

V&V Reference Report

L2 ASCDS Version : 8.4.4

Observation 10760 - L2 Version 2
Chandra X-Ray Center

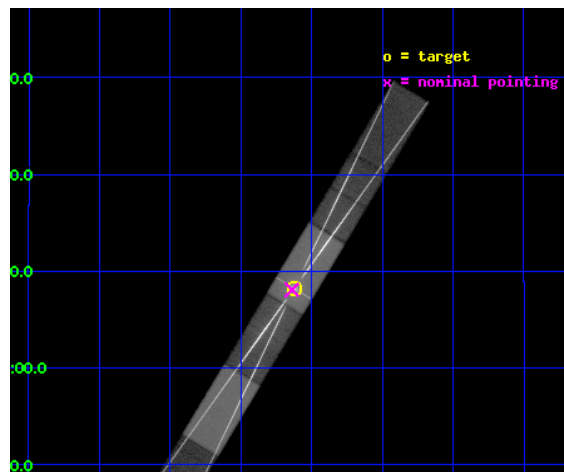
L2 Processing Date : May 29 2012

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1 Front

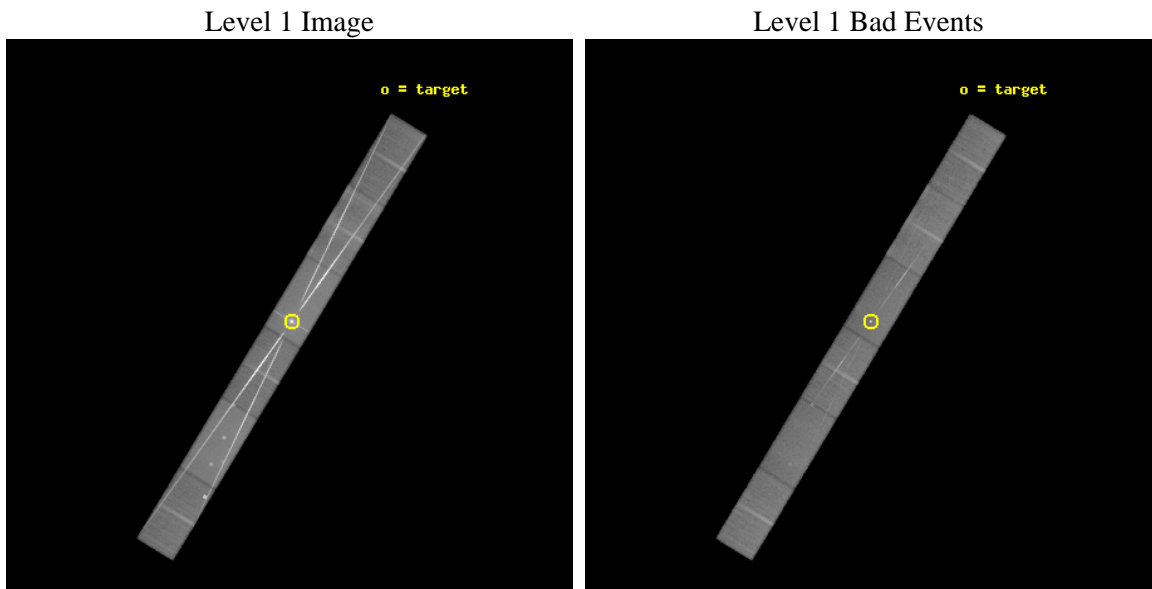
| | | |
|----------|---|---|
| seq_num | 900906 | Sequence number |
| obs_id | 10760 | Observation id |
| title | Absorption and Abundances in the Ultracompact Binary 4U 0614+091 | P |
| observer | Prof Claude Canizares | Principal investigator |
| object | 4U 0614+091 | Source name |
| dtcycle | 0 | |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 94.280417 | Observer's specified target RA [deg] |
| dec_targ | 9.136944 | Observer's specified target Dec [deg] |
| ra_nom | 94.28479060498 | Nominal RA [deg] |
| dec_nom | 9.134731975842 | Nominal Dec [deg] |
| roll_nom | 301.15593960963 | Nominal Roll [deg] |
| revision | 2 | Processing version of data |
| ontime | 45165.599683344 | Sum of GTIs [s] |
| livetime | 44100.95084644 | Livetime [s] |
| ontime4 | 45163.858643174 | Sum of GTIs [s] |
| ontime5 | 45165.599683344 | Sum of GTIs [s] |
| ontime6 | 45165.599683344 | Sum of GTIs [s] |
| ontime7 | 45165.599683344 | Sum of GTIs [s] |
| ontime8 | 45163.858653128 | Sum of GTIs [s] |
| ontime9 | 45165.599683344 | Sum of GTIs [s] |
| l2events | 1993720 | Number of level 2 events |



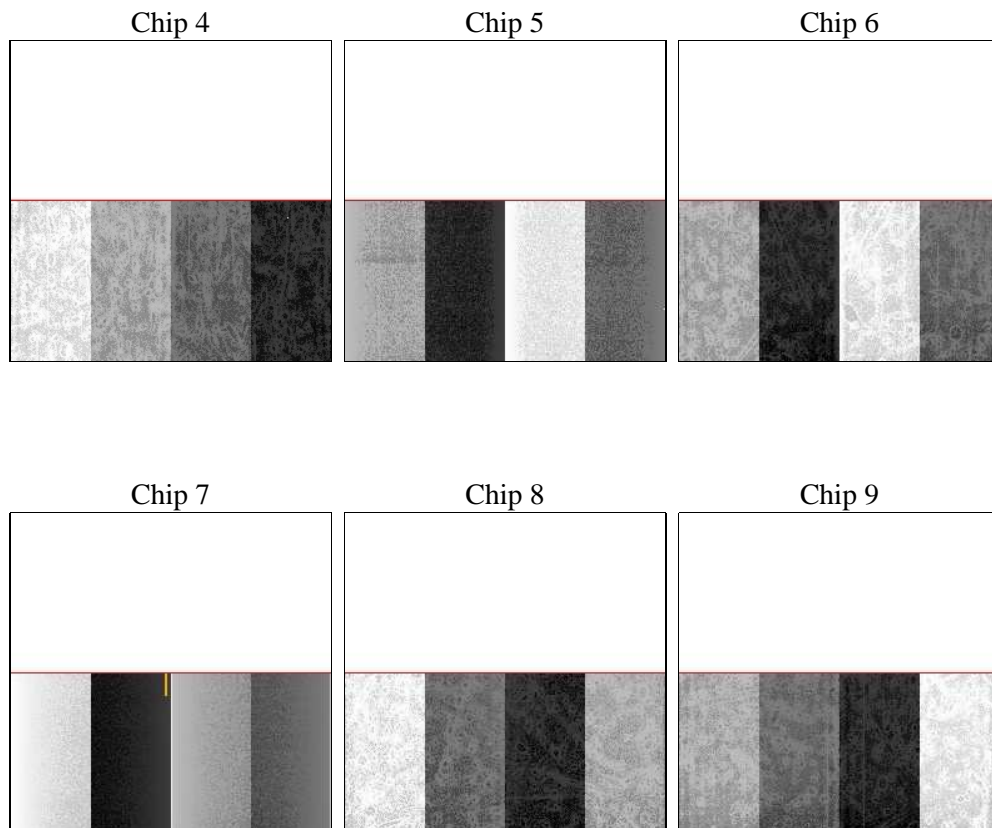
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num | 0 | Obi number | sched_exp_time | 44985.000000 | [s] Scheduled observation exposure time |
| ascdsver | 8.4.4 | Processing system revision | ontime | 45165.599683344 | Sum of GTIs [s] |
| caldbver | 4.4.9 | | ontime4 | 45163.858643174 | Sum of GTIs [s] |
| date | 2012-05-29T05:07:13 | Date and time of file creation | ontime5 | 45165.599683344 | Sum of GTIs [s] |
| revision | 2 | Processing version of data | ontime6 | 45165.599683344 | Sum of GTIs [s] |
| | | | ontime7 | 45165.599683344 | Sum of GTIs [s] |
| | | | ontime8 | 45163.858653128 | Sum of GTIs [s] |
| | | | ontime9 | 45165.599683344 | Sum of GTIs [s] |
| | | | l1events | 3503575 | Number of level 1 events |

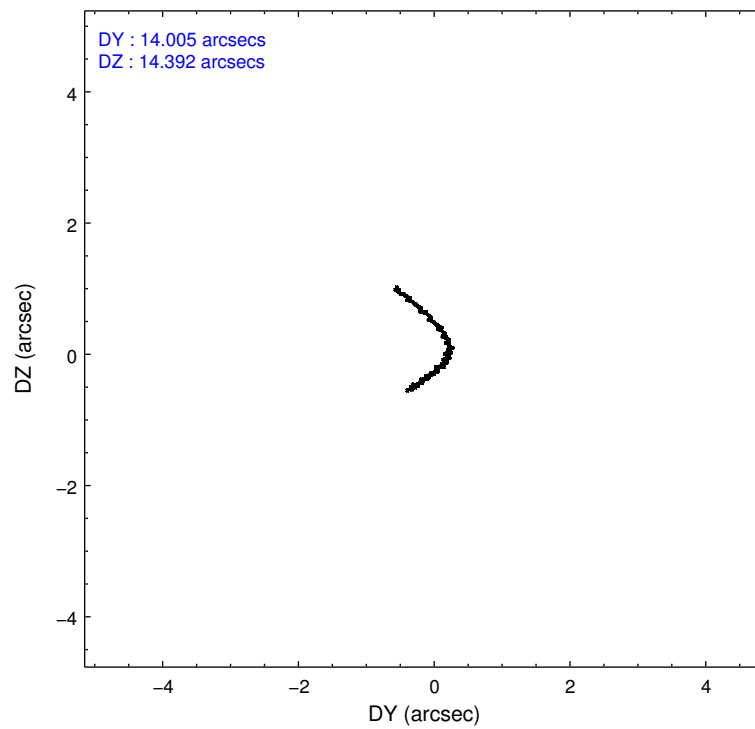
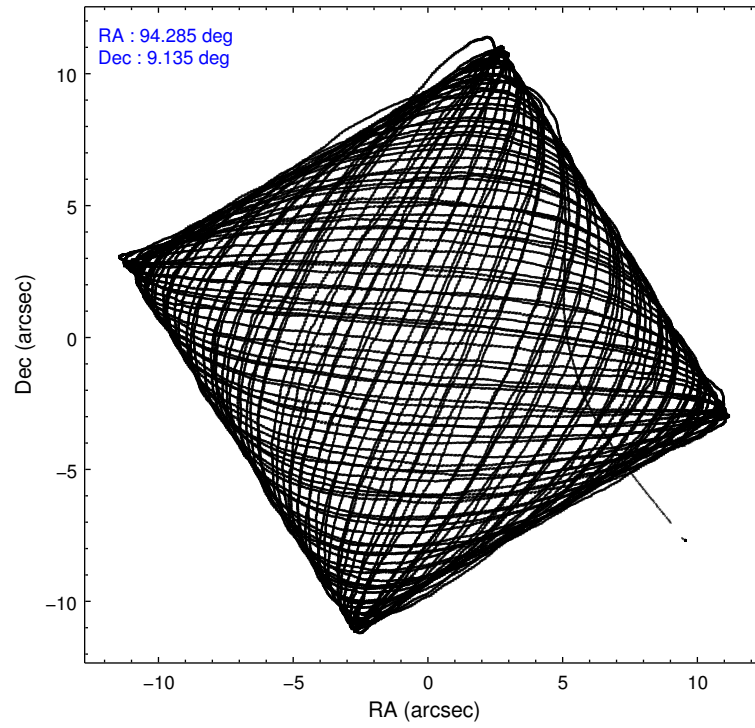
2.1.4 Events

