ds9tomask

January 12, 2017

Abstract

Creates a image mask from a DS9 region

1 Instruments/Modes

Instrument	Mode
EPIC-MOS	Imaging
EPIC-pn	Imaging

2 Use

pipeline processing	yes
interactive analysis	yes

3 Description

This task creates an image mask hiding the area delimited by the input regions in the DS9 region file. The output image mask is the product of the individual image masks generated for every instrument specified as input. This way, the regions for sources in different instruments can be considered.

The task looks for three types of regions in the DS9 region file:

- regions with a group name "tag=man": these regions are "exclusion" regions and will cause that all mask pixels inside them are set to "0".
- regions with a group name "tag=sin": these regions are also "exclusion" regions for single sources (already flagged by the automatic system) and will cause that all mask pixels inside a circle with radius=10" centered at the same point are set to "0".
- regions with a group name "tag=src": these regions can be "inclusion" regions or "exclusion" regions, depending on the value of the input parameter `srcpixvalue`. These regions are designed for single bright point sources causing problems in their sorroundings but bright enough to be kept as "good" sources. As such, they are located inside an "exclusion" (polygon) region. If `srcpixvalue`="2" (default), all the mask pixels inside a circle with

radius=10" centered at the source position are set to "2" (the **dpssflag** will then flag the sources on these pixels with Flag12="T", a "causing" source). On the other hand, if `srcpixvalue`="0" will make all these pixels have a value of "0" (the pixels are "excluded" and the causing source not being considered).

In the final masks, all pixels inside the DS9 exclusion region(s) are set to "0" and the remaining pixels are set to "1" or "2".

Finally, this mask can be used as input to the **dpssflag** to flag the sources in the source list falling inside the areas specified by the DS9 input region file.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
eventsets	yes	dataset	evtlistm1.fits evtlistm2.fits evtlistpn.fits	

Event list filenames of the EPIC imaging observation

imagesets	yes	dataset	imagem1.fits imagem2.fits imagepn.fits	

EPIC Image sets for EPIC instrument

tmpmasks	yes	dataset	maskm1.fits maskm2.fits maskpn.fits	

Temporary output image masks for EPIC instruments

regionfile	yes	file	ds9.reg	

DS9 region file. Regions can be defined in X,Y (physical) or DETX,DETY (detector) coordinates.

srcpixvalue	yes	integer	2	0|2

Value for the mask pixels inside a circular (R=10") region centred at 'src' sources position: 0 to exclude pixels, 2 to include them again and flag sources there with Flag12=T using **dpssflag**

maskset	yes	dataset	mask.fits	

Output mask for regions

tmpevt	yes	file	tmpevt.fits	

Temporary file to keep fake event list

5 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 docu-

mented here. Refer to the index of all errors and warnings available in the HTML version of the SAS documentation.

ErrFcolpar *(error)*
Cannot establish column number for X/Y in a given event list

ErrFkeypar *(error)*
Cannot run `fkeypar` to read an attribute from an event list

ErrFparkey *(error)*
Cannot run `fparkey` to add an attribute to the fake event list

ErrEvselect *(error)*
Cannot run **evselect** to filter input evt list with region filter

ErrEmosaic *(error)*
Cannot run **emosaic** to add instrument masks

ErrFcarith *(error)*
Cannot run `fcarith` to divide by the number of masks

ErrFarith *(error)*
Cannot run `farith` to add intermediate masks

6 Input Files

1. List of EPIC instrument band 8 images
2. List of EPIC instrument event lists
3. List of EPIC instrument band 8 images
4. Ds9 region file

7 Output Files

1. Image mask hiding pixels inside input DS9 region file

8 Algorithm

9 Comments

•

References