

Proposals on research and development work «New type of propulsion systems for aerospace industry»

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Introduction

This report describe some methods to create active propulsion force, i.e. the force that is not resulting from reactive flow of mass. Look at <http://alexfrolov.narod.ru> for more information about theoretical approach and photo of my experiments.

Brief survey of experimental research and patents

There are some open experimental data and patents in this area:

1. Converting rotary motion into unidirectional motion.

Inner gradient of pressure in the system can be produced if the velocity of rotation (and acceleration) of the mass is changing in different parts of the trajectory and centrifugal force is asymmetrical. Gyroscopical version of this approach is USA patent by Richard E. Foster, 3,653,269 of May 15, 1970 [1]. Also the converting angular momentum into linear impulses can be produced by means of eccentric inertial masses that was tested in Thomson Drive [2]. In experiments this engine was installed onto boat and it demonstrated force-to-power ratio in 20 times higher than a jet engine of the same power. According to Academician Albert Veinik, such sort propulsion systems are based on "chronal motive forces" [3]. So, in any powerful reactionless drive some local space-time changes can be detected. In spite of complexity of theory, the design can be produced as simple mechanical device.

2. Gravity shielding

There is the fact of «gravity shielding» by Dr. Podkletnov's experiments on superconductor rotation. It seems more correct way to name the effect as «compensation of gravitation» since gravitation should be considered as some process and it can be compensated by other process. Below we'll discuss it in author's proposals for experiments.

3. Electrokinetic effects.

In this method the electric field is used to accelerate a charged particles (electrons or ions) so periodical impulses of the micro particles can be transferred to the system to change net impulse. The example for this way is old USA patent 300,311 of Nov.15, 1928 by T.T.Brown [4] and patent by W. Cooper [5]. Spacecraft engine in this case can be made as plane capacitor that is powered by pulsing voltage source. The thrust is created in positive electrode direction since the electron bunch in area between electrodes is periodically accelerated by electric field in one direction. The example is research project by Dr. Lev Sapogin <http://www.erols.com/stuartjr/Image42a.gif>

4. Energy flow

Poynting vector as energy flow description is well known notion. Rotating electromagnetic field can be composed of synchronous and mutually perpendicular magnetic and electric field and in this case the energy flow is created to "push the Ether" and to move the system in opposite direction. In fact it is the Ether reactive propulsion. Example of this way is patent by Michel Pages, France, 1,253,902 of January 9, 1961. Experiments by Academician Gennady F. Ignatyev, Krasnoyarsk, demonstrated several Kg propulsion force in such sort engine [6]. Known Searl effect (John Searle, 13 Blackburn Lower Strand, Graham Park Estate, London MW9 5NG, United Kingdom) also can be described as original method for the same technology where electric field is produced by centrifugal force in dielectric and magnetic field is resulting from permanent magnets.

5. Thermogravitics propulsion

Thermo-gravitation propulsion technology was tested in experiment by Alexander Shegolev [7], Russia as weight changes in metal body of special shape that is heated by laser.

Thermogravitation

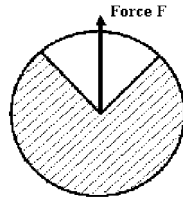


Fig. 1.1

The thrust is created due to directed heat flow (ordered heat molecular motion) inside of this body.

6. Asymmetry and gradient of electric field

The thrust can be produced if the electrostatic field gradient between two electrodes is non-linear, USA patent 3,187,206 of June 1, 1965 by T.T.Brown. This non linearity of the gradient may result from the electrodes superposition and from its shape, from the gradient of the density, electric conductivity and electric permittivity, from the shape of the dielectric that is placed between electrodes.

Gradient electrical field

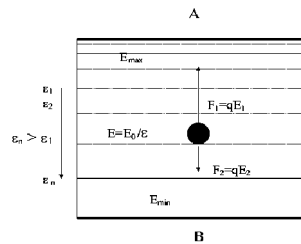
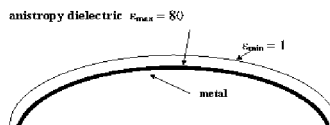


Fig. 3

So, application of electric potential field in such sort propulsion systems is the most efficient method since there are no needs in powerful onboard source of energy. There is calculations [8] for propulsion unit of 80 t force:

Calculations



$$F = qE_0(1/\epsilon_1 - 1/\epsilon_2)$$

$\epsilon_1 = 1$ $\epsilon_2 = 80$ (ceramic)
 Square $S = 100 \text{ m}^2$
 Capacity $C_0 = 10^{-8} \text{ F}$; $C = \epsilon_2 C_0 = 8 \times 10^{-5} \text{ F}$
 Potential $\varphi = 10^5 \text{ V}$
 Charge $q = CU = 8 \text{ K}$
 Intensity of the field $E = 10^5 \text{ V/m}$

$$F = 8 \times 10^5 (79/80) = 7.9 \times 10^5 \text{ (N)}$$

$$F = 7.9/9.8 \times 10^5 = 80 \text{ T}$$

Fig. 5

Impulse potential field technology seems as perspective only if reliable and powerful generator of impulse high frequency field can be produced. So, the main direction of research work that is proposed here is asymmetrical electrostatics and gradient electric field technology.

