

V&V Reference Report

L2 ASCDS Version : 10.2.1

Observation 16606 - L2 Version 2
Chandra X-Ray Center

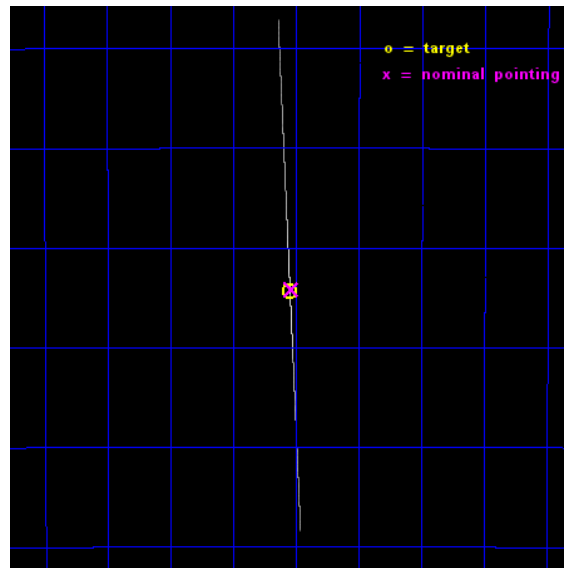
L2 Processing Date : Dec 10 2014

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1 Front

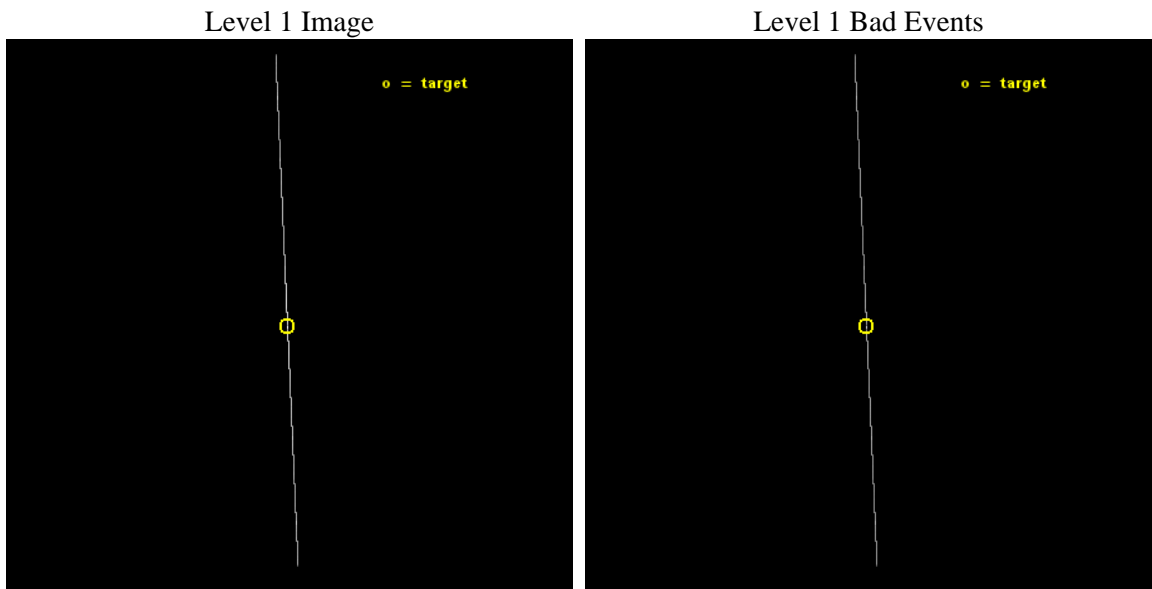
| | | |
|----------|--------------------------------------|---------------------------------------|
| seq_num | 401613 | Sequence number |
| obs_id | 16606 | Observation id |
| title | A Harder Look at the Bursting Pulsar | Proposal title |
| observer | Dr. Jon Miller | Principal investigator |
| object | GRO J1744-28 | Source name |
| ra_targ | 266.137917 | Observer's specified target RA [deg] |
| dec_targ | -28.740833 | Observer's specified target Dec [deg] |
| ra_nom | 266.13427240062 | Nominal RA [deg] |
| dec_nom | -28.736547669628 | Nominal Dec [deg] |
| roll_nom | 87.354870647732 | Nominal Roll [deg] |
| revision | 2 | Processing version of data |
| ontime | 35082.25 | Sum of GTIs [s] |
| livetime | 34945.209960938 | Livetime [s] |
| ontime4 | 35082.25 | Sum of GTIs [s] |
| ontime5 | 35082.25 | Sum of GTIs [s] |
| ontime6 | 35082.25 | Sum of GTIs [s] |
| ontime7 | 35082.25 | Sum of GTIs [s] |
| ontime8 | 35082.25 | Sum of GTIs [s] |
| ontime9 | 35082.25 | Sum of GTIs [s] |
| l2events | 2957649 | Number of level 2 events |



2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|--------------|---|
| obi_num | 0 | Obi number | sched_exp_time | 35000.000000 | [s] Scheduled observation exposure time |
| ascdsver | 10.3.1 | Processing system revision | ontime | 35082.25 | Sum of GTIs [s] |
| caldsver | 4.6.4 | | ontime4 | 35082.25 | Sum of GTIs [s] |
| date | 2014-12-10T17:54:56 | Date and time of file creation | ontime5 | 35082.25 | Sum of GTIs [s] |
| revision | 2 | Processing version of data | ontime6 | 35082.25 | Sum of GTIs [s] |
| | | | ontime7 | 35082.25 | Sum of GTIs [s] |
| | | | ontime8 | 35082.25 | Sum of GTIs [s] |
| | | | ontime9 | 35082.25 | Sum of GTIs [s] |
| | | | l1events | 4576529 | Number of level 1 events |
| | | | tgmetho | TGDETECT | Method used to create src1a file |
| | | | | 14072.48 | |

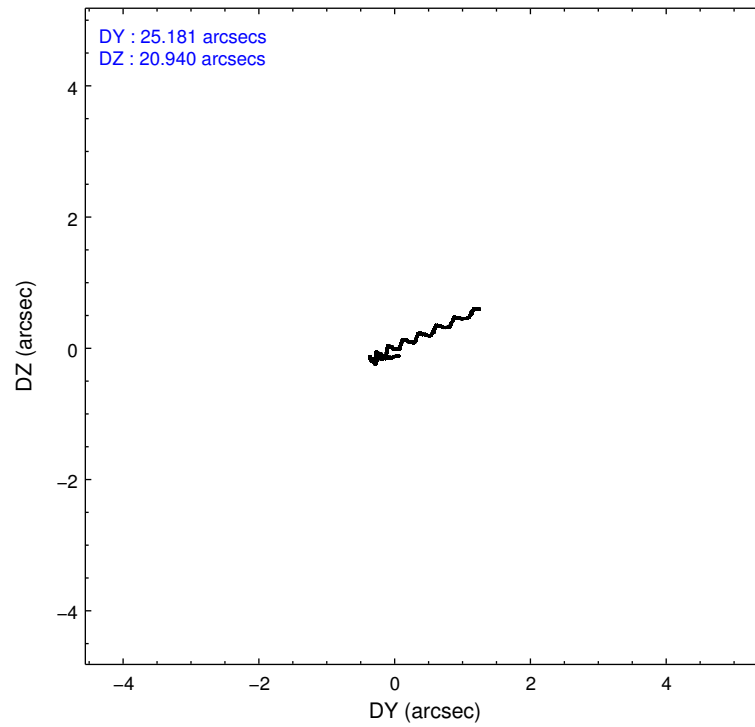
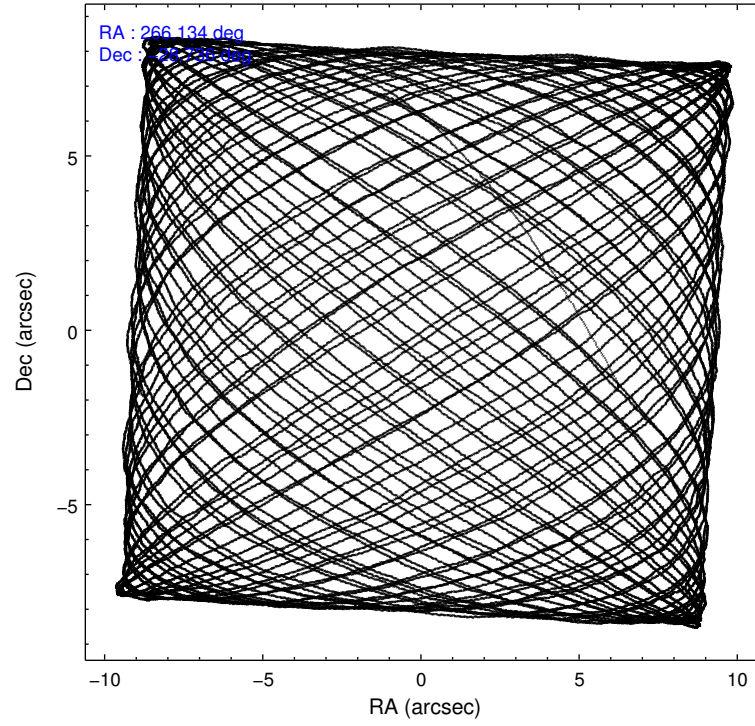
2.1.3 Events

