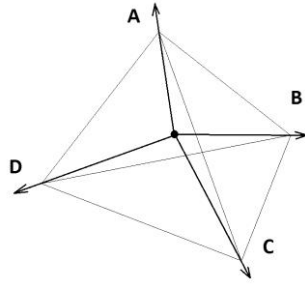


Fig. 126. Tetrahedral coordinate system.

Time is a parameter describing the rate of change of some value. In geometry based on a tetrahedral coordinate system, we can think of time as the fifth dimension. This coordinate is measured as the interval from some event (minus-time), or the interval of time to some event in the future (plus-time).

Given that the time coordinate has a relative direction "forward" and "backward", we can formulate the concept of a *six-dimensional space-time*, in which four coordinates of the tetrahedral system specify the position of the object in space, and two more coordinates describe the movement of the object along the time axis, in the direction of increasing the energy density or in the direction of decreasing it.

For the positive direction of the time axis, as we have already noted, it is advisable to take the direction of the decrease in the density of the Aether medium, since this direction of the development of events corresponds to the natural process of the expansion of the Universe and the movement of the Solar system in the arm of the Milky Way Galaxy from the center to the periphery.

An elementary five-dimensional figure, with a cyclic function of time, can be considered a tetrahedron of variable volume, cyclically contracting to a central point, and returning to its previous dimensions. Obviously, such a model reflects the real processes of changes in the volumetric energy density in space.

Geometry has its own laws, which allows us to make assumptions about the structure of objects of higher dimensions. For example, the simplest one-dimensional object "line" has two points; the distance between them sets the main parameter of this object, its length. The simplest two-dimensional object "triangle" has three sides, each of which is a "line". The simplest three-dimensional object "tetrahedron" is defined in space by four triangles - the simplest objects of a lower dimension.

By analogy, going beyond the usual static three-dimensional space and trying to suggest the structure of an elementary four-dimensional dynamic object, it is possible to imagine its boundaries as five three-dimensional objects. Considering two directions of motion in time, for example, a decrease in the energy density of the medium or an increase in the energy density, we can assume a four-dimensional structure formed from ten three-dimensional objects. Thus, the decimal calculus must somehow manifest itself in calculating the parameters of real material systems, like a natural system.

In 1991, in the theoretical research, the author of this book found a relationship between the parameters of elementary particles and the size of the planet, and concluded that there is a parametric resonance in space-time, which determines this relationship.

Based on the calculation of the four-dimensional curvature of the space of elementary particles of matter, as well as such elements of living matter as DNA molecules, it was proved that natural (natural) objects, when calculated in the SI system of measurements, are characterized by an *integer value of the curvature* of their resonators, since the number of waves of matter in the spatial resonator can only be an integer. Calculations are made in decimal terms.

The validity of the wave theory of matter is widely recognized today. At first view, the theory seems attractive, but it also has serious drawbacks: superpositions of waves are usually unstable and must decay. To solve this problem, it is enough to assume that a particle with a mass can be represented as a stable dynamic superposition of wave packets that exists *under special resonance conditions*.

This concept can be used as an applied tool for calculating the transformations "mass-energy" and "energy-mass", which will find its application in the future power engineering, and when creating new technologies of movement in space and time. Based on this concept and ideas about the quantization of space - time, the exact value of the speed of light in vacuum was calculated by me.

Readers who are not interested in calculations will not find it difficult to turn over a few pages and go straight to the experimental part. Other readers can be assured that the formulas are elementary, and the conclusions from the calculations are very useful.

To begin with, let's define the concept of "time". Consider the movement of a point along a closed trajectory. This movement takes place in a *dynamic one-dimensional* space-time line. If the line is closed, then we can talk about some resonant phenomenon, the parameter of which is the radius R. This is a process with a certain period. The curvature is here defined as $1/R$ and is denoted by the symbol ρ :

$$\rho_1=1/R \qquad [1/m] \qquad F.12$$

where R is radius, ρ_1 - classical linear curvature of the line.

Pavel Dmitrievich Uspensky's defined "time" as such a direction of movement of a line, plane or object, *which is not contained in the object [83]*. For example, the process of rectilinear motion of an entire line in space, in a direction that is not contained in it, displaces it along the surface of a dynamic two-dimensional space, for example, a plane. If this surface is not flat, has curvature and is closed, then it forms a sphere, and its cyclic resonance parameter is two-dimensional curvature:

$$\rho_2=2/R \qquad [1/m] \qquad F.13$$

Here ρ_2 is the classic concept of the curvature of a sphere used in modern geometry. In our understanding, this parameter characterizes the speed of the process of existence of a dynamic two-dimensional space, and with the cyclical nature of this process, the curvature corresponds to the repetition period of the position of the point, when it moves along the surface of the sphere.

The curvature of three-dimensional space is determined in a similar way, although this concept is not presented in textbooks of geometry:

$$\rho_3=3/R \qquad [1/m] \qquad F.14$$

Three-dimensional curvature is a parameter of the process of dynamically changing two-dimensional objects, movement that occurs in three-dimensional space. As a result of such processes, for example, the cyclically contracting and expanding surface of a sphere forms a ball - a dynamic three-dimensional object with a certain density. Obviously, the greater the three-dimensional curvature, the higher the frequency and speed of the process of compression - expansion of the sphere. In this case, in projection onto the equatorial section of the ball, we get a dynamic two-dimensional object - a circle, as a cyclic process of compressing a circle into a point and expanding it.

We can simulate all these processes in ordinary geometry, and more interesting for us is the analysis of the concept of 4-dimensional curvature.

Let me remind you once again that time, as the radius of one-dimensional space, is a direction that is outside the given space of the line. However, there is always a projection. The radius of a circle, when projected onto a circle line, gives a point. A new higher dimension for the three-dimensional world, a new direction, has a projection in our world as a given moment in time corresponding to a certain energy density.

Let me say here a few words about "dynamic multidimensional objects". The sphere of variable radius forms a "dynamic ball" as an elementary three-dimensional object. Its projection onto the plane is a "dynamic circle": the area of its projection onto the plane changes from zero (point) to some value. Based on this view, we can say that the 4-curvature of objects is created as a change of 3-dimensional structure (ball) in the next dimension.

Thus, we are ready to move on to reasoning about a dynamic four-dimensional object, although we cannot draw a four-dimensional radius of curvature of the ball (the direction of curvature of the ball), since it lies outside the three-dimensional space. The undoubted characteristic of a 4-dimensional object, from our point of view, is the isotropic synchronous movement of all points of a 3-dimensional object. This is its projection onto our usual three-dimensional space, which will look like a "dynamic ball", the volumetric energy density of which is a function of time, and changes from zero to a certain value.

Let's move on to the issue of energy conservation in this context. Let's assume that the size of objects is related to the amount of their energy. The cross section of the sphere in the equatorial region has the maximum area. The section elsewhere is smaller. Studying the properties of a sphere (three-dimensional space), but being within the framework of a flat world, we can conclude that the cross-sectional area can vary from zero to a maximum. This is true, but this does not mean that the ball itself changes its radius, because the ball can have constant parameters, but move through the plane of the two-dimensional world, creating a "dynamic circle" in projection. When its dimensions (in the area of our observation, in our space) tend to zero, this does not mean a decrease in the size of the ball itself and a change in the energy associated with it.

Similarly, let's say that we observe volumetric changes in energy density as a dynamic projection of a four-dimensional object onto our space. From our point of view, the cycle of four-dimensional movement looks like the appearance in an empty space of a three-dimensional object (ball) with a gradually increasing volume, and "the appearance of energy from the void." After reaching its maximum size, the object begins to reduce its volume to zero, while its matter and energy disappears! This contradicts our common sense, since material objects cannot arbitrarily change their physical parameters, and "energy does not appear out of nowhere and does not disappear into nowhere." We usually do not observe such processes in the familiar macrocosm, but this is possible if a four-dimensional object passes through a three-dimensional section of our space (it crosses our world like a ball crosses a flat plane).

For the world of elementary particles, represented in quantum physics as de Broglie's waves of matter, the proposed concept can be very useful. The wave theory of matter has been developed in detail, but it does not answer the question of the conservation of particle energy at the zero point of the wave process of changing the probability density function. We can say that four-dimensional dynamics (chronodynamics) makes it possible to give quantum theory more physical meaning.

So, the parameter characterizing the speed of processes in 3-dimensional objects is time, that is, their 4-dimensional curvature:

$$\rho_4=4/R \qquad [1/m] \qquad F.15$$

A change in the volumetric energy density can be considered a process that develops in three-dimensional objects simultaneously in all dimensions. This understanding of the nature of time allows us to propose some methods of creating a local tempo of the course of time. Technical means can be different, but in any case, it is necessary to change the energy density in space. For a one-dimensional space, a change in the linear energy density can be realized as a change in the electric current density. Similarly, by changing the volumetric energy density, we can create changes in the magnitude of the 4-dimensional curvature of space.

Any action (process) is described in our world by a certain curvature, which has a certain numerical value, and characterizes the rate of change in the energy density. It will be shown below that this number is an integer under resonance conditions. Hence, conclusions arise about the quantization of space and time. Hermann Weil formulated this question as follows: "At any conditions the action is just the number" - under any conditions, the action is just a number [83].

Chronal constant

Let us consider some formulas related to conclusions about the electromagnetic nature of matter particles, which allows us to consider them as Aether-dynamic processes.

In 1923, Louis de Broglie suggested that particles of matter that have mass should have wave properties. He used the formulas $E = hf$ and $E = pc$ where p is momentum, h is Planck's constant, f is vibration frequency, c is the speed of light. Then he combined both sides into one equation $hf = pc$. Since the wavelength $\lambda = c/f$, the formula takes the known form to express the wavelength of de Broglie matter

$$\lambda = h/p \qquad \text{F.16}$$

Consider another logical branch of this idea, which will lead us from this particular case to a more general version of the wave concept of matter with mass. Instead of de Broglie $E = pc$, we use formula for the rest mass energy:

$$E=mc^2 \qquad \text{F.17}$$

The energy of an electromagnetic wave of a certain frequency is described by F.18:

$$E=hf \qquad \text{F.18}$$

Due to the wave dualism of matter, we can write the following formula for energy:

$$mc^2=hf \qquad \text{F.19}$$

Hence, mass can be represented as electromagnetic oscillations

$$m=(h/c^2)f \qquad \text{F.20}$$

where h/c^2 is the new coupling constant between mass and vibration frequency.

Let's call it "chronal constant" because it shows the connection between the concepts of "mass" and "time":

$$m= (h/c^2)(1/T) \qquad \text{F.21}$$

where $T=1/f$ is period of wave oscillations.

