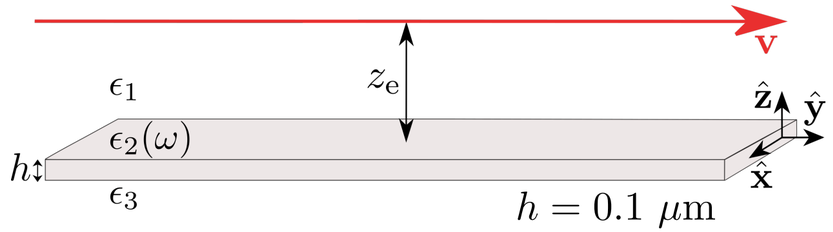
Electron coupling to a WG: test the electrostatic approx

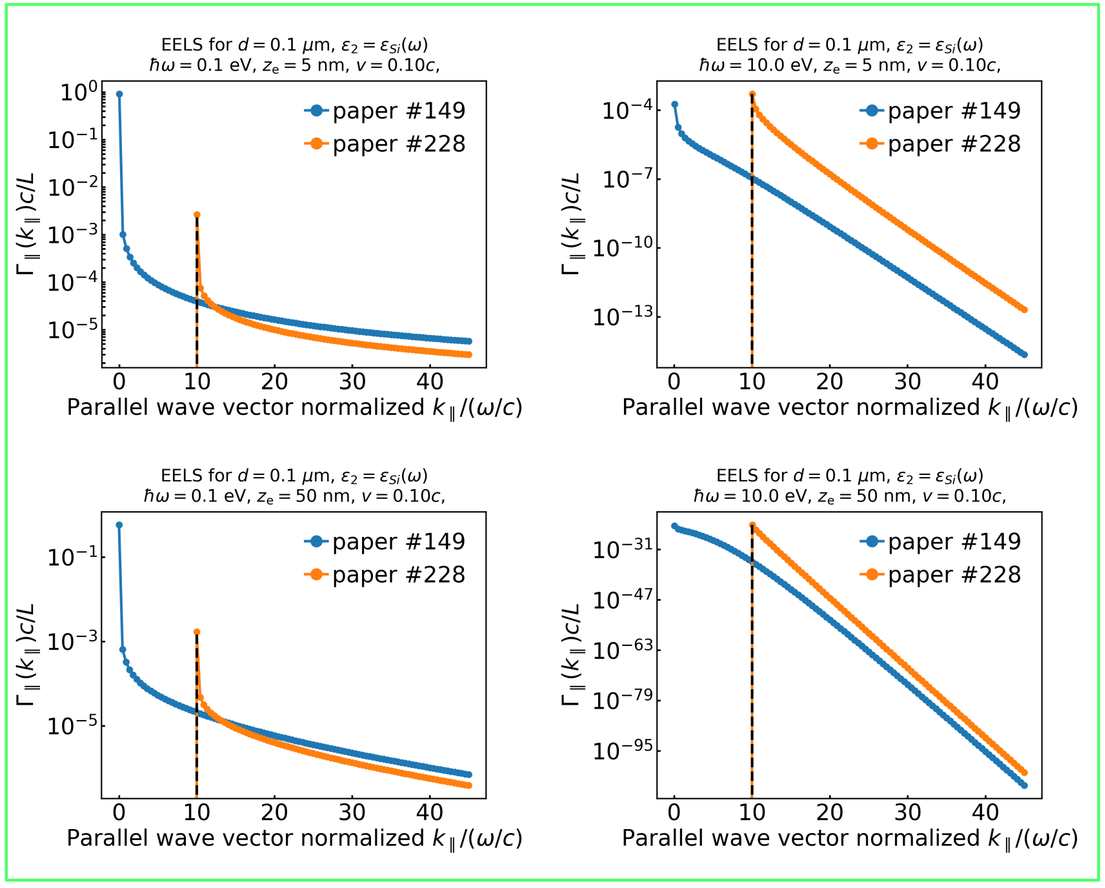
$$\frac{d\Gamma}{dy}(\mathbf{r}, k_\parallel, \omega) = \frac{2e^2}{\pi\hbar v^2} \frac{k\, \mathrm{e}^{-2k_\parallel z_\mathrm{e}}}{\sqrt{k_\parallel^2 - \omega^2/v^2}} \mathrm{Im}\{r_{123}^\mathrm{p}(k_\parallel)\},$$ #paper228 Eq. (3): QE approx

$$\frac{d\Gamma}{dy}(\mathbf{r}, k_\parallel, \omega) = \frac{2e^2}{\pi\hbar v^2} \frac{k}{k_\parallel k_x} \mathrm{Re}\left\{ k_{z1} \mathrm{e}^{2\mathrm{i}k_{z1}z_\mathrm{e}(\mathbf{r})} \left[\left(\frac{k_x v}{k_{z1} c} \right)^2 r_{123}^\mathrm{s}(k_\parallel) - \frac{1}{\epsilon_1} r_{123}^\mathrm{p}(k_\parallel) \right] \right\}$$ #paper149 Eq. (25)

$$r_{123}^\nu = r_{12}^\nu + \frac{t_{12}^\nu t_{21}^\nu r_{23}^\nu \mathrm{e}^{2\mathrm{i}k_{z2}h}}{1 - r_{21}^\nu r_{23}^\nu \mathrm{e}^{2\mathrm{i}k_{z2}h}},$$



$v = 0.1c$



$v = 0.9c$