

V&V Reference Report

L2 ASCDS Version : 10.8.1

Observation 22343 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Dec 30 2019

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1 Front

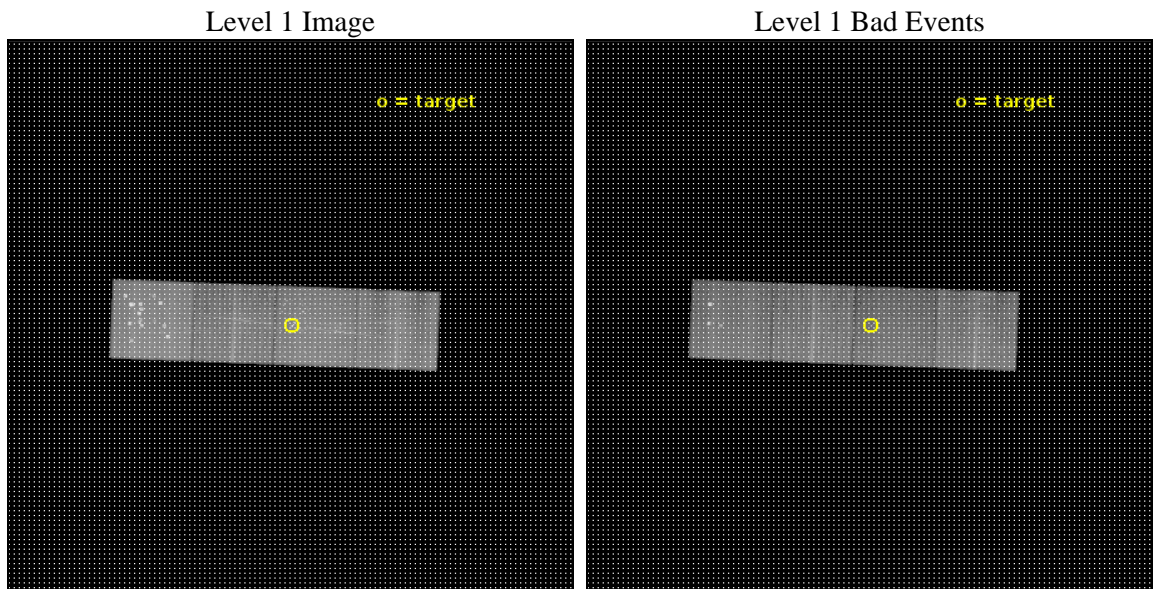
| | | |
|----------|--|---|
| seq_num | 201298 | Sequence number |
| obs_id | 22343 | Observation id |
| title | THE TRUE NATURE OF X-RAYS FROM THE ORION TRAPEZIUM | Proposal title |
| observer | Norbert Schulz | Principal investigator |
| object | Orion Nebula Cluster | Source name |
| dtcycle | 0 | |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 83.81875 | Observer's specified target RA [deg] |
| dec_targ | -5.38975 | Observer's specified target Dec [deg] |
| ra_nom | 83.821237711809 | Nominal RA [deg] |
| dec_nom | -5.385680857747 | Nominal Dec [deg] |
| roll_nom | 2.3194929243634 | Nominal Roll [deg] |
| revision | 2 | Processing version of data |
| ontime | 25062.080678105 | Sum of GTIs [s] |
| livetime | 24734.626143611 | Livetime [s] |
| ontime5 | 25062.039638162 | Sum of GTIs [s] |
| ontime6 | 25058.857527733 | Sum of GTIs [s] |
| ontime7 | 25062.080678105 | Sum of GTIs [s] |
| ontime8 | 25061.957558155 | Sum of GTIs [s] |
| l2events | 345877 | Number of level 2 events |



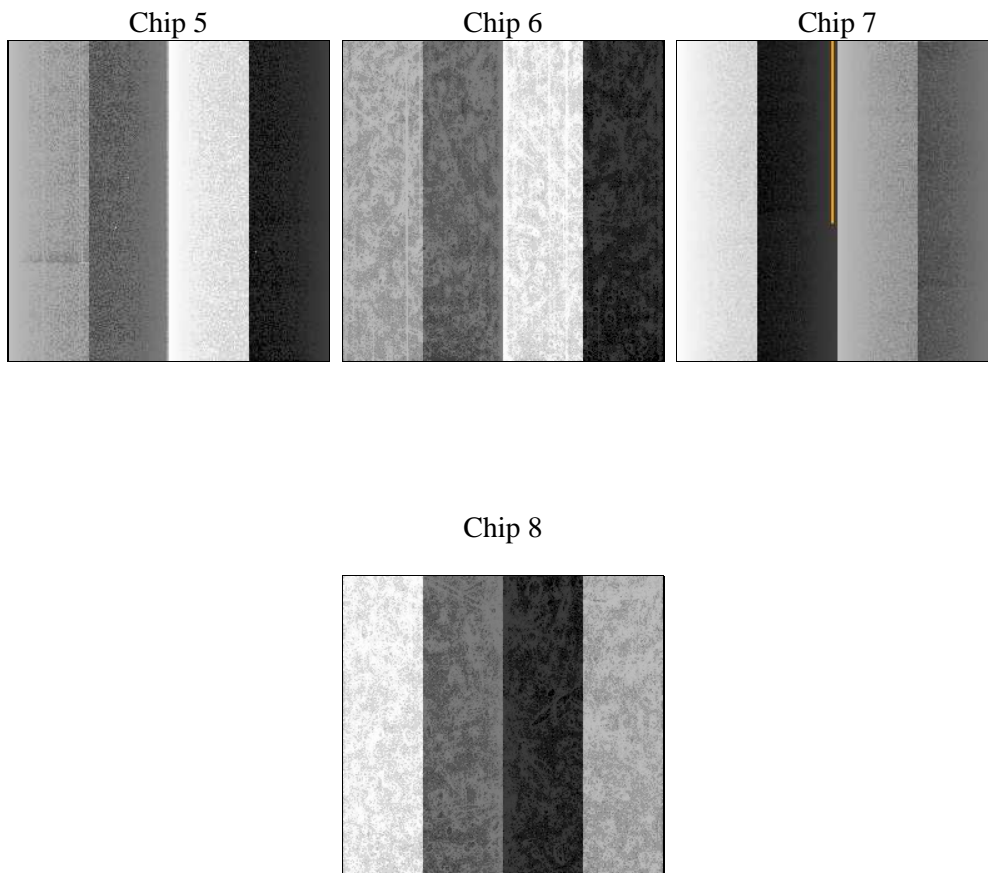
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|--------------------|---|
| obi_num | 0 | Obi number | sched_exp_time | 25000.000000 | [s] Scheduled observation exposure time |
| ascdsver | 10.8.1 | Processing system revision | ontime | 25062.080678105 | Sum of GTIs [s] |
| caldsver | 4.8.4.2 | | ontime5 | 25062.039638162 | Sum of GTIs [s] |
| date | 2019-12-30T22:00:27 | Date and time of file creation | ontime6 | 25058.857527733 | Sum of GTIs [s] |
| revision | 2 | Processing version of data | ontime7 | 25062.080678105 | Sum of GTIs [s] |
| | | | ontime8 | 25061.957558155 | Sum of GTIs [s] |
| | | | l1events | 1167587 | Number of level 1 events |
| | | | tgmethod | TGDETECT | Method used to create src1a file |
| | | | zo_pos | (4114.99, 4067.48) | src1a sky pixel position |

2.1.4 Events

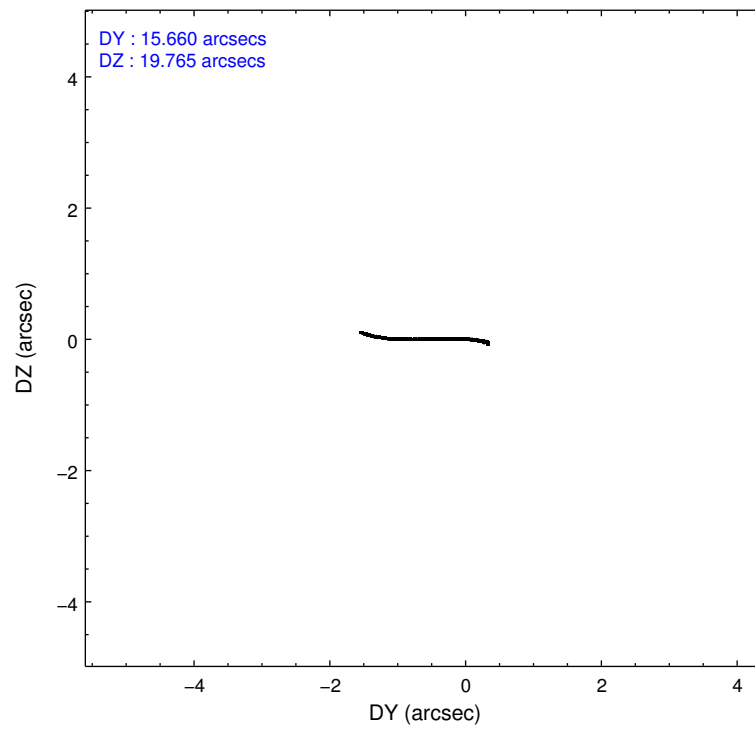
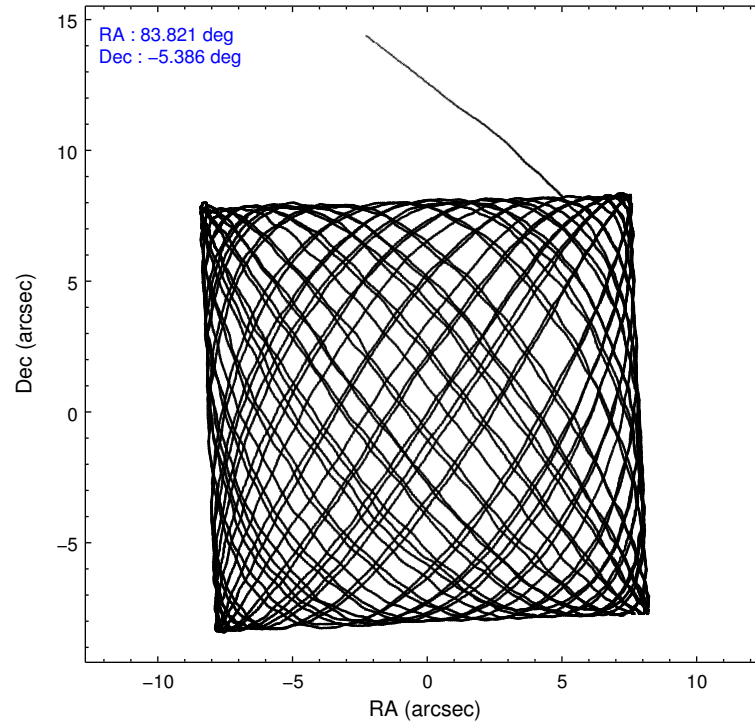
| | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|-----------------|--------|--------|--------|--------|
| level 1 events | 392213 | 220148 | 290493 | 264733 |
| rejected events | 179810 | 183472 | 146331 | 191580 |
| rejected % | 45% | 83% | 50% | 72% |

