



bin_image_merge

May 4, 2016

Abstract

This task produces binned count rate and count-rate uncertainty images for merged observations using the output of `merge.comp_xmm`.

1 Instruments/Modes

Instrument	Mode
EPIC	Imaging

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

bin_image_merge produces binned count rate and count-rate uncertainty images for merged observations using the output of the task `merge.comp_xmm`. For each unmasked and binned pixel, the program will determine the average count rate and the count rate uncertainty. The assumption is that the uncertainty is dominated by the counting statistics and the the systematics of the background modeling.

Warning and requirements: *bin_image_merge* is part of the package *esas*, integrated into SAS, but (still) limited to work within the *esas* data reduction scheme. This is specially true wrt input files structure and names. In particular, *bin_image_merge* assumes that individual observations have been processed and subsequently mosaicked by the task `merge.comp_xmm`.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
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thresholdmasking	yes	real	0.02	
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The scale factor for excluding regions from the smoothing based on a mask image. In the default mode the average exposure is calculated and then any pixel with exposure less than **fraction*average** value is excluded.

elowlist	yes	int	350 800	
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Low energy for successive bands in eV

ehighlist	yes	int	800 1300	
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High energy for successive bands in eV

binning	yes	int	1	
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Binning control with 1 for no binning, 2,4,8,16,32 for binning by 2, 4,8,16,32.

withpartcontrol	yes	bool	yes	
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Particle background control, "yes" to subtract the model particle background image.

withsoftcontrol	yes	bool	yes	
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Soft proton background control, "yes" to subtract the soft proton background image.

withswcxcontrol	yes	bool	yes	
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Solar wind charge exchange background control, "yes" to subtract the swcx background image.

withmaskcontrol	yes	bool	yes	
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For masking with an additional image.

mask	yes	dataset	mask.fit	
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Mask image file name.

clobber	no	boolean	yes	T/F
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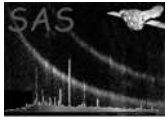
Clobber existing files?

5 Input Files

The count, exposure, QPB, and SP image products from running `merge_comp_xmm`, following the particular nomenclature used in the `esas` package, eg.: `obj-im-350-800.fits` for a mosaicked image with the first band in that spectral range.

6 Output Files

- **rate-elow-ehigh.fits** – The binned count rate image for the selected energy band (*elow* and *ehigh*) of the of the mosaicked field.
- **sig-elow-ehigh.fits** – The binned count rate uncertainty image for the selected energy band (*elow* and *ehigh*) of the mosaicked field.



7 Algorithm

8 Comments

References