**Objective:**
Implement surface roughness with scattering self-energies and compare against explicit case.

**Problem:**
Explicit surface roughness requires many samples and for periodic structures can lead to unphysical resonances.

**Approach:**
- Scattering self-energy where the statistics are included implicitly. Scattering is nonlocal.
- Compare to explicit case in which many samples are realized.

**Results/Impact:**
Implemented surface roughness with reasonable agreement to explicit case for different correlation lengths and RMS step height.

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3x3x20 nm Si wire in effective mass