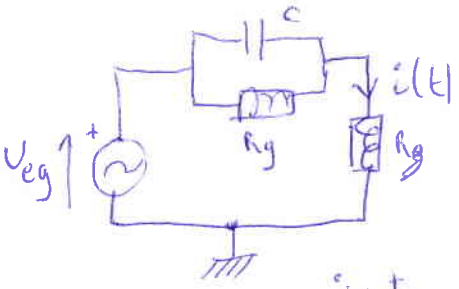
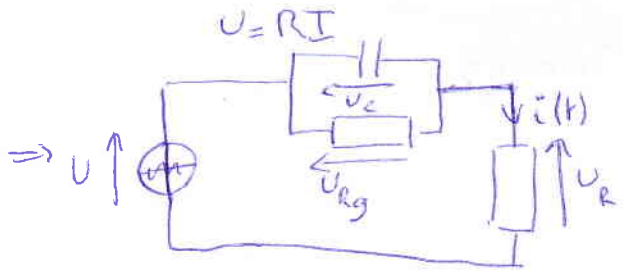
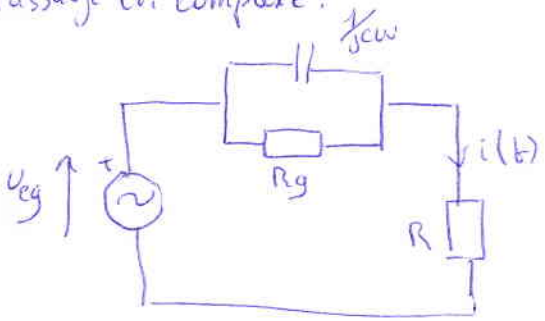


$E \sin(\omega_0 t) = E e^{j\omega_0 t}$

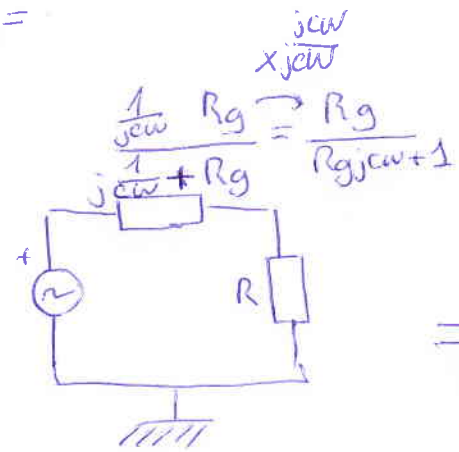


$U_{eg} =$

Passage en complexe :



PDC $\Rightarrow$



↳ loi des mailles

$$\emptyset = R\underline{i} + \frac{Rg}{Rg\,jCw + 1}\underline{i} - Ee^{j\omega_0 t}$$

$$\emptyset = \underline{i}\left(R + \frac{Rg}{Rg\,jCw + 1}\right) - Ee^{j\omega_0 t}$$

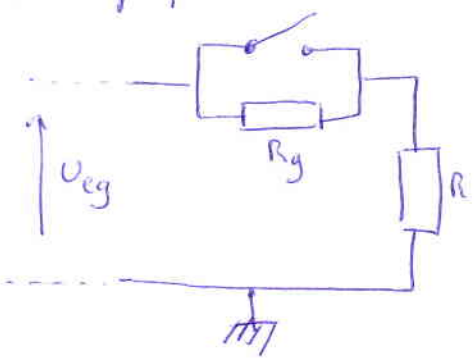
$$\underline{i} = \frac{Ee^{j\omega_0 t}}{R + \frac{Rg}{Rg\,jCw + 1}}$$

$i(t) = \mathrm{Img}(\underline{i})$

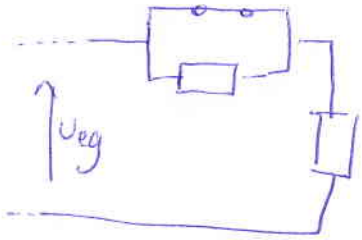
↳ partie Img car sin partie Réel est cos

En statique :

Basse freq :



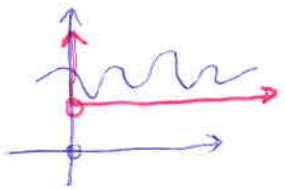
Haute freq :



valmoy de X

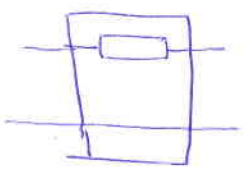
$X(t) = \langle X(t) \rangle + x(t)$ ← Changement de repère

