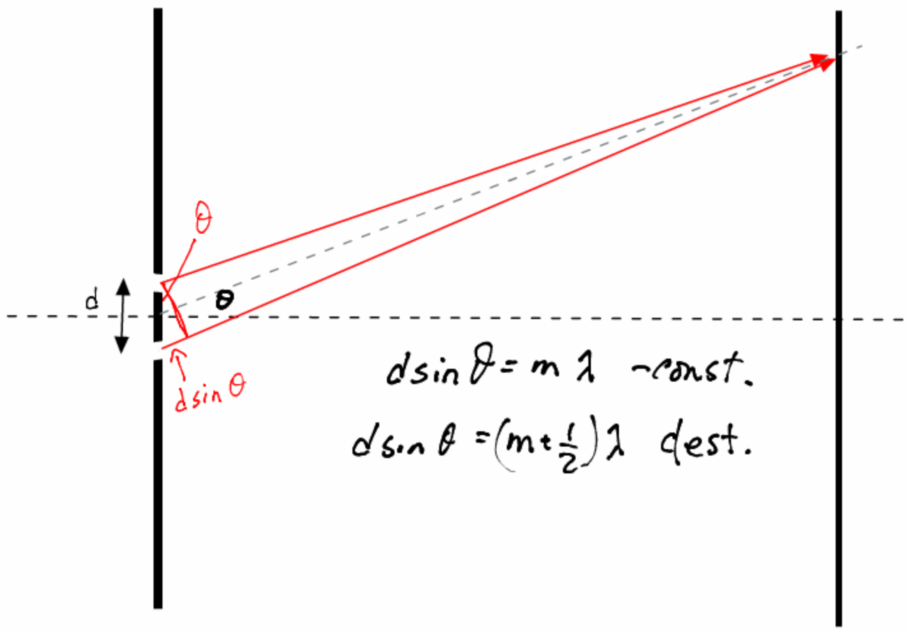
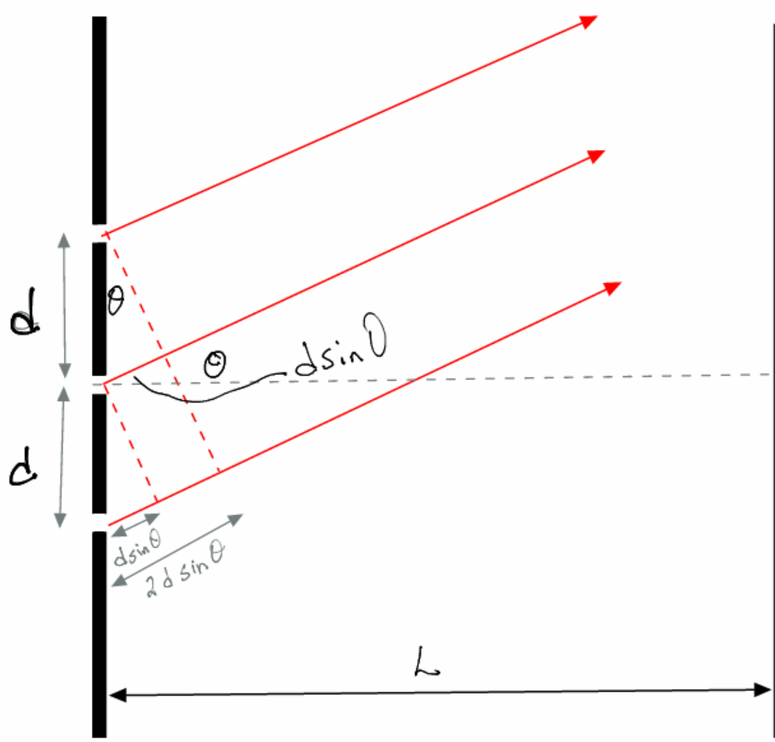
1. a) $y_{\mp 1} = \frac{m\lambda L}{a} = (\mp 1)\frac{(600\times10^{-9}\,m)(2.5\,m)}{0.00005} = \mp 0.03$ m

