omcosflag

November 4, 2014

Abstract

Applies the OM tracking history to a bad pixel map

1 Instruments/Modes

Instrument	Mode
OM	FAST
OM	IMAGING

2 Use

pipeline processing	yes
interactive analysis	yes

3 Description

The shift and add process means that the counts observed in each pixel of an OSW image may have been accumulated in several different detector pixels. This task takes the OM tracking history and applies it to the map of bad pixels defined in the CCF. The result is an increase in the area of the OSW image contaminated by bad pixels.

The task produces a bad-pixel 2-d map which is stored in the **QUALITY** extension of the FITS input\output image file. From **SAS 9.0** onwards, this map is a 16-bit image, compared to the earlier 8-bit image. This change has occurred because **SAS 9.0** introduced the functionality of source-detection on mosaiced sky-images. In order to allow the quality-flagging of sources detected on such images, the **QUALITY** image allows flagging information obtained from source-detection on exposure images to be stored and then retrieved to set source **QUALITY** flags. This process is explained in the **SAS** document **omqualitymap**- a new **OM** program.

The QUALITY image will be used by other **OM** programs, including **omdetect**, **ommodmap** and **ommosaic**. The binning of the bad pixel map, and the offset of the science window, are read from the headers of the OSW image, which is an input of the task.

4 Parameters

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

Parameter	Mand	Type	Default	Constraints
samplefactor	no	integer	1	1 - 10

Spatial oversampling factor (oversampling of bad pixel map)

timefactor	no	integer	1	1 - 10

Temporal sampling factor (subdivision of tracking frame spacing)

set	yes	string	none	

OM OSW Image filename

thxset	yes	string	none	

OM Tracking History Data Auxiliary filename

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.

badFileMode *(fatal)*
    Invalid datamode <dataMode> in set <set>

allocError *(fatal)*
    Can't allocate memory for internal array <name>.

deAllocError *(warning)*
    Failed to release memory for <name>
    corrective action:

6 Input Files

1. OM OSW Image file

2. OM Tracking History Data Auxilliary file

7 Output Files

1. Same OM OSW Image file as input image (QUALITY extension added)

8   Algorithm

```
subroutine omcosflag

   read in task parameters

   open OM OSW Image file

   determine file type from datamode in primary header

   read in science window keywords from the primary header

   extract window data from MODES binary table extension

   open OM Tracking History Data Auxiliary file

   determine file type from datamode in primary header

   extract tracking history data from OMTHX1 binary table extension

   check for poor tracking solution and warn

   extract bad pixel map from CAL

   calculate maximum drift in x and y

   extract localised bad pixel map allowing for maximum drifts

   over sample localised bad pixel map

   loop over tracking frames to construct oversampled quality array

      loop over discretised tracking steps

         logical OR oversampled quality array with shifted oversampled bad pixel map

      end loop

   end loop

   add QUALITY extension to OM OSW Image file

   resize and bin quality array with appropriate binning factors

   write 16-bit quality array to QUALITY extension of OM OSW Image file

end subroutine omcosflag
```

9   Comments

- none
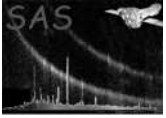
10   Future developments

References