- $X(t)$: Global
- $\langle X(t) \rangle$: Statique continue
- $+$: Superposition
- $x(t)$: dynamique centrée en $\emptyset$



Repère global

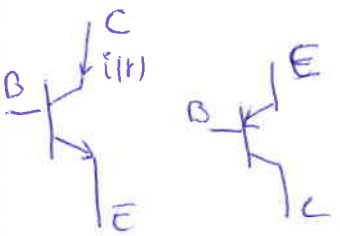
Transformer un dipole en quadripole



Transistors :

Bipolaire

NPN PNP



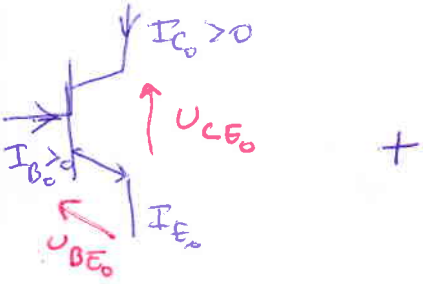
→ Travail sur le courant

→ Ampli.

NPN

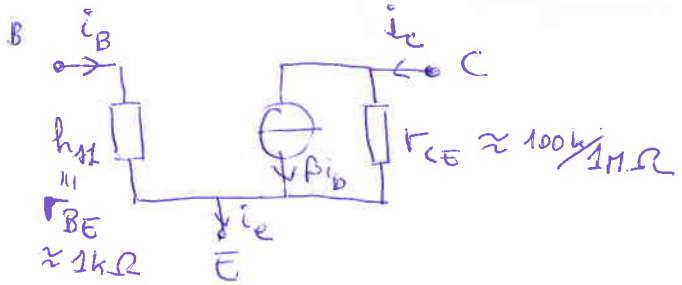
$I_E = I_C + I_B$

$\beta I_B = I_C$ ← Statique



+

Vrai ≠ < 1MHz ← Dynamique



$U_{BE_0} = \begin{cases} 0,6\,V \text{ en passant} \\ 0,3\,V \end{cases}$

⇓

$I_{C_0} = \beta I_{B_0}$

$I_{E_0} = I_{C_0} + I_{B_0}$

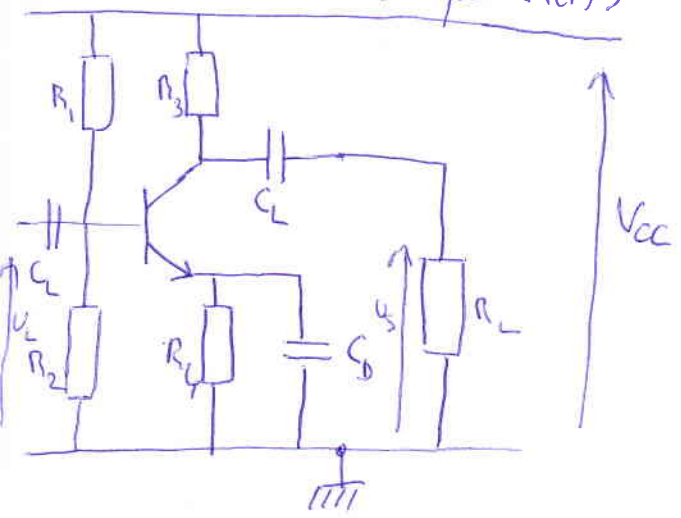
FET

Transistor à effet de champs.

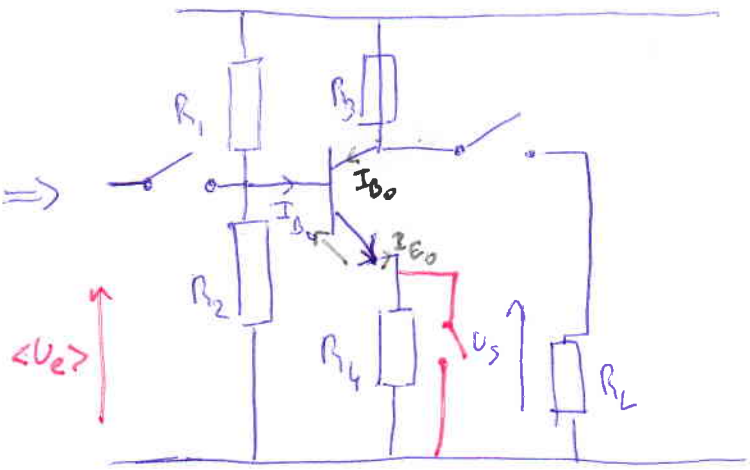
Canal N Canal P

→ Travail tension.

