ADAS interactive programs are now starting to come off the production line. These are delayed by about six weeks over the conversion schedule. Dr Jalota has had two weeks away on paternity leave. He now has a new son. The main delay however has been simply building up pace on the complexities of the IDL- Unix interface. For the next month, Tessella (the contracting computer consultants) are putting in a second programmer to bring us back to the conversion schedule by about the first week in April. In this bulletin, I wish to give an overview of the user interface to the new programs and draw attention to the rewritten parts of the manual. There is also some new data being placed.

1. **Starting ADAS**

 Commence with the following steps
 1.1. Make sure you have a defaults directory allocated. This should have the pathway
 /..../uid/adas/defaults
 where *uid* is your user identifier. The defaults directory records the parameters you set the last time you ran each ADAS code.
 1.2. Move to the directory in which you wish any ADAS created files to appear. These include the output text file produced after executing any ADAS program (*paper.txt* is the default) and the graphic file if saved (e.g. *graph.ps* if a postscript file)
 1.3. Initiate ADAS by typing *adas* at the command line prompt. Note that ADAS can be set up as a program tool also. The primary selection menu is presented as illustrated below.
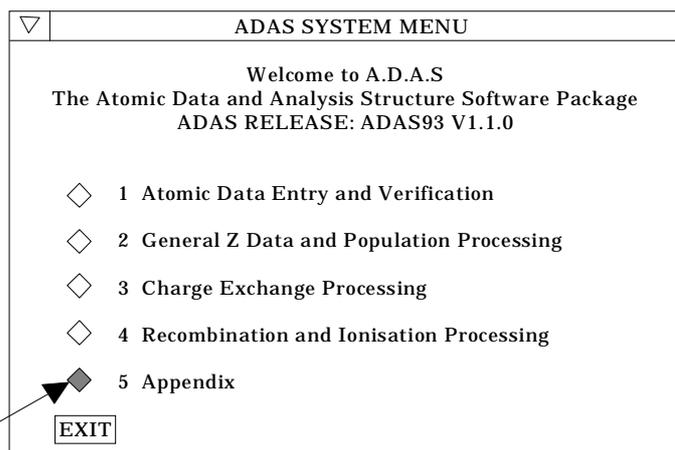
Click left mouse key at
button to select series

 1.4. Move to an ADAS series menu by clicking on the appropriate button. Alternatively click the *EXIT* button to leave ADAS
 1.5. The series 5 (Appendix) menu is then presented as shown below
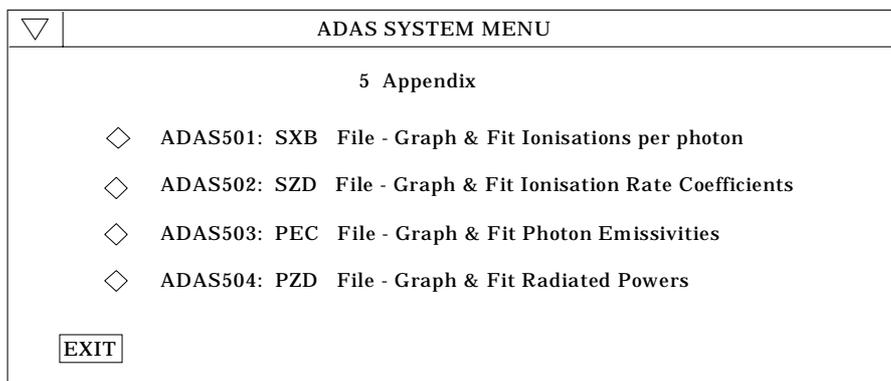
Activate an ADAS program by clicking on the appropriate button. Note that only ADAS501 and ADAS503 are operational at this time. Alternatively click the *EXIT* button to return to the primary menu.

2.   **Operating ADAS programs**

The broad philosophy of an ADAS interactive routine such as the new ADAS501 and ADAS503 is that there are usually three tasks

        file selection
        user data processing
        output display and disposition.

We achieve this through three sequential windows.

