**Chandra X-ray Center**

*AHELP for CIAO 3.4*          # acis_bkgrnd_lookup          Context: tools

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# Synopsis

Find the matching ACIS "blank–sky" dataset for an observation

# Syntax

```
With a parameter file:
acis_bkgrnd_lookup infile [outfile] [verbose]

Without a parameter file:
acis_bkgrnd_lookup chipids aimpoint infile [verbose]
```

# Description

The acis_bkgrnd_lookup script is used to find the ACIS background (i.e. "blank sky") dataset from the CALDB that matches your observation. It is suggested that – before using this tool – you read over the ACIS Background Memos page, Maxim Markevitch's ACIS background discussion, and the ACIS Background Subtraction thread since there are a number of these datasets available – some with unique characteristics that may not be available from the CALDB.

## Using only an event file

When supplied with an event file, the script will determine the aimpoint and set of ACIS CCDs covered by the file or selected region. For this to happen, the parameter file (acis_bkgrnd_lookup.par) should be made available as discussed on the Script Installation page.

An advantage to using the parameter file is that the results of the CALDB search are written to the outfile parameter – and so accessible by calling

```
pget acis_bkgrnd_lookup outfile
```

– as well as being written to the screen.

## Manually specifying the aimpoint and CCDs

It is still possible to use the old syntax where you manually specify the range of CCD numbers, the aimpoint, and supply an event file. For this to work you must give the three parameters values on the command line (or 4, since you can also include the verbose level) without specifying the parameter name: so

```
unix% acis_bkgrnd_lookup 0123 i evt2.fits
```

will work, but

```
unix% acis_bkgrnd_lookup 0123 i infile=evt2.fits
```

will not.

In this mode the parameter file is ignored – so the outfile parameter will not be set to the matched files; the only output of this information is to the screen (i.e. stdout).

This mode has been marked as deprecated and will be removed at a future date.

## Output

Due to the way the ACIS background files are created and indexed in the CALDB there may not be one file per CCD: for example recent ACIS–I observations tend to be covered by one events file. If more than one file is found then they are listed on the screen one to a line and written to the parameter file – if the new scheme is used – as a comma–separated list (i.e. a stack).

Due to the large number of background files there may be more than one that matches your data. In the case of such a match this script returns the first file in the CALDB that matches the search query used. Prior to CIAO 3.0 this fact was hidden to users since such output would have interferred with the screen output of the selected files. With the CIAO 3.0 release you will see a warning message from the CALDB printed to the screen with such a match. This will look something like:

```
# caldb (CIAO3.0): WARNING:  2 CALDB files found. Using the first
```

In such a case it is worth checking the ACIS Background documents discussed above and in the thread to ensure you are using the most appropriate dataset for your observation.

# Example 1

```
acis_bkgrnd_lookup evt2.fits
```

Here we use the new (to CIAO 3.0) syntax of just specifying the event file. The script finds out the aimpoint from information in the header of the file and scans the ccd_id column of the event file to select what chips to look for.

For this to happen the parameter file (acis_bkgrnd_lookup.par) should be made available as discussed on the Script Installation page.

The matching file(s) are printed to the screen and stored in the outfile parameter of the script. This can be retrieved by saying:

```
pget acis_bkgrnd_lookup outfile
```

# Example 2

```
acis_bkgrnd_lookup "evt2.fits[sky=region(source.reg)]"
```

The input file can include any Data Model expression (see "ahelp dmsyntax") as long as the resulting file is still a table with a ccd_id column. Here we use a spatial filter to filter the events file: the resulting background file(s) will be chosen to match only the CCDs that cover the region source.reg (due to the way the background files are stored then it may be the case that the selected file(s) still contain CCDs that aren't covered by the spatial filter).

# Example 3

```
acis_bkgrnd_lookup 0123 i evt2.fits
```

Here we show an example of the old syntax – which is now deprecated, and so will be removed at a future date – that does not use a parameter file. The set of CCD values to search for and the ACIS aimpoint are explicitly given; the event file is only used to find out the date of the observation in this mode.

Since this mode does not use a parameter file the names of the ACIS background files are only printed to the screen. They are not stored in the outfile parameter.

# Parameters

| name | type | def | min | max | reqd | stacks |
|------|------|-----|-----|-----|------|--------|
| infile | file | | | | yes | |
| outfile | file | | | | | yes |
| verbose | integer | 0 | 0 | 5 | | |

# Detailed Parameter Descriptions

**Parameter=infile `(file required)`**

*Event file for which you want background files*

**Parameter=outfile `(file stacks=yes)`**

*ACIS background file(s) to use*

This parameter will be set to the name(s) of the ACIS background files selected from the CALDB to match your observation. The file names include the full path. If more than one file is selected then they will be stored as a comma−separated stack.

Example 2                                                                 3

**Parameter=verbose `(integer default=0 min=0 max=5)`**

*Debug level (0=no debug information)*

In most cases the default vrebose level (of 0) is the correct value to use. Higher values may prove useful when trig to track down problems with the script.

## CHANGES in CIAO 3.2.2

Fixed a bug that caused the script to exit with an error rather than write the the file name, or names, to the parameter file.

## CHANGES in CIAO 3.0

## Specifying chipids and the aimpoint is deprecated

In CIAO 3.0 the suggested way to run the script is to give it only parameter – the event file (which can include a Data model virtual–file filter to restrict the data (see "ahelp dmsyntax"). The old format is still supported but has been marked as deprecated and will be removed in a future version.

## Parameter file

The event–file only mode requires that the parameter file for the script be installed. Sere the Script Installation page for more details of this. When the parameter–file mode is used the set of background files is stored in the outfile parameter as well as printed to the screen, making it easier to script.

## Multiple CALDB matches are now visible

Since the background files are now stored in the outfile parameter, the script no longer hides the mesages from the CALDB that one file from several was chosen. This message is now displayed to the screen to indicate when potential conflicts may arise. In such situations the ACIS background documentation should be reviewed to find out what is the most appropriate dataset to use for your observation.

## Re–written in S–Lang

The script has been re–written in S–Lang to take advantage of CIAO 3.0 features – such as the availability of the S–Lang parameter, pixlib, and caldb libraries. The fact that the script is now written in S–Lang rather than sh should not be obvious to you as a user.

## NOTES

## Downloading the script

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.

## Downloading the CALDB background files

As of the CALDB 3.0.0 release on December 14 2004, the ACIS background files have been moved out of the main CALDB download file. They are now packaged separately, and are available from the CALDB download page.

# 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_fef_lookup, acis_set_ardlib, 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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Downloading the CALDB background files