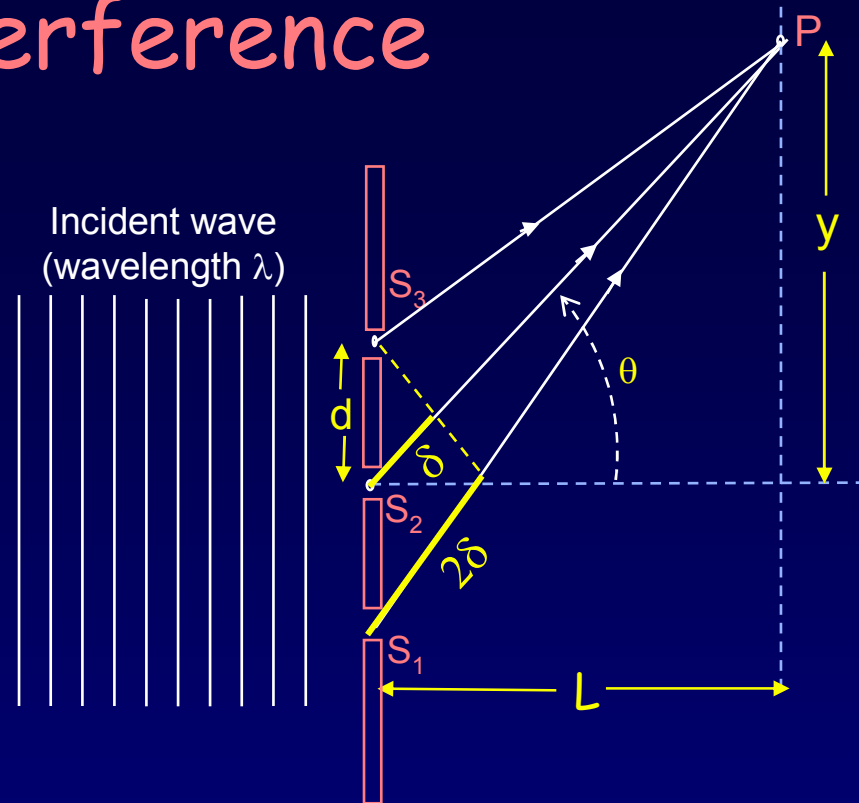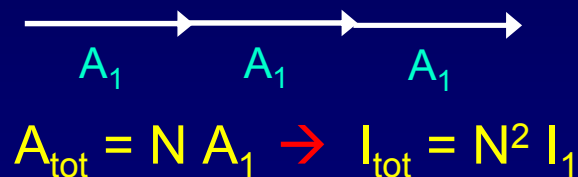# Multi-Slit Interference

We already saw (slide 4) that the positions of the principal maxima are independent of the number of slits. Here, we will use phasors to determine the intensity as a function of θ.

At each principal maximum ($d \sin\theta = m\lambda$), the slits are all in phase, and the phasor diagram looks like this:

$$A_{tot} = N A_1 \rightarrow I_{tot} = N^2 I_1$$

Incident wave (wavelength λ)

For other values of θ, the phasors are rotated, each by an angle ϕ with respect to its neighbors. Remember that $\phi/2\pi = \delta/\lambda = d/\lambda \sin\theta$. We can calculate A_{tot} geometrically (next slide).