Universal Gravitational Thruster (UGT)
Using ***H_2O (Distilled Water)*** **(Or others *Polar molecules*).**

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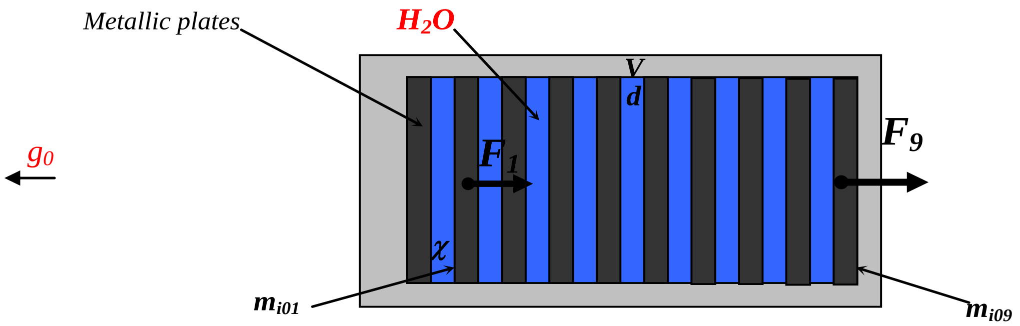
Recently, I have shown how to build several types of Universal Gravitational Thruster (UGT); using photon gas; electron gas; Duracap 86103; Metglas 2714A, etc. Here I shown a new type of UGT using H_2O or others polar molecules. This became very easy the building of the UGTs.
Key words: Gravitation, Gravity Control, Universal Gravitational Thruster

1. THEORY

Consider a UGT with 9 plates (0, 1, …9). Between them there is ***Distilled Water*** ($\mu_r = 1$; $\sigma = 2\times10^{-4} S/m$; $\rho = 1000 kg.m^{-3}$; *dieletric strength* $> 20KV/mm$).



When a voltage V, with frequency f, is applied on the metallic plates, the value of χ, between the metallic plates, is given by [1]:

$$\chi = m_g/m_{i0} = \left\{1 - 2\left[\sqrt{1 + \left(\mu/4c^2\right)\left(\sigma/4\pi f\right)^3 \frac{E^4}{\rho^2}} - 1\right]\right\} \qquad (1)$$

Note that $E = E_m \sin\omega t$ .The average value for E^2 is equal to $\frac{1}{2}E_m^2$ because E varies sinusoidaly (E_m is the maximum value for E). On the other hand, $E_{rms} = E_m/\sqrt{2}$. Consequently we can change E^4 for E_{rms}^4, and the equation above can be rewritten as follows

$$\chi = m_g/m_{i0} = \left\{1 - 2\left[\sqrt{1 + 1.758\times10^{-27}\left(\mu_r\sigma^3/\rho^2 f^3\right)E_{rms}^4} - 1\right]\right\} \qquad (2)$$

Substitution of $\mu_r = 1$; $\sigma = 2\times10^{-4} S/m$; $\rho = 1000 kg.m^{-3}$ into equation above gives

$$\chi = m_g/m_{i0} = \left\{1 - 2\left[\sqrt{1 + 1.40\times10^{-44}\left(E_{rms}^4/f^3\right)} - 1\right]\right\} \qquad (3)$$

The Electric Field of the *dipole of the H_20 Molecule*, is given by [2]:

$$\vec{E} = \left[3(\vec{p}.\hat{r})\hat{r} - \vec{p}\right]/4\pi\varepsilon_0 r^3 = 2\vec{p}/4\pi\varepsilon_0 r^3$$

where $p = 6.17\times10^{-30} C.m$ and $r = 9.6\times10^{-11} m$. Thus, we get $E = 1.26\times10^{11} V/m$. The exact calculation of the electric field inside a water molecule is very complex; it depends on of several factors. Here, we will assume the value $\bar{E} \cong E$ for the entire molecule.

Now consider that an *external oscillating electric field*, $E_f \cong 1V/m$, with frequency f is applied on the water molecule. The vectorial sum of $\bar{E}$ with E_f produces an oscillating field, $\vec{E}_{rms}$, with intensity $E_{rms} \cong \bar{E} \cong 1.26\times10^{11} V/m$. By substituting this value into Eq. (3), we get

$$\chi = m_g/m_{i0} \cong \left\{1 - 2\left[\sqrt{1 + 3.52/f^3} - 1\right]\right\} \qquad (4)$$

On the other hand, the forces acting on the metallic plates are, respectively, expressed by

$\vec{F}_1 = m_{i01}\vec{g}_1 = m_{i01}(\chi\vec{g}_0) = \chi m_{i01}\vec{g}_0$;

....