$\Delta y = 0.06$

b) $y_{\mp 1} = \frac{(\mp 1)(400\times10^{-9})(2.5)}{0.00005} = \mp 0.02$

$\Delta y = 0.04$



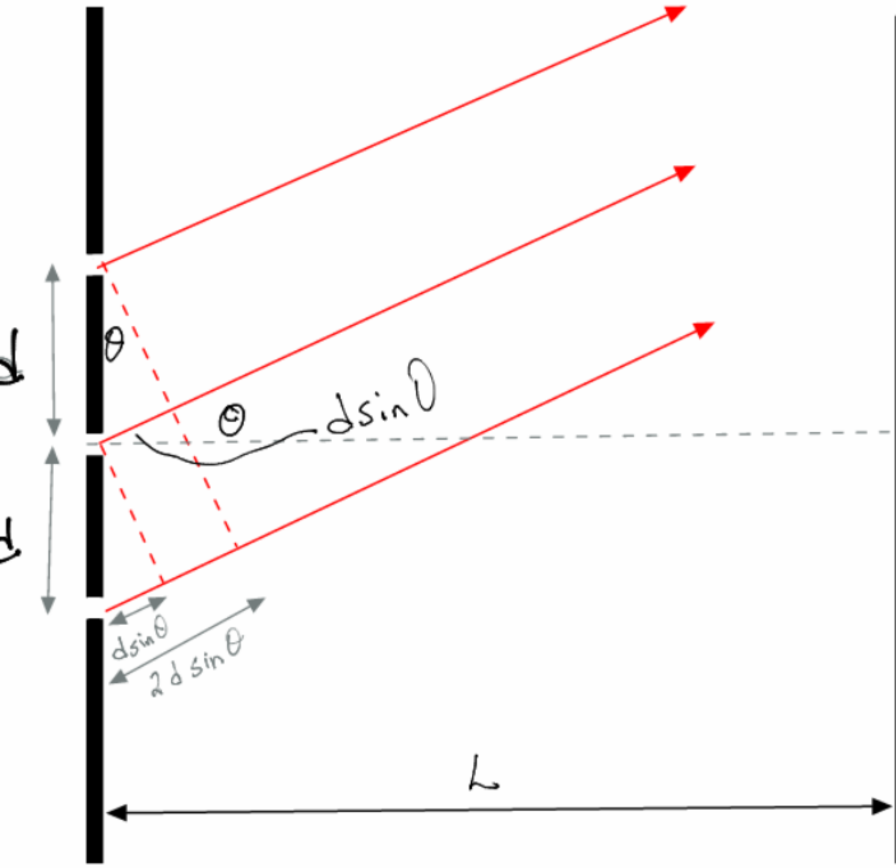


Interference

maxima occur where path diff between adjacent slits is interger # of wave lengths

