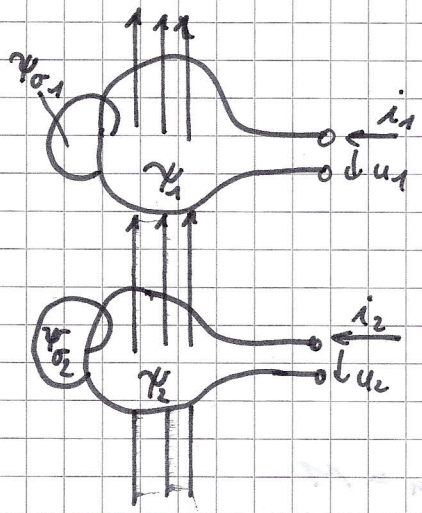
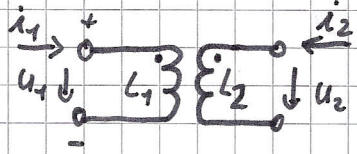
Gegeninduktion / Gegeninduktivität

2 Leiterschleifen (Spulen) magnetische Kopplung





- Verkettungsanfang

$$L = \frac{\Psi}{i}\Big| \quad L_1 = \frac{\Psi_1}{i_1}\Big|_{i_2=0}$$

$$L_2 = \frac{\Psi_2}{i_2}\Big|_{i_1=0}$$

Def: Gegeninduktivität $M_{1,2}$

M_1 hervorgerufen von 2

$\Psi_{1,2} \rightarrow \Psi_1$ hervorgerufen von 2

$$M_{12} = \frac{\Psi_{12}}{i_2}\Big|_{i_1=0}$$

$$M_{21} = \frac{\Psi_{21}}{i_1}\Big|_{i_2=0}$$

Superposition: $\Psi_1 = \Psi_{11} + \Psi_{12} = L_1 i_1 + M_{12} \cdot i_2$

$$u_1 = \frac{d\Psi_1}{dt} = L_1 \frac{di_1}{dt} + M_{12} \frac{di_2}{dt}$$

$$u_2 = \frac{d\Psi_2}{dt} = L_2 \frac{di_2}{dt} + M_{21} \frac{di_1}{dt}$$

lineare Systeme: $M, L \neq f(i) \rightsquigarrow L, M = \text{const}$

$M_{12} = M_{21} = M$

Streufluss $\Phi_{\sigma_1} = \Phi_{11} - \Phi_{21}$