

$$\epsilon_r \mu_r = \frac{c^2}{v^2} \Rightarrow \epsilon_0 \mu_0 \epsilon_r \mu_r = \frac{1}{v^2} = \epsilon \mu$$

$$\frac{k^2}{c^2} = \frac{\alpha^2}{4\omega} \quad ; \quad \sigma = \frac{2n\epsilon_0\omega}{\mu_r} k = \frac{\cancel{2n\epsilon_0\omega}}{\mu_r} \frac{\alpha c}{\cancel{2\omega}}$$

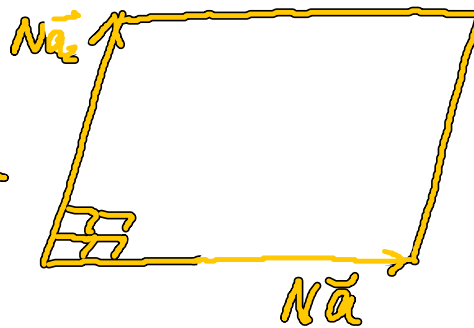
$$\epsilon_0 \mu_0 = \frac{1}{c^2} = \frac{n\epsilon_0 \mu_0 \alpha c}{\mu_r \mu_0} = \frac{n\alpha}{\mu_r c}$$

wir setzen  $\mu = \mu_0 \mu_r \approx \mu_0$ ,  $\mu_r \approx 1$

Elementarzelle = Periodizitätsgebiet  $\vec{a}_1, \vec{a}_2, \vec{a}_3$   $\Omega$

Grundgebiet

$$V = N^3 \Omega$$



$$N^3 = N_A$$

$\vec{b}_1, \vec{b}_2, \vec{b}_3$  Basisvektoren im reziproken Gitter

$$\int_0^{\tau} \exp\{\dots\} \exp\{\dots\} dt = \frac{\exp\{-\frac{t}{\tau}\} \exp\{-i\omega t\}}{-\frac{1}{\tau} (1 + i\omega\tau)} \Big|_0^{\infty}$$

$$= \frac{\tau}{1 + i\omega\tau} = \frac{\tau(1 - i\omega\tau)}{1 + \omega^2\tau^2}$$