Exo : Trouver le modèle statique $\langle X(t) \rangle$

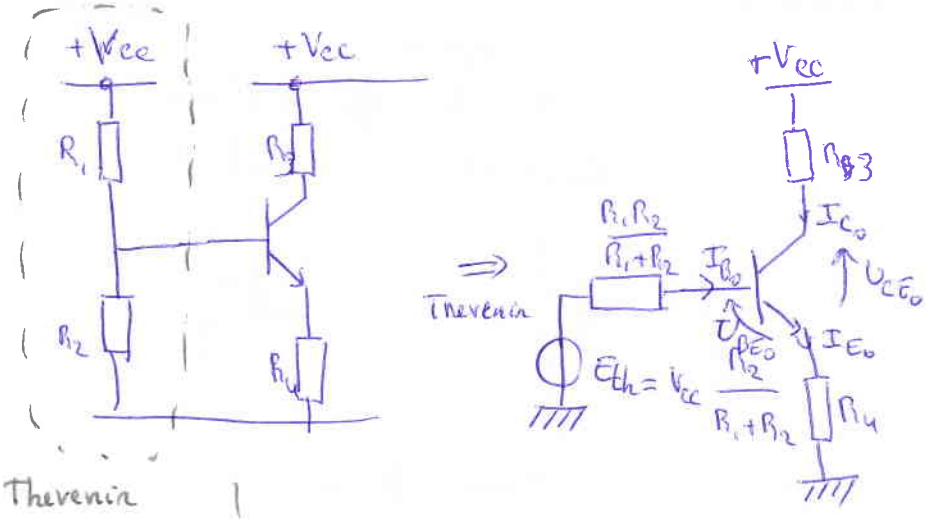


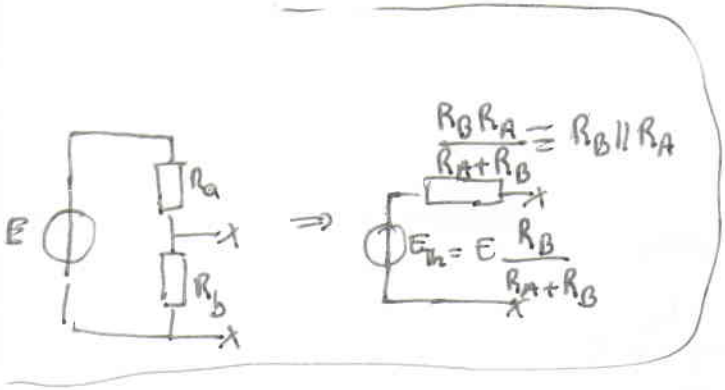
⇒

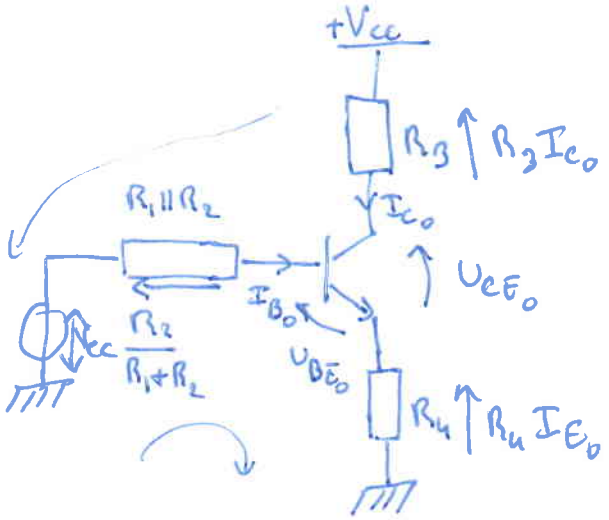


Calculer

I_{C_0}, I_{B_3}, I_{E_0}, U_{CE_0}







Loi des mailles :

$$0 = R_3 I_{C_0} + U_{CE_0} + R_4 I_{E_0}$$

$$0 = R_3 I_{C_0} + R_1 // R_2 I_{B_0} - V_{cc} \frac{R_2}{R_1+R_2}$$

$$0 = -V_{cc} \frac{R_2}{R_1+R_2} + R_1 // R_2 I_{B_0} + R_4 I_{E_0} + U_{BE_0}$$

$$R_3 I_{C_0} + U_{CE_0} + R_4 I_{E_0} = R_3 I_{C_0} + R_1 // R_2 I_{B_0} - V_{cc} \frac{R_2}{R_1+R_2} \quad ②$$

