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Was pleased to discover the journal "Speculations in Science and Technology" this last Thursday eve. Equally pleased to find your letter, "On Photon/Matter Interactions" in V16 N1.

I was doing computer reference searches at Stanford's Terman Engineering Library (search inspec) on electron & proton geometry, and discussions of the underlying assumptions on the quantum of charge, e, and the 'velocity' of light, C.

From the attached presentation [my 'Omniverse' paper] on the fundamentals of metrics and field, you will observe the coherence of our approaches to a volumetric concept of a photon, and electron, or proton (perhaps).

The excuse for that particular library search: On Wednesday I had shown (to my satisfaction) that C is simply the ratio (conversion factor) of circumference to radius or length to time = (wavelength/period) of physics!

Using an electron energy of 511,000 eV, and $f = (E/h)$ [frequency = energy / Planck's constant] we then derive an internal standing wave frequency of an electron = 1.24×10^{20} hz (cycles/sec).

The radius = wavelength (λ) divided by 2π , equals

$$\left(\frac{C}{f}\right) \div 2\pi = \frac{3 \times 10^{10} \text{ cm/sec}}{2\pi \frac{\text{rad}}{\text{cycle}} \times 1.24 \times 10^{20} \frac{\text{cycles}}{\text{sec}}}$$

equals 3.9×10^{-11} cm/radian!

Just the value determined by you for a' and b, which you call the 'jellium' volume!

Using the same formalism; $C = \lambda f$, $\lambda = 2\pi r$, and $f = E/h$, we then get $C = 2\pi r(E/h)$.

Now given a proton radius of $r_p = 1.4 \times 10^{-13}$ cm, and proton energy of 938 MeV; we derive a C_p (proton internal 'light' velocity):

$$C_p = 2 \pi r_p \frac{E}{h}$$

$$C_p = \frac{2 \pi (1.4 \text{ cm}) (938 \text{ eV}) (10^{-13}) (10^6)}{(4.1 \text{ eV} \cdot \text{sec}) (10^{-15})}$$

$$= 2.0 \times 10^{11} \text{ cm/sec} \quad !!!$$

A shortcut is to use :

$$C_p = 2 \pi r_p \frac{E_p}{h} \quad \text{and} \quad C_e = 2 \pi r_e \frac{E_e}{h}$$

$$\text{therefore} \quad \frac{C_p}{C_e} = \frac{r_p}{r_e} \times \frac{E_p}{E_e} = \frac{1840}{278}$$

$$= 6.6 \quad !!!$$

$$C_p = 6.6 C_e \quad (\text{meson velocity?})$$

If we assumed the 'classical' electron radius of 2.8×10^{-13} cm, we would then derive a C_p :

$$C_p = C_e \times \frac{1840}{2} = 920 C_e \quad !!$$