

14.10: End of Chapter Key Terms

Definition: Property of Sound, Doppler Effect & Interferences

- **Sound:** the transfer of energy from a vibrating object in waves that travel through matter.
- **Speed of Sound:** The speed at which sound waves travel through a medium, influenced by the medium's properties (e.g., temperature, density).
- **Sound Wave:** A mechanical wave that propagates through a medium (such as air, water, or solids) by the vibration of particles.
- **Loudness:** The perceived intensity or volume of a sound, related to the amplitude of the sound wave.
- **Intensity:** measure of the amount of energy in sound waves.
- **Decibel (dB):** A logarithmic unit used to measure the intensity of sound, representing the ratio of a particular sound pressure to a reference level.
- **Amplitude:** The maximum displacement of particles in the medium from their rest position, related to the loudness of the sound.
- **Frequency:** The number of vibrations or cycles per second of a sound wave, measured in hertz (Hz), determining the pitch of the sound.
- **Pitch:** The perceived frequency of a sound; higher frequencies are heard as higher pitches, and lower frequencies as lower pitches.
- **Wavelength:** The distance between successive crests or troughs of a sound wave, determining its spatial period.
- **Ultrasound:** Sound waves with frequencies above the upper limit of human hearing ($>20,000$ Hz), used in medical imaging and industrial applications.
- **Infrasound:** Sound waves with frequencies below the lower limit of human hearing (<20 Hz), often produced by natural phenomena like earthquakes.
- **Doppler Effect:** The change in frequency or wavelength of a sound wave as the source and observer move relative to each other, resulting in a perceived change in pitch.
- **Redshift (Sound):** The decrease in frequency (and increase in wavelength) of a sound wave as the source moves away from the observer.
- **Blueshift (Sound):** The increase in frequency (and decrease in wavelength) of a sound wave as the source moves toward the observer.
- **Echolocation:** The use of reflected sound waves to determine the location of objects, used by animals such as bats and dolphins.
- **Sonar:** A technique that uses sound waves to detect and locate objects underwater.

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