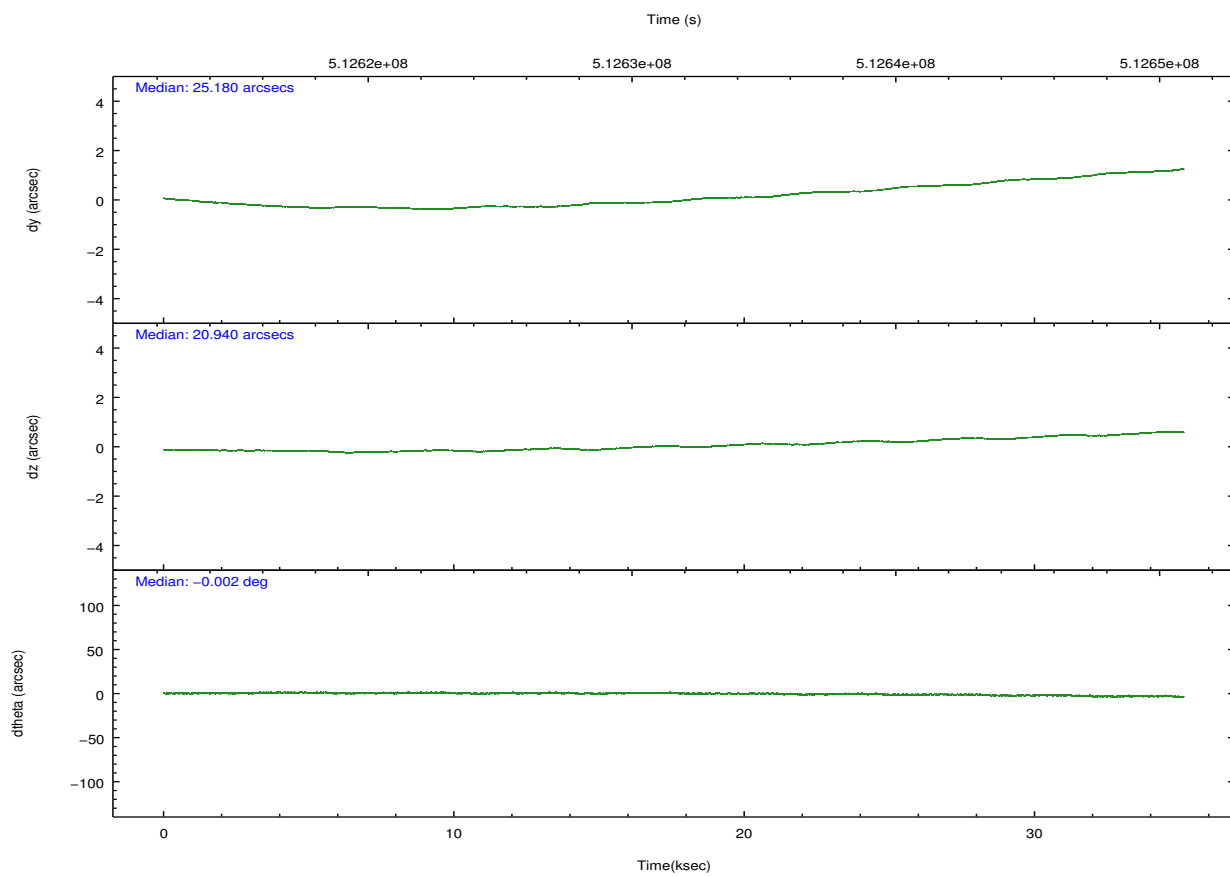
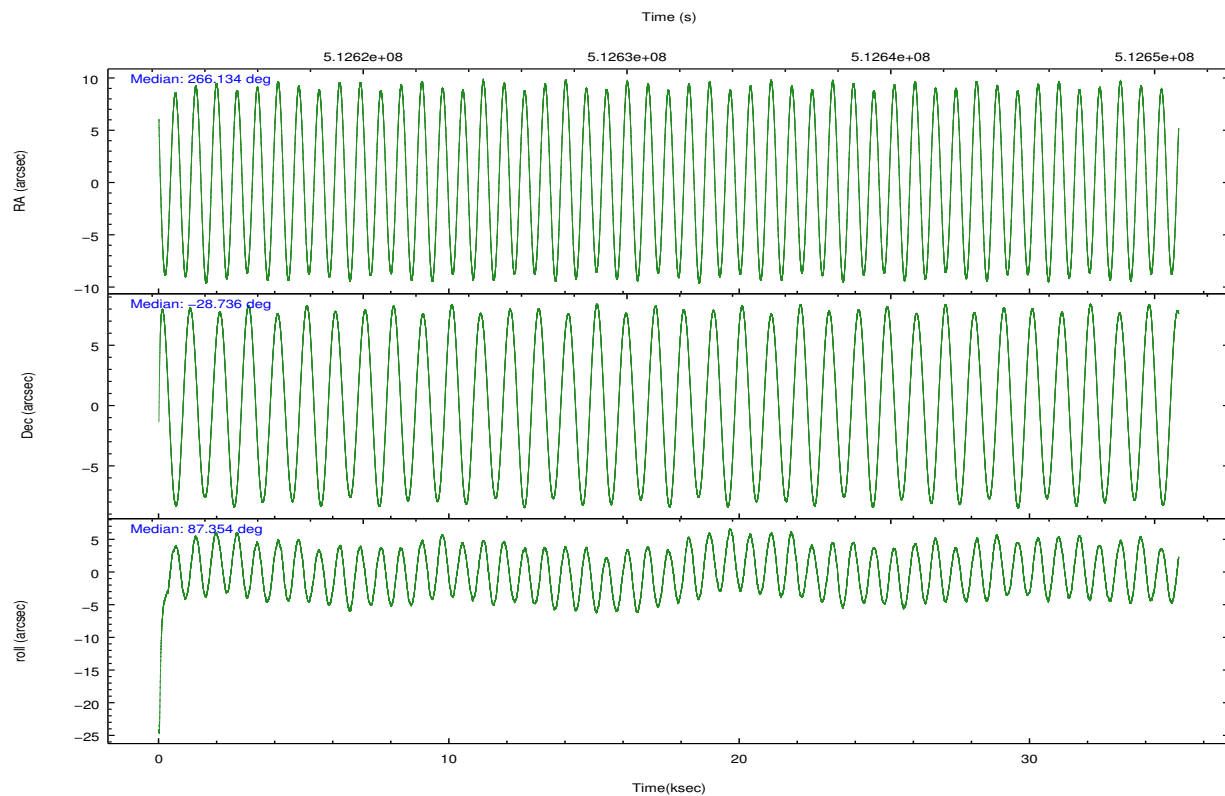
| | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 | | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|-----------------|--------|--------|---------|---------|--------|--------|----------------|--------|--------|--------|--------|--------|--------|
| level 1 events | 322889 | 463521 | 1141122 | 1708187 | 601752 | 339058 | grade 0 events | 5139 | 25401 | 26294 | 111020 | 49670 | 9249 |
| rejected events | 178043 | 190329 | 203596 | 303974 | 239908 | 173319 | | 1% | 5% | 2% | 6% | 8% | 2% |
| rejected % | 55% | 41% | 17% | 17% | 39% | 51% | grade 1 events | 125 | 206 | 184 | 1978 | 362 | 173 |
| | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% |
| | | | | | | | grade 2 events | 122215 | 137635 | 768313 | 602011 | 257134 | 136749 |
| | | | | | | | | 37% | 29% | 67% | 35% | 42% | 40% |
| | | | | | | | grade 3 events | 4076 | 3423 | 5274 | 63092 | 10386 | 3761 |
| | | | | | | | | 1% | 0% | 0% | 3% | 1% | 1% |
| | | | | | | | grade 4 events | 4111 | 3218 | 5131 | 62475 | 10098 | 4156 |
| | | | | | | | | 1% | 0% | 0% | 3% | 1% | 1% |
| | | | | | | | grade 5 events | 7979 | 15832 | 11866 | 37157 | 13350 | 9366 |
| | | | | | | | | 2% | 3% | 1% | 2% | 2% | 2% |
| | | | | | | | grade 6 events | 9310 | 103532 | 132569 | 565718 | 34577 | 11828 |
| | | | | | | | | 2% | 22% | 11% | 33% | 5% | 3% |
| | | | | | | | grade 7 events | 169934 | 174274 | 191491 | 264736 | 226175 | 163776 |
| | | | | | | | | 52% | 37% | 16% | 15% | 37% | 48% |

2.2 Compared Parameters

| Parameter | Planned | Actual | Parameter | Planned | Actual |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument | ACIS | ACIS | Obspar format version number | 7 | 7 |
| Detector | ACIS-456789 | ACIS-456789 | Obspar file type | PREDICTED | ACTUAL |
| Grating | HETG | HETG | Obspar update status | NONE | UPDATED |
| Data mode | CC33_GRADED | CC33_GRADED | CCD I0 on | N | N |
| Observation mode | POINTING | POINTING | CCD I1 on | N | N |
| [deg] Pointing RA | 266.148998 | 266.1342724006205 | CCD I2 on | N | N |
| [deg] Pointing Dec | -28.760668 | -28.73654766962822 | CCD I3 on | N | N |
| [deg] Pointing Roll | 87.205333 | 87.35487064773173 | CCD S0 on | O1 | Y |
| [mm] SIM focus pos | -0.684267 | -0.6828225247311905 | CCD S1 on | Y | Y |
| [mm] SIM defocus | 0 | 0.001444936568705701 | CCD S2 on | Y | Y |
| [mm] SIM translation stage pos | -183.992523 | -183.985022191653 | CCD S3 on | Y | Y |
| [mm] SIM translation stage offset | -6.14 | -6.147500391354811 | CCD S4 on | Y | Y |
| [s] Observation start time (MET) | 512614156.184000 | 512612989.66728 | CCD S5 on | Y | Y |
| Observation start date | 2014-03-31T00:48:09 | 2014-03-31T00:29:49 | Number of optional ACIS chips dropped | 0 | 0 |
| [s] Observation end time (MET) | 512649156.184000 | 512650180.76933 | On-chip summing requested | N | N |
| Observation end date | 2014-03-31T10:31:29 | 2014-03-31T10:49:40 | Subarray requested | NONE | NONE |
| Read mode | CONTINUOUS | CONTINUOUS | Alternating exposures requested | N | N |
| | | | [s] Primary exposure time | 0.000000 | 0 |