In other words, the **product of the mass of a particle of matter and the period of energy fluctuations is a constant value:**

$$X = mT = (h/c^2) = \text{const} \quad \text{F.22}$$

The chronical constant X, which is introduced here into consideration, is the ratio of the elementary quantum of action h to the square of the speed of light c² and for all particles of matter existing in our space-time it is the same and is equal to the value

$$X = 0.73725 \cdot 10^{-50} [\text{Joule sec}^2/\text{m}^2] \quad \text{F.23}$$

Due to this, we do not notice movement in time, since all objects around us move at the same speed, and the relative speed of movement in time is equal to zero. Changes in the conditions of existence of an object in space-time means a change in its choral constant, which will be noted by an outside observer as a relative acceleration or deceleration of the process of existence of this object.

In other words, according to F.21, it makes no sense to consider the concept of "time" separately from a specific object that has mass. Once again, we note that the main objects with mass in our space-time system are our planet, neighboring planets, the Sun and objects of the Milky Way Galaxy.

Further, a few words about "Heisenberg's uncertainty." Taking into consideration the Heisenberg formula

$$h = \Delta p \Delta x \quad \text{F.24}$$

formula F.22 can be presented in a new form:

$$mT = (\Delta p \Delta x) / c^2 \quad \text{F.25}$$

Let's check the correctness of this formula:

$$[\text{kg}][\text{sec}] = ([\text{kg}][\text{m}][\text{m}][\text{sec}^2]) / ([\text{sec}][\text{m}^2]) = [\text{kg}][\text{sec}] \quad \text{F.26}$$

So, formula F.22 is a fair formula of the ratio between the mass of some object and the corresponding period of oscillations of electromagnetic energy, therefore, it is permissible to assume that the effect of the inertial mass of matter particles is the result of oscillatory processes of the electromagnetic form of energy. Our next goal is to find confirmation of this position, given the need for resonant conditions for natural oscillatory processes.

To begin with, consider a logical contradiction and show its solution.

According to F.22, an increase in the mass value corresponds to a decrease in the oscillation period. However, in the macrocosm we observe the opposite phenomenon, since the gravitational field of a massive body, for example a star, causes an increase in the oscillation period of a photon passing in the vicinity of a given body (the so-called "redshift" of the wavelength). This question is a prerequisite for the following assumption: the space of every object with mass is created as a balanced structure, similar to the pair forces in Newton's theory. The area of high-frequency electromagnetic oscillations that produce the effect of mass M in space must be compensated for by some change in the structure of space (Aether density) around the massive body M. In this case, as in other induction phenomena, a certain field (area of action of a certain force) must be created around the process that creates the effect of the mass of the body in question.

This induced compensation field is the gravitational field of a given object with some mass.

So, suppose that the mass and the gravitational field of a particle with mass are two mutually compensating processes, but they are separated in space and time: the particle's mass is localized in a certain three-dimensional region of space, and the gravitational field of this particle is localized at a certain period of time.

The gravitational field of a given particle is characterized by its oscillation period, wavelength and frequency. Due to this symmetry, the particle mass is not localized in time (it moves from the past to the future), and the gravitational field is not localized in space, it is distributed throughout the entire Universe from the field source to an infinite distance. This situation is described by the Heisenberg formula F.24.

Let us note the analogies with Belostotsky's theory, in which gravity is explained by the effects of elastic deformation of the Aether medium. Belostotsky's "compensation principle" means that the elastic deformations inside the object must correspond to the elastic deformations of the Aether medium around the object.

In order to solve the question of the "redshift" of the wavelengths of photons moving in the gravitational field of some object, for example, a planet, we assume that there are two parts of the time function: positive $t^+ > 0$ inside the mass and negative $t^- < 0$ around the mass. Something similar was suggested by Polyakov, describing the electron model in the book "Experimental gravitonics" [4].

In other words, it is a chronical version of Newton's law of action and reaction. Any body (elementary particle with mass) is considered as a set of paired processes: t^+ process (mass) for itself and t^- process (gravitational field) around itself.

So, the spectrum (wavelength) of photons passing in the region of negative time $t^- < 0$ near a body of mass m should change in the direction of increasing wavelength ("redshift"). Any object placed in the gravitational field of another object has its own plus-time $t^+ > 0$, but in the external negative $t^- < 0$ it is necessary to calculate the total rate of time Σt , as the difference between plus-time and minus-time, F.27

$$\Sigma t = t^+ + t^- \quad \text{F.27}$$

or the same in other view:

$$\Sigma t = t_m - t_g \quad \text{F.28}$$

where t_m is the positive "internal time" of an object with mass, and t_g is the negative "external" time of another object with mass. Note that the special case of zero difference $\Sigma t = 0$ means the zero state of energy oscillations, that is, the period of the process T tends to infinity, and the frequency f is zero.

Let us formulate the answer to the question posed earlier: for a photon moving in the gravitational field of a body, as well as for a body placed in the region of the gravitational field produced by another massive body, the time effect is the sum of its own positive time and the negative time of the external gravitational field. A decrease in the intrinsic rate of time, as a result of this summation, manifests itself as a decrease in the energy and frequency of oscillations, that is, as a "redshift" of the photon's wavelength. This also corresponds to a decrease in the electromagnetic mass of the photon. The mass of any body that is placed in the gravitational field of another body also decreases. It seems possible to obtain a zero or negative sum Σt as a result of the "vector summation of the course of time". This kind of situation is known as a "black hole".

So, we believe that inside a particle with a certain mass, there is an ordinary electromagnetic process going on in direct time relative to us ($t > 0$), but it is compensated (balanced) by an external process in space around this particle.

This kind of approach allows us to consider the gravitational field around a particle of matter as a region of high-frequency fluctuations in the density of electromagnetic energy. The vibration frequency can be calculated using the formula F.8

for any known value of the particle mass, for example, for a proton, this frequency is approximately $8.1 \cdot 10^{26}$ [Hz]. Note that these are longitudinal fluctuations of the energy density, longitudinal waves in the Aether.

Interesting conclusions can be obtained when considering formula F.25 for cases of different speeds of movement:

$$mT = (\Delta p \Delta x) / c^2 = (m \Delta v \Delta x) / c^2 \quad \text{F.29}$$

Let's shorten "m" and get the following formula:

$$T = (\Delta v \Delta x) / c^2 \quad \text{F.30}$$

Let's consider limit case (velocity $v = c$) to calculate wavelength λ

$$\lambda = cT = (cc \Delta x) / c^2 = \Delta x \quad \text{F.31}$$

In this case, we get an *object in a photon state: the wavelength of the object determines the size (observation space) of the object.*

Another case, the real world: objects have a speed that ranges from zero to the speed of light $0 < v < c$. In this range of velocities, we conclude that the wavelength of an object is always less than the ability to determine the position of a given object Δx

$$\lambda = (v/c) \Delta x \quad \text{F.32}$$

This means that the object has a certain space of positions, and can move between different positions, since the entire area of its positions is deterministic. This is the nature of space for material objects moving at a speed less than the speed of light.

The second limiting case, for the speed of movement of objects higher than the speed of light $v > c$. In this case the Formula F.30 can be represented as follows

$$T = (\Delta v_\tau \Delta x) / c^2 = ((c+v) \Delta x) / c^2 \quad \text{F.33}$$

or in other view as F.34

$$Tc = c/f = \lambda = ((c+v) \Delta x) / c \quad \text{F.34}$$

In this case, the *size of such an object (its wavelength) is greater than the ability to determine the position of the object*

$$\lambda = (1+v/c) \Delta x \quad \text{F.35}$$

The manifestation of objects of this kind in our real space has some analogy with potential fields, since the change in the energy density of such an object occurs instantly in the entire 3-dimensional space we observe.

Further, let us consider separately the connection between the concepts of "energy" and "time". The Heisenberg Uncertainty Principle defines Planck's constant as follows

$$h = \Delta E \Delta T \quad \text{F.36}$$

To put it simply, if the observation period T is long enough, then the energy of the system is known exactly, but if the value of T is very small, then the energy of the system is characterized by a spectrum of different levels. This kind of properties of physical

systems is demonstrated by elementary particles in quantum physics. In radio engineering, this concept manifests itself in the spectral analysis of pulses: short pulses have a wider frequency spectrum. An extremely short "delta pulse" has an infinitely wide spectrum of frequencies, and, oddly enough, an infinite amount of energy.

Further, from the formula for the energy of electromagnetic oscillations, where T is the oscillation period, F.37

$$E=hf=h/T \quad \text{F.37}$$

substitution of the value h from F.36, we obtain the formula F38

$$E=(\Delta E \Delta T)/T \quad \text{F.38}$$

Next, we can move on to the following form of expressing the Heisenberg uncertainty relation

$$(\Delta E/E)=(T/\Delta T) \quad \text{F.39}$$

Here we see the *asymmetry of the concepts of energy and time*.

Time and energy are not the same things, but they are interrelated relative concepts.

According to F.39, an increase in the relative observation period of an object (the ratio $T/\Delta T$ increases) corresponds to a decrease in its relative energy (the ratio $\Delta E/E$ also increases). We can say that the longer the observation time (lifetime of an object), the less its energy. On the other hand, this conclusion is consistent with the previously made proposal to consider the process of a decrease in the energy density in our near-Earth space as a natural direction of the course of time.

Four-dimensional resonance

Let's move on to the consideration of the mathematical facts discovered by me in 1992, proving the existence of resonant conditions for the existence of natural material objects, and the fractality of the universe.

Before proceeding to the calculations, let us assume that the theory of the similarity of the microcosm and the macrocosm is valid, and for the planets, in a sense, the formulas for calculating the parameters of elementary particles can be applied. A similar method, for other purposes, was used by Professor Kirill Pavlovich Butusov to calculate the orbits of the planets of the solar system. He showed that the planets are located in certain places corresponding to "ring orbital resonances." [42]. This situation is similar to discrete energy levels of elementary particles of matter.

So, let's substitute in the formula for the wavelength of matter, F.40, the parameters of our planet:

$$\lambda =h/(mv) \quad \text{F.40}$$

Here h is Planck's constant, m is the mass of the planet, and v is the speed of the planet. When calculating, we get the following value for the wavelength of the planet

$$\lambda= 3,725 \cdot 10^{-63} \text{ [m]} \quad \text{F.41}$$

Further, assuming that for a 4-dimensional space, the summation factor over measurements is equal to 4, we obtain the following formulas

$$E_3=m_3 c^2=9m_3 \quad \text{F.42}$$

$$E_4=m_4 c^2=16m_4 \quad \text{F.43}$$

where m_3 is the mass in the 3-dimensional description and m_4 is the mass in the 4-dimensional description.

The "summation factor" in the formula F.42 is understood not just the speed of propagation of electromagnetic waves in space, approximated to value 3. This coefficient reflects the structure of space, which determines the process of propagation of photons and its speed, therefore in the formula F.43 for four dimensions we take it equal to 4.

It is important to note that we assume the total energy of the system to be constant, regardless of descriptions of different dimensions. This means that the same amount of energy, but in a different form, must be considered in a 3-D and 4-D description of the same physical system. In other words, the total energy of the object must be the same, regardless of the dimension of the description used by the observer.

