Oscillations

* The action of repetitious behavior
  + Back and forth, side to side, up and down, etc.

Key Definitions

* Period, T (s): Time for one complete cycle
* Frequency, f (Hz): 1/T, Number of cycles/second
* Angular Frequency, ω (rad/s or s-¹) = 2πf or 2π/T
* Amplitude, A (m): Maximum displacement from equilibrium

Simple Harmonic Motion

* Equations
  + x(t) = Acos(ωt)
  + v(t) = -Aωsin(ωt)
  + a(t) = -Aω²cos(ωt)
* Turning Points: x = ±A, zero velocity
* Maximum Velocity: Vmax = Aω, occurs at x = 0
* Maximum Acceleration: amax = Aω², occurs at turning points
* Acceleration is zero at x = 0
* Equations when motion doesn’t start at x(0) = ±A
  + x(t) = Acos(ωt + φ)
  + v(t) = -Aωsin(ωt + φ)
  + a(t) = -Aω²cos(ωt + φ)