TRANSP Pubfig

Purpose of the script was to combine capability of ***rplot*** from TRANSP with possibility to easily change plotting settings and easy make more suitable figures for publications

To make a plot

1. Open TRANSP_Pubfig GUI in OMFIT['TRANSP']['GUIS']['TRANSP_Pubfig']

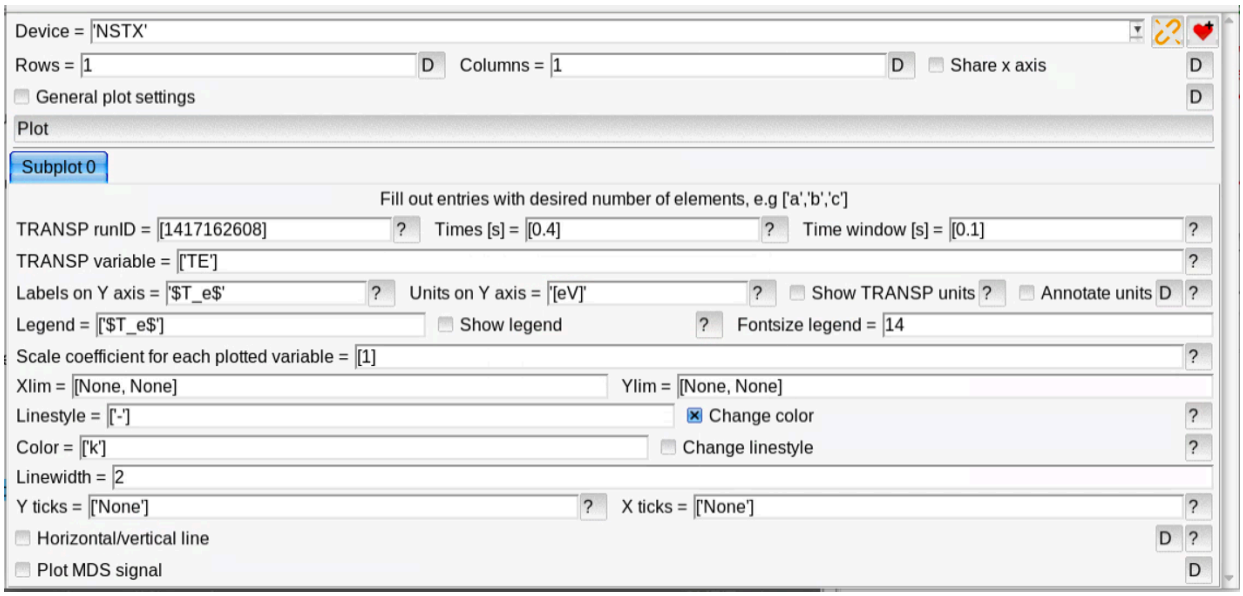


Figure 1. Illustration of the GUI with default settings for NSTX

2. Set up Device (should work for NSTX and DIII-D) and number of subplots by changing number of Rows and Columns. New tab Subplot will appear for each subplot if rows + columns > 2

3. General plot settings will allow adding annotation letters to each plot, annotation text on the top, change tick and font sizes.

