

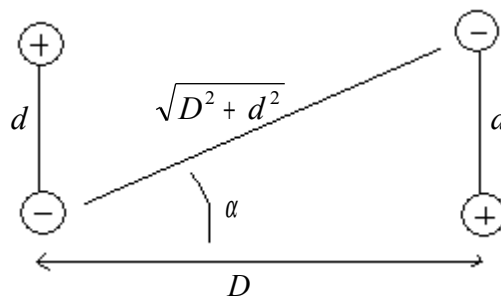
The Gravitational Constant II

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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 mass is the electric dipole moment, Coulomb meter is equal to kilogram.
The gravitational force is the electric force between neutral electric dipoles.



$$\cos \alpha = \frac{D}{\sqrt{D^2 + d^2}} ; \quad \sin \alpha = \frac{d}{\sqrt{D^2 + d^2}}$$

Attractive force between two dipoles:

$$F = \frac{2q_e^2}{4\pi \epsilon_0 D^2} - \frac{2q_e^2 D}{4\pi \epsilon_0 (D^2 + d^2)^{3/2}} = G \frac{m^2}{D^2}$$

Mass or electric dipole moment:

$$m = \frac{q_e k_B}{d}$$

q_e - Electron charge; D - Distance; d - Distance between poles;
 k_B - Boltzmann constant; G - Gravitational constant.

$$F = \frac{q_e^2}{2\pi \epsilon_0} \left(\frac{1}{D^2} - \frac{D}{(D^2 + d^2)^{3/2}} \right) = G \frac{q_e^2 k_B^2}{d^2 D^2} ; \quad D \gg d$$

$$\Leftrightarrow G = \frac{d^2}{2\pi \varepsilon_0 k_B^2} \left(1 - \sqrt{\frac{D^6}{D^6 + 3D^4 d^2}} \right)$$

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

The gravitational constant is not constant, but:

Particular quantization:

$$d^4 = \frac{4\pi \varepsilon_0 G k_B^2 D^2}{3} \quad \text{and} \quad D = \varepsilon_G = \frac{1}{\sqrt[3]{G}}$$

$$\Leftrightarrow d^4 = \frac{4\pi \varepsilon_0 G^{1/3} k_B^2}{3} = x_p^4$$

x_p - Proton Compton wavelength

The proton (and the neutron) is the quantum of the macroscopic mass.

$$G = 6.6742 \times 10^{-11} m^{-3} \quad \Leftrightarrow \quad d = 1.30 \times 10^{-15} m$$

$$x_p = 1.32 \times 10^{-15} m$$

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