

# LECTURE 11: SOUND WAVES & AUDITION

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## I. Sound Waves

### Definition:

Vibrations created by moving air. These fluctuations (areas of compressed and rarefied air) give rise to a sound wave.

### • Formation:

- When an object vibrates, surrounding air molecules:
- Condense (compress)
- Rarefy (pull apart)

### • Travel:

Sound waves travel away from the object at approximately 700 mph.

## II. Audition (Hearing)

### • Process:

The human ear transduces fluctuations in air pressure.

### • Pressure Fluctuation Range:

17 mm to 17 meters.

### • Sound Generation Frequency:

Sound waves are generated by vibrations between 20-20,000 per second.

**Faster vibrations = smaller wavelengths**

**Slower vibrations = larger wavelengths**





