

# cheese-bands

February 23, 2011

## 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

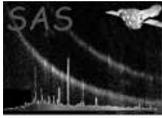
`cheese-bands` runs source detection on full-field images in two bands and creates cheese masks from the output. `cheese-bands` produces the event, exposure, and mask images that are required in a user-selected energy band. Running `cheese-bands` is not required if only the spectral files with all counts 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
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<b>prefixm</b>	yes	string		
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Detector and exposure identifiers (eg. "1S001 2S002") for the MOS exposures (in the example MOS1 S001 and MOS2 S002) to be processed.

<b>prefixp</b>	yes	string		
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Detector and exposure identifiers (eg. "S003") for the PN exposures (in the example PN S003) to be processed.

<b>verb</b>	yes	int	4	
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SAS verbosity level.

<b>scale</b>	yes	real	0.5	
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Energy fraction, which sets the exclusion radius of point sources.

<b>rate</b>	yes	real	1.0	
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Flux threshold (in units of  $1.0E - 14cgs$ ) for the exclusion of point sources.

<b>dist</b>	yes	real		
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Minimum separation in arc seconds between masked sources.

<b>clobber</b>	yes	int	1	0—1
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1 allows the program to overwrite old files, 0 does not.

<b>elow</b>	yes	int	400 2000	
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The low energy for the band in eV

<b>ehigh</b>	yes	int	1250 7200	
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The high energy for the band in eV

## 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.

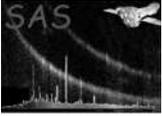
`boxlist.fits` – The output from the first pass of `eboxdetect`.

`boxlist-f.fits` – The output from the second pass of `eboxdetect`.

`emllist.fits` – The output from `emldetect`.

Where MOS data are processed:

- `mosprefix-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.
- `mosprefix-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.



- `mosprefix-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.
- `mosprefix-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.
- `mosprefix-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.
- `mosprefix-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.
- `mosprefix-cheese.fits` – The cheese mask image for the *prefix* exposure for the combined band.
- `mosprefix-cheese.fits-s` – The cheese mask image for the *prefix* exposure for the soft band.
- `mosprefix-cheese.fits-h` – The cheese mask image for the *prefix* exposure for the hard band.

Where PN data are processed:

- `pnprefix-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.
- `pnprefix-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.
- `pnprefix-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.
- `pnprefix-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.
- `pnprefix-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.
- `pnprefix-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.
- `pnprefix-cheese.fits` – The cheese mask image for the *prefix* exposure for the combined band.
- `pnprefix-cheese-s.fits` – The cheese mask image for the *prefix* exposure for the soft band.
- `pnprefix-cheese-h.fits` – The cheese mask image for the *prefix* exposure for the hard band.

## 7 Algorithm

## 8 Comments

## References