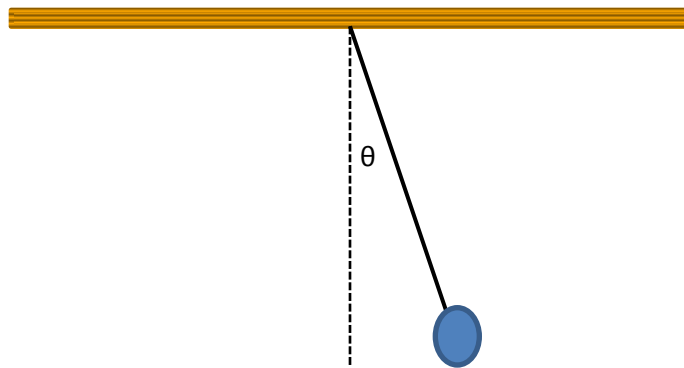


Simple Pendulum

Another important example of a simple harmonic oscillator is a pendulum constructed of a mass attached to a string (assumed to be massless) with no damping (energy loss mechanism) and undergoing small angle swings. Like all SHO's, its position as a function of time can be described by either a sine or cosine function.



As we will show, the pendulum is not in general a simple harmonic oscillator unless it swings over small angles θ as its acceleration doesn't match the equation required for simple harmonic motion.

Results

$$\omega =$$

$$T =$$

$$f =$$

$$X_{\max} =$$

$$V_{\max} =$$

$$a_{\max} =$$

$$E =$$

Proof

To show that the simple pendulum is a simple harmonic oscillator under small oscillations, we start by finding its angular acceleration using Newton's Laws for rotation.

