echeckregion

April 16, 2023

Abstract

A task to check whether a region falls within an observing window.

1 Instruments/Modes

Instrument	Mode
EPIC	IMAGING, TIMING

2 Use

pipeline processing	yes
interactive analysis	yes

3 Description

echeckregion calculates whether the centre of an input region falls within an an EPIC observing window. If the region centre falls on a chip, but outside the observing window, for small and large-window observations, the output status is set false. Otherwise status is set true. Note that regions falling outside the field-of-view or on a chip gap result in an output status of true.

4 Example

To find whether a circular extraction region falls within the observing window:

```
echeckregion srcexp='(X,Y) in circle(40847,28797,560)'
table=EPN_ImagingEvts.ds
```

5 Parameters

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

Parameter	Mand	Type	Default	Constraints
srcexp	yes	string		

Spatial Expression for checking

table	yes	table specifier		event list table specifier

A table specifier which must point to an event list table in a data set. It must be in either of the forms `setname` or `setname:tableid` where `setname` must be the name of an existing data set and `tableid` the name of a table in the specified data set. If the first form, `setname`, is used, the event data are sought in the *first* block of the named data set.

status	no	boolean		

Output parameter. This is set to false if the centre of the input region falls on a CCD but outside the observing window. Otherwise it is set true.

6 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.

InvalidExpression *(error)*
The input expression for this spatial region was not valid.

RegionInvalid *(error)*
The input region either doesn't contain region information or it is unbounded in detector coordinates.

7 Input Files

- an EPIC calibrated events list from the pipeline, the e*proc or e*chain tasks.

8 Output Files

9 Algorithm

```
status=true

calculate region_centre in detector coords
find CCD number for this detector position

if (region_centre outside observing window for this CCD)
{
  status = false
}

return status
```

10 Comments

References