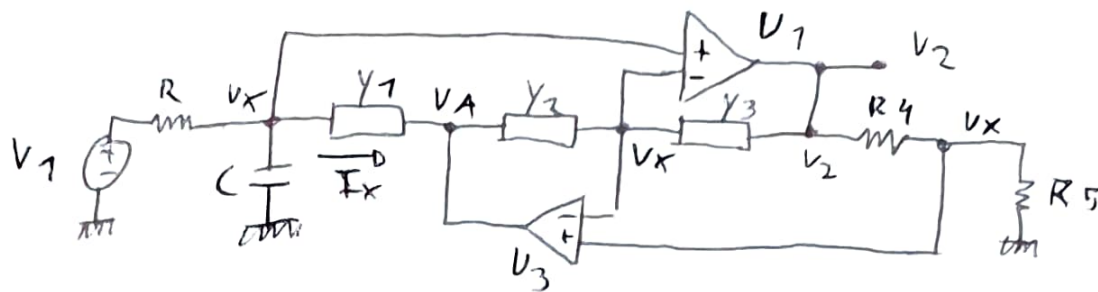


TS7



Cálculo de  $Z_p$  desde el modo  $V_x$

(1)

$$(V_2 - V_x) G_4 = V_x G_5 \rightarrow V_2 G_4 = V_x (G_4 + G_5) \rightarrow \left[ V_2 = V_x \left( 1 + \frac{G_5}{G_4} \right) \right]$$

$$[(V_A - V_x) Y_2 = (V_x - V_2) Y_3] \quad (2)$$

$$(1) \rightarrow (2): [(V_A - V_x) Y_2 = (V_x - V_x - V_x \frac{G_5}{G_4}) Y_3]$$

$$V_A Y_2 - V_x Y_2 = -V_x \frac{G_5}{G_4} \cdot Y_3$$

$$V_A Y_2 = V_x \left( Y_2 - \frac{G_5 \cdot Y_3}{G_4} \right) \rightarrow \left[ V_A = V_x \left( 1 - \frac{G_5 \cdot Y_3}{G_4 \cdot Y_2} \right) \right] \quad (3)$$

$$I_x = (V_x - V_A) Y_1 \quad (4)$$

$$(3) \rightarrow (4): I_x = (V_x - V_x + V_x \frac{G_5 \cdot Y_3}{G_4 \cdot Y_2}) Y_1 \rightarrow \left[ I_x = V_x \frac{G_5 \cdot Y_3 \cdot Y_1}{G_4 \cdot Y_2} \right] \quad (5)$$

$$Z_p = \frac{V_x}{I_x} = \frac{V_x}{V_x \frac{G_5 \cdot Y_3 \cdot Y_1}{G_4 \cdot Y_2}} = \frac{G_4 Y_2}{G_5 Y_3 Y_1} = \frac{R_5 \cdot Z_3 \cdot Z_1}{R_4 \cdot Z_2}$$

$$\rightarrow \left[ Z_p = \frac{R_5 \cdot Z_3 \cdot Z_1}{R_4 \cdot Z_2} \right]$$

Valores de  $R_5, R_4, Z_1, Z_2, Z_3$  para que  $Z_p = S$  (inductor)

$$\begin{cases} Z_2 = \frac{1}{sC} \\ Z_1 = R_1 \\ Z_3 = R_3 \end{cases}$$

$$y \quad R_1 = R_3 = R_4 = R_5 = C = 1 \rightarrow [Z_p = S]$$

$$\text{donde: } R_1 = R_3 = R_4 = R_5 = 1 \Omega \\ C = 1 F$$