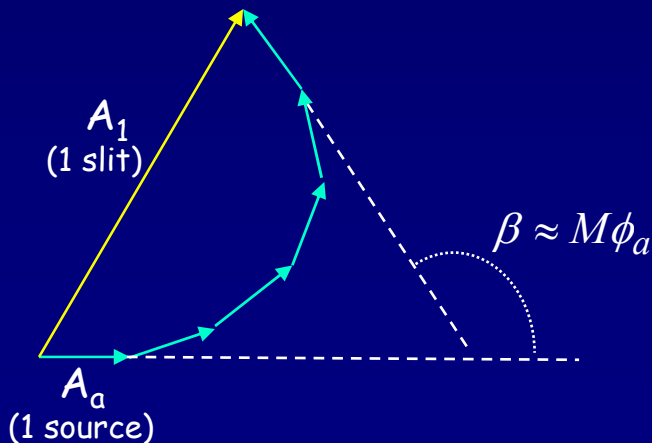
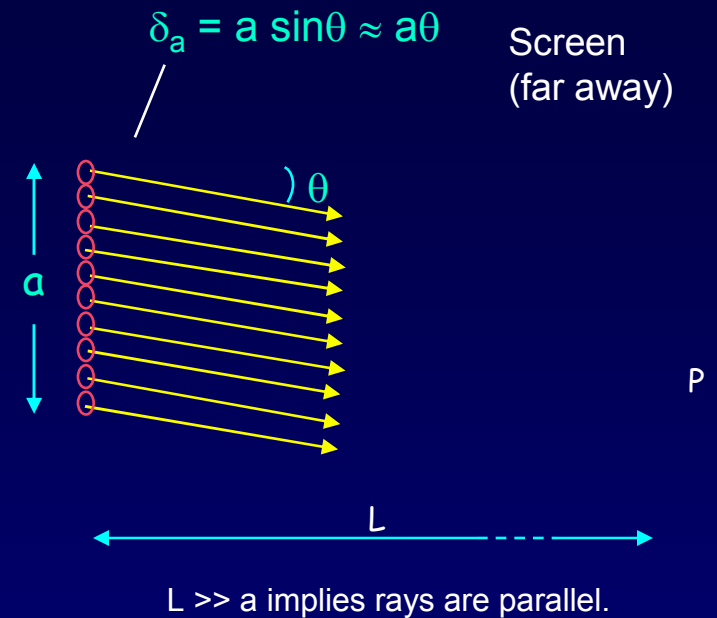


Single-slit Diffraction

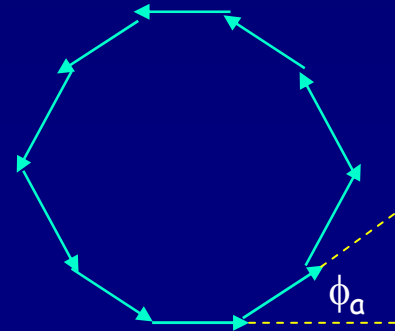
To analyze diffraction, we treat it as *interference* of light from many sources (*i.e.*, the Huygens wavelets that originate from each point in the slit opening).

Model the single slit as M point sources with spacing between the sources of a/M . We will let M go to infinity on the next slide.

The phase difference β between first and last source is given by $\beta/2\pi = \delta_a/\lambda = a \sin\theta / \lambda \approx a\theta/\lambda$.



Destructive interference occurs when the polygon is closed ($\beta = 2\pi$):



This means $\frac{a \sin\theta}{\lambda} = 1$

For small θ , $\theta \approx \frac{\lambda}{a}$

Destructive Interference