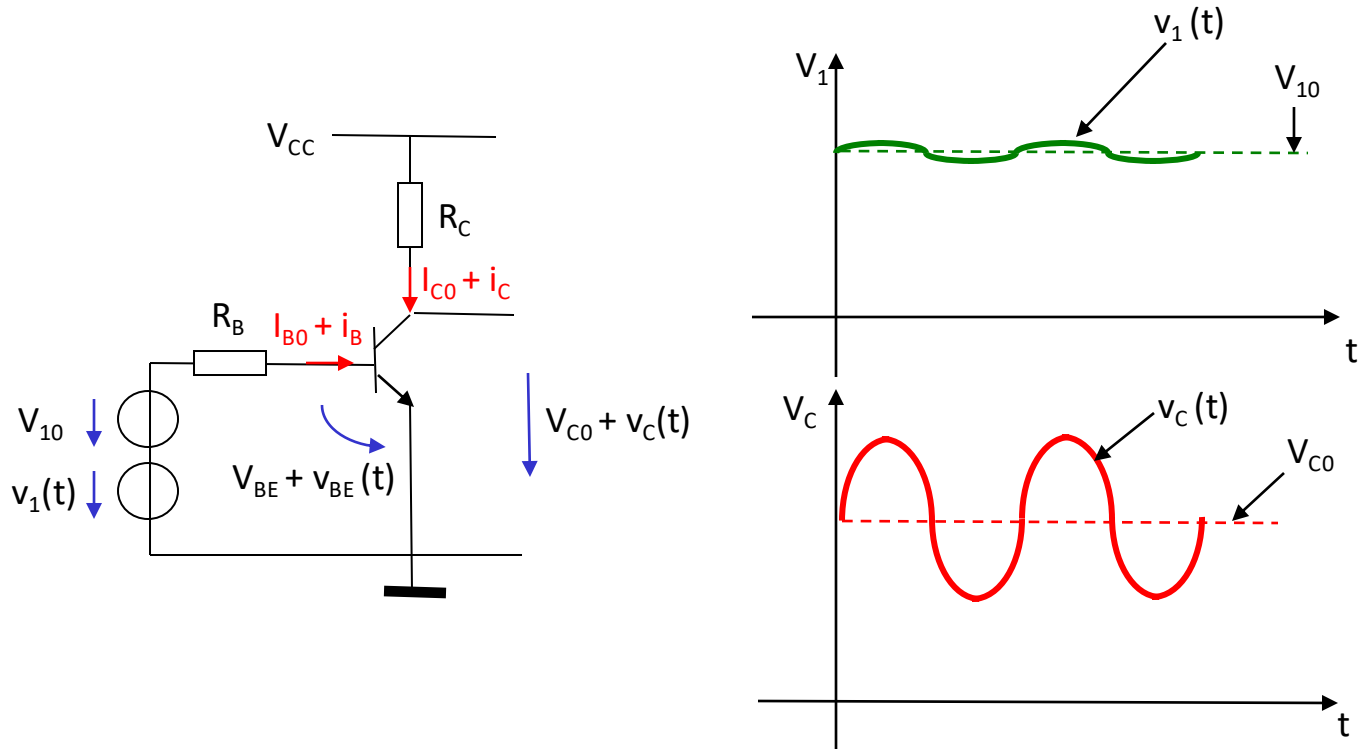
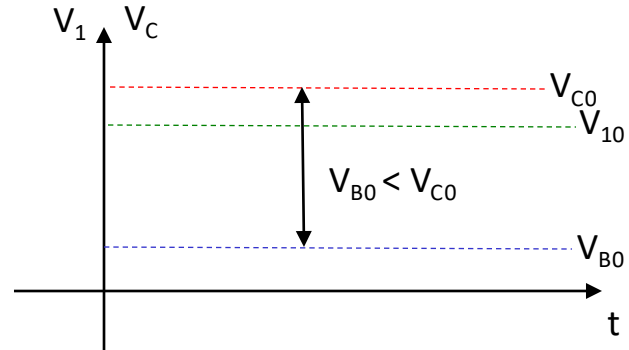
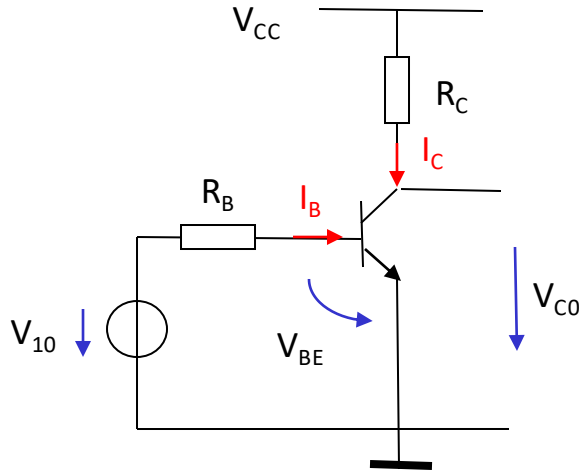


# Montage de base amplificateur : Observations



A-t-on une superposition du DC et de l'AC???