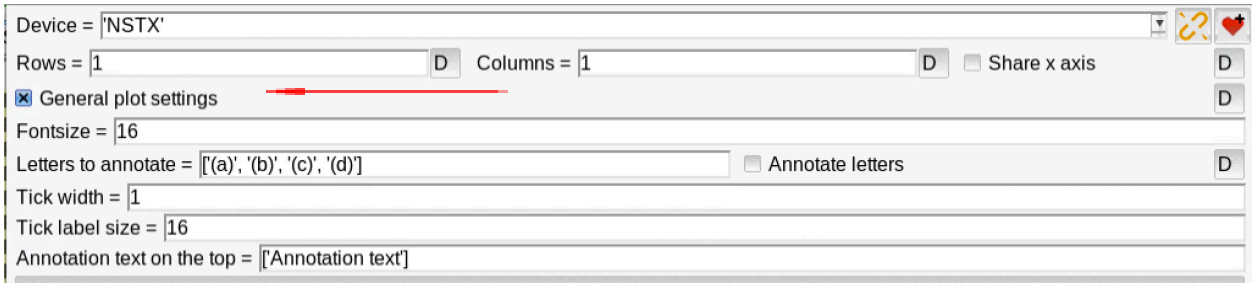
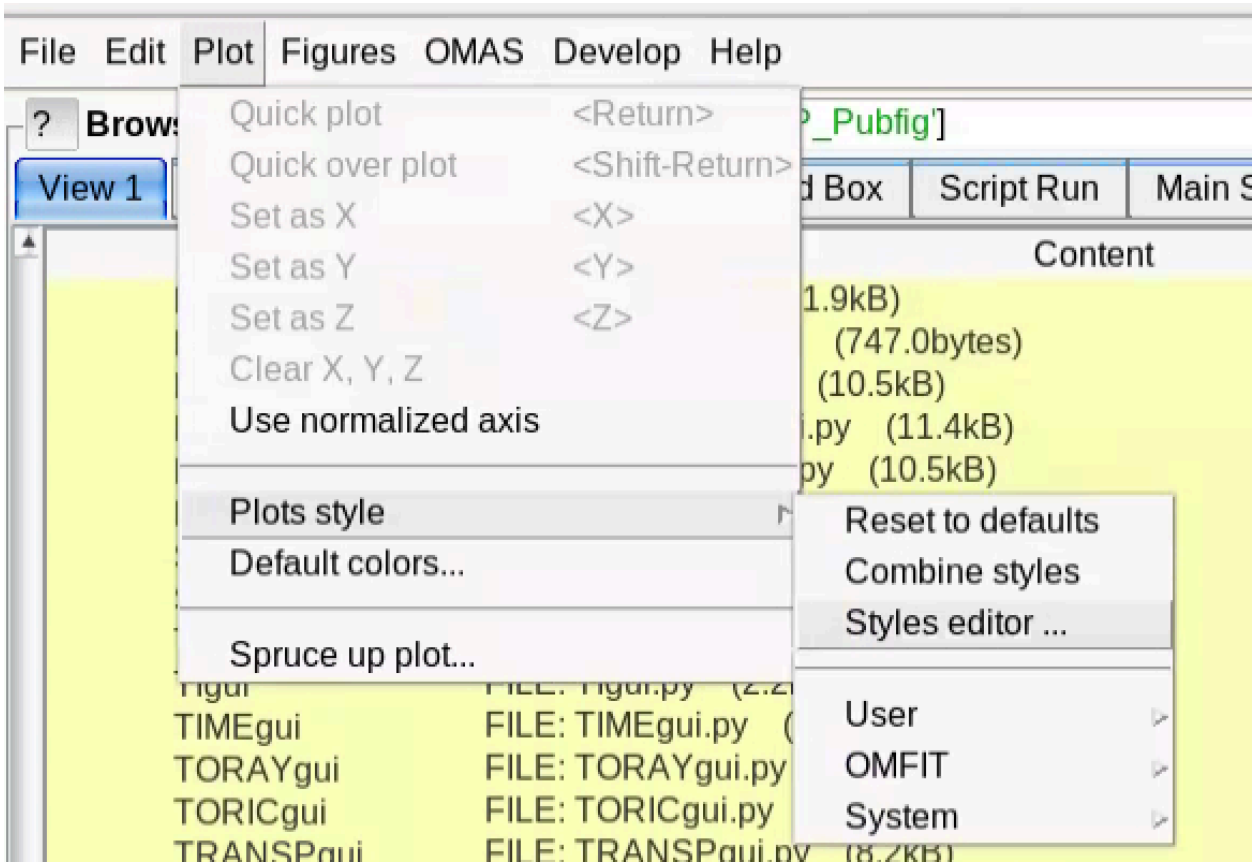


Figure 2 To open 'General settings' use the check box

To change other general matplotlib settings it is useful to use Style editor



4. Entries TRANSP runID, Times, Time window should have the same number of elements. It is possible to plot different TRANSP runs for the same or different times, or plots the same TRANSP runs with different times.

Figure 3 Example how to plot same shots with different times

5. TRANSP variable can be a one variable or a list for of variables.

   The following variables will be plotted as volume integrated [
   'AMTR_MOD',
   'AMTR_OBS',
   'EETR_MOD',
   'EETR_OBS',
   'EHEAT',
   'EPTR_MOD',
   'EPTR_OBS',
   'IETR_MOD',
   'IETR_OBS',
   'IHEAT',

'PCNDE',
'PCNVE',
'PCOND',
'PCONV',
'PRAD',
'QIE',
'UFASTPA',
'UTHRM',
'UTOTL',
]

The following variables will be plotted as a functions of time
['Q0', 'PINJ', 'RAXIS', 'VSURC', 'TAUEE', 'BETAT', 'BPTI', 'BPTE', 'BPCAP', 'NEUTT', 'PCURC', 'PCUR', 'POHT']

The following variables will be sliced
['UTOTL', 'UTHRM', 'EHEAT', 'IHEAT', 'UFASTPA']

6. Labels, units on Y axis. It is possible to use the user specified labels or read 'labes' data from TRANSP output and show it on the plot. (Can be useful if units are not know). TRANSP units are not displayed if quantities are volume integrated (EETR_OBS, ...) or sliced (UTOTL,). Using checkbox Annotate units will put labels and units on the plot instead of Y axis. Text is draggable.