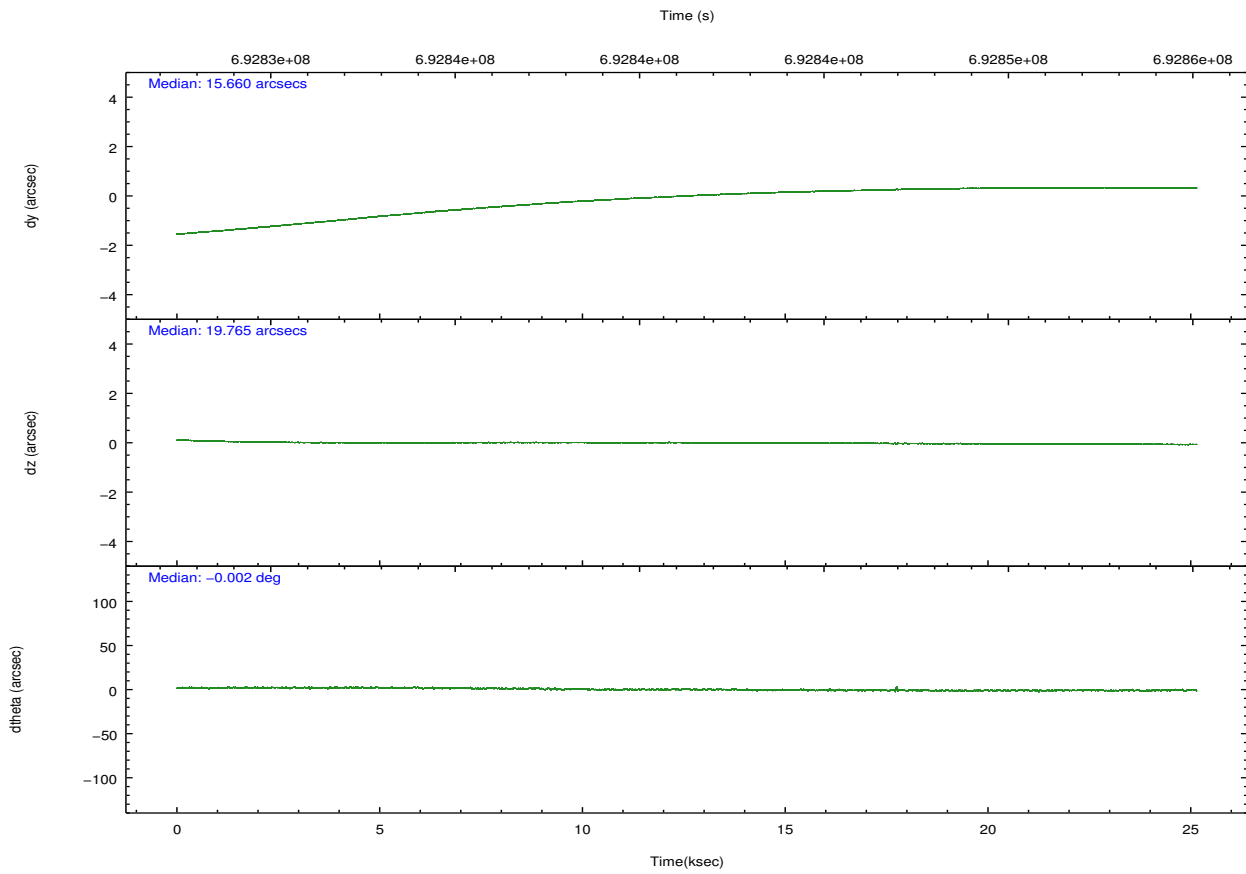
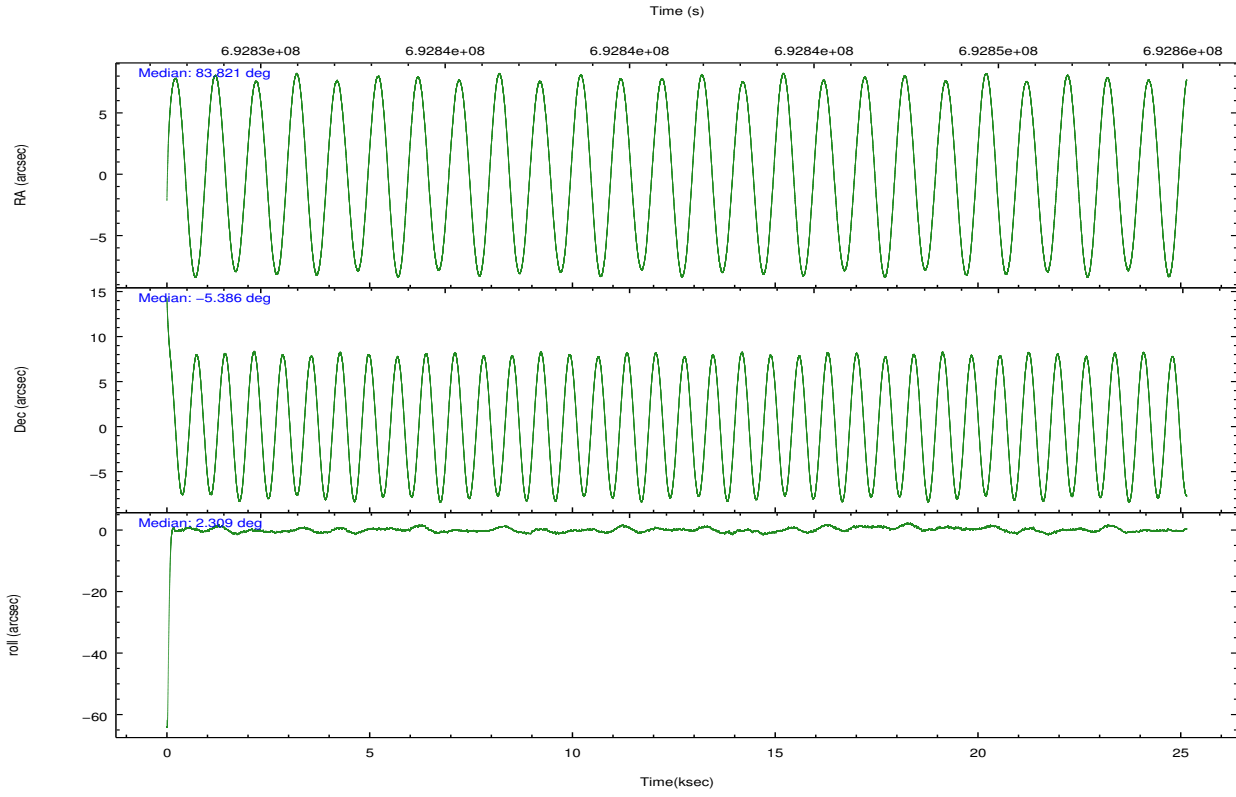
| | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|----------------|--------|--------|--------|--------|
| grade 0 events | 59329 | 17841 | 16468 | 23922 |
| | 15% | 8% | 5% | 9% |
| grade 1 events | 885 | 146 | 477 | 203 |
| | 0% | 0% | 0% | 0% |
| grade 2 events | 58957 | 7724 | 32325 | 17071 |
| | 15% | 3% | 11% | 6% |
| grade 3 events | 5211 | 2411 | 12027 | 6859 |
| | 1% | 1% | 4% | 2% |
| grade 4 events | 4338 | 2360 | 11830 | 6384 |
| | 1% | 1% | 4% | 2% |
| grade 5 events | 22241 | 8431 | 25172 | 13433 |
| | 5% | 3% | 8% | 5% |
| grade 6 events | 84599 | 6347 | 71529 | 18934 |
| | 21% | 2% | 24% | 7% |
| grade 7 events | 156653 | 174888 | 120665 | 177927 |
| | 39% | 79% | 41% | 67% |

2.2 Compared Parameters

| Parameter | Planned | Actual | Parameter | Planned | Actual |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument | ACIS | ACIS | Obspar format version number | 7 | 7 |
| Detector | ACIS-5678 | ACIS-5678 | Obspar file type | PREDICTED | ACTUAL |
| Grating | HETG | HETG | Obspar update status | NONE | UPDATED |
| Data mode | FAINT | FAINT | CCD I0 on | N | N |
| Observation mode | POINTING | POINTING | CCD I1 on | N | N |
| [deg] Pointing RA | 83.798130 | 83.82123771180932 | CCD I2 on | N | N |
| [deg] Pointing Dec | -5.400667 | -5.38568085774696 | CCD I3 on | N | N |
| [deg] Pointing Roll | 2.160725 | 2.319492924363397 | CCD S0 on | O1 | N |
| [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 | -190.132523 | -190.1425803651734 | CCD S3 on | Y | Y |
| [mm] SIM translation stage offset | 0 | 0.01005778216563158 | CCD S4 on | Y | Y |
| [s] Observation start time (MET) | 692828878.184000 | 692827524.07118 | CCD S5 on | O2 | N |
| Observation start date | 2019-12-15T20:26:49 | 2019-12-15T20:05:24 | Number of optional ACIS chips dropped | 2 | 2 |
| [s] Observation end time (MET) | 692853878.184000 | 692854677.34782 | On-chip summing requested | N | N |
| Observation end date | 2019-12-16T03:23:29 | 2019-12-16T03:37:57 | Subarray requested | NONE | NONE |
| Read mode | TIMED | TIMED | Alternating exposures requested | N | N |
| | | | [s] Primary exposure time | 0.000000 | 3.1 |

2.3 Aspect





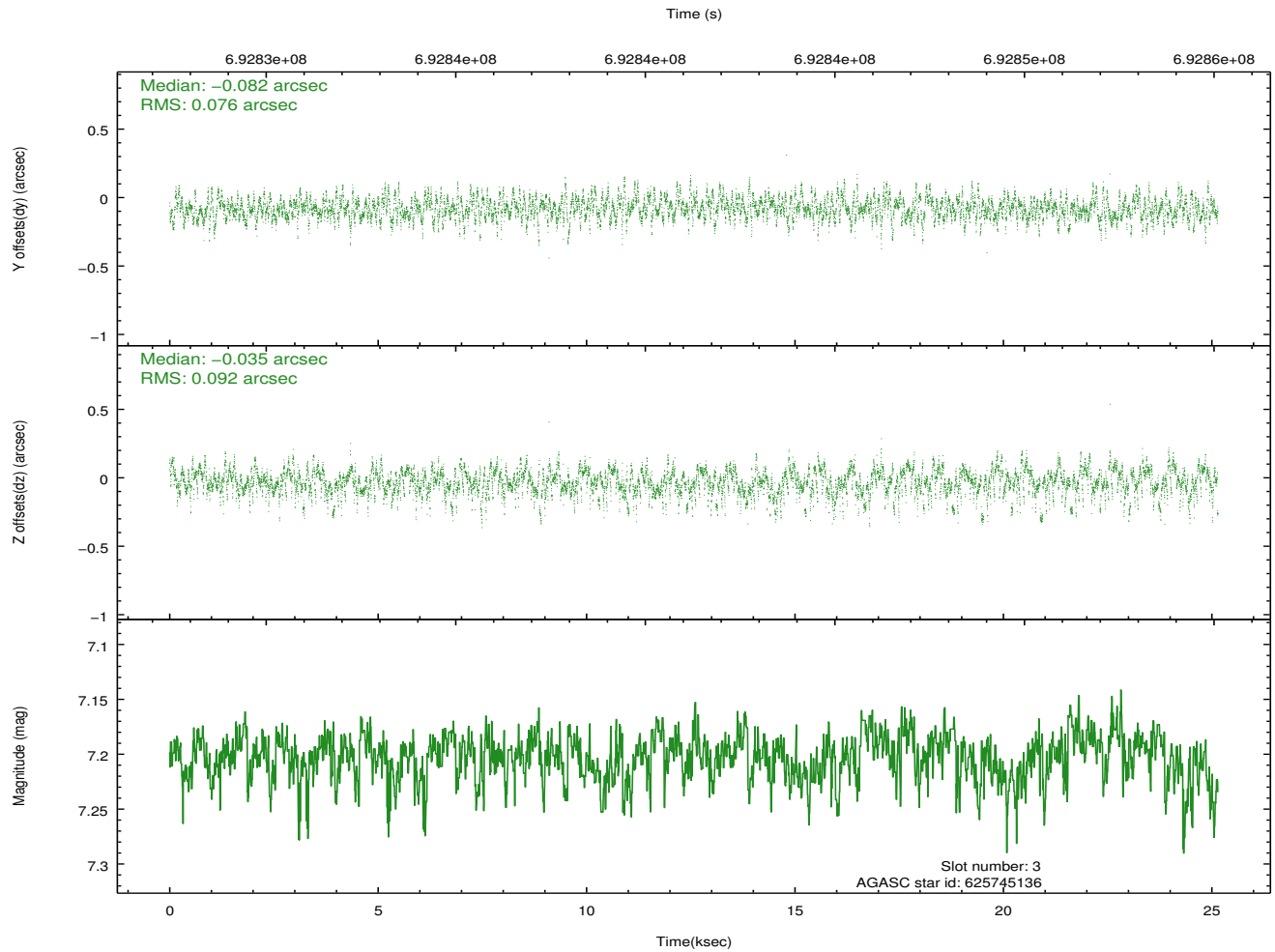
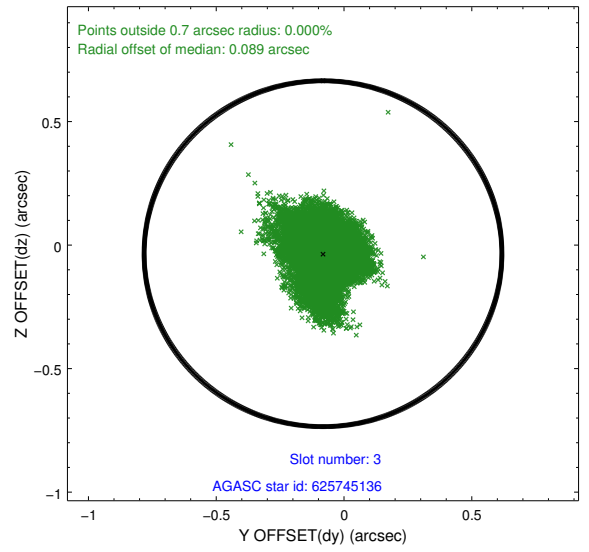
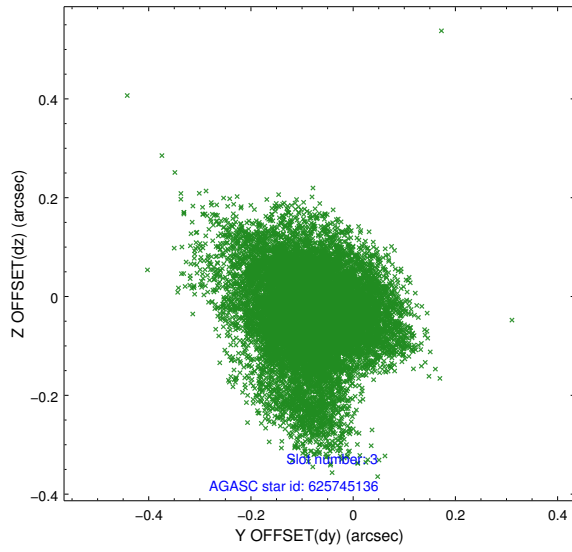
Slot Statistics

