

1. A double-slit interference experiment is performed using red light from a helium discharge tube ($\lambda = 587.5 \text{ nm}$). The second-order bright fringe in the interference pattern is 0.130° from the central maximum. How far apart are the two slits separated?
2. A double-slit interference experiment is performed using red light from a laser pointer pen ($\lambda = 656.3 \text{ nm}$). The fourth-order bright fringe in the interference pattern is 0.626° from the central maximum. How far apart are the two slits separated?
3. A ruby laser was developed by T.H.Maiman in 1960. Suppose a double slit interference experiment is performed using red light from a ruby laser ($\lambda = 693 \text{ nm}$). The third-order bright fringe in the interference pattern is 0.578° from the central maximum. How far apart are the two slits separated?
4. Light falls on a double slit with slit separation of $8.04 \times 10^{-6} \text{ m}$, and the third bright fringe is seen at an angle of 13.1° relative to the central maximum. Find the wavelength of the light.
5. Light shines on a double slit with slit separation of $3.92 \times 10^{-6} \text{ m}$, and the second bright fringe is seen at an angle of 20.4° relative to the central maximum. What is the wavelength of the light?
6. Blue light with a wavelength of 430.8 nm shines on two slits 0.163 mm apart. What is the angle at which a first-order bright fringe is observed?
7. Orange light ($\lambda = 583 \text{ nm}$) passes through two slits 0.329 mm apart. Calculate the angle at which a first-order bright fringe is observed.
8. If two slits are 0.267 mm apart, find the angle between the first order and second order bright fringes for red light with a wavelength of 687 nm .