

Control Network Analysis is a very powerful program that allows an advanced analysis in Bode diagram of a transfer function and of a user entered control network. You can try different solutions and analyze their fundamental parameters: 0 decibel frequency, phase margin, gain margin and eventually peaks. You can also chose and trace different types of drawing: real and asymptotic TF graph and phase graph.

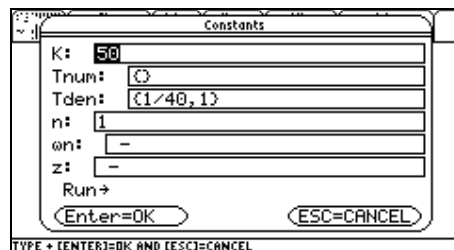
Example:

I want to correct this transfer function:

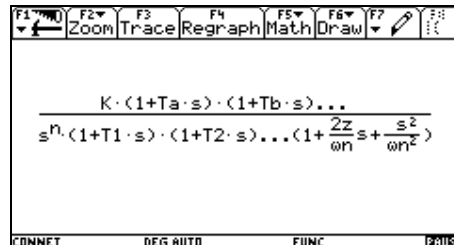
$$G = \frac{2000}{s \cdot (s+1) \cdot (s+40)}$$

in order to have unchanged Kv, $30^\circ < PM < 60^\circ$ and $\pi < \omega_0 < 2\pi$

Enter connet(2000/(s*(s+...)) or define g and enter connet(g)

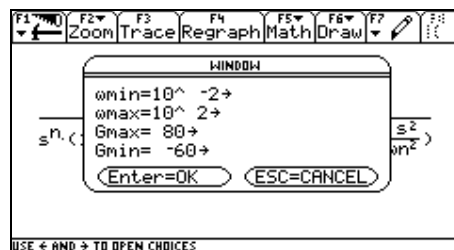


Where Tnum and Tden are two lists containing T constants of numerator and denominator. You can select help, under run in dropdown browser:

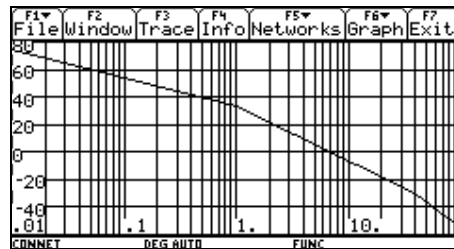


z (decay coefficient) and wn (natural frequency) are available only with the 2nd order term in the denominator.

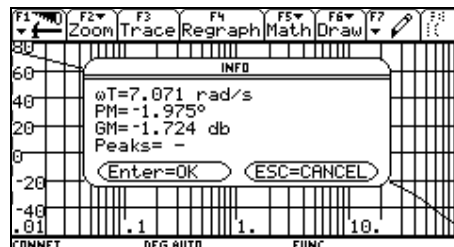
Select Run and press Enter:



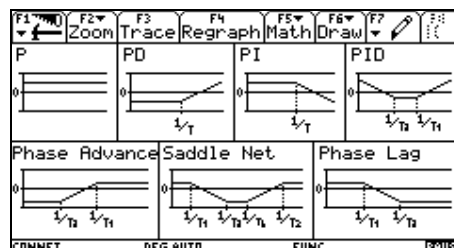
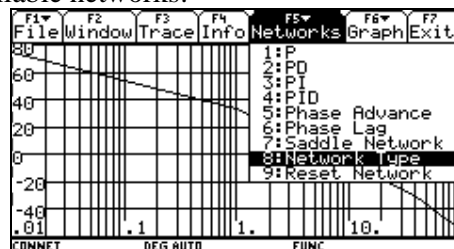
Select window dimension values (just use defaults in this case) and press Enter. The program traces the asymptotic graph in Bode diagram.



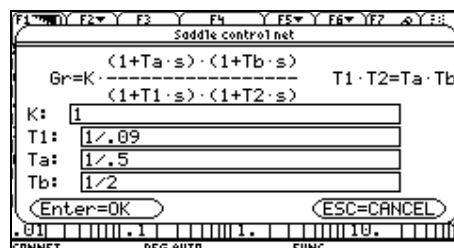
Verify fundamental data with F4:



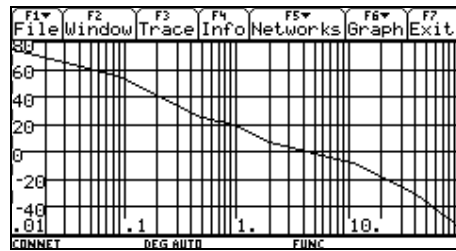
Select F5 and 8 for seeing available networks:



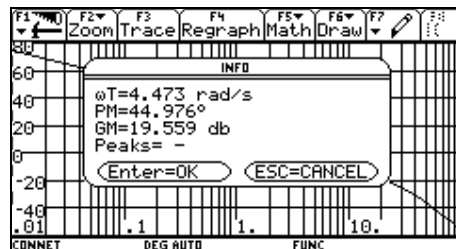
We can try to use a (symmetric) saddle network: select F5 and 7 and enter requested value.



T₂ value, more on right value, is calculated automatically. Press Enter and wait few seconds.

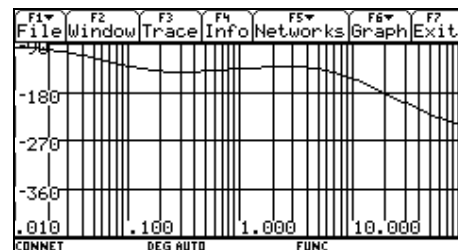
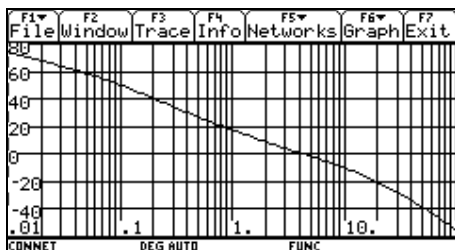


The new asymptotical graph is traced. Now control new data with F4:



Every datum come into requested range. If not we can modify network parameters or network type without resetting the transfer function. If you want to see the original TF press F5 and 9.

We can see real TF graph and phase graph selecting F6 and 2 or 3:



If you want to change window press F2; for save network or adjusted TF use File menu using F1.

Press F7 and Enter for exit.

This program has been already used many times without problems.

If somebody finds any bug is asked to let me know.

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Thank you very much for your help!

Paolo Silingardi