Running *xcvf*

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1. Introduction

xcvf is a visualization tool for ISO CVF data and a front end for the routine *conv_cvf2isap* (see *conv_cvf2isap* headers for more detail). While *conv_cvf2isap* works with both the CAM CVF AAR products, and CVF data structures which have been custom reduced with the Cam Interactive Analysis (CIA), *xcvf* is limited to work on the latter dataset only (the so called "PDS"). Note that facilities exist within CIA to import AAR products.

2. Obtaining and Installing *xcvf*

xcvf is currently only available by request from Author. XCVF relies heavily on CIA routines, IDL's astronomy library routines and additional routines written by the author. Thus, it must be used within CIA itself, and all prerequisite procedure must either be compiled in IDL prior to starting *xcvf*, or included in directories which are in IDL's search path. Please consult the README file for information on setting up *xcvf*for your session.

3. Synopsis:

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xcvf, pds, iz=, z1=, z2=, outfile=, /help

Arguments      Name      I/O Type            Description
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               pds        I  structure       CVF Primary data structure.
               iz         I  integer         Frame # to display on startup.
               z1         I  float           Lower bound on the range of
                                             intensities to display.
               z2         I  float           Upper bound on the range of
                                             intensities to display.
               outfile    I  string          Name of the default output
                                             file.
               help       I  byte            If set, instructs the procedure
                                             to print a short help screen.
```

4. Using *xcvf*

On startup the user is greeted with a summary of mouse commands and explanation of the plot symbols and lines. More detailed explanations and descriptions are available in this document.

4.1. The display

4.1.1. The top panel

The row of buttons and fields at the top of GUI perform the following operations.

QUIT Exit *xcvf*.

HELP Re-print the short summary listed on startup.

RESET ALL Reset all apertures, as well as the lower and upper bounds on the intensity ranges to display.

COLOR Bring up IDL's *xoolor* widget for interactive control of color tables and stretches.

Write ASCII File This will write the current spectrum as an ASCII file with column headers and a short summary of apertures and combination option used to produce the spectrum.

Export Current Spectrum Call *conv_cvf2isap* and export the current spectrum for use in *ISAP*. The current spectrum is the one shown by the thick solid line and the '+' symbols in the plotting window (see below).

Output File: The name given by *conv_cvf2isap* to its output file. You must follow any changes to this name with the return (enter) key for the new name to take effect.

4.1.2. The plot windows

The two display units below the top row show the current spectrum in the source aperture (solid line), the sky aperture (dashed line) and the difference between the two (thick solid line marked with '+' symbols). The left panel shows the full spectrum. The right panel shows an expanded (zoomed) view. The zoomed region is marked by two vertical dotted lines in the left panel.

The set of buttons immediatley beneath the plotting windows allow the user to select how the spectrum is computed. Choices are average, median or the sum of all spectra currently in the aperture. The axis selection allows one to plot the spectrum versus the wavelength or the frame number. The arrows (<, and >) allow the user to reposition the two vertical lines marking the boundaries of the expanded view.

4.1.3. The display region

The section of the GUI beneath the plotting region displays frames from the reduced CVF cube. The left-most part of this region displays astrometry information, and allows the user to select which frame to display as well the range of intensity to use. The panel at the bottom left of the display region is used to select the beam.

The left panel in the display region shows the current frame in the reduced data cube. The right panel highlights the pixels currently in the aperture. In both panels, clicking mouse buttons has the following effects:

mouse LEFT Selects the pixel and makes it part of the aperture. The right panel highlights the pixel. If the pixel is already selected, clicking on it has no effect.

mouse RIGHT Removes the pixel from the aperture.

mouse MIDDLE While held down, shows the spectrum of the current pixel in the plotting window, and the astrometry information in the bottom panel (see below). When released, the previous spectrum (if an aperture has been selected) is displayed again.

4.1.4. The bottom panel

The last part of the GUI displays the following information about the current pixel selected: (1) its row and column on the array, (2) its intensity in the currently displayed frame, (3) the equatorial co-ordinates corresponding to the pixel's spatial location in J2000 equinox. Additional information and buttons in the last row are: (1) the 'RESET APERTURE' button which resets the aperture and (2) the number of pixels in the current aperture.

4.2. Defining and editing apertures

First, you need to the select the beam (either sky or source). The apertures are defined by pressing the LEFT mouse button on the pixel which is to be included in the aperture. Either the frame display or the aperture display windows are "clickable". To remove a pixel from an aperture, position the cursor over the pixel and press the RIGHT mouse button.

4.3. Quick Look

This is useful when you are curious about how the spectrum form a particular pixel looks but don't necessarily want to include the pixel in the aperture. Position the cursor over the pixel of interest and press and hold the MIDDLE mouse button. The spectrum will remain visible while the button is held down. The astrometry information at the bottom panel is also updated.

5. Additional Notes

1. All messages (if any) from *xcvf* are displayed in your IDL session window. If you become confused, check to see if there were any messages from *xcvf*.
2. When using TOTAL (sum of all spectra in the aperture) to compute the current spectrum, the user should take care to use the same size aperture for both the SKY and the SOURCE beam for the sky subtraction to be meaningful. Currently, *xcvf* warn users if a discrepency exists and the user tries to export the current spectrum. However, the output file will be written after the warning message is displayed.

6. Whom to contact

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