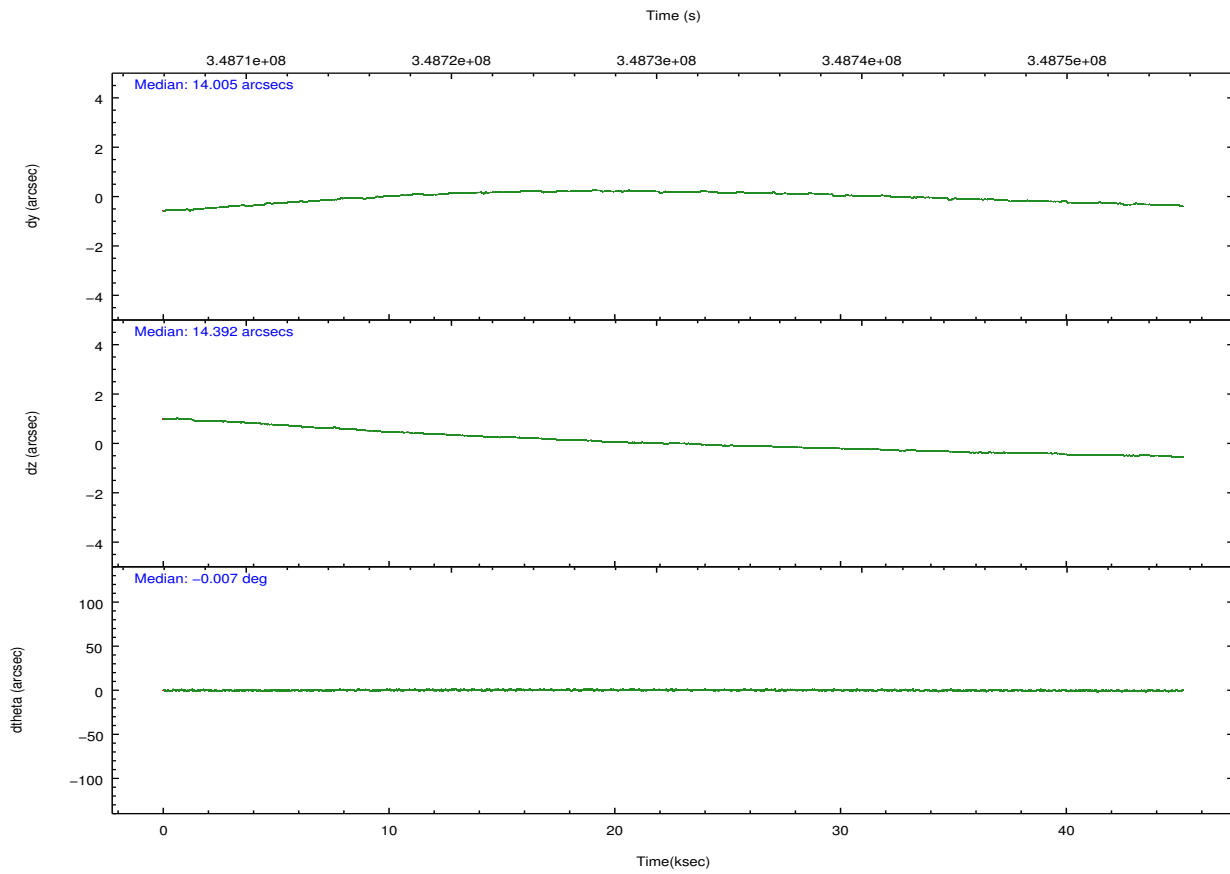
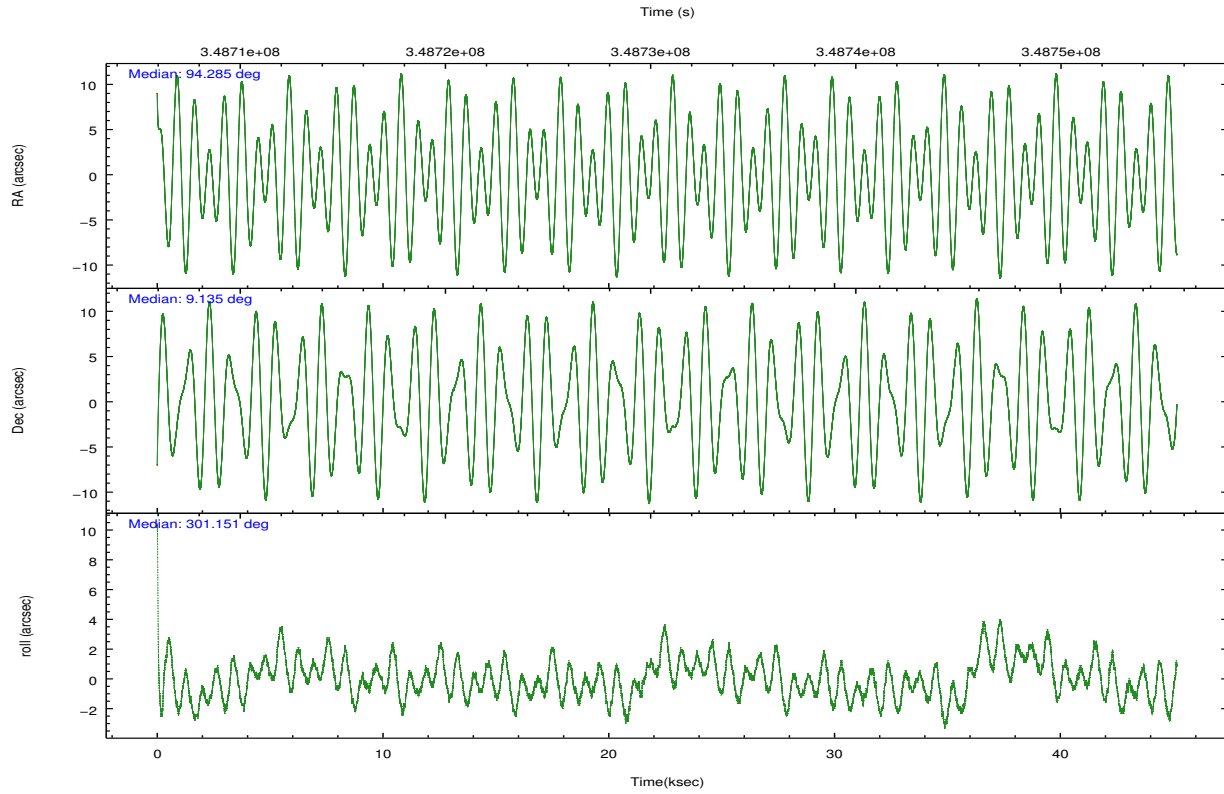
| | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 | | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|-----------------|--------|--------|--------|--------|--------|--------|----------------|--------|--------|--------|--------|--------|--------|
| level 1 events | 313771 | 557870 | 826678 | 891657 | 617422 | 296177 | grade 0 events | 53259 | 92213 | 457420 | 137247 | 269457 | 60425 |
| rejected events | 237088 | 203279 | 228325 | 214205 | 248314 | 207452 | | 16% | 16% | 55% | 15% | 43% | 20% |
| rejected % | 75% | 36% | 27% | 24% | 40% | 70% | grade 1 events | 330 | 1451 | 5333 | 2747 | 1847 | 310 |
| | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% |
| | | | | | | | grade 2 events | 9986 | 101687 | 71484 | 167510 | 44436 | 11949 |
| | | | | | | | | 3% | 18% | 8% | 18% | 7% | 4% |
| | | | | | | | grade 3 events | 4285 | 26487 | 24416 | 73833 | 17021 | 5140 |
| | | | | | | | | 1% | 4% | 2% | 8% | 2% | 1% |
| | | | | | | | grade 4 events | 4085 | 26053 | 24400 | 73525 | 16140 | 4995 |
| | | | | | | | | 1% | 4% | 2% | 8% | 2% | 1% |
| | | | | | | | grade 5 events | 10580 | 31128 | 14520 | 40825 | 15635 | 11765 |
| | | | | | | | | 3% | 5% | 1% | 4% | 2% | 3% |
| | | | | | | | grade 6 events | 5742 | 111079 | 22863 | 228802 | 24054 | 6810 |
| | | | | | | | | 1% | 19% | 2% | 25% | 3% | 2% |
| | | | | | | | grade 7 events | 225504 | 167772 | 206242 | 167168 | 228832 | 194783 |
| | | | | | | | | 71% | 30% | 24% | 18% | 37% | 65% |

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 | FAINT | FAINT | Number of optional ACIS chips dropped | 0 | 0 |
| Observation mode | POINTING | POINTING | On-chip summing requested | N | N |
| [deg] Pointing RA | 94.260349 | 94.2847906049798 | Subarray requested | CUSTOM | 1/2 |
| [deg] Pointing Dec | 9.147589 | 9.134731975841994 | Subarray start row | 1 | 1 |
| [deg] Pointing Roll | 301.003191 | 301.1559396096304 | Subarray row count | 512 | 512 |
| [mm] SIM focus pos | -0.684267 | -0.6828225247311905 | Alternating exposures requested | N | N |
| [mm] SIM defocus | 0 | 0.001444936568705701 | [s] Primary exposure time | 0.000000 | 1.7 |
| [mm] SIM translation stage pos | -183.992523 | -183.9875365069546 | | | |
| [mm] SIM translation stage offset | -6.14 | -6.144986076053243 | | | |
| [s] Observation start time (MET) | 348708405.184000 | 348707254.51195 | | | |
| Observation start date | 2009-01-18T23:25:39 | 2009-01-18T23:07:34 | | | |
| [s] Observation end time (MET) | 348753390.184000 | 348754095.47676 | | | |
| Observation end date | 2009-01-19T11:55:24 | 2009-01-19T12:08:15 | | | |
| Read mode | TIMED | TIMED | | | |