Therefore, we must take into account

$$E_1=E_2=E_3=E_4=\dots \quad \text{F.44}$$

In our case it is F.45

$$9m_3=16m_4 \quad \text{F.45}$$

From F.40, we can get formula of mass

$$m=h/(\lambda v) \quad \text{F.46}$$

then we can get F.47

$$(16h)/(\lambda_4 v) = (9h)/(\lambda_3 v) \quad \text{F.47}$$

where λ_4 is the wavelength in the 4-dimensional description of space and λ_3 is the wavelength in the 3-dimensional description of space. Since one and the same physical system is considered, the magnitude of its speed of movement is the same. We get a simple ratio:

$$\lambda_4=(16/9) \lambda_3 \quad \text{F.48}$$

Substituting the quantity λ_3 from the formula F.41 into F.48, we obtain the following value

$$\lambda_4=66.22 \cdot 10^{-64} \quad [\text{m}] \quad \text{F.49}$$

It correspond to 4-D curvature

$$\rho_4=1/\lambda_4=151.00 \cdot 10^{60} \quad [1/\text{m}] \quad \text{F.50}$$

Note that it is an integer value, with great precision. This is a whole number of waves in the resonator of the space of a given planet.

On the other hand, the calculation for a planet is possible based on its motion characteristics. The known period of rotation of the planet around the Sun is 31557600 seconds, which corresponds to a certain value of the oscillation frequency

$$F=1/T=3.168861 \cdot 10^{-8} \quad [1/\text{s}] \quad \text{F.51}$$

Let's calculate electromagnetic wave length for this frequency

$$\lambda_{em}=c/f=9.46\dots 10^{16} [\text{m}] \quad \text{F.52}$$

and reversed value, i.e. the curvature of this wave length

$$\rho_{em}=1/\lambda_{em}=1057.00\cdot 10^{-20} \text{ [1/m]} \quad \text{F.53}$$

We also note the connection between the two results obtained in F.50 and F.53

$$\rho_{em}/\rho_4=7\cdot 10^{-80} \quad \text{F.54}$$

The mathematical connection between the results of two different descriptions of the same natural object (our planet) confirms the assumptions about the resonant conditions for the existence of this material object. The curvature of its space is equal to an *integer number of waves, when measured in the SI system*. We will show later why these calculations make sense in SI. This law is valid for any natural objects, which we will show further on other examples.

The so-called Bohr radius $R = 0.52917 \text{ \AA}$ is known, for which we can find the circumference L and the corresponding curvature

$$L=2\pi R=3.32318\dots \quad \text{F.55}$$

so the curvature is

$$\rho=1/L=3.0075\cdot 10^9 \text{ [1/m]} \quad \text{F.56}$$

Since the object is three-dimensional, we divide this value by 3, and find the linear curvature of the Bohr atom, which is 1, with great accuracy

$$\rho_1=\rho_3/3=1.0025 \cdot 10^9 \text{ [1/m]} \quad \text{F.57}$$

This seems to be the correct result, since the simplest atom, an element of matter of unit curvature, is considered here. A certain deviation of 1.0025 shows an imperfect resonant state in real material objects, or the inaccuracy of our concepts of measurement standards for lengths and time intervals, in the SI system.

Another example: the spacetime of the proton. In order to calculate the proton wavelength, we use the formula F.58

$$m = (h/c^2)f=(h/c^2)(c/\lambda)=h/(c\lambda) \quad \text{F.58}$$

the same in other view

$$\lambda=h/(mc) \quad \text{F.59}$$

Knowing the mass of the proton $m = 1.6726231\dots \cdot 10^{-27} \text{ (kg)}$, taking Planck's constant equal to $h = 6.6260755 \cdot 10^{-34} \text{ (J}\cdot\text{s)}$, we obtain the wavelength (without taking into account the mathematical degree)

$$\lambda = 132141 \quad \text{F.60}$$

It is also an integer number, with great accuracy, which characterizes the proton as a resonant process of the existence of waves of matter (waves of density of the Aether). This wave number is known, it corresponds to the "Compton" wavelength. It is surprising that little attention is paid to this fact, but the integer value of the wavelength of the matter of an elementary particle, when calculated in the SI system, means evidence of the fractality of the universe.

Another important example of calculating the resonance conditions for the existence of elements of matter is the DNA molecule. The expanded period of its spiral is 71.4417 (Å), which corresponds to the value of the curvature

$$\rho_{dna} = 1/\lambda = 13999\dots \cdot 10^7 = 14\cdot 10^7 \text{ [1/m]} \quad \text{F.61}$$

We can say that this is a very good resonator, since the curvature of the space of the DNA molecule is an integer number, accurate to the 3rd decimal place. This accuracy is the basis for the assumption about the resonant mechanism of energy conversion, and the transfer of information at the molecular level in biological systems.

Note that, in this case, we consider volumetric pulsations of energy in space, while the entire 3-dimensional space changes at the moment of its contraction or expansion, corresponding to changes in the density of its energy.

Therefore, the spatial orientation of the DNA helix as a "receiver of information" does not matter. DNA molecules are known to be "rolled into a ball" in their usual state. The information signal, in this case, is the change in the volumetric energy density in space.

Next, let's make some calculations to analyze the magnitude of the relative displacement of the branches of the DNA helix.

It is known that two branches have a period of 34 Å and a displacement of 23.8 Å. In other words, the "backward wave" is displaced relative to the "forward wave" by 0.7 wave period, which is 50 Å and corresponds to the curvature

$$\rho_2 = 2 \cdot 10^8 \quad [1/m] \quad \text{F.62}$$

Since DNA is two-dimensional object we can get linear curvature

$$\rho_1 = 1 \cdot 10^8 \quad [1/m] \quad \text{F.63}$$

So, we can say that the *branches of the DNA molecule are shifted by one value from the zero state, in which both branches are combined in space.* In this case, the code structure of each of the branches is oppositely directed with respect to each other.

This interesting analogy with the world of elementary particles emphasizes the role of the DNA molecule as an element and fundamental principle of biological systems. Its dimensions, when calculated in the SI system, show the relationship between the structure of the molecule and the dimensions of the planet. *Think about it, could this fact be accidental fact?*

Most likely, here we are dealing with resonant processes that provide the elements of living matter with optimal conditions for existence in the space-time of our planet. It is possible that this is not a resonance and not an accidental coincidence. This fact may be evidence that the *DNA molecules of all living things were designed*, and when they were designed, the dimensions of the planet and the decimal system of calculations were taken as a basis. By the way, there are ten nucleotides in one turn of the helix of the DNA molecule.

I would be happy to discuss this issue with theologians as evidence of the Creation of life, but not of the accidental appearance of life on the planet.

Let us consider separately the aspects of information transmission technology when creating multidimensional waves, and the important concept of "four-dimensional hologram".

Four-dimensional hologram

The works of P. Gariaev on the irradiation of DNA molecules with longitudinal waves of the Aether medium, non-Hertzian electromagnetic waves [67], show that there is an analogy between the methods of creating and reproducing holographic information and methods of creating and reproducing genetic information. Let us briefly consider this

issue and introduce the concept of a "four-dimensional hologram". This concept is the original term by author of this book.

In conventional holography, information is recorded in the thickness of a photographic emulsion of a plate, namely, in the form of interference layers created by waves coming from various points of an object when it is scanned by a laser beam during the recording of a hologram. The thickness of the emulsion should have a certain minimum value for high-quality recording of the interference pattern.

Similarly, in 4-dimensional holography, information can be recorded on the Aether at a time interval that cannot be less than a certain amount. This minimum value of the time interval is related to Planck's constant.

Further, when reproducing an image from a three-dimensional hologram, each point of the emulsion layer gives a complete image of the object, since the light beam penetrates into the thickness of the emulsion, and is refracted at different angles, at different points of the interference pattern. The plate on which the three-dimensional hologram is recorded can be broken into pieces, but each of them will give a complete image of the object, if the emulsion is preserved to the entire depth, and the size of the "fragment" surface area is not less than necessary for the light beam to pass through its thickness. at a certain angle.

Similarly, to record and reproduce a 4-dimensional hologram, it is sufficient to work with one point of three-dimensional space (Aether medium), but a minimum interval of its existence is required, in which, as in the thickness of an emulsion, a picture of events occurring at a given point is recorded.

Of course, technical methods of reproducing information from a 4-dimensional hologram differ from the methods of working with a 3-dimensional hologram, and instead of the image of an object, as an idea of its three-dimensional shape in space, we will receive an image of events or processes as a reflection of changes in energy density over time (four-dimensional image). In the proposed concept, it is also permissible to obtain information not only about the past, but also about future irreversible processes of material objects.

Understanding that the processes in the Aether create not only force effects, but are multidimensional energy-informational processes, makes it possible to develop biomedical technologies, which we have previously considered on the examples of the works of Gurvich, Jiang and others.

So, for the fundamental elements of the universe (particles of matter, DNA molecules and the planet itself), their sizes, when calculated in the SI system, as wave numbers, are integer numbers. This is the wavenumber, which indicates the number of waves in the resonator, and it is always an integer. In radio engineering, the wavenumber is measured in "reversed meters", as the curvature of the resonator, that is, the reverse of the resonator radius. This is the condition of resonance, under which particles of matter and other elements of nature exist, as wave processes in the Aether medium.

The search for facts confirming the validity of this concept led to the establishment of a connection between the space curvatures of natural objects, for example, a proton or other elementary particles, with the curvature of the planet's space. In the previous chapter of the book, it was shown that the curvature of these objects (with great precision) is an integer, using the SI system and decimal calculus. These facts are explained by the fact that this measurement system uses the concept of "meter", which was introduced into practice by the French Academy of Sciences in 1795, as one ten-millionth part of the section of the earth's meridian from the North Pole to the equator. Consequently, this calculation technique is workable only when using this metric

system, since it is not a mathematical abstraction, but connects the calculations in the SI system with the real dimensions of the planet. The planet, in turn, is a global resonator of Aether processes, and its physical parameters are not random. All natural particles of matter exist in a stable form, like resonant processes in the Aether.

So, the essence of the concept of four-dimensional resonances is that the particles of matter of each specific planet are resonant vortex processes of the Aether, and the characteristics of these processes depend on the parameters of the space-time of this planet. The idea is not new, but the calculation method is shown here for the first time.

The practical value of the new approach lies in the possibility of calculating the resonant conditions for the existence of elements of living and inorganic matter on a particular planet, which is of particular importance for space projects and experiments on changing the density of the Aether, the speed of time and control of gravity.

The development of the concept of four-dimensional curvature allows us to understand the physical meaning of time, and to develop a theory of four-dimensional resonators, as special conditions in which vortex processes in the Aether lead to the emergence of stable particles of matter. The study of the theory of four-dimensional resonators opens the way to the creation of controlled teleportation, as well as the transformation (transmutation) of the elements of matter.

Based on the proposed concept, *we can substantiate the quantization of the action according to Planck. Apparently, in nature there is objectively a minimum time interval (period), which is determined by the energy parameters of each specific process that creates a certain space*, for example, the space of a planet, an atom or a DNA molecule.

