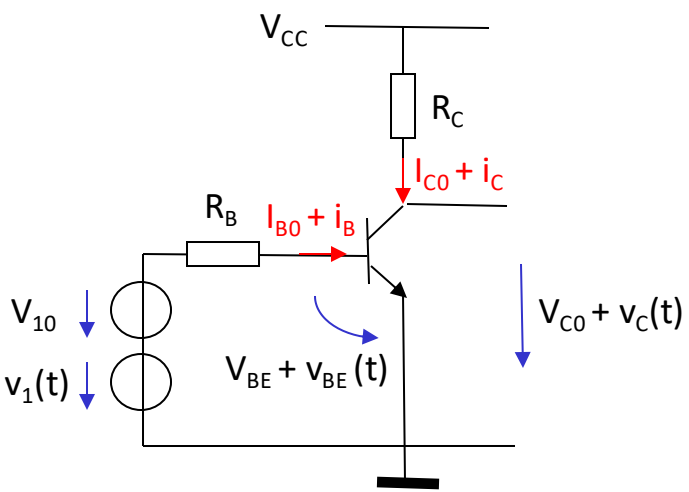
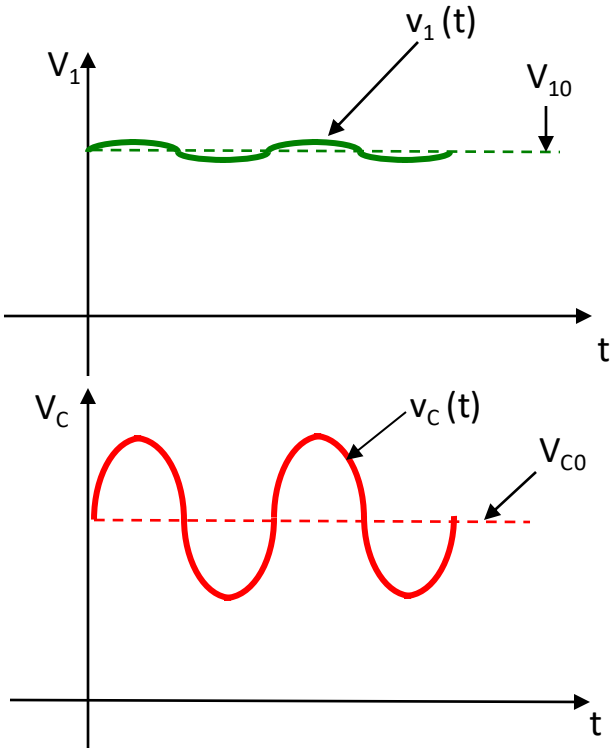
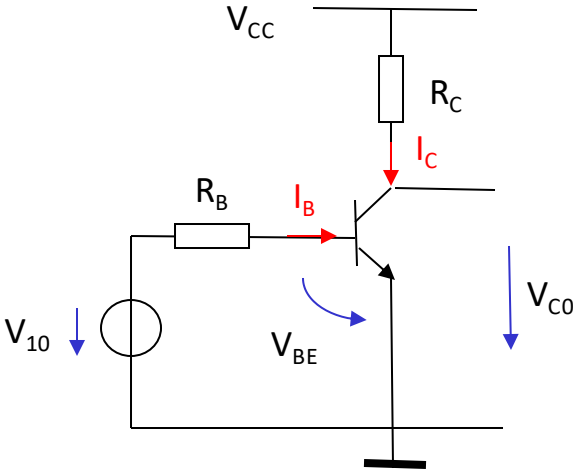
Montage de base amplificateur : Observations

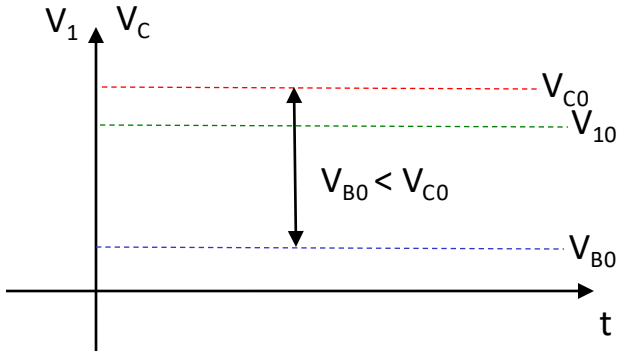




A-t-on une superposition du DC et de l'AC???

