

# **Transforming a Quantum Controller of Gravity into a Gravitational Spacecraft**

by

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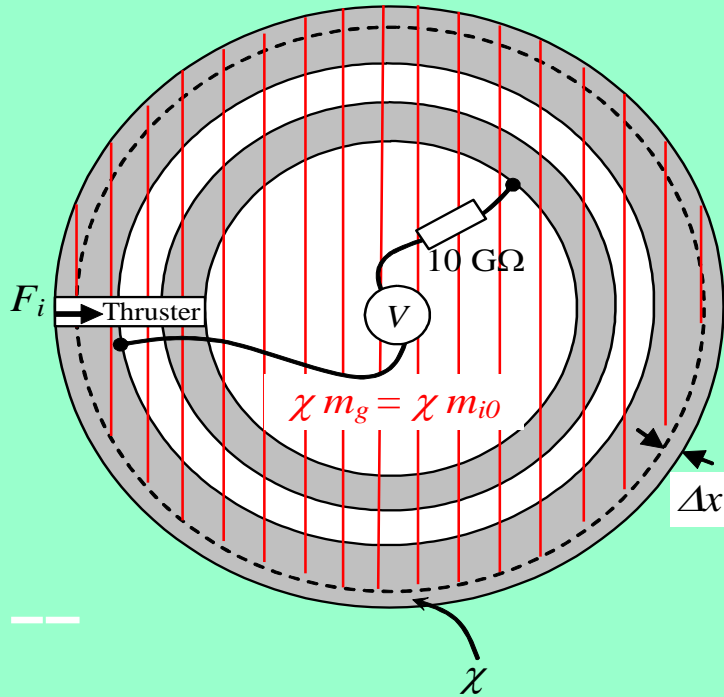


Fig.1 – A Quantum Controller of Gravity transformed into a Spacecraft.

Consider the Quantum Controller of Gravity (QCG) shown in Fig. 4 of reference [1]. Here, Fig.1 shows it transformed into a spacecraft. It was shown that in the region hatched in red on Fig.1 we have  $m'_g = \chi m_g$ , where  $\chi$  is given by

$$\chi = \frac{m_{g(\Delta x)}}{m_{i0(\Delta x)}} = \left\{ 1 - 2 \left[ \sqrt{1 + 2.64 \times 10^{-3} V} - 1 \right] \right\} \quad (1)$$

Thus, the gravitational mass of the spacecraft becomes  $m'_g = \chi m_g = \chi m_{i0}$ , where  $m_{i0}$  is its *inertial* mass.

Equation (6) of reference [2] shows that the spacecraft will acquire an acceleration  $\vec{a}$ , given by

$$\vec{a} = \frac{\vec{F}_i}{m'_g} \left( 1 - \frac{v^2}{c^2} \right)^{\frac{3}{2}} = \frac{\vec{F}_i}{\chi m_{i0}} \left( 1 - \frac{v^2}{c^2} \right)^{\frac{3}{2}} \quad (2)$$

where  $F_i'$  is the thrust produced by the thruster of the spacecraft (See Fig.1). In the non-relativistic case ( $v \ll c$ ), Eq. (2) reduces to

$$\vec{a} \cong \frac{\vec{F}_i}{\chi m_{i0}} \quad (3)$$

Equation (1) shows that for  $V = 473.428 \text{ volts}$ , we obtain  $\chi \cong 1 \times 10^{-4}$ . Then, if the inertial mass of the spacecraft is  $m_{i0} = 10,000 \text{ kg}$ , we get

$$|\vec{a}| \cong |\vec{F}_i| \quad (4)$$

Therefore, if  $|\vec{F}_i| \cong 10,000 \text{ N}$  (The thrust of the F-22 Raptor reaches 160,000N) then the spacecraft will acquire an acceleration

$$|\vec{a}| \cong 10,000 \text{ m.s}^{-2} \quad (5)$$

This means that at *one* second the velocity of the spacecraft will be about 36,000km/h (Earth's circumference at the equator has about 40,000km).

The *total* energy of the spacecraft, according to Eq. (7) of reference [2], is given by

$$E_g = \frac{m_g c^2}{\sqrt{1-v^2/c^2}} = \frac{\chi m_{i0} c^2}{\sqrt{1-v^2/c^2}} \quad (6)$$

and consequently, its *kinetic energy*, in the non-relativistic case, is expressed by

$$K \cong \frac{1}{2} \chi m_{i0} v^2 \quad (7)$$

which is equivalent to

$$K \cong \frac{1}{2} m_{i0} v_{eq}^2 \quad (8)$$

where

$$v_{eq} = v \sqrt{\chi} \quad (9)$$

Therefore, for  $\chi = 10^{-4}$  and  $v = 36,000\text{km} / h$ , the equivalent velocity of the spacecraft is only

$$v_{eq} = 360\text{km} / h \quad (10)$$

This means that, despite the enormous velocity of the Gravitational Spacecraft ( $v = 36,000\text{km} / h$ ), its surface *temperature* – due to the friction with the atmospheric air, does not increase significantly, because it becomes equivalent to the surface temperature of a conventional spacecraft, flying in atmospheric air, with only 360km/h.

## References

- [1] De Aquino, F. (2016) *Quantum Controller of Gravity*.  
<https://uema.academia.edu/FranDeAquino/Papers>
- [2] De Aquino, F. (2010) *Mathematical Foundations of the Relativistic Theory of Quantum Gravity*, Pacific Journal of Science and Technology, **11** (1), pp. 173-232.  
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