

1 Application to linear array

This section explores the effect of multiple scattering on the elementary case of a linear array of identical circularly symmetric scattering bodies. For simplicity, the simulations are performed in 2D but the general conclusions should equally apply to 3D simulations.

The interlattice distance, the strength of the potential and the number of scattering elements, i.e. the thickness of the sample are allowed to vary. The potential profile is Gaussian as shown in figure 1a. The wavelength is kept at 200keV for all the simulations, the radius being about 1Å resulting in a normalized radius $ka \approx 2\pi/\lambda r_0 \approx 250$.

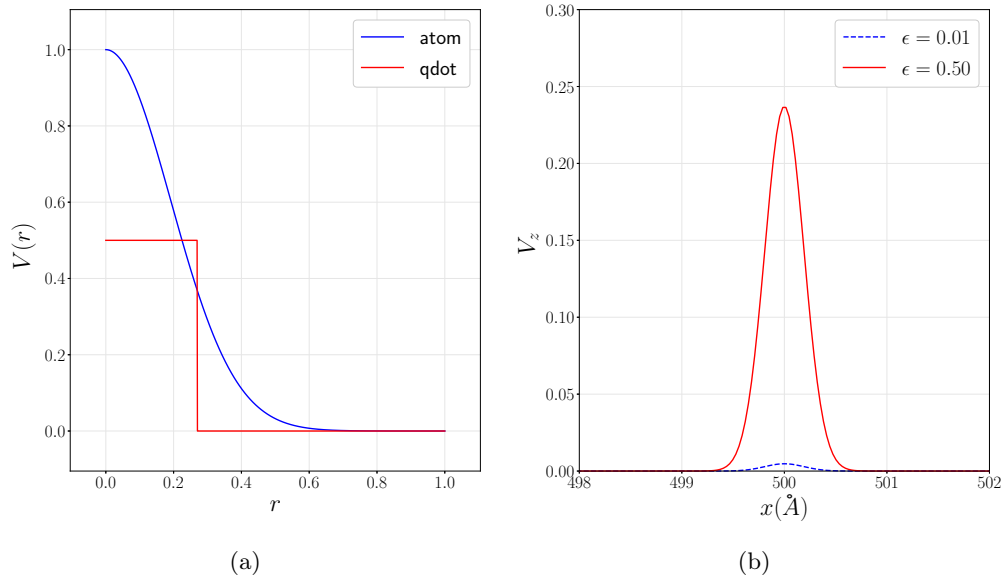


Figure 1: 1a Potential constant over the circular area $qdot$ and Gaussian $atom$. 1b Projected potential.

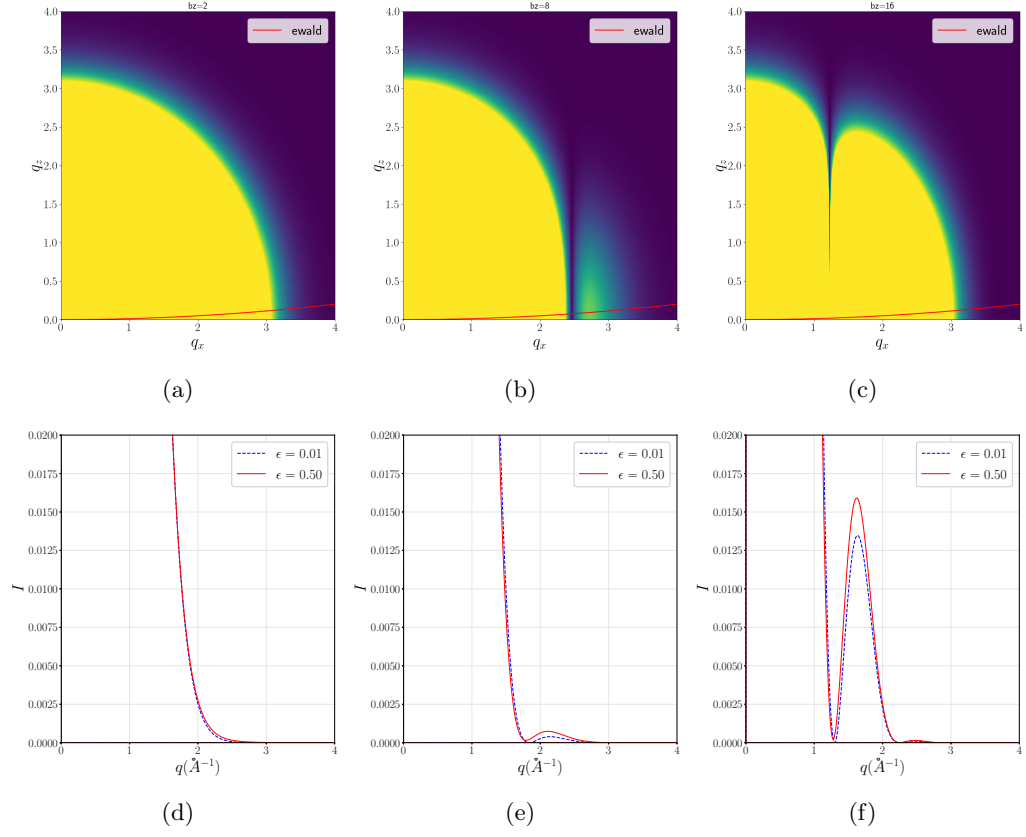


Figure 2: 2D Potential and diffraction pattern for a 2-scattering bodies with interlattice distance $2a, 2d=2$, $2b, 2e d=4$, $2c, 2f d=8$. Solid lines correspond to dynamical diffraction due to strong potential and dashed lines for kinematic weak potential.