Observation sans variations



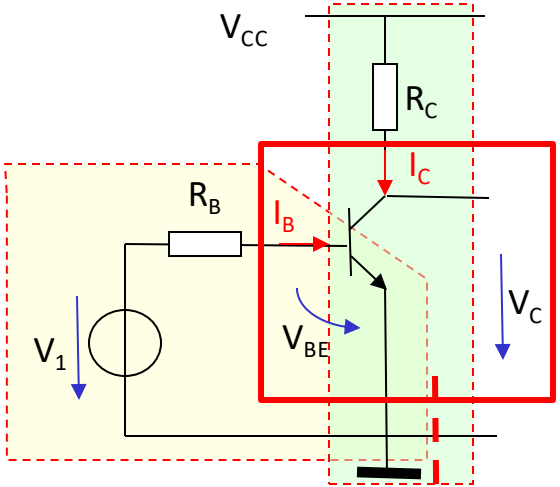


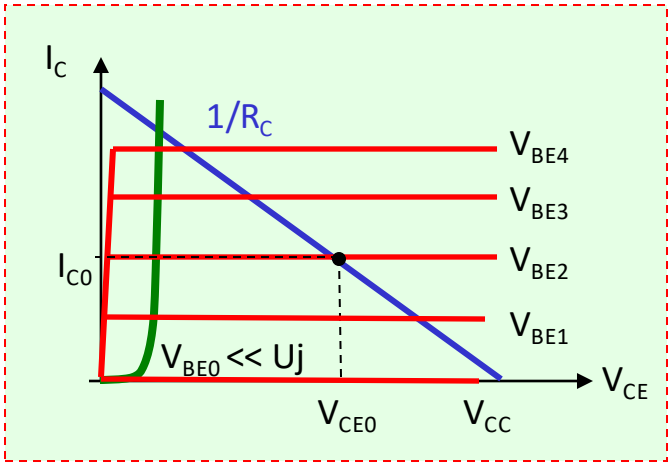
Le transistor en mode actif direct

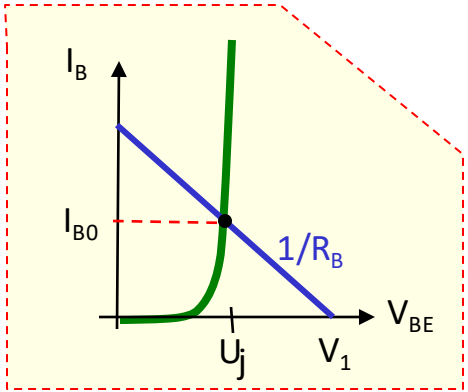
Intuitivement il y a bien superposition du DC et de l'AC

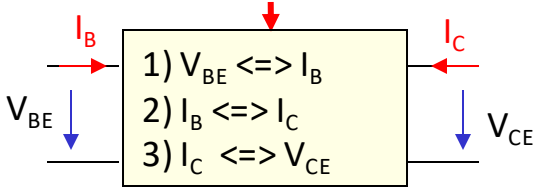
Interprétation graphique (sans variation)