2.3 Aspect



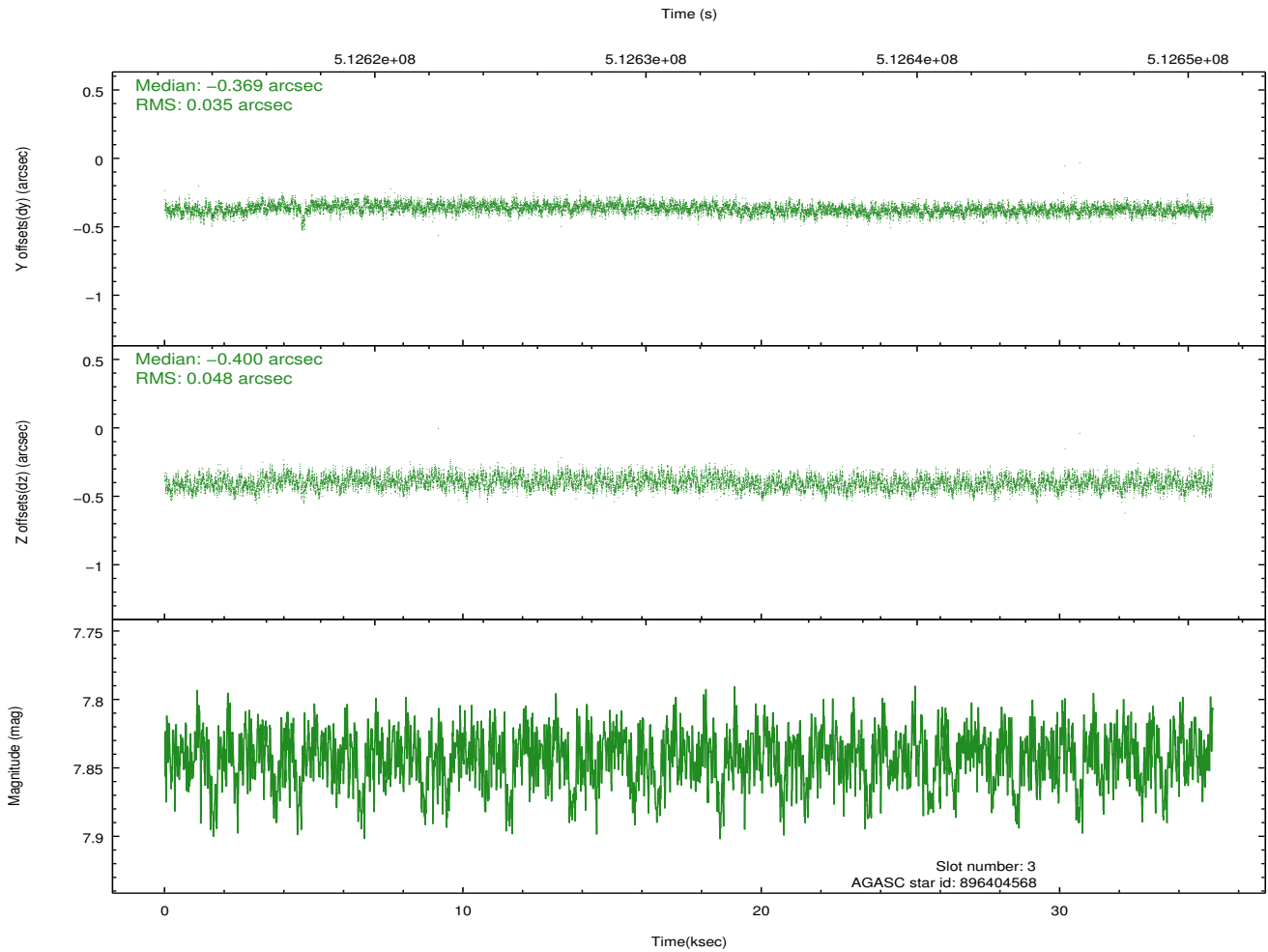
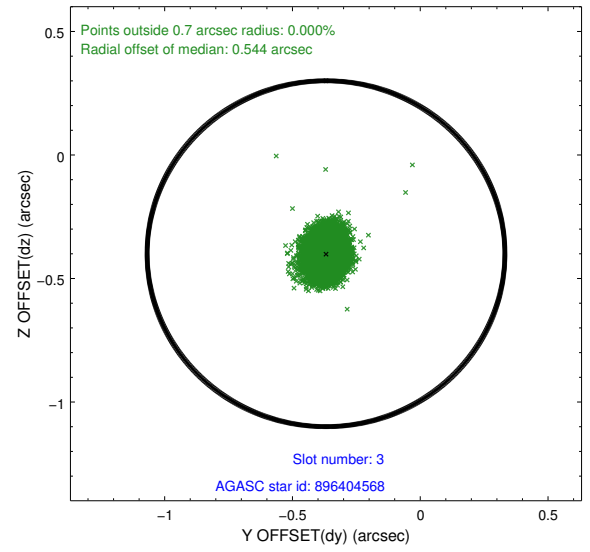
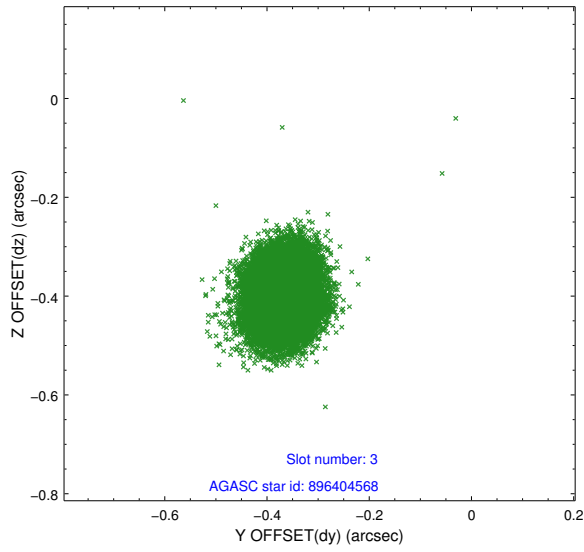


Slot Statistics

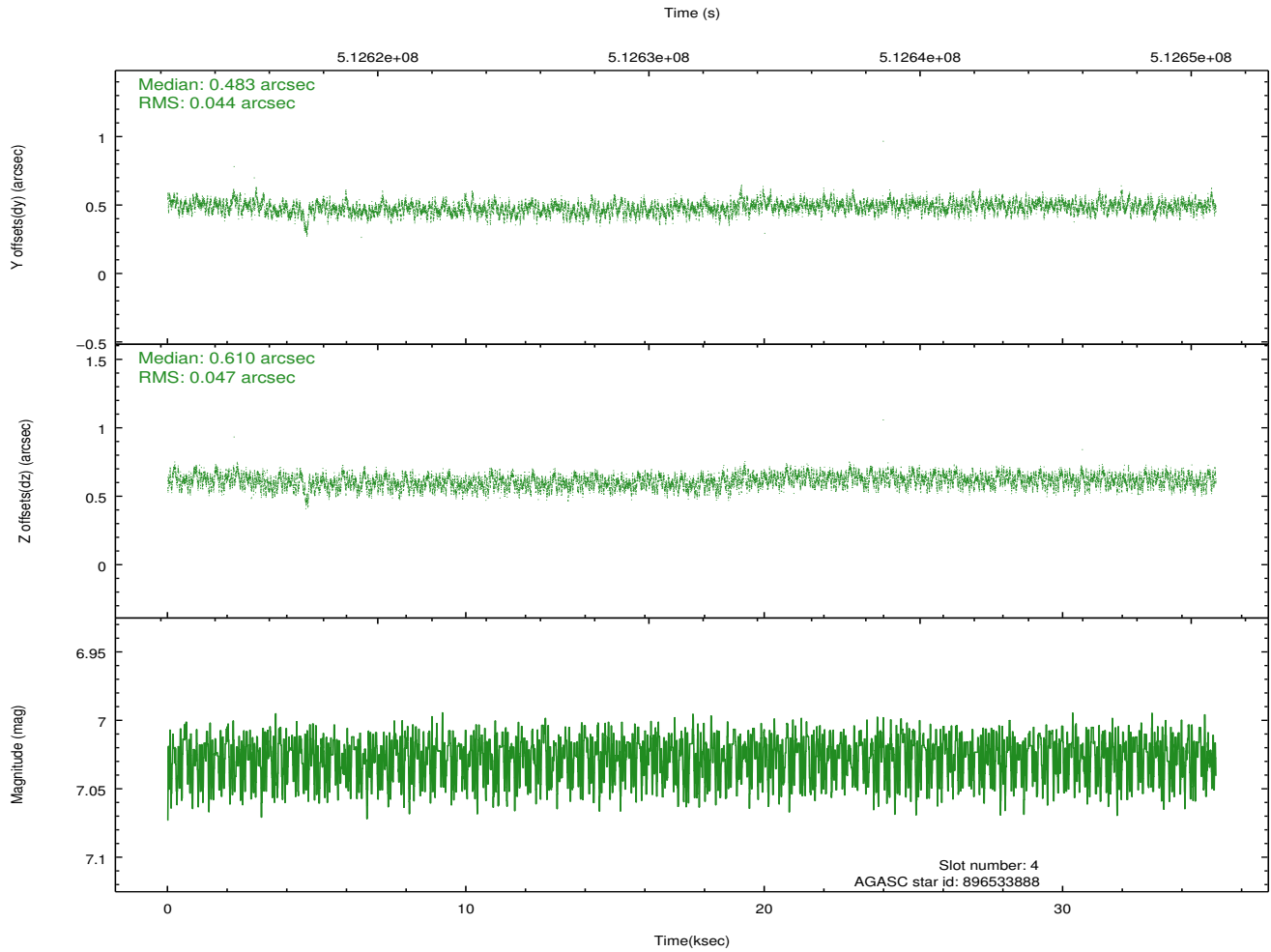
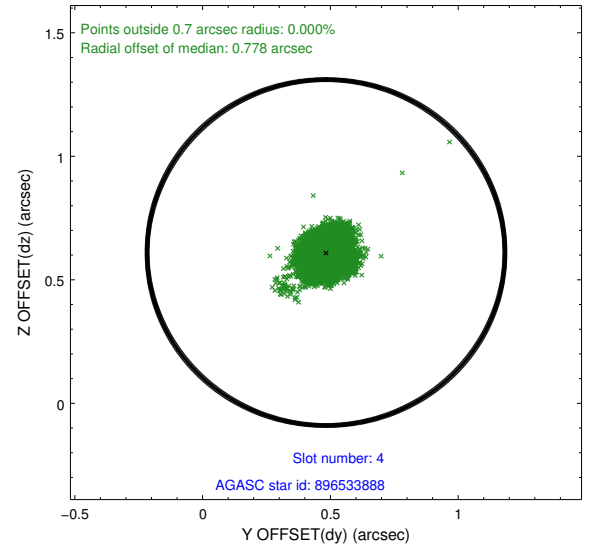
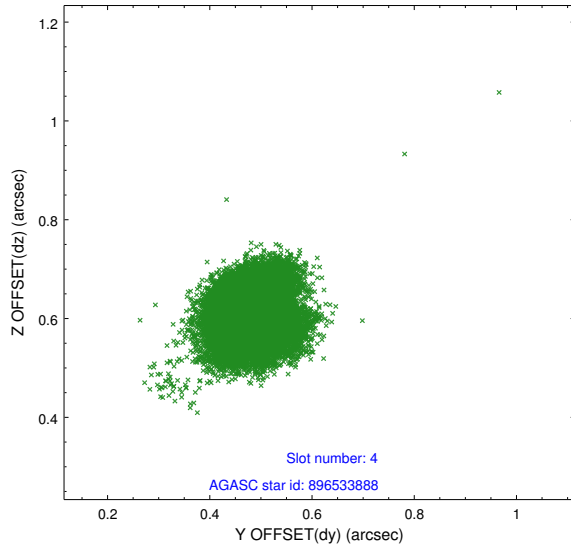
| slot | status | used | id | mag | n_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_z |
|------|--------|------|-----------|------|-------|--------|--------|-------|-------|------------|------------|----------|----------|
| 0 | FID | | ACIS-S-2 | 7.00 | 8568 | -0.187 | -0.125 | 0.019 | 0.032 | 0.000000 | 0.000000 | -778.41 | -1869.36 |
| 1 | FID | | ACIS-S-4 | 7.08 | 8568 | 0.400 | 0.123 | 0.009 | 0.016 | 0.000000 | 0.000000 | 2135.49 | 39.23 |
| 2 | FID | | ACIS-S-5 | 7.12 | 8567 | -0.246 | 0.010 | 0.022 | 0.034 | 0.000000 | 0.000000 | -1831.21 | 32.93 |
| 3 | GUIDE | used | 896404568 | 7.84 | 17135 | -0.369 | -0.400 | 0.064 | 0.101 | 265.687293 | -28.431080 | 1110.72 | 1517.29 |
| 4 | GUIDE | used | 896533888 | 7.03 | 17133 | 0.483 | 0.610 | 0.068 | 0.108 | 266.666434 | -29.392757 | -2196.66 | -1731.57 |
| 5 | GUIDE | used | 896537176 | 8.04 | 17130 | 0.061 | 0.277 | 0.072 | 0.113 | 266.498272 | -28.678259 | 348.50 | -1087.24 |
| 6 | GUIDE | used | 896540808 | 7.52 | 17136 | 0.291 | -0.082 | 0.073 | 0.117 | 265.985401 | -29.308604 | -1995.25 | 416.63 |
| 7 | GUIDE | used | 896402272 | 7.58 | 17060 | -0.467 | -0.406 | 0.076 | 0.119 | 265.637294 | -28.313189 | 1525.94 | 1697.90 |