| slot | status | used | id | mag | n_pts | frac_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_x |
|------|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|-----------|-----------|---------|--------|
| 0 | FID | | ACIS-S-2 | 7.10 | 6133 | 1.000 | -0.498 | -0.328 | 0.012 | 0.033 | 0.000000 | 0.000000 | -768.96 | -1741 |
| 1 | FID | | ACIS-S-4 | 7.24 | 6134 | 1.000 | 0.521 | 0.305 | 0.012 | 0.031 | 0.000000 | 0.000000 | 2145.33 | 167 |
| 2 | FID | | ACIS-S-6 | 7.38 | 6134 | 1.000 | -0.049 | 0.030 | 0.014 | 0.026 | 0.000000 | 0.000000 | 393.69 | 804 |
| 3 | GUIDE | used | 625745136 | 7.20 | 12264 | 1.000 | -0.082 | -0.035 | 0.125 | 0.208 | 83.600341 | -4.804339 | -628.50 | 2171 |
| 4 | GUIDE | used | 625874672 | 7.66 | 12266 | 1.000 | -0.241 | -0.505 | 0.107 | 0.180 | 84.403143 | -4.934124 | 2231.05 | 1595 |
| 5 | GUIDE | used | 626272760 | 6.66 | 12267 | 1.000 | 0.065 | 0.043 | 0.110 | 0.211 | 84.363987 | -5.938389 | 1952.25 | -2011 |
| 6 | GUIDE | used | 626272880 | 7.69 | 12260 | 1.000 | 0.201 | 0.710 | 0.125 | 0.199 | 83.815609 | -6.032748 | -22.63 | -2276 |
| 7 | GUIDE | used | 625745128 | 7.82 | 12262 | 1.000 | 0.048 | -0.204 | 0.103 | 0.169 | 83.769930 | -4.731835 | -10.86 | 2409 |

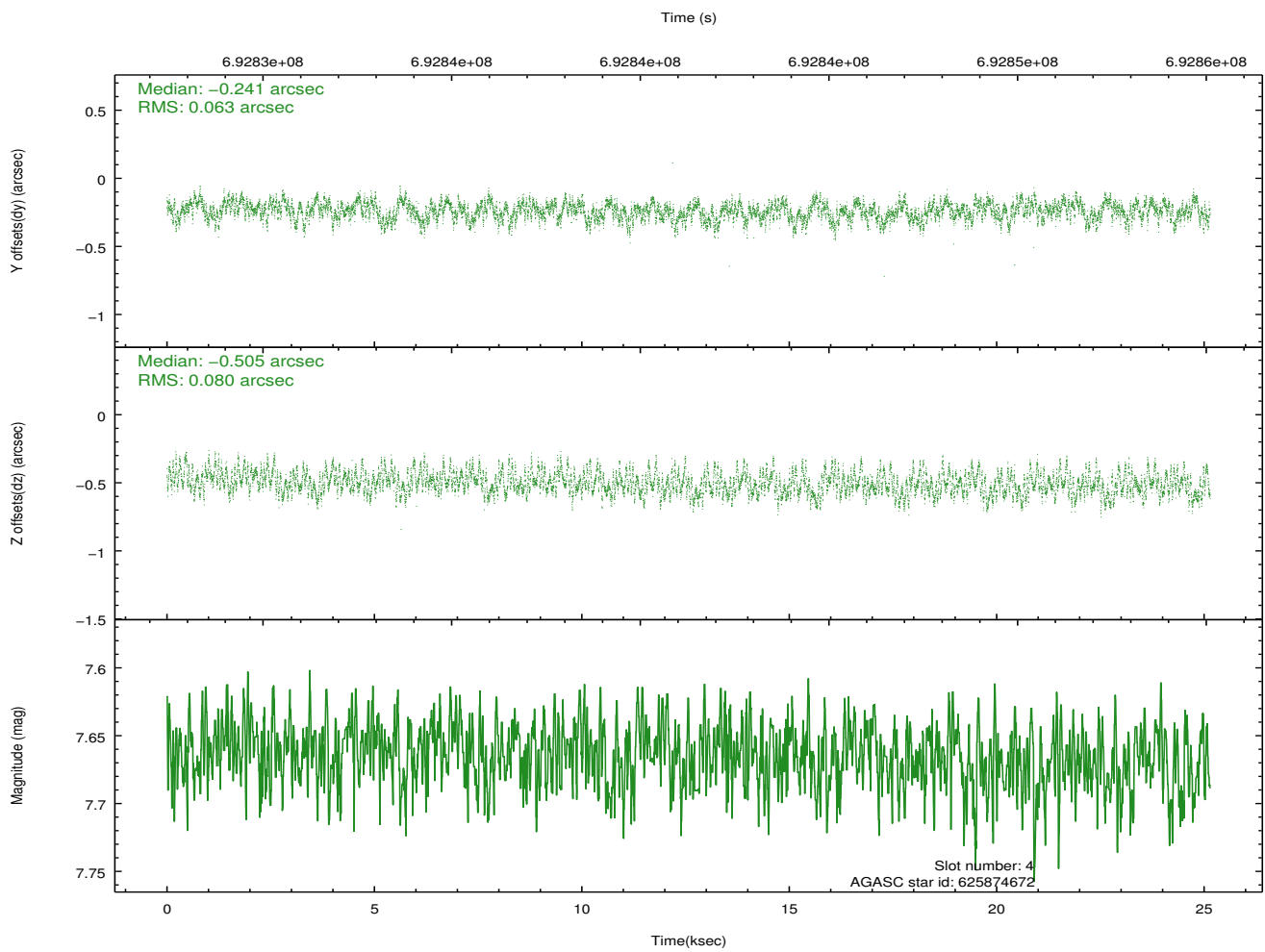
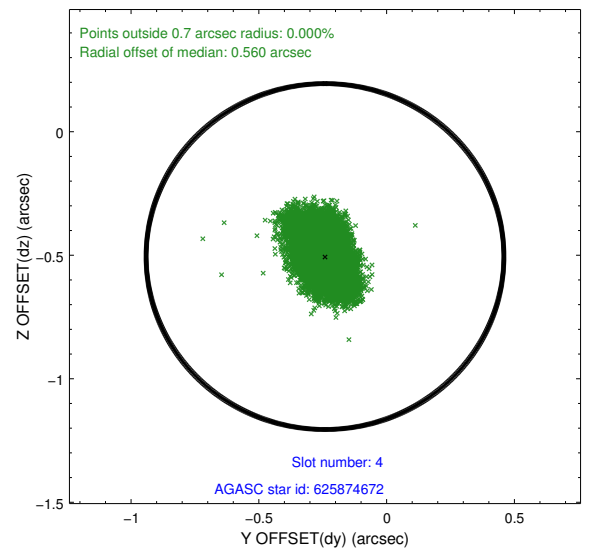
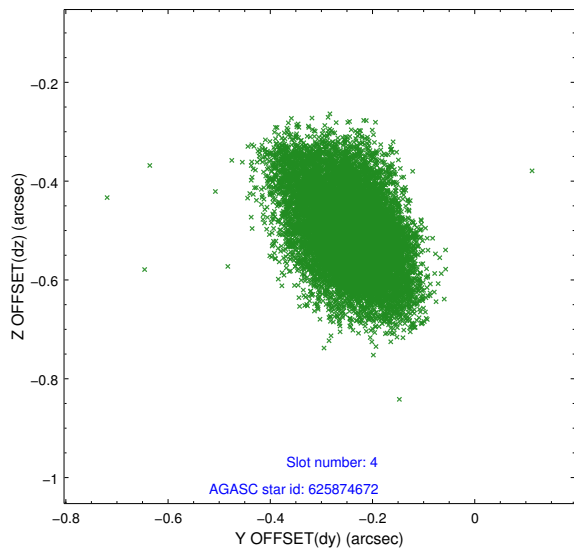
∞

