

$$\left(\Delta - \frac{1}{c^2} \frac{\partial^2}{\partial t^2}\right) u(\vec{r}, t) = \emptyset$$

$$u(\vec{r}, t) = u(\vec{r}) e^{-i\omega t}$$

$$-\frac{1}{c^2} \frac{\partial^2}{\partial t^2} u(\vec{r}, t) = -\frac{1}{c^2} u(\vec{r}) i^2 \omega^2 e^{-i\omega t}$$

$$= \underbrace{u(\vec{r}) e^{-i\omega t}}_{u(\vec{r}, t)} \cdot \frac{\omega^2}{c^2} \quad k = \frac{\omega}{c} \quad \begin{array}{l} \hbar \\ \downarrow \\ 1 \end{array}$$

$$= \underline{\underline{u(\vec{r}, t) k^2}}$$

$$\Rightarrow -\frac{1}{c^2} \frac{\partial^2}{\partial t^2} = k^2 \quad \text{in dieser Gleichung}$$