

Irish folk tunes arranged by Howard Baer

Propagation of Waves Key Terms *****Reflection *****Refraction **Absorption**



Diffraction

Diffraction is significant only when $D \le \lambda$



★Interference occurs whenever two waves occupy the same space at the same time.

Resultant Wave The combined wave formed by the superposition of two individual waves

Constructive Interference

★The two interfering waves reinforce one another

★Occurs when the two waves are *in phase*



Destructive Interference



Destructive Interference

★The two interfering waves cancel one another

★Occurs when the two waves are out of phase

Video I-3

Interference: Transverse Waves on a String.

Constructive Interference – Waves



Destructive Interference – Waves



Constructive Interference (unequal amplitudes)



Destructive Interference (unequal amplitudes)



Sound From Two Sources



Sound From Two Sources

Constructive interference occurs when

$L_1 - L_2 = n \lambda$

Sound From Two Sources

Destructive interference occurs when

$L_1 - L_2 = (n + \frac{1}{2})\lambda$

Video II-5

Interference of Sound Waves



Occur when two waves of slightly different frequency interfere







Beat Frequency

$|\mathbf{f}_{\text{beat}} = |\mathbf{f}_1 - \mathbf{f}_2|$