multiespecget

June 2, 2019

Abstract

Creation of source and background spectra and associated ARF/RMF for multiple event lists

1 Instruments/Modes

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIC MOS</td>
<td>IMAGING</td>
</tr>
<tr>
<td>EPIC PN</td>
<td>IMAGING</td>
</tr>
</tbody>
</table>

2 Use

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>pipeline processing</td>
<td>no</td>
</tr>
<tr>
<td>interactive analysis</td>
<td>yes</td>
</tr>
</tbody>
</table>

3 Description

multiespecget is a especget wrapper. This task has as input a set of EPIC event lists and a source and background expression in (RA,DEC) and it runs especget for each of the input files, producing a set of spectra, responses and effective area files. In the current implementation the source and background regions should both be simple circles.

The withmultiEPICspec allows users to run epicspeccombine task to combine all the output files, spectra, responses and effective area files, into a three individual files: source and background spectra and response files.

The procedure to combine the spectra files and the effective area and response matrices files it is explained in the SAS thread: “Combining the spectra of the 3 EPIC cameras”
http://xmm.esac.esa.int/sas/current/documentation/threads/epic_merging.shtml
4 Usage and Examples

4.1 Example 1: Producing EPIC-pn and EPIC-MOS spectra

multiespecget tables='m1_evts.ds m2_evts.ds epn_evts.ds' srcexp='(RA,DEC) in circle(187.879,64.236,0.0166)' backexp='(RA,DEC) in circle(187.843,64.201,0.02)' calindexsets='ccf.cif ccf.cif ccf.cif'

This call produces spectra from MOS-1, MOS-2 and EPIC-pn event files using a circular extraction region of radius 0.0166 degrees. It also produces background spectra and the ARF and RMF matrices for each camera.

4.2 Example 2: Combining EPIC data into one spectrum

multiespecget tables='m1_evts.ds m2_evts.ds epn_evts.ds' srcexp='(RA,DEC) in circle(187.879,64.236,0.0166)' backexp='(RA,DEC) in circle(187.843,64.201,0.02)' calindexsets='ccf.cif ccf.cif ccf.cif' withmultiEPICspec=yes

In addition to the files for the individual instruments, this command produces a single source spectrum, background spectrum, and response matrix representing the combined data from the three cameras. The spectra and matrices are weighted by their exposure time.

5 Parameters

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mand</th>
<th>Type</th>
<th>Default</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>tables</td>
<td>yes</td>
<td>tables specifier</td>
<td></td>
<td>event lists table specifier</td>
</tr>
<tr>
<td>calindexsets</td>
<td>no</td>
<td>e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>srcexp</td>
<td>yes</td>
<td>string</td>
<td></td>
<td></td>
</tr>
<tr>
<td>backexp</td>
<td>yes</td>
<td>string</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
expression | no | string | valid filter expression according to selectlib syntax rules
---|---|---|---
This is the expression controlling the filtering process.

onlysingleevents | no | boolean | no
---|---|---|---
Whether to create spectra only for single events.

withmultiEPICspec | no | boolean | no
---|---|---|---
Whether to combine all the output spectra (src and bkg) in one file and combine responses and effective area files into one file.

### 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.

**pairing** *(error)*

The number of events files does not match the number of calibration index files; there must be a one-to-one pairing.

**SAS_CCF_Failed** *(error)*

Error trying to change the SAS_CCF environment variable

**ProductExtractionFailure** *(error)*

Spectral product accumulation failure (error running especget).

### 7 Input Files

1.

### 8 Output Files

1. Source spectrum with name RRR_0000000000_1111_111111_src.ds where RRR is the revolution number, 0000000000 is the observation number, 1111 is the instrument name (e.g. EMOS1) and 111111 is the exposure number (e.g. S014).

2. Background spectrum with name RRR_0000000000_1111_111111_bgd.ds

3. ARF with name RR_0000000000_111111_src.arf
4. RMF with name RR_OOOOOOOOOOIIIIEEEE_src.rmf

5. Optionally produce combined spectra with the names, epic_spc_src.ds and epic_spc_bkg.ds and a combined ARF and RMF called epic_rsp.ds

9 Algorithm

10 Comments

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References