Theoretical basis of the Project

The theoretical principles were published by author in papers "Application of Potential for Creation of Power", New Energy News, May 1994, " Trilateral spacetime effect", Newsletter of Planetary Association for Clean Energy, Vol.9 (2&3), April 1997, p.10-14, "Reactionless Propulsion", report on Space-Time Congress in St.-Petersburg, 1998.

Any active force can be created only in pair with reactive force. This known rule described the balanced interaction between two bodies. But this rule should be working also for body and some substance around this body (air, liquid or the ether). So, it is proposed to create a motion of spacecraft without reactive mass flow if reaction is created as changes of space-time parameters.

Important part of the gravitation concept that is proposed here is follows from the M. Faraday's opinion about matter nature. In his letter of June 25, 1844 to Richard Taylor, M. Faraday wrote: «So, matter anywhere is continuous... it is not necessary to suppose the difference between atoms of the matter and some intermediate space. The forces around centers provide to these centers the properties of the matter...» By this way, local change of space structure that produce the mass-particle must be compensated by corresponding opposite change of vacuum structure around the mass-particle. So, this substance (space-time itself) can be used for etherdynamics (like aerodynamical) method of motion. Forces are acting to the body in this case are external and laws of conservation (for energy, momentum, impulse) are the true laws if the body and substance around the body are considered as closed four-dimensional system.

Modern physics of vacuum is considering notion about so called "virtual particles" that is an analogy for "ether particles" idea. It can explain the chaotical impulse interaction between real particle of matter and vacuum that is observed in heat molecular motion and atom heat oscillations. The target of the project now can be formulated by next way: active drive can be designed if some special conditions for directed impulse energy exchange between real and virtual particles are created. Such sort interaction takes place anytime and always but total vector sum is zero since the process is spontaneous process. We have chance to order this process as directed heat flow in the mass of the drive (in thermogravitics method) , or to change vacuum structure by means of force field (electrical, for example) to order the processes of creation and annihilation of the virtual particles. Such sort influence is the reason of any electromagnetic interactions that was discovered by the author and reported in 1998 [8].

Repulsion

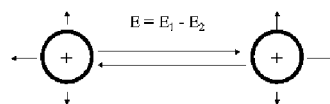


Fig.2.1.

Attraction

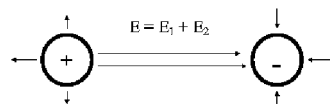


Fig.2.2.

The Lorentz Force

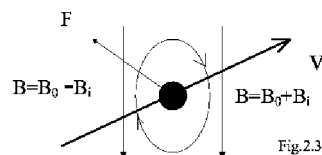


Fig.2.3.

In fact, if electrically charged body is surrounded by joint summary electrical field that is not symmetrical, so some gradient of electrical intensity is the reason for propulsion force that is demonstrate itself as the Coulomb interaction. So, there is only direct interaction between body and

surrounding space (ether) and electromagnetic force is result of the gradient of the pressure like to aerodynamics. The same gradient can be considered to find the nature of the Lorenz force.

The "field" means some area of space where the processes of interaction between the ether and matter are not chaotic and spontaneous but they are ordered in some degree. The field influence to processes of impulse interaction between material particle and ether (virtual) particle that make this interaction to be directed. It was used by T.T.Brown to get the propulsion force.

Important note about law of impulse conservation. The Law of conservation for quantity of the motion should be true for gravity drive also. The impulse and the velocity of the system is changing and the compensation effect here is the change of the impulse of the "virtual particles" or "energy level of the ether". So, the heat energy exchange between real material particles and virtual particles of the ether should be changed. It can be detected since local time rate should be changed in area of the drive operation. The gravity propulsion force is four-dimensional vector and its spatial component should be paired with time directed force. This force was named by Academician Albert Veinik as chronomotive force by analogy with electromotive force. The value of this force depend of the power (propulsion force) that is produced by gravity drive. The volumetrical energy density of vacuum is known and local changes of space-time curvature in area of gravity drive can be calculated as function of distance.

The Newton's Law can be generalized: Forces can be created in pair only, and any active force is paired with spatial or choral reactive force. By this version there are pre-conditions for new technology named as time rate control.

Important aspect was discovered by Professor Anatoly P. Smirnov, St.-Petersburg from original Newton's text for the third law: Product of active force and velocity of action is equal to the product of reactive force and velocity of reaction. Sure, velocities of action and reaction are in opposition. This formulation make us to take into account the velocity of process, i.e. the time and in this case the law is four-dimensional law.