Separately, it is proposed to calculate the exact value of the speed of light, which, according to the author, is an integer number. The reason why the speed of light in a vacuum must be an integer number is in the assumption of the mechanism of propagation of electromagnetic disturbance in space, following from the model of quantized space-time. The speed of light, in this concept, has the meaning of the number of units of space (meters or multiples) traversed by the front of the wave per unit of time. So, it is always is integer number.

Calculation of the speed of light

Light, that is, waves of disturbance of the medium, the so-called "photons", propagates in the medium at a speed that depends on the electromagnetic properties of the given medium. An analogue is the speed of propagation of sound waves in matter. We consider here space without material objects, that is, pure Aether, the physical vacuum. In past the Aether was called "luminiferous medium" and we believe its physical properties to be more or less constant in our near-earth space, although many authors have studied seasonal changes in Aether properties, and considered ways of influencing the physical parameters of the Aether medium using technical means and biological processes.

So, assuming that the natural structure of space and time is discrete, we conclude that the speed of light should be expressed as an integer number. Let us prove this by calculations.

Let's return to the formula for calculating the Compton wavelength of de Broglie matter for the proton, formula F.64

$$\lambda = h/mc \qquad \text{F.64.}$$

Substituting the value of the proton mass and Planck's constant, we obtain the known value $\lambda = 132141$ units of space (with great accuracy).

Suppose that in the concept of discrete space and time, we have every reason to round the value of λ to the integer number, that is, to use the value $\lambda = 132141$ units of space in the calculations.

Note that this number is divisible by 3

$$\lambda = 132141 / 3 = 44047 \quad \text{F.65}$$

This mathematical fact gives reason to assume the presence of the internal structure of the proton (three elements).

It really makes sense to consider the value of Planck's constant as an integer number. The essence of this constant lies in the ratio of the magnitude of the energy and the frequency of oscillations, and it cannot have a fractional number of oscillations if we consider resonance conditions.

For this reason, we take the value of Planck's constant equal to exactly $6.6260755 \cdot 10^{-34}$ (J·s). We take the proton mass equal to $1.6726231 \cdot 10^{-27}$ (kg). Further, assuming that the formula F.64. is the ratio between integers, we get the output of the value of the speed of light, which is also an integer. As a result of calculations by the formula F.66, we get the exact value of the speed of propagation of a photon in discrete space-time.

$$c = h / m\lambda \quad \text{F.66.}$$

The speed of light is 299792456413177104388 units of space per unit of time. This value is obtained with great accuracy from the ratio of the other three whole values, which is unlikely if it is not a reflection of the actual situation.

Note that this number can be reduced by 4, and get the speed value equal to 74948114103294276097 units of space per unit of time. Perhaps this is due to the fact that 1 meter was introduced as 10^{-7} distances from the equator to the pole. In this case, it is convenient to consider a 4-meter segment as a unit of space, as 10^{-7} of the full circumference of the planet, that is, the resonant wavelength of our planet.

At present, the speed of light is assumed to be exactly 299792458 (m / s) and this is due to the fact that the unit of measurement of length 1 meter is taken as the distance that a ray of light travels in a vacuum in $1/299792458$ of a second. This method is fundamentally different from the natural, and from the physical meaning of the SI measurement system itself, which was rigidly tied to the real parameters of the planet.

Let me remind you that even Galileo introduced the concept of "1 meter" as the length of a pendulum with a swing half-period of 1 second. This standard was not very accurate, since it depended on the latitude of the terrain on the planet, but it had a clear physical meaning, linking the units of measurement of space and units of measurement of time. The fact that time (the period of oscillation of the pendulum) depends on the latitude of the area gives rise to thinking about the impossibility of fixing the standards of space and time, their local nature and dependence on the parameters of the Aether medium.

The applied value of the proposed correction to the value of the speed of light lies in the fact that it becomes possible to accurately calculate many parameters used in the study of the processes of the microworld, as well as astrophysical processes. However, if

we arbitrarily enter the standards of length (meter) and time intervals (seconds), then the value of the speed of propagation of a photon in the Aether medium ceases to have the meaning of "discrete steps".

We have already noted that this issue relates to the structure of multidimensional space, and the speed in formulas F.42 and F.43 is the summation coefficient. Theoretically, the speed of propagation of electromagnetic waves in our space should be equal to exactly three units of space per unit of time, according to the formula F.14 for three-dimensional curvature. It would be useful to introduce a normalization factor, approximately it is 1.0007 and recalculates all basic physical quantities, starting with units of measurement for distances and time intervals.

The main conclusion from calculations of the speed of light is new understanding *of space-time as a single continuum consisting of quanta*. Photons propagate in space-time in discrete "steps" from one element of space-time to another.

At this point, I propose to finish with the computational part, and proceed to the description of experiments to control the rate of existence of matter.

The Time Machine

The title of this chapter of the book does not relate to the topic of the travels of people in time to past or to future. We are not doing science fiction. Our experiments have shown a real possibility of changing the speed of time in a small area of space.

This chapter uses the materials of my report at the conference "Time Machine" on April 12, 2003 Moscow, conference hall of the KOSMOS hotel.

Previously, cases of the use of passive reflectors, concentrators, swirlers, cavity structures, etc. have been considered. devices that create changes in the state of the Aether environment. These methods are the same primitive methods of controlling the parameters of the Aether medium, as sailing technologies, in comparison with the power plants of modern ocean ships.

Electromagnetic phenomena, which are well studied and widely used in practice, can be rethought from the standpoint of Aether dynamics if we look for ways to actively influence the parameters of the Aether medium.

Such attempts were made in due time by V.A. Chernobrov, Moscow. The theory of Chernobrov and his experiments are considered in the article "The first results of work on the creation of devices that control the characteristics of physical processes (Time) [84].

In order to conduct experiments on the effect on physical Time, the main method of such an effect was chosen by him devices capable of creating *converging waves* that can lead to the emergence of a quasi-monopole inside a limited volume of space. By quasi-monopole, Chernobrov means a part of space that has some characteristics of a hypothetical single monopole, or a bunch of such particles. In particular, instruments located outside a given area must detect only one magnetic pole, on all sides, at some distance from it.

Note that in the Chernobrov concept, the type of "converging waves" is not specified, and the task is to create a dynamic structure of the magnetic "quasi-monopole". Chernobrov writes: "As shown by preliminary experiments, it is very difficult (if not impossible) to create a long-lived quasi-monopole (volume with one external and one internal magnetic pole) by means of permanent magnets or by means of

electromagnets operating on direct currents. This is due to the fact that the lines of force of the "inner pole" invariably find a weak point in the non-uniform surface of the magnets, and break out; As a result, in addition to one "external" magnetic pole, a local exit of the magnetic lines of the "internal" pole appears on the installation.

In this regard, the task was to create a quasi-monopole situation within a limited volume of space, moreover, not constantly, but for a short time, using the pulsation method. The frequency of operation of electromagnetic emitters (vibrators) was selected primarily based on the linear dimensions of the installations. The selection of the frequency was made in such a way that one period of the pulsation did not exceed the time it took for the electromagnetic waves to reach the center and opposite walls of the installation.

I believe that the high-frequency pulse mode, in experiments by the method of V.A. Chernobrov is necessary so that the emitters do not interfere with each other to create in the center "an antinode or a node of waves", that is, an area of compression or discharge of energy density. In terms of the magnetic component, which is measurable with conventional instruments, we will see a single pole magnet.

Chernobrov reported in 2003: "Installations using electromagnetic (solenoid) vibrators connected in series and in parallel turned out to be the simplest in execution (Note: located on the spherical surface of the body). In various experiments, from 3 to 5 such surfaces were used, called electromagnetic working surfaces (EWS). All EWS layers of various diameters were mounted sequentially in each other (like a nesting doll). The outer layer was either attached to the power shell, or at the same time itself was such a shell. The size of the maximum EWS in the first installation was about 0.9 m, the diameter of the minimum (internal) EWS was 115 mm, which turned out to be sufficient for placing the control sensors of experimental animals inside, on which the effects of the effects of converging spherical electromagnetic waves were checked ... Volume of the payload compartment ... located in the center of symmetry of the device, in all the first device (except for the 7th model) did not yet exceed the volume of a soccer ball. The maximum size is the installation with an outer diameter of 2.1 m and an internal payload compartment of 1 m, which allows experiments to be made directly with human participation. "

Measuring instruments, in the experiments of Chernobrov, were "all types of electronic, quartz, mechanical, as well as several specially made duplicated quartz generators (in which the readings of the frequencies of the measuring and reference spaced heat-insulated generators were compared). In some of the experiments, light-guide diodes were used (in which the change in the speed of passage of a light beam of a given section of the light guide was recorded), as well as other methods. Before and after the experiment (less often and during the experiment), the readings of the measuring clock were periodically compared with the reference clock and the exact time signals on the radio. "

Obviously, in such a scheme, electromagnetic emitters had a side effect on some types of measuring devices, for example, on quartz watches, however, duplication of measurement methods made it possible to significantly reduce the measurement error...

The results of experiments reported by V.A. Chernobrov were assessed by him as follows: "The rate of change in the speed of the current of Time (Professor NA Kozyrev called it the density of Time t/t_0) was on the order of fractions of a second in the reference earth hour. If we take our usual earthly "reference" Time as $t_0 = + 1$, it will become clear that in these experiments the range of the speed of Time is being studied so far $+0.99 < t/t_0 < +1.01$ ".

In other words, these are changes in the natural course of time at the level of 1%. This does not mean that some objects were sent to the future or the past ... Chernobrov clarifies: "Consequently, objects and animals placed inside the installation, in any mode of its operation (slowing down or accelerating), in any case moved to the Future (with "positive" speed) but slower or faster than others."

We have already discussed the "compensation effect", in which elastic deformations of the Aether medium inside the "time machine" should produce reverse deformations of the Aether medium outside the "time machine". Chernobrov also writes about such an effect: "The Time Difference (the gradient of the speed of Time, or simply the curvature of the Space-Time field) was observed not only inside the device, although, of course, the maximum value of the changed Time was set inside the smallest "nesting doll". During the experiments, as expected, the change in Time was recorded outside the device, and such a change with the opposite sign was about an order of magnitude lower than the internal one (quite in accordance with geometric laws - inversely proportional to the cube of the distance). In other words, device affects not only its interior, not only the payload, but also the environment. It is very reminiscent of the reactive method of movement, only not in Space, but in Time. It is similar to reactive jet flight by throwing back not mass, but Time. "

An interesting function of the decrease of the effect from the outside, found by Chernobrov, *"inversely proportional to the cube of distance"*, suggests the dynamics of a change in some quantity in the volume of space, that is, a *function of change in the volumetric energy density*.

A valuable remark made by Chernobrov on the difference between the processes of "accelerating time" from the processes of "braking time", the dependence of the effect on the time of day and vibrations, allow us to draw an analogy with the conclusions of Kozyrev, Veinik and Mishin. These analogies show the Aether-dynamic nature of these processes.

