emeventsproj

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Abstract

Project EPIC-MOS events file (one node of one CCD) onto map.

1 Instruments/Modes

Instrument	Mode
EPIC MOS	IMAGING

2 Use

pipeline processing	yes
interactive analysis	yes

3 Description

emeventsproj projects a list of events onto an image, projecting multiple events onto several pixels (using the geometry contained in `PATTERN`). The output image is always 600x600 (even in Window mode) and covers the CCD only (not the under and overscans). The main use of **emeventsproj** is to prepare an image for **embadpixfind**.

emeventsproj works both on raw events files straight from the ODF, on merged PPS event lists, and on single CCD events file processed by **emevents**. The latter solution is the only one allowing full functionality. If the input file is a merged PPS event list, the `mergedeventlist` and `ccdnr` parameters must be set.

When `rejectbadevents`=Y, events flagged for rejection are not included in the projection. The flags `OUT_OF_FOV` and `REJECTED_BY_GATTI` are ignored, because it is useful to find bad pixels outside the field of view, and masking the truncated events would prevent from detecting single bright pixels with charge larger than the upper threshold. The `rejectbadevents` option is not supported if the input events file is straight from the ODF, because there is no `FLAG` there. If another selection on events is required, then it should be done via **evselect** prior to calling **emeventsproj**.

When `projectenergy`=Y, energy is projected instead of counts. For each event, `ENERGYE1` is added to the map at the events position (instead of 1), and `ENERGYE2` is shared among all secondary pixels of the

events (exact reconstruction of the original charge pattern is impossible for events larger than 2 pixels). `ENERGYE3` and `ENERGYE4` are not projected.
If a single frame were selected in the events file, the output image would look like the original CCD map read-out on-board after thresholding, minus all charge patterns which did not pass the EDU (and flagged events if `rejectbadevents`=Y). The same algorithm is used in **emevents** when `analysepatterns`=Y. The `projectenergy` option is not supported if the input events file is a merged PPS event list, because there is no `ENERGYE1` and `ENERGYE2` there.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
eventset	yes	dataset	' '	none
Input events file from ODF or previous emevents run				
evimageset	no	dataset	events.map	none
Output image file				
rejectbadevents	no	boolean	no	yes/no
Reject events flagged as bad when constructing image				
projectenergy	no	boolean	no	yes/no
Project energy rather than counts (not useful for embadpixfind)				
mergedeventlist	no	boolean	no	yes/no
Is the input file a merged PPS event list				
ccdnr	no	integer	1	1-17
CCD number (CCDNR value). If this parameter is set, then `mergedeventlist`=Y is automatic				

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.

getparamvalues03 *(error)*
`projectenergy`=Y and merged PPS events file

getparamvalues10 *(warning)*
`rejectbadevents`=Y and events file from ODF. Ignore option
corrective action: run **emevents** and **emenergy** if you wish to reject bad events

6 Input Files

1. event file (from ODF or **emevents**).

7 Output Files

1. Projected image file (for **embadpixfind**) as Integer*4 array in PRIMARY.

8 Algorithm

```
Read the parameters

Read events list
if rejectbadevents then
   Select events not flagged for rejection
   (but keep OUT_OF_FOV and REJECTED_BY_GATTI)
endif
if mergedeventlist  Select CCDNR == ccdnr

Read event patterns

Loop over events
   if projectenergy then
      Add ENERGYE1 to central pixel
      Share ENERGYE2 among other pixels of current event
   else
      Add 1 to all image pixels sharing into current event
   endif
endloop

Write projected map
```

9 Comments

None.

References