omgsource

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Abstract

Interactive program that allows the user to select and process spectra from a modulo-8 corrected, rotated and undistorted grism image.

1 Instruments/Modes

Instrument	Mode
OM	IMAGING

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

Omgsource is an interactive SAS task which enables the user to reprocess an OSW rotated grism-image produced by the SAS task **omgchain**. A couple of examples where the user will find **omgsource** useful are:

- The user notices that a spectrum on an image has not been identified and processed.
- A processed spectrum is seen to lie close to another spectrum and the background region may thus be contaminated by its neighbour.

The task allows the user to interactively select spectra from the input image: the width and height of the central spectrum extraction region, the widths and offsets (from the central extraction region) of the two background regions (one either side of the central region) can be varied. The selected spectra are processed using the SAS task **omgrism**. A new source-list and spectrum-list fits file are produced, together with a spectrum-plot postcript file. These output files have the same format as those produced by the SAS task **omgchain**. The spectrum plot file is produced using the SAS task **omgrismplot**.

4 Running the program

The various command lines for running the program are:

- **omgsource imageset=... newsrclistset=... newspectrumset=... spectrumplotset=...** For creating new source and spectrum list files (no parameters **oldsrclistset oldspectrumset** specified). The image stored in the image file specified by the parameter **imageset** is displayed without any source regions overlayed. The user can either select spectra manually, or run the **SAS task omdetect** to detect sources.
- **omgsource imageset=... oldsrclistset=... oldspectrumset=... newsrclistset=... newspectrumset=...** The sources and spectra stored in the fits files corresponding to the parameters **oldsrclistset** and **oldspectrumset**, respectively, are loaded. The image stored in the fits file specified by the parameter **imageset** is displayed with the source regions overlayed. Each source and spectrum is numbered.
- **omgsource** In this case the program will display a file-dialog box to get the name of the **imageset**.
- **omgsource oldsrclistset=... oldspectrumset=...** As before, except that the user wishes to modify an existing source and spectrum list file.

4.1 The Main window

The task starts up by displaying a small progress-dialog box whilst it is doing some initialisation work. If the parameter **imageset** was omitted on the command-line, a menu will appear prompting the user to select an image-file, either from a list of the last ten image-files assessed, or from a directory. Various checks are carried out on the selected file to ascertain that it contains a modulo-8 corrected, distortion-corrected and rotated image. If a check fails a warning message is displayed and the user is prompted to enter another file name. The selected image is then displayed using **ds9** and shortly afterwards the main window appears **(see Figure 1)**.

4.2 Main window buttons

The function of the various buttons are described below.

- **Help** Displays information about selecting spectra, etc. Clicking the **right mouse** button will also display the information.

Spectrum list operations

- **Table** Displays a table containing information about all the stored spectra.
- **Delete** Delete the contents of the drop-down list- all the sources will be deleted.

Image operations

- **Select spectra** Allows the user to select new spectra from the **ds9** image. A new window is displayed **see section 7)**.