Chernobrov writes: "In the experiments it was found that the processes of slowing down and accelerating Time differ sharply in their nature and consequences. Thus, the deceleration was much smoother and more stable; during acceleration, sharp jumps in the readings were observed; the course of this regime was characterized by general instability and dependence on any (or many) external factors. In particular, the instability of acceleration consisted in the fact that, at a fixed power, the value of the speed of Time depended on the time of day and the location of the moon, possibly on other reasons, including the presence of an operator or strangers nearby. Even a small external influence, for example, mechanical shaking, led to a change in the speed value, which sometimes turned out to be significant. Inside the laboratory facilities it was also recorded that Time can change with some inertia. After the impact of the changed speed of Time on any physical object (soil, for example), residual phenomena are noted on it for some time, which can only be removed by the impact of a different speed of Time. "

This remark fully agrees with the assumptions that the natural course of time corresponds to a global decrease in the energy density. This assumption was made earlier, based on the fact that interstellar space is expanding in our arm of the Milky Way Galaxy. Hence, in order to accelerate the process of existence of matter, it is necessary to further reduce the density of the Aether. These are two coordinated processes, the effect is added, and as a result of external random influences, additional transitions between discrete energy levels can occur. On the other hand, when trying to slow down the process of the existence of matter, it is necessary to artificially "condense" the Aether, to create an area of compression of the elastic Aether medium. This process is directed against the natural decrease in the energy density of the medium, which leads to the subtraction of effects. In such a situation, accidental impacts are less significant.

Consider the experiments that were organized on this topic by Faraday Lab Ltd. company in 2003. In a joint project with Vadim A. Chernobrov, we built and tested an experimental device, made measurements, filed a patent application, and proposed new methods for the technical implementation of this idea.

The invention that we have proposed relates to methods and devices for controlling the rate of various physical processes, including the very process of the existence of matter in space-time. Of course, this invention has useful applications in practice, which we will discuss later.

We have filed an application for "Method and device for controlling the temporal characteristics of physical processes by changing the energy density of space", No. 2003110067 dated April 09, 2003. Co-authors Frolov A.V. and Chernobrov V.A.

Let's consider the history of this invention.



Fig. 127. Chernobrov V.A. and Frolov A.V. at the conference "Time Machine" 2003.

Previously, various methods and devices have been proposed for influencing the rate of physical and chemical reactions, biological processes, or the period of oscillation of a system. In the works of N.A. Kozyrev describes experiments on the influence of one process, for example, evaporation or crystallization of a substance, on the period of another process, which is a sensor and is compared with a reference oscillatory process. In one case, in the area of space near the process of evaporation of the substance, the rate of oscillation of the sensor decreases. In another case, near the process of crystallization of the substance, the rate of oscillation of the sensor increases.

Using the term "entropy", we can say that processes of increase in entropy, for example, the transition of a substance from a solid state to a liquid, create such an influence on matter (surrounding processes) around itself that the entropy of systems decreases. In the opposite case, for example, next to the crystallization process, the entropy of systems in the area of space around this process increases.

Kozyrev introduced the term "time density wave" and concluded that, in addition to such a characteristic as "directionality," time has active properties, for example, density of time. The development of this approach for applied purposes requires a deep analysis of the physical meaning of the concept of "time density". The connection between the direction of time and the entropy of the system was shown in the works of Ilya Prigogine "Introduction to the thermodynamics of irreversible processes", 1964 [85].

Sakharov's work "Quantum fluctuations of vacuum in curved space and the theory of gravity" [86] proposed the concept of the structure of the vacuum.

Harold Puthoff's work "Can a vacuum be designed for applied problems in astronautics?" Is widely known in the USA. [87], in which he considered the applied aspects of studying the structure of vacuum, and described a method and device for obtaining a driving force by changing the properties of a vacuum.

The substance concept of time and methods of creating energy density waves were also considered in the work "Time is a physical substance" by Professor K.P. Butusov, 1991 [88]. In the book by Belostotsky Yu. G. "What is time?" [60] we can see the connection between the concepts of time and Aether, which was considered in this book in the astrophysical sense. It can be said that the modern concept of Aether is successfully developed in the works of V.A. Atsukovsky [89].

In other articles, in particular, in my 2002 publication "Physical principles of a time machine" [90], it was shown that for the practical development of experimental work in this area, it is advisable to clarify the terminology, and to consider "time density waves" as longitudinal density waves energy in space. In this case, the concept of "time density" has the physical meaning of energy density (density of the Aether medium).

This approach is practically implemented by electrical and radio engineering methods and is a development of Faraday's Aether-dynamic concept of the nature of electricity and magnetism (see volume 3 of Faraday's works "Experimental Studies on Electricity" [91]. Considering an ordinary bipolar magnet from the point of view of Aether dynamics, we can say that it represents the source and drain of the Aether, that is, a balanced energy system that does not change the energy density in space. In this case, it is obvious that the creation of a magnetic monopole, or the simulation of a quasi-monopole by electrodynamic methods, is the technical basis for obtaining a local change in the energy density in space.

In addition to magnetic phenomena, electrical processes can be used, for example, the issue of creating a longitudinal wave was also considered in another work of Professor Butusov "Symmetrization of the Maxwell-Lorentz equations" [41], in which he showed that an *electrically charged sphere can emit a longitudinal wave*, when a change in the radius of the sphere, that is, its surface, while maintaining the magnitude of the electric charge located on this surface.

This method is one of the options for implementing the technology, the essence of which is to change the energy density. Changing the size of the surface, while maintaining the amount of charge, creates a change in the charge density per unit surface. The surrounding Aether medium is forced to compensate for this change, and a longitudinal wave is created in it. However, as Professor Butusov has shown, it is possible to create longitudinal waves without electromagnetic methods, by changing the volume density of any substance.

In this regard, it makes sense to recall the method described by Polyakov in the book "Experimental gravitonics" [4]. Polyakov considers the issue of the generation of gravitational waves during high-frequency magnetization reversal of a ferromagnetic, that is, during volumetric magnetostriction of a substance. Since, with this phenomenon, the density of the substance changes, that is, the energy density in the space occupied by the substance, then volumetric magnetostriction is a special case of a change in the energy density. *Likewise, longitudinal waves can be created by modulating the density of any substance, including gases and plasma.*

Let us consider the essence and technical capabilities of the scheme proposed by Vadim Aleksandrovich Chernobrov in the book [92]. He described a method and device for controlling the temporal characteristics of physical and chemical processes by creating a model of a magnetic monopole (quasi-monopole), in which a converging wave is formed from several sources located on a spherical body. In accordance with this method, in a multilayer spherical structure, where each of the layers (the so-called "electromagnetic working surface") is a set of electromagnets, a wave is created by successive switching on of the layers, converging to the center of the device. The device, according to Chernobrov's scheme, has one magnetic pole on the outside and another magnetic pole on the inside, thus simulating a macroscopic magnetic monopole. We believe that under the condition of in-phase operation of all wave sources, the interference of longitudinal waves provides some change in the value of the energy density of space at the focus of the system.

Experimental facts are that sensors located in the center of the device, for example, mechanical or electromagnetic oscillators show the change in the period of natural oscillations. We provided shielding of sensors from thermal and other electromagnetic influences. Thus, it can be argued that the sensors slow down or speed up their oscillation period depending on the generated energy density at the center of the device.

However, experiments with this device require careful tuning of all wave sources to ensure their in-phase operation. In this case, the stability of the entire system depends on the stability of the operation of each of the wave sources. Increasing the pulse frequency leads to an increase in the effect, but it is limited by the parameters of the electromagnets and the pulse generator. In addition, to increase the effect, more powerful power sources are needed, since the current in the windings of the electromagnets determines the magnitude of the magnetic field of the generated quasi-monopole.

Since the efficiency of such systems directly depends on the frequency and magnitude of changes in the energy density in space, we propose in the next version of the implementation of this device to use plasma shells instead of electromagnetic working surfaces, which will significantly increase the specific characteristics of the device. Let's consider the basic technical principles of work, and outline the ways of development of this method. Let's move on to the pictures. Fig. 128 shows a diagram of the main element that is a "three-turn electromagnetic emitter", proposed by V.A. Chernobrov.

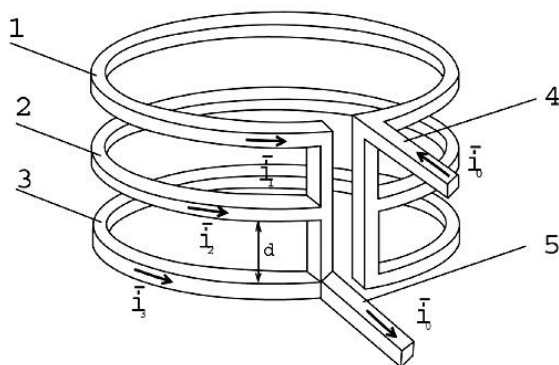


Fig. 128. Chernobrov's three-turn emitter.

It would be more correct to say that it is a "vibrator", since its work produces such vibrations of the Aether medium, in which directional radiation of a wave of energy density along its axis is created.

This structural element was developed according to the idea of Vadim A. Chernobrov. He did not consider this technology as changes of density of the Aether medium. In his opinion, this element is a "magnetic quasi-monopole".

From another point of view, a three-turn "vibrator" is designed to create a directional wave of energy density, which is formed in the Aether medium due to the use of a *phase shift* in the propagation of the front of a current pulse, sequentially passing through three sections of current i_1 , i_2 , i_3 , which are displaced along the axis of the electromagnet by some distance d .

The device works as follows. When the pulse generator is turned on, the front of the current pulse i_0 appears at pin 4. Due to the spatial displacement of current sections 1, 2, and 3 relative to each other along the electromagnet axis by a distance d , the pulse front in section 1 leads the pulse front in section 2, which, in turn, advances the pulse front in section 3 for some time T . Second the output of the electromagnet 5 is located in such a way that the front of the pulse in section 1 will lag behind the front of the pulse in section 2, which also lags behind the front of the pulse in section 3 for the same time T , therefore, a single front of the pulse is formed in section 5 again.

The delay time of the propagation of the front of the pulse T depends on the distance d . At each current pulse, the value of T (relative delay of the pulse front) remains unchanged. Thus, with each pulse, a successive excitation of the electromagnet layers with a very high frequency is created.

An example of calculating the frequency: for the displacement of the turns of the radiator coil (Fig. 128) equal to $d = 7\text{mm}$, the frequency will be approximately $4.28 \cdot 10^{10}$ (Hertz).

This design of a three-layer electromagnetic emitter allows you to create longitudinal waves of the ultra-high frequency, for example, the millimeter range, without the use of semiconductor and other radio engineering elements. It is important to keep all the emitters in phase, which is an almost impossible task. The power wires that supply current to each radiator must be the same length from the point of connection to the pulse generator. During the manufacture of the experimental design, consisting of 12 "vibrators of the Aether medium", it was not possible to completely solve the problem of in-phase, and several other methods were found that did not use many separate emitters.