2.4 Star Slots

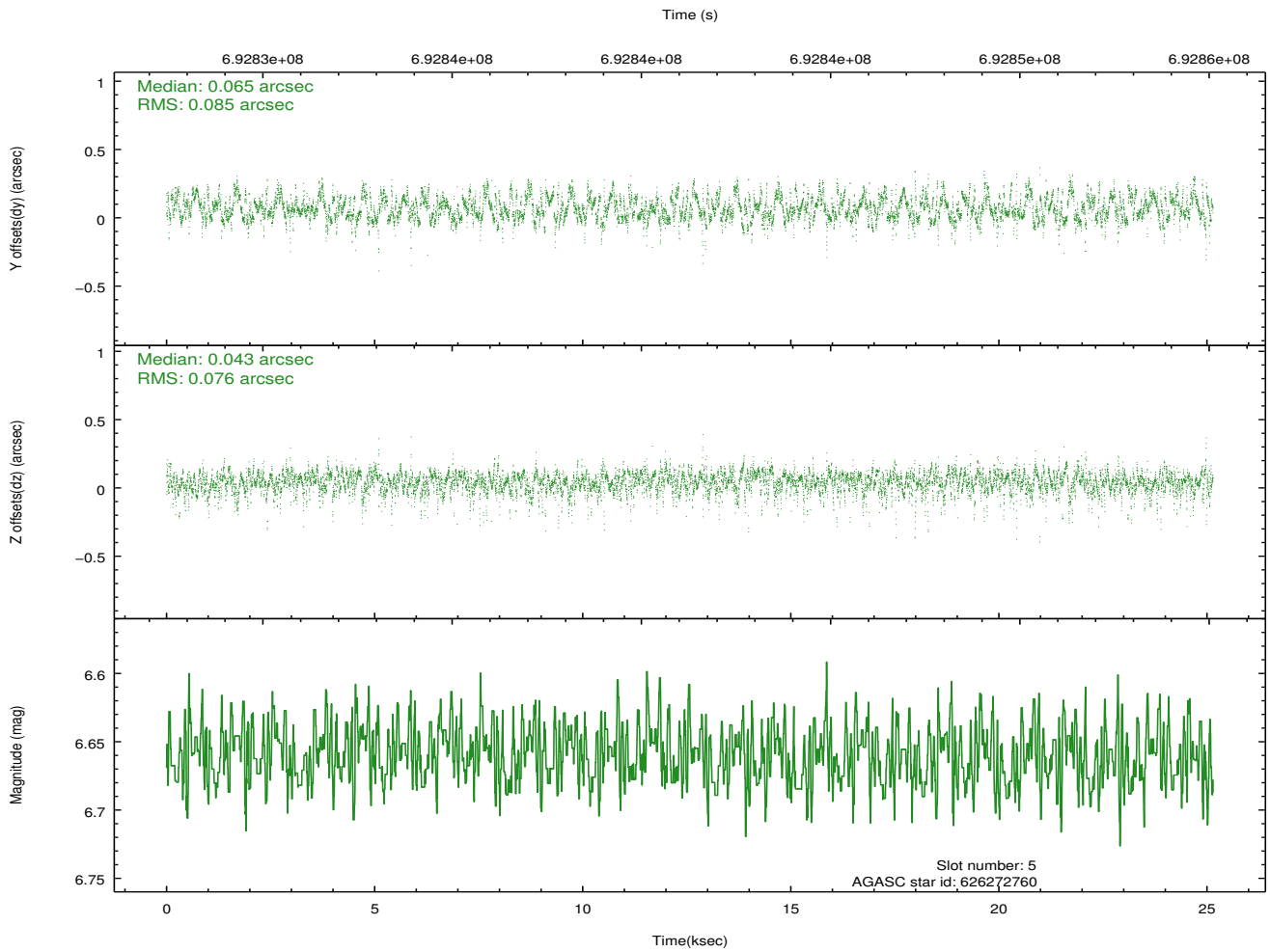
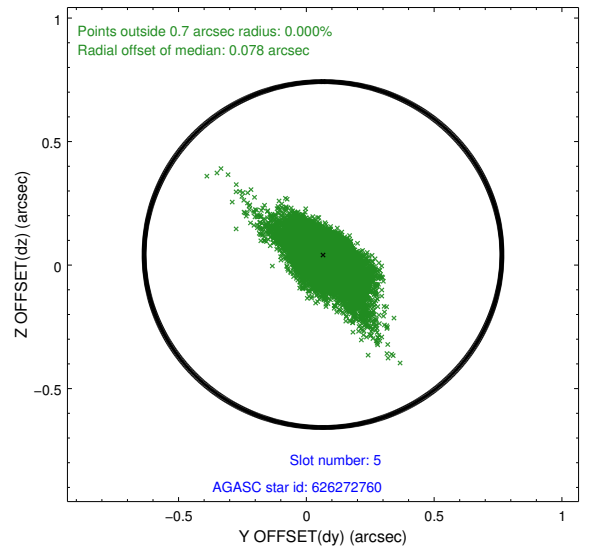
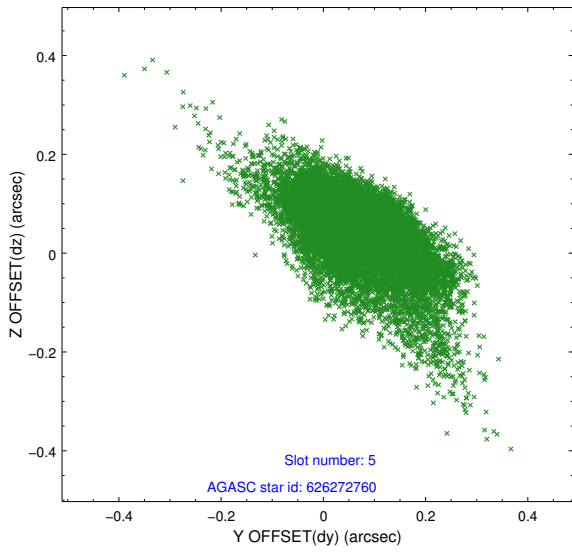
2.4.1 Slot 3



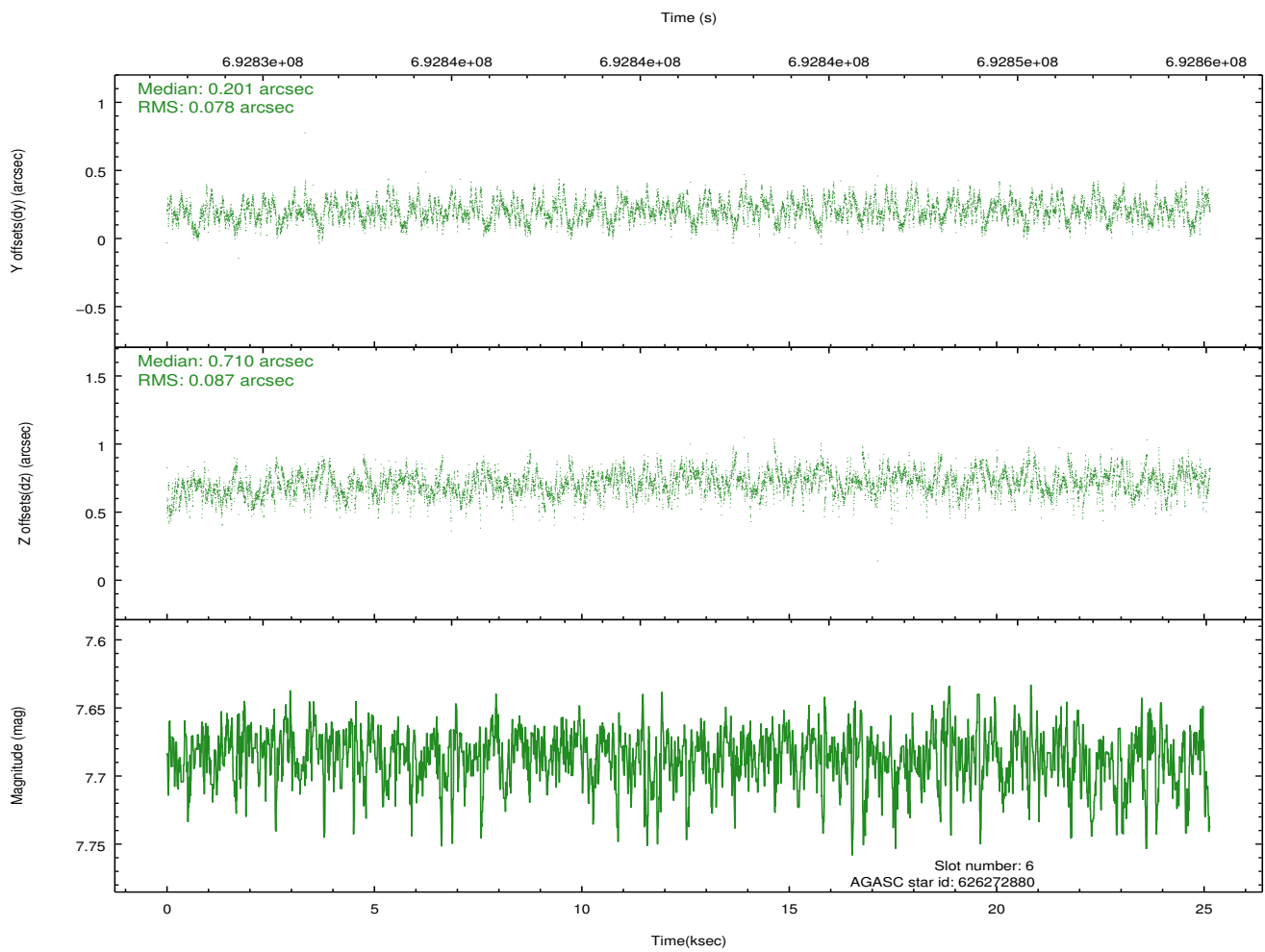
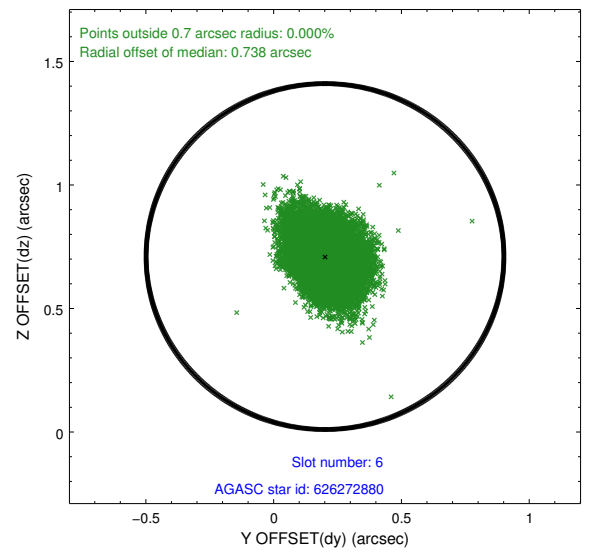
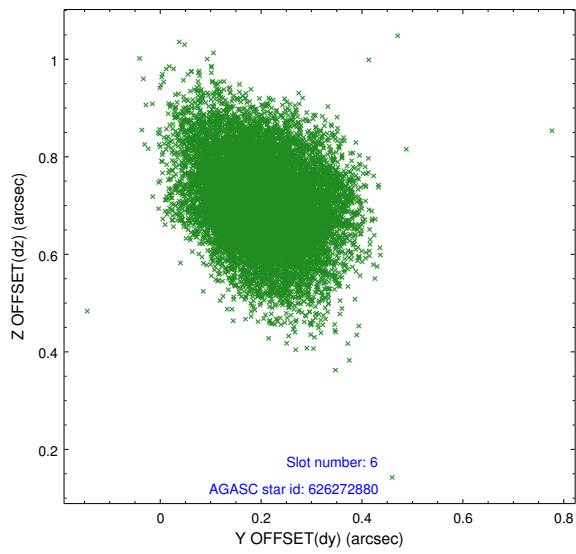
2.4.2 Slot 4



