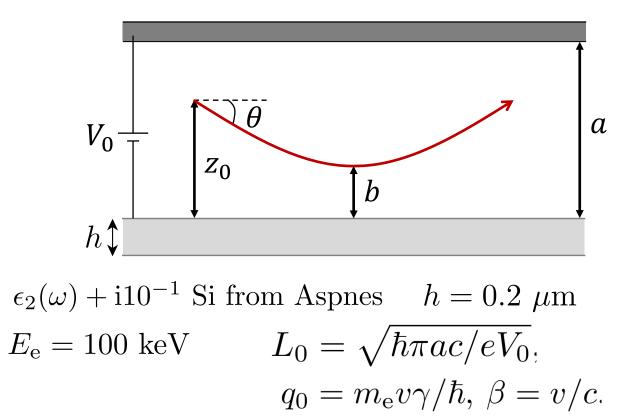
Total EELS as a function of the cutoff energy

$$\begin{split} \frac{d\Gamma}{dy}(\mathbf{r},\omega) &= \frac{2e^2}{\pi\hbar v^2} \int_0^\infty \frac{\mathrm{d}k_x}{k_\parallel^2} \mathrm{Re} \left\{ k_{z1} \mathrm{e}^{2\mathrm{i}k_{z1}z_\mathrm{e}(\mathbf{r})} \left[\left(\frac{k_x v}{k_{z1} c} \right)^2 r_{123}^\mathrm{s}(k_\parallel) - \frac{1}{\epsilon_1} r_{123}^\mathrm{p}(k_\parallel) \right] \right\}, \text{\#paper149 Eq. (25)} \\ \Gamma(\omega) &= \frac{2e^2}{\pi\hbar v^2} \int_0^\infty \frac{\mathrm{d}k_x}{k_\parallel^2} \mathrm{Re} \left\{ \underbrace{\int_{-\infty}^\infty \mathrm{d}y \, \mathrm{e}^{2\mathrm{i}k_{z1}z_\mathrm{e}(y)}}_{L^\mathrm{eff}(k_\parallel)} \, k_{z1} \left[\left(\frac{k_x v}{k_{z1} c} \right)^2 r_{123}^\mathrm{s}(k_\parallel) - \frac{1}{\epsilon_1} r_{123}^\mathrm{p}(k_\parallel) \right] \right\}, \end{split}$$



zoom in energy

EELS for $h = 0.2 \mu \text{m}$, $\varepsilon_2 = \varepsilon_{Si}(\omega)$, v = 0.55c-b = 0 nm→ *b* = 10 nm 3 2 1 1 1 $\underline{\int_0^{\omega_{\mathrm{f}}}\mathrm{d}\omega\Gamma(\omega)}$ normalization over 1.5 all frequencies integration Electron energy $\hbar\omega$ (eV) over frequency EELS for $h = 0.2 \mu \text{m}$, $\varepsilon_2 = \varepsilon_{Si}(\omega)$, v = 0.55cEELS for $h = 0.2 \mu \text{m}$, $\varepsilon_2 = \varepsilon_{Si}(\omega)$, v = 0.55c0.8 -b = 0 nmL_∥/L₀ (1/μm) 5 0.6 → b = 50 nm0.4 tot $\int_{0}^{\omega_{\rm f}} \mathrm{d}\omega \frac{\Gamma(\omega)}{I_{\rm co}}$ 0.2 2.0 1.0 1.5 1.0 1.5 Cutoff energy $\hbar \omega_f$ (eV) Cutoff energy $\hbar \omega_f$ (eV)

no zoom in energy

EELS for $h = 0.2 \mu m$, $\varepsilon_2 = \varepsilon_{Si}(\omega)$, v = 0.55c