Droite de charge

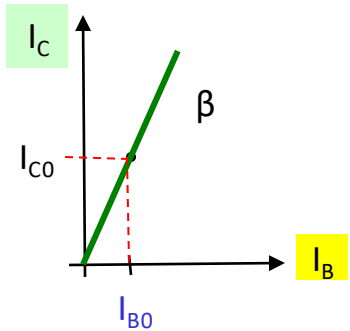








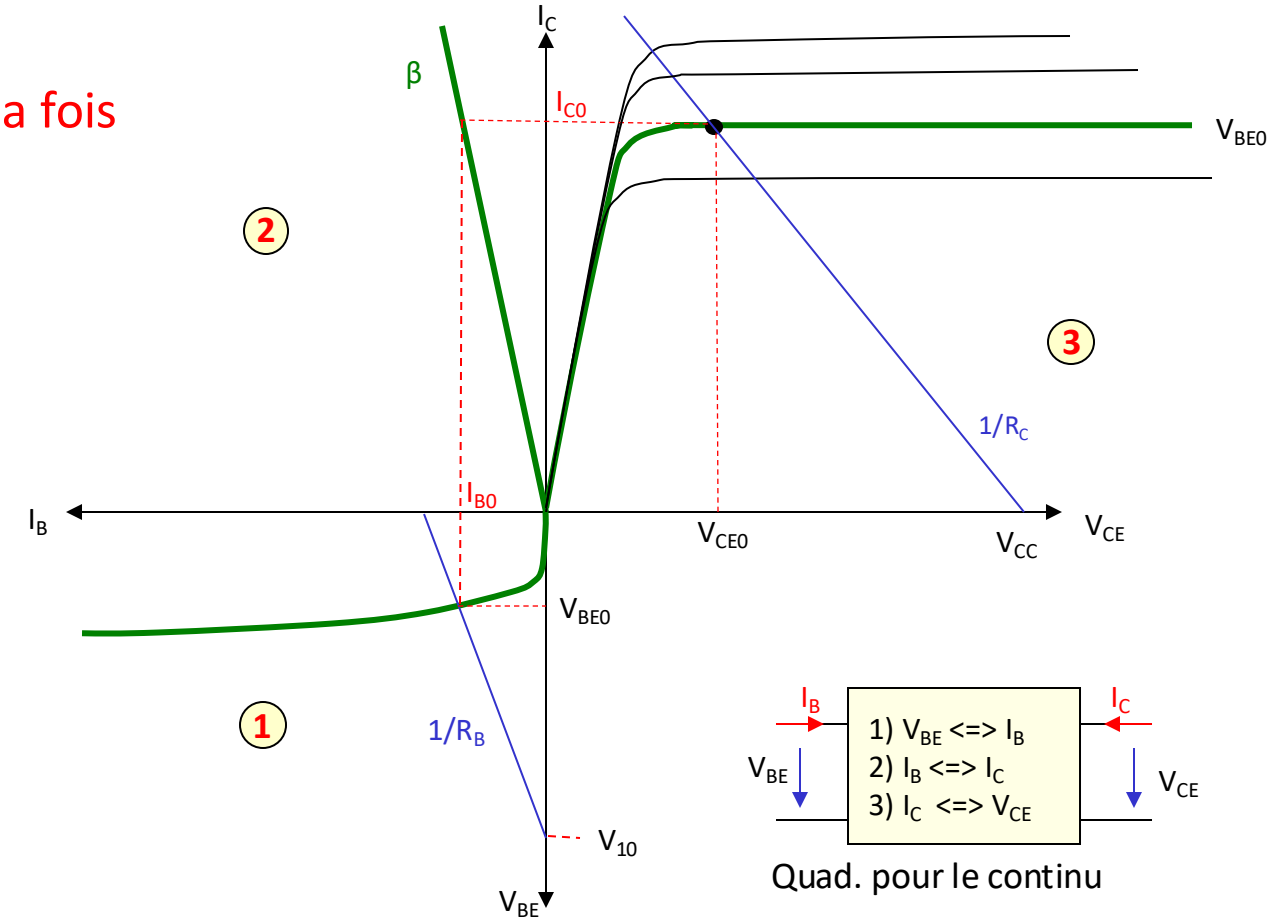
Quadripôle