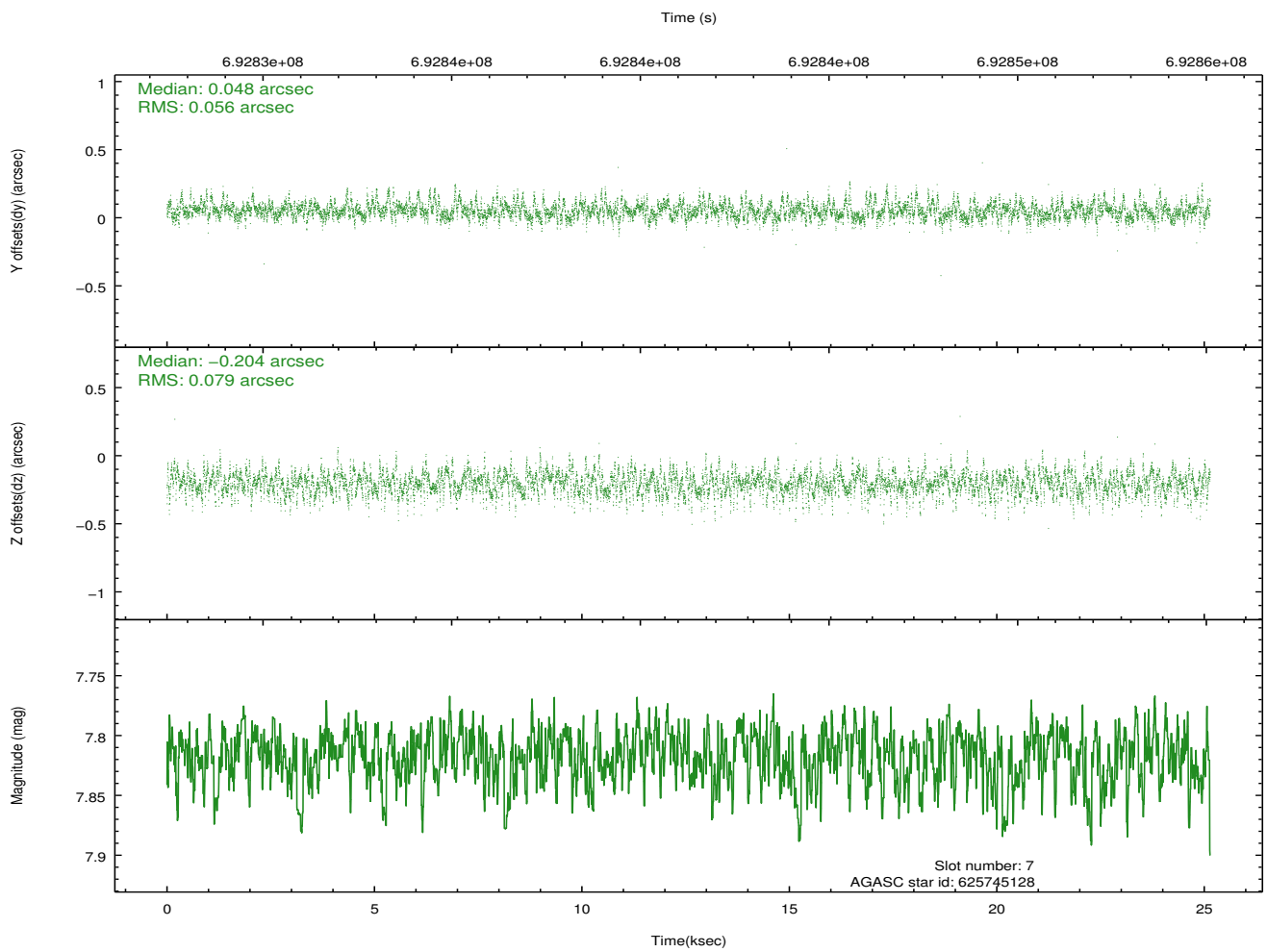
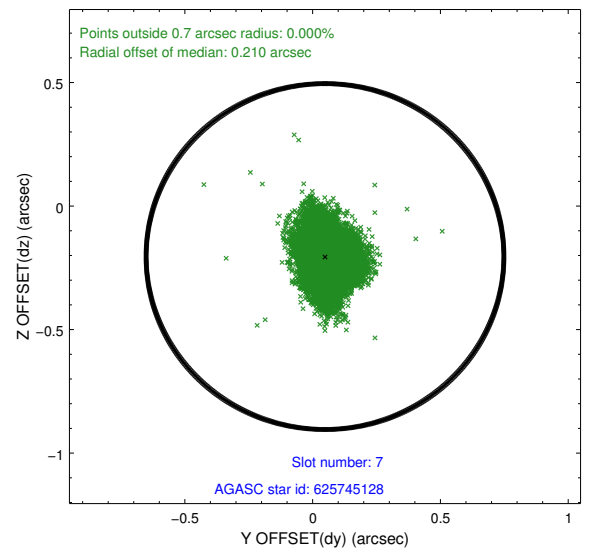
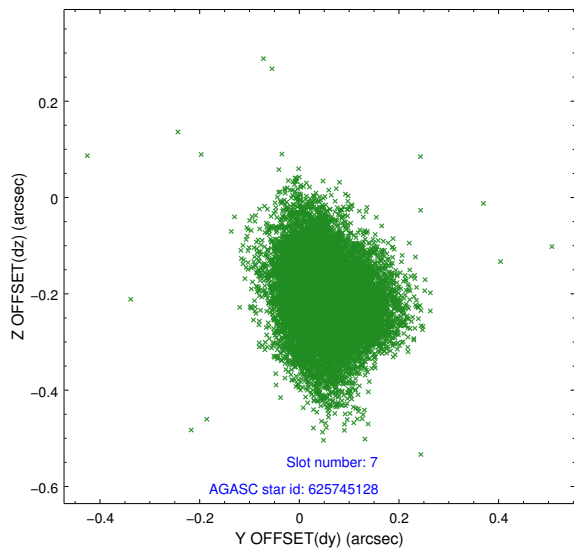
2.4.3 Slot 5



2.4.4 Slot 6

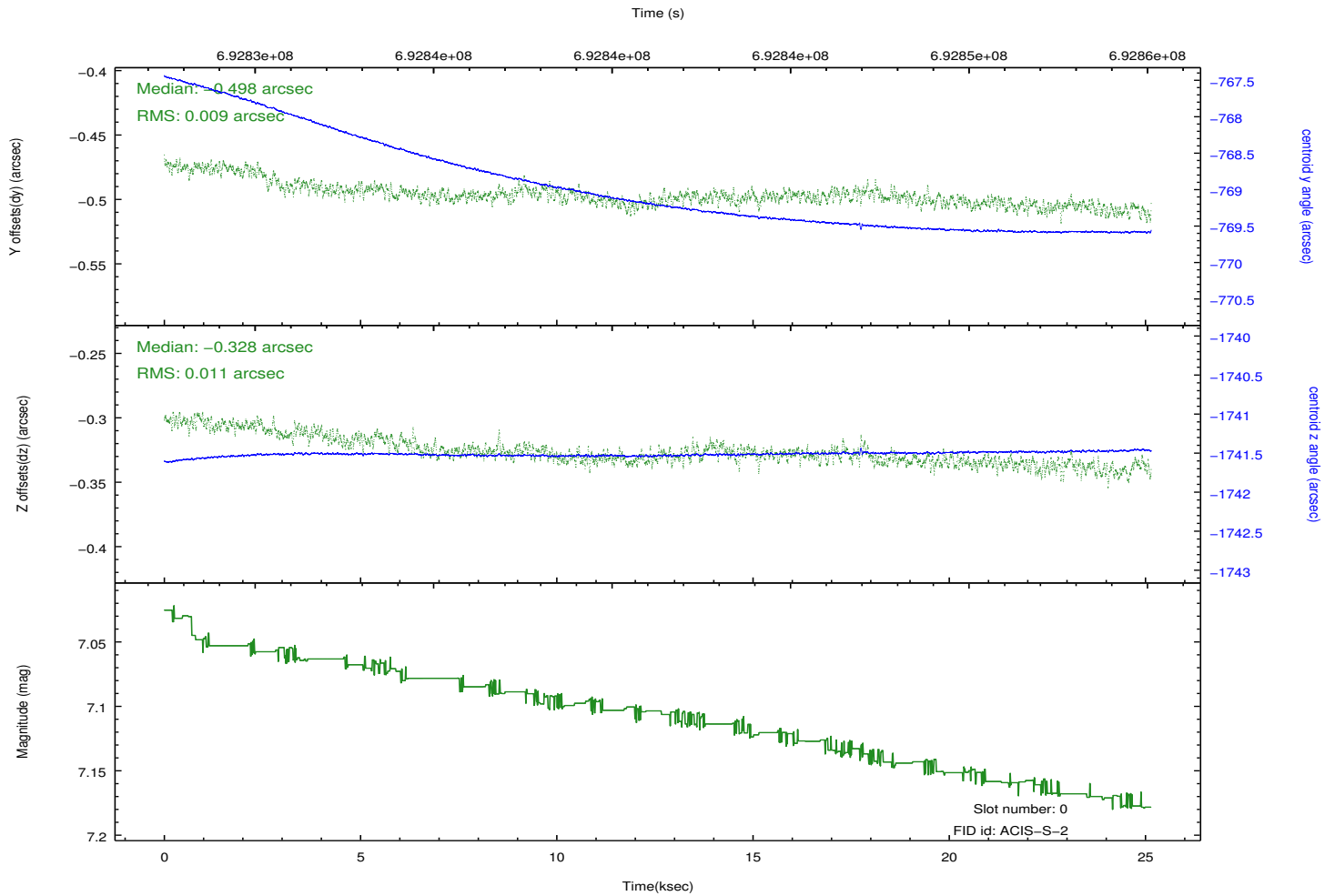
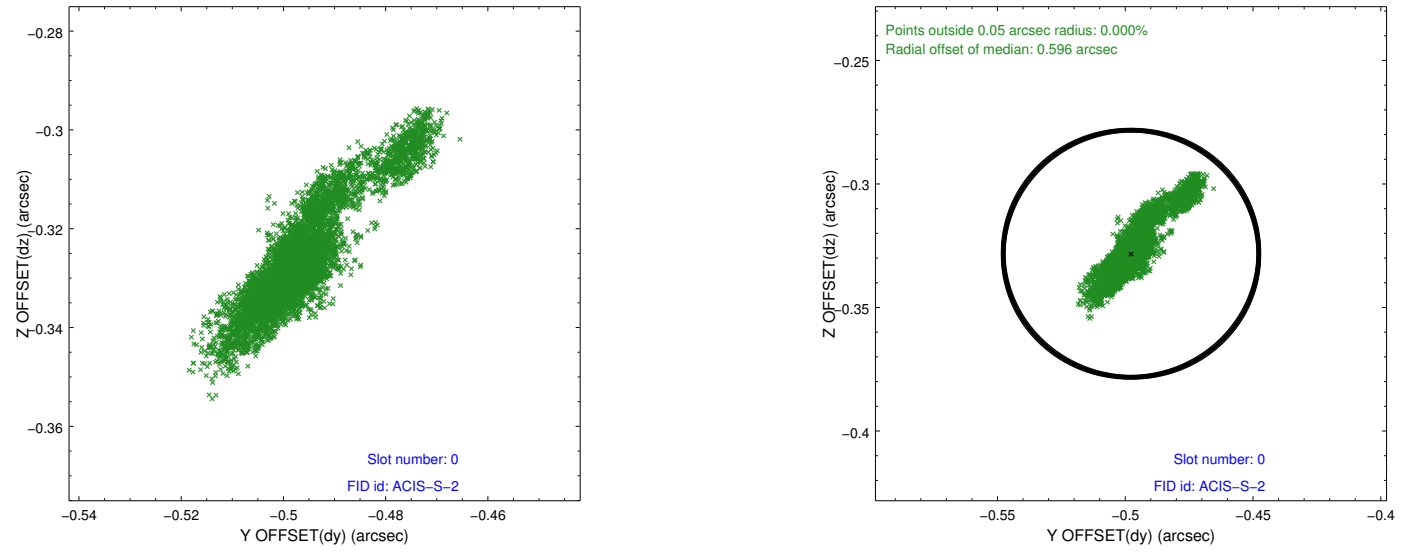


