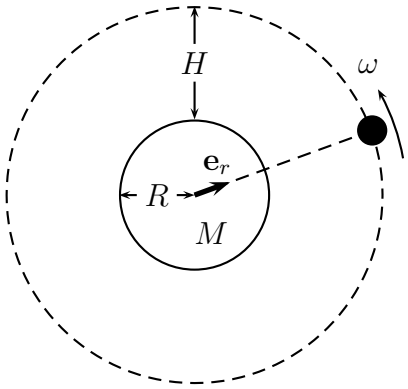
# Rotation.

**Question 1** A sling $L$ metres long, with a stone of mass $m$ kilograms, is being rotated with frequency $\nu$ revolutions per second. Find the linear velocity of the stone. *2005 paper.*

**Question 2** A satellite of mass $m$ is rotating about a planet of mass $M$ and radius $R$ with angular velocity $\omega$. The satellite is at height $H$. Find the acceleration $\mathbf{a}$ of the satellite in terms of $R$, $H$, $\omega$, and the unit vector $\mathbf{e}_r$ oriented from the centre of the planet to the satellite.




*2009 paper.*