

Two-Point Source Interference Lesson Notes

Learning Outcomes

- What is a two-point source interference?
- How does two-point source interference provide support for the wave model of light?

Interference

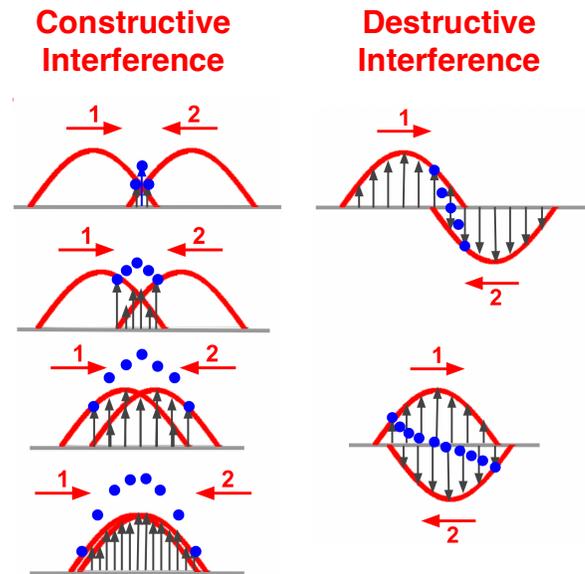
Interference: when two or more waves meet up while traveling through the same medium.

Constructive Interference

Occurs wherever an upward-displaced wave meets up with another upward-displaced wave (or two downward-displaced waves meet).

Destructive Interference

Occurs wherever an upward-displaced wave meets up with a downward-displaced wave.

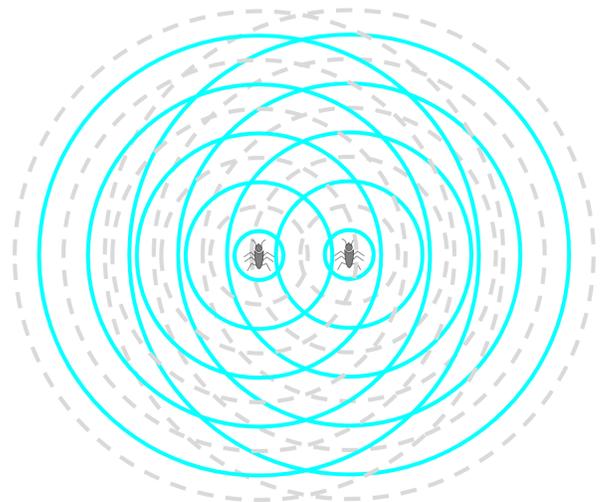


Wiggling Water Bugs

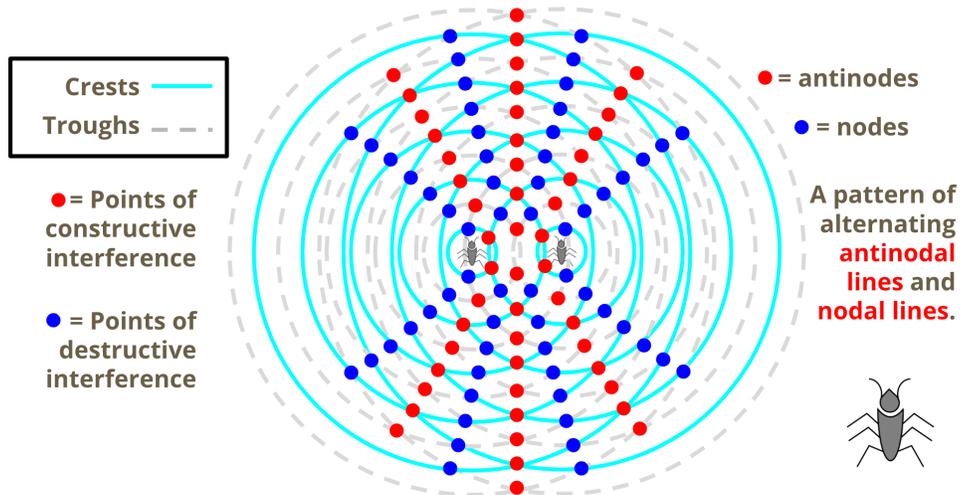
Two Sources of waves
(at two points)

Interfering in the surrounding space ...
... to form a **Pattern**.

Two-Point Source Interference Pattern

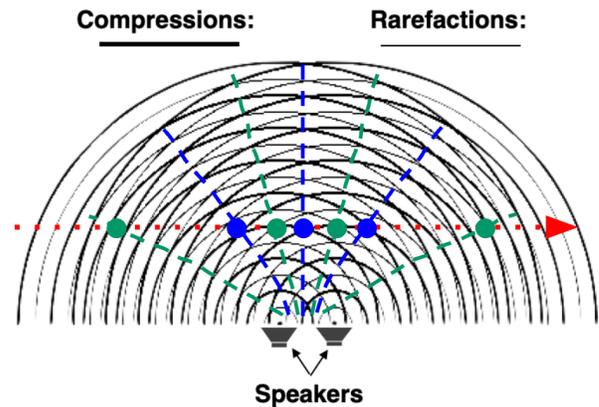


Interference Patterns



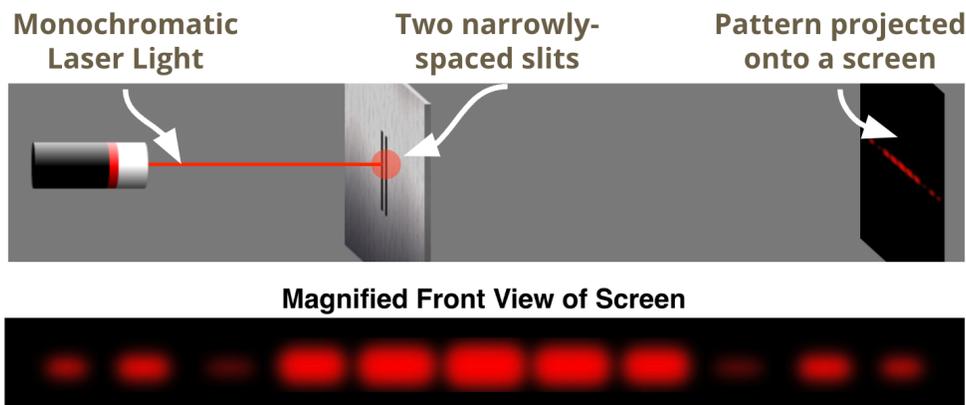
So What About Light? Can Light Do This?

- What would you expect to observe if light from two same-frequency sources interfered in the surrounding space?
- Students would observe alternating **silent (nodes)** and **loud (antinodes)** locations as they walk across the room (along the **red dashed line**).
- Two-point source light interference should result in alternating locations of **brightness (antinodes)** and **darkness (nodes)**.



Young's Experiment

A two-point source interference pattern is commonly used in Physics classes to measure the wavelength of light.



A pattern of alternating bright and dark spots.