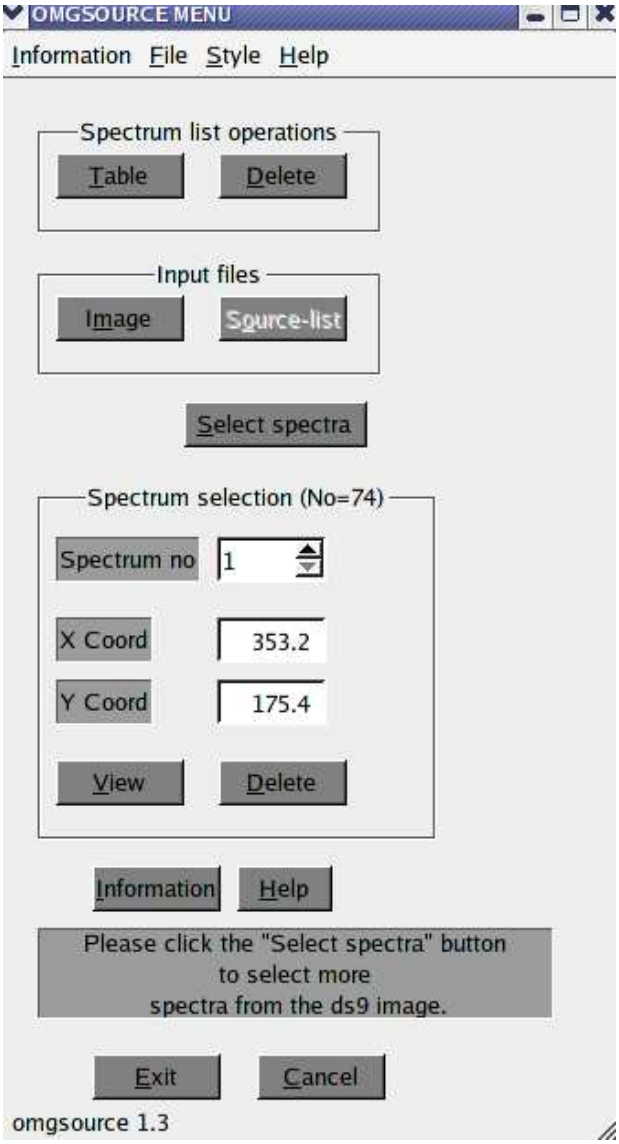

Figure 1: The main window

Individual source operations

- **Delete** Deletes the currently selected source from the list.
- **View** Displays the spectrum of the currently selected source **(see Source selection below)**.

Input files

- **Load image** Allows the user to select another image file, which is then loaded.
- **Load source-list** Allows the user to select another source-list file. Various checks are made to ensure that it has the same format as that produced by the SAS task **omgrism**. If a check fails, the user is prompted for another file name.

- **Information** Allows the user to display information about either the program, exposure or image details. On clicking this button, a menu appears, and the user should then click the relevant menu button.
- **Help** Displays information about selecting spectra, etc. Clicking the **right mouse** button will also display the information.

Terminating the program

- **Exit** Exits the program. A new source-list, source-spectrum-list and spectrum-plot file are created containing the current sources and spectra. These files have the same format as those produced by the SAS task **omgchain**.
- **Cancel** Exits the program without creating any output files.

4.3 summary of window tables

- **Source list table** Stores information about each source in the current source-list. The source number corresponds to the number on the image.

4.4 Spectrum selection

The **source no spin box control (the control to the right of the Spectrum no text)** sets the number of the spectrum in the list to that which will be displayed or deleted when the user clicks the **View** or **Delete** button, respectively. The coordinates of the selected source are displayed.

5 The spectrum-selection window

This window is shown in **Figure 2**.

A spectrum region is selected by clicking the left mouse-button on the image- this position should correspond to the coordinates of the zeroth-order spectrum. Once selected, the position can be refined by using the left/right/up/down keyboard keys, after first clicking the **Align Spectrum** button. Alternatively, if the **Centroid Spectrum** button is clicked, the zeroth-order feature will be automatically centroided. If a magnified view of the selected region is required, the **Centroid Spectrum** button should be clicked.

The left right background region offsets can be adjusted by clicking the Left Right background region buttons and using the left right keyboard keys. Alternatively, these values can be changed using the relevant spin-box in the default-extraction region parameters group box. Another alternative is to set the values in the relevant input text box in the user input extraction regions group box.

Various **omgrism**
omgrismplot parameters can be changed by clicking the **parameters button**.

Once you are happy with the regions, clicking the **Compute Spectrum** button will cause the spectrum to be computed and displayed. The computation of a spectrum is done using the **SAS task omgrism**, and omgsource produces a source-list file containing two sources, the zero and first order spectra, for input to omgrism.

