

190(S): Potential and Force Suitable for Computation

Normalized Potential

$$\frac{V_e}{mc^2} = \frac{f(r)}{2mc^2} \left(1 + \left(\frac{L}{mcr} \right)^2 \right) \quad - (1)$$

Normalized Force

$$\frac{F(r)}{mc^2} = \frac{1}{2mc^2} \frac{d}{dr} \left(\exp \left(2 \exp \left(-\frac{r}{R} \right) \right) \left(1 + \left(\frac{L}{mcr} \right)^2 \right) \right) \quad - (2)$$

In these equations mc^2 and $L/(mc)$ are constants, and if simplified case, R is a constant.

The orbital equation is:

$$\frac{d^2}{d\theta^2} \left(\frac{1}{r} \right) + \frac{1}{r} = - \frac{mr^2}{L^2} F(r) \quad - (3)$$