2.4.5 Slot 7

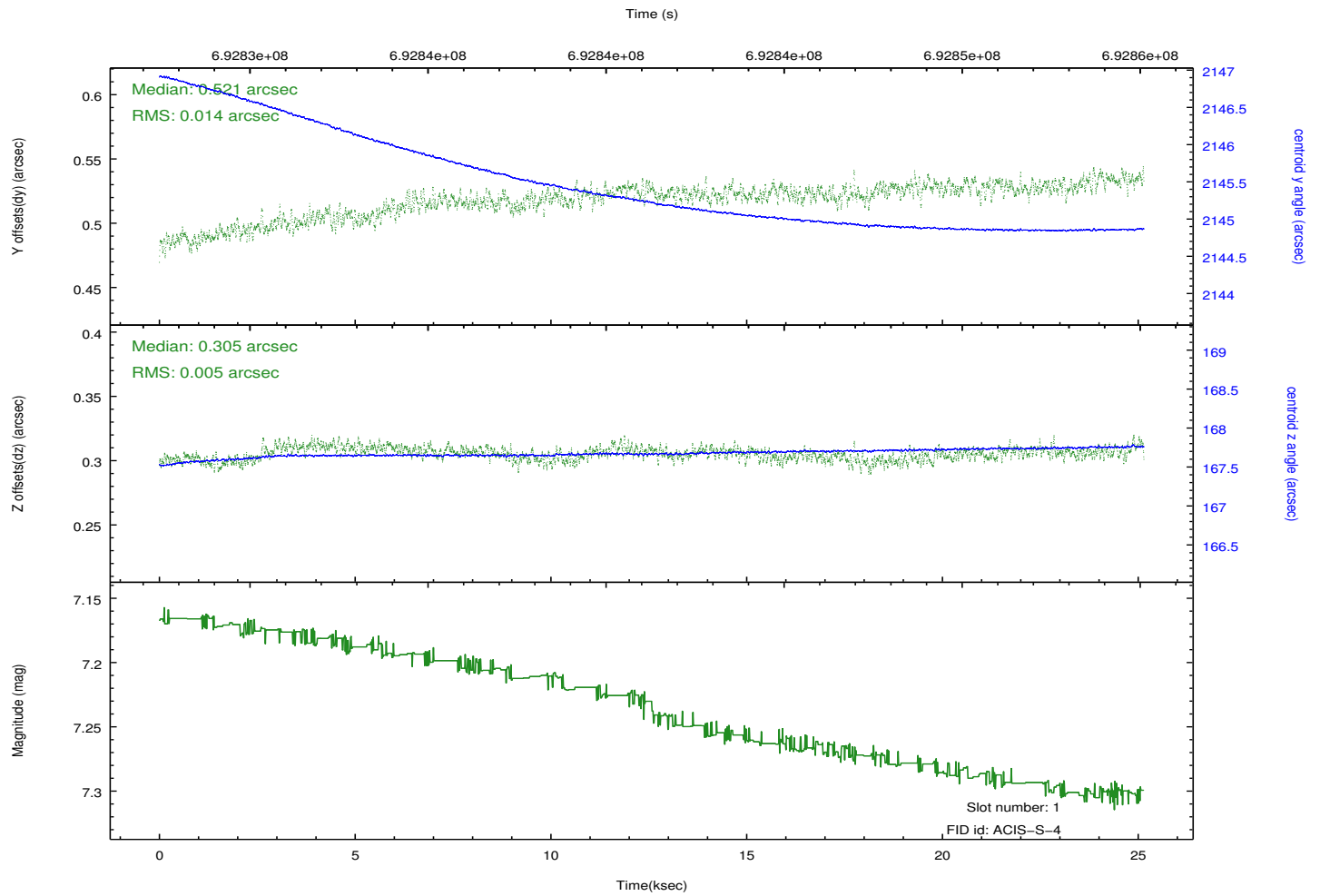
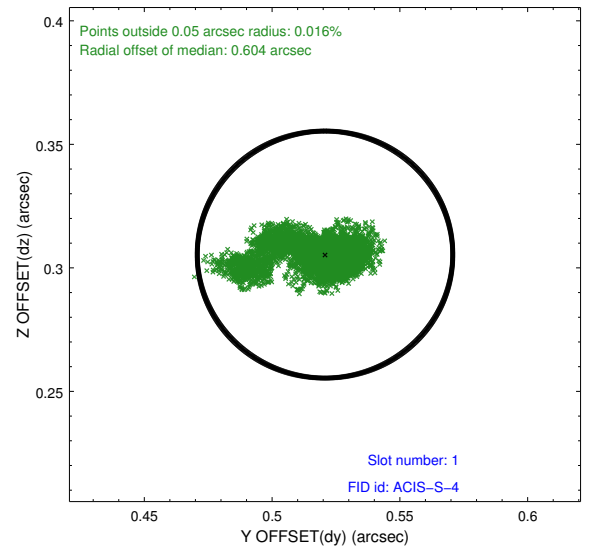
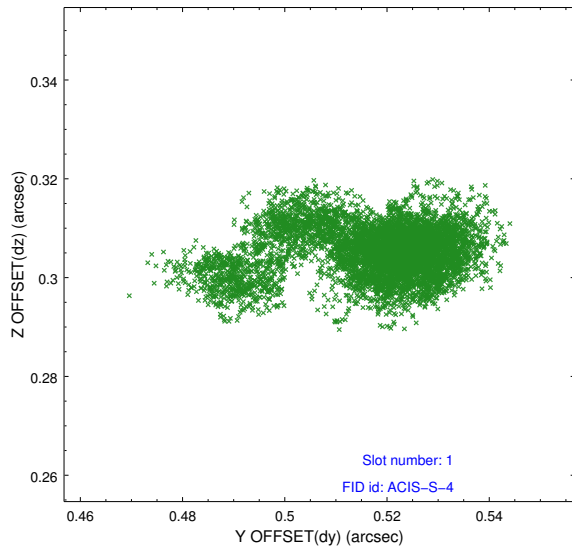


2.5 FID Slots

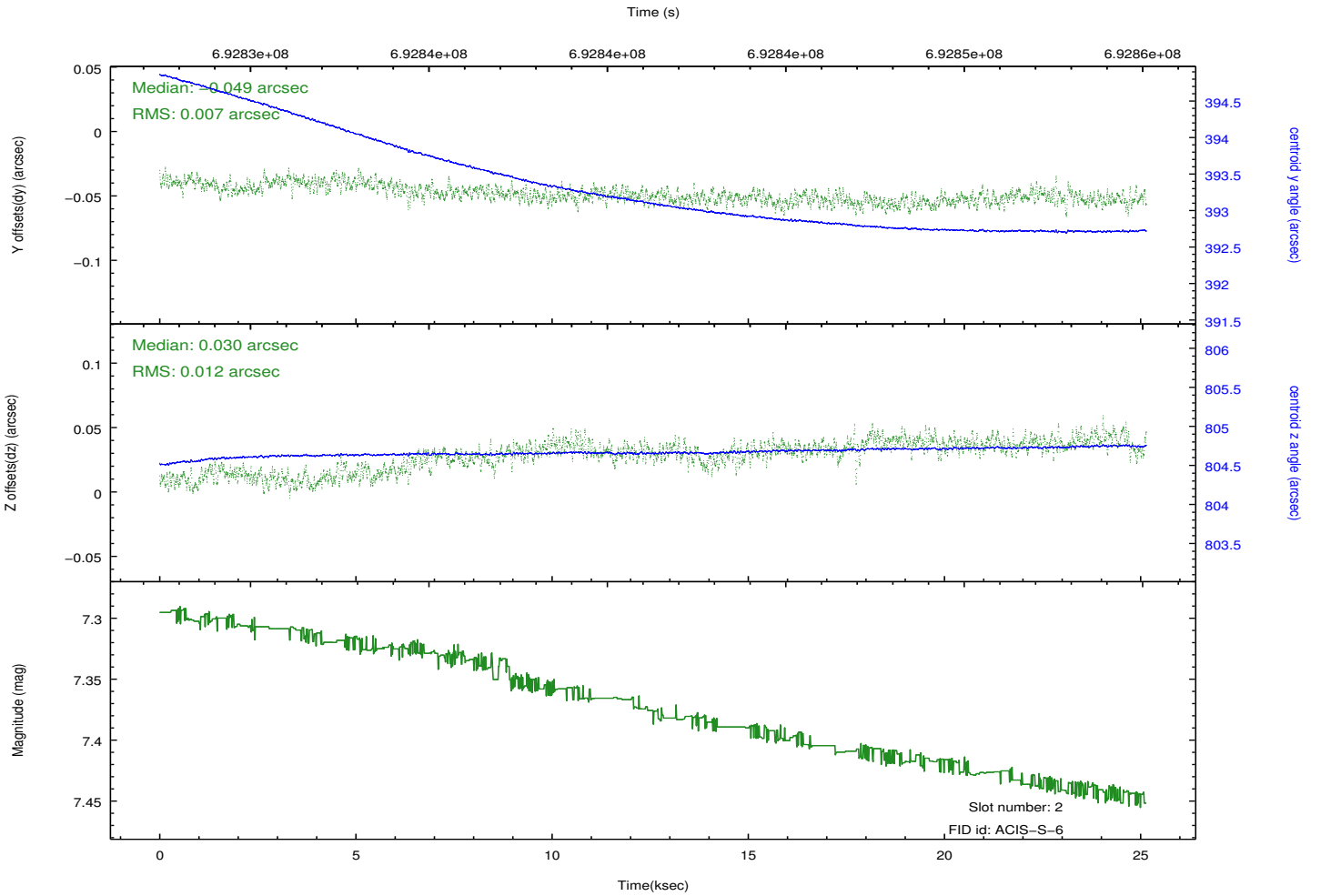
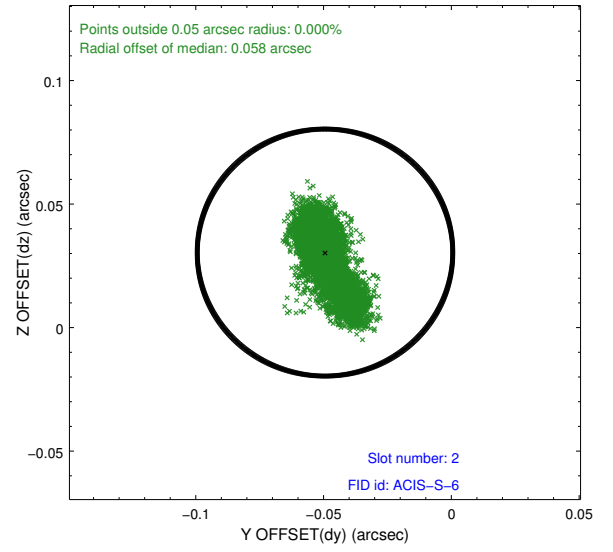
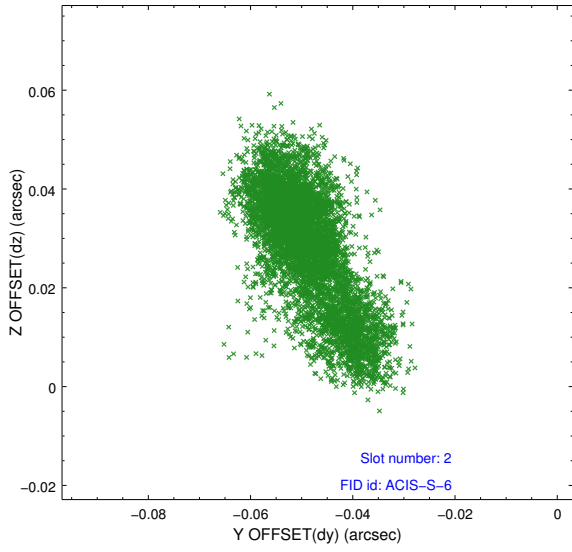
2.5.1 Slot 0