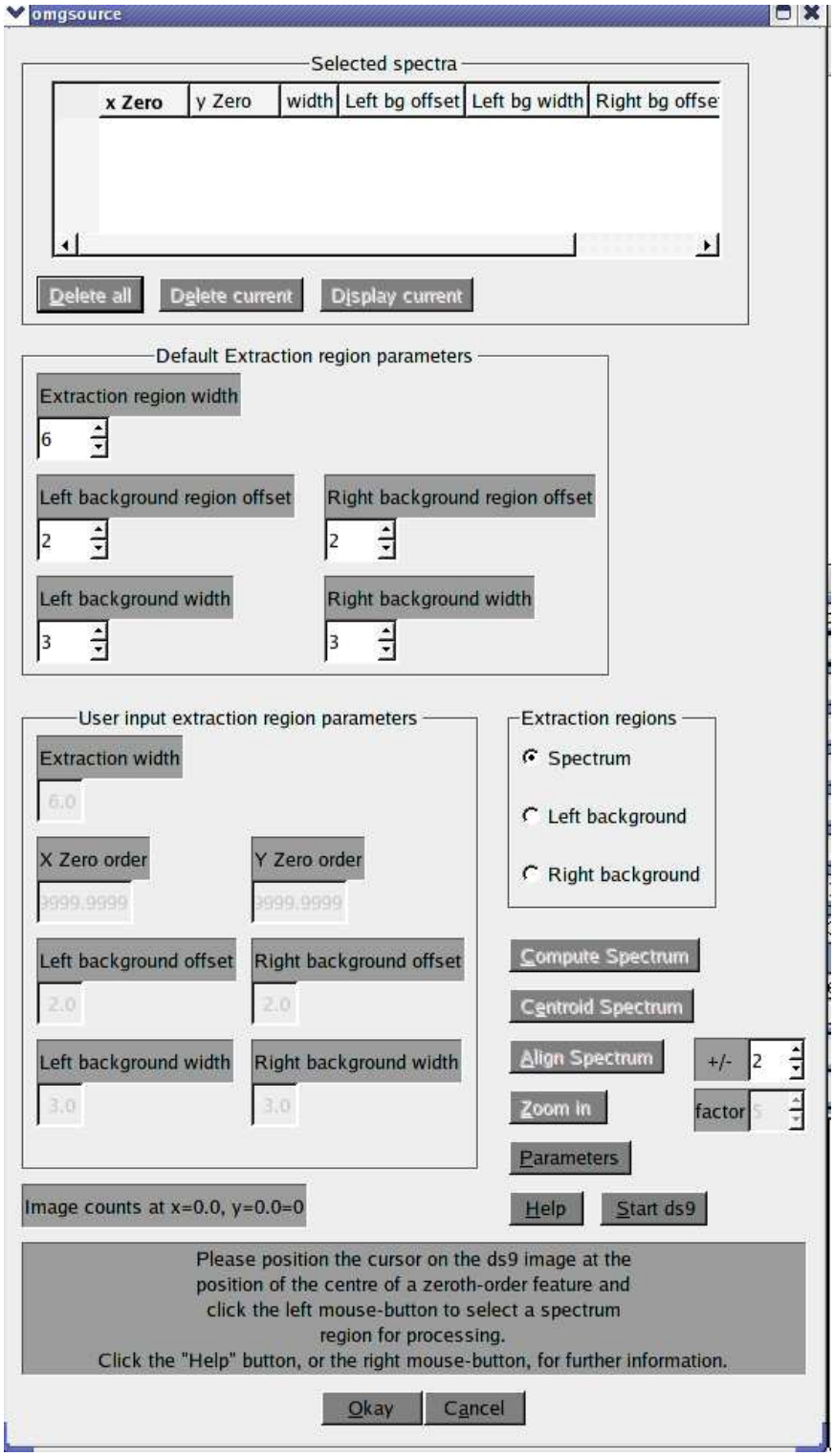

Figure 2: Spectrum-selection window

Details of each of the selected spectra are stored in the top left-hand table.

Any spectra in the table can be viewed by clicking the **left mouse-button** on the appropitate row in the

table, or by clicking the **Display current** button, after it has been selected by clicking on its number in the table.

