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IGIS - A Graphical User Interface for the IDA Program Package

W S Howells T Csoka M Adams and W Kagunya

December 1997

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IGIS

A Graphical User Interface for the IDA program package

W S Howells, T Csoka,
M Adams and W Kagunya

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Also on http://sutekh.nd.rl.ac.uk/wsh/igis/

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1. Introduction

1.1 General

IGIS (acronym for **I**DA **G**raphic User **I**nterface**S**) is a GUI (Graphical User Interface) using a WIMP (Window Icon Mouse Pointer) environment to provide a user-friendly means of launching the Batch jobs in the IDA program suite. It carries out all the operations presently provided by the IDA Batch menu (using the command IDA). This manual is a guide to the menu system only - for descriptions of the programs themselves the user should refer to the IDA manual (IDA - Iris Data Analysis, W S Howells, CLRC Technical Report RAL-TR-96-006 and on the Web-site http://sutekh.nd.rl.ac.uk/wsh/ida/). This manual is also available on the Web-site http://sutekh.nd.rl.ac.uk/wsh/igis/.

The programs use the Tcl/Tk computer language with further extensions from Tix. For further information on these languages the user should refer to the appropriate manuals. Use of the window interface requires a fast computer and it is recommended that this package should only be run on an Alpha computer.

2. Data Input

2.1 Introduction

Options and data can be specified in one of two ways:

a) by pointing to an area on the screen and pressing the mouse button which will be referred to as pressing a button or clicking.

b) typing a value for a variable.

2.2 Buttons

There are four types of button:

i) main button. These are large and have a text label on them. By pressing them a specific command/operation is initiated. In this package they are confined to three types of operation and the buttons are colour coded and mainly positioned along the bottom of the window.

The three types are :

a) Help - blue. On pressing, a new window appears containing text describing the operations performed from the window containing the button.

b) Go forward - green. These are called either Run or Continue. The first type initiates the task described in the window; the second is usually used when the window is no longer needed. In both cases the window is closed.

c) Go back - red. These are normally called Stop or Cancel. When used the operations defined in the window are not carried out and the window is closed.

ii) radio button. This refers to a series of buttons of diamond shape of which only one can be active and is coloured red. On starting up, this marked button will be the default option. Each button has an associated text label. To change on option, point and click on the new option which will then turn red and the previous option turn white. The buttons linked together will all be situated either on the same line or within the same frame.

iii) check button. This has a square shape and is a straight forward on/off button for a single option. The on state is red and on startup signifies the default option, if there is one.

iv) Drop down menu button. These buttons are usually within the main part of the window and incorporate a drop-down menu of text labels. Clicking on the button brings up the menu and the option can then be chosen by clicking. The new choice will then become the value of the label.

2.3 Input boxes

Function values are typed into a specific box which has a descriptive label. If the caret is not already positioned in the box, the pointer must be positioned inside it and clicked. Input MUST be terminated either with the Return key or the Tab key. In most cases the input cursor then moves to the next appropriate input box or, if it is the last box in the window, carries out the command defined by the Run (green) button. The position of the caret within the box can be moved by using the cursor keys and characters removed with the Delete key. After editing a value, the entry must still be terminated with Return or Tab.

A variable retains its value until changed. If it is used in several programs, then once defined will become the default for subsequent programs. For example, when a resolution run number is defined in ResNorm it becomes the default value in Quasi.

A further version of input box, called a ComboBox, has a drop-down menu of fixed values and the menu is activated by clicking on the down-arrow to the right of the box. The value required is chosen by clicking on it. A different value may be typed in if necessary.

In some routines an entry box for a run number has a button next to it labelled Browse (described in Setion 3).

3. Windows

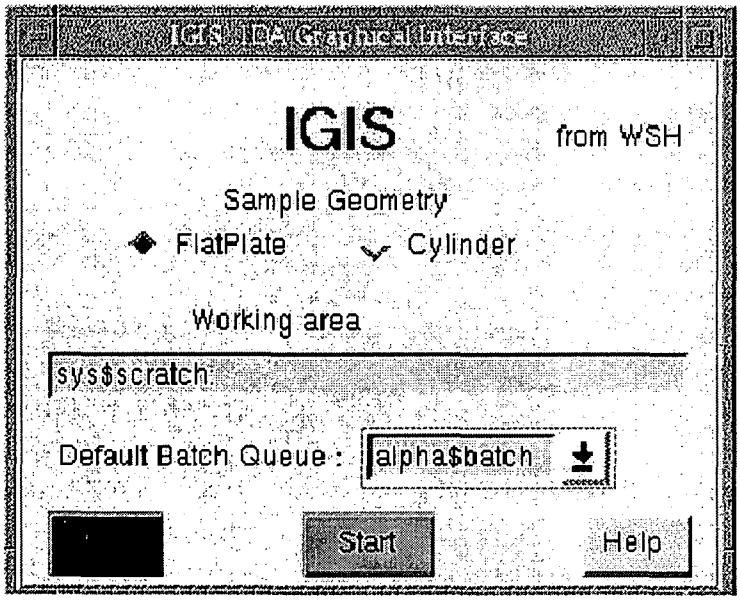
These appear at various stages of operation and can be iconised if required.
There are two main types :

i) Program Menu windows - are specific to a program or option and only appear for that option and are closed when finished. The three main windows described below are not closed until IGIS is shut down. Buttons in these windows will perform the task or operation specific to that window.

ii) Message windows - just show a text message and the window is closed when no longer required.
The Help pages for example contain black text and a scroll-bar.
Error messages have their own style of window with red text and an example is one which states that a file does not exist.
Information windows have the message in blue text and an example is the last window to appear in an option which states that the Batch job has been submitted and gives the names of the files created (this window has a label Finale).

The standard windows show all the text within the one window, but a NoteBook style window contains several 'pages' which are selected by clicking on the appropriate 'tab' arranged along the top of the window (like a card index).

The StartUp window appears when the program is started with the command IGIS.



Below the IGIS banner is the first set of radiobuttons to specify the sample geometry (Cylindrical or Flat Plate). This options will remain in force for all further programs and until they are changed.

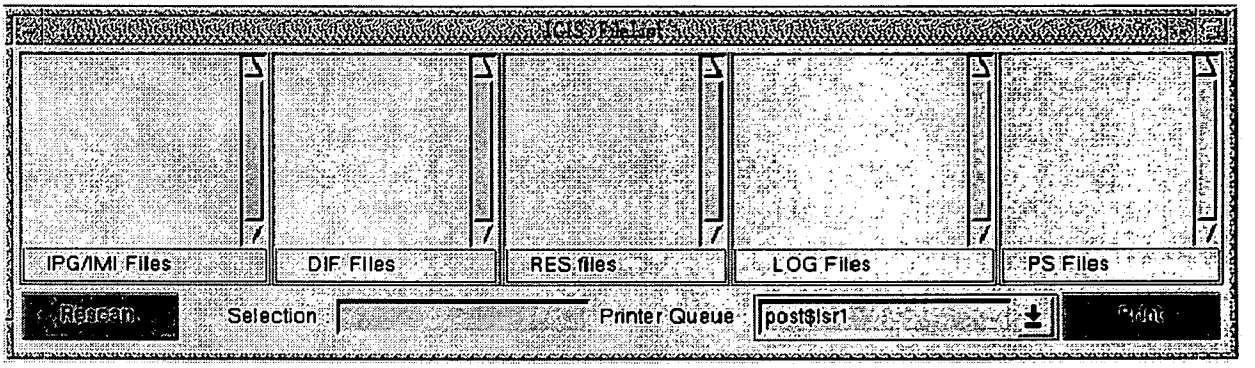
In many programs the input required depends on the options chosen, if an input variable is not in use then its text will be light grey instead of black and any buttons or input boxes will be inhibited.

