Unified Force

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Abstract – There's only one force, the electric one that can be expressed by only one formula.

Wrong energy formulas:

$$E = mc^2 \quad ; \qquad E = hf$$

Correct formulas:

$$E = mcw \quad ; \qquad E = \frac{hcf}{w} \quad ; \qquad w = \sqrt{c^2 - Sf^2}$$

E – Energy; m – Mass; c – Light speed; h – Planck's constant
f – Compton's frequency; w – True light speed in vacuum; $S = 1.9 \times 10^{-34} m^2$

Mass:

$$m = \frac{hf}{w^2}$$

Acceleration:

$$g = \frac{1}{2}\frac{d(w^2)}{dx} \qquad \text{and} \qquad w^2 = \frac{c^2 x^2}{S + x^2}$$

g – Acceleration; x – Compton's wavelength

Force:

$$F = mg \qquad \Leftrightarrow \qquad F = \frac{S.h.f^4}{c^2 w}$$

Lorentz's equations:

$$f = \frac{cf_0\sqrt{c^2 - v^2}}{c^2 - vw_0} \quad ; \qquad w = c^2 \frac{w_0 - v}{c^2 - vw_0}$$

$$\Leftrightarrow \qquad F = \frac{S.h.f_0^{\,4}(c^2 - v^2)^2}{(c^2 - vw_0)^3 (w_0 - v)}$$

Behaviour of the several forces

Force between two electrons:

$$f = 1.236\times 10^{20}\,Hz\ ; \qquad w = c$$

$$F = \frac{Shf^4}{c^3} = 1.1\times 10^{-12}\,N$$

Electric force:

$$F = \frac{q^2}{4\pi\varepsilon_0 R^2} \qquad \Leftrightarrow \qquad R = \frac{x}{\pi\alpha^2} = 1.45\times 10^{-8}\,m$$

α -- Fine structure constant; q – Electric charge; ε_0 -- Vacuum permittivity

Force between two protons (strong force):

$$f = 2.26861\times 10^{23}\,Hz\ ; \qquad w = \sqrt{c^2 - Sf^2} = 2.99776033\times 10^8\,ms^{-1}$$

$$F = \frac{Shf^4}{c^2 w} = 12.465N$$

Electric force:

$$F = \frac{q^2}{4\pi\varepsilon_0 R^2} \qquad \Leftrightarrow \qquad R = 4.3\times 10^{-15}\,m$$

$$x = \frac{w}{f} = 1.32\times 10^{-15}\,m$$

4.2×10^{-15} is the distance between the proton and the neutron in the deuteron.

So, the strong force is only an electric force, stronger because the distance is smaller. Protons repeal each other like neutrons. At small distances the neutron has a negative charge.

Weak force

Between quarks and mediated by the bosons w and z

Size of the quark: $x \approx 1\times 10^{-19}\,m$

Unified and electric forces:

$$F = \frac{Shf^4}{c^2 w} = \frac{q^2}{4\pi\varepsilon_0 R^2} \qquad \text{and} \qquad R = \frac{x}{2\pi}$$

$$\Leftrightarrow \qquad x = \frac{q^2\pi\sqrt{S}}{hc\varepsilon_0} = 6.34\times10^{-19}\,m$$

The weak force is also an electric force.

$$F = 5.74\times10^{8}\,N$$

The weak force is the stronger one.

Gravitational force

The mass is the electric dipole moment of a particle.
The gravitational force is the one between the electric dipoles of the protons and neutrons:

There are two electric attractive forces and two repulsive.

$$F = \frac{Gm_p^{\ 2}}{D^2} = \frac{2q^2}{4\pi\varepsilon_0}\left(\frac{1}{D^2} - \frac{1}{D^2 + d^2}\right) = \frac{2q^2 d^2}{4\pi\varepsilon_0 D^2}$$

G – Gravitational constant; m_p -- Mass of the proton; d – Distance of the dipole

$$\Leftrightarrow \qquad d = 6.36\times10^{-19}\,m$$

The distance of the dipole is equal to the quark wavelength.