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THE TRANSITIVE AXIOM IN RELATIVITY

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The transitive axiom states: that if two quantities are both equal to a third quantity, then they are equal to each other.

Following this axiom it is proposed:

$$\boldsymbol{m_0 + \Delta m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}}$$

Where:

$$\boldsymbol{m_0 = any\ \ mass}$$

$$\boldsymbol{\Delta m = \frac{Nhf}{c^2}}$$

$$\boldsymbol{N = \ Number\ of\ photons}$$

According to the electromagnetic spectrum:

$$\boldsymbol{c = f\lambda}$$

$$\lambda = \frac{c}{f}$$

At this moment we must propose that there is a longer wave length, that is, the largest. This happens when f = 1.

$$\lambda = c\ (in\ meters)$$

Then:

$$m_0 + \frac{Nhf}{c^2} = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

With:

$$N = 1$$

$$f = 1$$

Would represent the minimum increase in mass:

$$m_0 + \frac{E_m}{c^2} = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$$E_m = Minimum\ energy$$

$$m_m = \frac{E_m}{c^2}$$

$$m_m = \text{ Minimum mass}$$

$$m_m = \frac{E_m}{c^2} = \frac{h(1)}{c^2}$$

$$m_m = \frac{h(\text{without time units})}{c^2} = \frac{(h/t)}{c^2} = \frac{\dot{h}}{c^2} = \frac{E_m}{c^2}$$

Then:

$$m_m \cong \frac{6.62607015x10^{-34}J}{\left(299792458\frac{m}{s}\right)^2} \cong 7.37x10^{-51}kg$$

The above is true if the longest wavelength is:

$$\lambda = c\ (\text{in meters})$$

In the universe there are limits. One of them is the speed of light (c), another is the temperature of absolute zero, magnetic forces and fields acquire the same intensities as electric forces and fields at the speed of light (c). In a rigorous study it could be verified that all or almost all the physical laws of this universe, in this dimension, have limits to values related to the value of the speed of light (c).

Applying the result to a differential gravitational force we obtain:

$$\Delta F = G\frac{m \cdot m_m}{r^2}$$

$$\Delta F = G\frac{m \cdot \dot{h}}{r^2 c^2}$$

$$\Delta F = G \cdot \dot{h} \cdot \varepsilon_0 \cdot \mu_0 \frac{m}{r^2}$$

$$G = Gravitational\ constant$$

$$\varepsilon_0 = Electric\ constant$$

$$\mu_0 = Magnetic\ constant$$

$$\dot{h} = Minimum\ energy$$

$$m = Any\ \ mass$$

$$r = Radios\ from\ center\ of\ \ mass\ m$$

Relationship between the speed and **energy of a mass particle**

$$m_0 + \Delta m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}} \quad ; \quad m_0 + \frac{Nhf}{c^2} = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$$m_0 + \frac{E_m}{c^2} = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$$m_0 c^2 + E_m = \frac{m_0 c^2}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$$\sqrt{1 - \frac{v^2}{c^2}} = \frac{m_0 c^2}{m_0 c^2 + E_m}$$

$$1 - \frac{v^2}{c^2} = \frac{(m_0c^2)^2}{(m_0c^2 + E_m)^2}$$

$$\frac{v^2}{c^2} = 1 - \frac{(m_0c^2)^2}{(m_0c^2 + E_m)^2}$$

$$\frac{v}{c} = \sqrt{1 - \frac{(m_0c^2)^2}{(m_0c^2 + E_m)^2}}$$

$$v = c\sqrt{1 - \frac{(E_0)^2}{(E)^2}}$$

Bremsstrahlung

$$m_0 + \Delta m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$$

$$Nhf = \frac{m_0c^2}{\sqrt{1 - \frac{v^2}{c^2}}} - m_0c^2$$

$$hf = E_1 - E_2$$

$$hf = \frac{m_0 c^2}{N\sqrt{1 - \frac{v^2}{c^2}}} - \frac{m_0 c^2}{N}$$

Generalizing:

$$\frac{m_0}{\sqrt{1 - \frac{v_1^2}{c^2}}} + \Delta m = \frac{m_0}{\sqrt{1 - \frac{v_2^2}{c^2}}}$$

$$\Delta m = \frac{m_0}{\sqrt{1 - \frac{v_2^2}{c^2}}} - \frac{m_0}{\sqrt{1 - \frac{v_1^2}{c^2}}}$$

$$hf = \frac{m_0 c^2}{N\sqrt{1 - \frac{v_2^2}{c^2}}} - \frac{m_0 c^2}{N\sqrt{1 - \frac{v_1^2}{c^2}}}$$