

Kondensator

Buch S.141; FS S.28

Laden

I sinkt exponentiell

$$I(t) = I_0 \cdot e^{-kt}; k = \frac{1}{RC}$$

Teilspannungen in Reihe

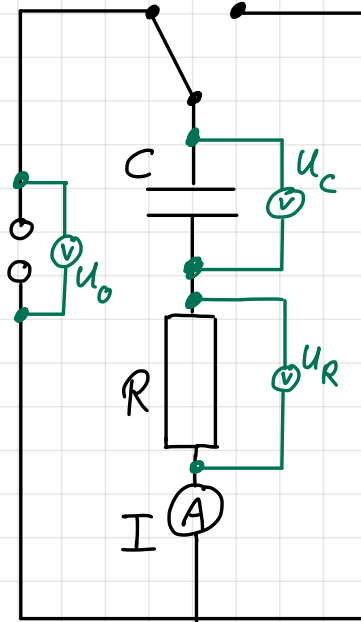
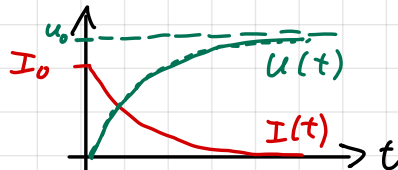
$$U_C + U_R = U_0$$

$$\Rightarrow U_C = U_0 - U_R; R = \frac{U_R}{I}$$

$$= U_0 - R \cdot I$$

$$= U_0 - \underbrace{R \cdot I_0}_{U_0} \cdot e^{-kt}$$

$$U_C = U_0 (1 - e^{-kt})$$



Entladen

I sinkt exponentiell

$$I(t) = I_0 \cdot e^{-kt}; k = \frac{1}{RC}$$

keine Netzspannung

$$U_C + U_R = 0$$

$$\Rightarrow U_C = -U_R; R = \frac{U_R}{I}$$

$$= -R \cdot I$$

$$= -\underbrace{R \cdot I_0}_{U_0} \cdot e^{-kt}$$

$$U_C = -U_0 \cdot e^{-kt}$$

