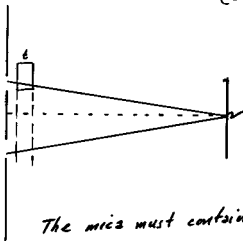


RECITATION INSTRUCTOR (CIRCLE)

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2. A thin flake of mica ($n=1.6$) is used to cover one slit of a double-slit arrangement. The central point on the screen is occupied by what used to be the seventh bright fringe. If $\lambda=6500 \text{ \AA}$, what is the thickness of the mica?

(650nm)



The mica must contain 7 more wavelengths than the same thickness of air.

$$\# \text{ of } \lambda\text{'s in air: } \frac{t}{\lambda_a}$$

$$\# \text{ of } \lambda\text{'s in mica: } \frac{t}{\lambda_m}$$

$$\lambda_m = \frac{\lambda_a}{n_m}$$

$$\therefore \frac{t n_m}{\lambda_a} - \frac{t}{\lambda_a} = \frac{t}{\lambda_a} (n_m - 1) = 7 \Rightarrow t = \frac{7 \lambda_a}{n_m - 1} = 2.5833 \times 10^{-4} \text{ m}$$

$$= 2.5833 \times 10^{-6} \text{ cm}$$

$$= 2.5833 \times 10^{-4} \text{ cm}$$

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