However, the problem of synchronizing several emitters is known in radio engineering. To solve it, when designing phased microwave antenna arrays, controlled phase shifters are used. Each of the waveguides is adjusted using a phase shifter so that the phases of all waves coming from individual emitters coincide at the focal point.

In Fig. 129 shows a spherical arrangement of emitters on the upper and lower hemispheres of the housing, which can be opened to accommodate sensors and various objects inside it. We used a plastic case, which was additionally shielded with several layers of aluminum foil. Subsequently, the principle of "nesting dolls" was applied, and a second spherical surface was added, strengthening the quasi-monopole, Fig. 129.

Two spherical layers, with the synchronous operation of all emitters, should create a more powerful effect of "converging electromagnetic wave", as Chernobrov wrote.

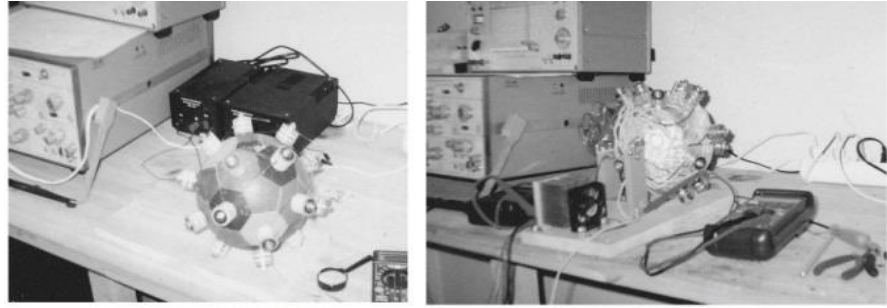
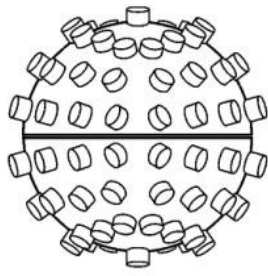


Fig. 129. Spherical body and emitters in the Frolov's laboratory, 2003.

In other words, this method provides a stronger local change in the Aether density in the central region of the spherical shells. Note that before our joint work, Chernobrov V.A. did not consider Aether dynamics as the reasons for the observed effects. Understanding the Aether nature of chronal effects gives great prospects for the development of technology for controlling the properties of space-time, both in order to create a driving force, and in other aspects.

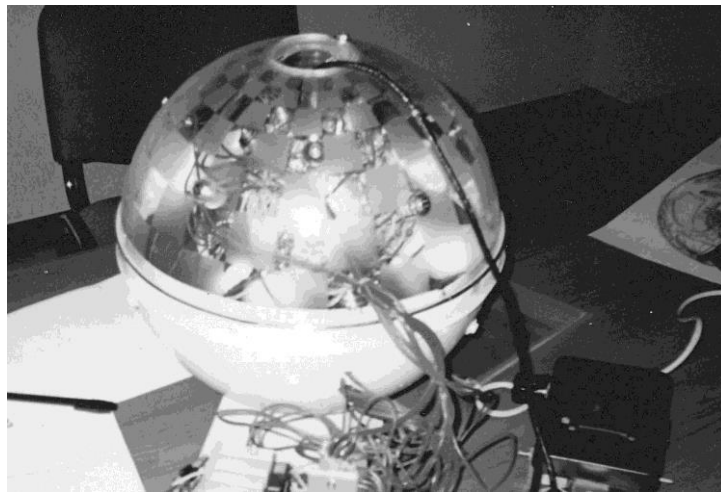


Fig. 130. Two-layer device. Photo from the conference "Time Machine" 2003.

Note that the development of the project in the team of V.A. Chernobrov actively continued until his death; members of his COSMOPOISK group participated in the experiments. Fig. 131 shows a large structure, the dimensions of which allow a person to be located inside it. A man in a protective spacesuit is standing next to the experimental setup in the photograph. The authority of V.A. Chernobrov, in this area of research, is beyond doubt.



Fig. 131. One of devices made by Vadim A. Chernobrov

We met with Vadim Chernobrov in 1996, at a conference in St. Petersburg, and this led to the start of a program of many years of research, design and testing. The reader can read about the results of these experiments in the books of V.A. Chernobrov. Unfortunately, funding for this program by Faraday Lab Ltd. was limited, and we implemented it to a minimum version. It makes sense to propose ways of developing this technology, and new design solutions. Perhaps this information will be interesting for future investors.

The practical application of this technology, as a method of influencing the properties of various materials, the rate of physical and biological processes, as well as chemical reactions, includes the possibility of deactivation of radioactivity wastes and objects. We also expected to get experimental evidence for the theory of chronodynamics, that is, *some anti-gravity effects*, but, in the experiments of 2003, no significant change in the weight of the test bodies was found.

Let us consider the ways of development of the proposed design of a device capable of obtaining controlled changes in the properties of the Aether medium (space - time). In another embodiment of the device, Fig. 132, an embodiment of the proposed method is shown in the form of a spherical electric capacitor with three plates, each of which is connected to the output of a three-phase pulse generator.

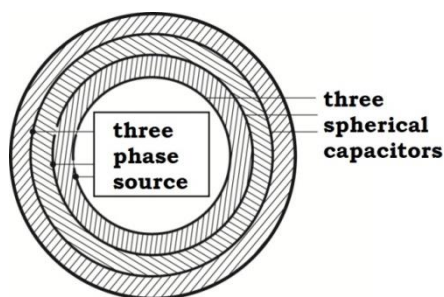


Fig. 132. Three-phase spherical capacitor.

Actually, not so long ago, our civilization began to use three-phase currents, which are very convenient for creating the rotation of the rotor of electromagnetic motors. The proposed design of a three-phase (multi-phase) capacitor does not create rotation, but a converging or diverging wave of energy density in the environment, both inside and outside of such a three-phase spherical capacitor. In this case, the effect of changing the density of the Aether is created without set of electromagnetic emitters. This principle does not apply to the field of magnetic quasi-monopole modeling. With this method, no tuning of separate wave sources is required to operate in the sin phase mode, which ensures the reliability of the device in comparison with a quasi-monopole. In addition, the processes of charging and discharging a multilayer spherical electric capacitor require much less energy than creating a powerful magnetic field by powerful electric currents in a "quasi-monopole" design.

Since the efficiency of such systems directly depends on the frequency and magnitude of changes in the energy density in space, we propose in the next version of the implementation of this device to use plasma shells instead of electromagnetic working surfaces, which will significantly increase the specific characteristics of the device. For this, it is sufficient that the spherical plates of the multilayer capacitor are placed in a gaseous medium and made in the form of grid electrodes, as shown in Fig. 133.

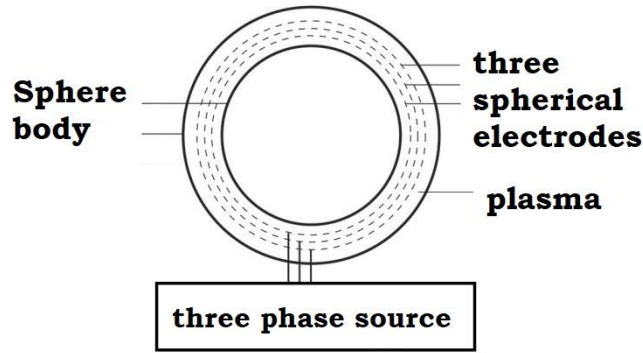


Fig. 133. Three grid electrodes in the space between the outer and inner spherical body

In this case, an energy density wave is created in gas plasma excited layer by layer by several grid spherical electrodes located in the space between the inner and outer casing. Thus, this embodiment of the device can be attributed to methods of manipulating plasma.

It is advisable to organize the manufacture of experimental devices of this type at a plant that develops and manufactures electronic vacuum devices. A feature of the proposed design is the spherical shape of the body and electrode grids. The gas filling of such a design, in the area between the spherical bodies, should ensure the creation of ionization of the gaseous medium, with a minimum expenditure of energy for its excitation. The three-phase power supply must create sequential excitation of the plasma layers, and this will provide an energy density wave that can propagate both inward towards the center of the device (converging) and outward from the center of the device (diverging).

The principle of changing the density of the Aether medium proposed by me is needed for the formation of the so-called "chronal charge". In statics, as we know by analogy with electrostatics, we can get the stress in the Aether environment by means of electric charge. Further, in the design of the Time Machine, some motion of this "chronal charge" in space must be provided. Other way, we know from electrodynamics, is change of density of electric current to create the electromagnetic induction effect. The same we can do in chronal dynamics. It will create a "chronal field" and a "chronal gradient" that will move material objects in time axis.

Spherical three-layer designs can be too complex to implement compared to tetrahedral concentrators. The tetrahedron is the simplest element of three-dimensional space, as we discussed earlier. The design of such a concentrator looks like a set of four longitudinal wave emitters located at the vertices of the tetrahedron and directed towards its center. Instead of Chernobrov's coils, it is enough to use any longitudinal wave emitter. Of course, all four emitters must create pulses synchronously.

A few words must be said about the idea of using longitudinal waves for a purposeful controlled change in the properties of space-time. Herbert G. Wells wrote in his novel "The Time Machine" about a certain mechanical structure, but I suppose that a complete understanding of his idea must be sought by summarizing the technical details of the fantastic devices that he described in all his publications. For example, a device that makes objects invisible is described by Wells in another novel. She writes about "two emitting centers" between which an object is placed. It is important to note that these are non-Hertzian waves, as Wells writes.

In his time, the so-called longitudinal waves in the Aether medium. This terminology was also used by Tesla. Based on these assumptions, we can say that even Wells proposed using several emitters of longitudinal waves to create invisibility, and change the usual properties of space-time. In my opinion, he put the idea of a time machine in one book, and revealed the secret of this device in another book.

Further, an important role in these designs is played by the shape of the excitation pulse, the steepness of its front and fall. Symmetrical waves, for example, sinusoidal ones, create vibrations of the Aether medium, but do not transmit a unidirectional impulse to the surrounding Aether medium. This aspect was previously discussed in the chapter on inertoids, in which movement is created due to the asymmetry of momentum. The principle of the asymmetric cycle of compression - expansion of the working medium of the "Aether pump" is similar to the principle of operation of such an inertoid: the impulse transmitted by the wave to the environment in the phase of expansion of the medium may not be equal to the impulse transmitted by the wave to the medium during its compression, or vice versa. As a result, the elastic Aether medium in the center of the device will either contract (thicken) or expand (lower the density). For the area of space outside the "Aether pump", a compensation effect should appear: compression of the medium inside the device creates an equivalent expansion of the medium outside, and vice versa.

This design of the "Aether pump" allows you to create longitudinal waves of any shape and purpose. Earlier, in the chapter on the structure of a potential field, electric or gravitational, we assumed that potential fields are two mutually compensating processes: a photon and an antiphoton. The antiphoton is presented as a photon existing in the other direction of the time axis, from the future to the past. "Time reversal" for a photon does not mean something unusual, it is the same longitudinal wave of the density of the Aether medium, although the properties of the photon are reversed.

