D17ARAYRA3DS

3D Graph of diffraction pattern of a periodic array of rectangular apertures.
In comparison the diffraction pattern of rectangular apertures in random array.

1. Periodic array

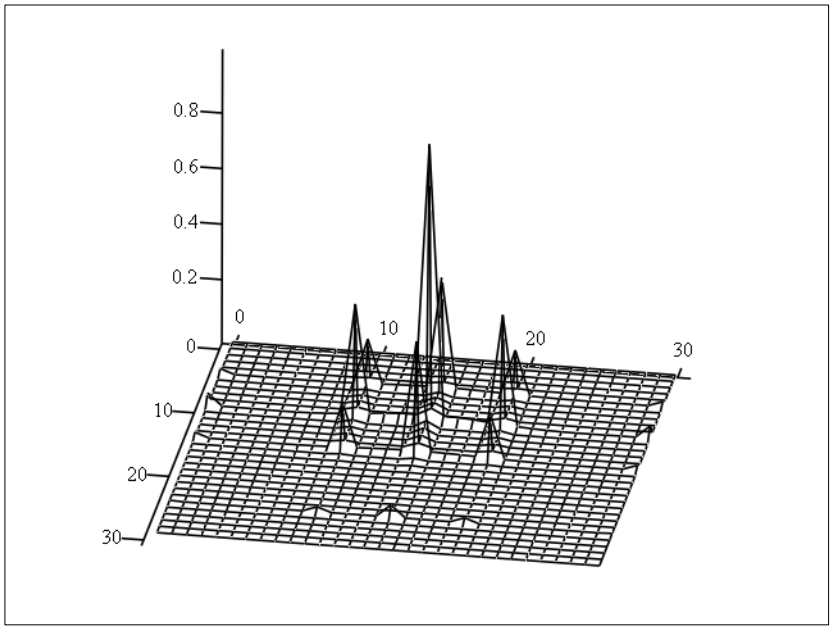
$i := 0 .. N \qquad j := 0 .. N$

$\lambda \equiv 4 \qquad x_i := (-2) + .20001 \cdot i \qquad y_j := -3 + .20001 \cdot j \qquad p := 6$

$$f(x,y) := \left[\frac{\sin\left(2\cdot\pi\cdot d\cdot\frac{x}{2\cdot\lambda}\right)}{\left(2\cdot\pi\cdot d\cdot\frac{x}{2\cdot\lambda}\right)}\right]^2 \cdot \left[\frac{\sin\left(2\cdot\pi\cdot d1\cdot\frac{y}{2\cdot\lambda}\right)}{\left(2\cdot\pi\cdot d1\cdot\frac{y}{2\cdot\lambda}\right)}\right]^2 \cdot \left[\left(\frac{\sin\left(2\cdot\pi\cdot a\cdot\frac{x\cdot p}{2\cdot\lambda}\right)}{p\cdot\sin\left(2\cdot\pi\cdot a\cdot\frac{x}{2\cdot\lambda}\right)}\right)^2 \cdot \left(\frac{\sin\left(2\cdot\pi\cdot a1\cdot\frac{y\cdot p}{2\cdot\lambda}\right)}{p\cdot\sin\left(2\cdot\pi\cdot a1\cdot\frac{y}{2\cdot\lambda}\right)}\right)^2\right]$$

$M_{i,j} := f(x_i, y_j) \qquad d \equiv 2 \qquad d1 \equiv 2 \qquad a1 \equiv 4 \qquad a \equiv 4$

$N \equiv 30$

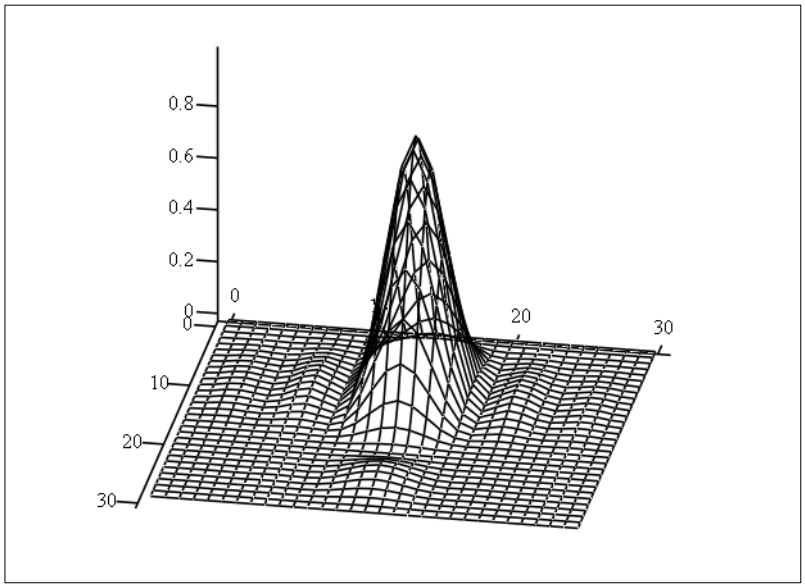


M

2. Random array

$$f1(x,y) := \left[\frac{\sin\left(2\cdot\pi\cdot d\cdot\frac{x}{2\cdot\lambda}\right)}{\left(2\cdot\pi\cdot d\cdot\frac{x}{2\cdot\lambda}\right)}\right]^2\cdot\left[\frac{\sin\left(2\cdot\pi\cdot a\cdot\frac{y}{2\cdot\lambda}\right)}{\left(2\cdot\pi\cdot a\cdot\frac{y}{2\cdot\lambda}\right)}\right]^2$$

$$MM_{i,j} := f1\left(x_i, y_j\right)$$



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