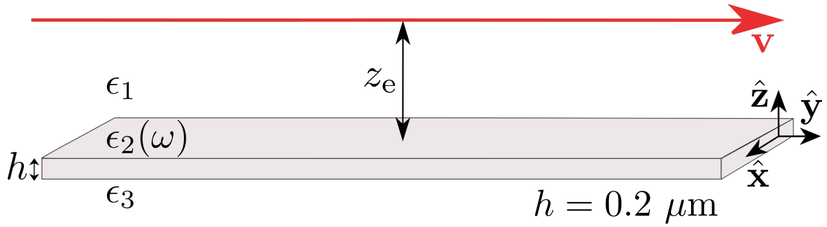
Integration over the waveguide modes

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

$$r^\nu_{123} = r^\nu_{12} + \frac{t^\nu_{12}t^\nu_{21}r^\nu_{23}\mathrm{e}^{2\mathrm{i}k_{z2}h}}{1 - r^\nu_{21}r^\nu_{23}\mathrm{e}^{2\mathrm{i}k_{z2}h}},$$

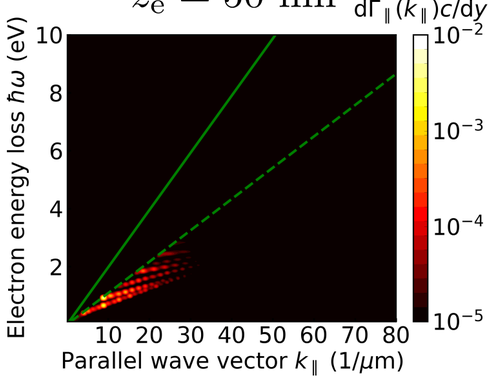


$h = 0.2\ \mu\mathrm{m}$

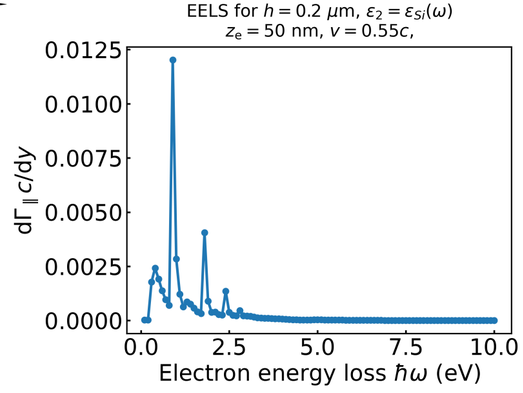
$\epsilon_2(\omega) + \mathrm{i}10^{-1}$ Si from Aspnes

$E_\mathrm{e} = 100$ keV

$z_\mathrm{e} = 50$ nm



integration



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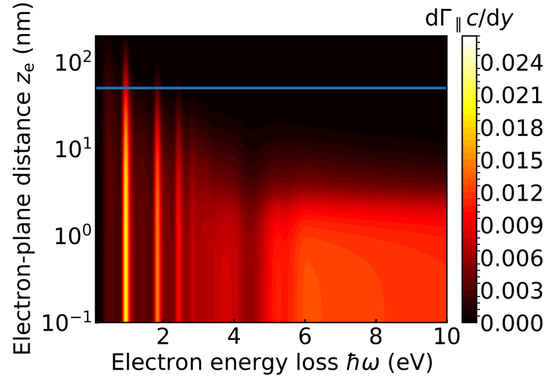
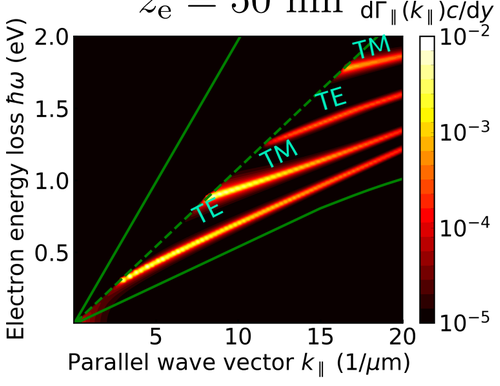
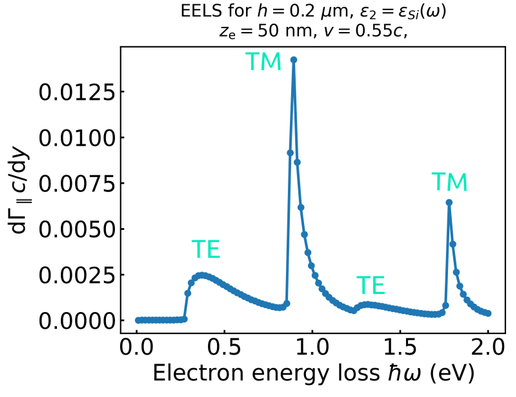


zoom in energy:

$z_\mathrm{e} = 50$ nm



integration



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