What is the difference? From a technical point of view, in the "Aether pump" the process of longitudinal wave radiation can be created with such volumetric pulsations of the energy density that "push the Aether medium" away from the source. We call this process of radiation "photons", it corresponds to waves with a steep front and a smooth decay. The reverse process, that is, slow volumetric "expansion" and fast "compression" will pull the environment into the area of pulsations. I believe that these are the "antiphotons".

In addition to volumetric pulsations, there are many methods of creating areas of Aether of higher or lower density, including the use of Bernoulli's law of total flow pressure. By creating an increase in the flow rate in a vortex process, by changing its dynamic pressure, we reduce the static pressure of the medium. Consider an interesting electromagnetic structure that creates a vortex process in the Aether medium.

In my home laboratory, in St. Petersburg, back in 1991-1995, some research work was made on this topic. The change in the parameters of the Aether medium was made by design called a "multilayer solenoid". The author of this idea asked not to mention it. The device was made by me and studied experimentally. The solenoid is not quite ordinary, it is required to perform several layers of wire winding according to the scheme shown in Fig. 134, and then, you can expect to get the most interesting effects, with a constant or impulse power supply to the coil.

Each layer of winding starts from a point on the edge (end) of the solenoid; moreover, the points of the beginning of the layers are displaced relative to each other. For example, for six layers, the beginning of each winding should be offset by 30 degrees.

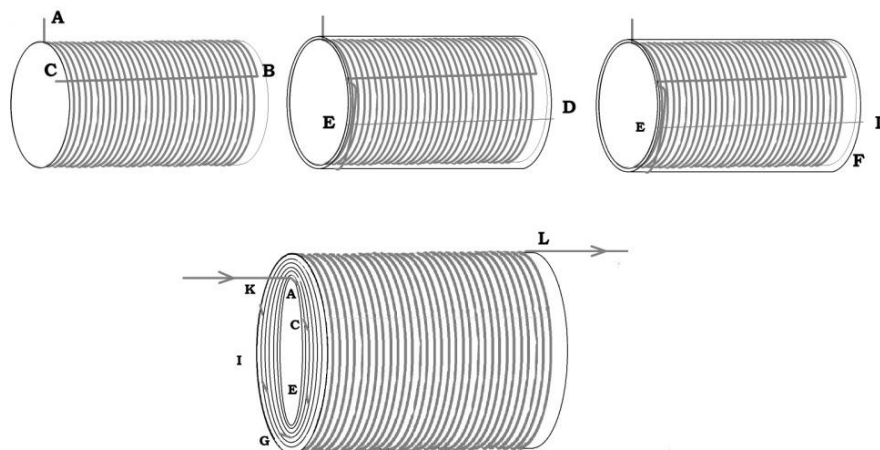


Fig. 134. Multilayer solenoid.

Starting the winding of the layer at point A, you need to end it at point B, offset by 30 degrees from the starting point. Then, you need to return in a straight line, but to point C, offset from point A by 30 degrees. Next, wind the second layer and end it at point D, return in a straight line to point E, and so on...

Turning on the current (impulse) causes the effect of "rotation of the Aether", since the front of the impulse sequentially "runs" through the layers, moving along the axis of the solenoid. Each layer starts from a different "entry point", which creates the "rotation effect" of the Aether medium. The layers also have different diameters, which also creates the "compression effect" or "expansion effect" of the Aether medium, depending on the direction of the current in the wire. In sum, the effects create a vortex process in the Aether medium, inside and outside such a multilayer solenoid.

I can point out an interesting fact. When this multilayer solenoid was turned on for the first time, in this room my radio receiver was working and I heard some talks. I noticed a momentary change in the voice of the radio station announcer. It was not the timbre that changed, but the sequence of the sounds of the words. For some time I could not understand the words of the announcer, it seemed to me that he was speaking in an incomprehensible language. I could distinguish pauses between words, but could not understand what he said. Then, after a few seconds, the voice of the radio station announcer returned to normal, and I could again understand what he was talking about.

I read about this effect in the article about the meeting of an airplane pilot with a UFO. The pilot noticed that the dispatcher's voice was changed in his radio and during some time he cannot understand words in his radio. I think that the multilayer solenoid changes the properties of the environment in some way, so the transmission of radio waves changes.

So, in these experiments, powerful chronal effects were noted, including acceleration and deceleration of the rate of oscillatory processes inside the solenoid and outside, near the solenoid.

In the chapter on pondemotor drives, we examined the process of affecting the Aether by rotating the crossed vectors of the electric and magnetic fields $E \times H$. We said that such a superposition of electric and magnetic fields is analogous to a helical structure in mechanics. When such an "Aether screw" rotates, an Aether reaction occurs and an axial driving force is created. A multilayer solenoid also creates a rotation of the Aether, and for this reason, the density of the Aether medium changes inside and around

it. Consequently, such designs can become the basis for a new type of propulsion system.

So, experimental research on the construction of "time machines" is at the very beginning. We clearly understand the physical principles of devices operation, which can significantly change the density of the Aether in a given area of space, and thus affect the temporal characteristics of physical processes.

The minimal results obtained today allow us to make a positive conclusion about the efficiency of the proposed method and the possibility of its practical application.

In addition to electromagnetic phenomena, any irreversible processes with a change in entropy can be used as a mechanism for controlling the density of the Aether. As an irreversible process, phase transitions of any substance, for example, from a solid to a liquid state, or reverse crystallization processes can be used. Unlike electromagnetic methods, such devices exclude the influence of electromagnetic fields on sensors and objects located in the area of the altered state of the Aether medium.

The methods of working with the Aether medium that are available to us can use the phenomenon of induction. The phenomenon of electromagnetic induction, discovered by Michael Faraday, allows us today to rely on the power of electric motors, transformers and other modern technology. The development of similar methods in chronodynamics opens up new prospects for the development of our civilization.

We can plan experiments on "chronal induction", for example, the movement of the "chronal charge" generates artificial chronal field, and a change in the current density of the "chronal charge" in the "generator chronal circuit" should induce "chronal currents" in the "receiving circuits".

Electric current is the movement of electrically charged body. We understand electric current as the movement of an electrically charged particle of matter. Chronal current can be thought of as the movement of a chronal charge, but this is not a movement in space! This is a change over time. The one-dimensional process of changing the current strength in conventional electrodynamics generates an electromagnetic field. Likewise, a *three-dimensional process of volumetric changes in energy density* should create a chronal field.

A "chronal charge" is understood as a local change in the energy density, that is, in the density of the Aether medium. The movement along the time axis can be considered the process of volumetric change in the energy density. We have already considered the variants of this process, which determine its characteristics, including the direction of movement along the time axis. It can be sinusoidal, or it can have special waveforms, for example, with a steep edge or a steep fall off. This is essential for creating a unidirectional CMF (chronal motive force).

Obviously, the methods for changing the Aether density can have analogies with aerodynamics. Bernoulli's law must be fulfilled for Aether-dynamic systems: the total pressure of the Aether is equal to the sum of static and dynamic pressure. By creating an artificial flow of the Aether medium, we increase the dynamic component of its energy, and the static pressure and density of the Aether medium decreases. This principle can be used to design a new type of space propulsion system operating with the Aether environment.

Is it possible to "stop time"? Particles of matter always exist as an Aether-dynamic process, it cannot be stopped. The process of movement in time is a relative process,

and, as is assumed in this concept, it is associated with the global process of decreasing the energy density of the Aether medium, which has a certain rate of decreasing dT / dt . This change is a relative parameter.

Let us assume that, during a certain time interval, we can compensate for the natural process of decreasing the energy density of the environment by creating an additional process of increasing the energy density inside the "working area of the time machine". If the artificial increase in the energy density is equal in magnitude to the natural decrease in the energy density, then we can say that "relative time flow is stopped." A more rapid increase in the energy density of the medium gives a relative "movement into the past." To create the effect of accelerating movement into the future, it is necessary to "help" the environment to reduce the energy density. In this concept, a certain area of space, including material objects, can exist faster or slower, relative to near-earth space, or another area of outer space.

In a particular case, when the opposite rates of change in the energy density of the Aether medium are equal, observers inside the "time machine" will be able to see "stopped time" as processes "frozen" at one point on the time axis, occurring in the world around them.

Obviously, we cannot create global processes on a cosmic scale by technical methods, but we can create an impulsive repetitive change in the energy density of a medium in a certain limited area of space. We say here "area of space", or "working area of the time machine", taking into account that particles of matter, any objects within a given area of space, are not something separate from the Aether medium, but resonant Aether-dynamic processes existing in the medium.

The design options for "time machines" may vary, but they have something in common. All of them must, by some technical method, control the state of the Aether medium, in a given volume of space. Variants of a possible closed volume of space are known: they can have a spherical shape or a toroidal shape. It is necessary to think about toroidal space due to the fact that this form is an elementary four-dimensional space formed by a three-dimensional ball in motion. It is in it that it is possible to create "your own time", and even your own straight line along which a ray of light will propagate.

There is an interesting phenomenon called "Einstein rings". The essence of the experiment is simple: a beam of light is directed along a tangent line directed to the lateral surface of a rapidly rotating lead cone. After some time, the light source is turned off, the cone is stopped, and removed from this place. At the same time, a ring of light remains in space in the same place! This "ring" can exist for a long time, but it can be destroyed by external influences, for example, a magnetic field. Unfortunately, I cannot give the reader a link to documentary evidence of this effect. The explanation of what is happening is obvious: a closed Aether stream (Aether loop) is formed around the rotating massive body, in which photons circulate. In fact, this region of space has its own "world straight line" along the axis of the toroid, since the light beam always propagates in a straight line. This is an independent space - time, the parameters of which we can design on our intention.

Any passive Aether-reflective structure, examples of which were considered in the chapter on the works of Kozyrev, Veinik, Dodonov and other authors, creates similar effects of "twisting the Aether" into a toroidal independent space - time due to the "shape effect". I believe that it is in this direction that it is most promising to conduct practical research.

Next, we will consider the concept of teleportation as a promising method for creating movement in space.

The teleportation

Teleportation does not require a propulsion drive; it is a fundamentally different method of working with space - time itself, with the Aether environment, in which a change in the position of material objects is organized.

Teleportation is called "instant transfer" of material objects from one place to another. The term was coined by the writer Charles Fort in 1931. This definition is not entirely correct, although from the point of view of the observer, this is exactly the case: an object exists at one distance from it, but can instantly appear at a different distance from the observer. At the same time, the process of movement does not require energy consumption! From the point of view of common sense, this is impossible, and if an object has mass, then its movement in space, and even more so, rapid movement from one point to another, should take place with a large expenditure of energy for acceleration and the release of energy during deceleration. It remains to assume that there is no movement in space during teleportation at all, and the object can be either in one place in space, or in another place in space, because it can be in two places at the same time, not for long, at least at the moment of the "teleportation transition".