# Observation sans variations

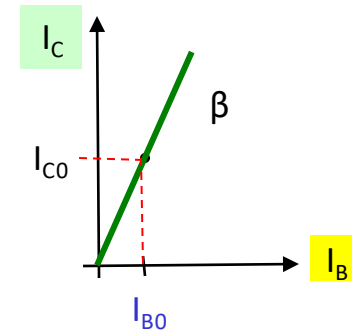
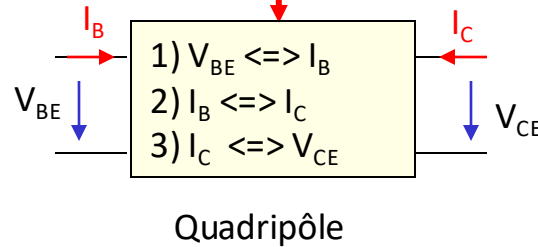
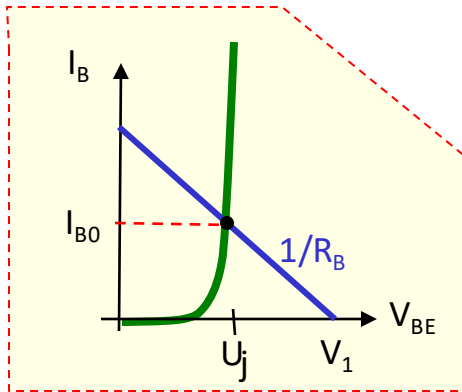
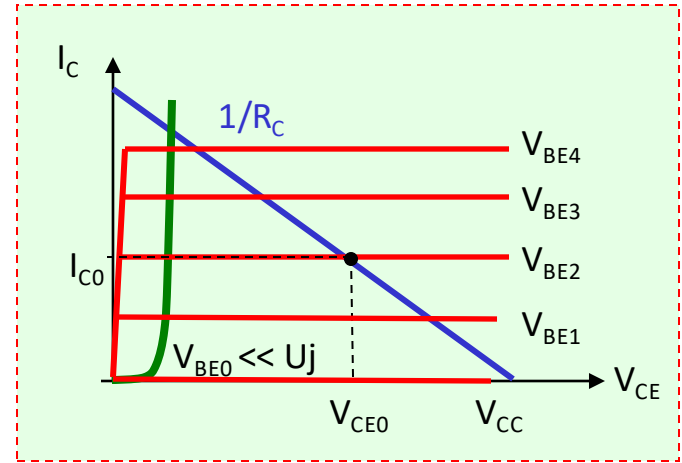
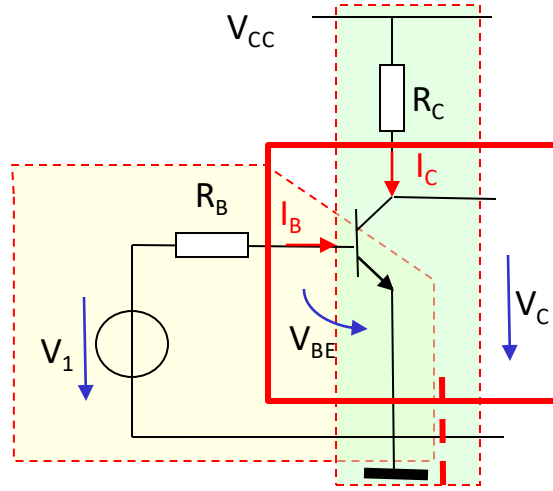