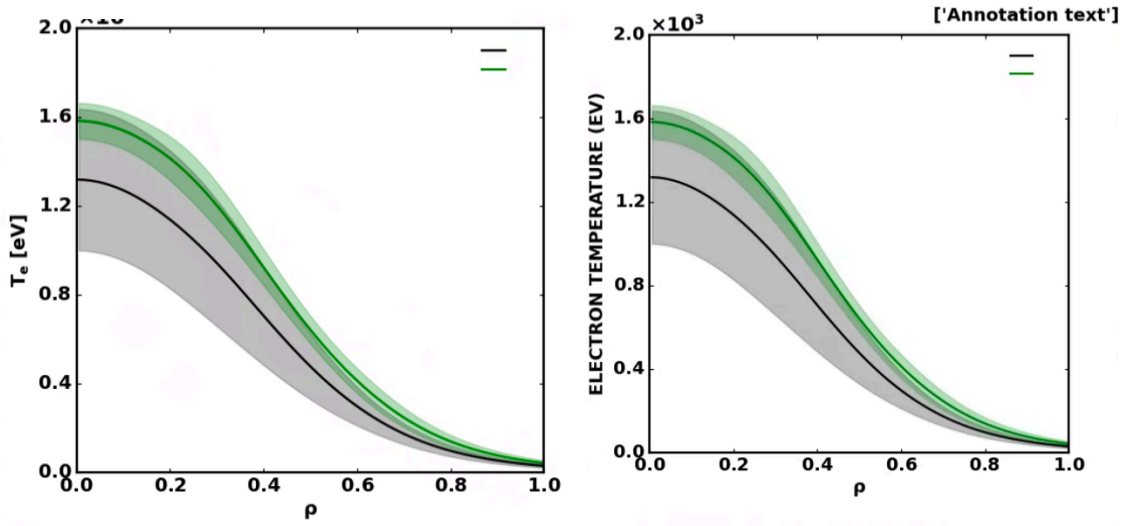


Figure 4 Plot with user defined labels on the left and with TRANSP labels on the right

7. Legend - list of legend labels. Should correspond to number of plotting quantities overwise script will produce error

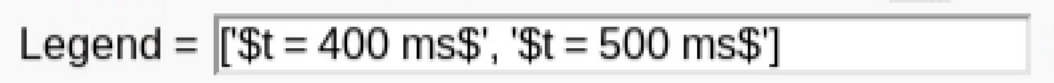


Figure 5 Illustration how to set up Legend entry for several variables

Error example

```
Exception in script of module OMFIT['TRANSP']:
Error in "plot_TRANSP_variables.py" at line  218
    label = legend[splot][i]
IndexError: list index out of range


Press <F6> to see full error report...
```

Figure 6 Error will be produced if number of variables to plot and number of items in legend are mismatched

8. Scale Coefficient to scale plotted variables. Should be defined for each variable.

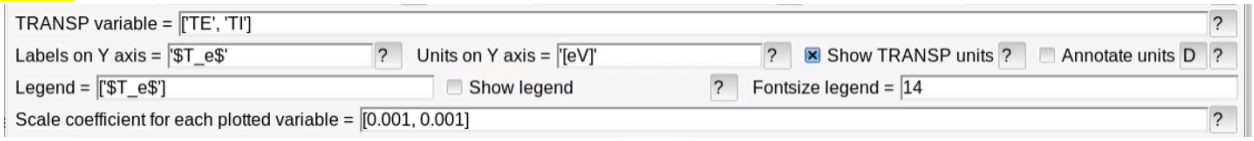


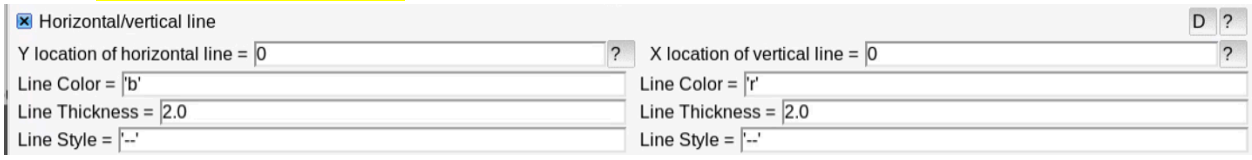
Figure 7 Illustration how to set up Scale entry for several TRANSP variables

9. Xlim and Ylim : limits to plot. Should a list, e.g [0,1]

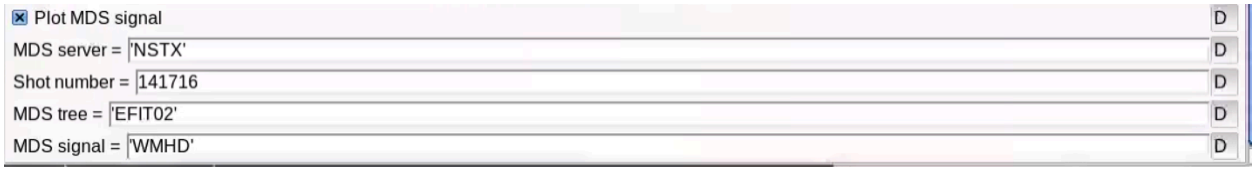
10. Linestyle, collors - depend on the number of plotted quantities and its combinations (different/same shots and times; one or several variables). It is possible to distinguish different lines by different linestyle, or color or both. Either change color or change linestyle should be specified and the number of specified styles/colors should correspond to the number of plotted quantities.

11. Yticks and Xtick are user defined locations of ticks

12. Horizontal/vertical lines – checkbox to use options to plot horizontal and vertical lines



13. Plot MDS signals. It is possible to compare TRANSP signals with signals from MDS+ server



All TRANSP signals are saved in the OMFIT tree in [TRANSP][TRANSP_plots_outputs]