The plan of research work and experiments

The asymmetry and gradient of electric field is proposed as the main direction of the research work. It does not require powerful energy source since there are no any conductivity currents. Author described the idea for asymmetrical capacitor in the paper "The Application of Potential Field for Generation of Power", New Energy News, May 1994, and in other publications. Simple test was made to confirm the theory is working one. The next step is investigation for the best dielectric material (both solid state and liquid), miniaturization and preparation for mass production technological process. Principal new aspect is application of electret materials in such sort asymmetrical capacitor that allow to "keep the thrust" after the power source is disconnected.

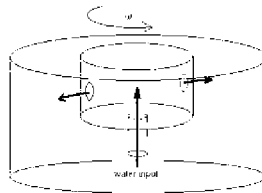
The potential decrease with distance is fundamental effect based on natural property of the space and time. By means of gradient of dielectric permittivity, the property of space can be reversed: the potential can be produced as constant or as increasing value with distance from the metal charged surface. This reverse of electric law in space means the negative curvature. All micro particles of this dielectric should be forced from metal surface to area of maximum potential and propulsion force can be created by this way.

One more supposition for research is so called «gravimagnetic field» that can be produced by means of motion (rotation) of the protons (natural positive charged particles). This field was predicted by author by analogy with magnetic field that is produced by electric current. The difference between the fields is based on the quality difference between negative and positive electricity, that was considered by many authors. One of them is Dr. Nassikas, Greece, who is offering fine mathematical conception that is considering the sign of electricity as sign of the time axis. It is planned to test the effect in experiment with rotation of material that is saturated by protons. Titan can be used for this process and it can be produced as porous material to increase the surface of interaction with water (the source of protons). This system is quite economical since very low voltage 6 - 12 VDC is necessary for

saturation of electrolytic cell cathode. It is supposed the rotation of this cathode should produce the "gravity shielding effect" that is similar to the Podkletnov effect. Other version is rotation of hydrogen ions as hydrogen gas plasma.

One more direction of the research work is investigation of optimal method to create unidirectional Poynting vector. By Academician Ignatyev the technology allow to get thrust from rotating electromagnetic standing wave. Principal new idea is to join powerful permanent magnets and high voltage electric field in rotational system. The mechanical rotation of E and H vector superposition can be organized by small motor to generate great axial thrust that is depend of magnetic field strength and electric field intensity. I have to note the possible connection with well known Searl effect and this supposition was not mentioned before. High voltage electric field (up to 10 million Volts) that was discovered in rotating dielectric by Searl can be linked with separation of electric charges in rotating dielectric as result of centrifugal force and it can be increased for special piezoelectric materials. This method is very perspective since it can be used both for power generation and for propulsion.

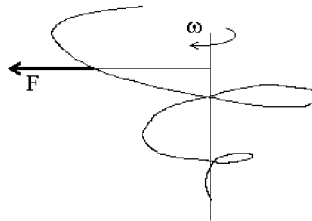
It is proposed also to investigate Victor Shauberger's idea about axial thrust in vortex and it can be designed as simple device:



If water inflow in centrifugal water pump is created in axial direction and water outflow is made in radial directions the reaction force for this system is axial and unidirectional.

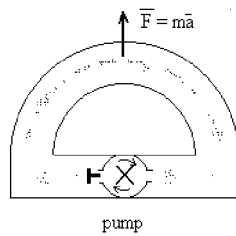
Some experiments

Author produced simplest experiments with rotation of liquid in special body and he found axial force that is resulting from centrifugal force.

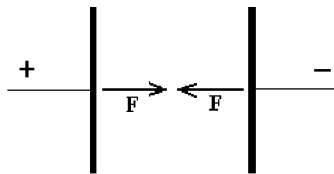


It is necessary to use two paired drives to compensate net rotation moment on the body.

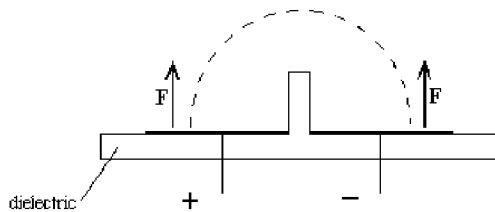
Also it was tested simple mechanical device according to A. Veinik design: two metal balls are rotating with eccentricity and non-compensated force was detected in the direction of minimal radius. It was proposed by author in [8] to use a liquid mass for the same method:



Some technical solutions were tested to prove efficiency of electrogravitation technology. One of them is so called T-shape capacitor. In classical plane capacitor the plates are in attraction but the forces are contradicted. In T-shape capacitor two electrodes are placed in the same flatness and both forces are co-directional forces.



electric field intensity lines are perpendicular to surface of the electrode



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Electrodes are separated by "dielectric wall" to exclude electric discharge along minimal distance way between electrodes. By this way the lines of electric field intensity are curved. The experiment was reproduced in France by J.L.Naudin <http://members.xoom.com/jlnlabs/html/elghatv1.htm>

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