

Gravitational Constant

António Saraiva – 2010-04-22
ajps2@hotmail.com

See Unified Absolute Relativity Theory at:

www.wbabin.net/saraiva/saraiva305.pdf
www.wbabin.net/saraiva/saraiva306.pdf
www.wbabin.net/saraiva/saraiva307.pdf
www.wbabin.net/saraiva/saraiva328.pdf

The macroscopic quantum of mass is the proton and the neutron.
From the force between two electric dipoles:

$$d^4 = \frac{4\pi \cdot G \varepsilon_0 k_B^2}{3} D^2$$

$$D = \varepsilon_G = \frac{1}{\sqrt[3]{G}} \quad \text{and} \quad d = x_p$$

G – Gravitational constant; x_p - Proton Compton wavelength;
 ε_0 - Vacuum permittivity; k_B - Boltzmann constant.

$$\Leftrightarrow \quad G = \left(\frac{3x_p^4}{4\pi \cdot \varepsilon_0 k_B^2} \right)^3 = 8 \times 10^{-11} m^{-3}$$

Variation of G with the speed or the gravitational potential:

$$G = G_0(1 - v^2/c^2)^4 ; \quad \varphi = v^2 = \frac{GM}{R}$$

Proton mass and wavelength:

$$m_p = 1.6728 \times 10^{-27} kg ; \quad x_p = 1.32134 \times 10^{-15} m$$

For:

$$G = 6.6742 \times 10^{-11} m^{-3} ; \quad x_p = 1.3 \times 10^{-15} m$$

The Unified Absolute Relativity Theory has only two constants:

$$x_e = 2.426 \times 10^{-12} m ; \quad c = 2.99792458 \times 10^8 m/s$$

x_e - Electron Compton wavelength; c – Light speed.

Natural units are stupid.

If nothing exists, the nothing can't exist. So, the existence is eternal.

There was no beginning. No one starts the existence.

Exact formula of the mass or the electric dipole moment with wavelength:

$$m = \frac{qk_B \sqrt{S + x^2}}{x^2} \frac{1}{1 + \frac{\pi^3 \alpha^2}{2}}$$

Planck mass and wavelength:

$$m = \frac{q}{\sqrt{4\pi \epsilon_0 G}} ; \quad x^2 = \frac{h\sqrt{4\pi \epsilon_0 G S}}{cq} \quad \Leftrightarrow$$

$$\Leftrightarrow \quad \frac{4\pi G \epsilon_0^3 k_B^2}{3} = \frac{4\pi^4 x^4}{\alpha^4}$$

Saraiva's constant:

$$S = \frac{\epsilon_0^2 \alpha^4}{12\pi^4}$$

For large masses:

$$w = x f_M = x \frac{c}{\sqrt{S}}$$

$$S = \frac{\epsilon_0^2 \alpha^4}{12\pi^4} = \frac{\pi x_e^2 \alpha^5}{2} \quad \Leftrightarrow$$

$$\Leftrightarrow \quad \frac{\epsilon_0}{x_e} = \sqrt{6\pi^5 \alpha} \quad (\text{Not exact})$$

Exact quantum correction:

$$= 1 + \frac{\alpha}{2\sqrt{2}}$$

α - Fine structure constant; x_e - Electron wavelength.