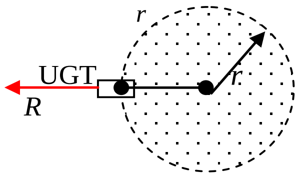
$\vec{F}_9 = m_{i09}\vec{g}_9 = m_{i09}(\chi\vec{g}_9) = m_{i09}\left[\chi\left(\chi^8\vec{g}_0\right)\right] = \chi^9 m_{i09}\vec{g}_0$;

Note that, due to $\chi < 0$, and $\chi^9 < 0$ then $\vec{F}_9$ has the same direction of $\vec{F}_1$. The resultant $\vec{R}$ is

$$\vec{R} = \vec{F}_1 + \vec{F}_2 + \ldots + F_9 \cong \vec{F}_9 = \chi^9 m_{i09}\vec{g}_0$$

If the oscillating electric field through the H_2O molecules has *extremely-low frequency*, for example, if $f = 0.2Hz$, then Eq. (4), gives $\chi \cong -39$. Thus, we get $R \cong F_9 = \chi^9 m_{i09} g_0 = (-39)^9 m_{i09} g_0$. If $m_{i09} = 10kg$ the result is $R \cong 2\times10^{15} g_0$.

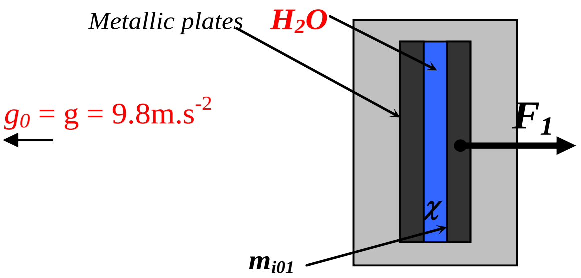
If the UGT is inside Earth's atmosphere, at a distance $r = 1m$ from the center of an "air sphere",



Then $g_0 = Gm/r^2 = G\left(\frac{4}{3}\pi\rho_{air}r\right)/r^2 = \frac{4}{3}\pi G\rho_{air}r \cong 2.8\times10^{-10} m.s^{-2}$. In this case, we get

$$R \cong 560kN$$

Let us now consider the case, in which the UGT has just one capacitor, and it is on the Earth surface ($\vec{g}_0 = \vec{g} = 9.8m.s^{-2}$).



In this case, there is just the force $\vec{F}_1$, which is expressed by

$$\vec{F}_1 = m_{i01}\vec{g}_1 = m_{i01}(\chi\vec{g}) = \chi m_{i01}\vec{g} \qquad (5).$$

If $f = 0.5Hz$, then Eq. (4), gives $\chi \cong --7.8$. Thus, Eq. (5) gives $|F_1| = |\chi| m_{i01}\vec{g} = (7.8)(9.8)m_{i01} = 76.4m_{i01}$. If $m_{i01} = 1kg$ the result is

$$R = |F_1| \cong 76.4N$$

CONCLUSION

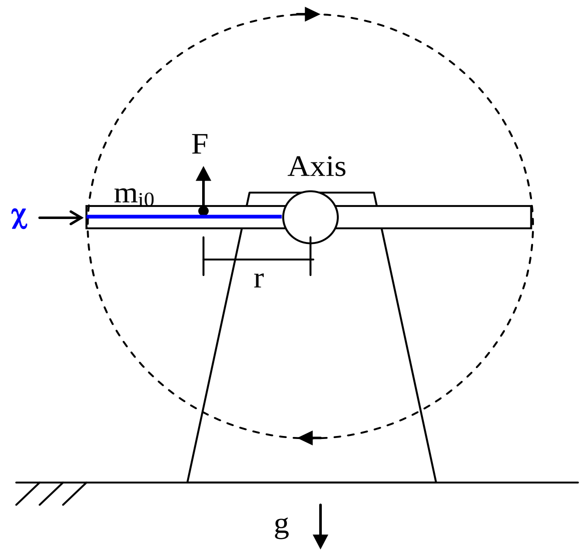
An experimental arrangement to check this result is very simple to be building, and practically it can be made in any laboratory that it has a Function Generator, in order to produce extremely-low frequency voltages.