2.4 Star Slots

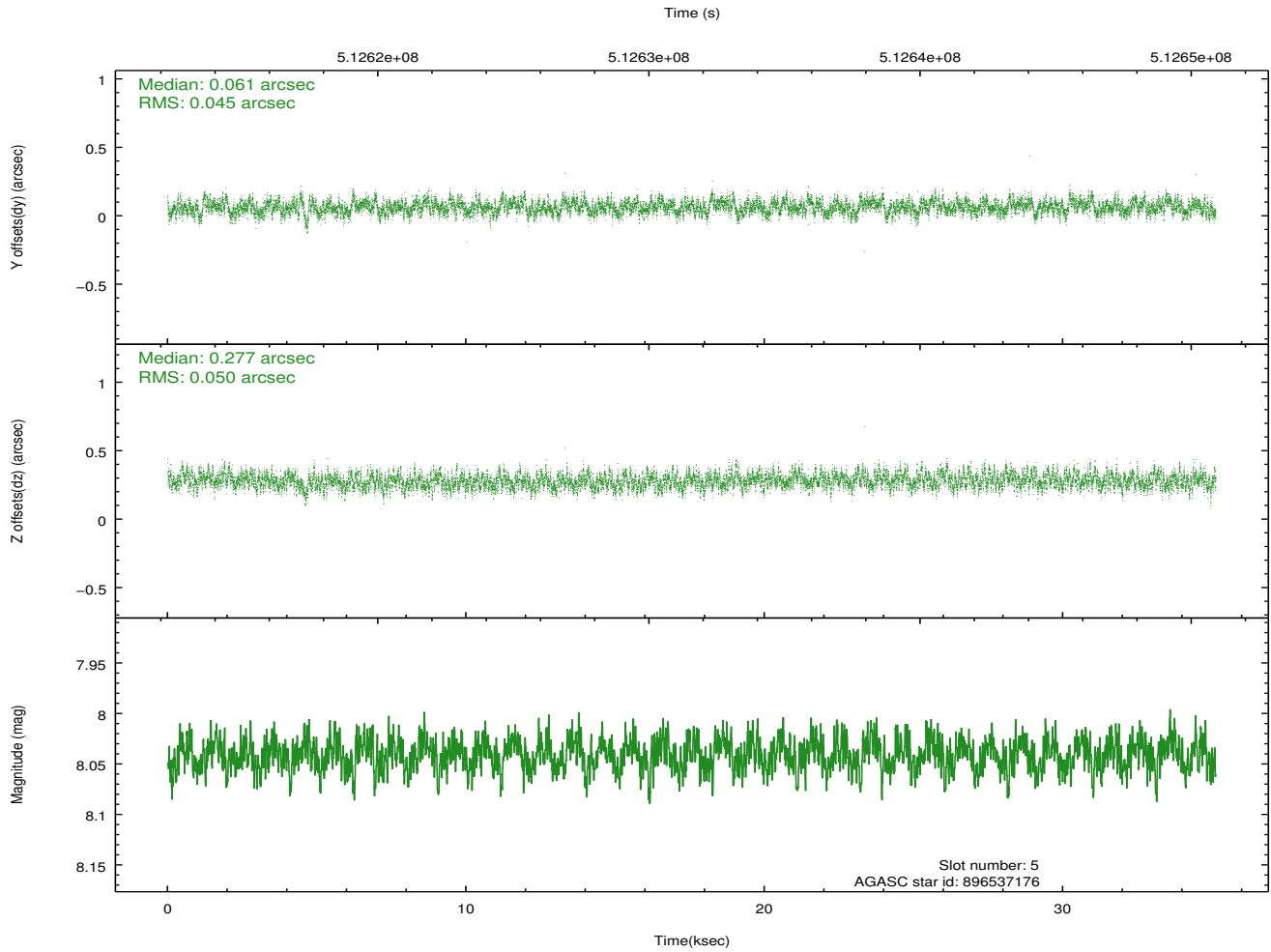
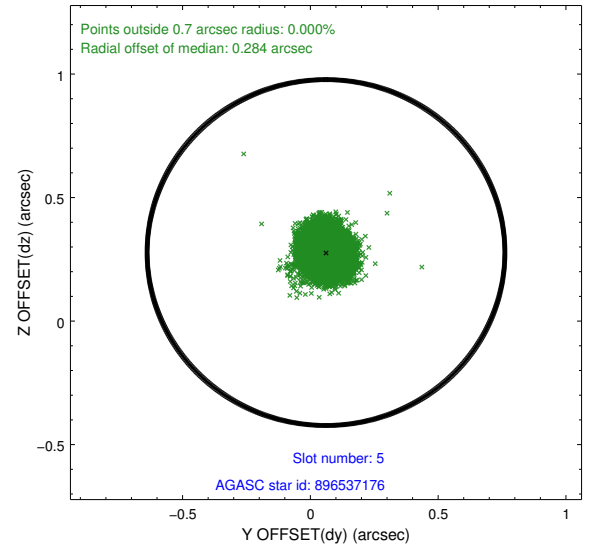
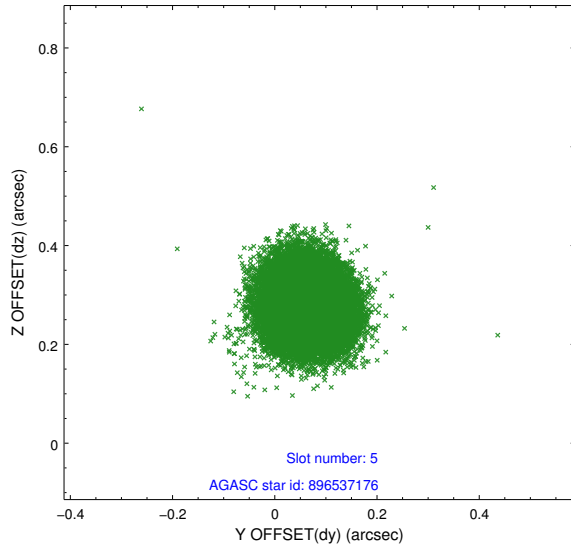
2.4.1 Slot 3



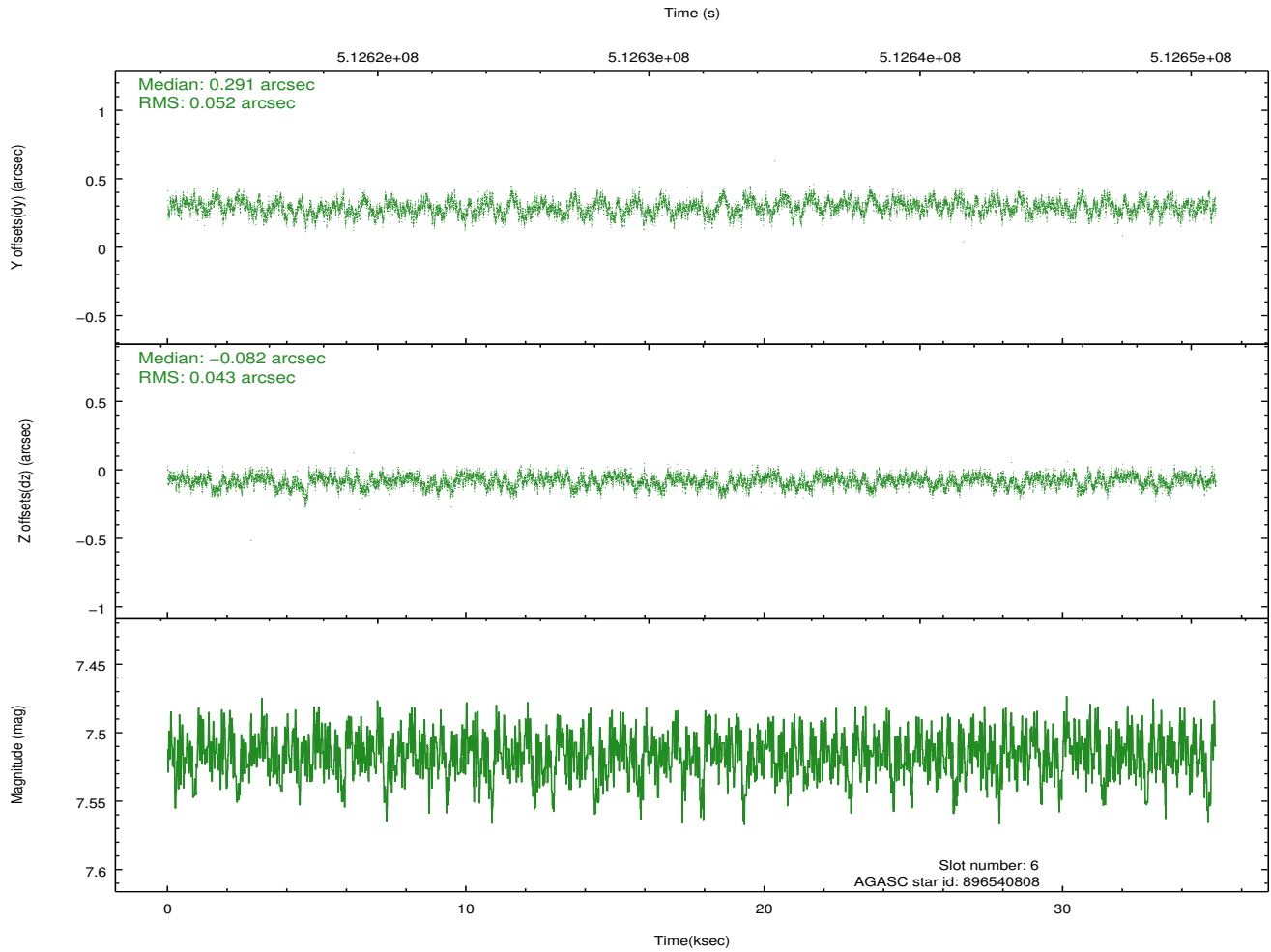
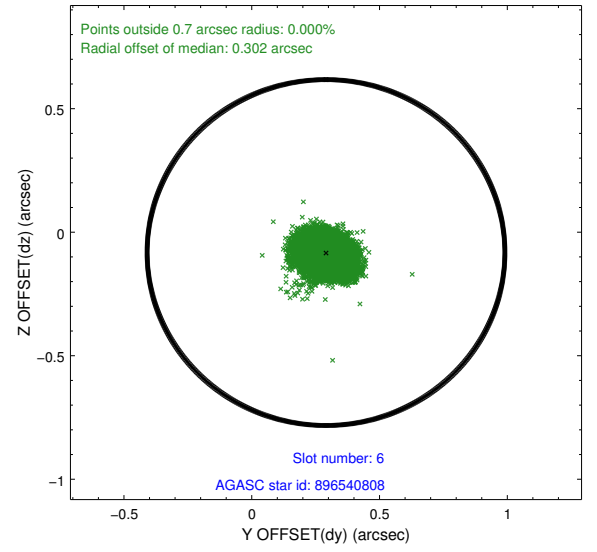
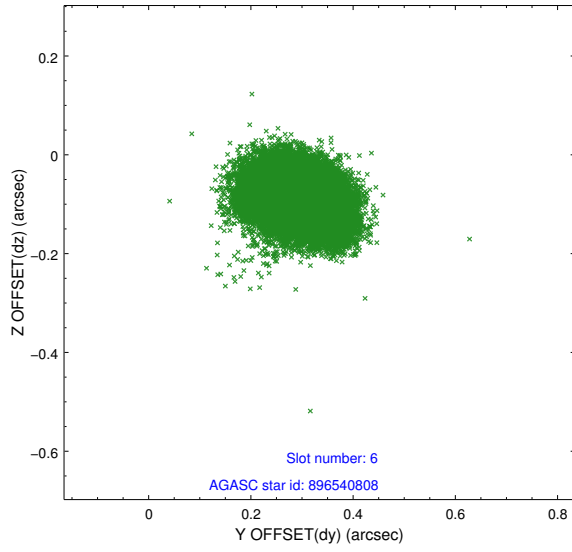
2.4.2 Slot 4



