



poscorr3xmm

January 27, 2025

Abstract

A procedure to correct an EPIC source list for offsets caused by the centring of the off-axis ELLBETA PSF.

1 Instruments/Modes

Instrument	Mode
EPIC	IMAGING

2 Use

pipeline processing	yes
interactive analysis	yes

3 Description

poscorr3xmm applies a correction to the centre of ELLBETA-PSF-derived source positions. The correction is of the order of 0.5 arcseconds and is calibrated as a cubic polynomial of the off-axis angle, Θ , such that:

$$\Delta\Theta = c0 + c1 * \Theta + c2 * \Theta^2 + c3 * \Theta^3$$

where $\Delta\Theta$ is in arcseconds and Θ is in arcminutes.

The offset, $\Delta\Theta$, is converted into corresponding offsets in RA and Declination.

The task runs on a source list, which must contain the columns RA and DEC, in an extension called SRCLIST, and the attitude keywords, RA_PNT, DEC_PNT and PA_PNT in the PRIMARY extension. The columns RA, DEC are updated directly with the modified source position.

There is an implicit assumption that source positions have been generated using the ELLBETA PSF. This can not be checked by the task.



3.1 Examples

3.1.1 A source list corrected

```
poscorr3xmm srclist=mysrclist.ds
```

This overwrites the RA and DEC columns in the source list with corrected values.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
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srclist	yes	dataset		
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The name of a source list generated by the SAS.

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

AlreadyCorrected (*error*)

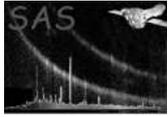
The source list has already been corrected. This can be seen from a keyword ELLBCORR in the file header.

6 Input Files

- an EPIC source list produced using the ELLBETA PSF and the three EPIC cameras.

7 Output Files

- A corrected source list



8 Algorithm

9 Comments

References