Tutorial session 4 examples

1. ADF01 and ADF12

1. Explore the ADAS database for these formats. Note that the specification is in the IDL-ADAS User manual (*appxa-01* and *appxa-12*).

2. ADAS301 Test Case

2. Move to your sub-directory */.../<uid>/adas/pass*. Start ADAS301.
3. Click on *Central Data*, and select *qcx#h0/qcx#h0_old#n7.dat*.
4. Click the *Browse comments* button to see the list of transitions present in the file *qcx#h0/qcx#h0_old#n7.dat.* Move onto ADAS301 Processing window.
5. Select *Fit polynomial* at the 5% level. Click on the n=8 - n'=7 transition in the transition list window. You will need to use the scroll-bar on the right.
6. Click on *Select Velocities/Energies for Output File* button.
7. Now put in default values in the Table. Note the units in use. It is preferred to units of eV/amu. You need to edit the table to change the units.
8. Click on the *Select Qunatum Numbers for Processing* button. Select the 7f shell. Note that you can select total and partial cross-sections – see the key to the right.
9. Click on the *Done* button to proceed to the Output options window.
10. Click on the button for *Graphical Output*. Then click *Done* to see the graph.
11. Have a look at the output text file after completion

3. ADAS303 Test Case

12. Move to your sub-directory */.../<uid>/adas/pass*. Start ADAS303.
13. Click on *Central Data*, and select *qef93#h/qef93#h_c6.dat*.
14. Click the *Browse comments* button to see what is in the file *qef93#h_c6.dat.* Move onto ADAS303 Processing window.
15. Select *Fit polynomial* at the 5% level. Click on the n=8 - n'=7 transition in the transition list window. You will need to use the scroll-bar on the right.
16. Click on the *Default Energy/Velocity Values* button. A set of energies appears in the Output energies column. Note the units in use. You need to edit the table to change the units.
17. Click on the *Select supplementary plasma parameters* button. Now type in Output Values for Ion Density, Ion Temperature, Z effective and B Magnetic. Note the reference value and valid ranges for each of these parameters are given. The reference values are good values to start with.
18. Click on the *Done* button to proceed to the Output options window.
19. Click on the button for *Graphical Output*. Then click *Done* to see the graph.
20. Have a look at the output text file after completion

4 ADAS 308 Test Case

1. Move to your directory */.../<uid>/adas/pass*. Start ADAS and move to the ADAS3 series menu. Select ADAS308.
2. Click on *Central Data*, the data root to data class ADF01 should appear in the window alongside. Click on the directory name *qcx#h0* in the file list window. *qcx#h0* appears above in the selection window. Click on *qcx#h0_old#n7.dat*. It appears in the selection window [you may need to scroll down].
3. Click the *Browse comments* button. Information of what is in the file *qcx#h0_old#n7.dat* is displayed. Click *Done* to restore the Input window. Click *Done* and the ADAS308 Processing window appears.
4. The Processing window is complex. Note the information on donor and receiver near the top. To the right enter the Atomic mass of the receiver (14.0). Remember to press {*return*}.
5. Next Input the plasma parameters, for example, T_i=5.0e3, T_e=5.0e3, N_i=2.5e13, N_e=5.0e13, Z_{eff}=2.0, B=3.0.
6. Now Select charge exchange theory. This is a drop down menu. Click *Use input data set*. [Note programs have built in default activation on some buttons. If the button is

darkened it is activated]. Now Select emission measure model. This is also a drop down menu. Click *Charge exchange*.

7. Now turn to the Input of beam and spectrum line information and click first on the button for *Beam parameter information*. The appropriate table appears below for editing. Click Edit to bring up Table Editor and enter appropriate values, for example

0.85	8.0E4
0.12	4.0E4
0.03	2.7E4

   and then *Done*.
8. Similarly, click the button for Observed spectrum lines and edit it's table. Try

9	8	1.00E12

   and click *Done*.
9. Finally click the button for Required emissivity prediction and edit it's table. Try

9	8	1
8	7	2
7	6	2
6	5	

   and click *Done*.
10. All is now ready. Click *Done* to move to the Output options window.
11. Click the button for *Graphical output.* You may also *Enable Hard Copy* and *Text Output*. Finally click *Done* to see the graph.
12. Click *Done* to return to the Output options screen. Click on the *Exit to Menu* icon to finish up. Finally click on the *Exit* button on the sub-menu and main menu windows to exit ADAS.