

# Multiple-Slit Interference

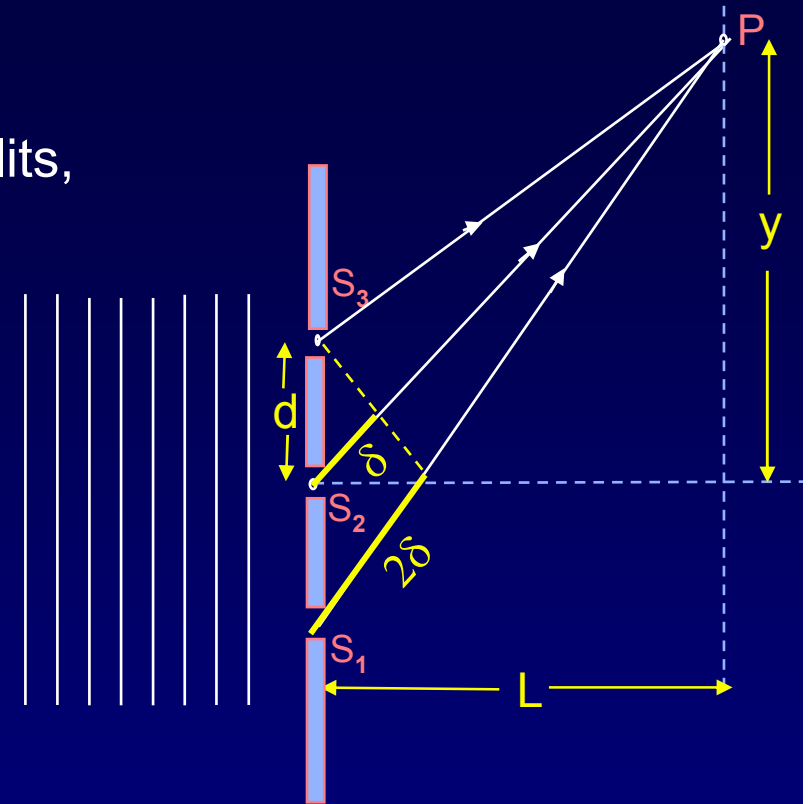
What changes if we increase the number of slits,  
e.g.,  $N = 3, 4, 1000, \dots$

(for now we'll go back to very small slits, so  
we can neglect diffraction from each of them)

First look at the principal maxima.

For equally spaced slits:

If slit 1 and 2 are in phase with each other,  
then slit 3 will also be in phase, etc.



The positions of the principal interference maxima  
are the *same* for any number of slits!

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

We will almost always consider equally spaced slits.