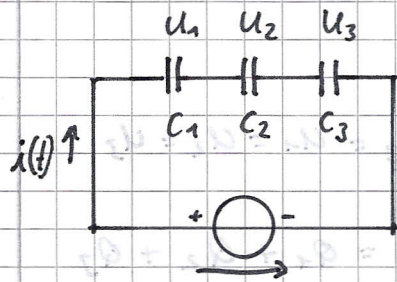


Reihenschaltung von Kondensatoren



$$U_q = U_1 + U_2 + U_3 \quad Q = C \cdot U$$

$$\text{am Anfang} \rightarrow U_1 = U_2 = U_3 = 0$$

$$\psi = Q = Q_1 = Q_2 = Q_3$$

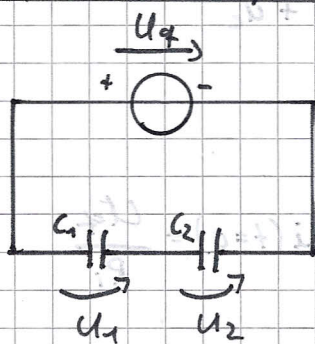
$$C_1 U_1 = C_2 U_2 = C_3 U_3 = C_{\text{ges}} \cdot U_{\text{ges}}$$

$$\frac{Q_1}{C_1} + \frac{Q_2}{C_2} + \frac{Q_3}{C_3} = \frac{Q_{\text{ges}}}{C_{\text{ges}}} \quad \left| \begin{array}{l} Q_1 = Q_2 = Q_3 = Q_{\text{ges}} \end{array} \right.$$

$$\frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} = \frac{1}{C_{\text{ges}}} \Rightarrow \frac{1}{C_{\text{ges}}} = \sum_i \frac{1}{C_i}$$

$$\text{für 2 Kondensatoren gilt: } \frac{C_1 C_2}{C_1 + C_2} = C_{\text{ges}}$$

kapazitiver Spannungsteiler



$$(t=0; U_i=0)$$

$$U_q = U_1 + U_2$$

$$Q = Q_1 = Q_2$$

$$C_1 \cdot U_1 = C_2 \cdot U_2 = C_{\text{ges}} \cdot U_{\text{ges}}$$

$$\frac{U_1}{U_2} = \frac{C_2}{C_1} \quad \frac{U_1}{U_{\text{ges}}} = \frac{C_2}{C_1 + C_2}$$

$$\rightarrow U_1 = U_q \cdot \frac{C_2}{C_1 + C_2} = U_q \cdot \frac{C_1 C_2}{C_1 + C_2} \cdot \frac{1}{C_1}$$

$$U_1 = U_q \cdot \frac{C_2}{C_1 + C_2} \quad \text{bzw.} \quad U_2 = U_q \cdot \frac{C_1}{C_1 + C_2}$$