2.3 Aspect



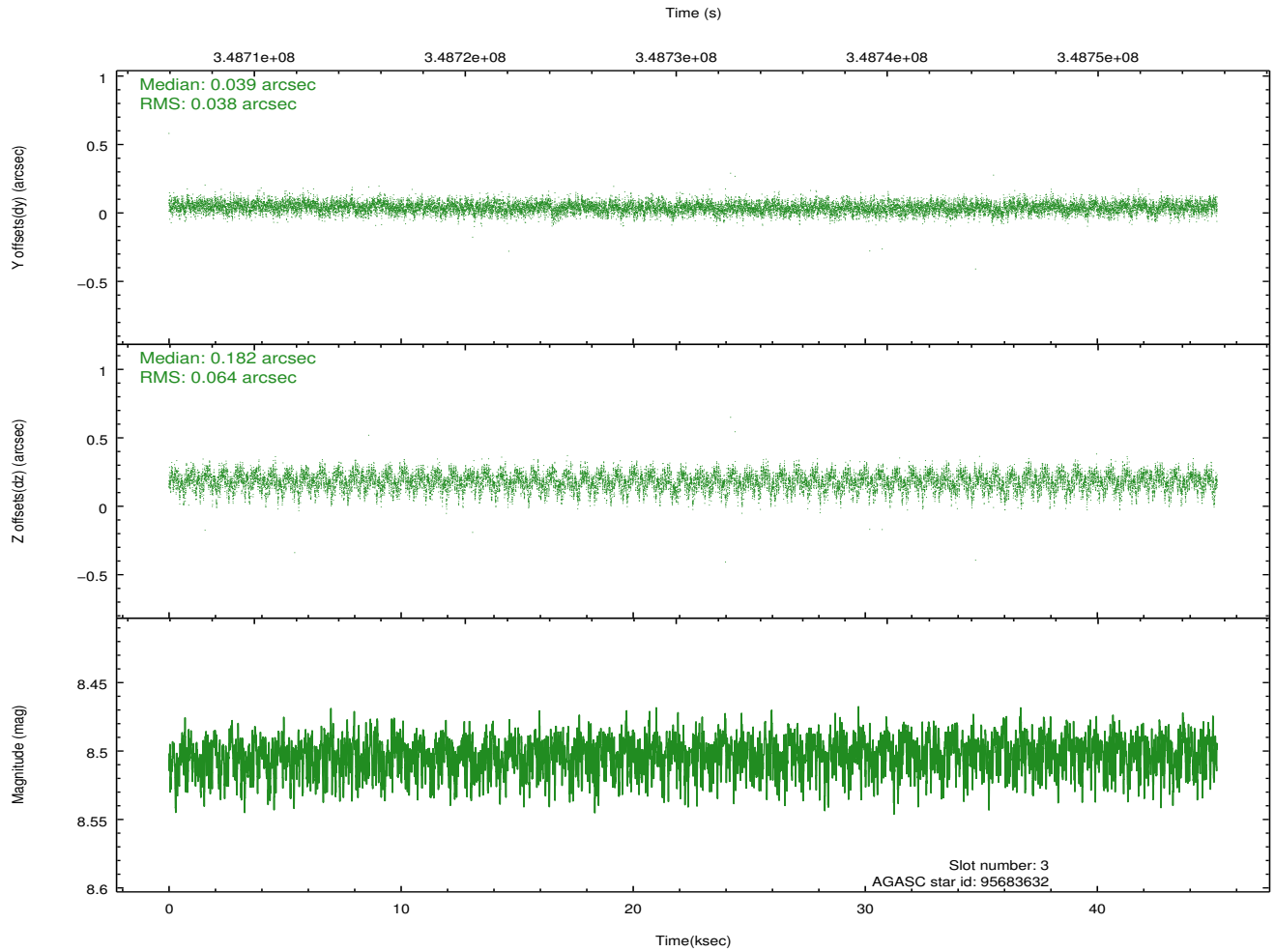
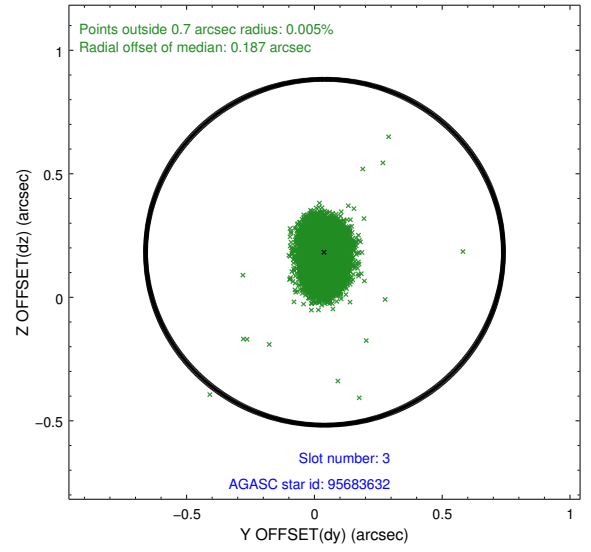
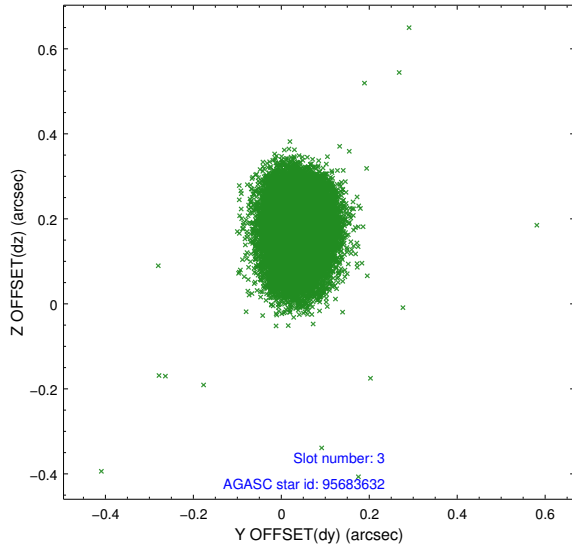


Slot Statistics

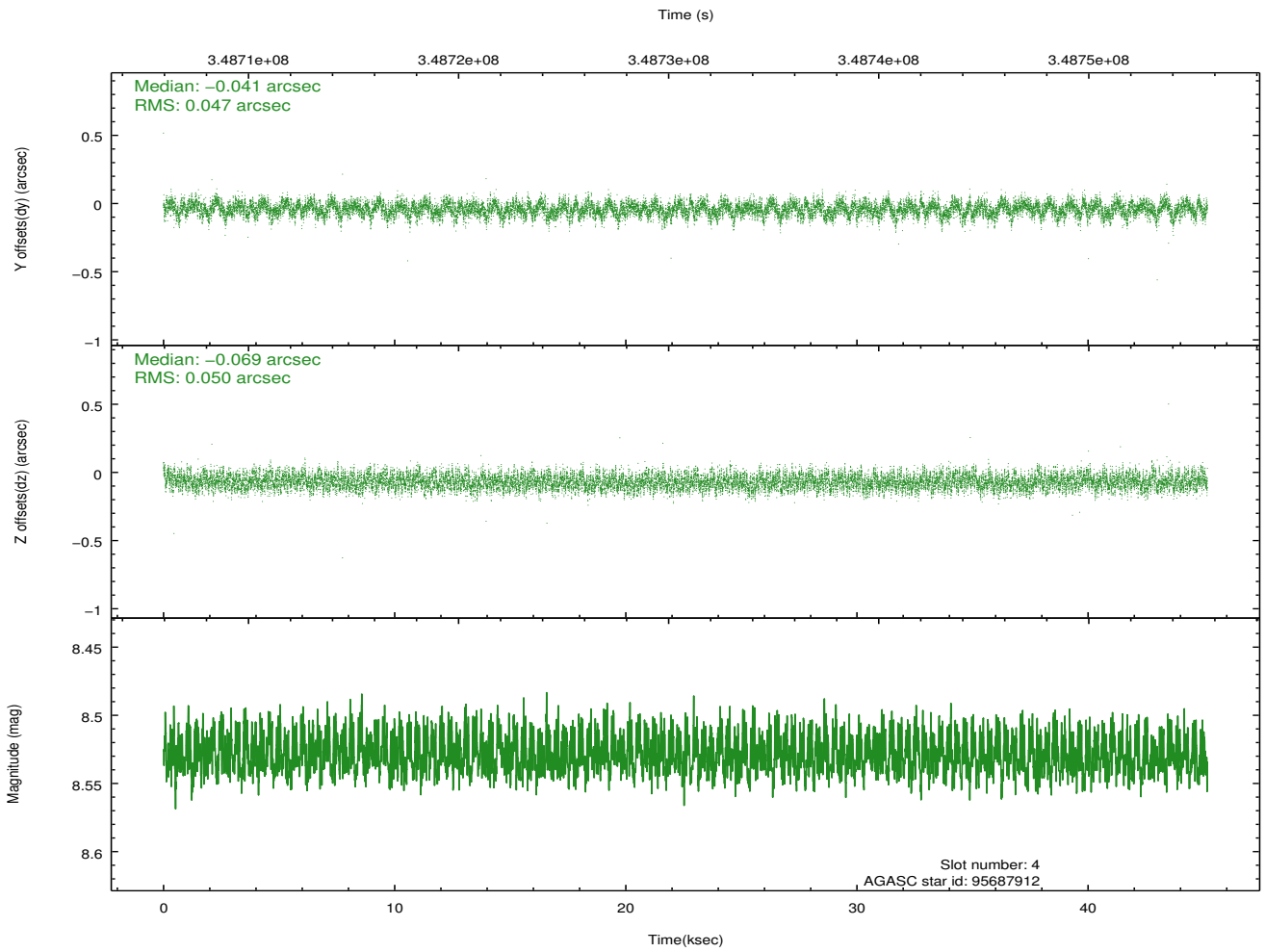
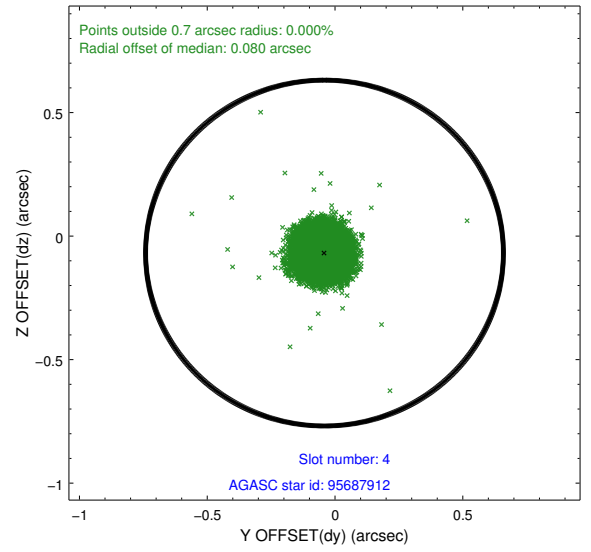
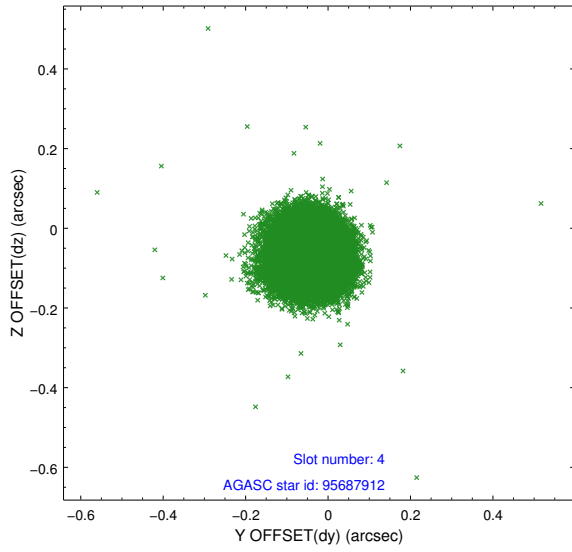
| slot | status | id | mag | n_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_z |
|------|--------|----------|------|-------|--------|--------|-------|-------|-----------|----------|----------|----------|
| 0 | FID | ACIS-S-1 | 6.99 | 11018 | 0.082 | 0.024 | 0.012 | 0.027 | 0.000000 | 0.000000 | 929.69 | -1858.08 |
| 1 | FID | ACIS-S-5 | 7.03 | 11015 | -0.161 | 0.067 | 0.014 | 0.024 | 0.000000 | 0.000000 | -1819.59 | 39.45 |
| 2 | FID | ACIS-S-6 | 7.18 | 11018 | 0.057 | -0.079 | 0.015 | 0.036 | 0.000000 | 0.000000 | 395.18 | 683.30 |
| 3 | GUIDE | 95683632 | 8.50 | 22023 | 0.039 | 0.182 | 0.077 | 0.130 | 93.465248 | 9.270074 | -1835.11 | -2192.42 |
| 4 | GUIDE | 95687912 | 8.53 | 22027 | -0.041 | -0.069 | 0.074 | 0.115 | 93.518845 | 9.149806 | -1366.16 | -2253.47 |
| 5 | GUIDE | 95829000 | 8.95 | 22012 | -0.088 | -0.015 | 0.089 | 0.139 | 93.957582 | 8.850705 | 361.43 | -1473.22 |
| 6 | GUIDE | 95842312 | 8.48 | 22033 | 0.168 | -0.034 | 0.082 | 0.133 | 93.940526 | 8.457435 | 1543.49 | -2255.41 |
| 7 | GUIDE | 95820480 | 8.91 | 22021 | -0.083 | -0.061 | 0.076 | 0.123 | 94.877321 | 9.017875 | 1528.92 | 1640.97 |

