

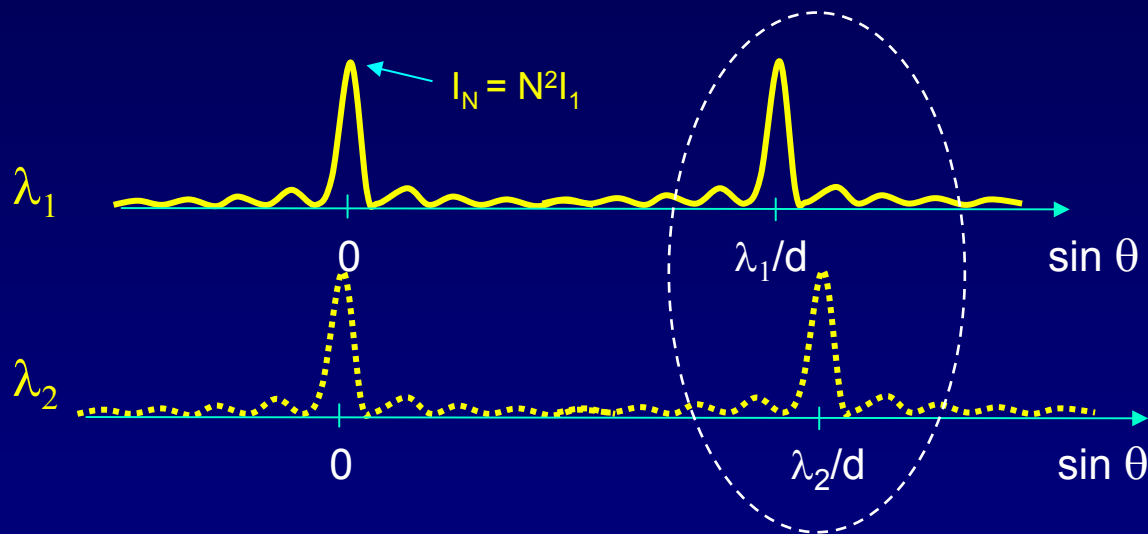
# Diffraction Gratings (1)

Diffraction gratings rely on N-slit interference.

They consist of a large number of evenly spaced parallel slits.

An important question:

How effective are diffraction gratings at resolving light of different wavelengths (*i.e.* separating closely-spaced 'spectral lines')?



$\sin \theta$  depends on  $\lambda$ .

Example: Na has a spectrum with two yellow “lines” very close together:  $\lambda_1 = 589.0 \text{ nm}$ ,  $\lambda_2 = 589.6 \text{ nm}$  ( $\Delta\lambda = 0.6 \text{ nm}$ )

Are these two lines distinguishable using a particular grating?

We need a “resolution criterion”.