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Correction of the Unified Acceleration

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We have defined the unified gravitational acceleration as:

$$g = \frac{dw}{dt} \quad ; \quad c^2t^2 - x^2 = k \quad \Leftrightarrow \quad w = \frac{x}{t} = \frac{\sqrt{c^2t^2 - k}}{t}$$

And it gives:

$$g = \frac{kf^3}{w} \quad ; \quad k = 1.9\times10^{-34}\, m^2$$

f = Compton frequency; w = Speed of the wave

This formula is correct for the electron because $w_e = c$
But it must be replaced by another formula:

$$g = \frac{1}{2}\frac{d(w^2)}{dx} \quad \Leftrightarrow \quad g = \frac{kwf^3}{c^2} \quad ; \quad w = \frac{cx}{\sqrt{k + x^2}}$$

The equivalent macroscopic acceleration is:

$$g = \frac{1}{2}\frac{d(V^2)}{dR} \quad ; \quad V = \sqrt{\frac{2GM}{R}}$$

V = Escape speed

The acceleration field is generated by the speed variation of the gravitons with distance. So, there is only one mechanism of generation of the gravitational field of the particles or the macroscopic masses.
The gravitons are photons of very low phase speed.

For the Earth:

$$M = 6\times10^{24} = \frac{hf_M}{{w_M}^2} \quad ; \quad f_M = \frac{c}{\sqrt{k}} = 2.166\times10^{25}\, Hz$$

f_M = Compton frequency of the matter

$$g = 9.8 = \frac{k w_G {f_M}^3}{c^2}$$

$$w_M = 4.9\times10^{-17}\, ms^{-1} \;; \qquad w_G = 4.5\times10^{-25}\, ms^{-1}$$

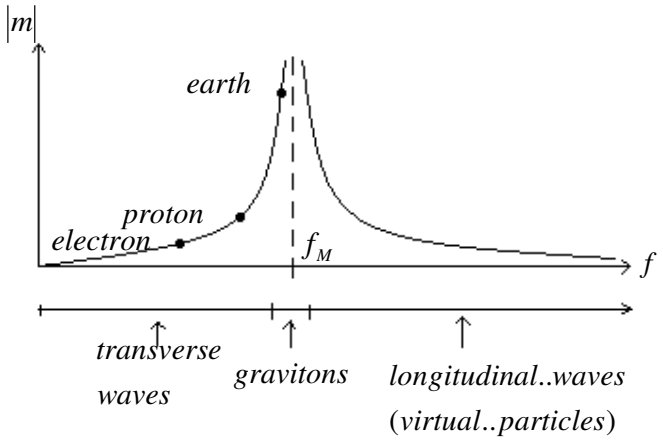
Group speed of the acceleration field:

$$V_G = \frac{c^2}{w_G} = 2\times10^{41}\, ms^{-1}$$

Compton wavelength of the gravitons:

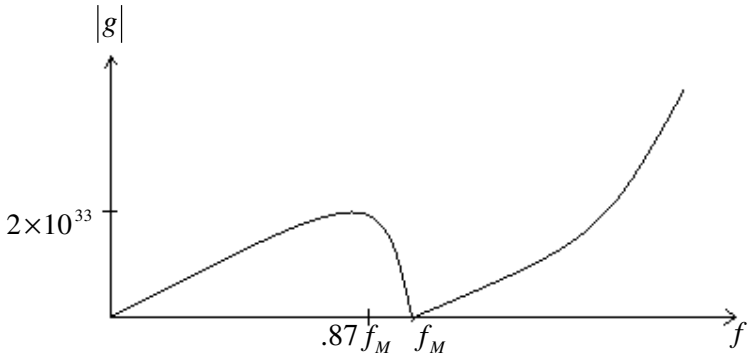
$$x_M = 2.26\times10^{-42}\, m \;; \qquad x_G = 2.1\times10^{-50}\, m$$

All mass spectrum

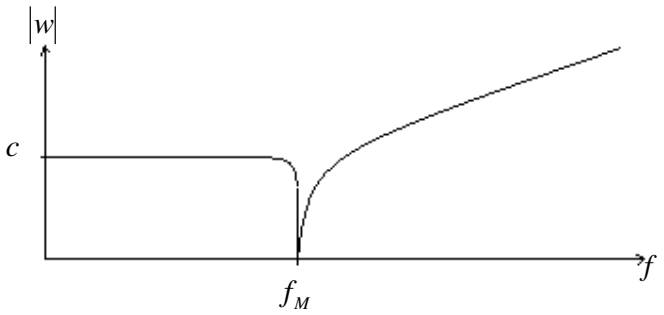


$|m|$ = mass module ; f = Compton frequency

Gravitational acceleration



Field speed:



Relative acceleration

$$g = \frac{kwf^3}{c^2} \;; \qquad w = c^2 \frac{w_0 + v}{c^2 + vw_0} \;; \qquad f = \frac{cf_0\sqrt{c^2 - v^2}}{c^2 + vw_0}$$

$$\Leftrightarrow \qquad g = \frac{kc^3 f_0{}^3 (w_0 + v)(c^2 - v^2)^{3/2}}{(c^2 + vw_0)^4}$$

For a black hole: $v = c \quad \Leftrightarrow \quad g = 0$
At the surface of a black hole the force is zero.

Unified relative force (between equal particles)

$$F = \frac{khf_0{}^4 (c^2 - v^2)^2}{(c^2 + vw_0)^3 (w_0 + v)}$$