The Working Area is the disk and directory in which the files to be used (other than RAW files) are stored and where the new files (except LOG files) will be created. The default value is the directory from which IGIS has been launched. This means that IGIS can be started from one directory and use files from another directory (or computer). This value can be changed at any time during an IGIS session and it remains in force until the next change.

The Default Batch Queue can be defined at this point, but can be changed for each individual option if required.

On pressing the Start button, two new windows appear :

i) the FileList window



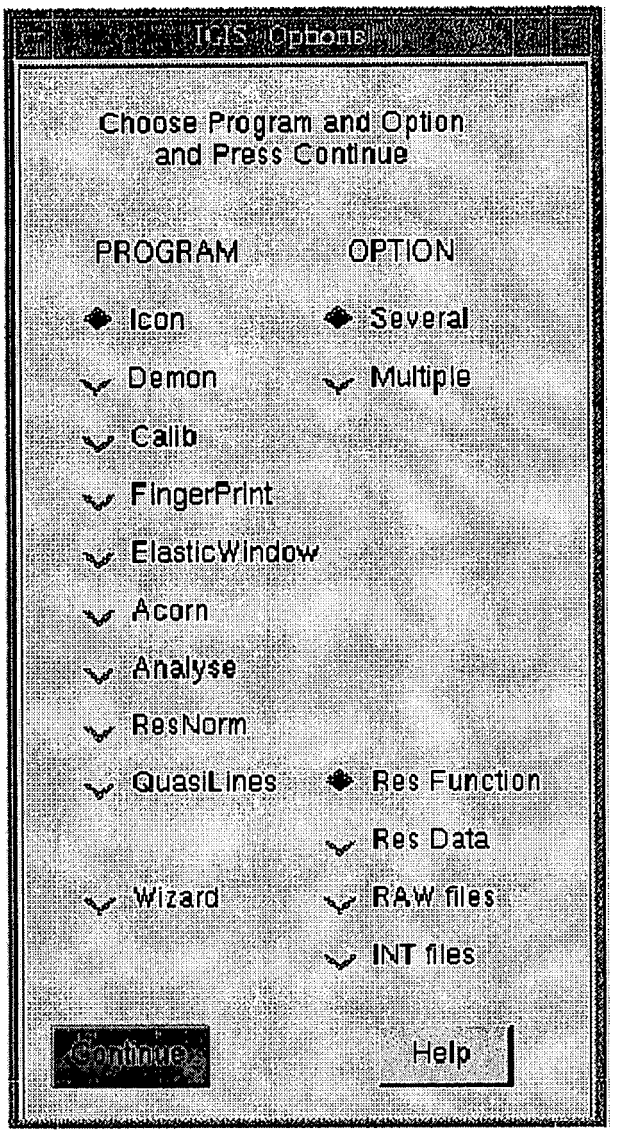
contains 5 panes and will list in each pane the files in the Working Area with the extensions specified at the bottom of the pane. For the LOG files, the directory is the user's scratch disk directory.

In order to update the lists click on the Rescan button.

A file can be selected by clicking on its name which then appears in the Selection box. It can then be sent to a printer by clicking on the Print button. The printer can be chosen by typing in the input box. (Only LOG files or PostScript files should be sent to a printer - all others are binary files!)

A variation on this window is opened from the Browse button. Clicking on this brings up a window with a single pane (similar to the Filelist window) in which are listed all the files with the extension indicated. The extension will be specific to that particular entry. Clicking on the chosen file results in that name appearing in the Selection box. If the Select button is now clicked the corresponing run number will appear in the entry box.

ii) the main Option window contains a menu of the options available and correspond to those that are available in the VMS command system using IDA.

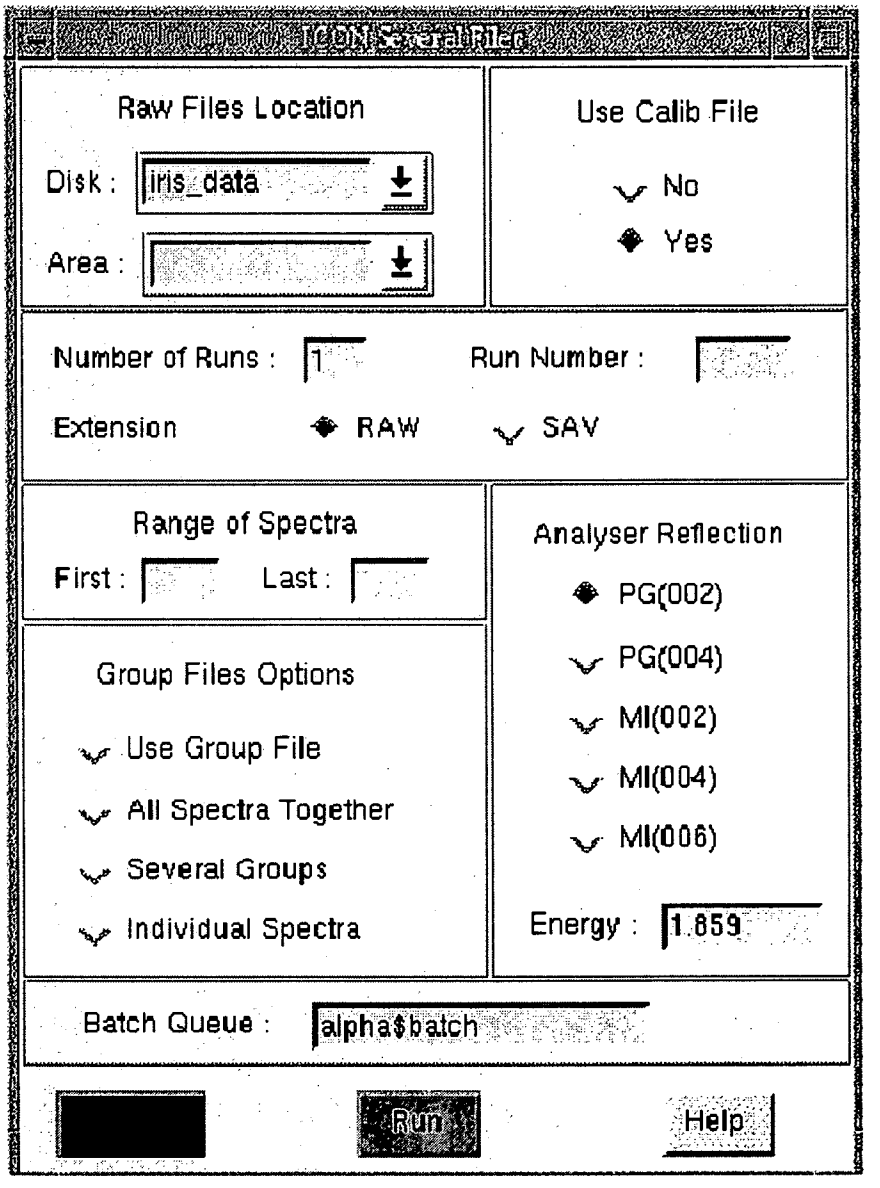


To run a program click on the appropriate radiobutton and then the Continue main button. The Icon and Demon programs, for example, each have two variations with their radiobuttons. The window for the specified program will then appear.

