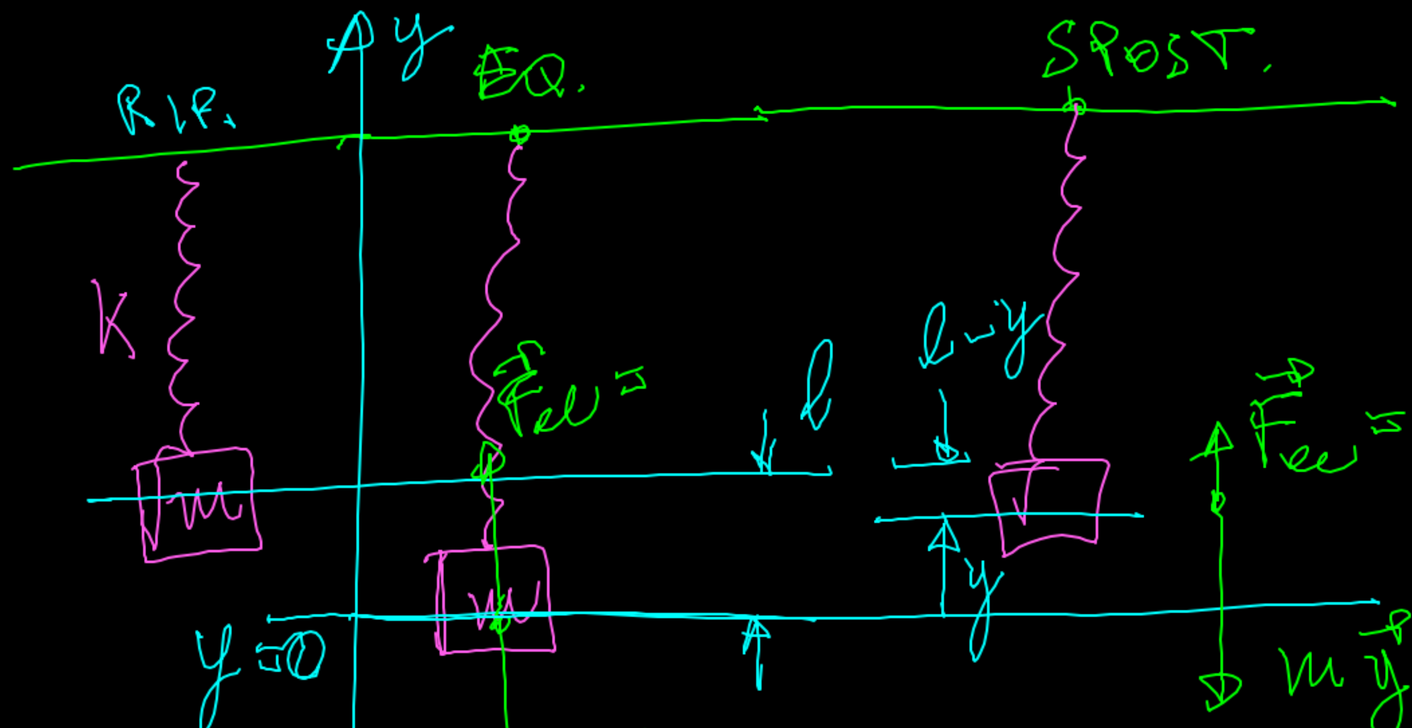


$\vec{F}_{ee} = K(l-y)\hat{j}$

$m\vec{y} = -mg\hat{j}$

$\vec{F}_{ee} + m\vec{g} = 0$

$Kl - mg = 0$

$\frac{K}{m}l - g = 0$

$K l \hat{j} - m g \hat{j} = 0$

$m a_y \hat{j} = \vec{F}_{ee} + m\vec{g} \neq 0$

(Y) $a_y = \frac{K}{m}(l - y(t)) - g$

$\frac{d^2y}{dt^2} = -\frac{K}{m}y + \frac{K}{m}l - g = 0$

$$\frac{d^2y}{dt^2} = -\frac{k}{m}y \Rightarrow y(t) = A\cos(\omega t + \phi)$$

$$\dot{y}(t) = -\omega A \sin(\omega t + \phi)$$

$$\omega = \sqrt{\frac{k}{m}} \qquad T = \frac{2\pi}{\omega}$$

$$\boxed{\frac{d^2x}{dt^2} = -\omega^2 x}$$

$$\ddot{x} = -\omega^2 x$$

COND. INIZ.

$$y(0) = y_0 > 0$$

$$\dot{y} = \frac{dy}{dt} = 0$$

$$y_0 = A\cos\phi$$

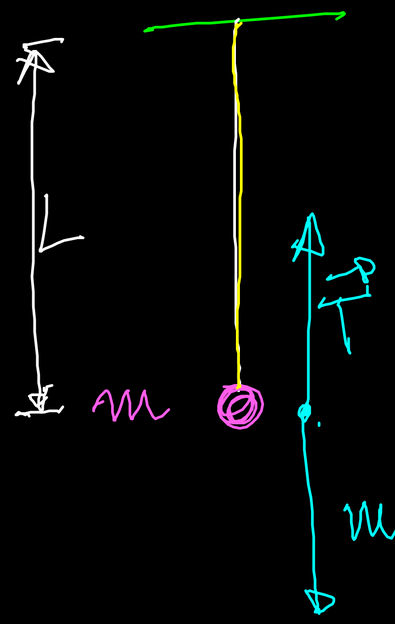
$$0 = -\omega A \sin\phi \Rightarrow \phi = 0$$

$$y_0 = A$$

$$y(t) = y_0 \cos \omega t$$

PENDOLO SEMPLICE

ROS. DI EQ.



$mg = T$

$\theta = 0$

FUORI EQ.