2.4 Star Slots

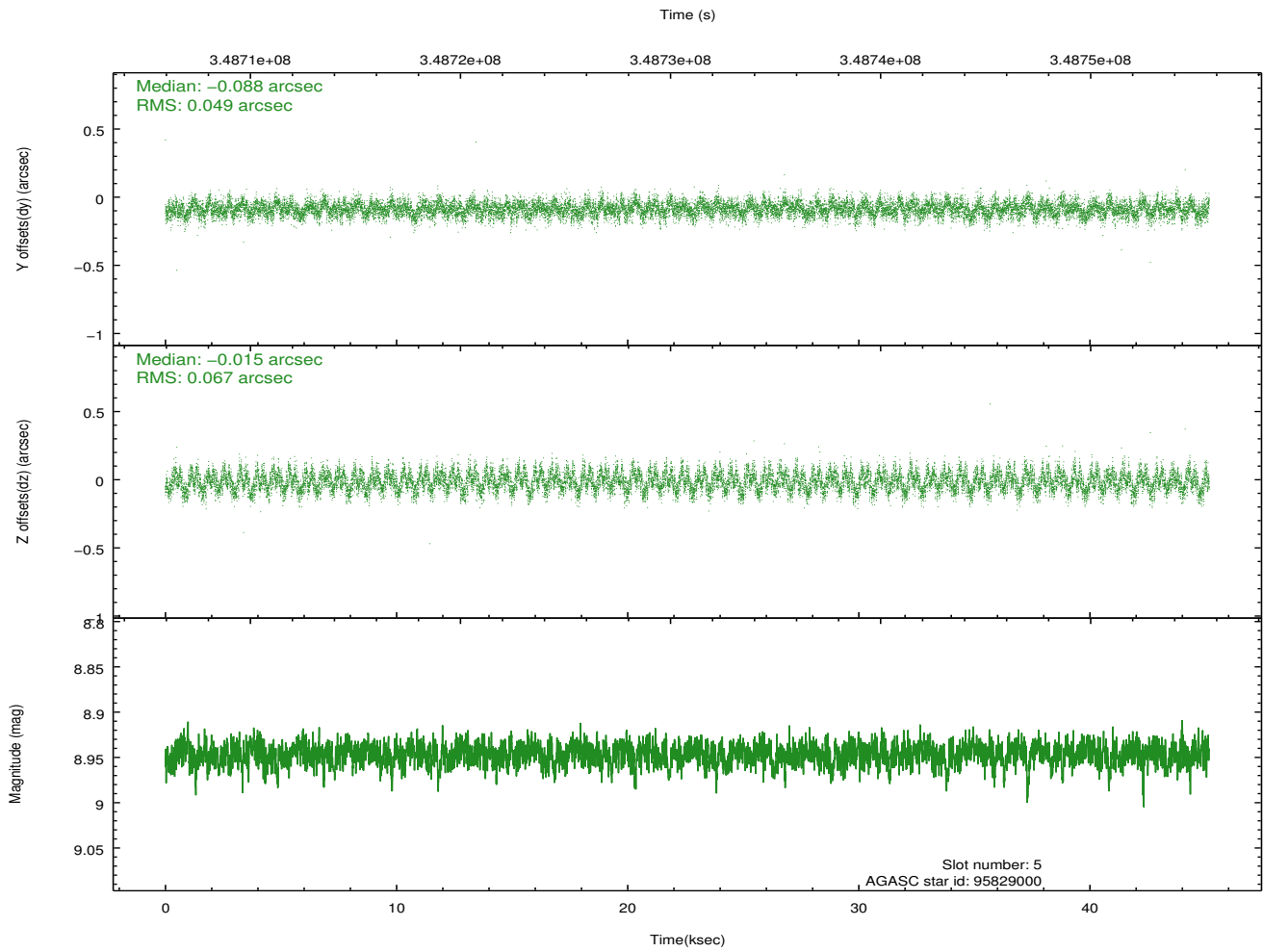
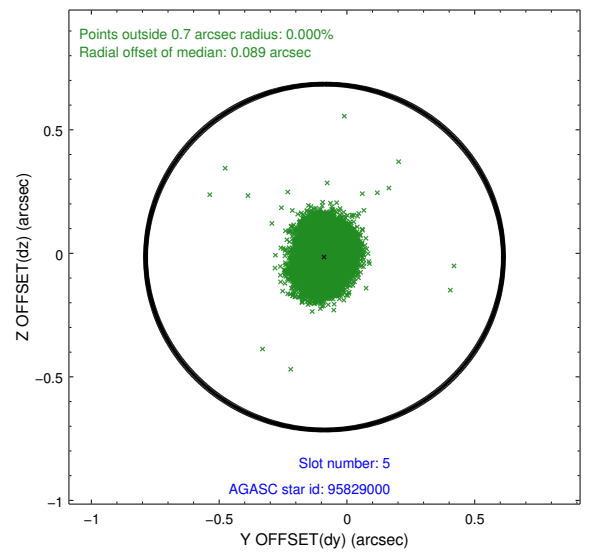
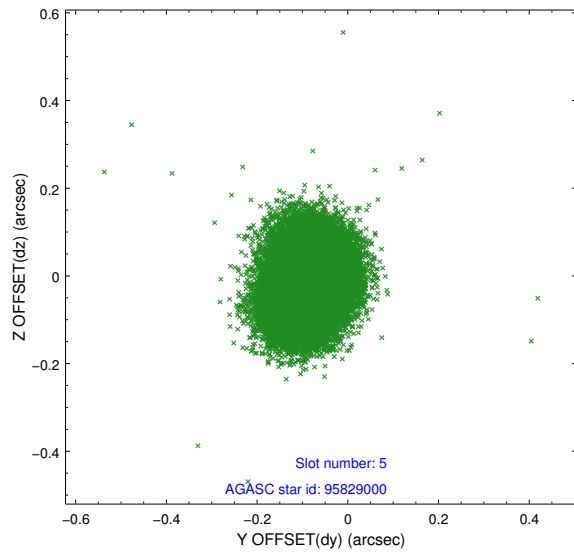
2.4.1 Slot 3



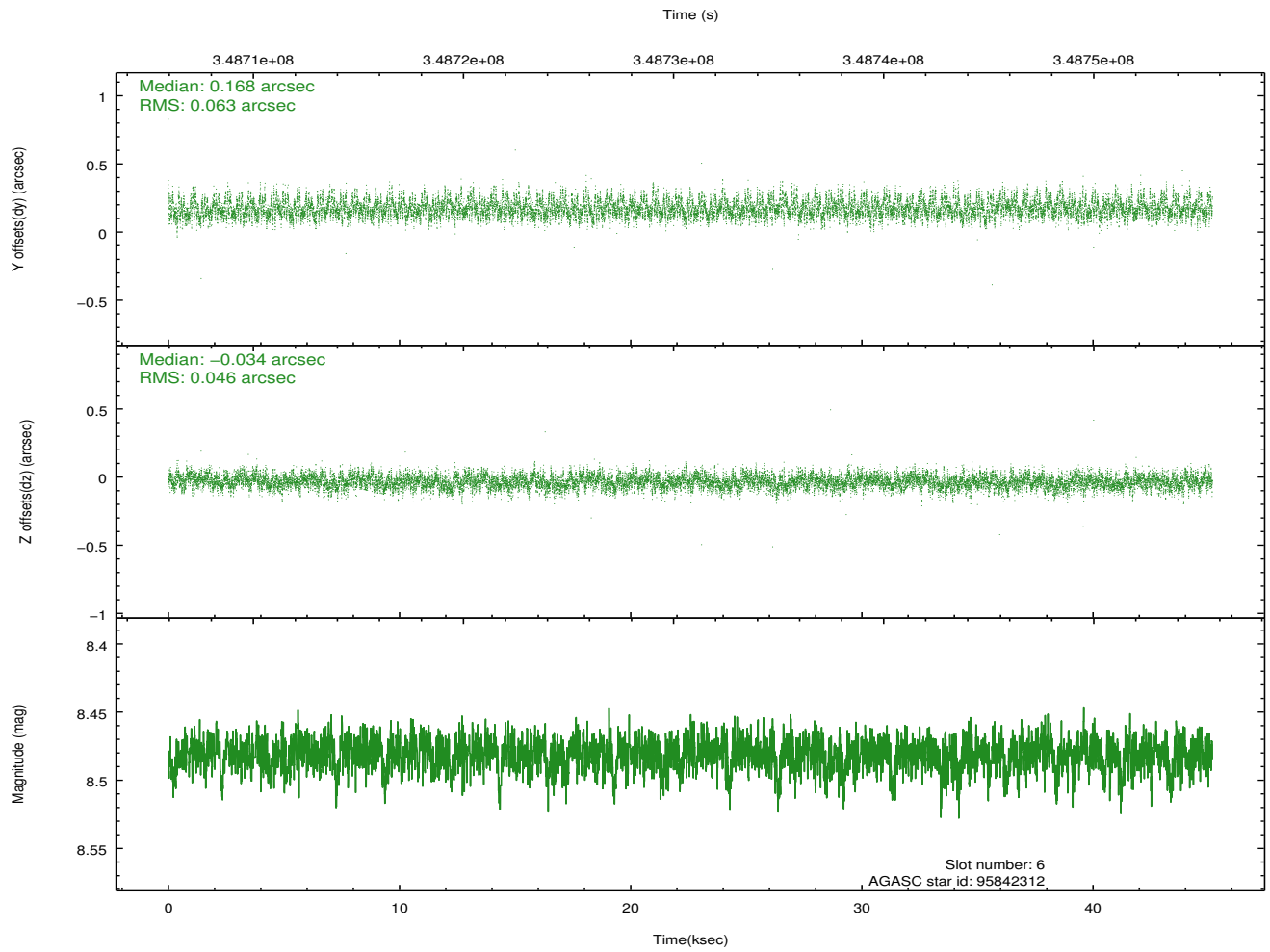
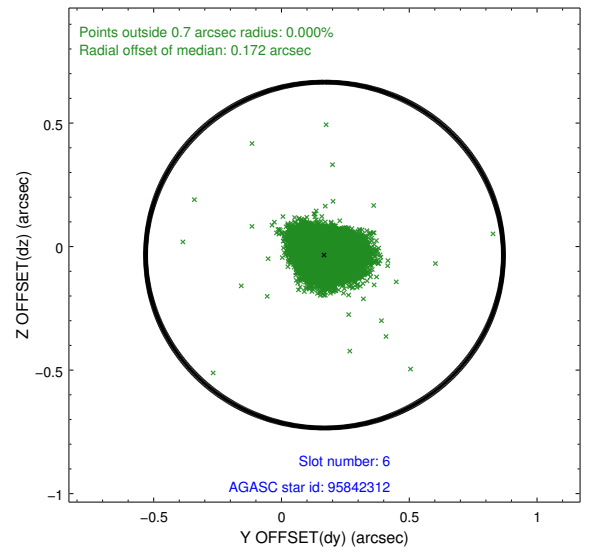
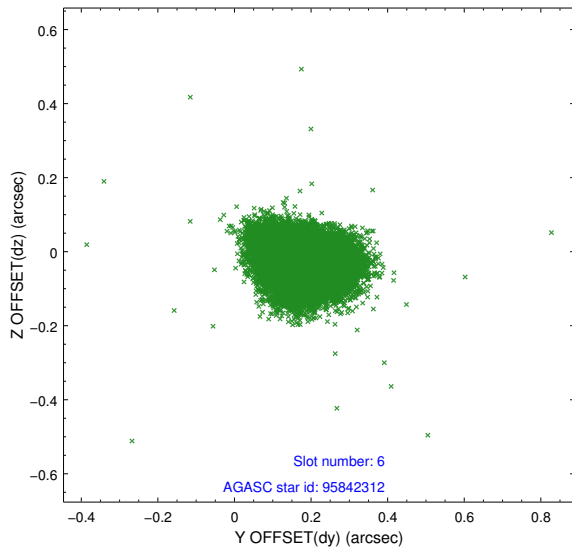
2.4.2 Slot 4



