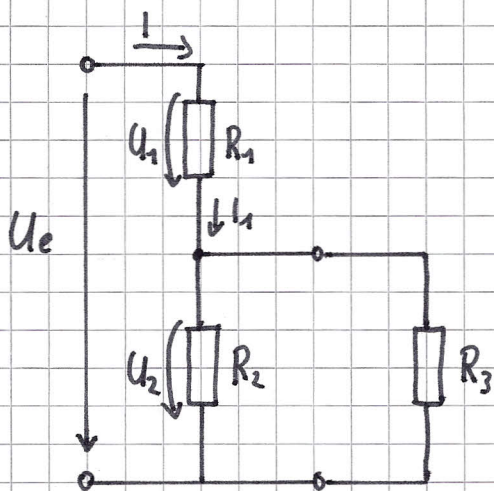


③ Der belastete Spannungsteiler



$$U_2 = U_e \cdot \frac{R_2}{R_1 + R_2}$$

$$R_{2||3} = \frac{R_2 \cdot R_3}{R_2 + R_3}$$

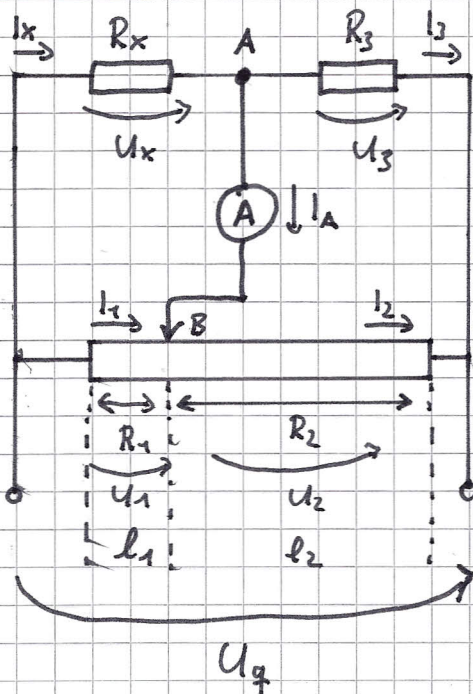
$$U_2 = U_e \cdot \frac{R_2 \cdot R_3}{R_2 + R_3}$$

$$R_1 + \frac{R_2 \cdot R_3}{R_2 + R_3}$$

$$I' (\text{mit } R_3) = \frac{U_e}{R_1 + \frac{R_2 \cdot R_3}{R_2 + R_3}}$$

belastungsfreie Spannungsmessung

(Kompensationsprinzip)



$$U_{AB} = 0 \quad \varphi_A = \varphi_B \rightarrow \begin{matrix} U_x = U_1 \\ U_3 = U_2 \end{matrix}$$

$$I_x = I_3 \quad I_1 = I_2$$

$$\frac{U_x}{U_3} = \frac{U_1}{U_2} \rightarrow \frac{I_x \cdot R_x}{I_3 \cdot R_3} = \frac{I_1 \cdot R_1}{I_2 \cdot R_2}$$

$$\frac{R_x}{R_3} = \frac{R_1}{R_2}$$

$$R_x = \frac{R_1}{R_2} \cdot R_3$$

$$R_x = \frac{l_1}{l_2} \cdot R_3$$