

ACTIVITY**● The Wave Nature of Light: Interference**

Does light show the wave property of interference when a beam of light is projected through a pinhole onto a screen?

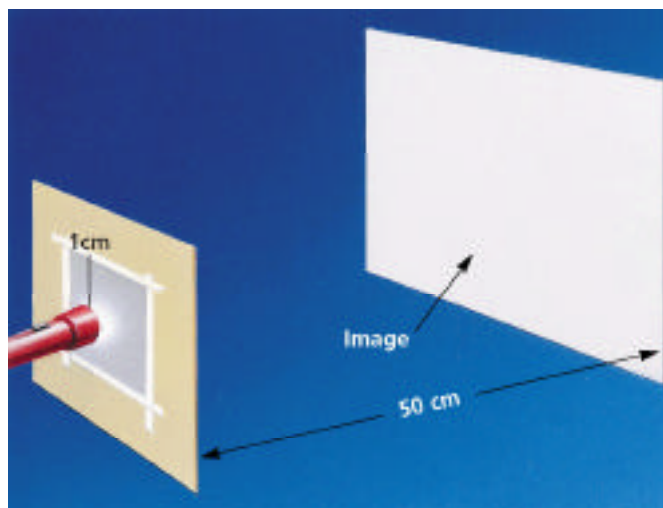
Materials

scissors, manila folders, thumbtack, masking tape, aluminum foil, white poster board or cardboard, flashlight

Procedures

Record all your observations.

1. To make the pinhole screen, cut a $20\text{ cm} \times 20\text{ cm}$ square from a manila folder. In the center of the square, cut a $2\text{ cm} \times 2\text{ cm}$ square hole. Cut a $7\text{ cm} \times 7\text{ cm}$ square of aluminum foil. Using a thumbtack, make a pinhole in the center of the foil square. Tape the aluminum foil over the $2\text{ cm} \times 2\text{ cm}$ square hole, making sure the pinhole is centered as shown in the diagram below.



2. Use white poster board to make a projection screen $35\text{ cm} \times 35\text{ cm}$.
3. In a dark room, center the light beam from a flashlight on the pinhole. Hold the flashlight about 1 cm from the pinhole. The pinhole screen should be about 50 cm from the projection screen, as shown in the diagram. Adjust the distance to form a sharp image on the projection screen.

Analysis and Conclusions

1. Did you observe interference patterns on the screen?
2. As a result of your observations, what do you conclude about the nature of light?