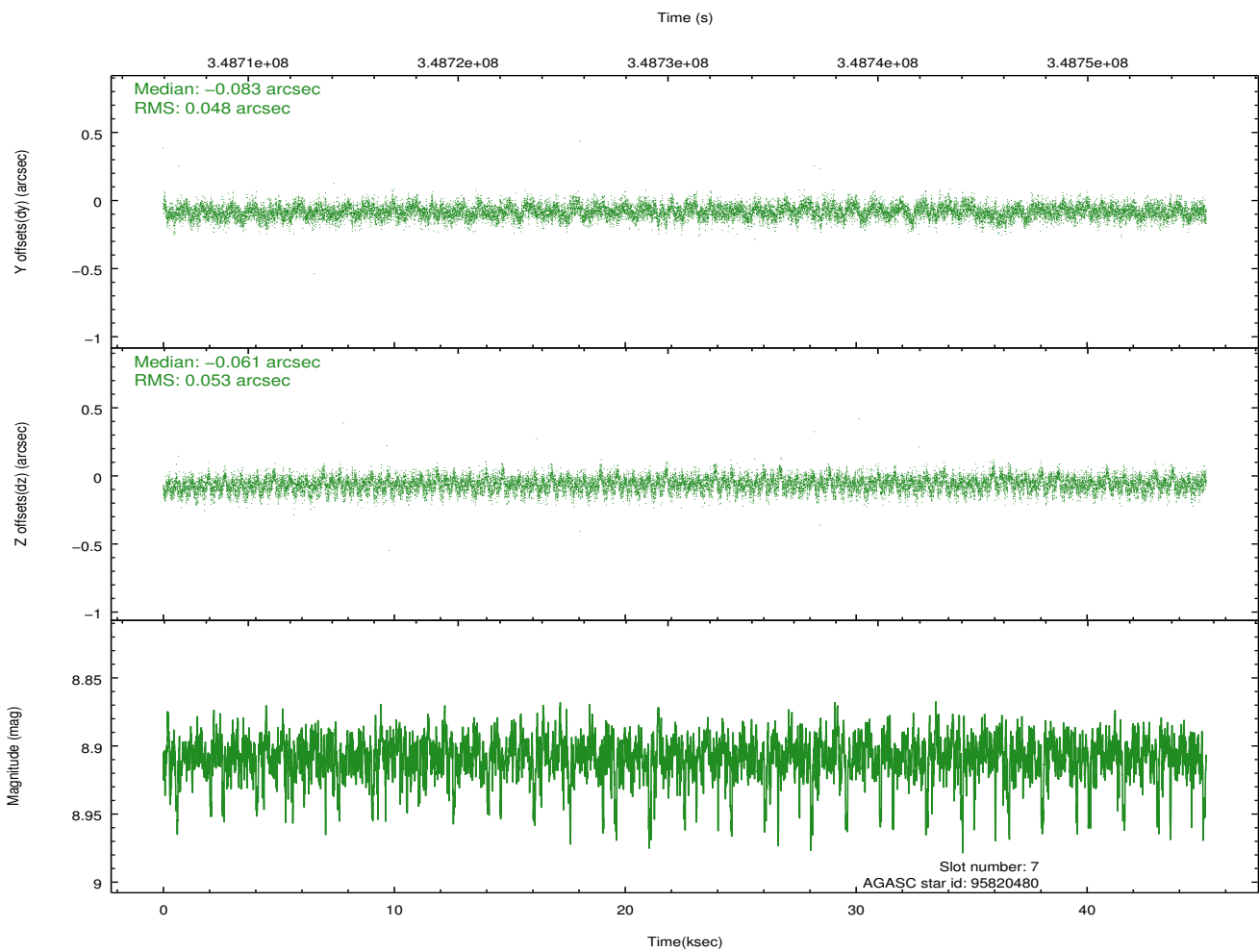
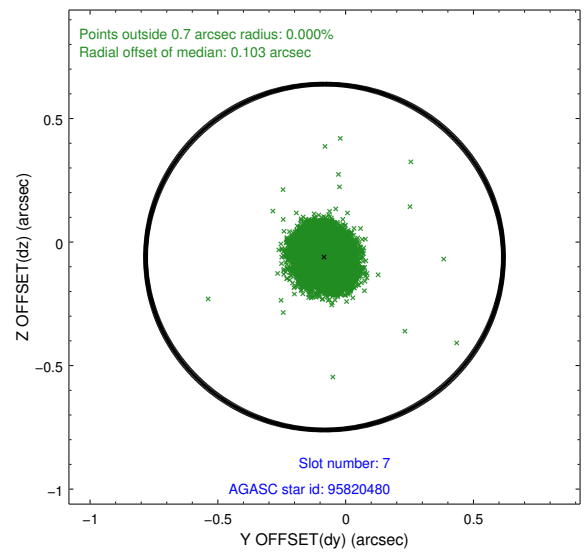
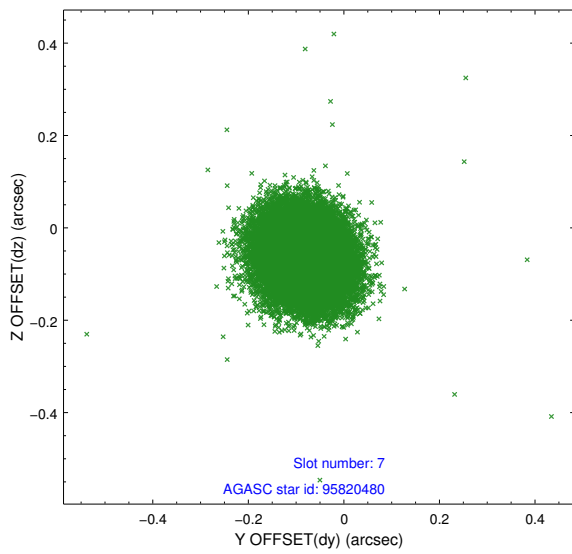
2.4.3 Slot 5



2.4.4 Slot 6

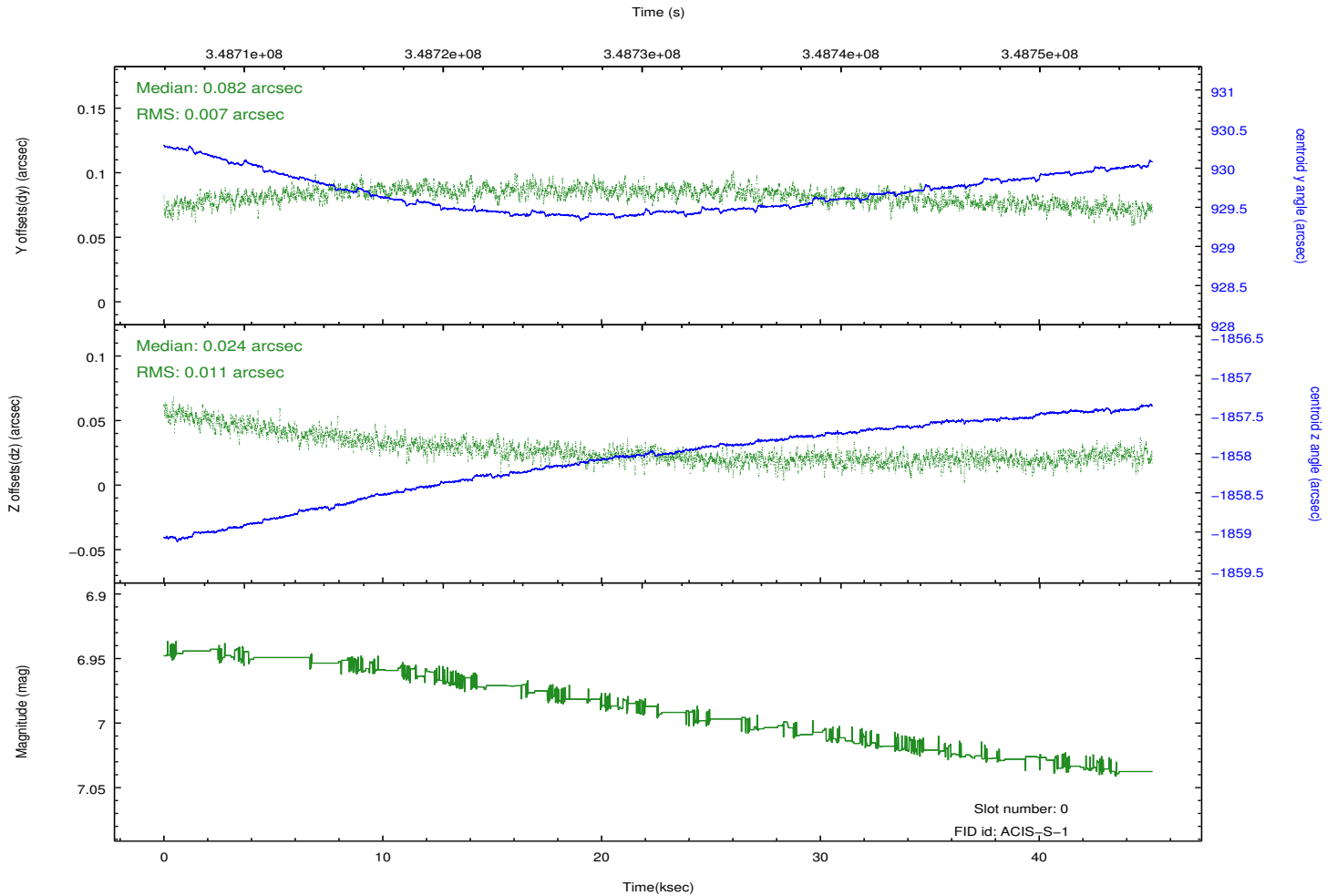
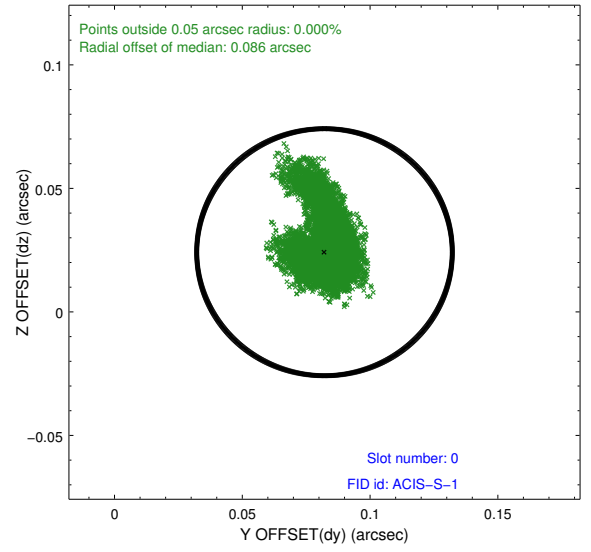
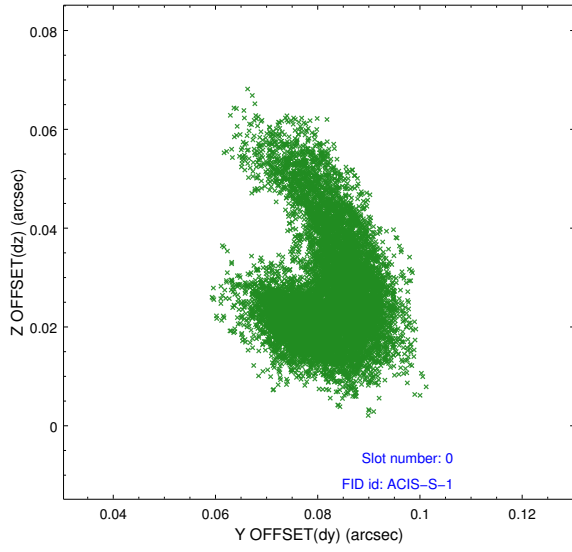