Le transistor en mode actif direct

Intuitivement il y a bien superposition du DC et de l'AC

# Interprétation graphique (sans variation)

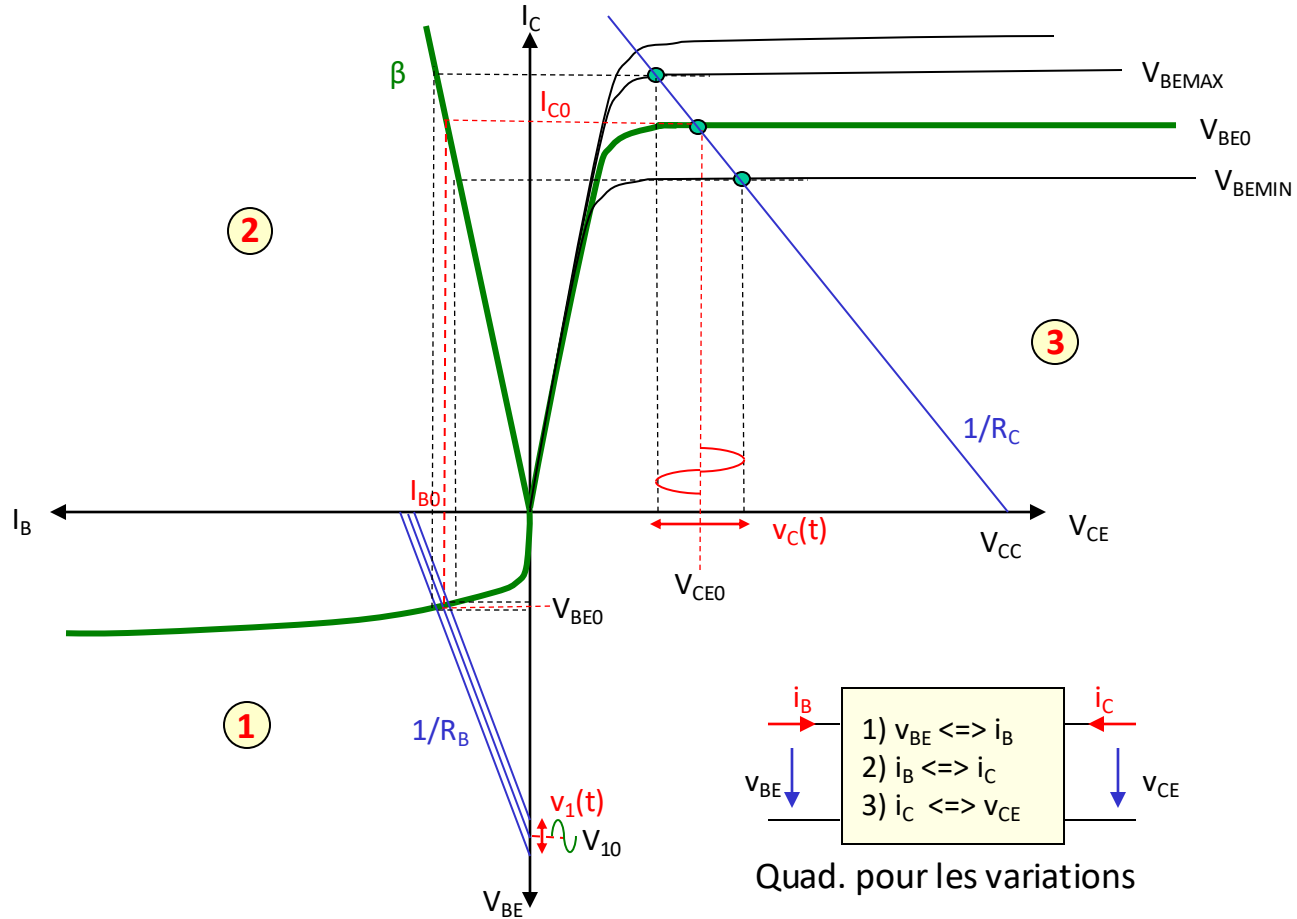
## Droite de charge



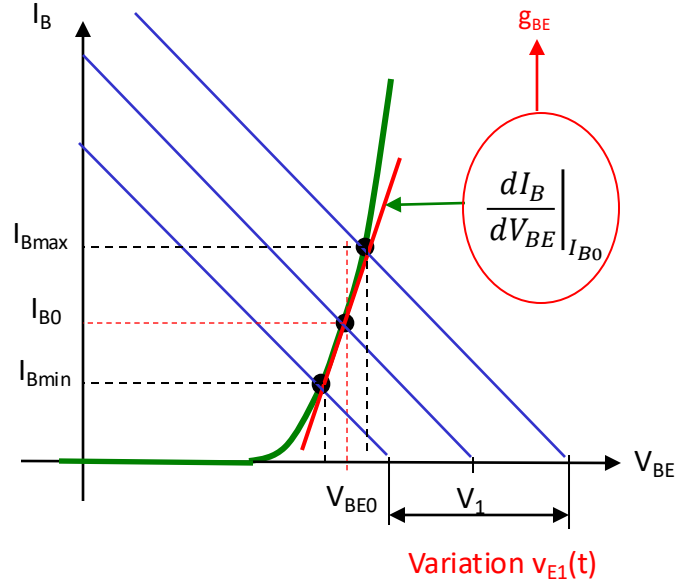
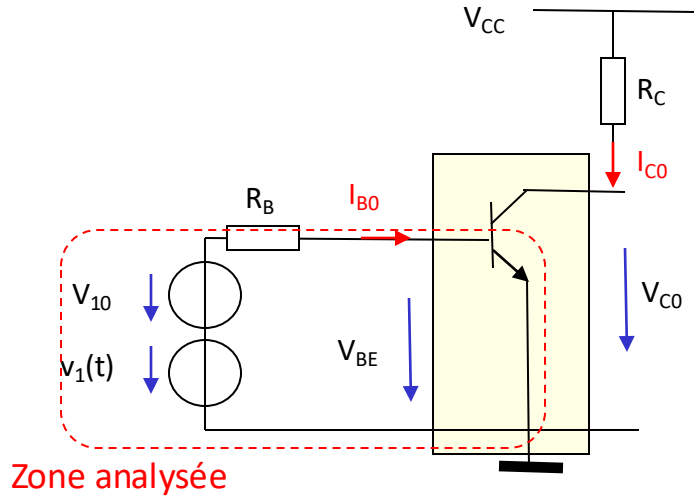
Cela rappelle un peu le modèle du quadripôle avec les trois relations



