the general science journal

Electric and Magnetic Fields of the Electron

António Saraiva – 2009-07-13
ajps2@hotmail.com

See Unified Absolute Relativity Theory at:

http://www.wbabin.net/saraiva/saraiva105.pdf
http://www.wbabin.net/saraiva/saraiva223.pdf

The magnetic field is a speed and the electric field is a squared speed.

Energy of the electron:

$$E_e = \left(\frac{\varepsilon_0 E^2}{2} + \frac{B^2}{2\mu_0} \right) V = 0.511 MeV \quad ; \quad \text{V – volume}$$

$$\frac{\varepsilon_0 E^2}{2} V = \frac{0.511 MeV}{2}$$

Electric charge:

$$q_e = EV \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad E = 5.7714 \times 10^{16} = c^2 / 1.557$$

$$V = 2.7761 \times 10^{-36}$$

Reference electric field:

$$E = E_0 \frac{4\pi^2 k}{{x_e}^2} \qquad \Leftrightarrow \qquad E_0 = 4.4964 \times 10^{25} = c^3 1.6688$$

Magnetic field

$$\frac{E_e}{2} = \frac{B^2 V}{2\mu_0} \qquad \Leftrightarrow \qquad B = 1.925 \times 10^8 = c / 1.557$$

Reference magnetic field:

$$B_0 = 1.5 \times 10^{17} = c^2 1.6688$$

$$\frac{E}{B} = c$$

Magnetic charge:

$$q_m = BA \qquad \Leftrightarrow \qquad A = 1.0742 \times 10^{-23}\, m^2$$

Induced magnetic field:

$$B = \frac{2\pi m_e f_e}{22.94 q_e} = \frac{\mu_0 q_e f_e}{22.94 R_e 2} \;; \qquad R_e = \frac{x_e}{2\pi 137}$$

Induced electric field:

$$E = \frac{q_m f_e}{R} \;; \qquad R = 4.43 \times 10^{-12}\, m$$

Electromagnetic energy density:

$$U = \frac{\varepsilon_0 E^2}{2} + \frac{B^2}{2\mu_0}$$

$$\frac{\varepsilon_0 E^2}{2} = \frac{B^2}{2\mu_0} \qquad \Leftrightarrow \qquad \frac{E}{B} = c$$