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

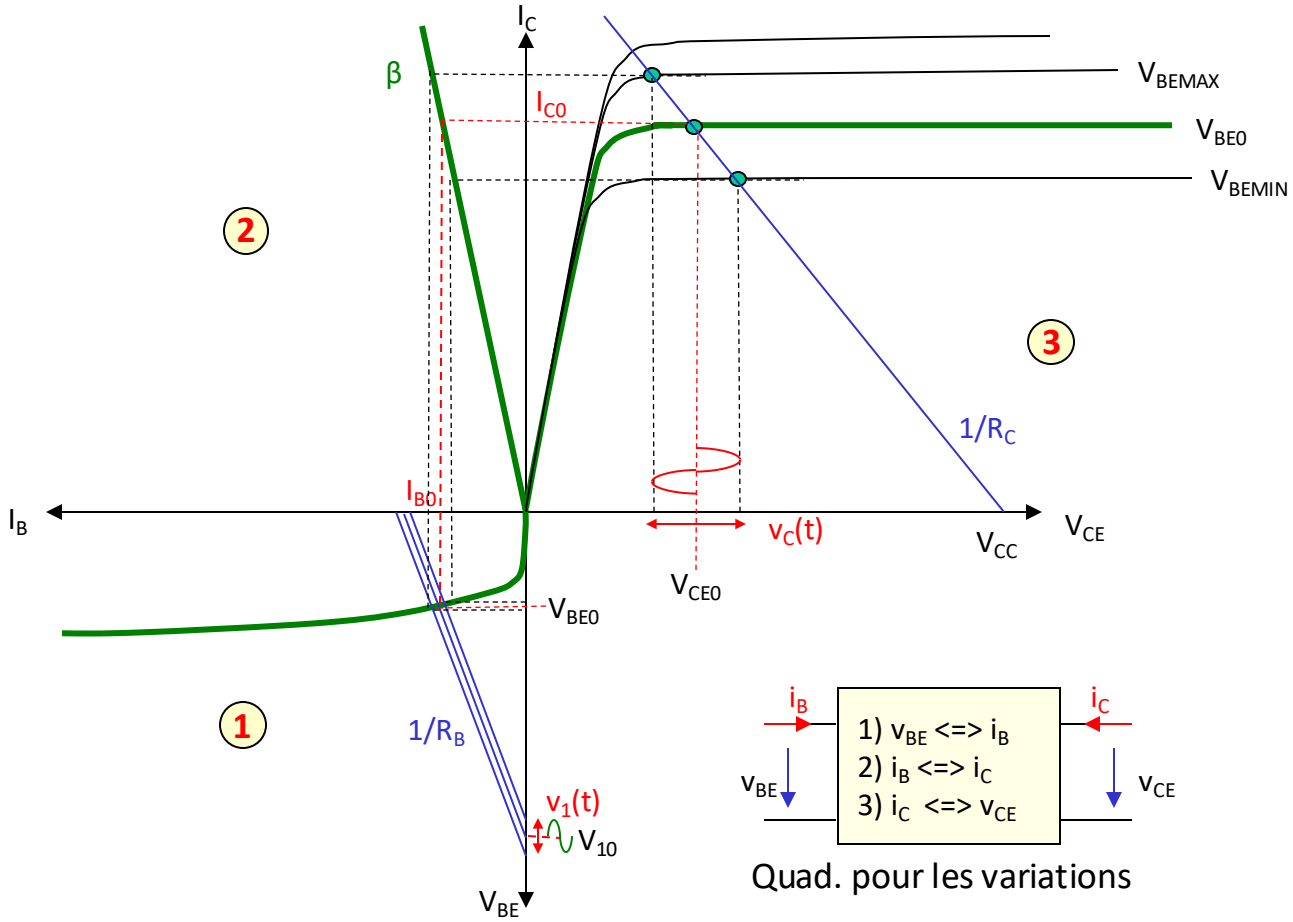
Interprétation graphique de la polarisation