# Interprétation graphique des variations



# Analogie pour la courbe $I_B = f(V_{BE})$

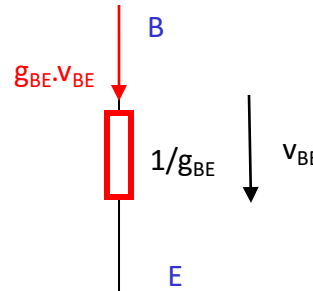


Dans cette configuration

$$g_B = \frac{\Delta I_B}{\Delta V_{BE}} = \frac{i_B}{v_{BE}}$$

$g_{BE}$  est une conductance

$$g_{BE} = \frac{I_{B0}}{U_T}$$

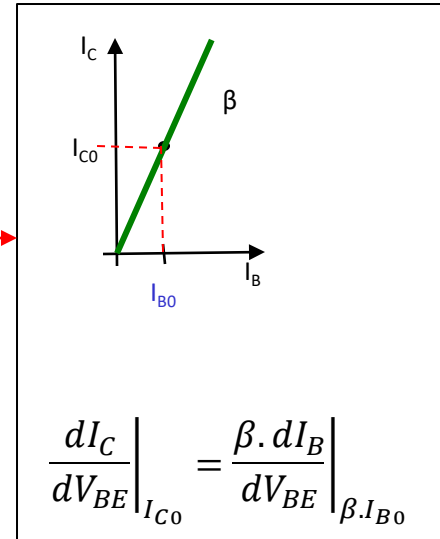
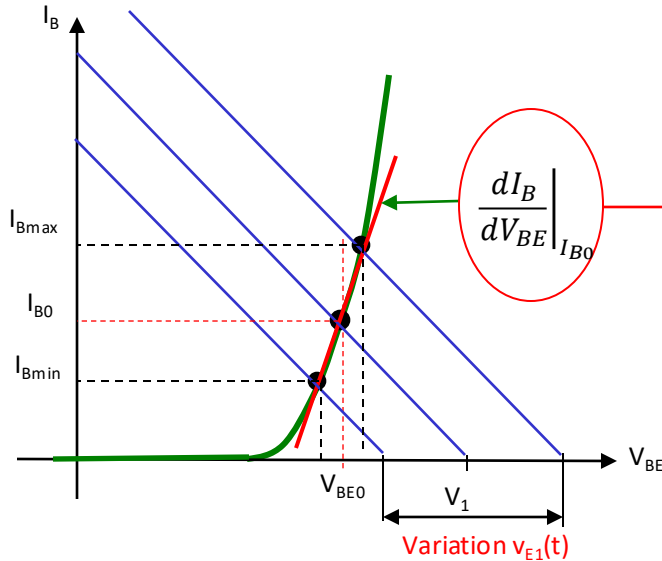


