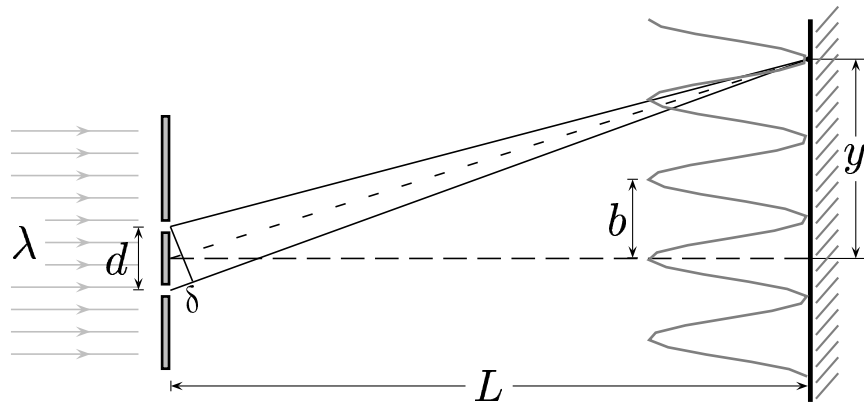


Consider the setup of a double slit experiment.



Find the third-minimum phase angle  $\phi$  and path difference  $\delta$ .

- 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  $\delta = 3\lambda$ .

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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**.