

Modelling and control summaries



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MATLAB GUIs – cross over frequencies

ASSUMPTION: This GUI is set in the context of gain and phase margins for feedback control systems. The purpose is to illustrate the definition of gain and phase cross over frequencies and the use of Bode diagrams for determining the gain and phase margins.

USING THE GUI

USERS are encouraged to use the GUI in a systematic fashion exactly as they would if performing the computations on pen and paper. This is to encourage a logical progression through the relevant procedures.

The GUI has a 'push to continue' button which will proceed the computations by one logical step at a time so that USERS can:

- Think about what they would do next and even try for themselves.
- Press the button and then compare their thoughts with the output of the GUI.
- A text box gives hints about what computation is coming next to help the user.

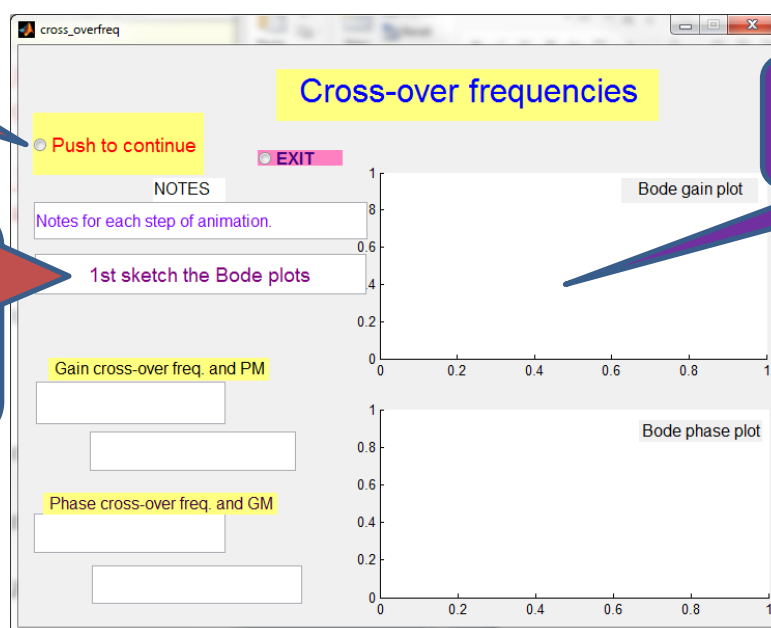
WARNING: The file is simple and not designed to be robust and thus assumes that margins exist!

FILENAMES are `cross_overfreq.p`, `cross_overfreq.fig` . Both are needed!

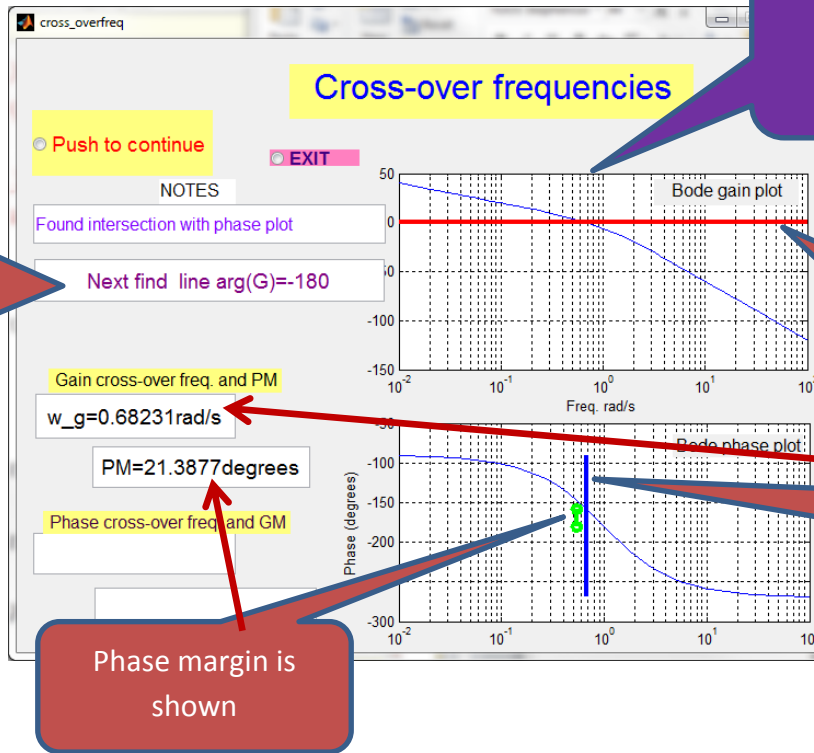
Type `>> cross_overfreq (G)` to run where **G** is a transfer function object

Press here for step 1.

Text box INDICATES what will be done first.



ENTRY LEVEL SCREEN IS BLANK



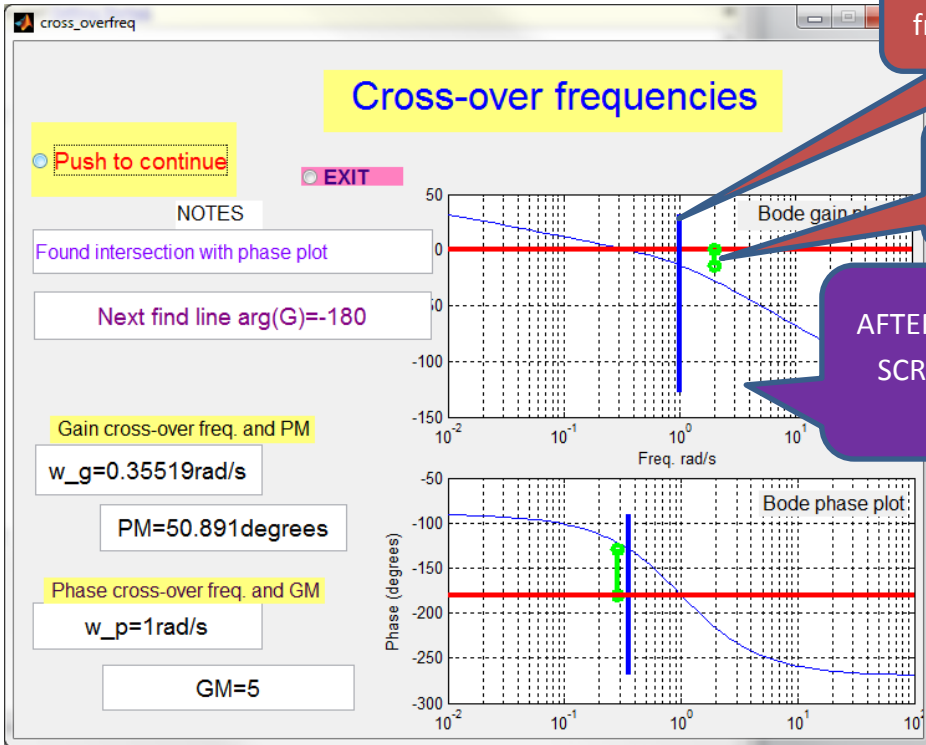
Text box INDICATES what will be done NEXT.

AFTER 3 STEPS, THE SCREEN IS MORE COMPLETE

0dB line is now shown

Gain cross over frequency is shown

Phase margin is shown



Phase cross over frequency is shown

Gain margin is shown

AFTER MANY STEPS, THE SCREEN IS COMPLETE