In the rest of this manual comments will only be made about points which are specific to IGIS.

4. ICON

In the main menu, the Option : Several or Multiple must be defined.



Frame 1-left: The RAW files location defaults to iris_data as usual - if the RAW files for the run numbers specified are not in that area there will be an error message.
The disk and directory may be specified using the input boxes with the usual selection available as a drop-down menu.

Frame 1-right: Radiobuttons are provided to specify whether to change the calibration table.

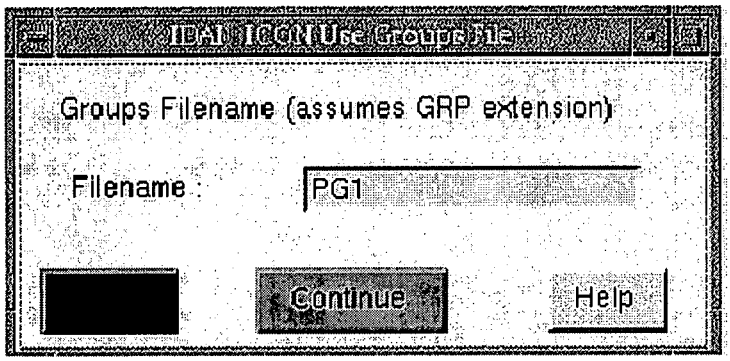
Frame 2: When entering the run numbers, if the number of runs is set to 1 the input caret moves to the Run Number input box; if the number of runs is greater than 1 a new window appears

with an entry box for each run and the caret moves to the next box on terminating entry to a box. When a run number is input, the appropriate range of spectra appears in the boxes of frame 3-left.
Radiobuttons are provided to specifiy the extension as RAW or SAV.

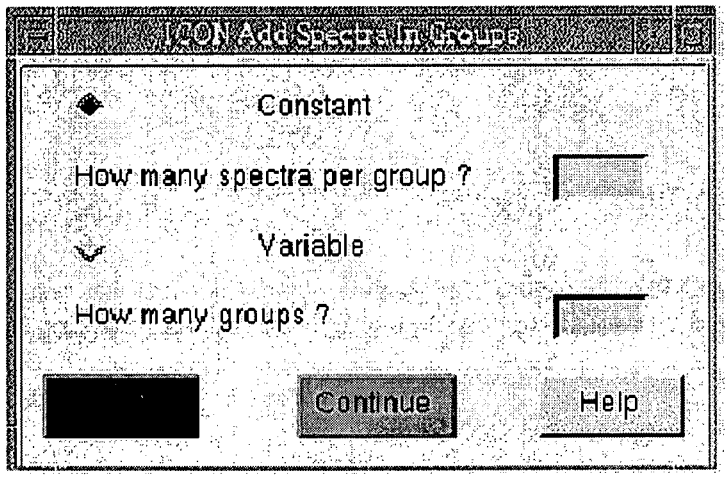
Frame 3-right: Radio buttons are provided to specify the analyser and reflection. When selected the appropriate energy appears in the input box - this may be altered if required.

Frame 3-left: specifies the default range of spectra - this will change according to the run number and analyser. They may be altered if necessary.

Frame 4: has radiobuttons to choose the group file option. On clicking on option :
i) Use groups file : a new window appears to input the filename.



ii) All spectra together : no further action required. The range is as defined in frame 3-left.
iii) Several groups : a new window appears with radiobuttons to choose either Constant or Variable. When one is clicked the text for the other turns to grey. The corresponding entry box requires input.



iv) Individual spectra : no further action required. The range is as defined in frame 3-left.
On each option the group file is created.

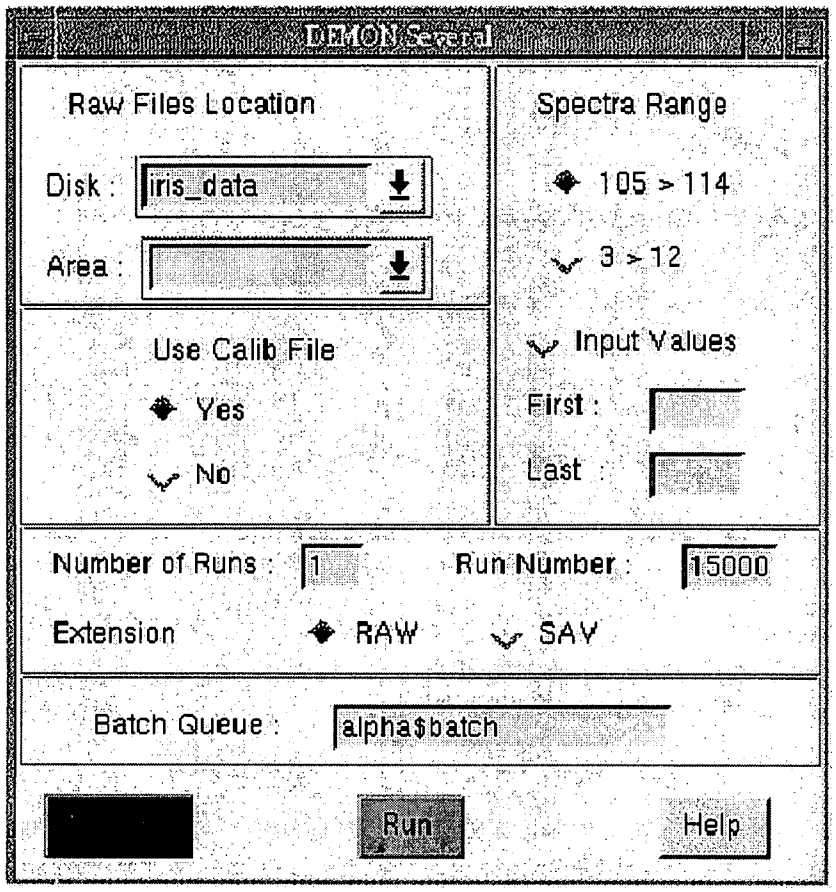
Frame 5 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

The values for number of runs and run number together with all the other options, when defined, become the default values for the next time ICON is run. So if ICON is to be run with the number of runs equal to 1 several times, only the run number needs to be changed (but do not forget to terminate the entry).

5.DEMON

In the main menu, the Option : Several or Multiple must be defined.



Frame 1-left: The RAW files location defaults to iris_data as usual - if the RAW files for the run numbers specified are not in that area there will be an error message.
The disk and directory may be specified using the input boxes with the usual selection available as a drop-down menu.

Frame 1-right: Radio buttons are provided to specify the range of spectra to be used. When a run number is entered the appropriate default values appear. If using the Input Values option, entries must be put into the boxes.

Frame 2-left: Radiobuttons are provided to specify whether to change the calibration table.

