Reading TRANSP output with MDS+ in MATLAB

Hyun-Tae Kim
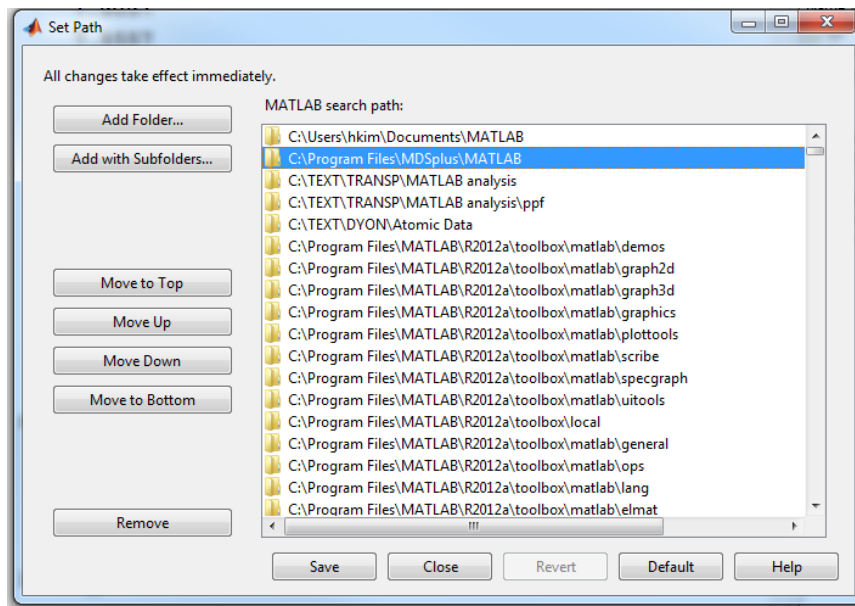
MDSPLUS installation for MATLAB

- **Download MDSplus:**
  Go to http://www.mdsplus.org, click on "Software", then "Downloads", and then select the appropriate version.

- Add the directory where MDSplus files are installed to Set Path in Matlab

- Further information is available
  http://users.jet.efda.org/pages/mdsplus/pages/rp-mdsplus.html

