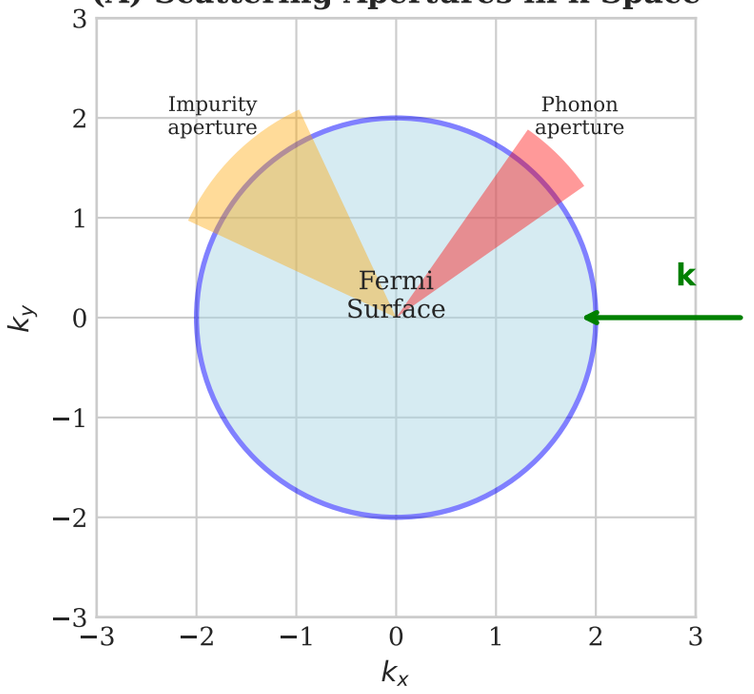
Panel C-7: Lattice Scattering as Categorical Apertures

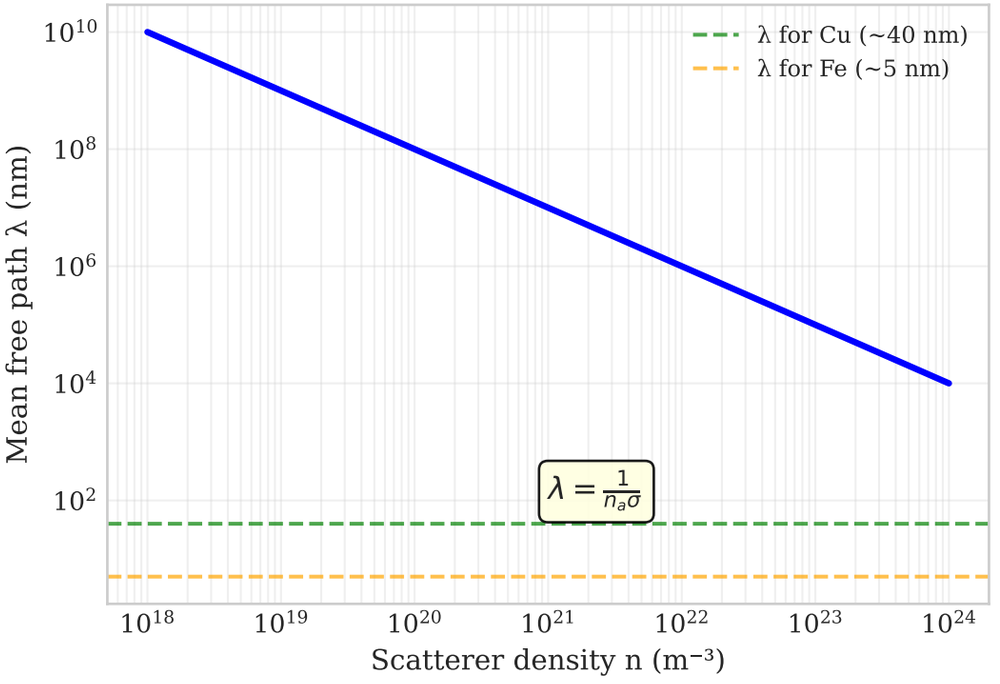
(A) Scattering Apertures in k-Space



(B) Scattering Types and Selectivities

Scattering Type	Selectivity (s)	T-Dependence	λ (nm)
Phonon	~0.1	$\propto T$	10-100
Impurity	~0.01	T-independent	1-10
Electron-electron	~0.5	$\propto T^2$	100-1000
Grain boundary	~0.001	Weak	0.1-1
Surface	~0.1	Complex	~film thickness

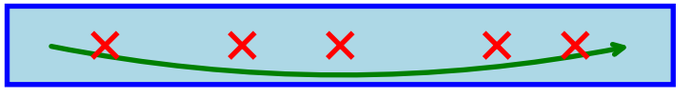
(C) Mean Free Path from Aperture Density



(D) Resistance as Aperture Barrier Sum

$$R = \sum_a \frac{\Phi_a}{I} = \frac{L}{A} \sum_a \frac{1}{s_a \tau_a}$$

Resistance = Sum of aperture potentials



Each scatterer = aperture barrier