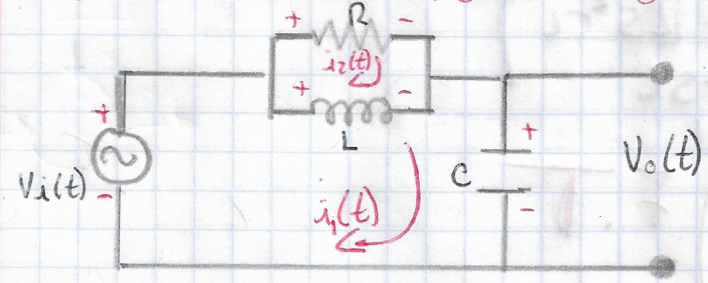
Tarea. Instrumentación

Función de Transferencia de un circuito RL-C



$$V_i(t) = \frac{1}{C}\int i_1(t)\,dt + L\frac{di_1(t)}{dt} - L\frac{di_2(t)}{dt}$$

$$\emptyset = i_2(t)R - L\frac{di_2(t)}{dt} + L\frac{di_1(t)}{dt}$$

$$V_o(t) = \frac{1}{C}\int i_1(t)\,dt$$

$$V_i(s) = \frac{1}{sC}I_1(s) + sLI_1(s) - sLI_2(s)$$

$$\emptyset = RI_2(s) + sLI_1(s) - sLI_2(s)$$

$$V_o(s) = \frac{1}{sC}I_1(s)$$

$$I_1(s) = V_o(s)\,sC$$

$$\emptyset = I_2(s)(R - sL) + sL\,I_1(s)$$

$$I_2(s) = -\frac{sLV_o(s)sC}{R - sL}$$

$$V_i(s) = I_1(s)\left(\frac{1}{sC} + sL\right) - sLI_2(s)$$

$$V_i(s) = V_o(s)\,sC\left(\frac{1}{sC} + sL\right) - sL\left(-\frac{sLV_o(s)sC}{R - sL}\right)$$

$$V_i(s) = V_o(s)\,1 + s^2CL + \frac{V_o(s)\,s^3CL^2}{R - sL}$$

$$V_i(s) = V_o(s)\left(1 + s^2CL + \frac{s^3CL^2}{R+sL}\right)$$

$$V_i(s) = V_e(s)\left(\frac{R+sL+Rs^2CL}{R+sL}\right)$$

$$\frac{V_o(s)}{V_i(s)} = \frac{R+sL}{Rs^2CL+sL+R}$$ F.T

$$k = \lim_{s\to 0} G(s) \approx \infty$$

$$k = \lim_{s\to\infty} G(s) \approx \emptyset$$

Orden = Segundo
Exactitud = dos
No. polos = dos
No. ceros = uno

$Rs^2CL+sL+R = \emptyset$

$Rs^2CL = -sL-R$

$s^2 = \frac{-sL-R}{RCL}$

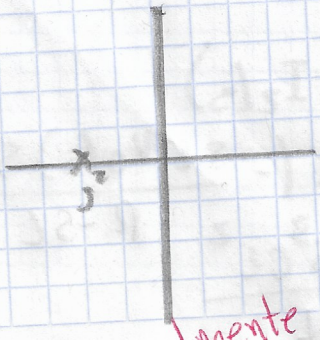
Polos

$R+sL = \emptyset$

$sL = -R$

$s = -\frac{R}{L}$

Ceros



Marginalmente estable