2.5.2 Slot 1

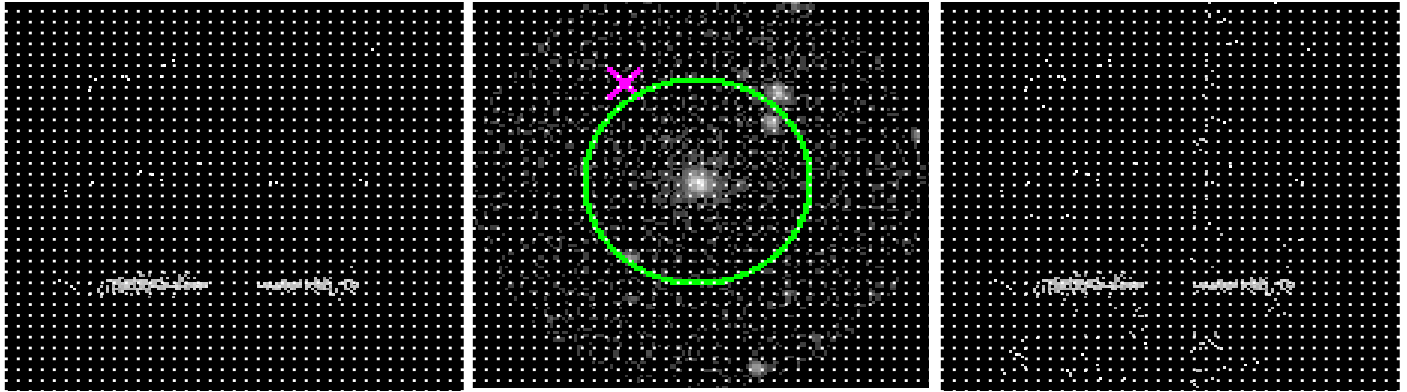


2.5.3 Slot 2



3 Gratings

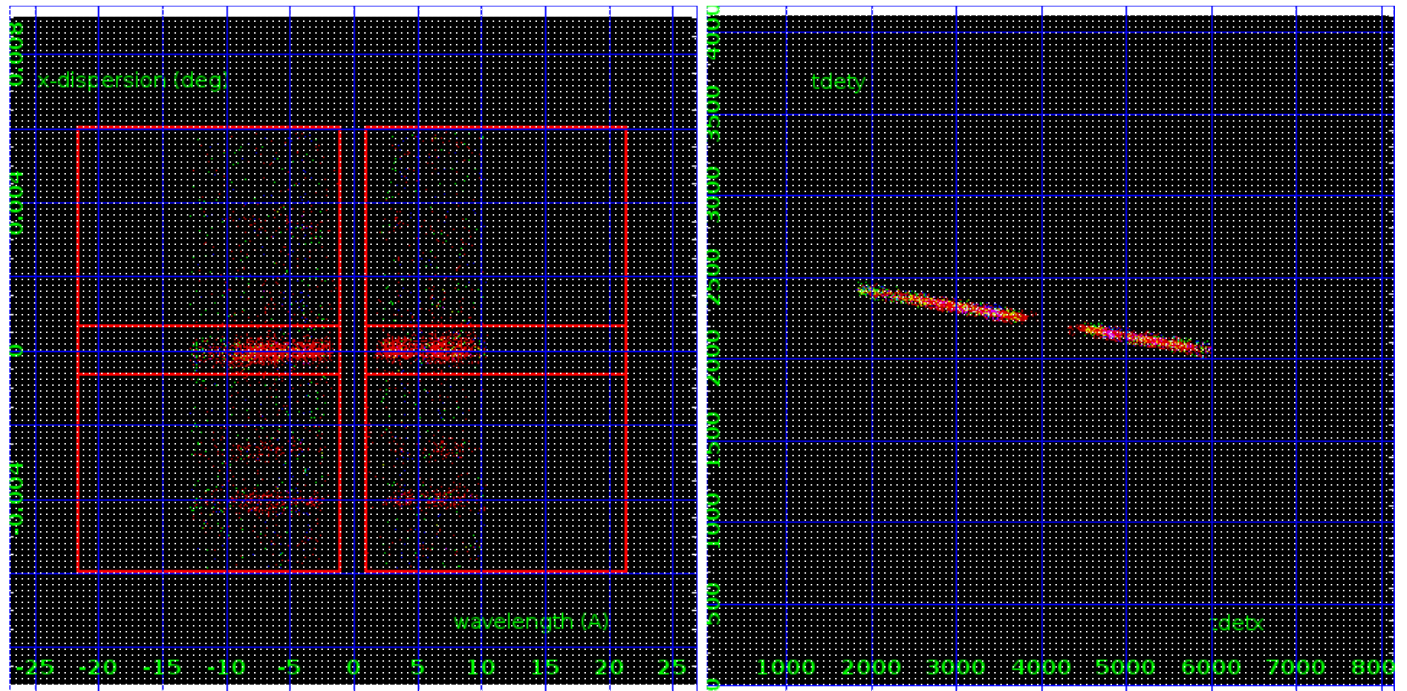
3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

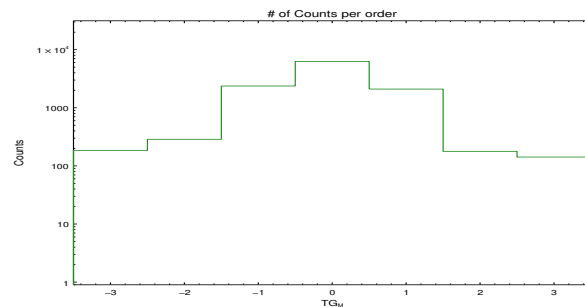
HEG Order Sort ALL



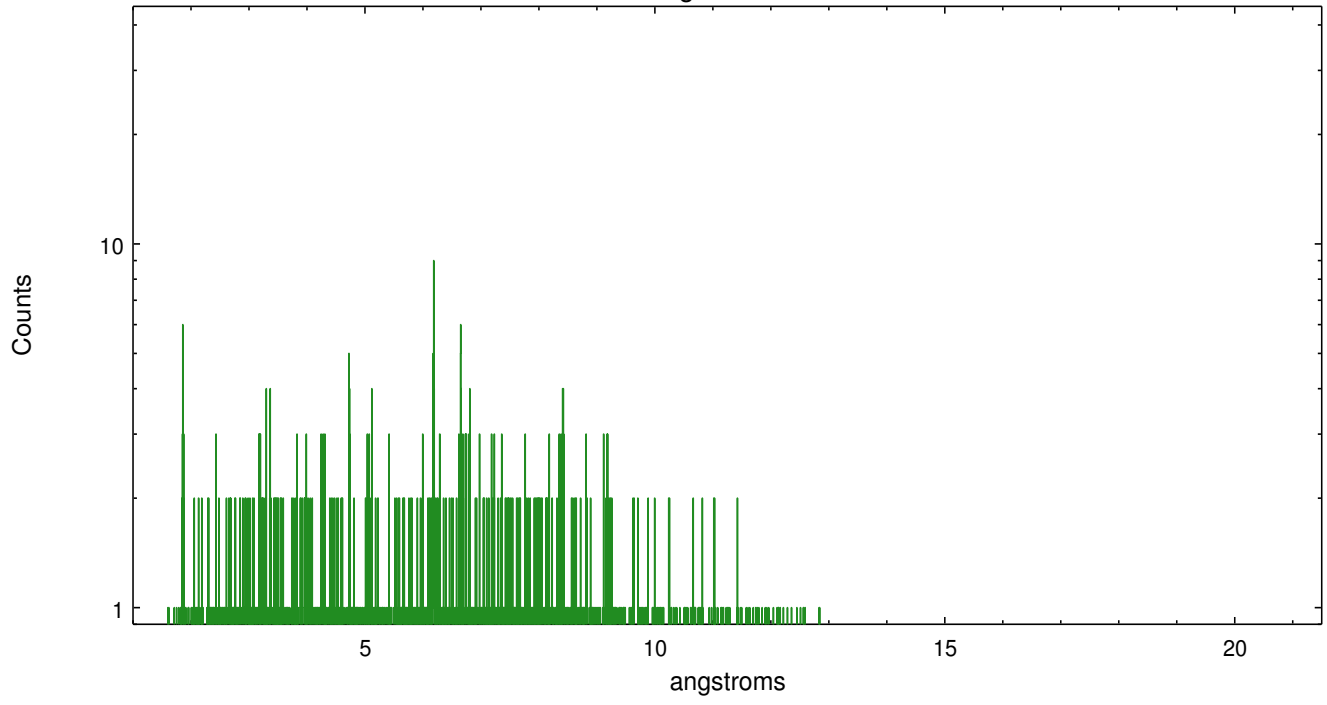
Spot Image HEG

Full Detector HEG

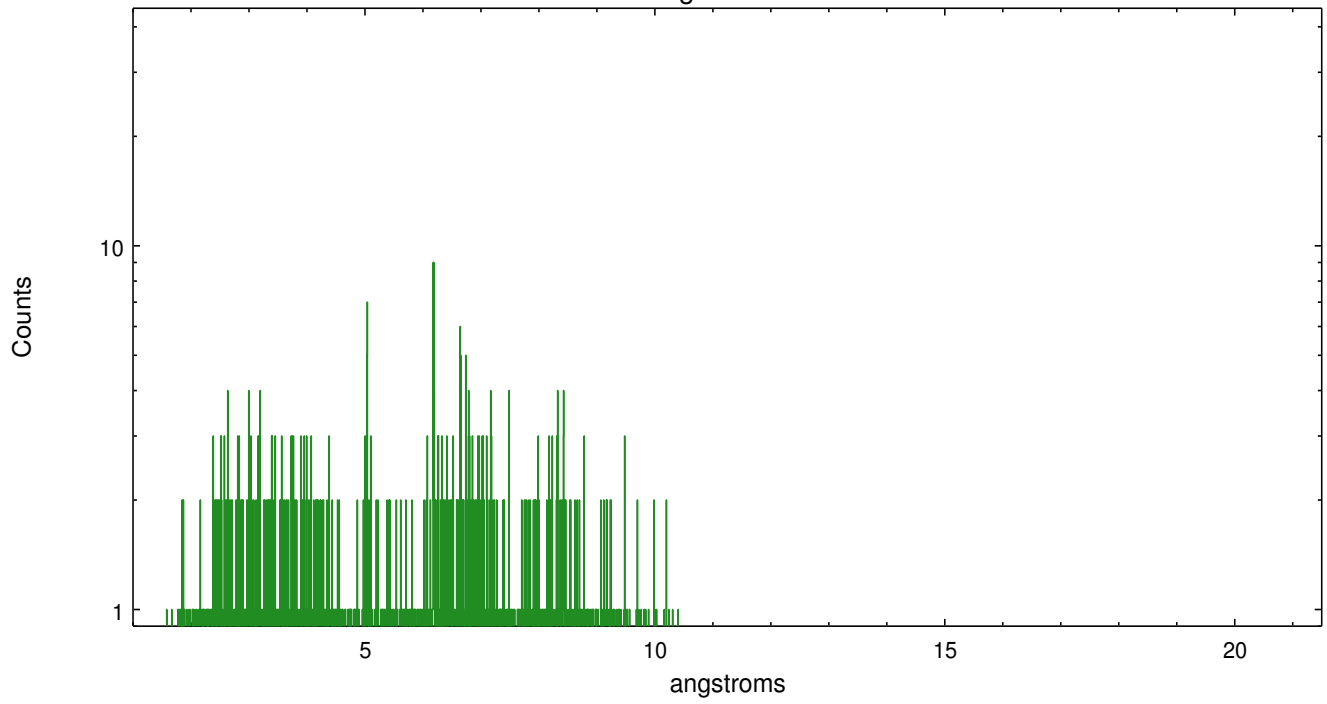
| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 185 | 287 | 2369 | 6283 | 2099 | 178 | 142 |



