URL: http://cxc.harvard.edu/ciao3.4/why/caldb3.0.1_geom_v5.html
Last modified: 15 December 2008

# PIXLIB Geometry File

Return to: Why Index

## Summary

Version 5 of the PIXLIB GEOM file (`telD1999-07-23geomN0005.fits`) is available as of CALDB 3.0.1 (10 February 2005). The ACIS-S chip corners have been modified at the sub-pixel level, and the MEG period has been increased by a part in 8000.

Note that only the ACIS-S0, S1, S2, S4, and S5 chip corner positions have been modified; ACIS-I0-I3 and ACIS-S3 are unchanged, as are HRC configurations. The GEOM file is used by `acis_process_events`, among other tools; users who wish to apply the new calibration should follow the Create a New Level=2 Event File thread to reprocess their data.

The HETG calibration and science planning groups have recommended modifications to the ACIS-S chip corners and MEG grating period. The changes will correct for rotational misalignments of some of the ACIS-S chips, while also correcting certain chip gap widths. The magnitude of the corrections is at the sub-pixel level, and hence the affect on the astrometry for imaging with ACIS-S is insignificant. However, some identified spurious instrumental line shifts due to the inaccurate chip gaps may now be removed. The derivation of the chip corner position corrections is provided in the CXC SDS memorandum "Update on ACIS-S detector corner positions; MEG period"; notice the relative line shifts visible for the Fe XVII 15.01A between first and second order, with the current processing (Fig. 4). With the new GEOM file, this shift is removed (Fig. 7).

Furthermore, the chip position corrections induce a corresponding change in the HEG/MEG relative and absolute wavelength scales, which may be accomplished by adjusting the MEG grating period from 4001.41 Angstroms to 4001.95 Angstroms. This derivation is given on the "HETGS: Chip gaps, rolls, and HEG-MEG period, Oct. 2004" web page.

With the installation of CalDB 3.0.1, these new geometry data, which are included in the PIXLIB "GEOM" file `$CALDB/data/chandra/tel/bcf/geom/telD1999-07-23geomN0005.fits`, will be applied in standard processing. Users of data processed before that date are encouraged to evaluate for their own research whether the small corrections in wavelengths are meaningful to them. Imaging observations are virtually unaffected by this upgrade, and need not consider reprocessing.

Only the ACIS-S0, S1, S2, S4, and S5 chip corner positions have been modified; ACIS-I0-I3 and ACIS-S3 are unchanged, as are HRC configurations. The GEOM file is used by `acis_process_events`, among other tools; users who wish to apply the new calibration should follow the Create a New Level=2 Event File thread to reprocess their data.

## Standard Data Processing Upgrade

The new PIXLIB Geometry file version 5 has been included in standard data processing (SDP) as of UTC=2005-02-15T16:45:00. This means that any new data processed after that DATE will have included the

version 5 file; prior to this date, the version 4 file would have been used, and users wanting to use the new file will have to reprocess those data. SDP will set data file header keywords as follows (use `dmlist` or `dmkeypar` to examine the header keywords):

| Header Keyword | Value |
|---|---|
| ASCDSVER | DS7.5.1 |
| CALDBVER | 3.0.1 |
| DATE | 2005-02-15T16:45:00 |

Note that these values indicate the starting point of when the version 5 file was included; the value may also be a later (more recent) version or time.

---



URL: http://cxc.harvard.edu/ciao3.4/why/caldb3.0.1_geom_v5.html
Last modified: 15 December 2008