Oscillations

Simple harmonic occilations are described by

$$\frac{d^2y}{dt^2} + \omega^2 y = 0$$

With real solutions on the form

$$y = A\sin(\omega t + \alpha)$$

Angular Frequency

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

Energy for Elastic Pendulum

$$W_{pot} = \frac{ky^2}{2}$$

$$W_{tot} = \frac{m}{2}A^2\omega^2$$

$$\omega = \sqrt{\frac{k}{m}}$$

Angular Frequency

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

Wave Number

$$k = \frac{2\pi}{\lambda}$$