Oscilatorio

sentido opuesto

$$-k \cdot \Delta x = m \cdot \ddot{x}$$

$$\Rightarrow \quad -\frac{k}{m} \cdot \Delta x = \ddot{x}$$

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

$$\omega^2 = \frac{k}{m}$$

$$\omega = \frac{2\pi}{T}$$

$$f = \frac{1}{T}$$

Unidades:

Cte elástica:

$$[k] = \frac{N}{m}$$

Período

$$[T] = s$$

Frec. Angular

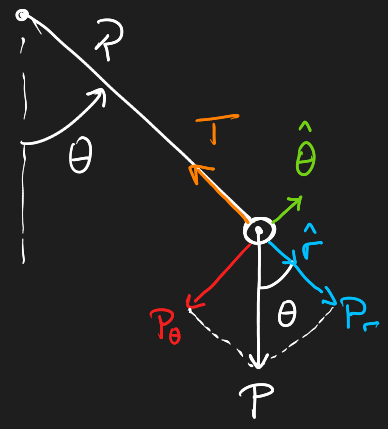
$$[\omega] \quad \frac{1}{s}$$

Frec. ?

$$[f] = \frac{1}{s} = Hz$$

Pendulo

SOH CAH $\quad \cos\theta = \frac{P_r}{P}$



$$\hat{r}: \quad -T + \cos\theta \cdot P = m \cdot a_{centr}$$

$$= -m \cdot R \cdot \omega^2$$

Cambia si va o viene segun θ

$$\hat{\theta}: \quad -\sin\theta \cdot P = m \cdot a_\theta$$

$$= -m \cdot R \cdot \ddot{\theta}$$

$$= -m \cdot R \cdot \frac{d\dot{\theta}}{dt}$$

$$= - m \cdot R \cdot \frac{d\dot{\theta}}{d\theta} \cdot \frac{d\theta}{dt}$$

Velocidad Angular

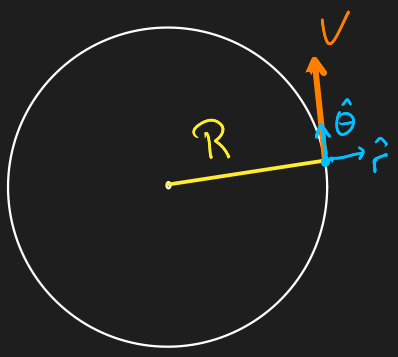
$$\omega = \frac{V_L}{R} \qquad [\omega] = \frac{1}{s}$$

Velocidad Lineal

$$V_L = R \cdot \omega \qquad \text{con } \omega : \text{Vel. angular}$$

$$[V_L] = \frac{m}{s}$$

Aceleración Radial / Centrípeta



$$a_{cen} = - R \cdot \omega^2 \cdot \hat{r}$$

$$[a_{cen}] = \frac{m}{s^2}$$

Aceleración Tangencial

$$a_{tan} = R \cdot \ddot{\theta} \qquad \text{con } \ddot{\theta} : \text{Aceleración Angular}$$

Aceleración :

$$\bar{a} = - R \cdot \omega^2 \cdot \hat{r} + R \cdot \ddot{\theta} \cdot \hat{\theta}$$

Energía

Trabajo

$$[W] = N.m = J$$

Energía Potencial Elástica

$$E_P = \frac{1}{2} k.(\Delta x)^2$$

Momento Lineal

Sea el sistema $S = \{1, 2\}$

$$\underbrace{m_1.v_1^0 + m_2.v_2^0}_{\vec{P}_S^0} = \underbrace{m_1.v_1^f + m_2.v_2^f}_{\vec{P}_S^f}$$

$$\vec{P}_S^0 = \vec{P}_S^f$$