Any spectra in the table can be deleted by clicking the **Delete current** button, after it has been selected by clicking on its number in the table.

All the selected spectra can be deleted by clicking the **Delete all** button.

5.1 Summary of the buttons

- **Cancel** Returns to the main window and any operations that have been performed **(such as selecting or deleting a spectrum)** are ignored.
- **Okay** If any spectrum regions have been selected the regions are processed and added to the current list of spectral regions.
- **Delete** The list of newly selected spectra is deleted and the image is redrawn- minus these extraction regions. **Note that any spectra that existed at the start of the selection session will not be deleted- see main Main window buttons if you wish to delete every spectrum**
- **Compute Spectrum** Causes **omgrism** to run and compute the spectrum, followed by **omgrism-plot**. The spectrum-plot file is then displayed.
- **Centroid Spectrum** The selected position of the zeroth-order feature is centroided.
- **Align Spectrum** Allows the selected spectrum to be moved using the up/down/left/right arrow keys.
- **Parameters** Allows the user to change the input parameters to omgrism or omgrismplot.
- **Start ds9** Causes the **ds9 image displayer** to be restarted - **You should click this if the ds9 image disppears.**
- **Spectrum** If marked then using the left right/up/down keyboard keys, the spectrum regions will be moved left/right/up/down, respectively.
- **Left background** If marked then using the left or right keyboard keys, the left background-region will be moved left or right, respectively, with respect to the central region.
- **Right background** If marked then using the left or right keyboard keys, the right background-region will be moved left or right, respectively, with respect to the central region.

5.2 The spectrum table window

This window is shown in **Figure 3**.

To display a spectrum click the **left-mouse button** on its row in the table (**NOT THE NO ON THE LEFT OF THE TABLE**.

5.3 Summary of the buttons

- **Print** Prints the contents of the table.
- **Delete** Deletes the contents of the table: ie all the spectra.
- **Okay** Returns to the main window.

