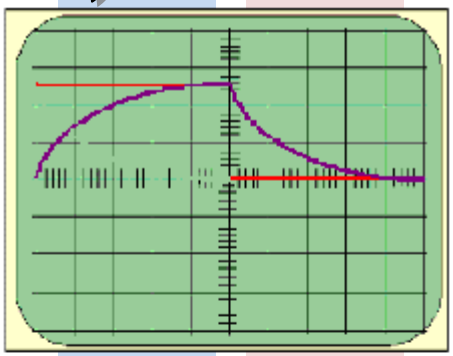
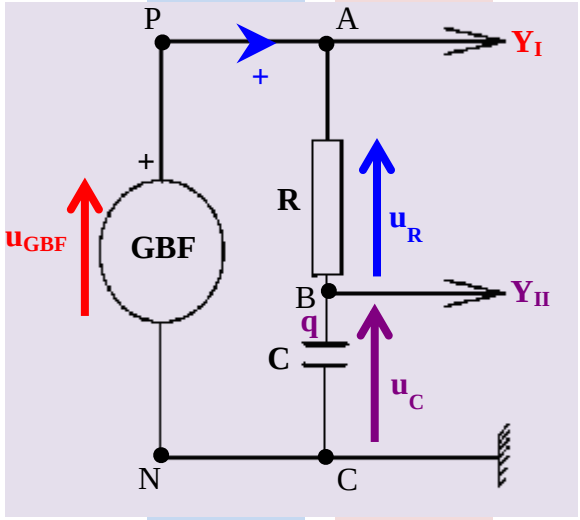
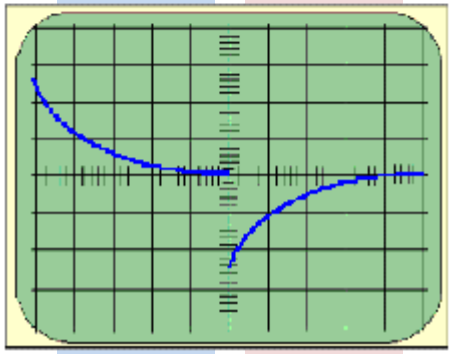
Comparaison R, C et R, L série

$u_{AB} + u_{BC} = u_{PN}$; $u_R + u_{BC} = u_{GBF}$; $Ri + u_{BC} = u_{GBF}$

R, C série







- *R, C série* : $u_{BC} = u_C$

$u_C = \frac{q}{C}$; $i = \frac{dq}{dt}$

$i = C \frac{du_C}{dt}$

$RC \frac{du_C}{dt} + u_C = u_{GBF}$

$RC\, u'_C + u_C = u_{GBF}$

$u = u_C$ $\tau = RC$

$u_{GBF} = 0$

$u_C = E_0\, e^{-\frac{t}{RC}}$

$u_R = -E_0\, e^{-\frac{t}{RC}}$

$u' = k_1\, e^{-\frac{t}{\tau}}$

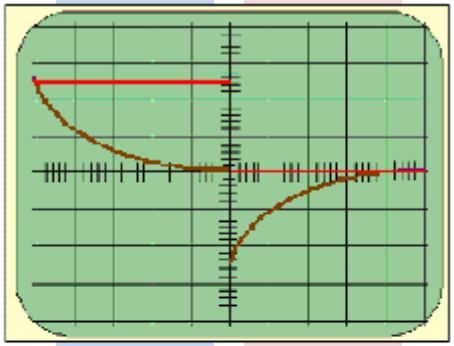
$u_{GBF} = E$

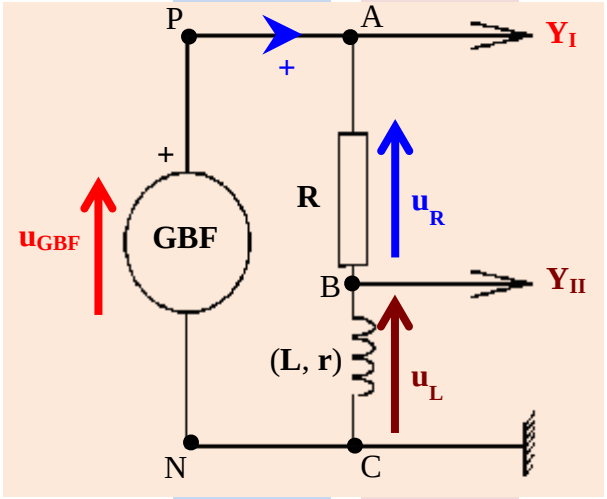
$u_C = E\,(1 - e^{-\frac{t}{RC}})$

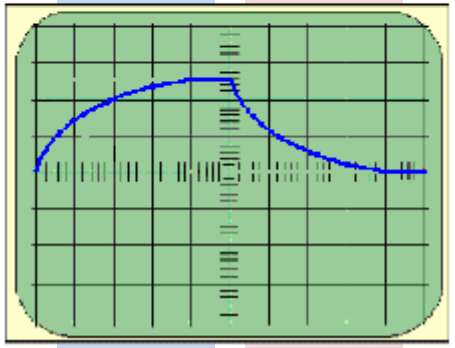
$u_R = E\, e^{-\frac{t}{RC}}$

$u' = k_2\, e^{-\frac{t}{\tau}}$

R, L série







- *R, L série* : $u_{BC} = u_L$

$u_L = L \frac{di}{dt}$

$u_L = \frac{L}{R} \frac{du_R}{dt}$

$u_R + \frac{L}{R} \frac{du_R}{dt} = u_{GBF}$

$u_R + \frac{L}{R} u'_R = u_{GBF}$

$u = u_R$ $\tau = \frac{L}{R}$

$u_L = -E_0\, e^{-\frac{R}{L}t}$

$u' = k_1\, e^{-\frac{t}{\tau}}$

$u_R = E_0\, e^{-\frac{R}{L}t}$

$u_L = E\, e^{-\frac{R}{L}t}$

$u' = k_2\, e^{-\frac{t}{\tau}}$

$u_R = E\,(1 - e^{-\frac{R}{L}t})$