2.1.   The **file selection window** has the appearance shown below

```
┌─┬────────────────────────────────────────────────┐
│▽│              ADAS501 INPUT                      │
├─┴────────────────────────────────────────────────┤
│                                                   │
│                 Input Dataset                     │
│                                                   │
│  Data root ┌──────────────────────────────┬──┐   │
│            │ /home/adas/adas/adf13         │▼ │──→ a)
│            └──────────────────────────────┴──┘   │
│                                                   │
│   ┌────────────┐   ┌───────────┐   ☐ Edit Path Name
│   │Central data│   │ User data │                  │
│   └────────────┘   └───────────┘                  │
│                                                   │
│       ┌────────────────────────────┬──┐          │
│       │ sxb93#be                   │▼ │──→ c)     │
│       └────────────────────────────┴──┘          │
│       ┌───────────────────────────────┐          │
│       │ . .                           │          │
│       │ sxb93#be_llr#be0.dat          │          │
│       │ sxb93#be_llu#be0.dat      ▼   │──→ b)     │
│       │ .                             │          │
│       │                               │          │
│       │                               │          │
│       │                               │          │
│       │                               │          │
│       │                               │          │
│       │                               │          │
│       │                               │          │
│       └───────────────────────────────┘          │
│                                                   │
│  ┌───────────────┐  ┌──────┐  ┌──────┐            │
│  │Browse Comments│  │Cancel│  │ Done │            │
│  └───────────────┘  └──────┘  └──────┘            │
│                                                   │
└───────────────────────────────────────────────────┘
```
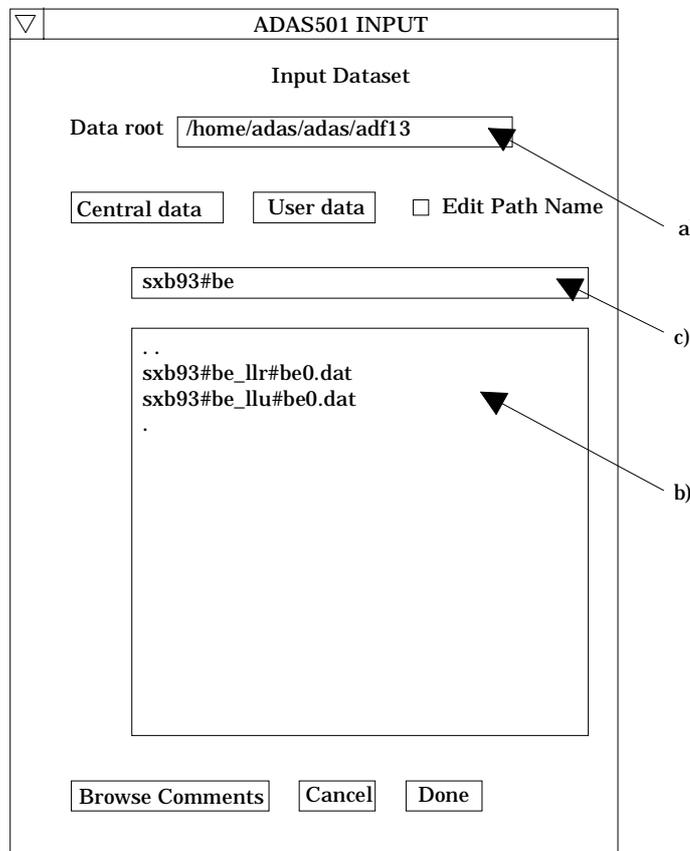
2.1.1. Data root a) shows the full pathway to the appropriate data subdirectories. Click the *Central Data* button to insert the default central ADAS pathway to the correct data type. Note that each type of data is stored according to its ADAS data format (*adf* number). Click the *User Data* button to insert the pathway to your own data. Note that your data must be held in a similar file structure to central ADAS, but with your identifier replacing the first *adas,* to use this facility.

2.1.2. The Data root can be edited directly. Click the *Edit Path Name* button first to permit editing.

        N. B. Under the IDL Graphical User Interface which controls the

window operations, you must remember to press the *return* key on the keyboard for any change to be recorded.

2.1.3. Available sub-directories are shown in the large file display window b). Scroll bars appear if the number of entries exceed the file display window size.

2.1.4. Click on a name to select it. The selected name appears in the smaller selection window c) above the file display window. Then its sub-directories in turn are displayed in the file display window. Ultimately the individual datafiles are presented for selection. Datafiles all have the termination *.dat*.

2.1.5. Once a data file is selected, the set of buttons at the bottom of the main window become active.

2.1.6. Clicking on the *Browse Comments* button displays any information stored with the selected datafile. It is important to use this facility to find out what is broadly available in the dataset. The possibility of browsing the comments appears in the subsequent main window also.

