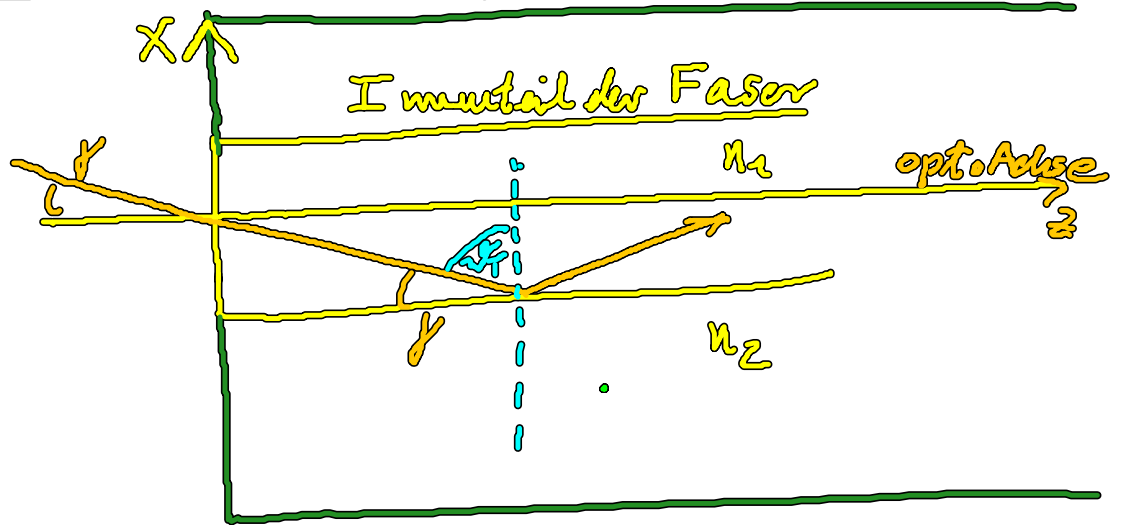
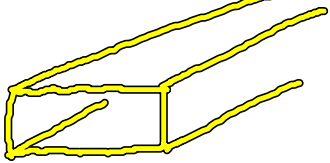


# Kap. 5 Optische Fasern

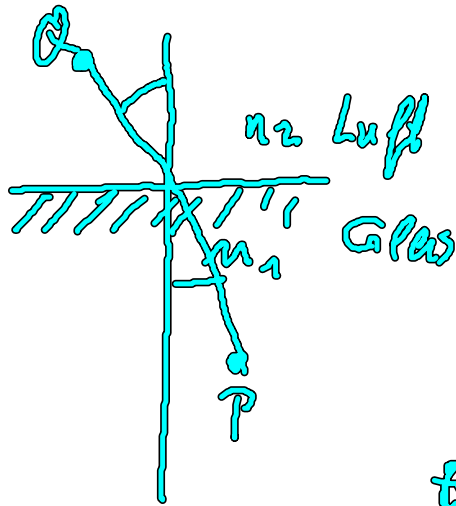
SiO<sub>2</sub>

Q Quarzglas

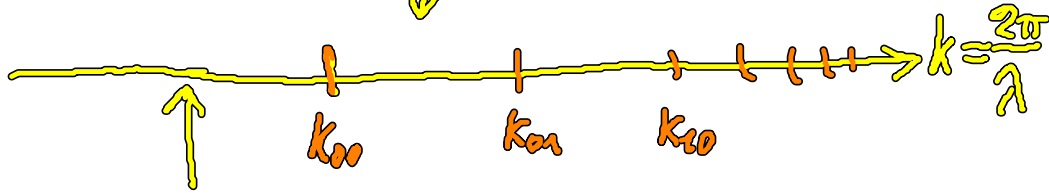
Mikrowellen



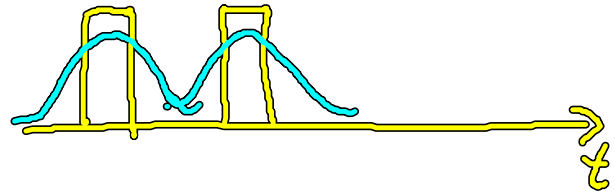
Fermatsches Prinzip



k nur eine Mode



keine eben Welle



$$\int_Q^P n(\vec{r}) |\dot{\vec{r}}| dt \rightarrow \text{Minimum}$$

ebene Welle

$$\vec{E} = \vec{E}_0 \exp\left\{i\omega\left(t - \frac{n}{c}x\right)\right\}$$

$$= \vec{E}_0 \exp\left\{i\omega\left(t - \frac{n}{c} \frac{\vec{k}}{|\vec{k}|} \cdot \vec{r}\right)\right\}$$

$$\underline{k_0 S} = \frac{\omega}{c} S = \omega \frac{n}{c |\vec{k}|} \vec{k} \cdot \vec{r} \quad \text{bzw. } S(\vec{r}) = n \frac{\vec{k}}{|\vec{k}|} \cdot \vec{r}$$

$$\exp\{-i k_0 S(\vec{r})\}$$