Given: \( t = 1.6 \mu \), \( \lambda = 0.5 \mu \).

Determine number of dark fringes in the interval \( OA \). The dark fringe at \( O \) is the first fringe. There after a dark fringe is included in the count only when the minimum point is included.

A) \( N_{dark} = 5 \)

B) \( N_{dark} = 6 \)

C) \( N_{dark} = 7 \)

D) \( N_{dark} = 8 \)
\[ N_{dark} = \text{Integer} \left( \frac{\phi}{2\pi} + \frac{1}{2} \right), \text{ with } \phi = \phi_{path} + |\phi_{refl1} - \phi_{refl2}| \text{ and “floor or integerize”: e.g. floor(3.9) = 3. Therefore} \]

\[
\frac{\phi}{2\pi} = \frac{2t}{\lambda} + \frac{1}{2} = \frac{2 \times 1.6}{0.5} + 0.5 = 6.9
\]

\[ N_{dark} = \text{Integer}(6.9 + 0.5) = 7. \]

Answer C.

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