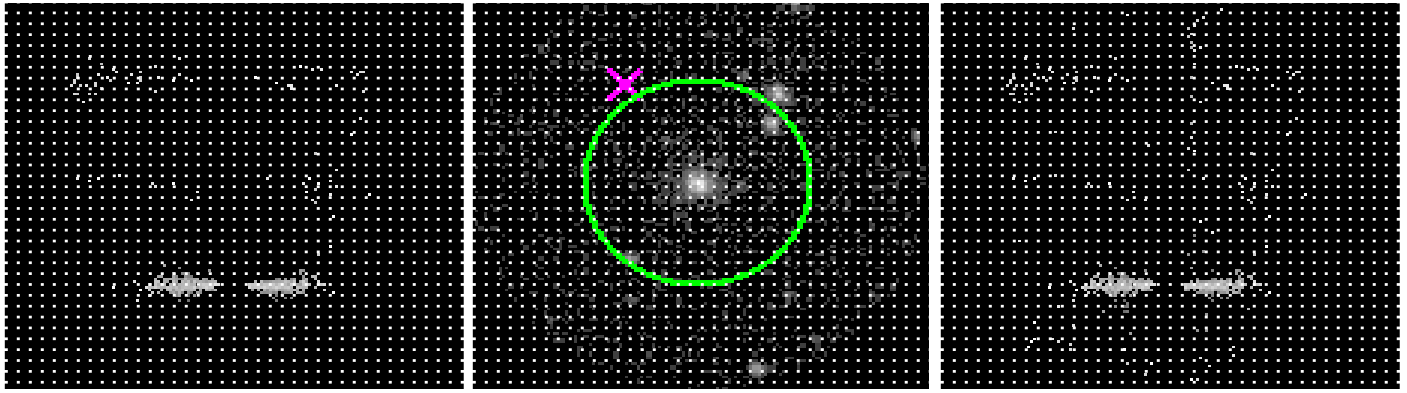
heg order -1



heg order +1



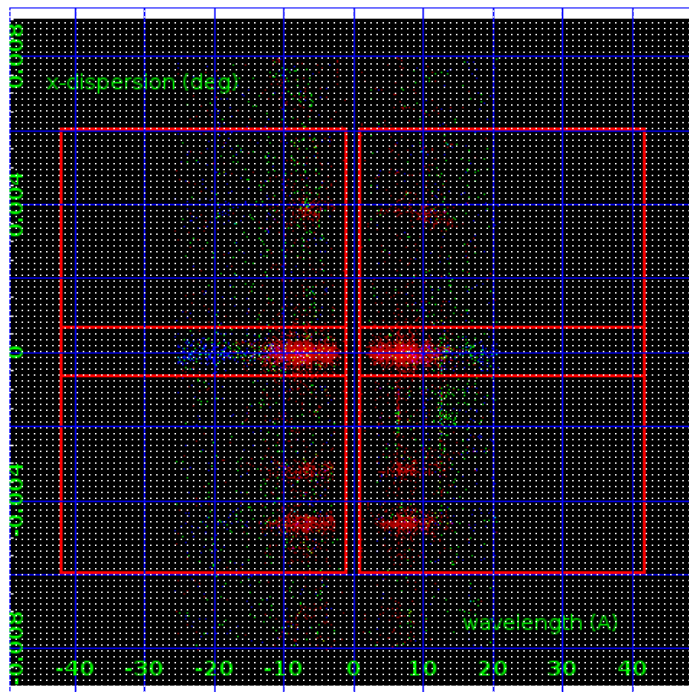
3.2 MEG Arm



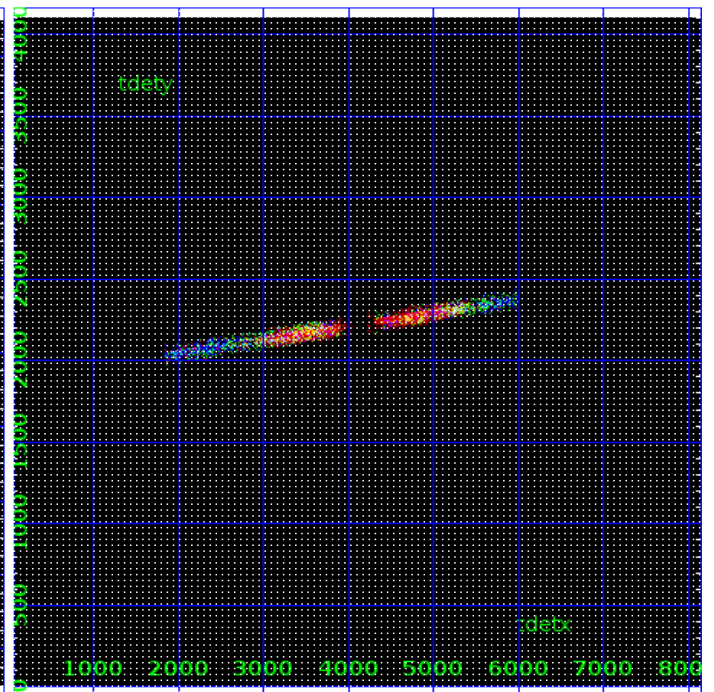
MEG Order Sort 123

MEG Zero Order

MEG Order Sort ALL

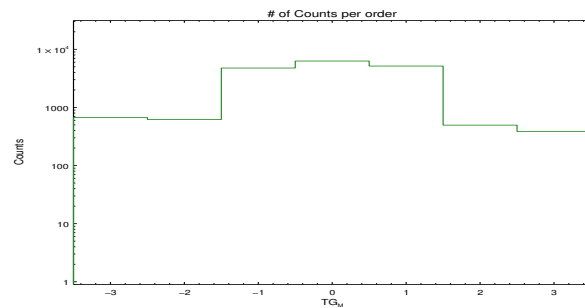


Spot Image MEG

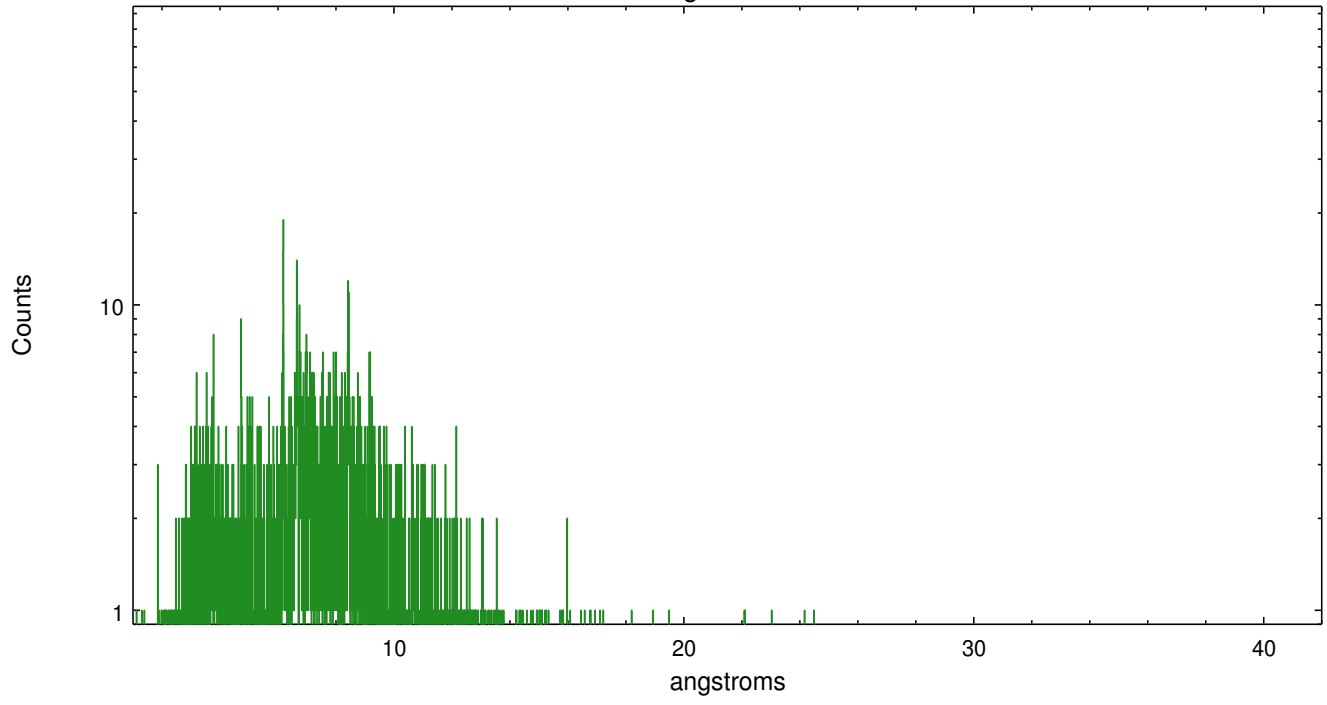


Full Detector MEG

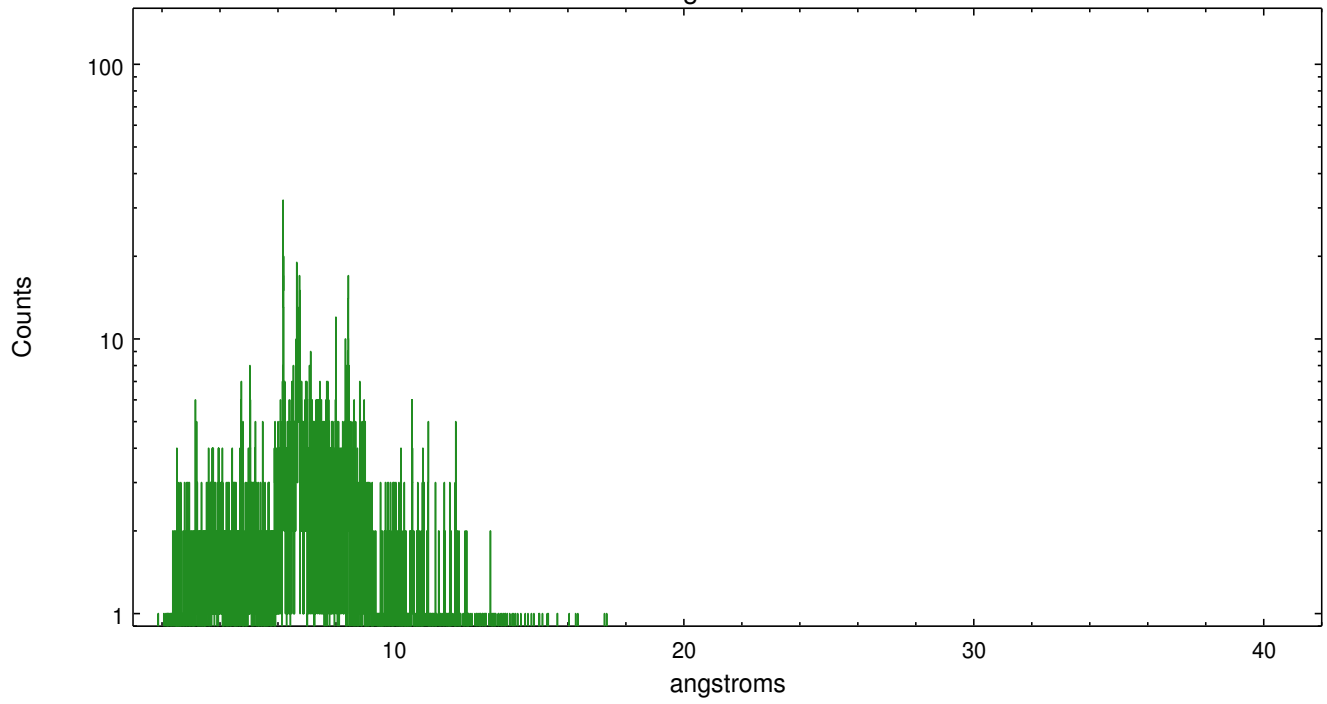
| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 668 | 622 | 4764 | 6283 | 5150 | 496 | 387 |



meg order -1



meg order +1



A Summary

A.1 Status

| | |
|----------------------------|-----------------|
| V&V Scientist | Melania Nynka |
| V&V Date (YYYY-MM-DD) | 2020.01.02 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 25.062080678105 |

A.2 Comments

To compensate for a few bad pixels not marked as bad that were not removed in the Level 2 processing, a custom bad pixel file with additional bad pixels at (chipx, chipy) = (232:234,322:339) in S1 was added in this processing. As a result, the user will NOT find a relatively bright square of pixels on the S1 chip for level 2 data caused by the application of the dither algorithm to the bad pixels in question, as opposed to previous processing(s).