

# Single-slit Diffraction

So far in the multiple-slit interference problems we have assumed that each slit is a point source.

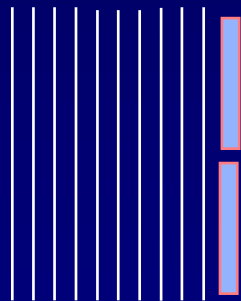
Point sources radiate equally in all directions.

Real slits have a non-zero extent – - a “slit width”  $a$ .

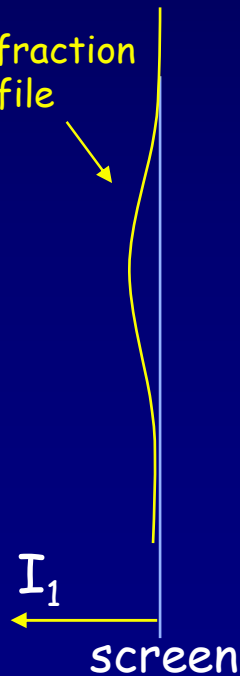
The transmission pattern depends on the ratio of  $a$  to  $\lambda$ .

In general, the smaller the slit width, the more the wave will diffract.

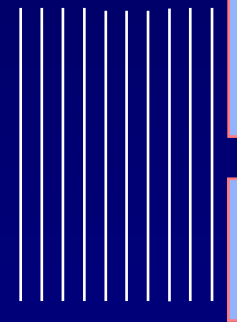
Small slit:



Diffraction profile



Large slit:



Diffraction profile

