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The Deuteron

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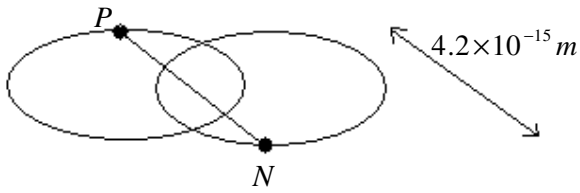
Orbit of the proton and the neutron:



Mass and frequency of the center of mass:

$$m_D = 3.34\times10^{-27}\,; \qquad f = \frac{-h+\sqrt{h^2+4km_D{}^2c^2}}{2m_Dk} = 4.53\times10^{23}$$

Acceleration:

$$g = \frac{kf^3}{w} = 6.2\times10^{28}\,; \qquad g = \frac{2.\pi.c^2}{n^3x_p} = 19 \approx 20$$

Kinetic energy of the proton:

$$E_k = 1.1MeV = \frac{1}{2}m_pv^2 \quad \Leftrightarrow \quad v = 1.45\times10^7 \approx 1.5\times10^7$$

$$n = \frac{c}{v} = 20\,; \qquad R = \frac{20.x_p}{2.\pi} = 4.2\times10^{-15}$$

$x_p = 1.32\times10^{-15}$ -- Wavelength of the proton

n -- Number of wavelengths in the perimeter of the orbit

We can verify the values by the formula:

$$m_p v R = \frac{h}{2.\pi}$$

For He^3:

$$2.6MeV = \frac{1}{2} m_p v^2 \quad \Leftrightarrow \quad v = 2.23\times10^7$$

$$n = \frac{c}{v} = 13$$

$$3\times m_p = 5\times10^{-27} \; ; \qquad f = 6.82\times10^{23}$$

$$g = 2.1\times10^{29} \; ; \qquad n = 13$$

$$R = 2.73\times10^{-15}$$

For He^4:

$$7MeV = \frac{1}{2} m v^2 \qquad \Leftrightarrow \qquad v = 3.66\times10^7 \; ; \qquad n = 8$$

$$4m = 6.7\times10^{-27} \; ; \qquad f = 9.1\times10^{23} \; ; \qquad g = 4.94\times10^{29}$$

$$n = 9 \approx 8 \; ; \qquad R = 1.7\times10^{-15}$$

Electron gravitational constant

$$G = \frac{q^2}{4.\pi.\varepsilon_0 m^2} = 2.78\times10^{32}$$

$$v = \sqrt{\frac{Gm}{R_B}} = \frac{c}{137} \; ; \qquad R_B = \frac{137x}{2\pi}$$

$$w_0 = c^2 \frac{w - v}{c^2 - vw} \; ; \quad w = c - \Delta w \; ; \quad w_0 = c - \Delta w_0$$

$$\Leftrightarrow \qquad \Delta w_0 = \Delta w$$

Electron magnetic moment

Theoretical value: $\mu_T = 9.273\times10^{-24}$

Experimental value: $\mu = 9.284764\times10^{-24}$

$$\mu = \frac{\mu_T}{\sqrt{1 - v^2 / c^2}}$$

$$v = 1.5\times10^{7}$$

This is the orbital speed of the proton in the deuteron.