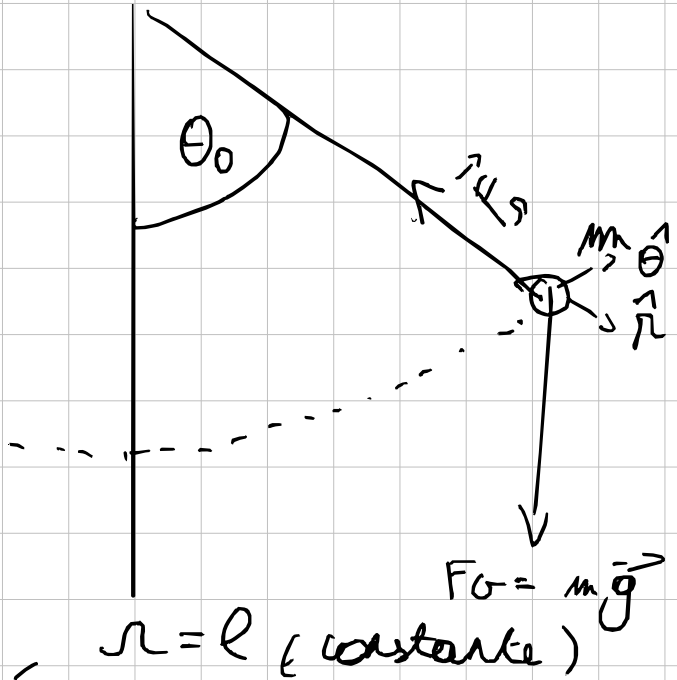


Slinger:

reminder:

$$\vec{a} = (\ddot{r} - r\dot{\theta}^2)\hat{r} + (2\dot{r}\dot{\theta} + r\ddot{\theta})\hat{\theta}$$



$$\vec{F}_s = F \hat{r}, \quad r = l \text{ (constant)}$$

oder

$$\vec{a} = -l\dot{\theta}^2\hat{r} + l\ddot{\theta}\hat{\theta}$$

$$\sum \vec{F} = m\vec{a} = m[-l(\dot{\theta})^2\hat{r} + l\ddot{\theta}\hat{\theta}]$$

$$[\hat{r}] - m \cdot l(\dot{\theta})^2 = F + mg \cos \theta \quad [1]$$

$$[\hat{\theta}] m \cdot l \ddot{\theta} = -mg \sin \theta \quad [2]$$

$$[2]: \ddot{\Theta} = - \frac{g}{l} \sin \Theta$$

klein $\Theta_0 \rightarrow \sin \Theta = \Theta$

$$\Rightarrow \ddot{\Theta} + \frac{g}{l} \sin \Theta = 0 \quad (H.\Theta)$$
$$\omega_0^2$$

$$\Theta = \Theta_0 \cos(\omega_0 t)$$