Electron Diffraction at Multiple Slits

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Number of slits: $n := 6$  
Slit width: $w := 0.5$

Slit locations: $s_1 := 0$, $s_2 := 2$, $s_3 := 4$, $s_4 := 6$, $s_5 := 8$, $s_6 := 10$

Normalized coordinate-space wave function at the slit screen:

$$
\Psi(x) := \frac{1}{\sqrt{n}} \frac{1}{\sqrt{w}} \left\{ \begin{array}{ll}
\frac{1}{\sqrt{w}} \sum_{j=1}^{n} \left[ (x \geq s_j) \cdot (x \leq s_j + w) \right] & \text{if } x \in [s_{j-1}, s_j] \\
0 & \text{otherwise}
\end{array} \right.
$$

Electron Density at the Slit Screen

Fourier transform the position wave function into the momentum representation:

$$
\Phi(p_x) := \frac{1}{\sqrt{2\pi}} \int_{0}^{s_{n+w}} \exp(-i\cdot p_x \cdot x) \cdot \Psi(x) \, dx
$$

Electron Distribution at the Slit Screen

$$
\left| \Phi(p_x) \right|^2
$$