pn_back

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Abstract

This task creates model particle background spectra and images (if selected with a non-zero energy range) for the selected region from the intermediate files produced from *pn-spectra*. The resultant image is in detector coordinates. The resultant image is in detector coordinates which is transformed into sky coordinates by the perl script *rot-im-det-sky*. *pn_back* creates a QDP plot file which shows the source and model background spectra for the observation. Any enhancement of the data over the particle background model at higher energies probably indicates residual soft proton contamination, unless there are really hard and bright sources in the field.

1 Instruments/Modes

Instrument	Mode
EPIC	Imaging

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

This task creates model particle background spectra and images (if selected with a non-zero energy range) for the selected region from the intermediate files produced from `pn-spectra`. The resultant image is in detector coordinates. The resultant image is in detector coordinates which is transformed into sky coordinates by the perl script *rot-im-det-sky*. *pn_back* creates a QDP plot file which shows the source and model background spectra for the observation. Any enhancement of the data over the particle background model at higher energies probably indicates residual soft proton contamination, unless there are really hard and bright sources in the field.

Warning and requirements: *pn_back* is part of the *esas* package integrated into SAS, but it is limited to work within the *esas* data reduction scheme. This is specially true wrt the structure and names of the input files. In particular, *pn_back* assumes that another task from the package, *pn-spectra* has been successfully run for the exposures to be used.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
prefix	yes	string	S003	

Detector and exposure identifier,(e.g., S003 exposure).

caldb	yes	string		

Directory containing all the ESAS specific calibration files

diag	yes	int	1	

Controls the amount of diagnostic output (0 low, 1 medium, 2 high)

elow	yes	int	400	

Energy low limit (in eV) for the band.

ehigh	yes	int	1250	

Energy high limit (in eV) for the band.

quad[1-4]	yes	int	1	

Selects which PN quadrants should be included.

clobber	no	boolean	yes	T/F

Clobber existing files?

5 Input Files

Event spectra and images from running `mos-spectra`.

6 Output Files

For the different values of `comp`, the output files are:

- `pn`*prefix*`-aug.qdp` – A QDP plot file showing the selected region of hardness/count rate distributions for the various ccds.
- `pn`*prefix*`-back-im-det-`*elow*`-`*ehigh*`.fits` – The model particle background image for the *prefix* exposure, selected energy band (`elow` and `ehigh`), and the selected region. The image is in detector coordinates.
- `pn`*prefix*`-back.pi` – The model particle background spectrum for the *prefix* exposure and the selected region.
- `pn`*prefix*`-spec.qdp` – A QDP plot file showing the observed spectrum and the model background spectrum.
- Additional output when `diag=2`

- pn*prefix*-back.qdp – A QDP plot file showing the normalized model background spectrum.
- pn*prefix*-back-accum.qdp – A QDP plot file showing the accumulating background spectrum. Chip 1 at the bottom increasing upwards.
- pn*prefix*-bridge-fit.qdp – A QDP plot file showing the the fit for the Al bridge.

7 Algorithm

8 Comments

References