2.4.5 Slot 7

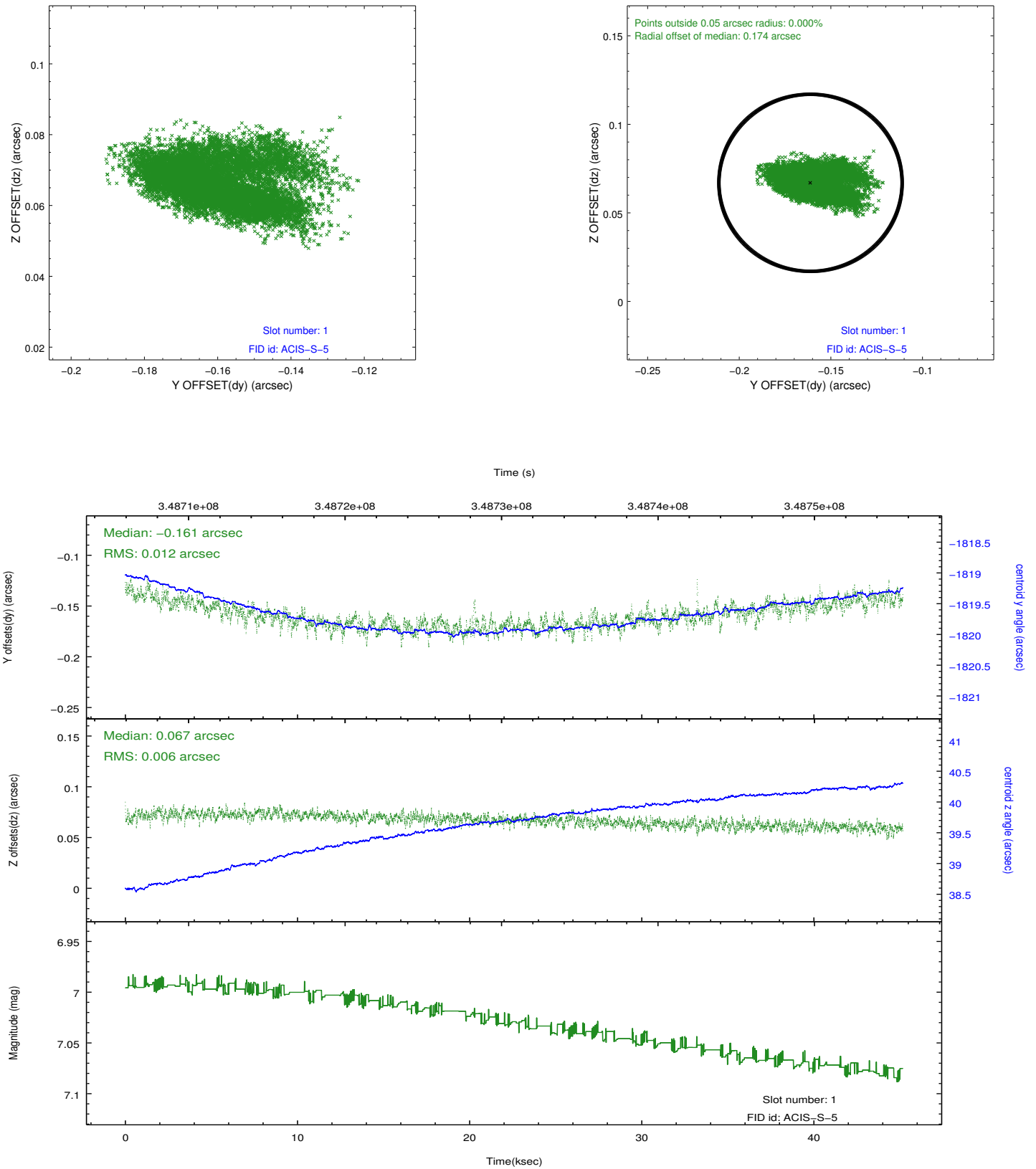


2.5 FID Slots

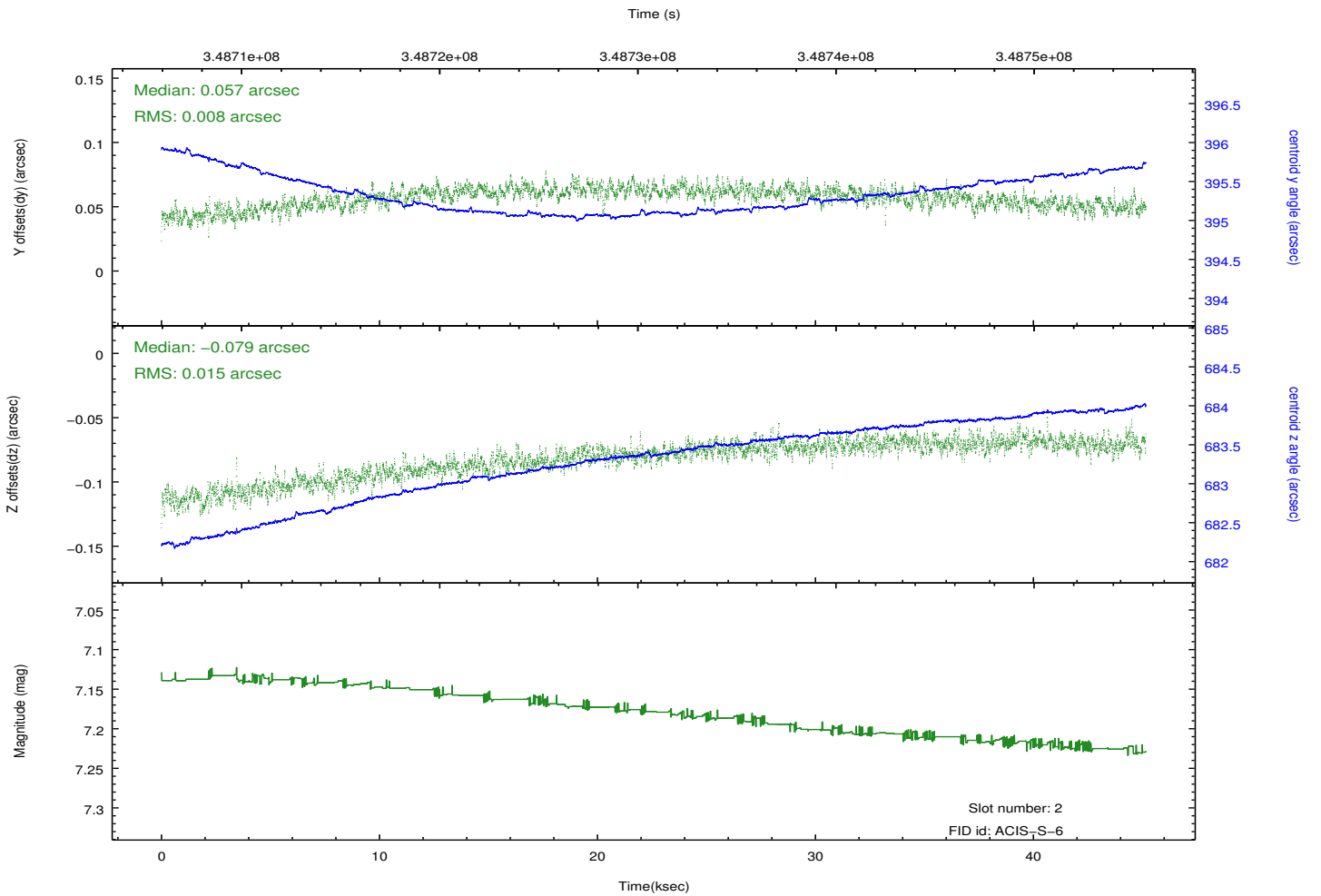
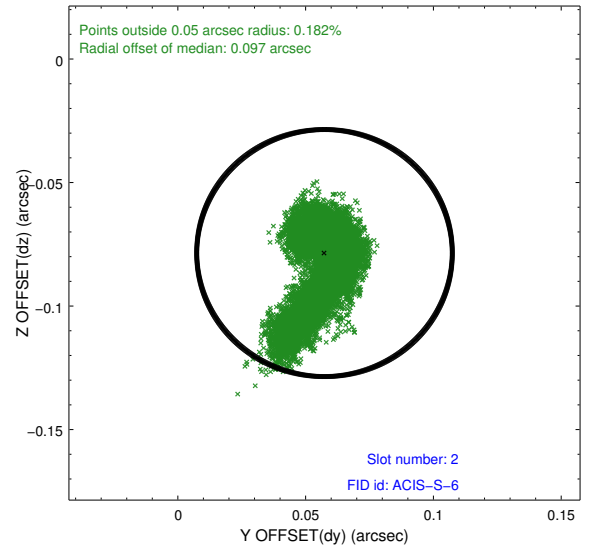
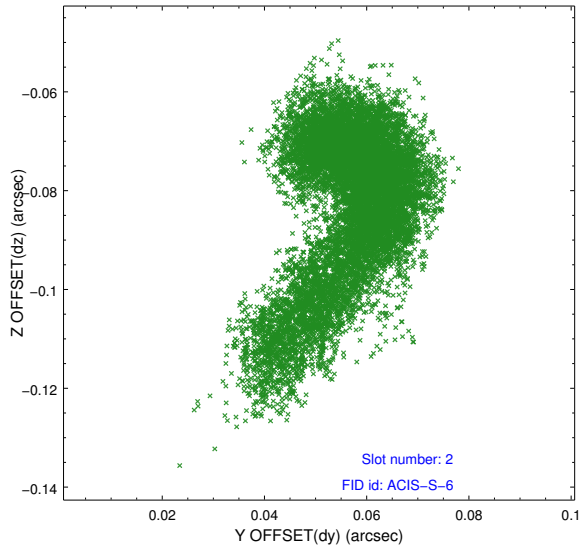
2.5.1 Slot 0