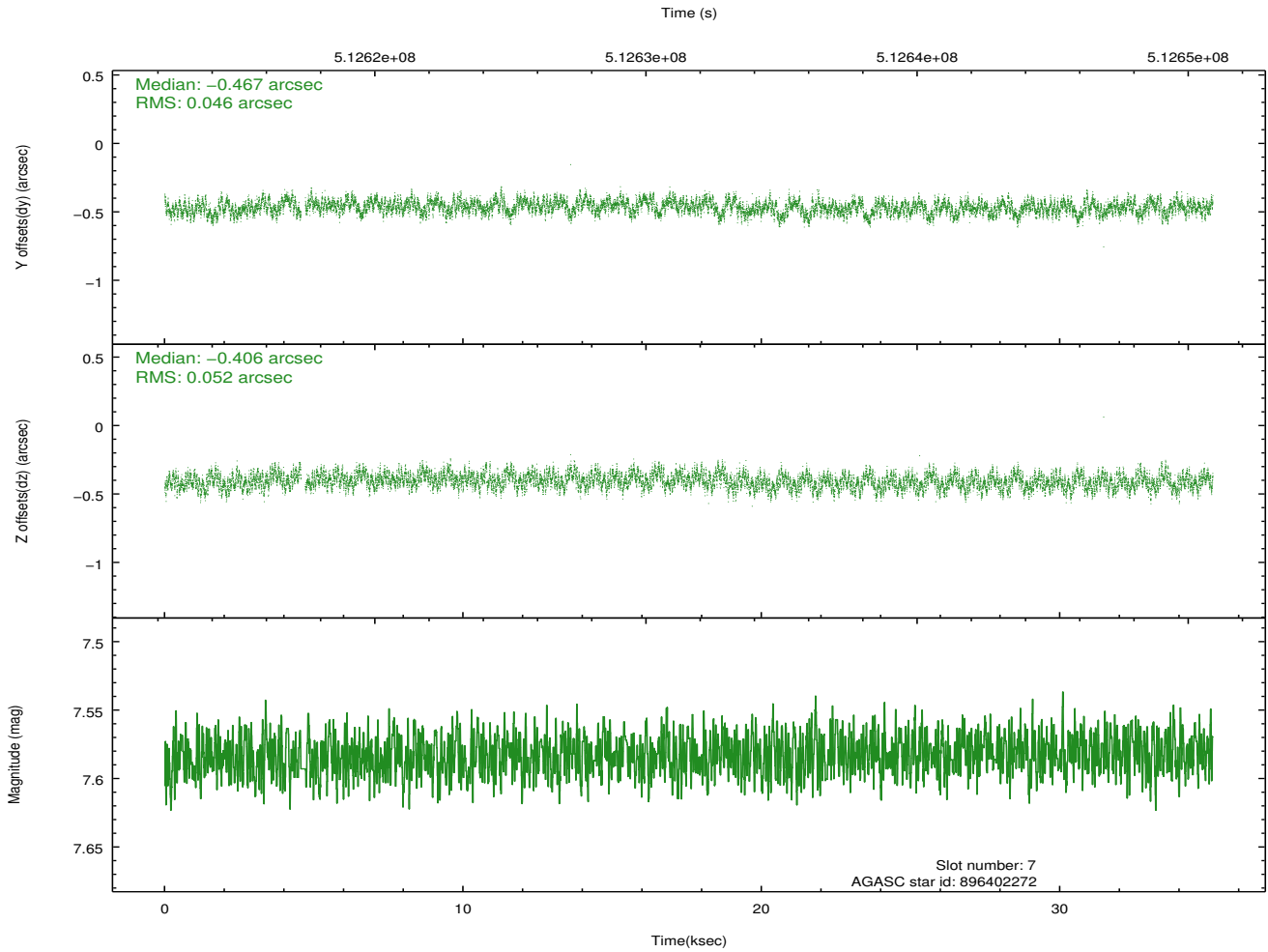
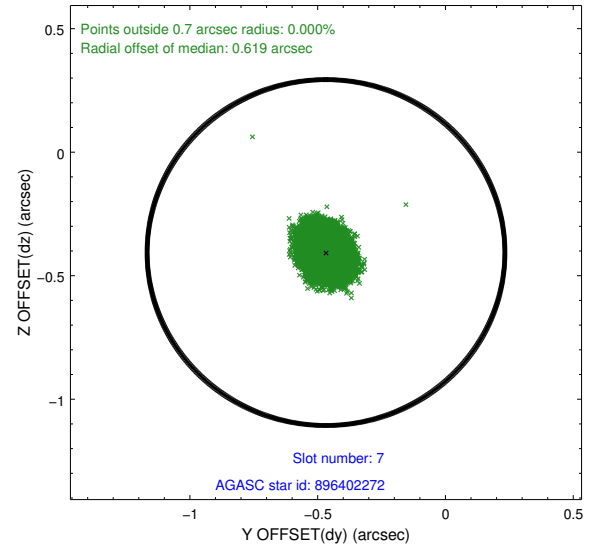
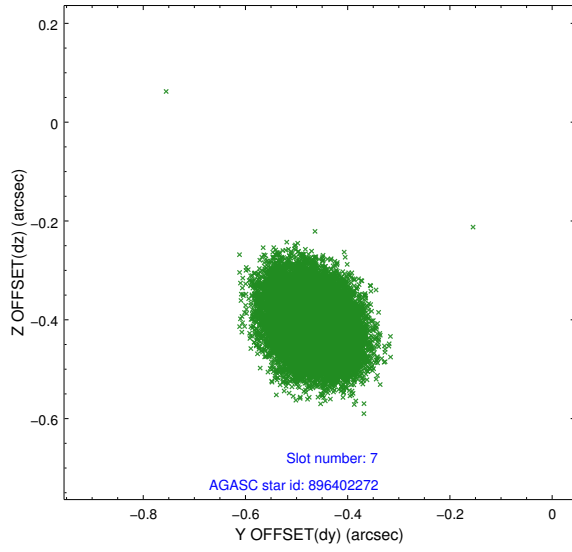
2.4.3 Slot 5



