16 Lecture - PHY101

Important Subjective

What is damping in oscillations?

Answer: Damping is the process of reducing the amplitude of oscillations over time due to some external factors, such as friction or air resistance.

What is the equation that describes damped oscillations?

Answer: The equation that describes damped oscillations is the damped harmonic oscillator equation, which takes into account the damping force proportional to the velocity of the oscillator.

What happens to the amplitude of damped oscillations over time?

Answer: The amplitude of damped oscillations decreases exponentially over time.

What are forced oscillations?

Answer: Forced oscillations occur when a periodic external force is applied to a system, and the behavior of the oscillator is affected by the frequency and amplitude of the external force.

What is resonance in forced oscillations?

Answer: Resonance occurs in forced oscillations when the frequency of the external force is equal to the natural frequency of the oscillator, resulting in a large amplitude of oscillation.

What are coupled oscillations?

Answer: Coupled oscillations occur when two or more oscillators are connected in some way, such that the motion of one oscillator affects the motion of the other(s).

What is beating in coupled oscillations?

Answer: Beating occurs in coupled oscillations when two oscillators of slightly different frequencies are connected, and the amplitude of the oscillation varies periodically.

What is the equation that describes coupled oscillations?

Answer: The behavior of a system of coupled oscillators can be described using a set of coupled differential equations, one for each oscillator.

What is synchronized behavior in coupled oscillations?

Answer: Synchronized behavior occurs in coupled oscillations when the oscillators all oscillate with the same frequency and phase.

Why is the study of oscillations important in science and engineering?

Answer: The study of oscillations is important in science and engineering because it helps us understand the behavior of natural systems and design stable and reliable systems that exhibit oscillatory behavior.