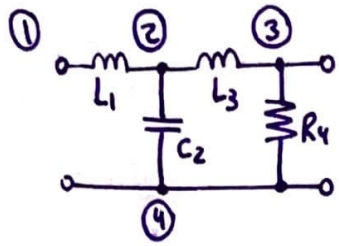

① $V_1(1/sL_4) + V_2(-1/sL_4) + V_3(0) + V_4(0) = 0$

② $V_1(-1/sL_1) + V_2(1/sL_4 + sC_2 + 1/sL_3) + V_3(-1/sL_3) + V_4(-sC_2) = 0$

③ $V_1(0) + V_2(-1/sL_3) + V_3(1/sL_3 + G_4) + V_4(-G_4) = 0$

④ $V_1(0) + V_2(-sC_2) + V_3(-G_4) + V_4(sC_2 + G_4) = 0$

$$Y = \begin{bmatrix} \frac{1}{sL_1} & -\frac{1}{sL_4} & 0 & 0 \\ -\frac{1}{sL_1} & \frac{1}{sL_1} + sC_2 + \frac{1}{sL_3} & -\frac{1}{sL_3} & -sC_2 \\ 0 & -\frac{1}{sL_3} & \frac{1}{sL_3} + G_4 & -G_4 \\ 0 & -sC_2 & -G_4 & sC_2 + G_4 \end{bmatrix}$$

Arendonõ 9.4 (p. 271): $A_{mn}^{ij} = \frac{V_{ij}}{V_{mn}} \cdot Sg(m-n)\,Sg(i-j)\,\frac{\underline{Y}_{ij}^{mn}}{\underline{Y}_{mn}^{mn}}$

$\frac{V_0}{V_i} = \frac{V_{34}}{V_{14}}$ $\quad \underline{Y}_{ij}^{mn} = \underline{Y}_{34}^{14} = \begin{vmatrix} -\frac{1}{sL_1} & \frac{1}{sL_1} + sC_2 + \frac{1}{sL_3} \\ 0 & -\frac{1}{sL_3} \end{vmatrix}$

Para abreviar: $\frac{1}{sL_4} + \frac{1}{sL_3} = \frac{1}{s}\left(\frac{L_1+L_3}{L_4L_3}\right)$

$$\underline{Y}_{mn}^{mn} = \underline{Y}_{14}^{14} = \begin{vmatrix} \frac{1}{sL_4} + sC_2 + \frac{1}{sL_3} & -\frac{1}{sL_3} \\ -\frac{1}{sL_3} & \frac{1}{sL_3} + G_4 \end{vmatrix}$$

$$\frac{V_0}{V_i} = \frac{\left(-\frac{1}{sL_4}\right)\left(-\frac{1}{sL_3}\right) - \left(\frac{1}{s}\left(\frac{L_1+L_3}{L_4L_3}\right) + sC_2\right)\cdot 0}{\left(\frac{1}{s}\left(\frac{L_1+L_3}{L_4L_3}\right) + sC_2\right)\left(\frac{1}{sL_3} + G_4\right) - \left(-\frac{1}{sL_3}\right)\left(-\frac{1}{sL_3}\right)} \cdot (-1)(-1)$$

$$= \frac{1}{s^2L_4L_3} \cdot \frac{1}{\frac{1}{s^2}\left(\frac{L_1+L_3}{L_4L_3}\right)\frac{1}{L_3} + \frac{1}{s}G_4\left(\frac{L_1+L_3}{L_4L_3}\right) + \frac{C_2}{L_3} + sC_2G_4 - \frac{1}{s^2L_3^2}}$$

$$= \frac{1}{\frac{L_1+L_3}{L_3} + s\cdot G_4(L_1+L_3) + s^2L_4C_2 + s^3L_4C_2L_3G_4 - \frac{L_4}{L_3}}$$

$$= \frac{1}{s^3 + s^2\frac{1}{L_3G_4} + s\frac{(L_1+L_3)}{L_4C_2L_3} + \left(1 + \frac{L_4}{L_3} - \frac{L_4}{L_3}\right)\cdot\frac{1}{L_4C_2L_3G_4}}$$

$$= \frac{1}{s^3 + s^2\frac{1}{\frac{1}{2}\cdot 1} + \frac{s\left(\frac{3}{2}+\frac{1}{2}\right)}{\frac{3}{2}\cdot\frac{4}{3}\cdot\frac{1}{2}} + \frac{1}{\frac{3}{2}\cdot\frac{4}{3}\cdot\frac{1}{2}\cdot\frac{1}{1}}} = \frac{1}{s^3 + 2\cdot s^2 + 2\cdot s + 1}$$