

## I20ARRAYS

## Interference pattern of N sources

Parameters: Opening  $a$ , Wavelength  $\lambda$ , Number of lines  $N$ .

Graph as function of  $\theta$ , because of small angle  $\theta = Y/X$ . Normalization to 1.

For comparison of maxima, the numerator is plotted separately.

$$\theta := 0, .001 \dots .5 \quad \lambda := .0005 \quad a \equiv .1 \quad N := 5$$

$$IA1(\theta) := \left( \frac{\sin\left(\pi \cdot N \cdot \frac{a}{\lambda} \cdot \sin\left(2 \cdot \frac{\pi}{360} \cdot \theta\right)\right)}{N \cdot \sin\left(\pi \cdot \frac{a}{\lambda} \cdot \sin\left(2 \cdot \frac{\pi}{360} \cdot \theta\right)\right)} \right)^2$$

$$y(\theta) := \sin\left(\pi \cdot N \cdot \frac{a}{\lambda} \cdot \sin\left(2 \cdot \frac{\pi}{360} \cdot \theta\right)\right)^2$$

$$y1(\theta) := \sin\left(\pi \cdot \frac{a}{\lambda} \cdot \sin\left(2 \cdot \frac{\pi}{360} \cdot \theta\right)\right)^2$$

$$\theta := 0, .001 \dots .5 \quad \lambda := .0005 \quad aa \equiv .2 \quad NN := 5$$

$$IA2(\theta) := \left( \frac{\sin\left(\pi \cdot NN \cdot \frac{aa}{\lambda} \cdot \sin\left(2 \cdot \frac{\pi}{360} \cdot \theta\right)\right)}{NN \cdot \sin\left(\pi \cdot \frac{aa}{\lambda} \cdot \sin\left(2 \cdot \frac{\pi}{360} \cdot \theta\right)\right)} \right)^2$$

