cheese-bands

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Abstract

This task creates "cheese" masks after running source detection on full-field images.

1 Instruments/Modes

Instrument	Mode
EPIC	Imaging

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

cheese-bands runs source detection on full-field images in two bands and creates cheese masks from the output. *cheese-bands* produces the event, exposure, and mask images that are required in a user-selected energy band. Running *cheese-bands* is not required if only the spectral files with all counts including point sources are required, or if excluding point sources is not of interest.

Warning and requirements: *cheese-bands* is part of the *esas* package, integrated into SAS, but it is limited to work within *esas* data reduction scheme. This is specially true wrt the structure and names of the input files. In particular, *cheese-bands* assumes that another task from the package, *mos-filter*, or *pn-filter*, have been successfully run for the exposures to be used. NOTE: *cheese-bands* can operate on only one exposure per instrument.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints

prefixm	yes	string		

Detector and exposure identifiers (eg. "1S001 2S002") for the MOS exposures (in the example MOS1 S001 and MOS2 S002) to be processed.

prefixp	yes	string		

Detector and exposure identifiers (eg. "S003") for the PN exposures (in the example PN S003) to be processed.

verb	yes	int	4	

SAS verbosity level.

scale	yes	real	0.5	

Energy fraction, which sets the exclusion radius of point sources.

ratet	no	real	1.0	

Total flux threshold for exclusion of pt srcs

rates	no	real	1.0	

Soft flux threshold for exclusion of pt srcs

rateh	no	real	1.0	

Hard flux threshold for exclusion of pt srcs

dist	no	real		

Minimum separation in arc seconds between masked sources

elowlist	yes	int	400 2000	

Lower energy limit list for the energy bands in eV

ehighlist	yes	int	1300 7200	

Higher energy limit list for the energy bands in eV

clobber	no	boolean	yes	T/F

Clobber existing files?

5 Input Files

The filtered event files, products from running *mos-filter* or *pn-filter*, following the particular nomenclature used in the esas package, eg.: `mos1S001-clean.fits` or `pnS003-clean.fits`.

6 Output Files

`atthk.fits` – SAS attitude file.
`boxlist.fits` – The output from the first pass of *eboxdetect*.
`boxlist-f.fits` – The output from the second pass of *eboxdetect*.
`emllist.fits` – The output from *emldetect*.

Where MOS data are processed:

- `mos`*prefix*`-bkg_region-det.fits` – The background region file made from the combined band filtered source list. Note that this list excludes the sources and is in detector coordinates.
- `mos`*prefix*`-bkg_region-det-s.fits` – The background region file made from the soft band filtered source list. Note that this list excludes the sources and is in detector coordinates.
- `mos`*prefix*`-bkg_region-det-h.fits` – The background region file made from the hard band filtered source list. Note that this list excludes the sources and is in detector coordinates.
- `mos`*prefix*`-bkg_region-sky.fits` – The background region file made from the combined band filtered source list. Note that this list excludes the sources and is in sky coordinates.
- `mos`*prefix*`-bkg_region-sky-s.fits` – The background region file made from the soft band filtered source list. Note that this list excludes the sources and is in sky coordinates.
- `mos`*prefix*`-bkg_region-sky-h.fits` – The background region file made from the hard band filtered source list. Note that this list excludes the sources and is in sky coordinates.
- `mos`*prefix*`-cheese.fits` – The cheese mask image for the *prefix* exposure for the combined band.
- `mos`*prefix*`-cheese.fits-s` – The cheese mask image for the *prefix* exposure for the soft band.
- `mos`*prefix*`-cheese.fits-h` – The cheese mask image for the *prefix* exposure for the hard band.

Where PN data are processed:

- `pn`*prefix*`-bkg_region-det.fits` – The background region file made from the combined band filtered source list. Note that this list excludes the sources and is in detector coordinates.
- `pn`*prefix*`-bkg_region-det-s.fits` – The background region file made from the soft band filtered source list. Note that this list excludes the sources and is in detector coordinates.
- `pn`*prefix*`-bkg_region-det-h.fits` – The background region file made from the hard band filtered source list. Note that this list excludes the sources and is in detector coordinates.
- `pn`*prefix*`-bkg_region-sky.fits` – The background region file made from the combined band filtered source list. Note that this list excludes the sources and is in sky coordinates.
- `pn`*prefix*`-bkg_region-sky-s.fits` – The background region file made from the soft band filtered source list. Note that this list excludes the sources and is in sky coordinates.
- `pn`*prefix*`-bkg_region-sky-h.fits` – The background region file made from the hard band filtered source list. Note that this list excludes the sources and is in sky coordinates.
- `pn`*prefix*`-cheese.fits` – The cheese mask image for the *prefix* exposure for the combined band.
- `pn`*prefix*`-cheese-s.fits` – The cheese mask image for the *prefix* exposure for the soft band.
- `pn`*prefix*`-cheese-h.fits` – The cheese mask image for the *prefix* exposure for the hard band.

7 Algorithm

8 Comments

References