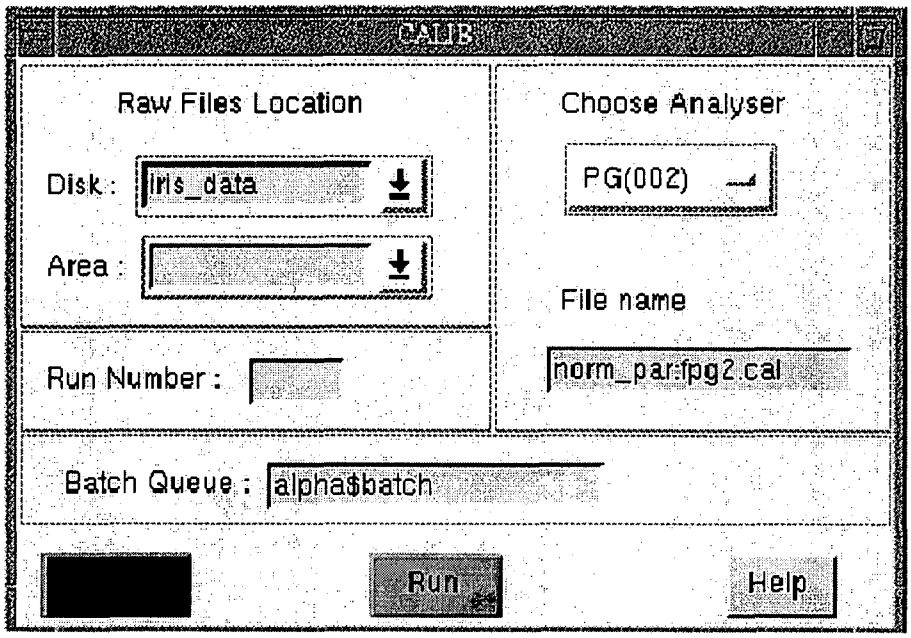
Frame 3: When entering the run numbers, if the number of runs is set to 1 the input caret moves to the Run Number input box; if the number of runs is greater than 1 a new window appears with an entry box for each run and the caret moves to the next box on terminating entry to a box. When a run number is input, the appropriate range of spectra appears in the boxes of frame 1-right.
Radiobuttons are provided to specifiy the extension as RAW or SAV.

Frame 4 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

The values for number of runs and run number together with all the other options, when defined, become the default values for the next time DEMON is run. So if DEMON is to be run with the number of runs equal to 1 several times, only the run number needs to be changed (but do not forget to terminate the entry).

6. CALIB



Frame 1-left: The RAW files location defaults to iris_data as usual - if the RAW files for the run numbers specified are not in that area there will be an error message.
The disk and directory may be specified using the input boxes with the usual selection available as a drop-down menu.

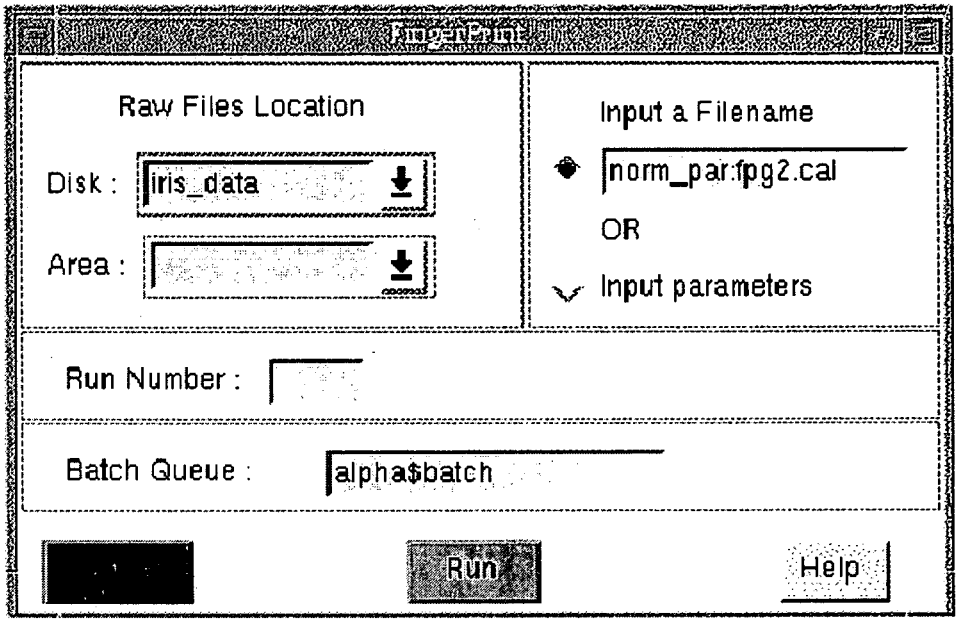
Frame 1-right : the Analyser is chosen via a button with a drop-down menu. The entry in the File name box is the default value for the analyser chosen. It can be altered if required.

Frame 2 : is for the run number.

Frame 3 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

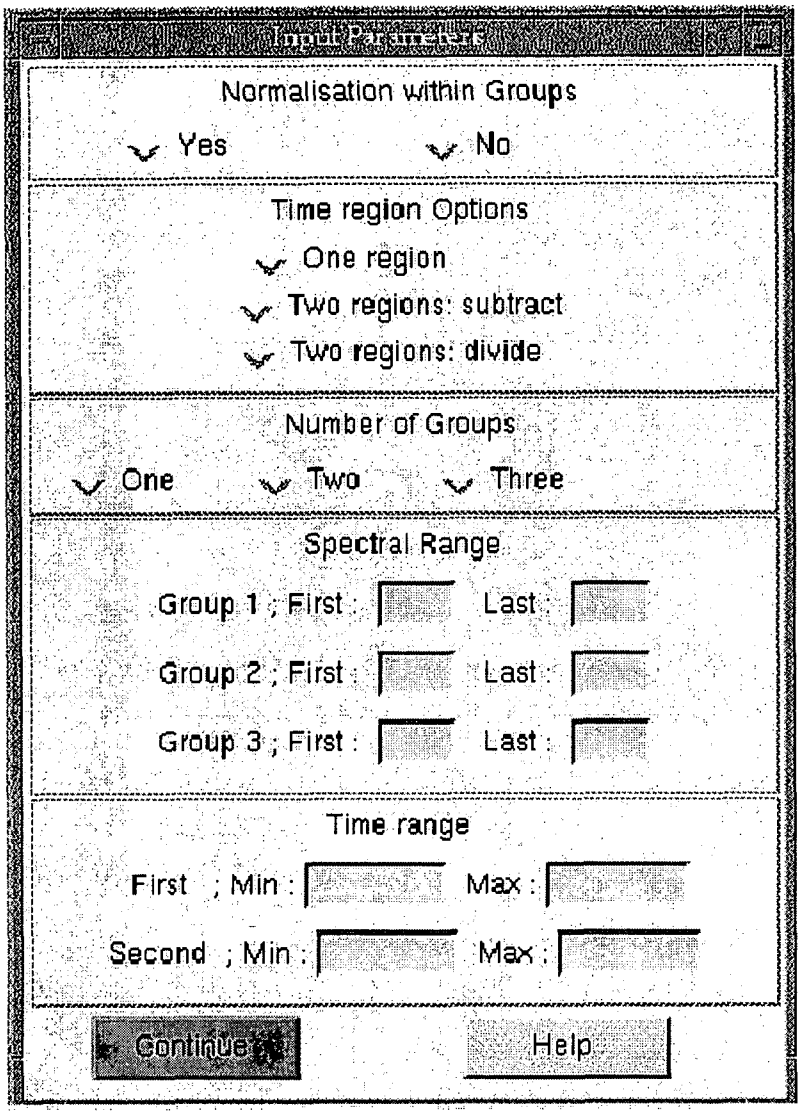
When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

7. Fingerprint



Frame 1-left: The RAW files location defaults to iris_data as usual - if the RAW files for the run numbers specified are not in that area there will be an error message.
The disk and directory may be specified using the input boxes with the usual selection available as a drop-down menu.

