

A particle of mass m moves in a circle of radius R under the influence of the attractive central force

$$F = -\frac{K}{r^2} e^{-r/a}$$

K, a are constants and r is the radial distance from the origin.

- (a) What quantities are conserved? Express any that you find in terms of the given parameters.
- (b) Determine under what conditions the circular orbit is stable.
- (c) Compute the frequency of small oscillations about a stable circular orbit, in terms of the given parameters and conserved quantities.