

W12TWOROCOHS

Imaging with coherent light:

Two round apertures at Rayleigh distance, and round lens (Y is R')

$$Y := -.01, -.0099 .. .02$$

$$\lambda := .0005$$

$$f/10 = f/2a$$

$$\text{Tol} := .1$$

$$k := \frac{2 \cdot \pi}{\lambda}$$

$$f := 500 \quad a := 25$$

Object Amplitudes:

$$\text{iob1}(Y) := (\Phi(b2 - Y) - \Phi(b1 - Y))$$

$$\text{iob2}(Y) := (\Phi(b4 - Y) - \Phi(b3 - Y))$$

Image

$$\text{iob}(Y) := \text{iob1}(Y) + \text{iob2}(Y)$$

$$\text{Im}(Y) := \left[\int_{b1}^{b2} 4 \cdot a^2 \cdot \frac{J1 \left[\frac{k \cdot a \cdot (Y - YY)}{f} \right]}{k \cdot a \cdot \frac{(Y - YY)}{f}} dYY + \int_{b3}^{b4} 4 \cdot a^2 \cdot \frac{J1 \left[\frac{k \cdot a \cdot (Y - YY)}{f} \right]}{k \cdot a \cdot \frac{(Y - YY)}{f}} dYY \right]^2$$

Intergration limits

$$b1 \equiv -.00025 \quad b2 \equiv .00025$$

$$b3 \equiv .00585 \quad b4 \equiv .00635$$

Resolution is obtained for

$$b3 = .00795 \quad b4 = .00845$$

