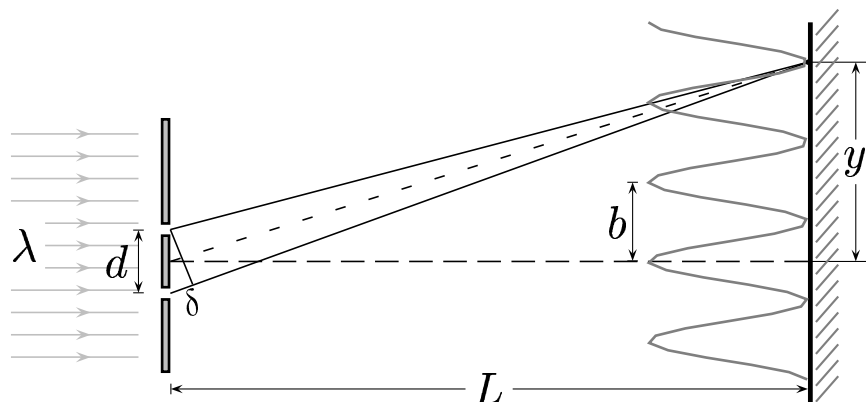


Consider the setup of a double slit experiment.



Find the third-minimum phase angle ϕ and path difference δ .

- A) $\phi = 3\pi$ and $\delta = \frac{3\lambda}{2}$.
- B) $\phi = 4\pi$ and $\delta = 2\lambda$.
- C) $\phi = 5\pi$ and $\delta = \frac{5\lambda}{2}$.
- D) $\phi = 6\pi$ and $\delta = 3\lambda$.

The intensity $I = I_0 \cos^2 \left(\frac{\phi}{2} \right)$.

By inspection, the minimum sequence is at $\frac{\phi}{2} = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}$. So the third minimum occurs at

$$\phi = 5\pi, \quad \text{or} \quad \delta = \lambda \frac{\phi}{2\pi} = \frac{5\lambda}{2}$$

Answer **C**.