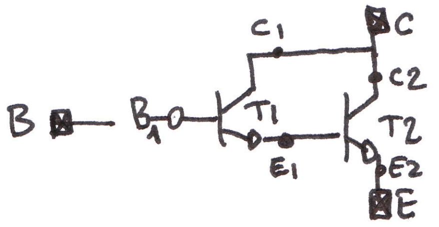

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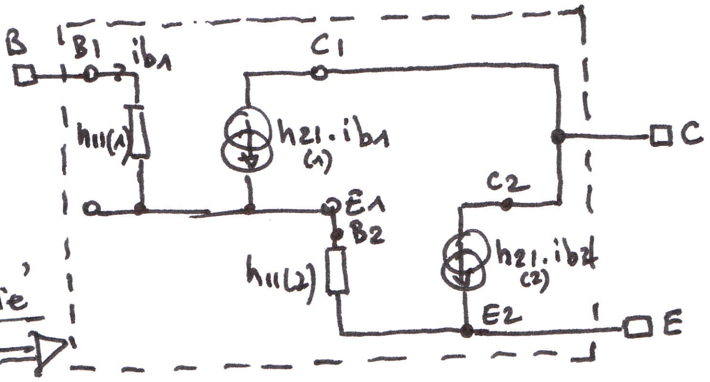
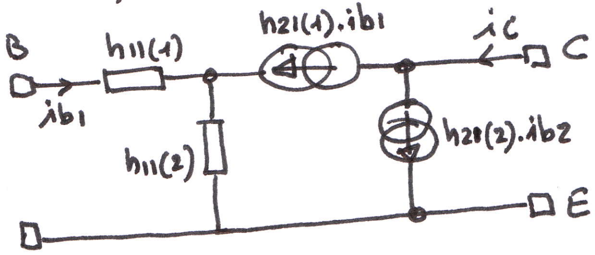


modèle simplifié

schéma équivalent:



Ⓐ $\mapsto$ Résistance d'entrée : $R_{in} = \dfrac{V_{in}}{I_{in}} = \dfrac{v_{be}}{i_{b1}} = \dfrac{h_{11}(1) \cdot i_{b1} + h_{11}(2) \cdot i_{b2}}{i_{b1}}$

$$R_{in} = \frac{h_{11}(1) \cdot i_{b1} + h_{11}(2) \cdot (i_{b1} + h_{21}(1) \cdot i_{b1})}{i_{b1}}$$

$$R_{in} = h_{11}(1) + h_{11}(2) + h_{11}(2) h_{21}(1) = \boxed{h_{11}(1) + h_{11}(2)\left[1 + h_{21}(1)\right]}$$

Si on prend $h_{11}(1) = h_{11}(2)$ on obtient : $R_{in} = h_{11}(1 + h_{21})$

soit $\boxed{R_{in} \approx h_{11} \cdot h_{21}}$

Ⓑ $\mapsto$ Gain en courant:

le gain en courant s'exprime par $G_c = \dfrac{I_{out}}{I_{in}} = \dfrac{I_c}{I_b}$

$$\frac{i_c}{i_{b1}} = \frac{h_{21}(1) \cdot i_{b1} + h_{21}(2) \cdot i_{b2}}{i_{b1}} = \frac{h_{21}(1) \cdot i_{b1} + h_{21}(2) \cdot \left[i_{b1} + h_{21}(1) i_{b1}\right]}{i_{b1}}$$

$$\boxed{\frac{i_c}{i_{b1}} = h_{21}(1) + h_{21}(2) + h_{21}(1) h_{21}(2)} =$$

Si $h_{21}(1) = h_{21}(2) \Rightarrow \dfrac{i_c}{i_{b1}} = \boxed{G_i = h_{21}^2 + 2 h_{21}}$

Soit $G_i \approx h_{21}^2$