Frame 1-right : has radiobuttons to give a choice between using Input a Filename or Input parameters. If the latter is chosen a new window appears to the type of grouping and the time ranges.



Frame 2 : is for the run number.

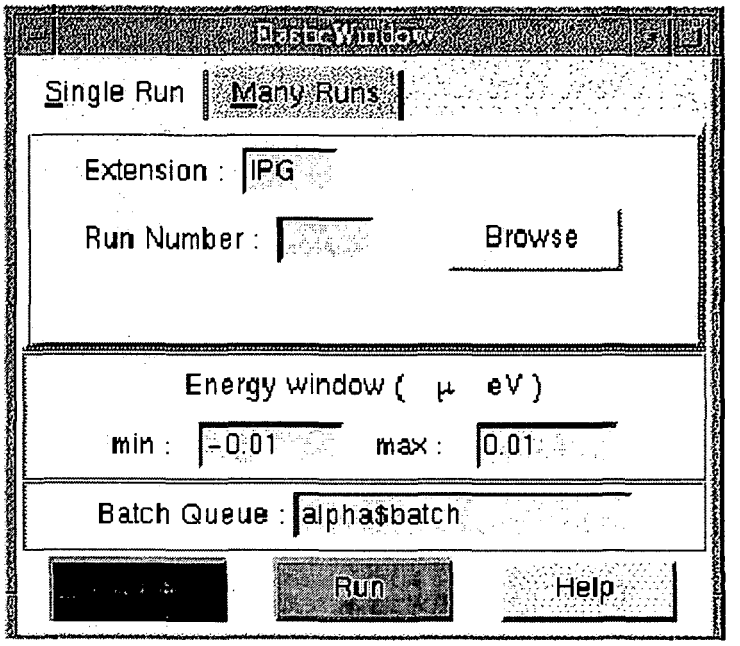
Frame 3 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

8. Elastic Window

This window is in NoteBook form with 2 choices :

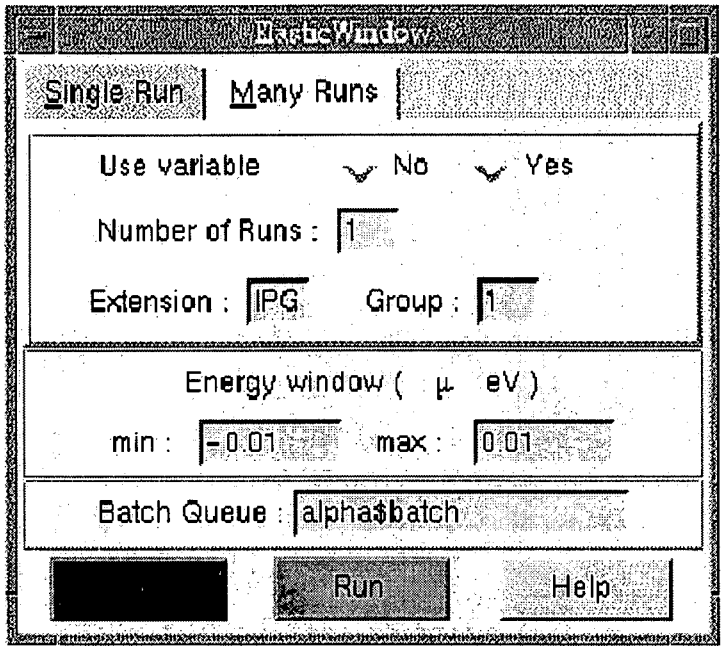
8.1 Single Run - which gives the angle/Q variation.



Frame 1 : is for the extension which defaults to IPG and run number - which can be input either by typing in the entry box or found using the Browse button.

Frame 2 : entry boxes to define the energy range for the integration.

8.2 Many Runs - at a specified angle/Q.



Frame 2 : has a radiobutton to define whether a Variable is to be input.
The Number of Runs must be greater than 1 and entered so that a new window can appear to allow input of the run numbers and the value of the variable. If the variable option is not chosen those boxes are grey.
The default extension is IPG and may be changed if necessary and the Group number (defining the angle/Q) defaults to 1.

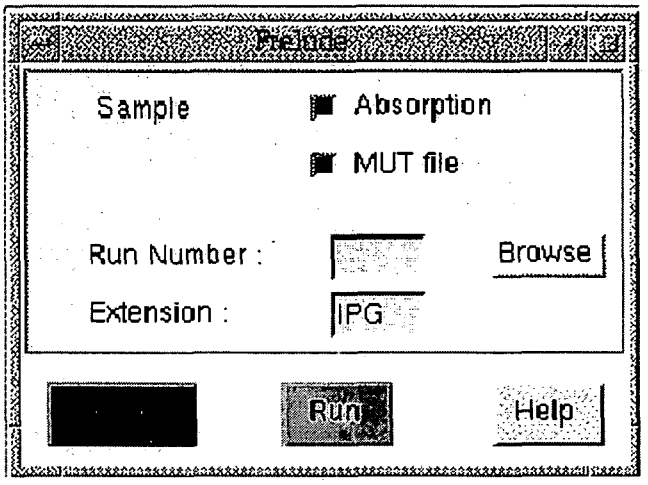
Frame 2 : entry boxes to define the energy range for the integration.

In both options :
Frame 3 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

9. Acorn

Acorn starts off with a Prelude window



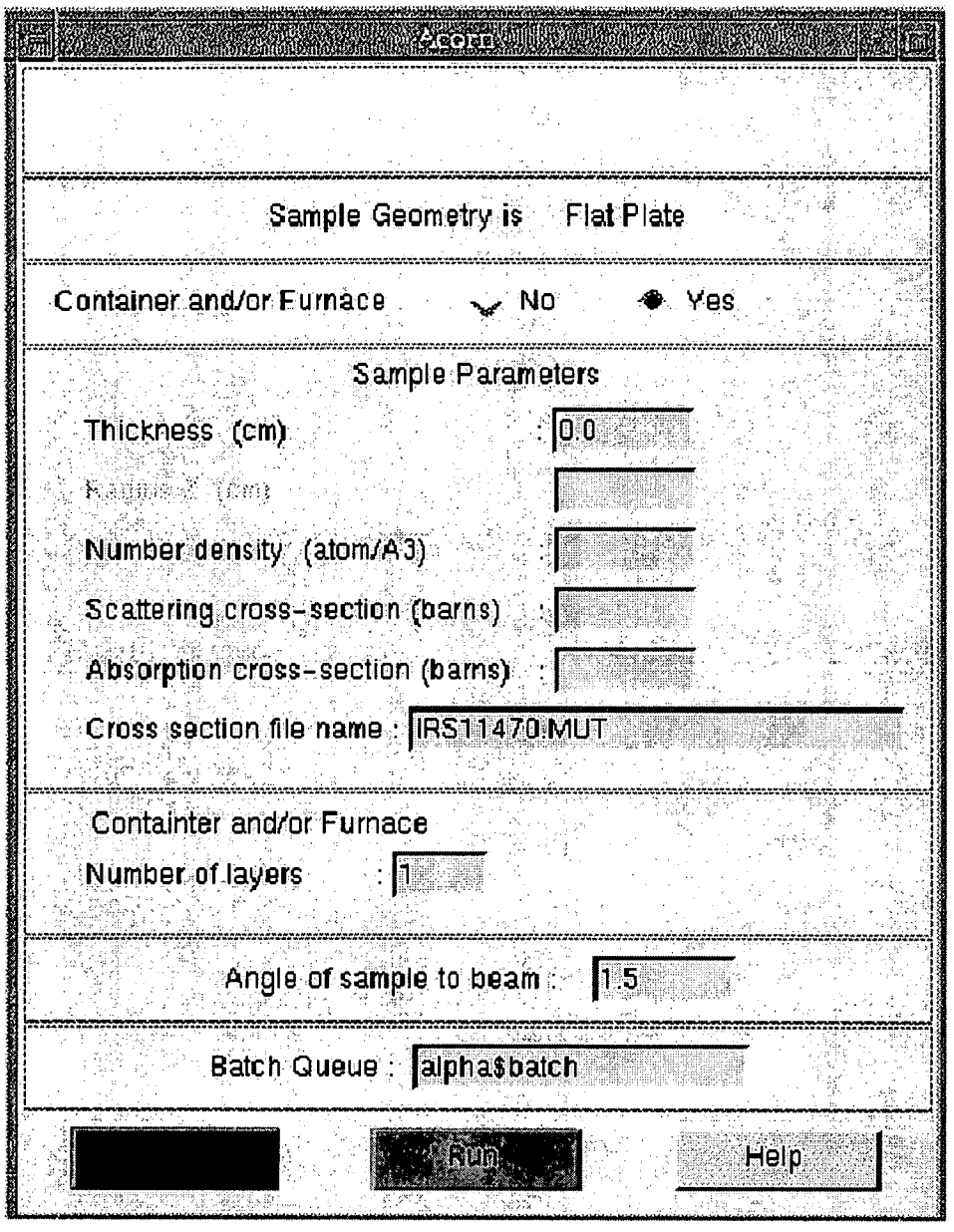
which defines:

i) the options to be run using checkbuttons for Absorption correction and MUT file creation

ii) the run number - which can be input either by typing in the entry box or found using the Browse button

iii) the extension - this defaults to IPG and can be changed

The routine checks for the existence of an AIN file before closing and opening the main Acorn window.



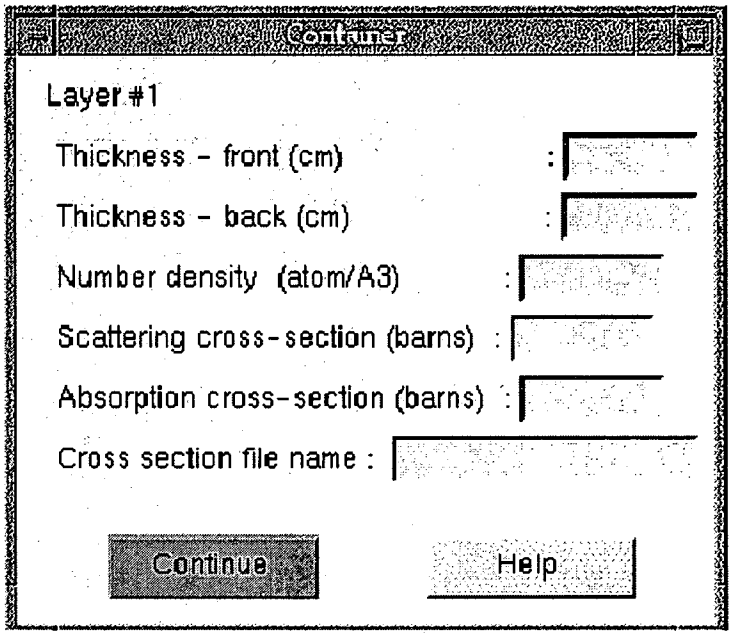
Frame 1 : this will be blank if no AIN file exists or displays the message Data from file in blue if there is an AIN file. In the latter case the values in the subsequent frames will be those from the AIN file.

Frame 2 : give the sample geometry as Flat Plate or Cylindrical.

Frame 3 : provides a radiobutton to specify whether there is a container.

Frame 4 : is for sample parameters. The titles will depend on the sample geometry.

Frame 5 : is for container parameters. If the container option has not been chosen the text in this box will be grey. Otherwise the number of layers or annuli must be entered so that a new box can appear for the parameters.



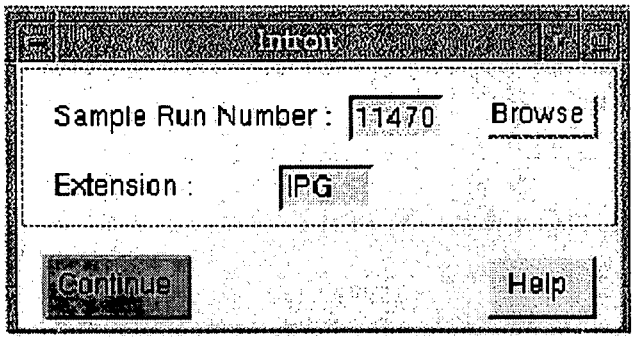
Frame 6 : will depend on the sample geometry. For Flat Plate it will be the angle of the sample to the beam. For Cylindrical it will be the beam width and height.

Frame 7 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

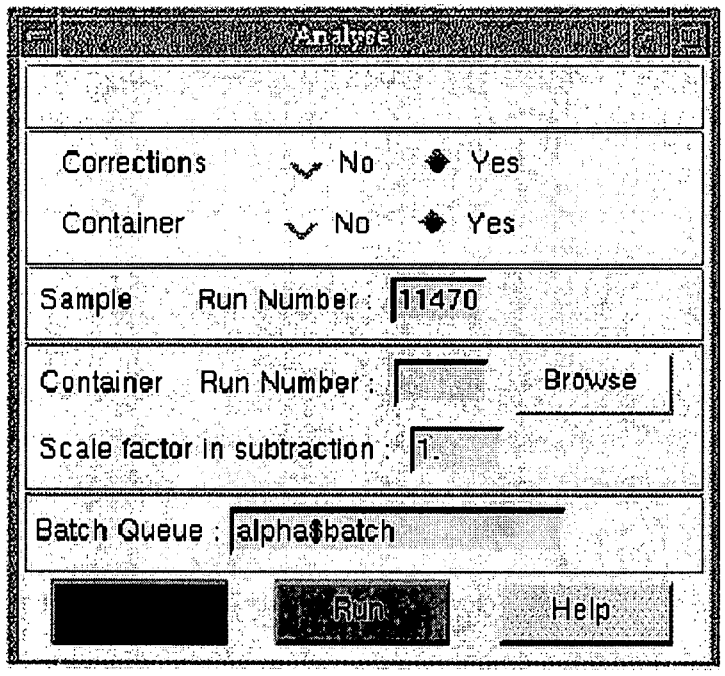
10. Analyse

Analyse must be run after Acorn and begins with an introductory Introit window.



The input in this window is :
i) the sample run number - which can be input either by typing in the entry box or found using the Browse button.
ii) the extension - this defaults to IPG and can be changed

The routine checks for the existence of an ANA_DAT file before closing and opening the main Analyse window.



Frame 1 : this will be blank if no ANA_DAT file exists or displays the message Data from file in blue if there is a file. In the latter case the values in the subsequent frames will be those from the file.

Frame 2 : provides radiobuttons to select Corrections, Container and Extension.