$$R_3 I_{C_0} + R_1 // R_2 I_{B_0} - V_{cc} \frac{R_2}{R_1+R_2} = -V_{cc} \frac{R_2}{R_1+R_2} + R_1 // R_2 I_{B_0} + R_4 I_{E_0}$$

$$R_3 I_{C_0} = R_4 I_{B_0} \iff I_{E_0} = \frac{R_3 I_{C_0}}{R_4} \iff I_{C_0} = \frac{R_4 I_{E_0}}{R_3}$$

$$R_3 I_{C_0} + U_{CE_0} + R_4 I_{E_0} = -V_{cc} \frac{R_2}{R_1+R_2} + R_1 // R_2 I_{B_0} + R_4 I_{E_0}$$

② : $U_{CE_0} + R_3 \beta I_{B_0} = R_1 // R_2 I_{B_0} - V_{cc} \frac{R_2}{R_1+R_2}$

$$U_{CE_0} = -R_3 \beta I_{B_0} + R_1 // R_2 I_{B_0} - V_{cc} \frac{R_2}{R_1+R_2} \iff I_{B_0} = \frac{U_{CE_0} + V_{cc} \frac{R_2}{R_1+R_2}}{R_3 \beta + R_1 // R_2}$$

Loi des mailles :

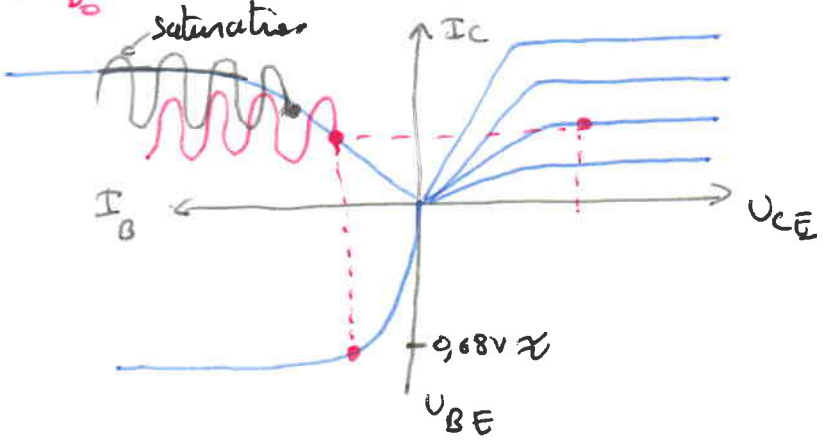
Dans un repère x, y la surface est homogène à $x * x$.

Correction

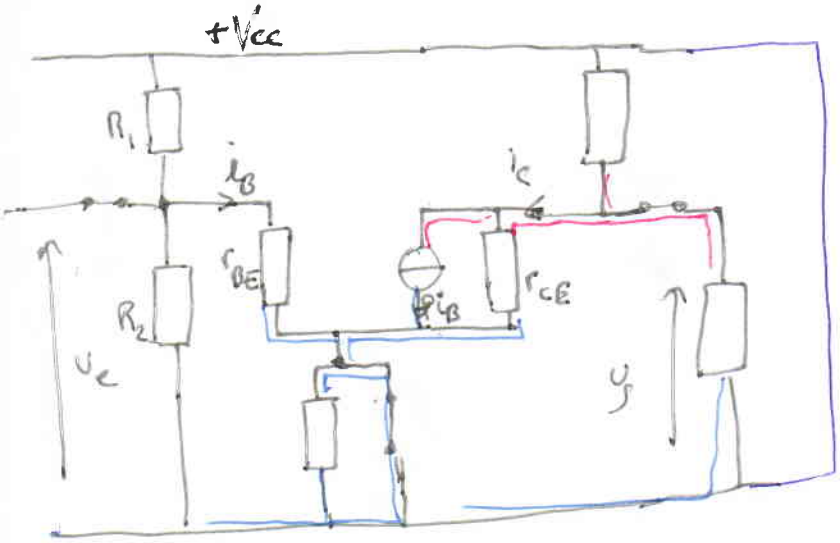
$$I_{B_0} = \frac{E_{Th} - U_{BE_0}}{\beta R_4 + R_{Th}} = \frac{I_{C_0}}{\beta}$$

$$U_{CE_0} = V_{cc} - R_4 \beta I_{B_0} - R_3 \beta I_{B_0}$$

> Polarisation du transistor
> ↳ Evite la saturation



2c(1) (dynamique)



condensateur ~~court~~ couplage
statique : —/ .—
dynamique : —o—o—