THE ELECTRIC CHARGE INCREASES WITH THE SPEED

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Abstract – The electric charge is a relativistic variable.

Cu 29 –

29th energy of ionization: E = 11567.617eV ; n = 1 / 29

Half of the potential energy:

$$E = \frac{(aq_e)(bq_e)\alpha}{4\varepsilon_0 n x_e} = 1.85333637 \times 10^{-15} J \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad ab = 29.317373$$

$$ab = \frac{29 \times 1}{\left(1-\frac{v^2}{c^2}\right)^x \left(1-\frac{v^2}{c^2}\right)^x} = \frac{29}{\left(1-\frac{v^2}{c^2}\right)^{2x}}$$

q_e -- Elementary charge; α -- Fine structure constant; ε_0 -- Vacuum permittivity; x_e -- Electron Compton wavelength; c – Light speed.

Relative speed:

$$v = \frac{\alpha.c}{n} = 29\alpha.c = 6.34430463 \times 10^7 \, m/s$$

$$2x \log\left(1-\frac{v^2}{c^2}\right) = \log\frac{29}{29.317373} \qquad \Leftrightarrow$$

$$\Leftrightarrow \ldots\ldots\ldots x = 0.118778641 \approx \frac{\sqrt[4]{2}}{10}$$

28 Ni –

E = 10775.40eV ; n = 1 / 28

x = 0.118690875

26 Fe –

E = 9277.69eV ; n = 1 / 26

x = 0.118462015

Charge variation formula:

$$Qe = \frac{Qe_0}{\left(1 - \frac{v^2}{c^2}\right)^{0.118920712}}$$