2.1.7. Clicking the *Done* button moves you forward to the next window. Clicking the *Cancel* button takes you back to the previous window

2.2. The **processing options window** has the appearance shown below

	ADAS501 PROCESSING OPTIONS

Title for run   Test title for ADAS501

Data file name : /export/home/adas/adas/adf13/sxb93#be/sxb93#b3_pju#be0.dat

Browse comments

a)

Polynomial fitting

Fit Polynomial   value % :   5

b)

Select data block

Index	Wavelength	Ion Source	Processing Code	Metastable Index
3	3321.1A	WJD91#BE	ADAS208	T

1	2349.3A	WJD91#BE	ADAS208	T
2	1661.5A	WJD91#BE	ADAS208	T
3	3321.1A	WJD91#BE	ADAS208	T
4	2651.4A	WJD91#BE	ADAS208	T
5	2495.4A	WJD91#BE	ADAS208	T

c)

Temperature & Density Values

	Temperature		Density	
Index	Output	Input	Output	Input
1	1.000E+00	1.000E+00	1.000E+12	1.000E+11
2	2.000E+00	2.000E+00	1.000E+12	2.000E+11
3	5.000E+00	5.000E+00	1.000E+12	5.000E+11
4	1.000E+01	1.000E+01	1.000E+12	1.000E+12
5	2.000E+01	2.000E+01	1.000E+12	2.000E+12
6	5.000E+01	5.000E+01	1.000E+12	5.000E+12
7	1.000E+02	1.000E+02	1.000E+12	1.000E+13
8	2.000E+02	2.000E+02	1.000E+12	2.000E+13

Temperature units : eV   Density units : cm-3

Edit Table

Default Temperature values

d)

Edit the processing options data and press Done to proceed

Cancel   Done

2.2.1.   An arbitrary title may be given for the case being processed a). For information the full pathway to the dataset being analysed is also shown. The button *Browse comments* again allows display of the information field section at the foot of the selected dataset, if it exists.

2.2.2.   The output data extracted from the datafile, in the case of ADAS501, an 'ionisation per photon', may be fitted with a polynomial. This is as a function of temperature. Clicking the *Fit polynomial* button b) activates this. The accuracy of the fitting required may be specified in the editable box. The value in the box is editable only if the *Fit Polynomial* button is active. **Remember to press the *return* key on the keyboard to record the value**.

2.2.3.   Spectrum lines for which 'ionisation per photon' quantities are available in the data set are displayed in the line list display window. This is a scrollable window using the scroll bar to the right of the window. Click anywhere on the row for a line to select it. The selected line appears in the selection window c) just above the line list display window.

2.2.4.   Your settings of electron temperature/electron density pairs (outputs) are shown in the temperature/density display window d). The temperature and density values at which the ionisation per photon quantities are stored in the datafile (inputs) are also shown for information. **Note that you must give temperature/density pairs, ie. the same number of each as for a model.** The underlying datafile has a two-dimensional storage as a function of temperature <u>and</u> density.

2.2.5.   The program recovers the output temperature/density pairs you used when last executing the program. Pressing the *Default Temperature values* button inserts a default set of temperatures equal to the input temperatures, all at the same density. A choice of density from the input density set is allowed on a 'pop-up' window.

2.2.6.   The Temperature & Density Values are editable. Click on the *Edit Table* button if you wish to change the values. A 'drop-down' window, the ADAS Table Editor window, appears as shown below:

2.2.7.   The values in italic font are your input data. Click in any of these boxes to edit the number within it. The workstation cut, paste and copy keys operate. Press the *return* key on the keyboard to record any change.

2.2.8.   The set of triangular and square buttons below the table are designed to help in some editing tasks. You must be careful to remember the sequence of operations since it is different from that on personal computers. **Activate** the appropriate button, **position** the mouse text cursor or drag over required digits, **press the *return* key** on the keyboard to complete the sequence. Triangular buttons operate for the next immediate action. Square buttons have a continuing effect until an alternative is pressed. The *Delete* button allows deletion of the value in a box, leaving an empty box; the *Remove* button allows deletion of a value with the column then being pushed up; the *Insert* button creates a new empty box, pushing the column down. The *Row_skip* button causes a jump to the next editable box in a row when the *return* key on the keyboard is pressed; *Column_skip* causes jumping to next box in a column. *Scroll up* moves the whole window down. Note that the window only shows ten values in a column, but the whole table may be longer that this. Preferred Temperature units for working with may be chosen. Changing units causes the Inputs from the file to change to the new units. It **does not** change any Output values already typed in. It merely interprets Output values in the selected units. Note however that default values are inserted in the currently selected units.