2.5.2 Slot 1

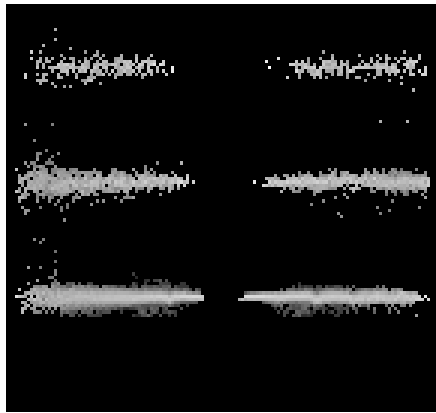


2.5.3 Slot 2

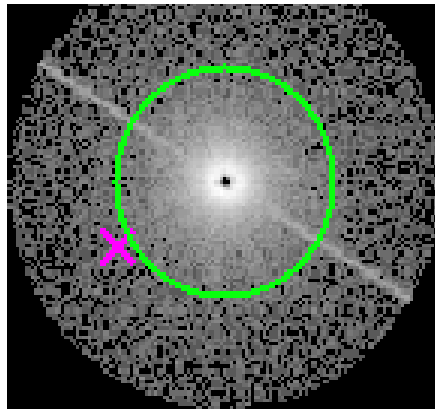


3 Gratings

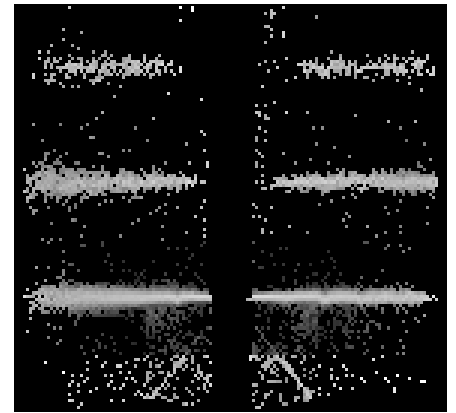
3.1 HEG Arm



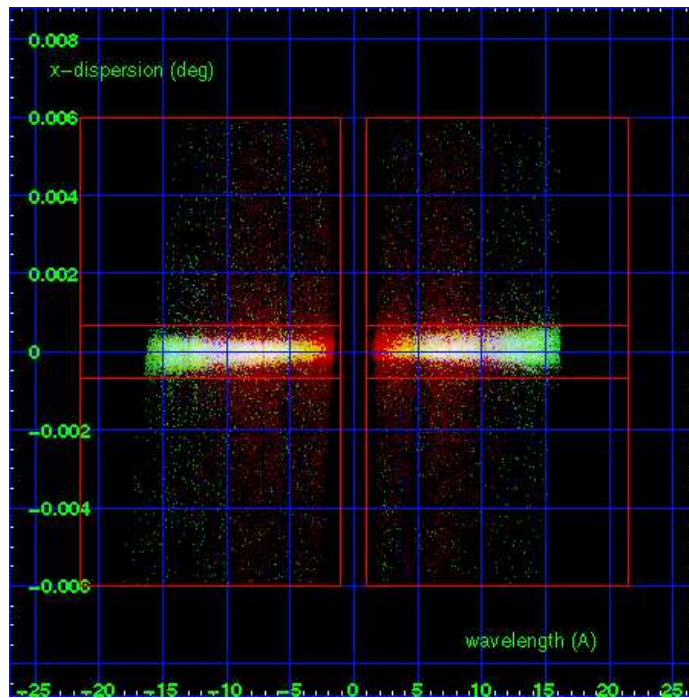
HEG Order Sort 123



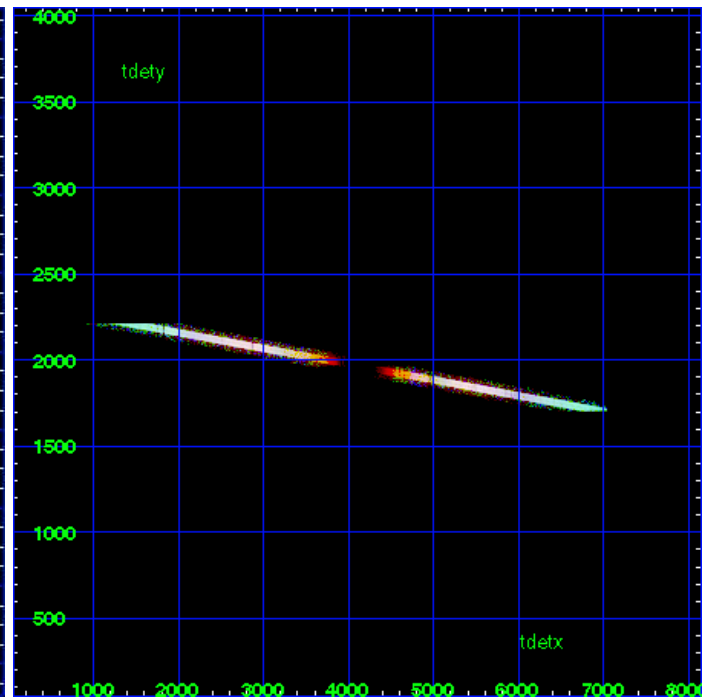
HEG Zero Order



HEG Order Sort ALL

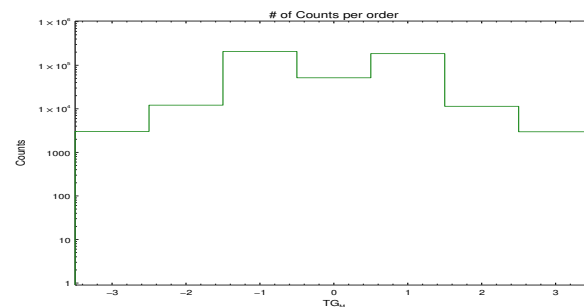


Spot Image HEG

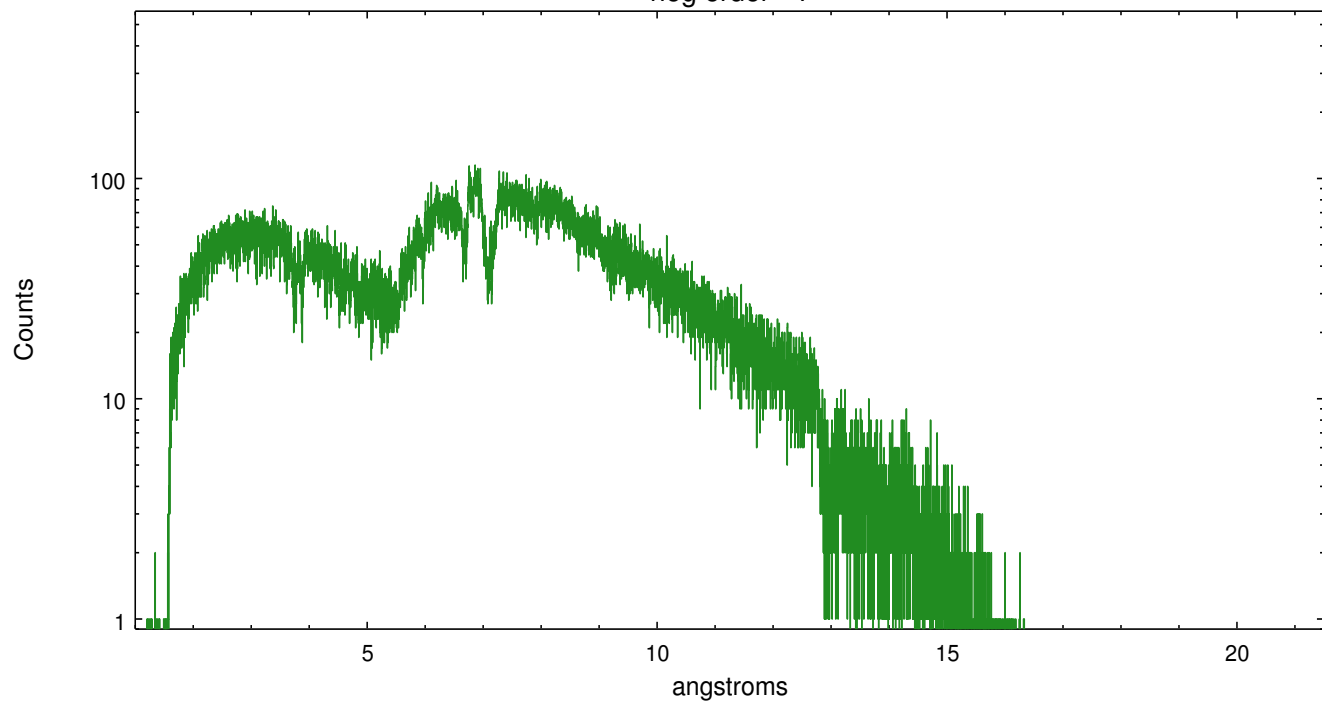


Full Detector HEG

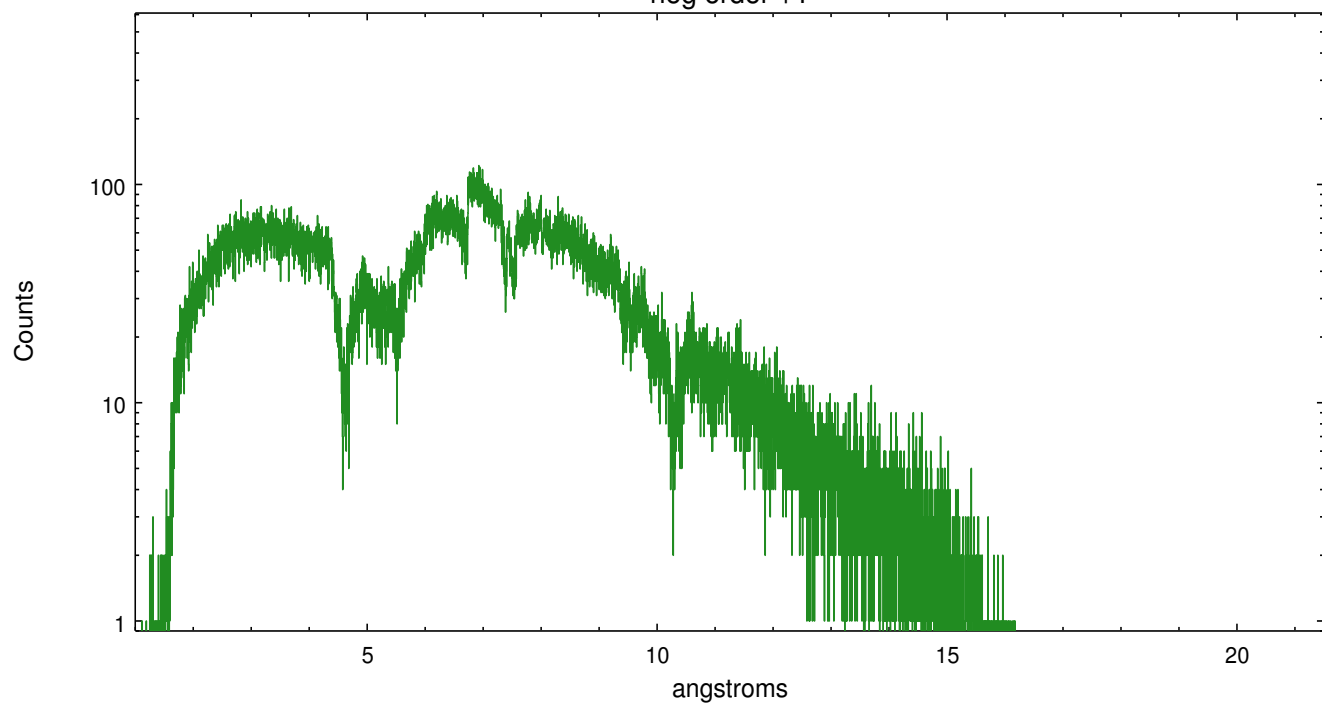
| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|----------|----------|----------|---------|---------|---------|---------|
| Events | 3029 | 12126 | 206880 | 51544 | 184794 | 11403 | 2971 |



