

Snelliussches Brechungsgesetz

$$AD = ct$$

$$CD = c't$$

$$\sin \varepsilon = \frac{AD}{BC}$$

$$\sin \varepsilon' = \frac{CD}{BC}$$

$$\frac{\sin \varepsilon}{\sin \varepsilon'} = \frac{AD}{CD} = \frac{ct}{c't} = \frac{c}{c'} = \frac{c/c_{\text{vak}}}{c'/c_{\text{vak}}} = \frac{1/n}{1/n'} = \frac{n'}{n}$$

Brechungsindex $n := \frac{c_{\text{vak}}}{c} \geq 1$

Brechung ins dünnere Medium:

$$\sin \varepsilon' = \frac{n}{n'} \sin \varepsilon \leq 1 \Rightarrow \sin \varepsilon \leq \frac{n'}{n} \Rightarrow \sin \varepsilon_g = \frac{n'}{n}$$

in Beispiel-Applet: $\sin \varepsilon_g = \frac{c}{c'} = 0.65 \Rightarrow \varepsilon_g = 40,54^\circ = 0.7076 \leq 0.225\pi$

$\varepsilon > \varepsilon_g \rightarrow$ Totalreflexion