The strange idea that one material object can be in two places at once has its own justification. There is an example from quantum physics: the wave properties of an electron are studied in an experiment with the passage of an electron through an obstacle in which two slits are made. Electron diffraction is well studied and confirms the concept of wave properties of matter in general.

An electron, as a particle of matter, cannot pass through two slits in a solid barrier. An electron, like a wave, can do this. An analogue of this effect, for a separate area of space, is teleportation.

The facts of teleportation are associated with such observations that relate to choral phenomena, namely, the slowing down or acceleration of time flow during teleportation. Assuming that this is real data, and instantaneous changes in the position of objects can be accompanied by the effect of changing the rate of time flow, we can conclude that teleportation is always associated with controlled or spontaneous changes in the properties of the Aether medium, therefore both effects appear in pairs. Choral effects can be small and imperceptible, or be quite noticeable when comparing the readings of the chronometers after teleportation, but this does not change the essence of the phenomenon.

The issue of transition from the world of elementary particles to events in the world of macro-objects requires additional study, but already now we can say that this issue belongs to the field of "Kozyrev's causal mechanics", and is technically realized when the speed of time changes by controlling the properties of the Aether medium. From this point of view, a decrease in the strength of cause-and-effect relationships, which occurs when the speed of time in a certain region of space decreases, should lead to the appearance of quantum and wave properties in material objects. Actually, this is the proposed concept of teleportation, as a variant of the technology application by controlling the parameters of the existence of matter particles in the Aether medium.

The facts of teleportation of people are disputed or hushed up, although there are many examples, and the phenomenon requires serious study. At the first level of research, it is necessary to highlight the cases of spontaneous teleportation that occur with people who find themselves in some kind of extreme conditions that provoke unusual activity of their psyche.

Other cases related to controlled teleportation have been seen in people who practice spiritual practice and martial arts. The third option: people can accidentally find

themselves in a region of space in which the conditions for the existence of matter have already changed, and the speed of all processes is slowed down or accelerated.

Some facts of teleportation in the world of living beings, for example, in communities of "atta" ants, are more accessible for research. Many times repeated experiments leave no doubt that this species of living creatures created a special "rescue system", instantly moving the queen ant for tens of meters from one anthill to another anthill, in case of danger of her life. Perhaps, here we also can suppose cavity structures effect and vibrations.

So, what properties of real space - time can allow us to create such effects, and why a material object, that is, a group of connected particles of matter, can instantly "dematerialize" in one place in space, leaving behind an "empty space", and recreate its structure in another empty place, without the participation of any technical means and energy sources?

The main assumption on this issue is that "empty space" is the source of any matter, "paren" or "Dirac's ocean", in which we do not observe anything until an information structure is created in it. The facts of spontaneous or controlled teleportation of people indicate that the information structure necessary for organizing this process can be created without technical means, with the activation of specific mental activity. However, all vital processes, including the activity of the brain, are accompanied by Aether-dynamic phenomena. In this regard, it is appropriate to recall the experiments on energy-informational exchange, which we discussed earlier in this book, and the theory of the "four-dimensional hologram". Assuming that any Aether-dynamic process is always multidimensional, any particle of matter can be considered as a projection of a multidimensional object onto a three-dimensional world at a given moment in time. A four-dimensional object has the property of "movement in time", a five-dimensional object already exists, in all three-dimensional space. Only in this case, for a five-dimensional object, its position in the three-dimensional world can instantly change from one to another, when its projection changes.

Quantum teleportation, in a sense, for example, experiments on instantaneously changing the position of a photon, is not a very interesting topic from an engineering point of view. It is only important for understanding that quantum phenomena can occur in a world where objects have wave properties, but does not provide an answer to the question of the mechanism of teleportation. Scientists who work in this direction believe that to implement this technology, it is necessary to "disassemble the object" into atoms in one place, and "recreate the object" in another place. To do this, they must send to the "destination" information about the configuration of a group of atoms of a given material object, by wire, by radio or other communication systems. The publications of Charles Bennett, IBM company are widely known in this area of research [93]. In my opinion, this idea is not very promising.

Considering nature of matter particles, their process of existence in space can be represented as a multidimensional Aether-dynamic process. Creation of real particles from virtual ones, by means of vacuum polarization, requires energy expenditures: a photon is required to create an "electron - positron" pair. Therefore, it would be more reasonable to consider teleportation, not as a process of "disassembling and assembling objects", but as a way of changing the parameters of the Aether medium, in a certain limited area of space.

To my mind, teleportation is realized not for a separate material object, but to some area of space-time.

I believe that "wave mechanics" as teleportation technology will allow working with macro-objects, moving some area of space, with all material objects in it, from one place to another, in the same way that we can instantly change the position of the antinode of

a standing wave in space by changing the settings of the source of a standing wave. waves. It may be useful to use a tetrahedral coordinate system to define a "destination" in space. This assumption has some justification if we take into account the cases of observation of spontaneous teleportation of groups of people, airplanes and other objects.

In connection with this conclusion, further we will consider teleportation as a phenomenon that occurs with some area of space-time in which the teleported object is located.

On the other hand, it is precisely certain properties and behavior of an object, for example, a specific mental activity, that can lead to teleportation. Here it is appropriate to recall the "induction effect" that we noted for various Aether-dynamic phenomena: by absorbing or emitting Aether, for example, during phase transitions, a substance can create a wave of energy density and deform the surrounding Aether medium. This may cause an instantaneous transition of an object to another "energy level of existence", its movement to another place, similar to how it happens with elementary particles in the microcosm. In this case, the quantization of space and time is the main condition providing the technical possibility of teleportation.

On the theory of this issue, it is useful to return to Kozyrev's experiments and his conclusions about the possibility of "instantaneous communication" through the "active properties of time". This becomes clear if we consider the entire three-dimensional world from multidimensional space. From this side, the entire material world looks like one point, which we perceive as "a given moment in time." All objects in our Universe can be projected onto one point - the moment of multidimensional space. In this sense, we are all always at one point, and this makes it possible not only to receive information about all processes in the Universe, but also to instantly change the position of objects in space. At the same time, information about the structure of the complex of atoms of the teleported object does not need to be transferred from one place to another.

Further, there are two directions of search ... In one direction of studying the issue, we are interested in the following: how and where is the information about the complex of particles of matter, forming a group of objects existing in a given region of space, recorded? In the other direction of the search for a technical solution, we are not interested in this question, since we set the task of instantly changing the position of a certain area of space in which any material objects can be located. The second direction of the search seems to be more constructive. As an example, let me remind you of the well-known "Philadelphia experiment", although it has no documentary evidence.

In the "Philadelphia Experiment" on July 22, 1943, American scientists set out to create the invisibility of a warship. Technically, this problem was solved using powerful pulses of an electromagnetic field, which refers to the method of creating an additional gravitational field. Invisibility has been obtained, which means the deflection of rays of light passing in the area of space of a process created by some electromagnetic method. The analogies with the Grebennikov effect are obvious. I believe that in addition to creating the effect of invisibility, in the "Philadelphia experiment" there was an "Aether-dynamic displacement" of a certain area of space from one place to another.

This well-known experiment was described by witnesses quite reliably, it can be concluded that the area of the Aether medium in which the ship was located instantly changed its position on the surface of the planet, as a result of some electromagnetic effect on the ship's hull, which led to deformation of the Aether medium around the ship.

Useful note for calculating the effect: V.A. Chernobrov discovered a function of the dependence of the rate of change in the rate of time on distance. This function is a cubic dependence, that is, the change in the parameters of space-time is inversely proportional to the cube of the distance from the central point of deformation of space-time.

I believe that the transitions of the "area of the changed state" of space-time from one position to another should occur discretely, as in quantum physics. The levels of existence have certain resonance conditions that can be calculated for each specific case of controlled teleportation. So, assuming that a region of space can change its physical characteristics as a result of some Aether-dynamic activity of a material object located in this region, we get the opportunity to create technical means for teleportation.

The most interesting question is the creation of a methodology for calculating a given "destination" and the size of the area of the moved space. However, it can be expected that modern computer technology will be able to provide the necessary control of the process of moving to a given area if programmers create the appropriate software. Most likely, the shape of the area being moved will be spherical, although other options are also possible.

The solution to this technical problem opens up great prospects for us, primarily in the field of transport. Delivery of goods is no longer important to their cost, and this is fundamentally changing the global economy. The advantages of using teleportation systems in the military field are obvious.

Afterword

We have considered various ways of moving in space, which differ from the usual reactive principles, in which the accelerated motion of a body, as a group of particles of matter, in an Aether medium, requires overcoming the inertia of the body. This effect is due to the fact that we move not only the particles of matter, but also a part of the Aether medium associated with the particles of matter that form this body. By themselves, particles of matter do not have inertial mass; these are "centers of forces", as Michael Faraday said centers of Aether-dynamic processes. Technologies of "displacement" of a certain area of the Aether medium, in the presence of a gradient of medium density in it, make it possible to create vehicles that do not have the effect of inertia of matter particles, with their accelerated motion. Particles of matter, in this case, remain motionless relative to the surrounding Aether, maintaining connections with each other, as a single material object, although the area of space itself can move, more precisely, change its location in the same way as the position of the antinode of a standing wave of energy density in space changes...

In this case, the speed of movement, that is, changes in the location of a given area of space, and its "trajectory" can be any, since this method refers to wave quantum mechanics, and not to Newtonian mechanics.

Assuming that space is quantized, any ordinary movement of matter particles occurs in "steps", as Richard Feynman described in the well-known diagram of the existence of a pair of particles "electron - positron".

Yury Belostotsky noted that as the body moves, its particles turn from virtual to real, and behind the body they turn from real to virtual. The speed of existence of matter particles, that is, the speed of time for them, with this consideration of the issue, is the frequency of the cycles of the realization of virtual particles, the birth and annihilation of pairs "particle - antiparticle". It is assumed that this parameter (cycle frequency) can be changed by certain technical methods. In such a scheme of existence, there are "moments of stopping" of matter, points on the time axis when the direction of its process of existence changes. For example, at the moment when the process of the existence of an electron has ended, the process of the existence of a positron begins. Assuming that they exist in different directions of time (an electron - to the future, to a positron - to the past), the very process of existence of matter particles gives us the opportunity to develop technologies for the controlled movement of bodies in space and time.

The issues of creating an artificial gravitational field, as shown by the experiments of Brown, Polyakov, Belostotsky, Zolotarev, Grebennikov and other authors, are solved by creating deformations of the elastic Aether medium, and the associated changes in its density. It is possible to work with the Aether medium indirectly, "through the substance", by changing the state of the "working body", since the Aether medium compensates for these changes, accordingly.

I invite investors to develop the projects shown in this book. The applied aspects of the controlled change in the Aether density go far beyond the wildest fantasies about a "time machine" and spacecraft propulsion, since we open the door to the world of controlling the physical parameters of the existence of any matter, including living matter.

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