

# Construction an engine for free space on the base of a pondemotor effect

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This engine is based on the pondemotor effect that is the principle of creation of propulsion force after interaction between electric and magnetic fields. The interaction between electric and magnetic fields produces energy-flux, determined by the Poynting vector [1,2]:

$$\mathbf{P}=\mathbf{E}\times\mathbf{H}, \mathbf{F}=\mathbf{P}/c, \mathbf{P}=\mathbf{m}\mathbf{c}^2$$

Peculiarities of Poynting's vector are:

1. Violation of the principle of composition of fields:

$$\mathbf{P}=\Sigma\mathbf{P}_i(\mathbf{f}_i).$$

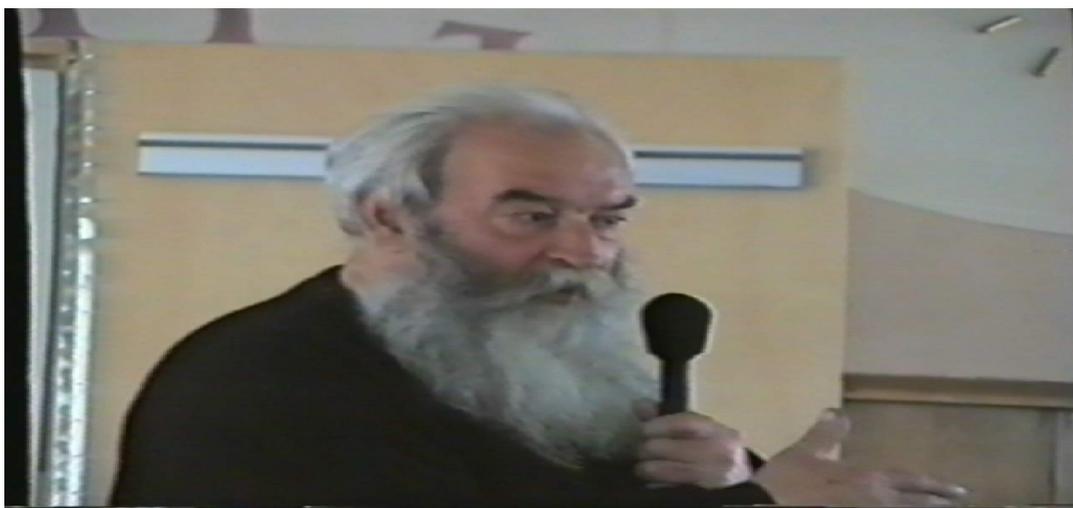
2. Poynting's vector changes with double-frequency for flat polarized electromagnetic field:

$$/E_0 \sin\omega t /, /H_0 \sin\omega t /, /P_0 \sin^2\omega t /$$

3. Poynting's vector is constant for circular polarized electromagnetic field:

$$/P/=const$$

Let's consider three types of interaction - electric, magnetic and gravitational - on one point of view. It allow us to draw an analogy between gravitational field and Poynting's vector.



here  $h$  is operating length,

$V$  is volume,

$l$  is length,

$S$  is square,

$M$  is magnetic charge,

$\lambda$  is wavelength,

$q$  is electric charge,

$W$  is bulk of energy.

Electric exciting of the space is initial (primary) one. It has flat polarization and maximum interaction with free space. A magnetic exciter is produced after closing the electric exciter to itself or a couple of parallel electric exciters with opposite feed.

A composition on three electric exciters or two magnetic exciters with opposite feed can be a gravitational exciters. In the last case, the exciter is polarized in volume and it in some possible case it can be the rotation of volume to form the toroid.

In first case the space is excited by electric and magnetic fields. In second case, only magnetic field excites the space. In third case both electric and magnetic fields close themselves and electromagnetic energy concentrates in volume. Only Poynting's vector comes inside and it defines the energetic condition of volume.

The main interest for engine is the circular polarization of magnetic field. In a wave zone either two equal components of the field these are 90 degrees phase shifted, or electromagnetic dipole give us the circular polarization [3]. The electromagnetic dipole at the first half of the period creates electric field, the next half of the period it creates the magnetic field, that correspond to 90 degrees phase shift.

We are interested in zone nearby the exciter because force of pondemotor action is placed here. In contrast to wave zone, the electric component has not sinphase magnetic component and the magnetic component has not sinphase electric component here. The sinphase components have not formed yet here. Then we offer to make these components artificially, as so to excite the space with two crossed electromagnetic dipoles, those are fed with 90 degrees phase shift.

There are a lot of versions for exciters disposition and feed, and in particular case it is radial and circular dispositions, those are corresponding to feed and step  $h=2\pi/N$  (the analogy of feed to form the triangle and star).

Assuming the ether excitement we can use its properties for evidence. It allows us to draw an analogy with movement of liquid or gas with absolutely resilient properties and to deal with moving ether under the action of electromagnetic field. Then we can say that electric and magnetic fields act on the ether with force  $\mathbf{F}=\mathbf{P}/c$ , forcing the ether to move. But the energy-flux that is produced by alone fragment of the exciter, compensates the incoming and out coming quantity of ether. We must make some asymmetrical construction for discompensation of these fluxes. the second fragment of the exciter will provide the second pair of forces with different geometry, different operation frequency and different direction of rotation. For example, if we take two fragments with different diameters these are disposed at a distance  $h$  from each other, but with equal  $P$ , and disposite them coaxial then the ether will moves asymmetrically in strength of the law of conservation of the quantity of the motion, and the result for it is the propulsion force  $F_t$ .

At the present time a third model of the fragment of the engine is built (Fig.1) and its main technical parameters are measured. So, on the frequency at 80 kHz :

the electric intensity  $E=10^5$  V/m,  
 the total electric intensity  $E=10^6$  V/m,  
 the magnetic intensity  $H=2 \times 10^4$  A/m,  
 the Poynting's vector  $P=10^{10}$  Joule/( $m^2 \times s$ )  
 the propulsion force  $F=60$  N  
 with input power to one arm at 10 kW.

In the near future we'll start estimating experiments of engine fragment pondemotor effect above the Earth surface: rotation moment, interaction between the exciter and its mirror reflection from the Earth surface and so on. We have started to design a life-size fragment of the engine with radius  $R=40$  m, which will create  $P=10^{14}$  Joule/( $m^2 \times s$ ) and  $F_t=3 \times 10^4$  N.

## References

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