En fait  $1/g_{BE}$  est une résistance

Ou encore  $i_B = g_{BE} \cdot v_{BE}$

# Analyse de la courbe $I_C = f(V_{BE})$

Un peu plus subtile



~~$1/r_D$~~

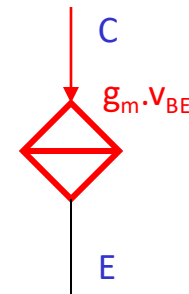
$$g_m = \frac{I_{C0}}{U_T}$$

Transconductance

Dans cette configuration  $g_m = \frac{\Delta I_C}{\Delta V_{BE}} = \frac{i_C}{v_{BE}}$

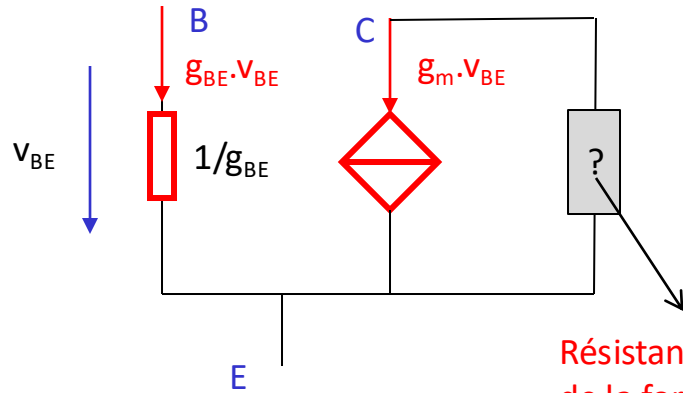
Ou encore  $i_C = g_m \cdot v_{BE}$

Remarque:  $\beta \cdot g_{BE} = g_m$



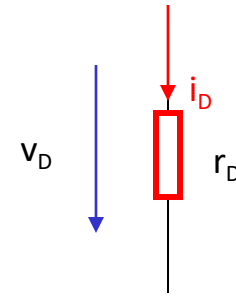
# Modélisation du transistor pour les petits signaux

Modèle transadmittance présenté en classe il y a une semaine



Résistance infinie à ce stade de la formation mais ...

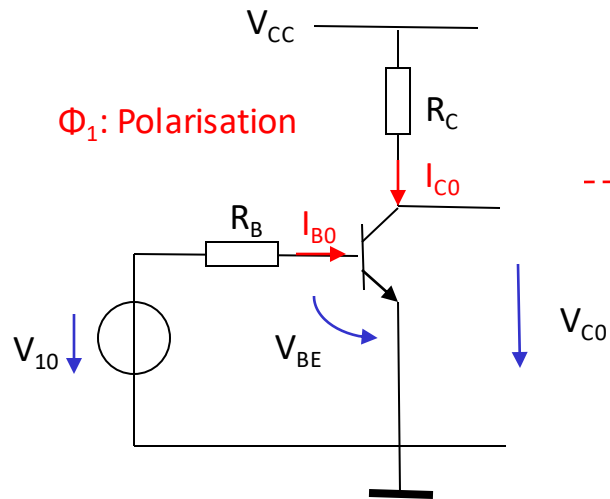
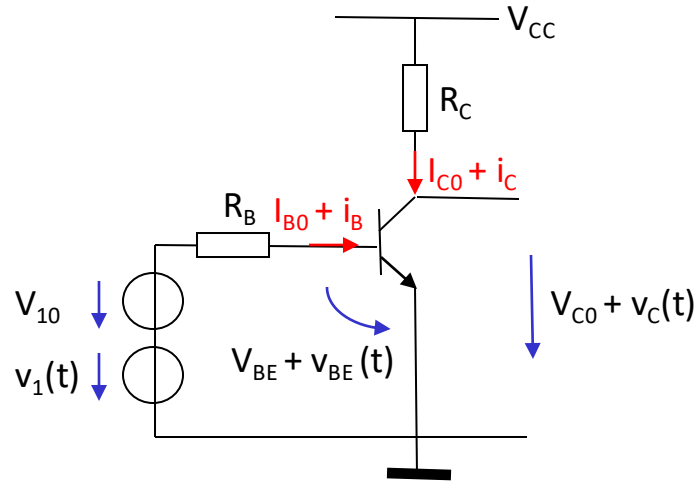
Transistor bipolaire