Trois courbes à la fois



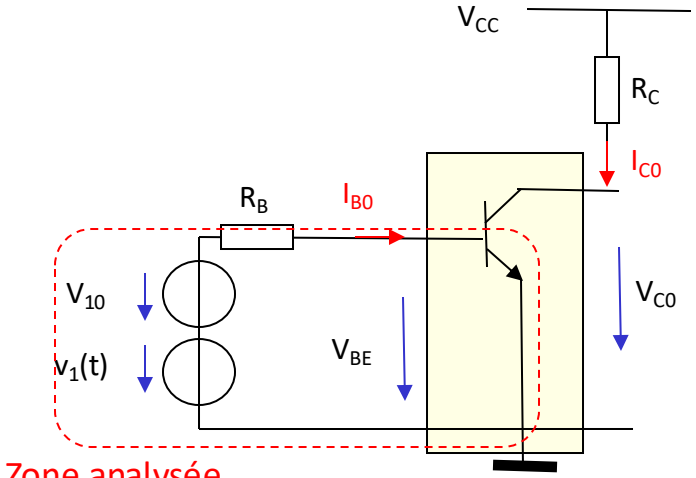
Quad. pour le continu

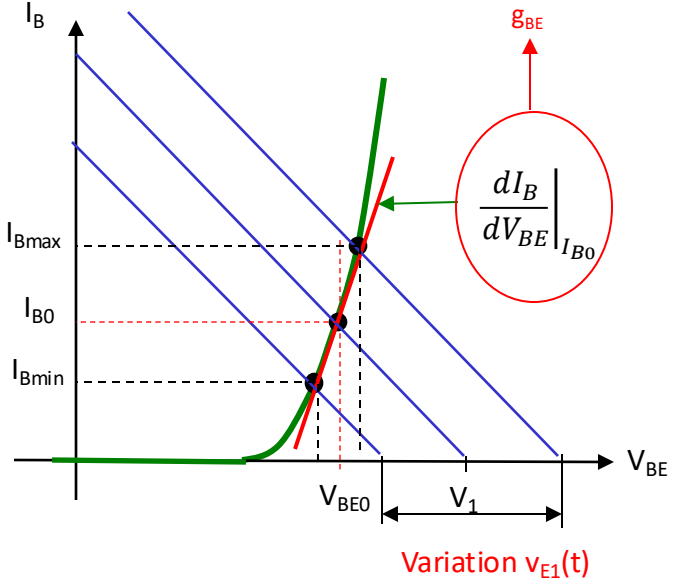
Interprétation graphique des variations



Quad. pour les variations

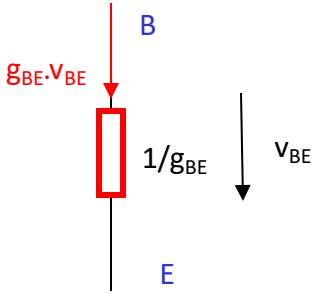
Analogie pour la courbe $I_B = f(V_{BE})$





