

1. A pair of slits, spaced $100\mu\text{m}$ apart, is placed a distance $L=1\text{m}$ from a screen, and illuminated by white light at normal incidence. What is the spacing on the screen of (a) red fringes ($\lambda=700\text{nm}$) (b) green fringes ($\lambda=500\text{nm}$)?

2. Two identical speakers emit sound waves of frequency 680 Hz uniformly in all directions. The total audio output of each speaker is 1 mW . A listener is 2.00 m from one speaker and 3.00 m from the other, and the speed of sound is 340 m/s .

(a) Find the intensities heard by the listener due to each speaker individually (when the other is switched off).

(b) If the speakers are driven coherently and are in phase, what intensity is heard?

(c) If they are driven coherently in anti-phase, what intensity is heard?

(d) If the speakers are incoherent, what intensity is heard?