

30.10.06

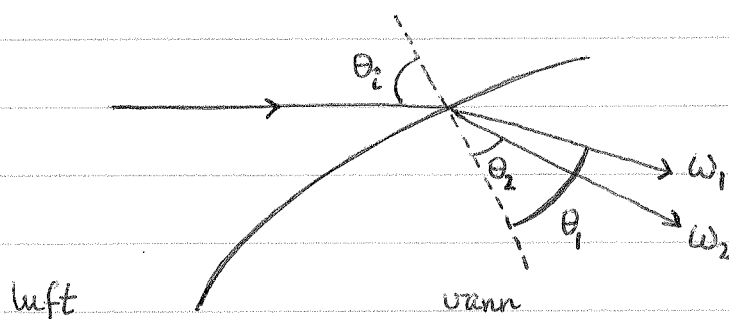
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Dispersjon. Regnbue. (LHL 30,7, TM 31,6)

Dispersjon: $v = v(\omega)$

$$\Rightarrow n = \frac{c}{v} = \frac{c}{v(\omega)} = n(\omega)$$

$$\Rightarrow \epsilon_r \approx n^2(\omega) \approx \epsilon_r(\omega) \quad (\text{antar } \mu_r \approx 1)$$



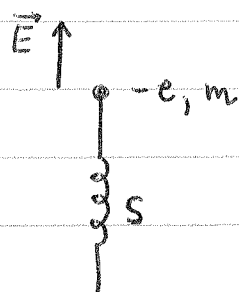
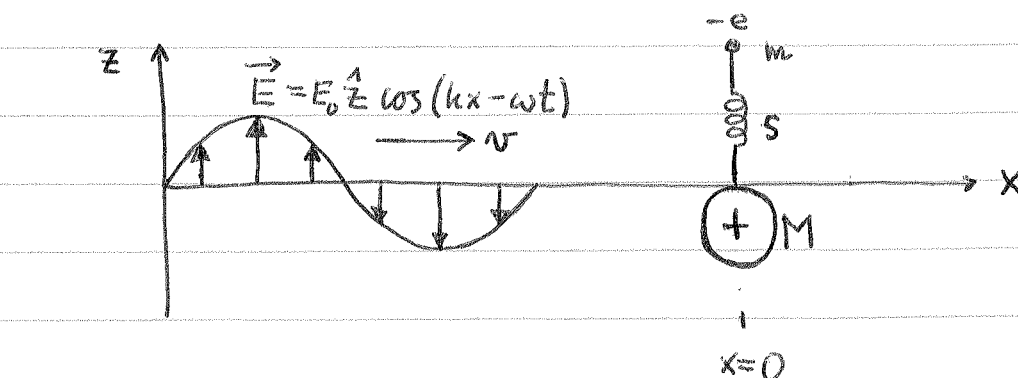
$$n(\omega_1) = n_1$$

$$n(\omega_2) = n_2 > n_1$$

$\Rightarrow$ f.eks. regnbue
(mer snart!)

Men hvorfor er e.m. bølger dispersive i et dielektrikum som f.eks. vann?

Ser på enkel modell for bundet elektron i molekyl (for å finne ut noe om $\epsilon_r(\omega)$ og $n(\omega)$):



$$m \ddot{z} = -S z - e E_0 \cos \omega t$$

$$\ddot{z} + \omega_0^2 z = -\frac{e E_0}{m} \cos \omega t$$