References

[1] De Aquino, F.,(2020) *Experimental set-up to check the decreasing of the Gravitational Mass in Metallic Discs subjected to an alternating voltage of extremely low frequency*, Eq. (8). https://hal.science/hal-02448571

[2] B, Laud B. (1987). *Electromagnetics.* [S.l.]: New Age International

APPENDIX



F = $m_{i0}(\chi g) = m_{i0}\, a$

$$a = (\chi g) \qquad \text{(I)}$$

Since $v = wr$ and $v = \sqrt{2ax} = \sqrt{2a(2\pi r)}$ we obtain

$$a = \pi r f^2 \qquad \text{(II)}$$

By comparing Eq. (I) with Eq. (II) we get

$$f = \sqrt{\frac{\chi g}{\pi \ r}} \qquad \text{(III)}$$

In order to $f = 60Hz$, Eq. (III) tells us that, the radius r must be given by

$$r = \frac{\chi g}{\pi f^2} = 8.66 \times 10^{-4}\chi \qquad \text{(IV)}$$

For $r = 0.1m$, it is necessary that $\chi = -115.5$. This value can be obtained, making $f = 0.1Hz$ in Eq.(4), i.e.,

$$\chi = m_g / m_{i0} \cong \left\{1 - 2\left[\sqrt{1 + 3.52/f^3} - 1\right]\right\} = -115.5 \qquad (4)$$

Since $W = F.d = F(2\pi r)$, then the power P of the generator (Rotor vane with 1 vane), is *

$$P = \frac{W}{T} = F(2\pi r)f = m_{i0}(\chi g)(2\pi r)f \qquad \text{(V)}$$

For $m_{i0} = 4.5kg$, we get

$$P \cong 192kW \cong 257HP$$

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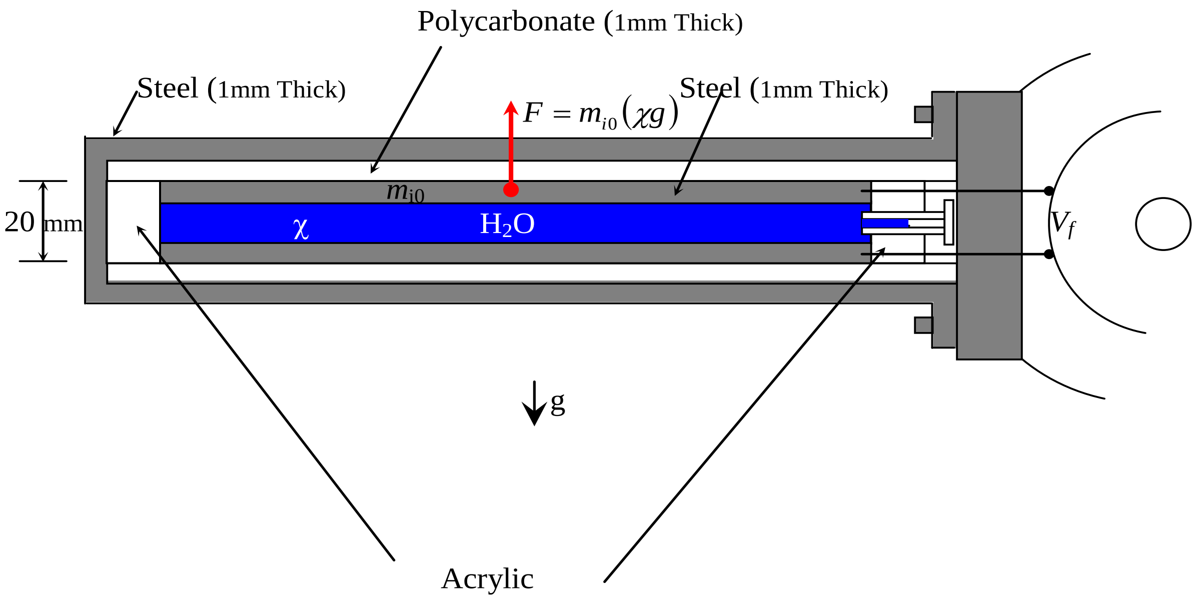
* In the case of Rotor vane with n vanes, P is given by

$$P = \frac{W}{T/n} = (n\chi)m_{i0}g(2\pi r)f$$



Schematic Diagram of the Rotor Vane