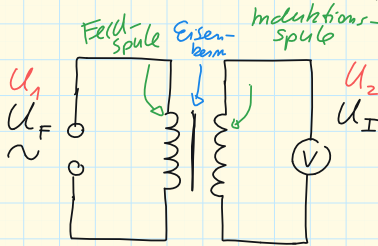


Transformator

23.4.26
Phy 106

Wechselstrom im Feldspule

- änderndes Magnetfeld im Eisenkern
- Magnetfeld induziert eine Spannung in der Induktionsspule



Es gilt

$$\frac{U_1}{U_2} = \frac{N_1}{N_2}$$

Windungszahl

N_1

N_2

A1

$$U_1 = 4V$$

$$N_1 = 600$$

$$N_2 = 900$$

$$U_2 = ?$$

$$\frac{U_1}{U_2} = \frac{N_1}{N_2} \quad | \cdot U_2$$

$$U_1 = U_2 \cdot \frac{N_1}{N_2} \quad | : \frac{N_1}{N_2}$$

$$U_1 \cdot \frac{N_2}{N_1} = U_2$$

$$U_2 = 4V \cdot \frac{900}{600} = 6V$$

A2

$$U_1 = 9V$$

$$U_2 = 6V$$

$$N_2 = 900$$

$$N_1 = ?$$

$$\frac{U_1}{U_2} = \frac{N_1}{N_2} \quad | \cdot N_2$$

$$\frac{U_1}{U_2} \cdot N_2 = N_1$$

$$\frac{9V}{6V} \cdot 900 = 1350$$

Versuch 1:

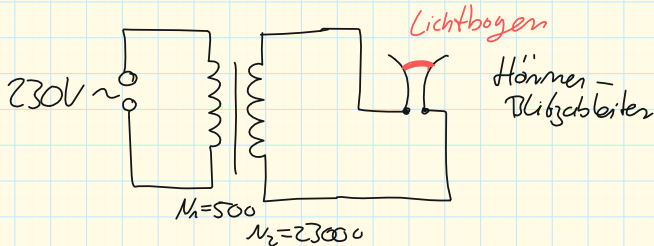
U_1 Steckdose \rightarrow 230V

$$N_1 = 500$$

$$N_2 = 23000$$

$$\dots U_2 = 10580V$$

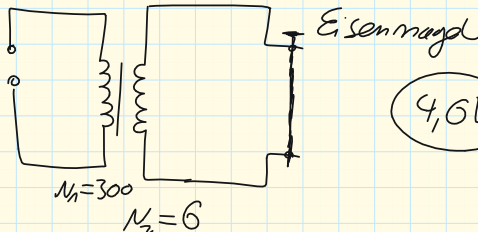
Hochspannungstransformator



Versuch 2:

$$P = U_1 \cdot I_1 = P = U_2 \cdot I_2$$

230V ~



Hochstrom-
transformator

4,6V

$$\frac{I_2}{I_1} = \frac{N_1}{N_2}$$