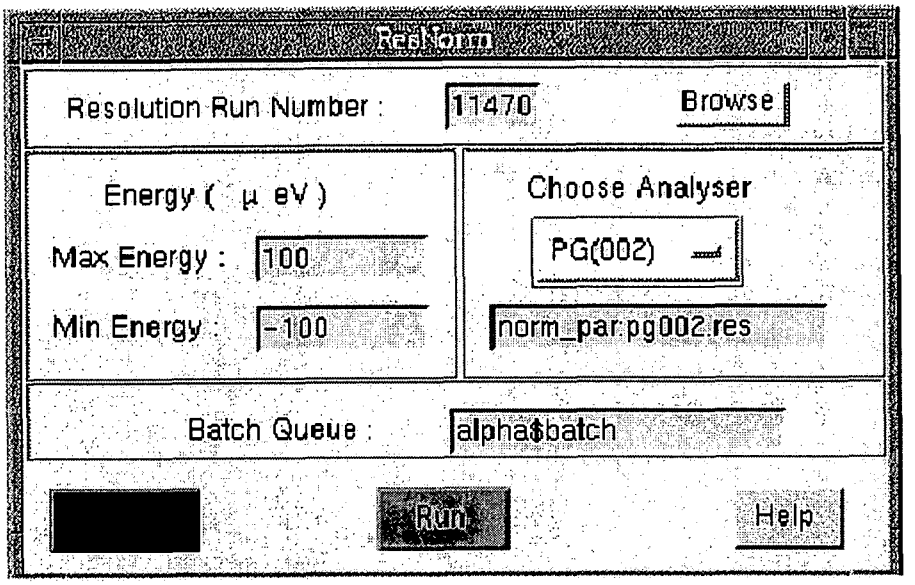
Frame 3 : just gives the sample run number again.

Frame 4 : is for container parameters. If not selected the text will be grey, otherwise the container run number can be input (either by typing in the entry box or found using the Browse button) together with the Scale factor (defaulted to 1).

Frame 5 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

11. ResNorm



Frame 1 : is for the resolution run number - which can be input either by typing in the entry box or found using the Browse button. The default extension is IPG and is changed when the analyser is selected in Frame 2-right.

Frame 2-left : defines the minimum and maximum energies for the calcuation.

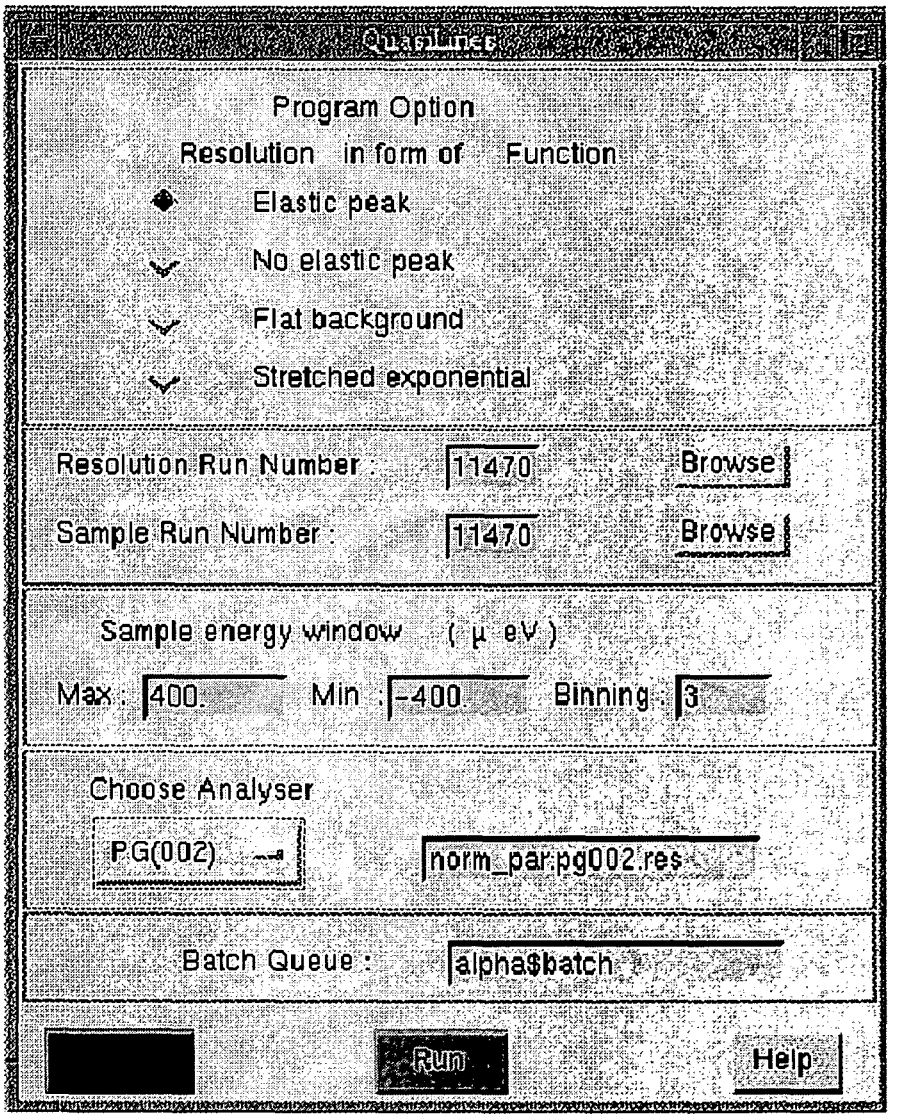
Frame 2-right: the Analyser is chosen via a button with a drop-down menu. The entry in the box is the default value for the analyser chosen. It can be altered if required.

Frame 3 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

12. QuasiLines

In the main menu, the type of resolution input must be defined :
either (a) resolution as a function, or (b) resolution is measured data



Frame 1 : contains radiobuttons for the Program Options.
A message will state, in blue, which resolution option is in effect. Program options not available will be in grey.

Frame 2 : the resolution run number - which can be input either by typing in the entry box or found using the Browse button. The default extension is RES for option (a) or IPG for (b).
The sample run number - which can be input either by typing in the entry box or found using the Browse button. The default extension is IPG and is changed when the analyser is selected in Frame 4.

Frame 3 : defines the sample minimum and maximum energies for the calculation and the rebinning.

Frame 4 : depends on the option.
For (a) : the Analyser is chosen via a button with a drop-down menu. The entry in the box is the default value for the analyser chosen. It can be altered if required.
For (b) : defines the resolution minimum and maximum energies for the calculation and the rebinning.