2.4.4 Slot 6

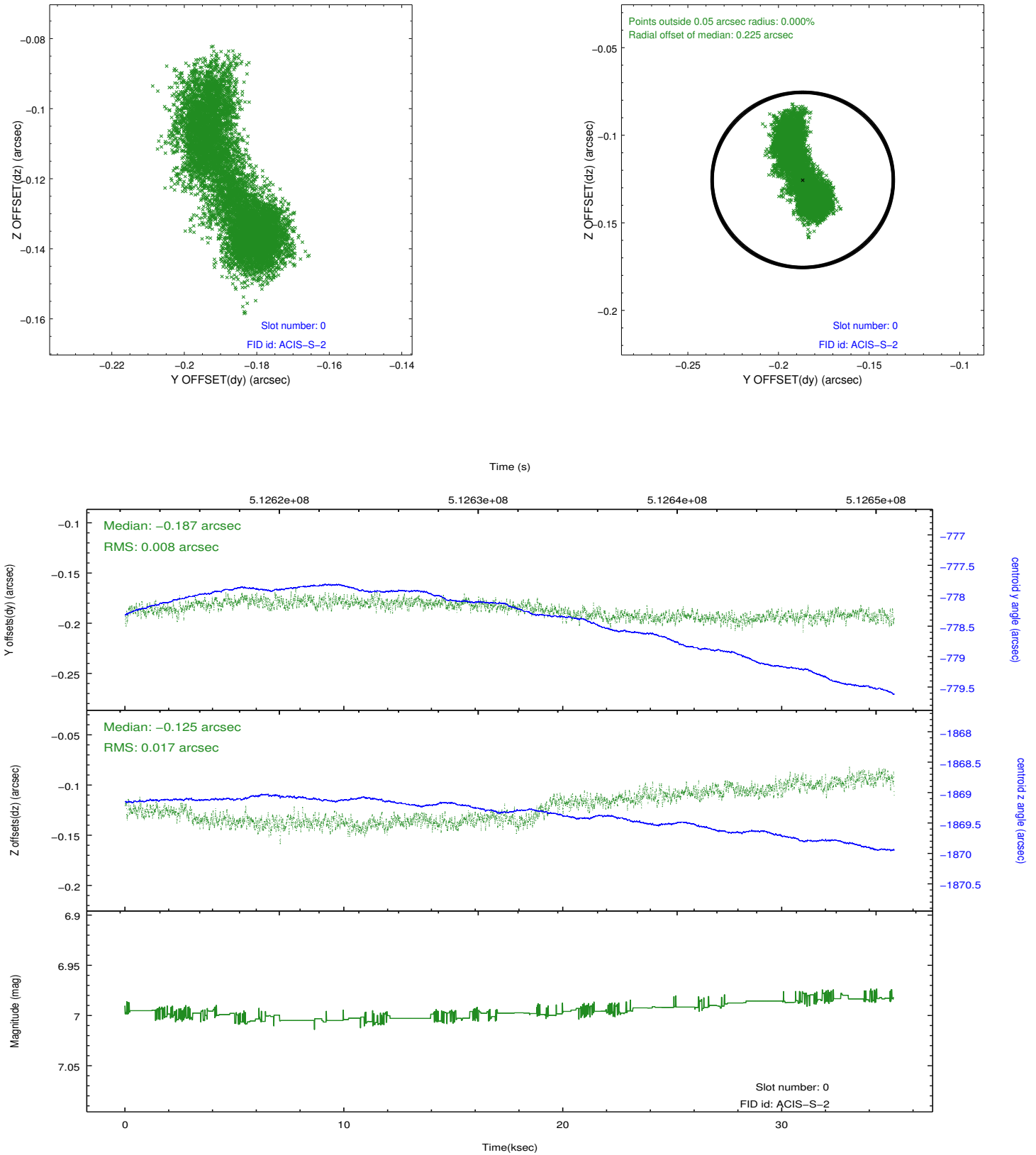


2.4.5 Slot 7

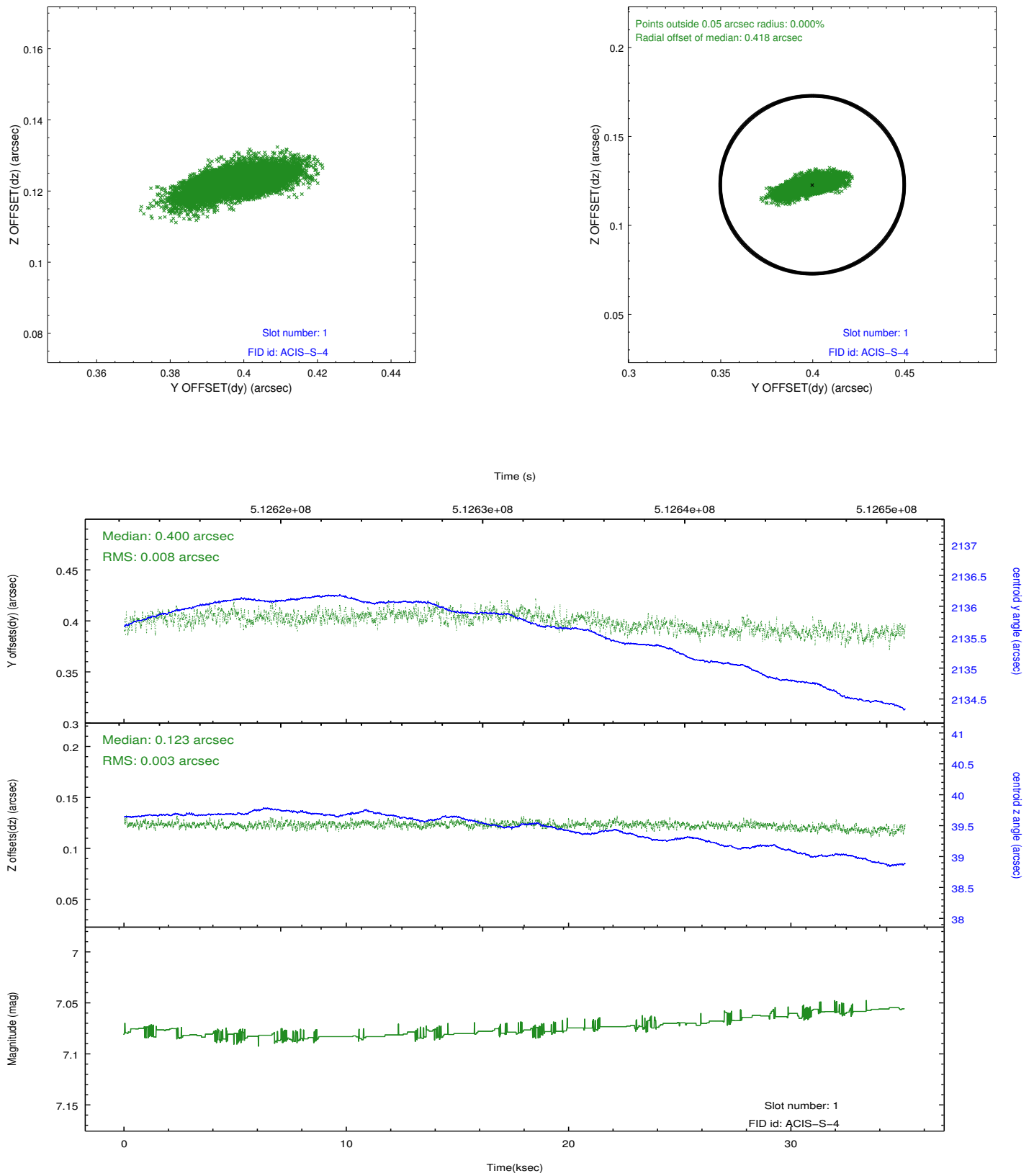


2.5 FID Slots

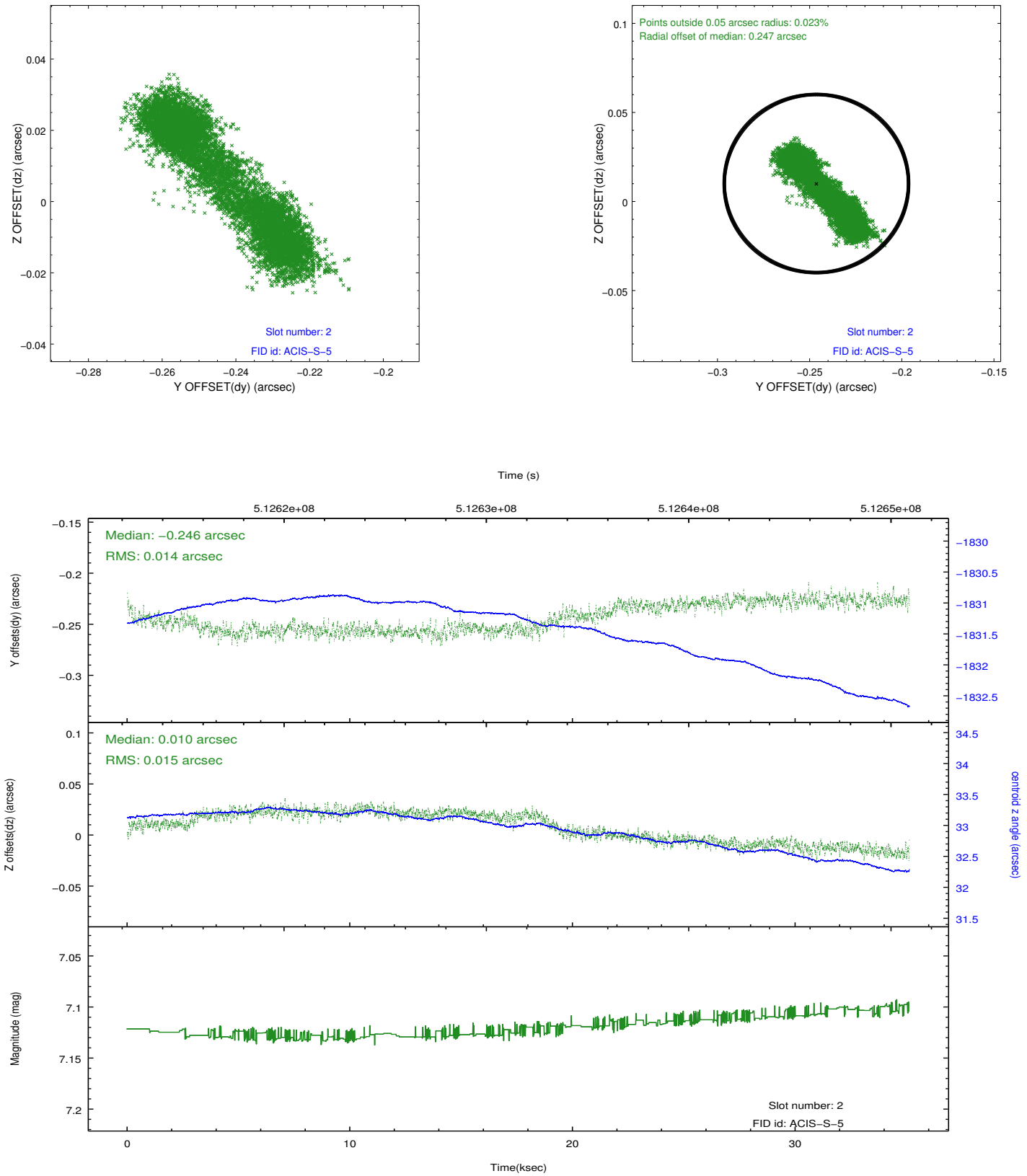
2.5.1 Slot 0



2.5.2 Slot 1

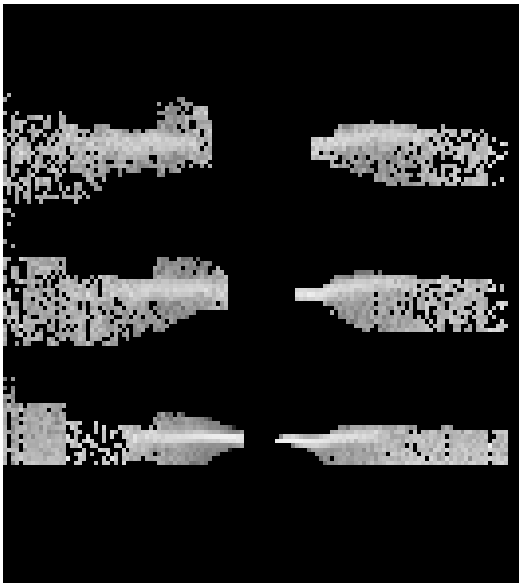


2.5.3 Slot 2



3 Gratings

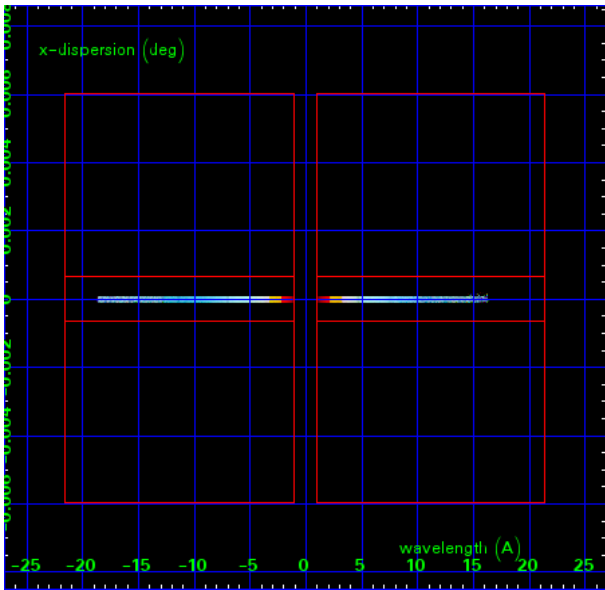
3.1 HEG Arm



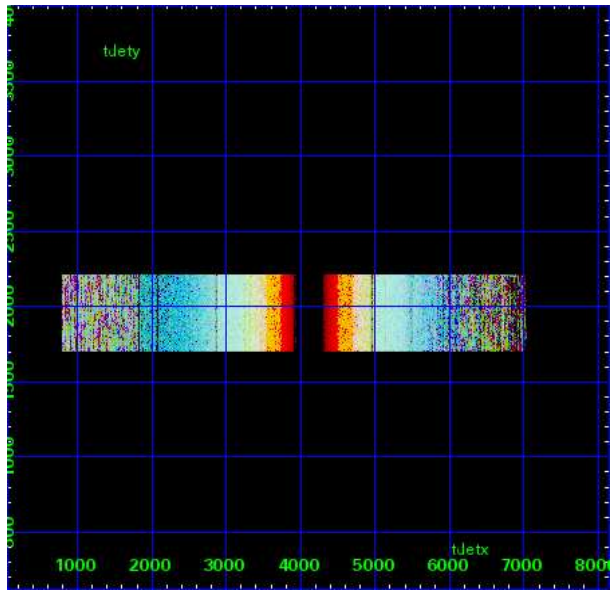
HEG Order Sort 123