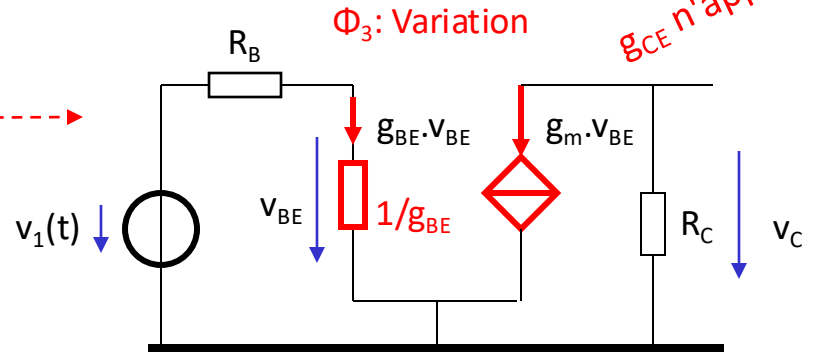
Diode

Avec 
$$\beta \cdot g_{BE} = \frac{\beta \cdot I_{B0}}{U_T} = g_m = \frac{I_{C0}}{U_T}$$

# Recette de cuisine en trois phases



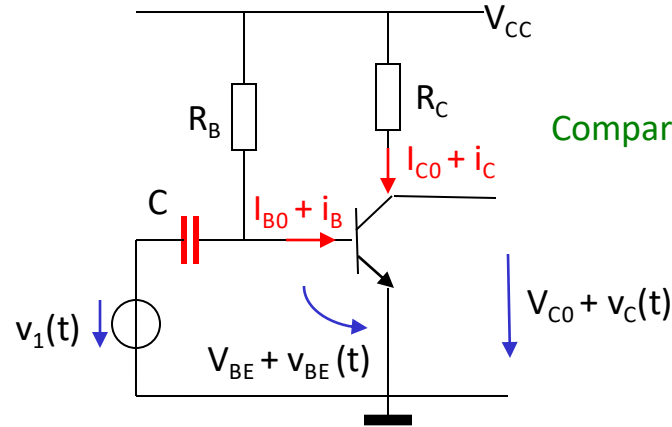
$\Phi_2$ :  $1/g_{BE}$ ,  $g_m$



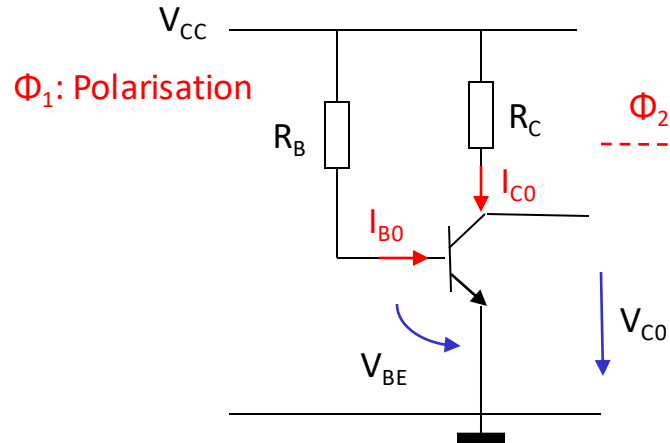
$$V_C = -g_m \cdot R_C \cdot v_{BE} < -g_m \cdot R_C \cdot v_1$$

# Parenthèse couplage capacitif

Montage bien meilleur  
à faire en exercices



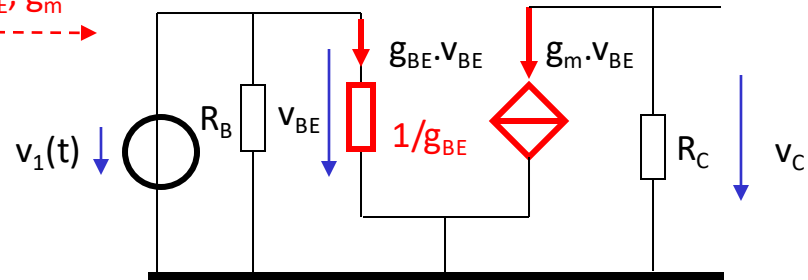
Comparable au montage précédent



$\Phi_1$ : Polarisation

$\Phi_2$ :  $1/g_{BE}$ ,  $g_m$

$\Phi_3$ : Variation



$$V_C = -g_m \cdot R_C \cdot v_{BE} = -g_m \cdot R_C \cdot v_1$$