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Proton-Proton Force

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See Unified Absolute Relativity Theory at:

www.wbabin.net/saraiva/saraiva105.pdf

and

www.wbabin.net/saraiva/saraiva223.pdf

The strong force is just an electric force.
At short distances the neutron has negative charge.
Between two protons the force is repulsive.

Proton rest energy: $E = 1.50327736 \times 10^{-10}\, J$

Mass: $m = \dfrac{E}{hc^3}\sqrt{kE^2 + h^2c^2} = 1.6727 \times 10^{-27}\, kg$

Wave speed: $w = \dfrac{E}{mc} = 2.99776 \times 10^{8}\, ms^{-1}$

Compton frequency: $f = \dfrac{Ew}{hc} = 2.26861 \times 10^{23}\, Hz$

Compton wavelength: $x = \dfrac{w}{f} = 1.32 \times 10^{-15}\, m$

Acceleration field: $g = \dfrac{kf^3}{w} = 7.453 \times 10^{27}\, ms^{-2}$

But the proton is relativistic,

$$\sqrt{g_p g_e} = 9.0453725 \times 10^{22} \quad ; \quad g_e = \frac{kf_e^{\,3}}{c} \quad ; \quad k = 1.9 \times 10^{-34}\, m^2$$

True acceleration field: $g_p = 6.8 \times 10^{27}$

$$g_p = g\left(1 - \frac{v^2}{c^2}\right)^{3/2} \qquad \text{and} \qquad v = \frac{w}{N} \approx \frac{c}{N}$$

⇔ N = 4.1 ; 1/N = Proton fine structure constant

True frequency: $f_p = 2.2 \times 10^{23}$; $f_p = f\sqrt{1 - 1/N^2}$

$$w_p = w(1 - 1/N^2) = 2.82 \times 10^8$$

$$x_p = \frac{w_p}{f_p} = 1.2815 \times 10^{-15}$$

Radius of the orbit: $R = \frac{Nx_p}{2\pi} = 8.362 \times 10^{-16}$

Electric charge: $q_p = \frac{q}{1 - 1/N^2} = 1.7 \times 10^{-19} C$

Binding energy:

$$E_B = \frac{q_p}{4\pi\varepsilon_0 R} = 1.94 MeV$$

Value for deuteron -- E = 2.22MeV

Force: $E_B = FR$ ⇔ F = 371.7 N

Shifted mass:

$$m_p = \frac{m}{(1 - 1/N^2)^{3/2}} = 1.834 \times 10^{-27}$$

Proton Cooper pair force:

$$F_C = m_p g_p = 12.472 N$$

Cooper pair radius:

$$R_C = \frac{N^2 x_p}{\pi} = 6.86 \times 10^{-15}$$

Cooper pair energy:

$$E_C = F_C R_C = 0.534 MeV$$

Neutrino Cooper pair

Force between two neutrinos:

$$F = \frac{q_m{}^2}{\mu_0 R^2} = g_\nu m_\nu$$

$$m_\nu = 2.2\times10^{-36}\,kg \;; \qquad g_\nu = 3.43\times10^{55}\,ms^{-2}$$

$$f_\nu = \frac{h}{km_\nu} = 1.574\times10^{36}\,Hz$$

$$w_\nu = \sqrt{k}\,f_\nu = 2.18\times10^{19}\,ms^{-1}$$

$$F = 7.54\times10^{19}\,N \;; \qquad R = 2.124\times10^{-22}\,m$$

$$E = FR = 10^{17}\,eV$$