HEG Order Sort ALL

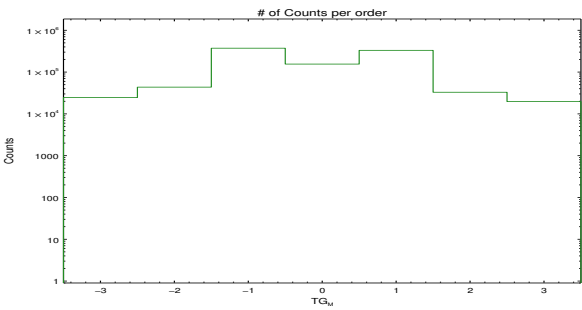


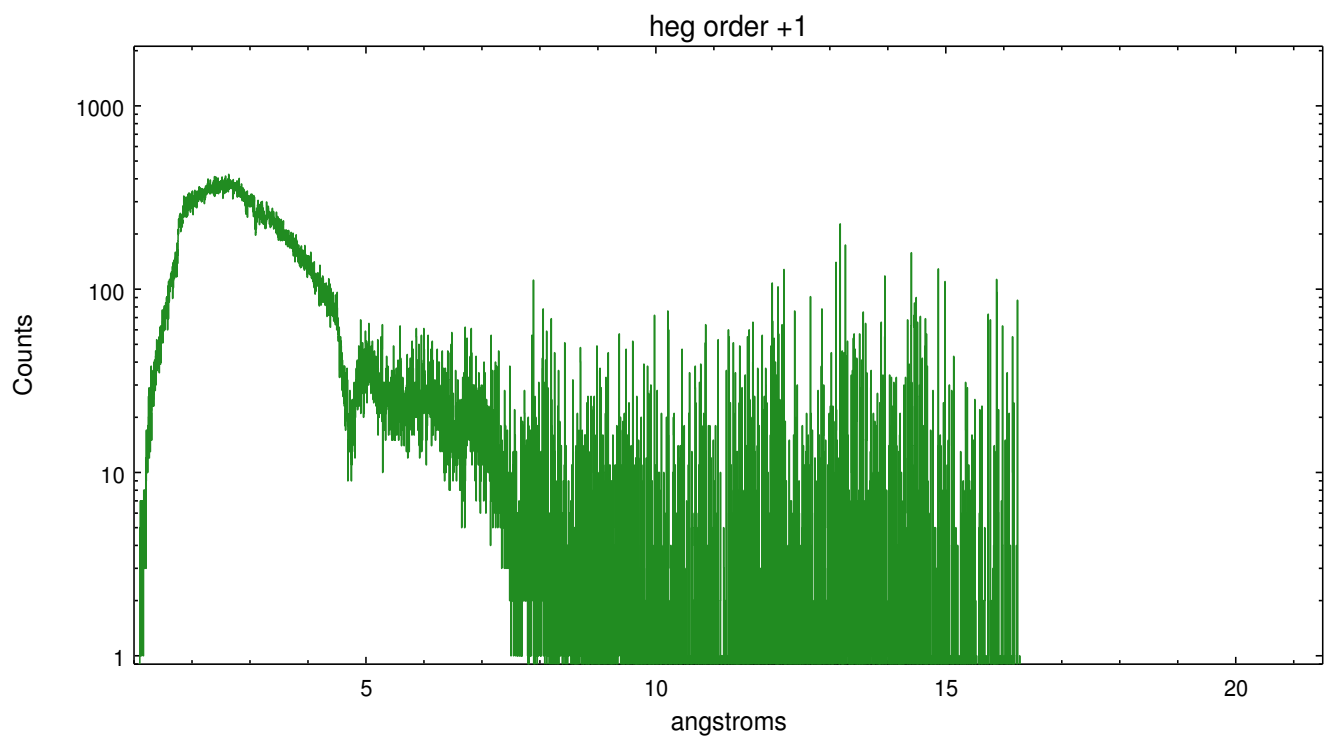
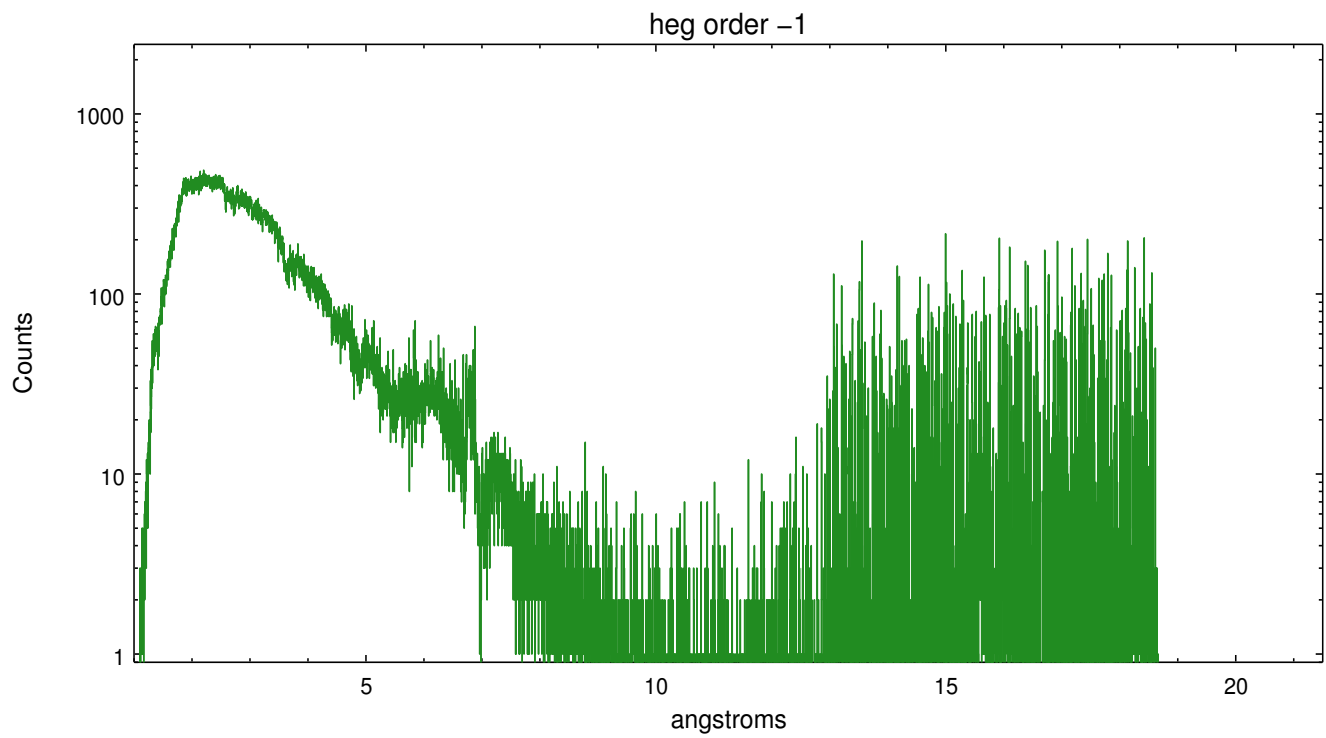
Spot Image HEG



Full Detector HEG

| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|-------------|-------------|-------------|---------|---------|------------|------------|
| Events | 24585 | 43613 | 372636 | 155318 | 330975 | 32896 | 19686 |