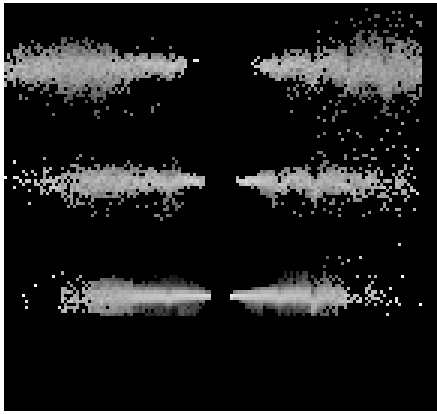
heg order -1



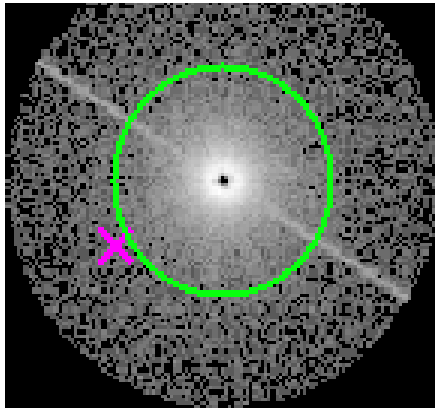
heg order +1



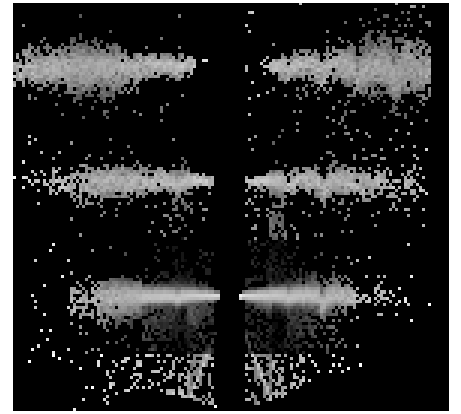
3.2 MEG Arm



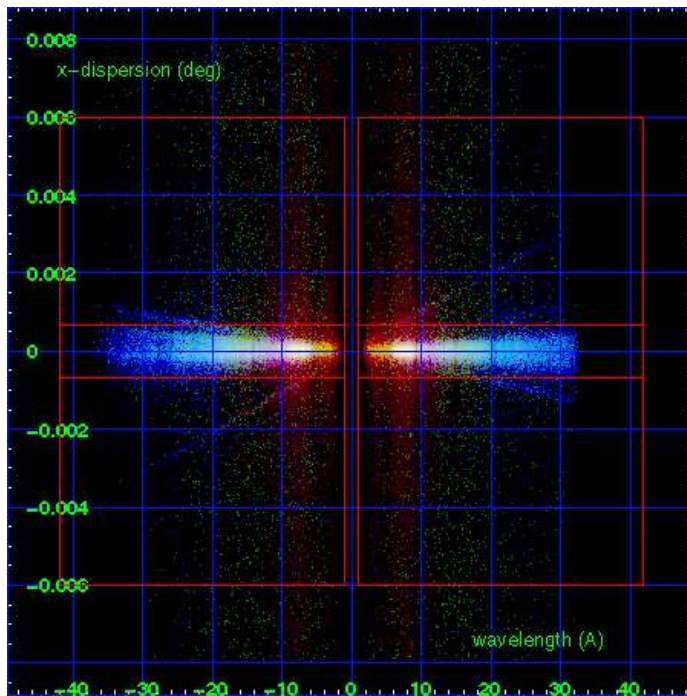
MEG Order Sort 123



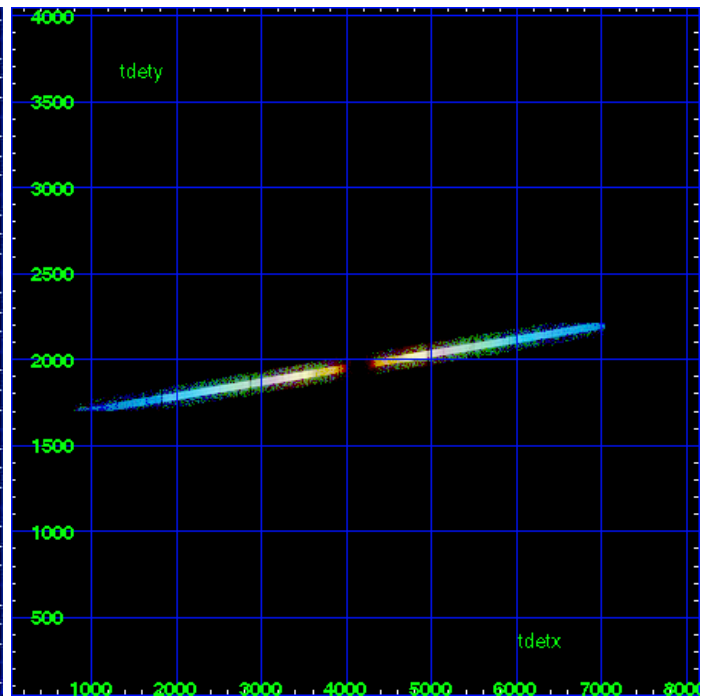
MEG Zero Order



MEG Order Sort ALL

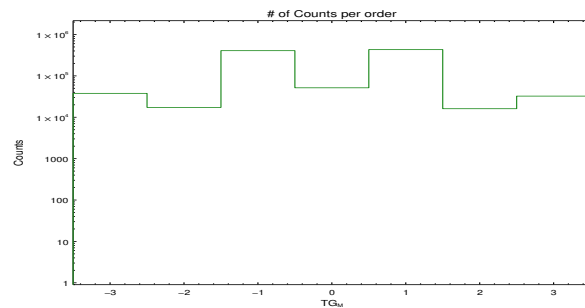


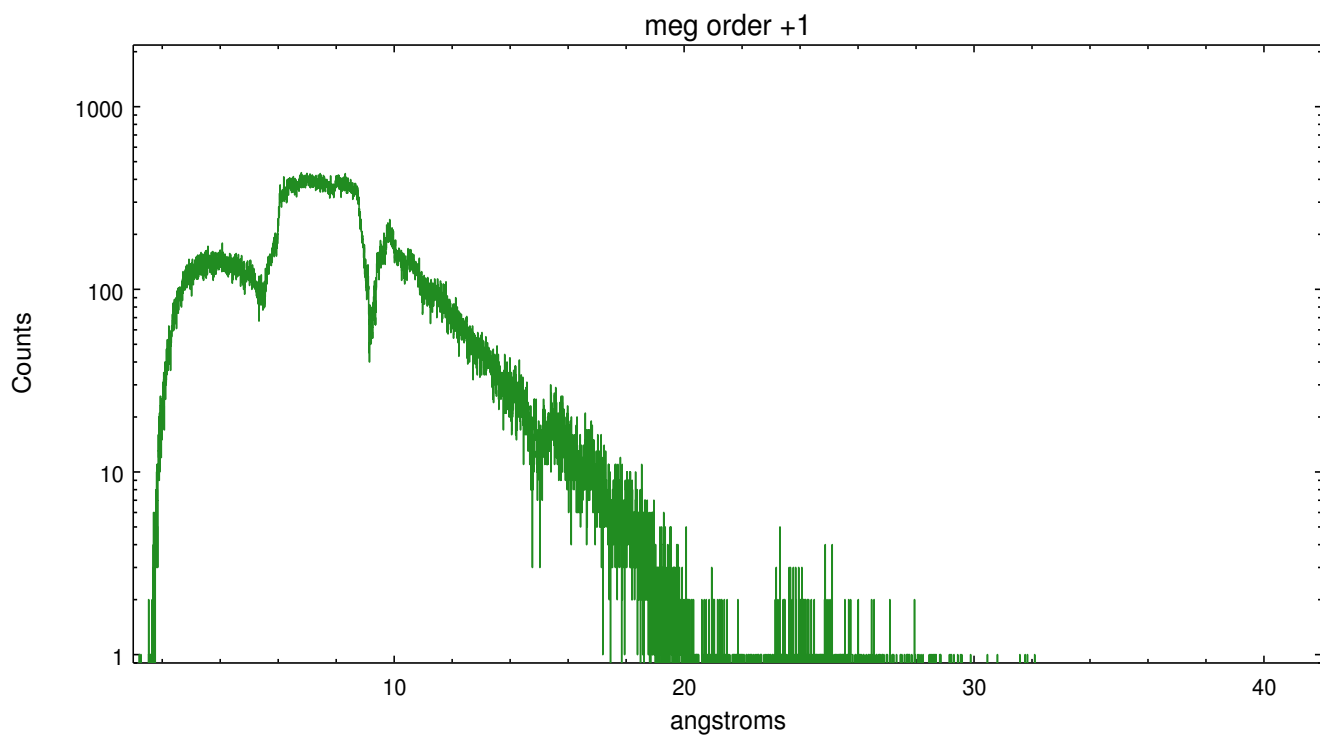
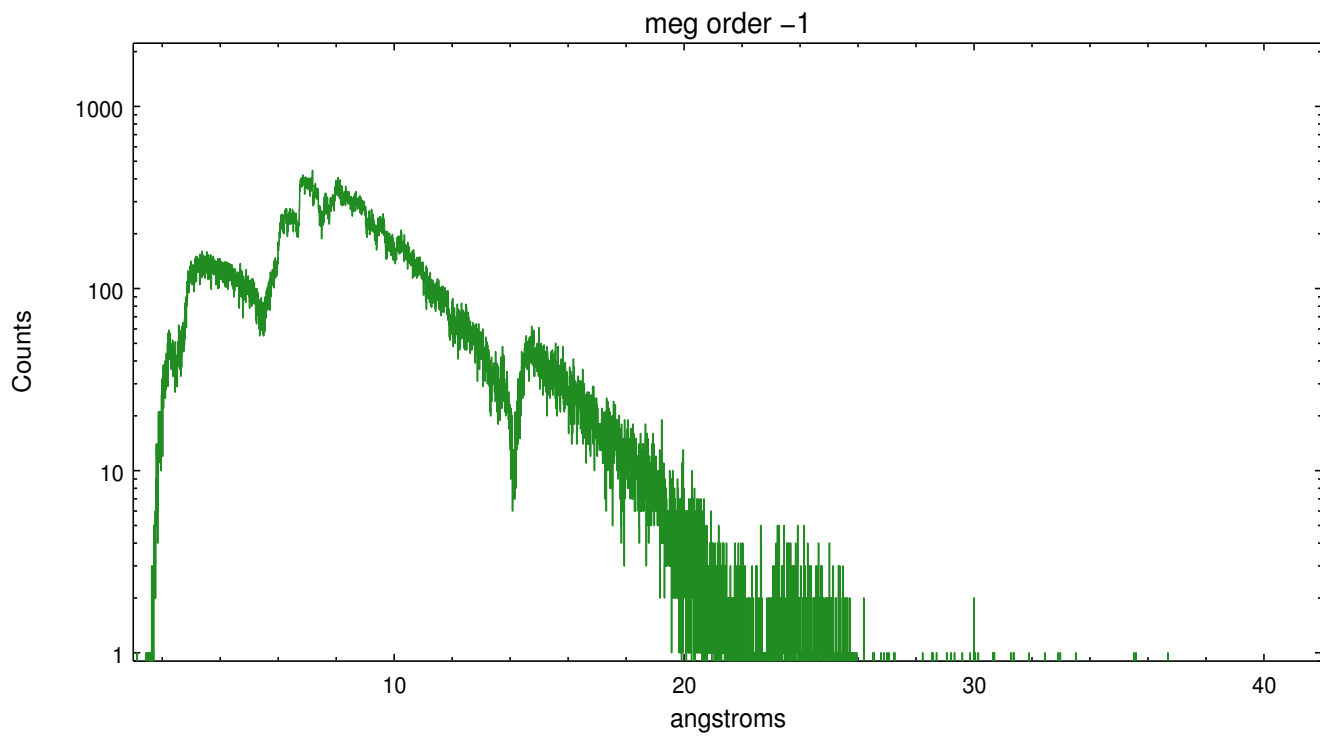
Spot Image MEG



Full Detector MEG

| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|----------|----------|----------|---------|---------|---------|---------|
| Events | 37775 | 17294 | 406929 | 51544 | 431186 | 16103 | 32426 |





A Summary

A.1 Status

| | |
|----------------------------|-------------|
| V&V Scientist | Joy Nichols |
| V&V Date (YYYY-MM-DD) | 2012.05.30 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 45.1655996 |

A.2 Comments

Zeroth order piled up. Standard data processing software did not correctly locate the zeroth order due to pileup. Manual intervention was used to input the correct sky coordinates (x=4126.12, y=4113.78) into the *srcla.fits file table. These corrected coordinates were determined using a software tool developed by CXC called findzero, which is expected to be released in CIAO (currently in ISIS). The tool calculates the point of intersection of the readout streak and the meg arm. The zeroth order source position determined by the standard pipeline processing using the tool tgdetect was not used in this processing. The newly determined zeroth order coordinates have been placed in the *srcla.fits file, replacing the coordinates determined by tgdetect. Note that these corrected coordinates of the zeroth order cannot be reproduced by running tgdetect on the data.