ADAS Table Editor

Temperature & Density Values

Index	Output	Input	Output	Input
1	1.000E+00	1.000E+00	1.000E+12	1.000E+11
2	2.000E+00	2.000E+00	1.000E+12	2.000E+11
3	5.000E+00	5.000E+00	1.000E+12	5.000E+11
4	1.000E+01	1.000E+01	1.000E+12	1.000E+12
5	2.000E+01	2.000E+01	1.000E+12	2.000E+12
6	5.000E+01	5.000E+01	1.000E+12	5.000E+12
7	1.000E+02	1.000E+02	1.000E+12	1.000E+13
8	2.000E+02	2.000E+02	1.000E+12	2.000E+13
9	5.000E+02	1.000E+05	1.000E+12	5.000E+13
10	1.000E+03	1.000E+03	1.000E+12	1.000E+14

△ Delete   △ Remove   △ Insert   △ Copy   △ Paste

☐ Row_skip   ☐ Column_skip   ☐ Scroll up   ☐ Scroll down

Temperature Units

☐ Kelvin   ☐ eV   ☐ Reduced

Cancel   Done

2.2.9. Press the *Done* button to record the changes and return to the Processing Options window. The *Cancel* button prevents the new values being substituted on return to the Processing Options window.

2.3. The **output options window** appearance is shown below

```
┌─────────────────────────────────────────────────────────────────┐
│ ◁                      ADAS501 OUTPUT OPTIONS                     │
│                                                                   │
│   Data file name :  /export/home/adas/adas/adf13/sxb93#b3/sxb93#be_pju_be0.dat │
│   ┌───────────────────────────────────────────────────────────┐ │
│   │                    Browse comments                        │ │
│   └───────────────────────────────────────────────────────────┘ │
│  ┌──────────────────────────────────────────────────────────┐   │
│  │  ☐    Graphical Output                   Default Device   │   │
│  │  Graph Title    ┌──────────────────┐     ┌────────────┐   │   │
│  │                 │ Figure 1         │     │ Post-script│   │   │
│  │                 └──────────────────┘     └────────────┘   │   │
│  │   ┌────────────────────────────────────┐                 │   │
│  │   │ ☐   Explicit Scaling               │  ┌────────────┐ │   │
│  │   │              X-min:┌────┐  X-max:┌────┐│ Post-script│ │   │
│  │   │                    └────┘        └────┘│ HP-PCL     │ │   │
│  │   │              Y-min:┌────┐  Y-max:┌────┐│ HP-GL      │ │   │
│  │   │                    └────┘        └────┘└────────────┘ │   │
│  │   └────────────────────────────────────┘                 │   │
│  │   ┌────────────────────────────────────┐                 │   │
│  │   │ ☐  Enable Hard Copy   ☐  Replace   │                 │   │
│  │   │ File name :  ┌────────────────────┐ │                 │   │
│  │   │              │ graph.ps           │ │                 │   │
│  │   │              └────────────────────┘ │                 │   │
│  │   └────────────────────────────────────┘                 │   │
│  └──────────────────────────────────────────────────────────┘   │
│  ┌──────────────────────────────────────────────────────────┐   │
│  │ ☐  Text Output   ☐  Replace   ┌──────────────────┐       │   │
│  │                               │ Default file name│       │   │
│  │ File name :  ┌────────────────┴──────────────────┘       │   │
│  │              │ graph.ps           │                       │   │
│  │              └────────────────────┘                       │   │
│  └──────────────────────────────────────────────────────────┘   │
│   ┌──────────┐   ┌──────────┐                                   │
│   │ Cancel   │   │  Done    │                                   │
│   └──────────┘   └──────────┘                                   │
└─────────────────────────────────────────────────────────────────┘
```

a)   b)   c)   d)

2.3.1.   As in the previous window, the full pathway to the file being analysed is shown for information. Also the *Browse comments* button is available.

2.3.2.   Graphical display is activated by the *Graphical Output* button a). This will cause a graph to be displayed following completion of this window. When graphical display is active, an arbitrary title may be entered which appears on the top line of the displayed graph. By default, graph scaling is adjusted to match the required outputs. Press the *Explicit Scaling* button b) to allow explicit minima and maxima for the graph axes to be inserted. Activating this button makes the minimum and maximum boxes editable.

2.3.3.   Hard copy is activated by the *Enable Hard Copy* button c). The File name box then becomes editable. If the output graphic file already exits and the *Replace* button has not been activated, a 'pop-up' window issues a warning.