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

g_{BE} est une conductance $g_{BE} = \frac{I_{B0}}{U_T}$

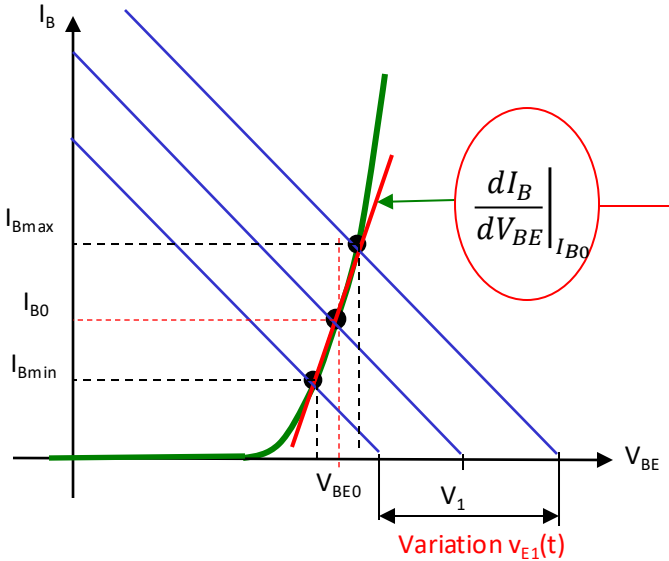


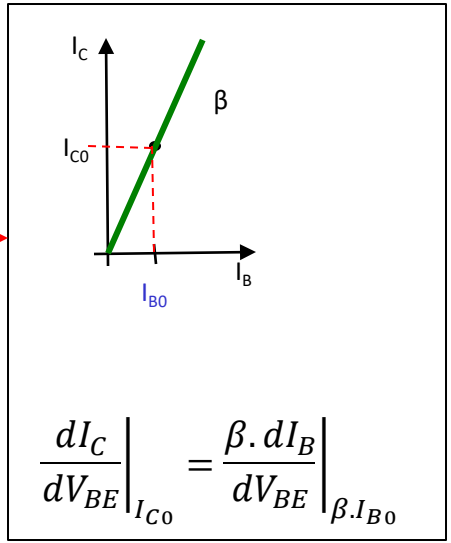
En fait $1/g_{BE}$ est une résistance

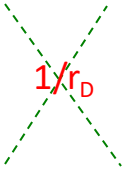
Ou encore $i_B = g_{BE}.v_{BE}$

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

Un peu plus subtile







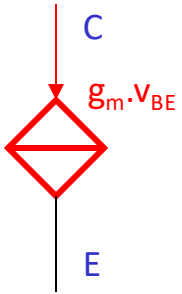
$$g_m = \frac{I_{C0}}{U_T}$$

Transconductance

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

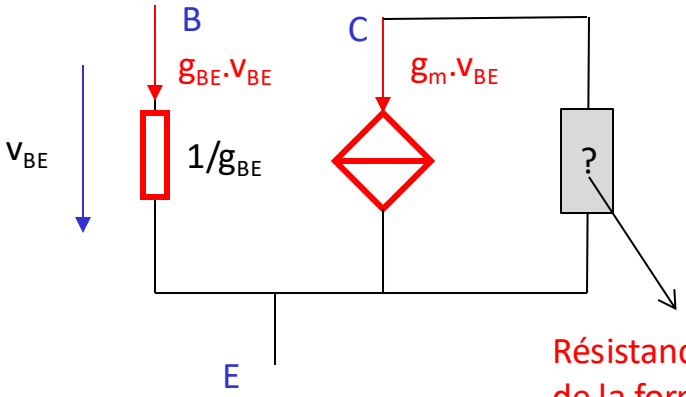
Ou encore $i_C = g_m.v_{BE}$

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



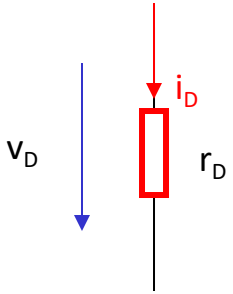
Modélisation du transistor pour les petits signaux

