Aulas 31 e 32

Osciladores Harmônicos

Gnomo

Apostila 7

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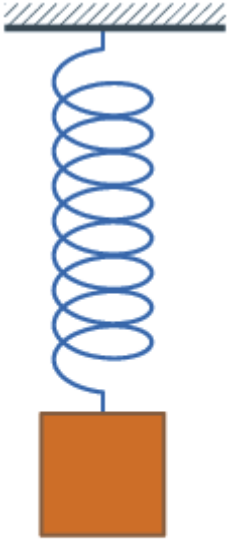
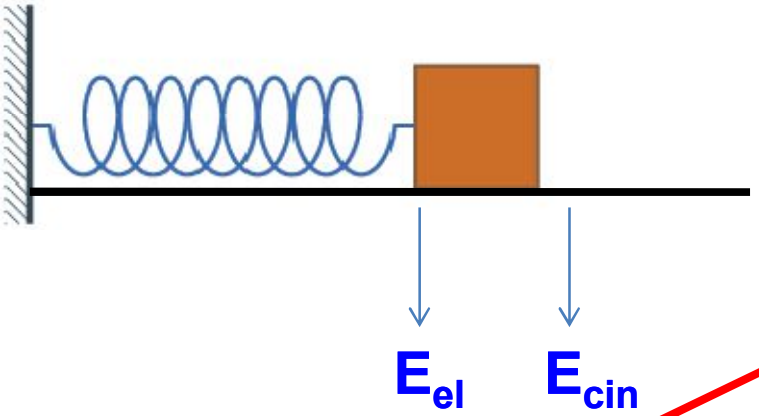


Sistema Massa - Mola

Sistema massa - mola *é constituído por um corpo de massa m preso a uma mola de constante elástica K.*

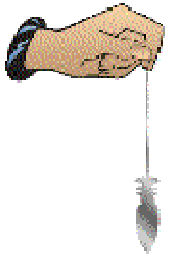


$$v = \frac{2\pi x}{T}$$

$$= \rightarrow \frac{Kx^2}{\cancel{2}} = \frac{mv^2}{\cancel{2}} \rightarrow Kx^2 = m\left(\frac{2\pi x}{T}\right)^2 \rightarrow Kx^2 = m\frac{(2\pi)^2 x^2}{T^2} \rightarrow$$

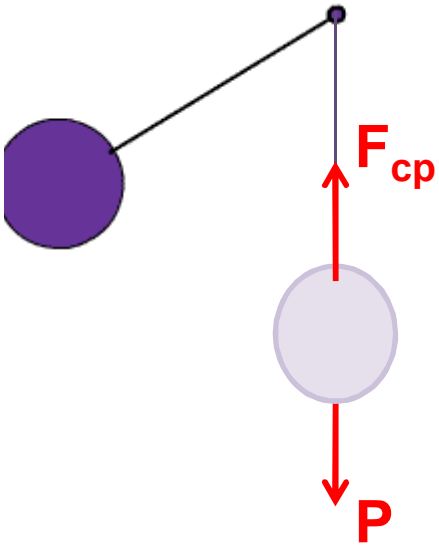
$$\rightarrow T^2 = m\frac{(2\pi)^2}{K} \rightarrow T = \sqrt{m\frac{(2\pi)^2}{K}} \rightarrow T = 2\pi\sqrt{\frac{m}{K}}$$

Gnomo



Pêndulo Simples

Pêndulo simples *é constituído por um corpo de massa* ***m*** *pendurado por um fio ideal (haste) de comprimento* L.



$$v = \frac{2\pi l}{T}$$

$$= \rightarrow \frac{\cancel{m}v^2}{R} = \cancel{m}g \rightarrow \left(\frac{2\pi l}{T}\right)^2 = gl \rightarrow$$

$$\rightarrow \frac{2^2\pi^2 l^2}{T^2} = gl \rightarrow T^2 = \frac{2^2\pi^2 l}{g} \rightarrow$$

$$\rightarrow T = \sqrt{\frac{2^2\pi^2 l}{g}} \rightarrow T = 2\pi\sqrt{\frac{l}{g}}$$

Gnomo