



 AHELP for CIAO 3.4

regions

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Synopsis

regions.sl – Display the FEF regions covered by a source

Description

The RMF used to analyze a source depends on what part of the chip the source falls on. As described in the mkrmf help page ("ahelp mkrmf"), the RMF is calculated using information stored in a FEF file. Since the information in the FEFs changes over the chip – the exact regions over which a particular FEF is valid depend on the chip and the focal-plane temperature – it is sometimes useful to see how the source photons are distributed with respect to this grid (this is particularly true for extended sources).

The regions.sl script provides a S-Lang function (display_fef_regions()) which requires an event file containing the source photons; it will accept the DM virtual-file syntax for filtering on-the-fly. The input file should only contain photons falling on a single ACIS chip, so it will be necessary to include a filter such as "ccd_id=<number>" if the source region covers more than one chip. It should also contain a TIME column, as the first entry is used to find out the focal plane temperature at the time of the observation.

The script is run from within ChIPS ("ahelp chips"), as shown in the example, or Sherpa ("ahelp sherpa"). To load the script:

```
chips> () = evalfile( "regions.sl" )
```

This step is only necessary once per ChIPS or Sherpa session.

This script is used in the [Displaying the FEF Regions Covered by a Source thread](#).

Example

```
chips> display_fef_regions(
  "acisf00459N002_evt2.fits[sky=region(3c273.reg)]" )
```

The script creates a plot showing the distribution of source photons for the given region of ObsID 459. The results are also printed to the screen:

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```
# Reading points from acisf00459N002_evt2.fits[sky=region(3c273.reg)]
# Chip is ACIS-7
# Focal Plane temperature = -110 C
# Number of photons in region = 736
#      Region          Num    Fraction
#  chipx   chipy      photons
0257:0288 0353:0384      344  0.4674
0289:0320 0353:0384      187  0.2541
0257:0288 0385:0416      151  0.2052
0289:0320 0385:0416       52  0.0707
0257:0288 0321:0352        1  0.0014
0289:0320 0321:0352        1  0.0014
```

The output shows that almost half of the source photons fell in the region CHIPX=257:288, CHIPY=353:384.

NOTES

This script is not an official part of the CIAO release but is made available as "contributed" software via the [CIAO scripts page](#). Please see the [installation instructions page](#) for help on installing the package.

Bugs

See the [bugs page for this script](#) on the CIAO website for an up-to-date listing of known bugs.

See Also

calibration

[ardlib](#)

tools

[acis bkgnd lookup](#), [acis fef lookup](#), [acis set ardlb](#), [acisspec](#), [add grating orders](#),
[add grating spectra](#), [asphist](#), [dither region](#), [dmarfadd](#), [dmfilth](#), [dmregrid](#), [fullgarf](#), [mkacisrmf](#), [mkarf](#),
[mkexpmap](#), [mkgarf](#), [mkgrmf](#), [mkinstmap](#), [mkpsf](#), [mkrmf](#), [mkwarf](#), [psextract](#), [psf project ray](#), [rmfimg](#),
[specextract](#)

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URL:
<http://cxc.harvard.edu/ciao3.4/regions.html>
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