Modèle transadmittance présenté en classe il y a une semaine



Résistance infinie à ce stade de la formation mais …

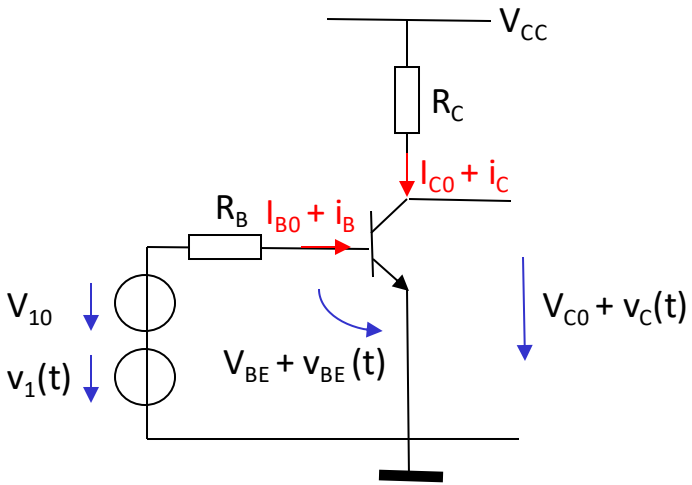
Transistor bipolaire

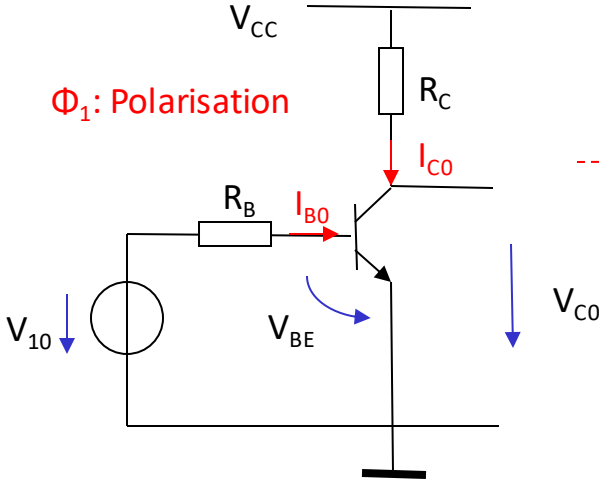


Diode

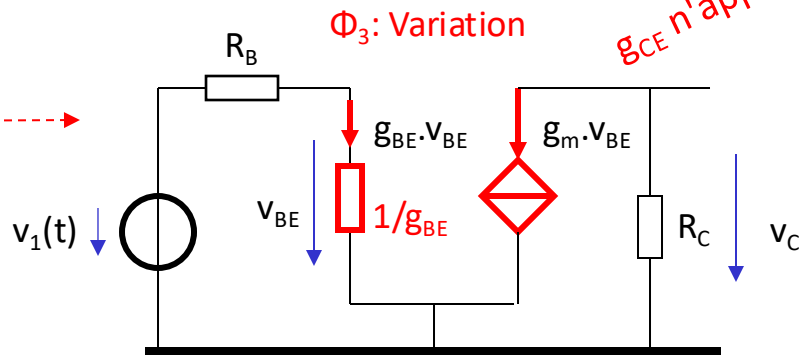
Avec $\beta . g_{BE} = \frac{\beta . I_{B0}}{U_T} = g_m = \frac{I_{C0}}{U_T}$

Recette de cuisine en trois phases





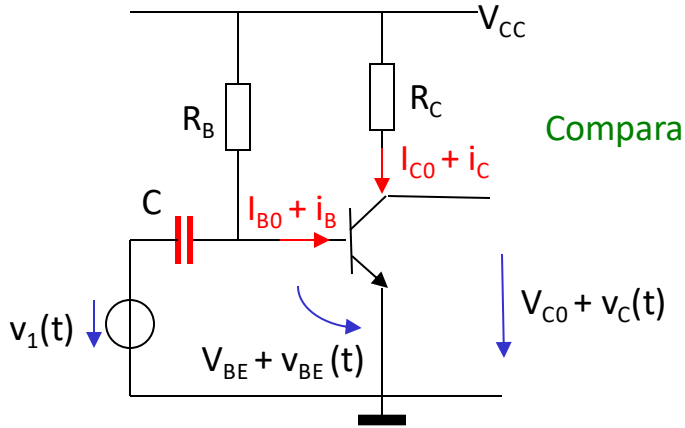
Φ_2: $1/g_{BE}$, g_m



$V_C = - gm.R_C.v_{BE} < - gm.R_C.v_1$

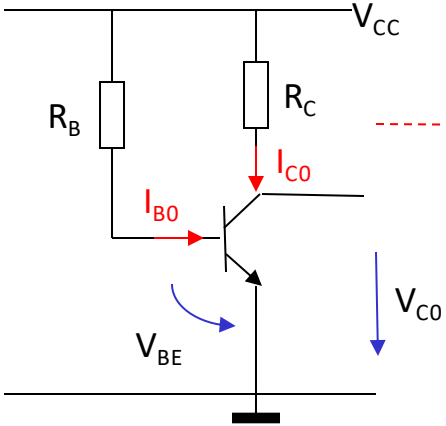
Parenthèse couplage capacitif

Montage bien meilleur
à faire en exercices



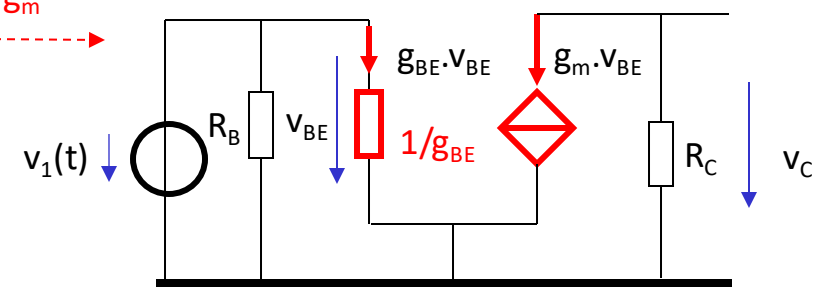
Comparable au montage précédent

Φ_1: Polarisation



Φ_2: g_m

Φ_3: Variation



$V_C = - gm.R_C.v_{BE} = - gm.R_C.v_1$