2.3.4.   A choice of output graph plotting devices is given in the Device list window d). Clicking on the required device selects it. It appears in the selection window above the Device list window.

2.3.5.   The *Text Output* button activates writing to a text output file. The file name may be entered in the editable File name box when *Text Output* is on. The default file name 'paper.txt'may be set by pressing the button *Default file name*. A 'pop-up' window issues a warning if the file already exists and the *Replace* button has not been activated.

2.3.6.   The graph is displayed in a following **Graphical Output** window as shown below.

```
┌─────────────────────────────────────────────────────────────┐
│ ▽                   ADAS501 GRAPHICAL OUTPUT                  │
├─────────────────────────────────────────────────────────────┤
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
│  ┌─────┐   ┌──────┐                                         │
│  │Print│   │ Done │                                         │
│  └─────┘   └──────┘                                         │
└─────────────────────────────────────────────────────────────┘
```
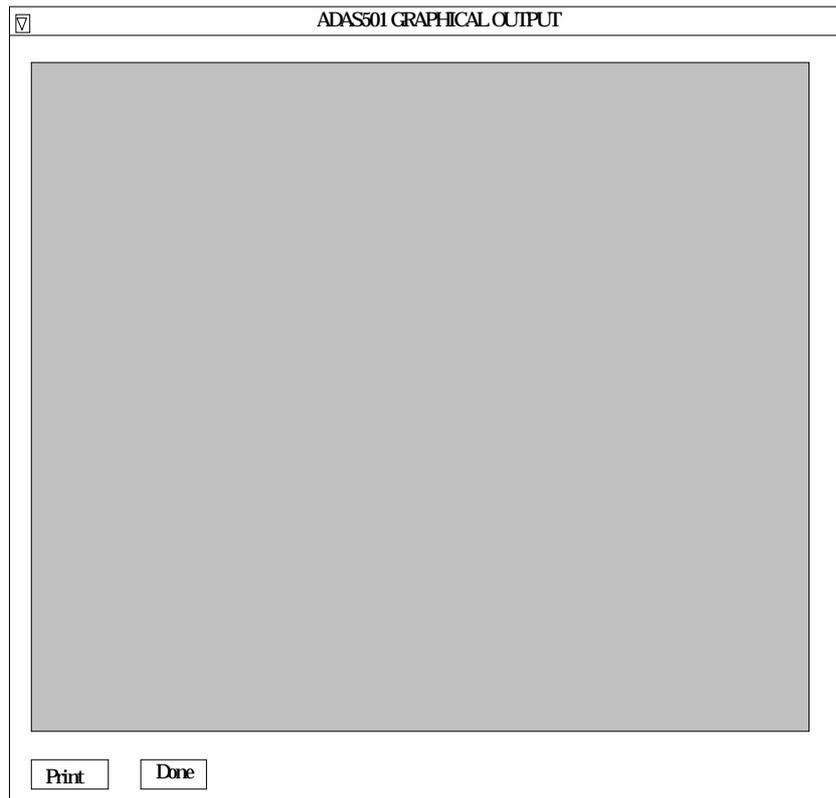
2.3.7. The *Print* button is present only if the *Enable Hard Copy* button on the previous window was activated. Press the *Print* button to make a hard copy of the currently displayed picture.

2.3.8. Pressing the *Done* button restores the previous Output Options window.

2.4. The variation in Unix operating systems on different makes of workstation causes slightly different behaviours. Please notify us of any unexpected or irritating behaviour on your local workstation so that we can make adjustments. Known restrictions at this time are i) no *Append* button on hard copy output on multiple passes through the program. This will be included in the future; ii) the text output file includes Fortran formatting carriage control characters, being intended for lineprinter output. When routing this to laser printers, landscape mode is required with carriage control character recognition if possible. We shall be able to give some futher advice on this shortly.

3. ADAS501 and ADAS503 are released at this time. There are associated modified ADAS Manual *chap6-01* and *chap6-03* describing the operation of the programs. Also there are amended adas data format descriptions *appxb-13* and *appxb-15*.

4. Until the ADAS program ADAS208 is implemented, you will be dependent on the central *adas* database for 'ionisations per photon' and 'photon emissivities'. We are continuing to put more data of these types as time permits. We have a substantial capability to put up data for arbirary ions by processing at JET Joint Undertaking and then file transfer to IDL-ADAS. Please let us know if there are any urgent requests.

H. P. Summers
March 6, 1995