$d \sin\theta_n = \frac{m\lambda}{d}$

$m = 0, \mp 1, \mp 2$



Interference

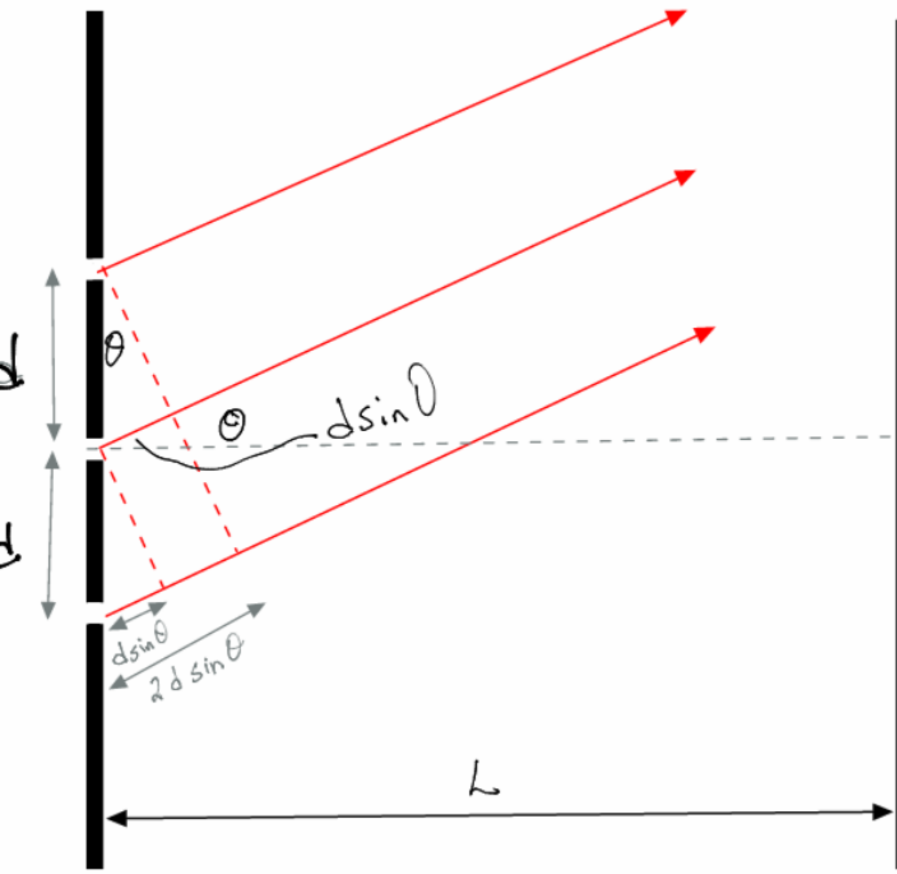
minima occur when

$$\sin\theta_s = \frac{s\lambda}{Nd}$$

$s = \mp 1, \mp 2, \ldots$

except $\frac{s}{N}$ is $\mathbb{Z}$

There are $N-2$ maxima between each principle maxima.