MATLAB script to read TRANSP data

```
mdsconnect('mdsplus.jet.efda.org')

shot=50623
run_ID='Z95'
time=48
shotID=[num2str(shot),run_ID]

%%To read 1 dimensional TRANSP output data
Q0=mdsvalue(['_SIG=tr_readfun("JET.00","',shotID,'","Q0")']) %safety factor at magnetic axis (t)
[TRANSP_t, status]= mdsvalue('dim_of(_sig,0)') %time - 40

figure(1)
plot(TRANSP_t+40,Q0,'r','LineWidth',3)
xlabel('time [sec]')
ylabel('safety factor at magnetic axis')
legend(num2str(shot))


%%To read 2 dimensional TRANSP output data
Te=mdsvalue(['_SIG=tr_readpro("JET.00","',shotID,'","TE")']) %electron temperature (rho,t) in eV
[TRANSP_x, status]= mdsvalue('dim_of(_sig,0)') %sqare root of normalized toroidal flux
[TRANSP_t, status]= mdsvalue('dim_of(_sig,1)') %time - 40

index_t=min(find(TRANSP_t >= time-40))  %index of the time for plotting

figure(2)
plot(TRANSP_x,Te(:,index_t)/1e3,'r','LineWidth',3)
xlabel('\rho')
ylabel('T_e [KeV]')
legend([num2str(shot), ' at ',num2str(time),'[sec]'])
```
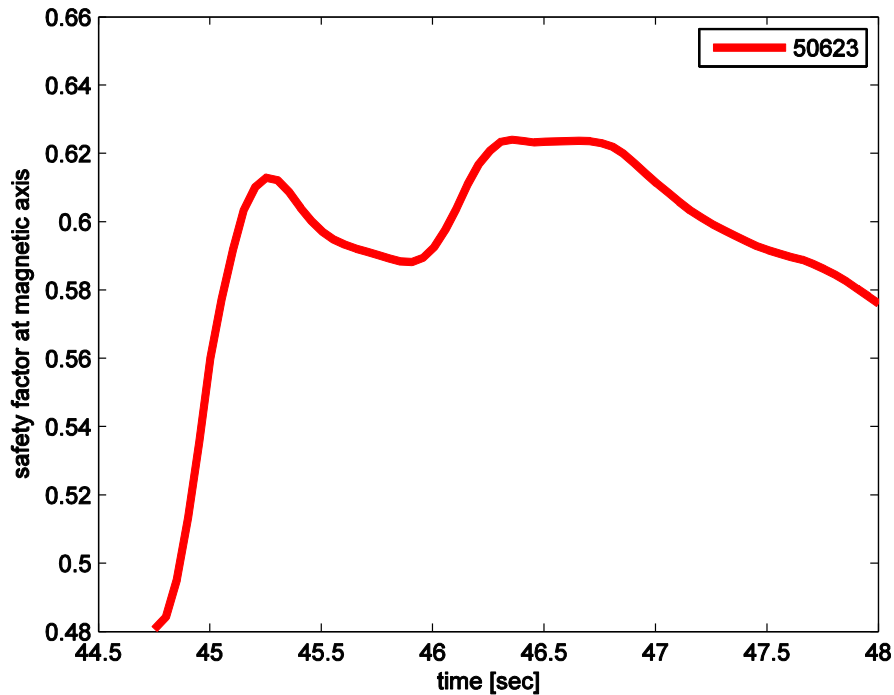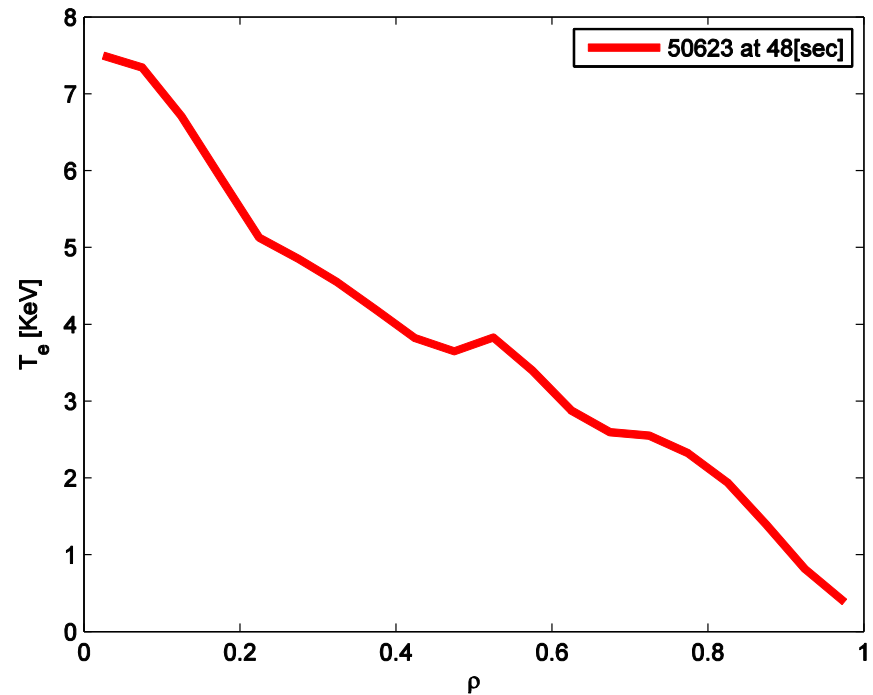
TRANSP data plot in MATLAB

Figure 1. 1 dimensional TRANSP data q0(t)

Figure 2. 2 dimensional TRANSP data $T_e(\rho,t)$