emlfill

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Abstract

This task replacs ID_BAND=0 FLUX=NULL entries in the emllist.fits file for source exclusion within the *esas* analysis schema. It was originally the *esas* subtask *fill_list* and retains all of that task's functionality.
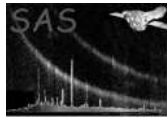
1 Instruments/Modes

Instrument	Mode
EPIC	Imaging

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

`emlfill` fills in missing entries in the emllist.fits file. Whenever the summary row (ID_BAND=0) is NULL, it prevents those sources from being excluded in the ESAS pipeline. This sets the value of the summary row to the average of the remaining instruments' fluxes for source exclusion purposes. For example:

ML_ID_SRC	ID_BAND	FLUX cgs	FLUX_ERR cgs
1	1	0 2.5142931E-14	1.4215882E-15
2	1	1 2.7656696E-14	2.0757946E-15
3	1	1 2.0042268E-14	2.5936310E-15
4	1	1 2.6675544E-14	2.9605379E-15
5	2	0 1.9649774E-14	1.2162156E-15
6	2	1 2.5054459E-14	1.9247998E-15
7	2	1 1.5255677E-14	2.0912418E-15
8	2	1 1.7091336E-14	2.3737423E-15

```
      9            3           0 INDEF            0.0000000E+00
     10            3           1 INDEF            INDEF
     11            3           1  1.0045201E-14   1.1888119E-15
     12            3           1  5.8909498E-15   9.5059892E-16
```

emlfill sets row 9 FLUX to be the average of rows 11 and 12, and the row 9 FLUX_ERR to be the sqrt of the sum of the squares of values in it's rows 11 and 12.

Warning and requirements: `emlfill` was part of the package *esas* until SAS-20 but is now a standalone task. It works within the *esas* pipeline data reduction scheme.

4   Parameters

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

Parameter	Mand	Type	Default	Constraints
emlin	no	string	emllist.fits	

Input emllist file name.

| **emlout** | no | string | emllistout.fits | |

Output emllist file name.

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.

noClobber *(error)*
    Outfile exists but noclobber set.

noSRCLIST *(error)*
    Infile missing SRCLIST extension

noIDBAND *(error)*
    Infile missing ID_BAND column

noFLUX *(error)*
    Infile missing FLUX column

noFLUX_ERR *(error)*
    Infile missing FLUX_ERR column

6   Input Files

- `emllist.fits` – Source list created by emldetect.

7   Output Files

- `emllistout.fits` – Output source list with updated fluxes.

8   Algorithm

```
Check and open input emllist.fits file from emldetect.
Clone input file.
Loop:
 if (ID_BAND .eq. 0) then
  read next 3 rows
  if (.not.flux .eq. NULL)
   sum flux
   sum flux_err
  endif
  flux(i) = sumflux/n
 endif
 EndLoop
```

9   Comments

The original code for this task appeared in the *esas* task 2009-2021 as subtask *fill_list*. It was removed from the task *esas*, and modularized as a single task for SAS-21. The *esas* task was removed in SAS-21.

References