diffraction

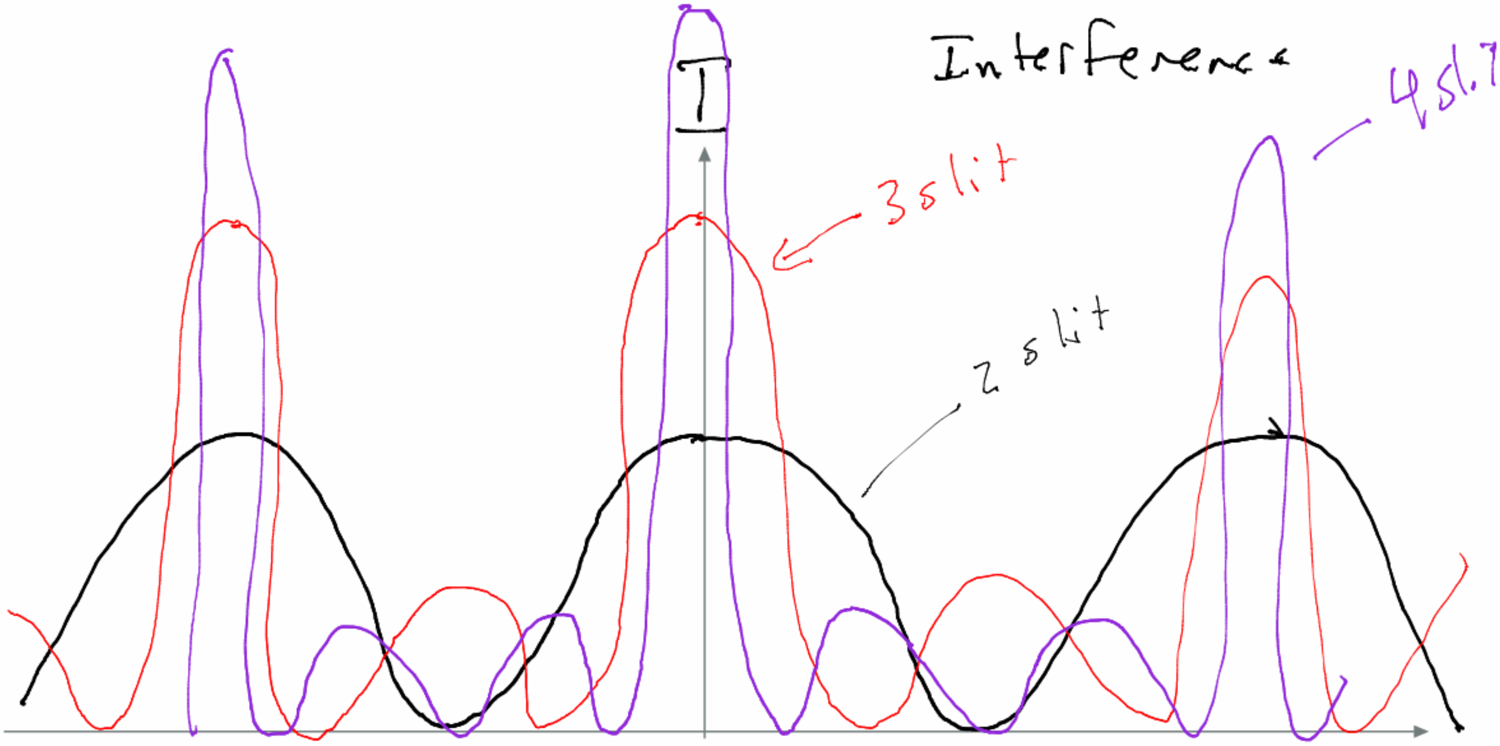
slit width = a

envelope for diffraction

minima a

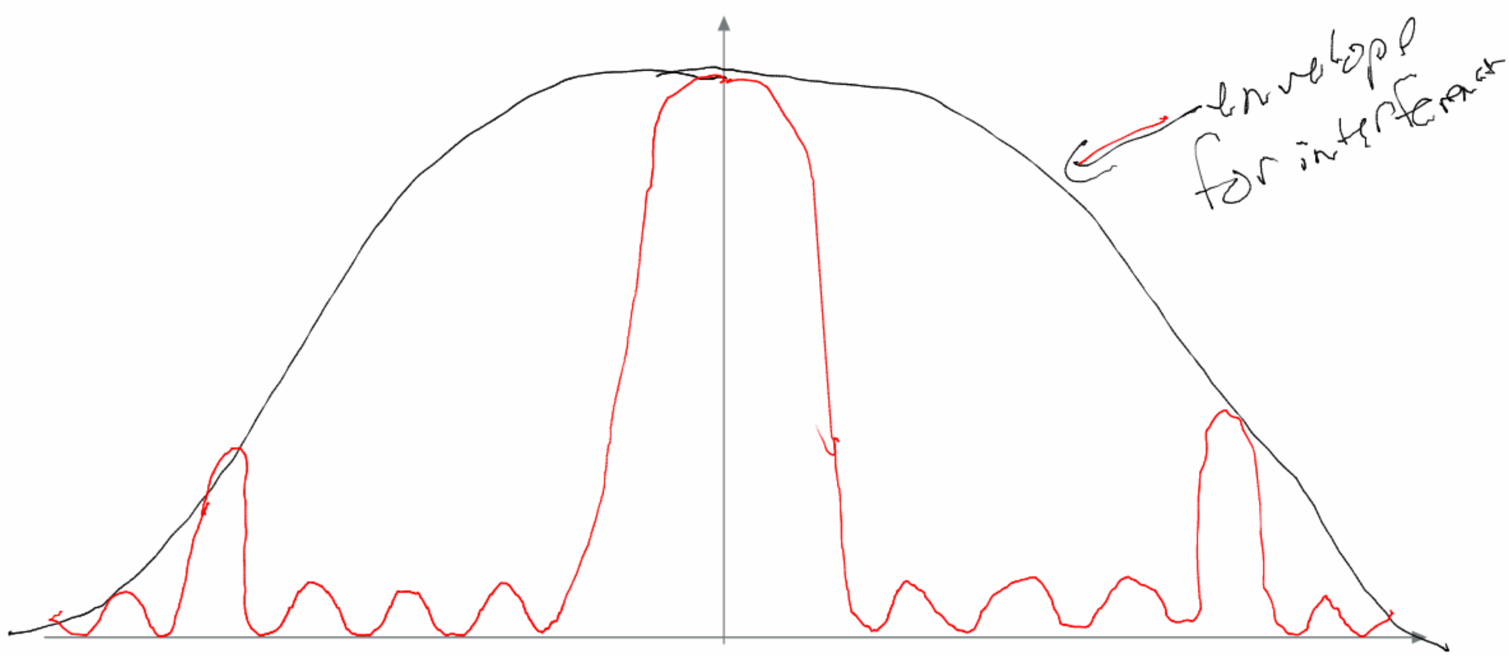
$$\sin\theta_m = \frac{m\lambda}{a}$$

$m = \mp 1, \mp 2, \ldots$



As number of slits increase
peaks become narrower and brighter
# of peaks inbetween increases

maximum peaks reaim same spot.



for gratting max occur

$$d \sin\theta = m\lambda \quad m = 0, 1, 2, \ldots$$