

Zusammenfassung: Tutorium 4

- **Der Differenzverstärker**

- Gleichtaktverstärkung:

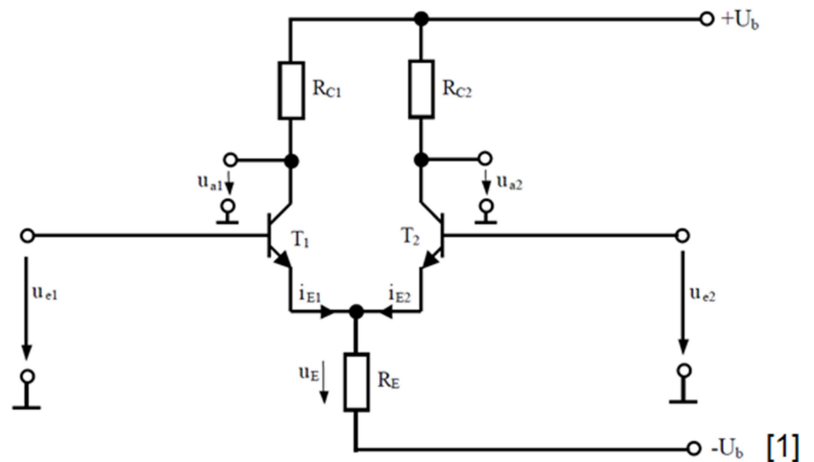
$$A_G \approx -\frac{R_C}{2 \cdot R_E}$$

- Gegentaktverstärkung:

$$A_D \approx -\frac{1}{2} \cdot S \cdot R_E$$

- Gleichtaktunterdrückung:

$$G = \frac{|A_D|}{|A_G|}$$

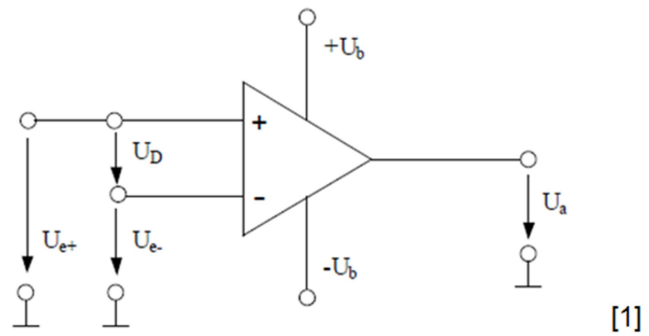


- **Der ideal Operationsverstärker**

- Eingangswiderstand: $r_e \rightarrow \infty$

- Ausgangswiderstand: $r_a \rightarrow 0$

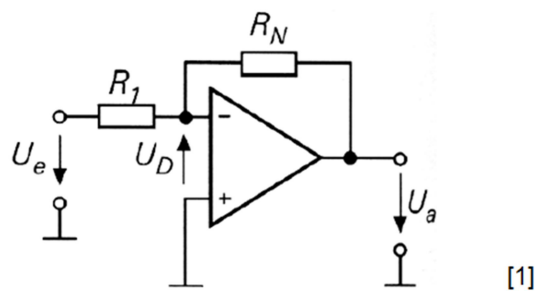
- Leerlaufverstärkung: $A_0 \rightarrow \infty$



- **Der invertierende Verstärker**

$$-A = \frac{U_a}{U_e} = -\frac{R_N}{R_1}$$

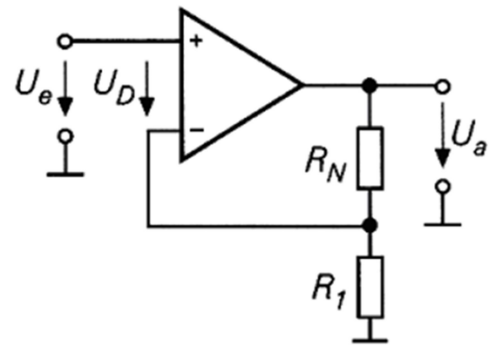
$$-U_D = 0$$



- **Der nichtinvertierende Verstärker**

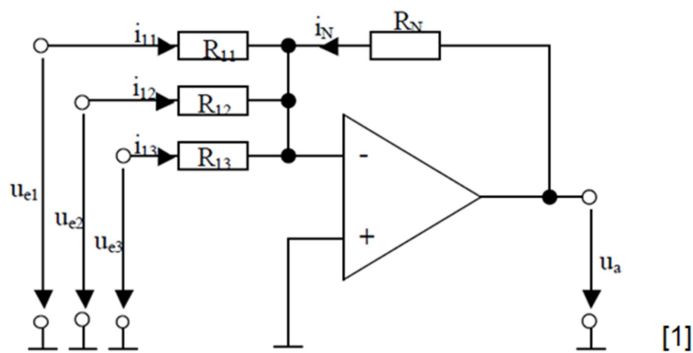
$$- A = \frac{U_a}{U_e} = 1 + \frac{R_N}{R_1}$$

$$- U_D = 0$$



[1]

- **Der invertierende Addierer**



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$$- u_a = -\left(\frac{R_N}{R_{11}} \cdot u_{e1} + \frac{R_N}{R_{12}} \cdot u_{e2} + \frac{R_N}{R_{13}} \cdot u_{e3}\right)$$

$$- U_D = 0$$

Quellen:

- [1] ES-Skript