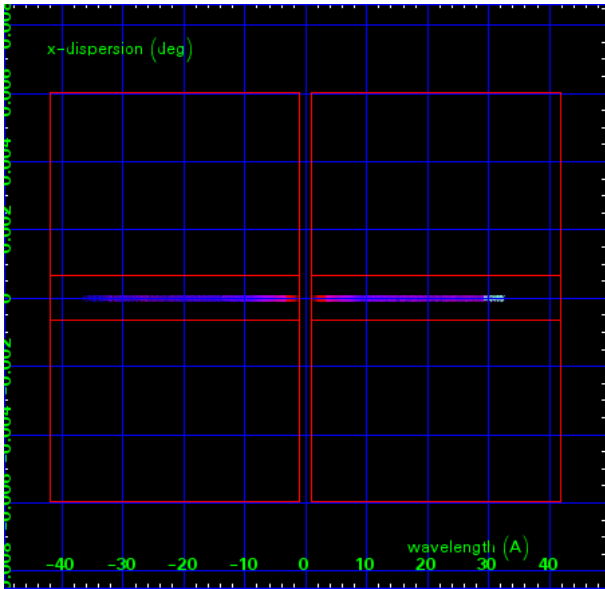
3.2 MEG Arm



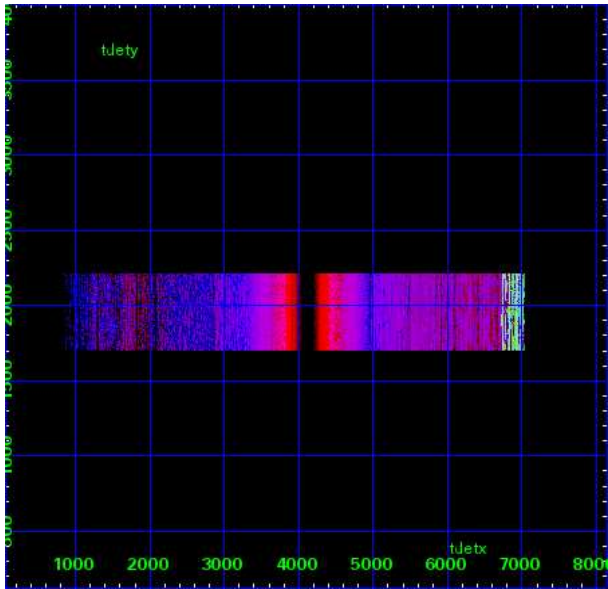
MEG Order Sort 123



MEG Order Sort ALL

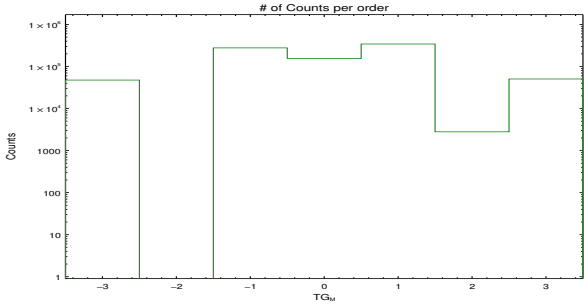


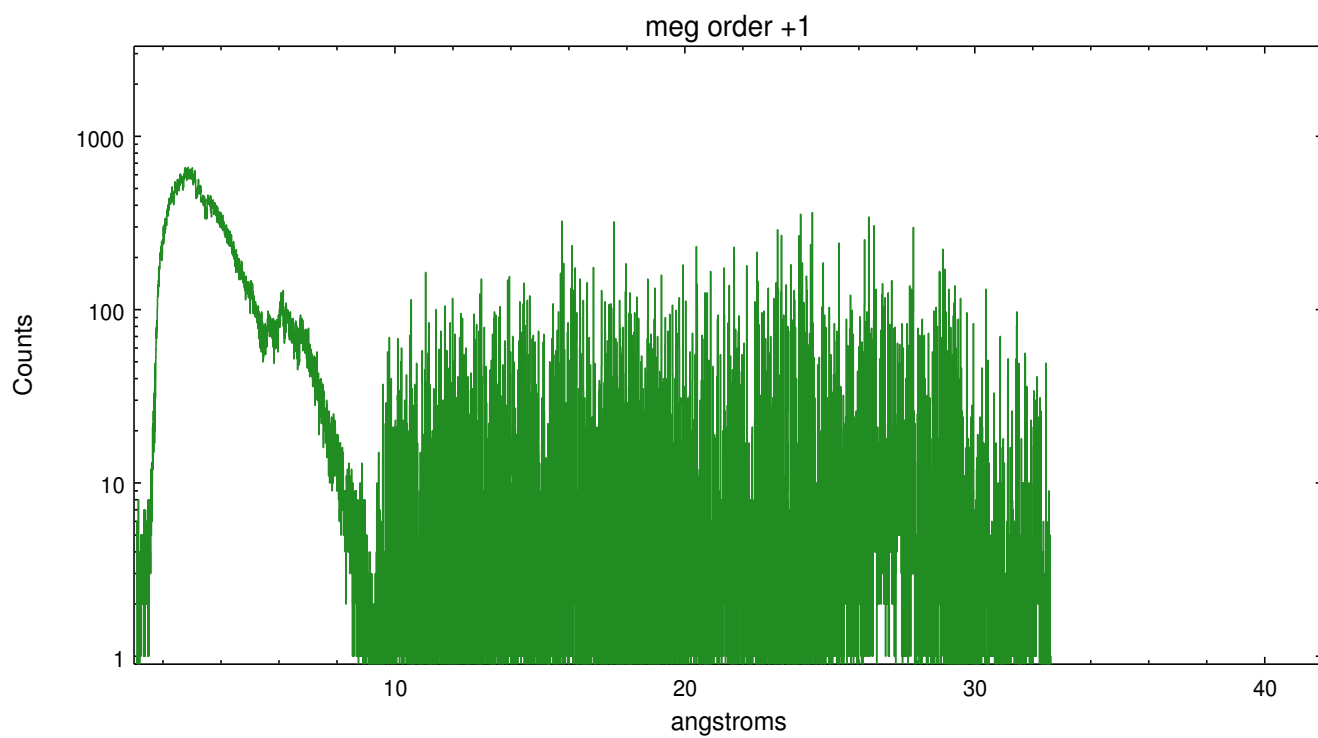
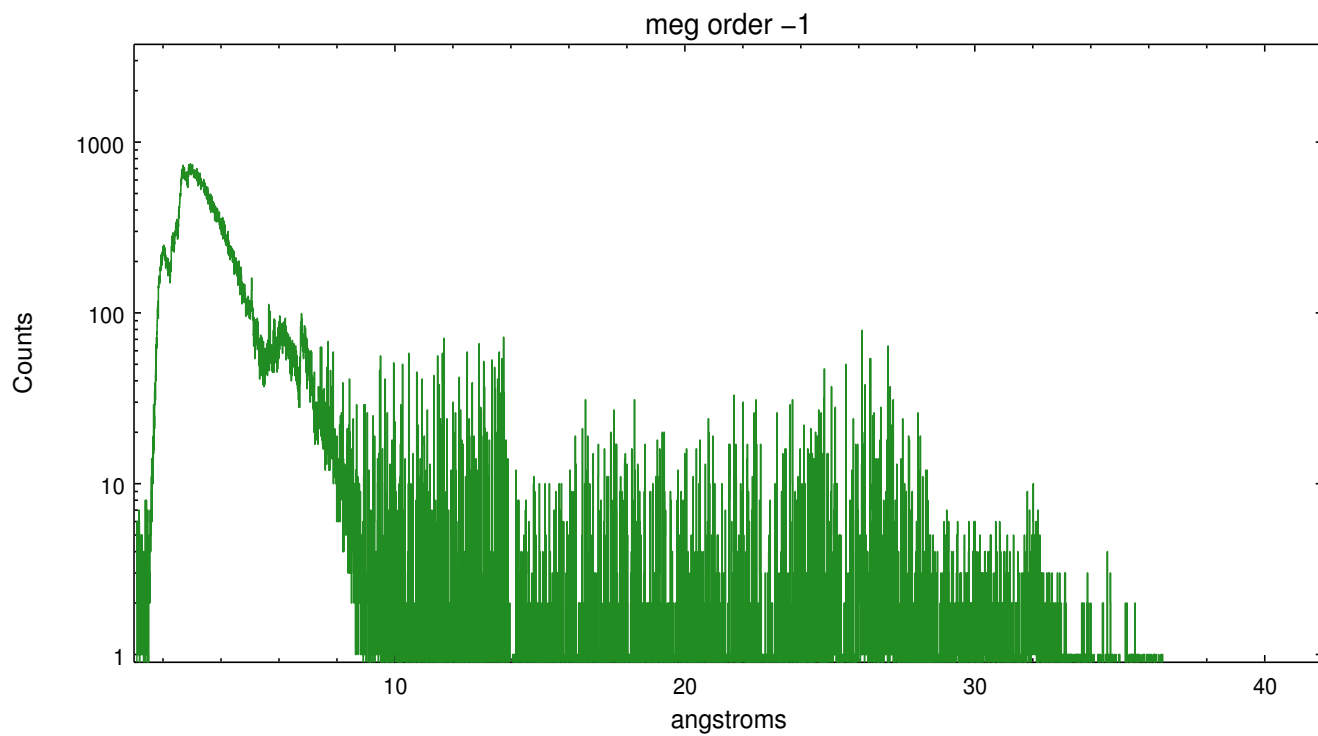
Spot Image MEG



Full Detector MEG

| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|-------------|-------------|-------------|---------|---------|------------|------------|
| Events | 47520 | 0 | 277246 | 155318 | 342556 | 2794 | 50459 |





A Summary

A.1 Status

| | |
|----------------------------|-------------|
| V&V Scientist | Joy Nichols |
| V&V Date (YYYY-MM-DD) | 2015.10.07 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 35.08225 |

A.2 Comments

Aspect solution confirmed by Aspect Team.

=====

These data have been reprocessed with new aspect alignment calibration files that correct small mean offsets (up to 0.4 arcsecs) and improve overall astrometric accuracy. The new calibration was determined using data from the time period being reprocessed and was performed using cross-correlation of X-ray sources with radio and optical counterparts.

=====

For ACIS-S with CC mode and HETG:

For ACIS/CC-mode w/ HETG, at with no SIM-Z offset, there are no MEG even order counts. MEG even orders overlap with HEG orders in energy, but MEG even order efficiencies are very low. Since HEG and MEG cannot be spatially separated, events are preferentially assigned to HEG. (MEG odd orders can be resolved.) For observations with a SIM-Z offset, MEG negative and MEG positive orders will be missing (off the array), and remove some of the ambiguity.

=====

As of November 1, 2009, events with a flight grade of 66 were added to the telemetry stream for continuous-clocking mode observations because it was found that a significant fraction of real X-ray events have this flight grade in this mode. To prevent these events from being discarded from Level 2 event files, the CALDB grade file was modified to change the 'ASCA' grade for these events from 7 (a bad grade) to 2 (a good grade). The new grade file has been used in standard pipeline processing for code versions DS 10.3 and later (i.e. 2014 Oct 30 and later). Since the calibration products for continuous-clocking mode observations are appropriate for data that includes flight grade 66 events, data obtained on or after 2009 Nov 1, but that were processed using an earlier version of the pipeline code, should be reprocessed with CIAO using version 4.7 (i.e. 2014 December) or later. Note that it is not possible to fix the data obtained before 2009 Nov 1. Since these earlier continuous-clocking observations are not calibrated at present, spectral analyses of these data may yield inaccurate results.