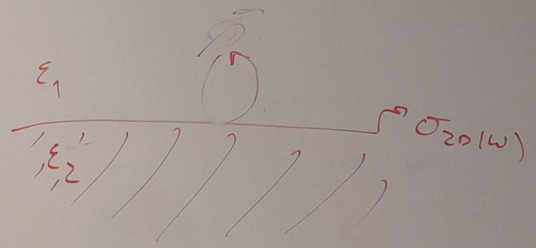
$$\sigma_0 = \frac{e^2}{4\hbar} \qquad \hbar c = L \cdot E$$

$$k_z = \sqrt{q^2 - \varepsilon_0 k_0^2} \quad \left| \; k_0 = \frac{\omega}{c} \right. \qquad \frac{\varepsilon_1}{k_1} + \frac{\varepsilon_2}{k_2} + \frac{i\sigma}{\omega \varepsilon_0} = 0$$

$$\sigma = \frac{e^2}{\pi \hbar} \frac{i E_F}{\hbar\omega + i\hbar\gamma}$$



$$\varepsilon_1 + \varepsilon_2 = -\frac{i\sigma}{\omega \varepsilon_0} q \rightarrow q = (\varepsilon_1 + \varepsilon_2) \frac{i\omega\varepsilon_0}{\sigma}$$

$$= \frac{e^2}{\hbar\omega \pi \varepsilon_0} \frac{4 E_F}{\hbar\omega + i\hbar\gamma} q = 4\alpha \hbar c \frac{E_F}{\hbar\omega + i\hbar\gamma} q$$

$\alpha \hbar c$

$$\hbar\omega = \sqrt{\frac{4q}{\varepsilon_1 + \varepsilon_2} E_F \hbar c \frac{q}{k_0}}$$

$$\hbar\omega = 2\alpha E_F q_{//}$$

$$q(\omega) = \frac{\varepsilon_1 + \varepsilon_2}{2} \frac{\hbar\omega (\hbar\omega + i\hbar\gamma)}{2\alpha \hbar c E_F}$$

$$k_{//} = \frac{q}{k_0} = \frac{\hbar\omega}{2\alpha E_F} = q_{//}$$

$E = \frac{1}{L}$

$L \cdot E = 1$