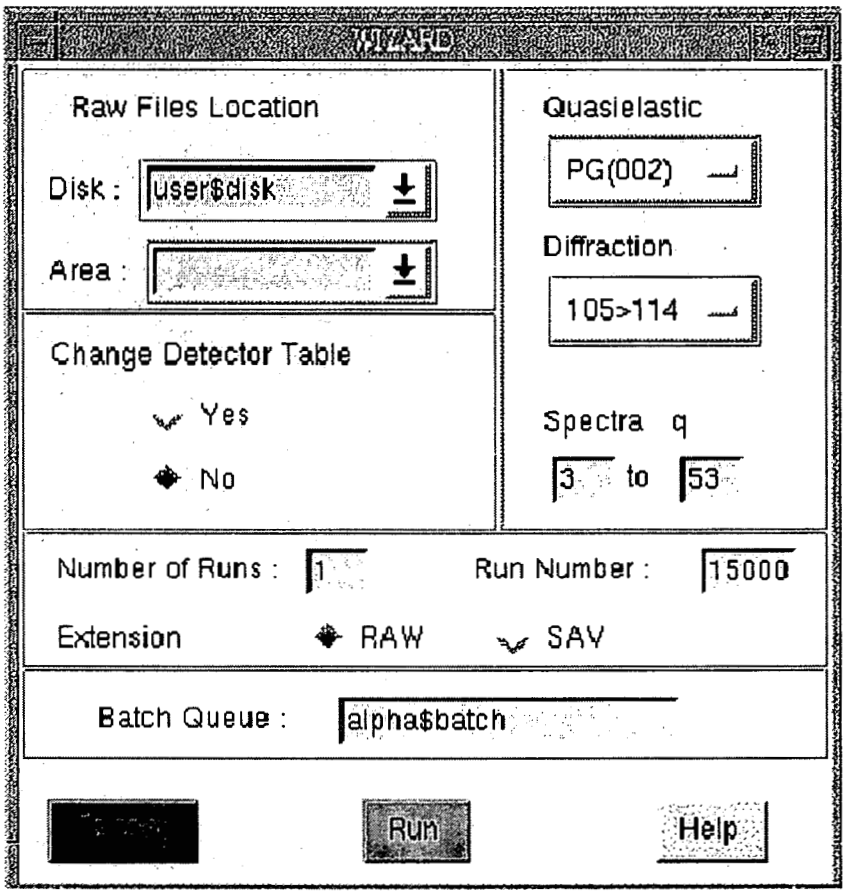
Frame 5 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

13. Wizard

Two versions are available from the main menu - for RAW or INT files.

13.1 RAW option



Frame 1-left: The RAW files location defaults to iris_data as usual - if the RAW files for the run numbers specified are not in that area there will be an error message.
The disk and directory may be specified using the input boxes with the usual selection available as a drop-down menu.

Frame 1-right: two buttons with drop-down menus are provided to specify either the Quasielastic option (with a choice of analyser reflections) or the Diffraction option (with the range of spectra to be used). When an option is chosen the spectral range will be displayed together with a q (for quasielastic) or d (for diffraction). The values may be altered if required.

Frame 2: Radiobuttons are provided to specify whether to change the calibration table.

Frame 3: When entering the run numbers, if the number of runs is set to 1 the input caret moves to the Run Number input box; if the number of runs is greater than 1 a new window appears

with an entry box for each run and the caret moves to the next box on terminating entry to a box.
Radiobuttons are provided to specifiy the extension as RAW or SAV.

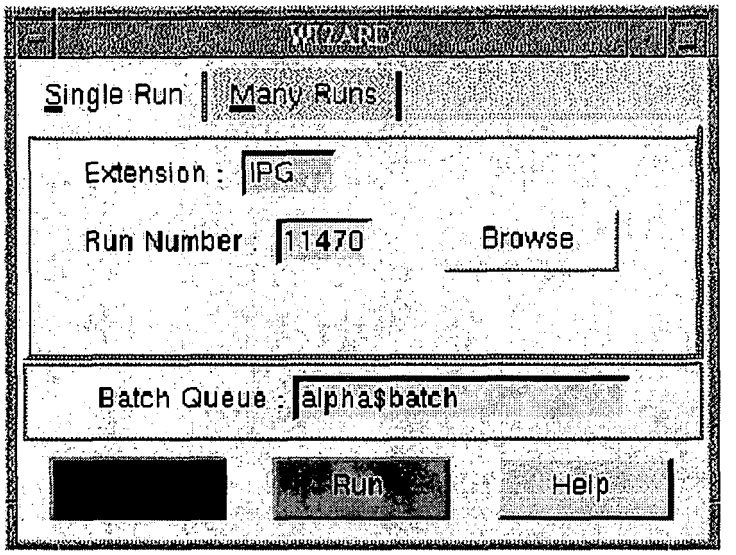
Frame 4 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.

13.2 INT option.

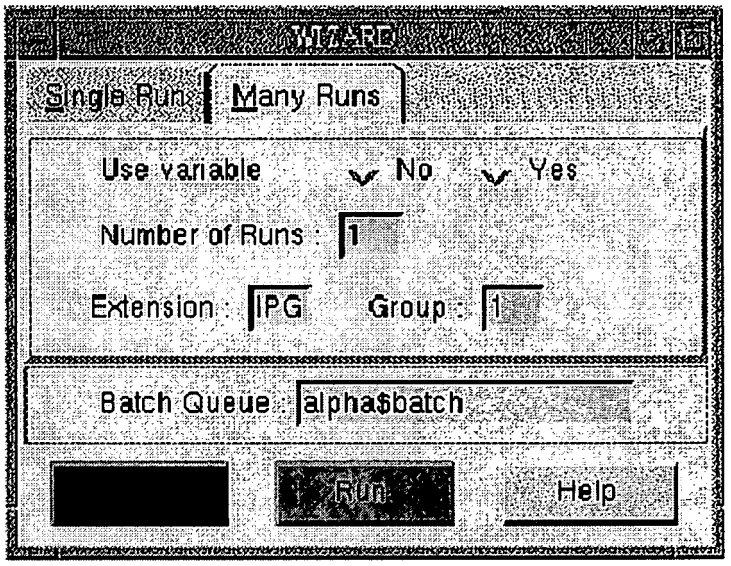
This window is in NoteBook form with 2 choices :

i) Single Run - which gives the angle/Q variation.

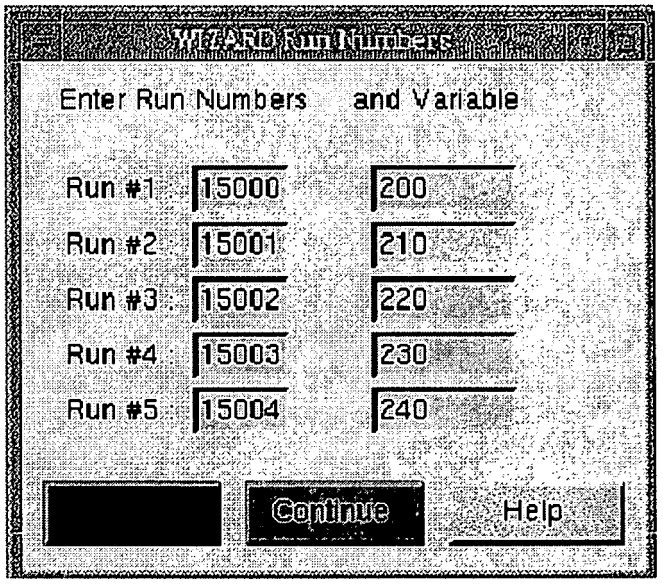


Frame 1 : is for the extension which defaults to IPG and run number - which can be input either by typing in the entry box or found using the Browse button.

ii) Many Runs - at a specified angle/Q.



Frame 1 : has a radiobutton to define whether a Variable is to be input.



The Number of Runs must be greater than 1 and entered so that a new window can appear to allow input of the run numbers and the value of the variable. If the variable option is not chosen those boxes are grey.

The default extension is IPG and may be changed if necessary and the Group number (defining the angle/Q) defaults to 1.

In both options :

Frame 2 : If the batch queue is changed, terminating that entry initiates the batch job as if the Run button had been pressed.

When the job as been submitted a message window appears with the filenames of the Command file and the LOG files.