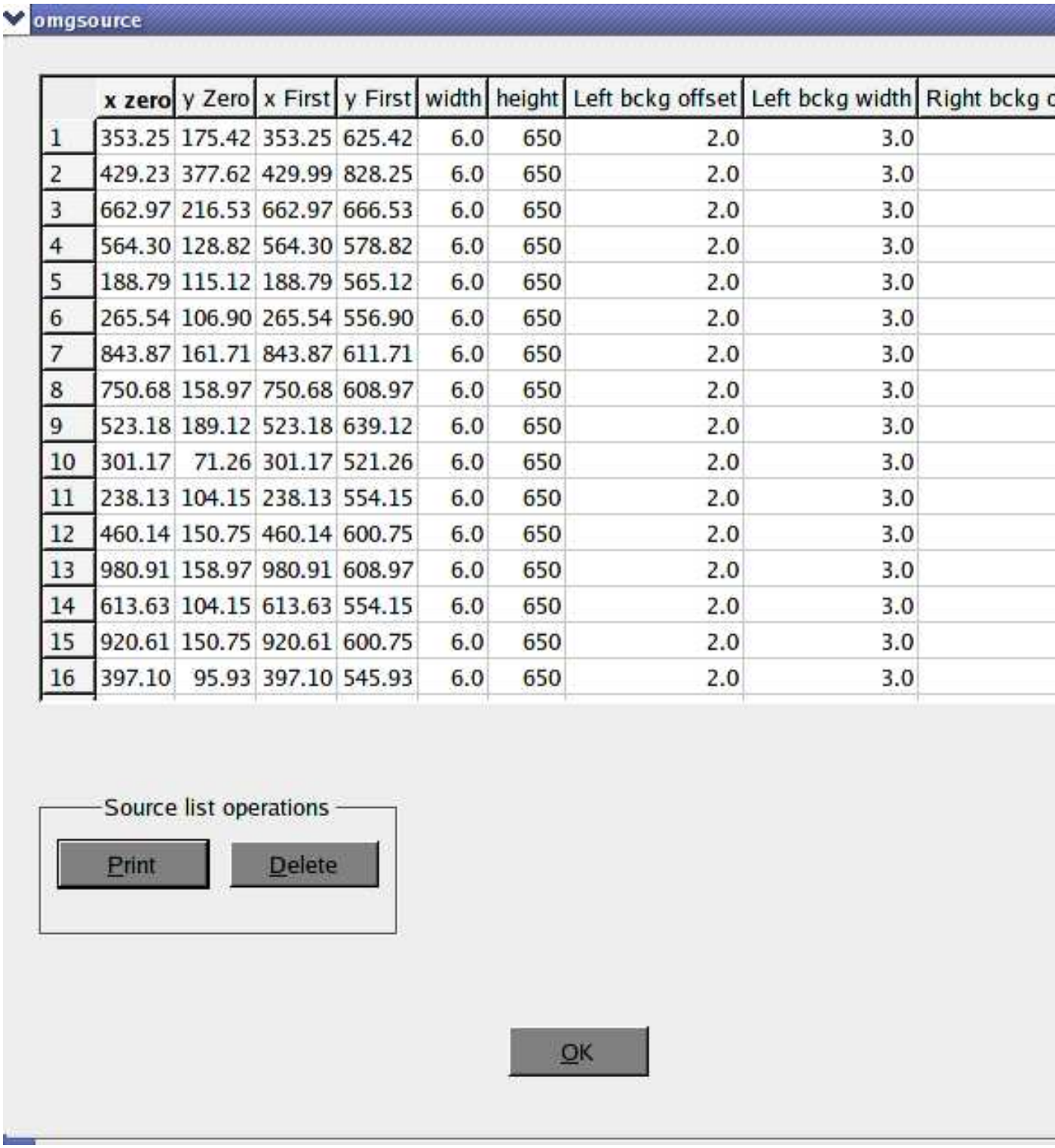

Figure 3: Spectrum-table window

6 Parameters

This section documents the parameters recognized by this task (if any).

Parameter	Mand	Type	Default	Constraints

imageset	no	string	none	

name of OM OSW FITS image file

oldsrclistset	no	string	none	

name of input OM OSW source list file

oldspectrumset	no	string	none	

name of input OM OSW source-spectrum list file

newsrclistset	no	string	none	

name of new output OM OSW source list file

newspectrumset	no	string	none	

name of new output OM OSW source-spectrum list file

spectrumplotset	no	string	none	

name of new spectrum-plot file

7 Errors

This section documents warnings and errors generated by this task (if any). Note that warnings and errors can also be generated in the SAS infrastructure libraries, in which case they would not be documented here. Refer to the index of all errors and warnings available in the HTML version of the SAS documentation.

nothing

8 Input Files

1. Modulo-8 corrected, rotated and undistorted OSW FITS image product file (output from OMGPREP)
2. Source-list file from OMGRISM.
3. Source-spectrum list file from OMGRISM.

9 Output Files

1. OM OSW source list file.
2. OM OSW source spectrum list file
3. OM OSW spectrum-plot file
4. A source-list file called pspecli.fit, produced by omgrism.

Before any output file is created the program checks to see if it already exists- if so the program will prompt the user to enter another name for the file.

10 Algorithm

subroutine omgsource

1) Read in image and display it using ds9. 2) Display the main window allowing the user to:

- Select spectra from the image.
- Run omdetect on the image to create a source-list file which is then
- processed by omgrism.
- Load a new image file.
- Load a new source-list file.
- View a selected spectrum.
- Delete a spectrum.
- View details about the spectra.
- Delete the list of spectra.

When the user quits the program a new source-list and spectrum file are created.

end subroutine omgsource

11 Known problems

Occasionally problems can arise with the interface between the program and ds9, resulting in **XPA** errors and the ds9 image to disappear. This is more likely to happen if the system is very busy. If it does happen, then you click the **Start ds9** button to restart the **ds9** image displayer.

12 Future developments

References