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Magnetic and Electric Forces

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See Unified Absolute Relativity Theory at:

http://www.wbabin.net/saraiva/saraiva105.pdf

$$F_M = \frac{{q_m}^2}{\mu_0 R^2} = \frac{h^2}{4{q_e}^2 \mu_0 R^2} = \frac{3.4026\times10^{-24}}{R^2}$$

$$F_E = \frac{{q_e}^2}{4\pi\varepsilon_0 R^2} = \frac{2.3072\times10^{-28}}{R^2}$$

$$\frac{F_M}{F_E} = \frac{h^2\pi\varepsilon_0}{{q_e}^4\mu_0} = \frac{(137.036)^2\pi}{4}$$

$$F_{M2} = \frac{q_m c}{\mu_0} = \frac{hc}{2q_e\mu_0} = 0.49331 \; ; \qquad B = c$$

$$F_{E2} = q_e c^2 = 1.44\times10^{-2} \; ; \qquad E = c^2$$

$$\frac{F_{M2}}{F_{E2}} = \frac{137.036}{4}$$

$$F_E = F_{E2} \quad \Leftrightarrow \quad R_1 = 1.266\times10^{-13}$$

$$F_M = F_{M2} \quad \Leftrightarrow \quad R_2 = 2.626\times10^{-12}$$

$$R_1 \approx R_2 \approx x_e = 2.426\times10^{-12}$$

Measurement of the magnetic charge

We have performed the measurement of the magnetic charge of two strong magnets from an old magnetron.

$$F = \frac{Q_1 Q_2}{\mu_0 R^2}$$

$$F = 0.98N \;; \quad R = 0.05m \quad \Leftrightarrow$$

$$\Leftrightarrow \quad Q_1 = Q_2 = 5.6\times10^{-5} Weber$$

Elementary magnetic charge (magnetic flux quantum):

$$q_m = \frac{h}{2q_e} = 2.068\times10^{-15} Weber$$

Number of charges:

$$\frac{Q}{q_m} = 2.71\times10^{10}$$

Magnetic pole strength – P

Force:

$$F = \mu_0 \frac{P^2}{R^2} = \frac{{q_m}^2}{\mu_0 R^2} \quad \Leftrightarrow$$

Quantum of magnetic pole strength:

$$\Leftrightarrow \quad P = \frac{q_m}{\mu_0} = \frac{h}{2q_e\mu_0}$$

$$P = 1.6455\times10^{-9} L^3 V^3$$