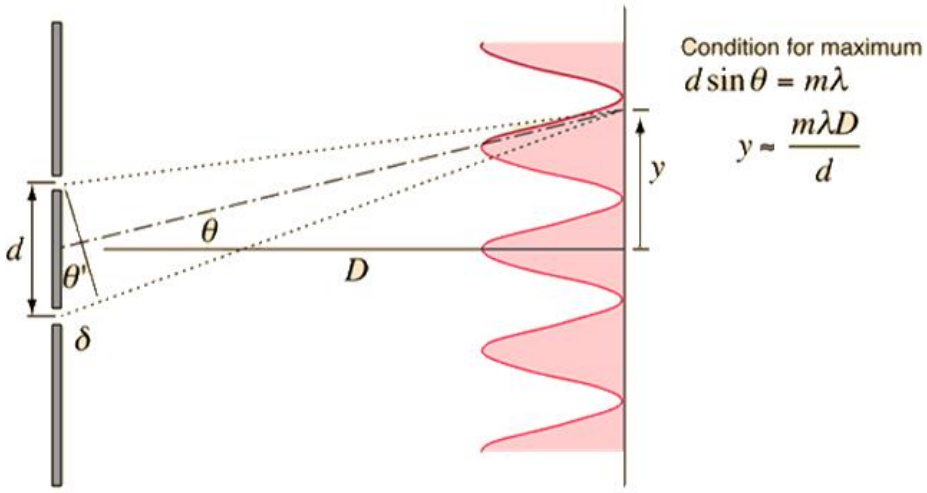
Answer on Question #43672, Physics, Optics

If a yellow light with a wavelength of 540nm shines on a double slits cuts 0.01mm apart, determine what angle you should look away from central fringe to see the second order fringe?

Solution:



The condition for maximum (bright spot) is

$$d \sin\theta = m\lambda$$

where m = 2 is order of interference, d = 0.01×10^{-3} m.

Thus,

$$\sin\theta = \frac{m\lambda}{d} = \frac{2 \cdot 540 \cdot 10^{-9}}{0.01 \cdot 10^{-3}} = 0.108$$

$$\theta = \sin^{-1}(0.108) = 6.2°$$

Answer: $\theta = 6.2°$