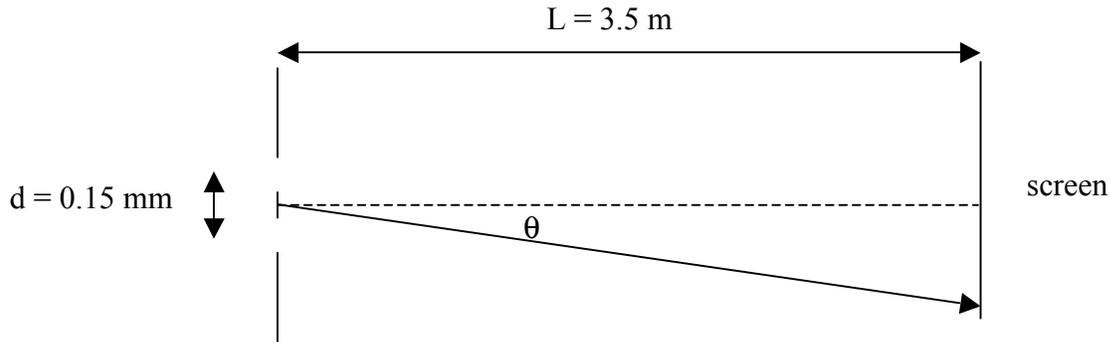


Consider the interference pattern from two identical slits equally illuminated by coherent light of a wavelength $\lambda = 450 \text{ nm}$ and separated by a distance $d = 0.15 \text{ mm}$. Assume that the amplitude of the light from each slit alone on a screen a distance $L = 3.5 \text{ m}$ away at $\theta = 0$ is A_0 , with a corresponding intensity of I_0 .



- Draw the phasor diagram that describes the situation in which the phase difference between the waves arriving at the screen from the two slits is $\pi/4$.
- Calculate the total intensity for the situation described in part a. Express your answer in terms of the symbols defined above (λ, d, I_0 , *i.e.*, not a numerical answer). Simplify as much as you can.
- Calculate the smallest angle θ which gives the situation described in part a. Here, we do want a numerical answer, in as simple a form as possible.