

V&V Reference Report

L2 ASCDS Version : 10.8.1

Observation 22338 - L2 Version 2
Chandra X-Ray Center

L2 Processing Date : Jan 2 2020

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1 Front

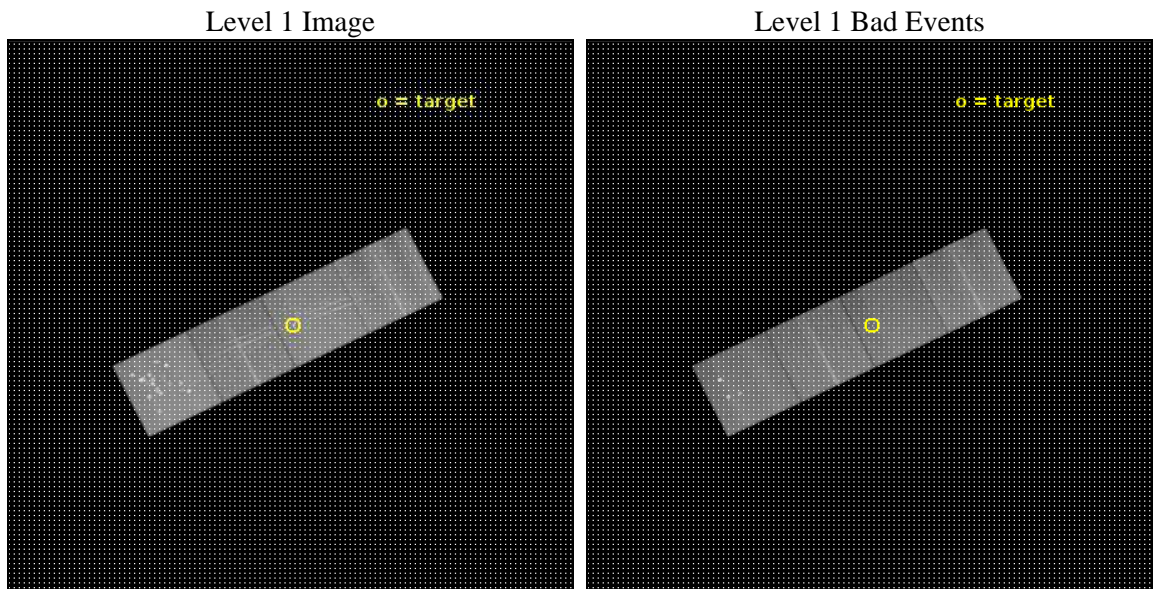
| | | |
|----------|--|---|
| seq_num | 201298 | Sequence number |
| obs_id | 22338 | Observation id |
| title | THE TRUE NATURE OF X-RAYS FROM THE ORION TRAPEZIUM | Proposal title |
| observer | Norbert Schulz | Principal investigator |
| object | Orion Nebula Cluster | Source name |
| dtcycle | 0 | |
| 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 | 83.823696248042 | Nominal RA [deg] |
| dec_nom | -5.3873632512076 | Nominal Dec [deg] |
| roll_nom | 333.83235642534 | Nominal Roll [deg] |
| revision | 2 | Processing version of data |
| ontime | 39667.163175225 | Sum of GTIs [s] |
| livetime | 39148.8824858 | Livetime [s] |
| ontime5 | 39667.122135282 | Sum of GTIs [s] |
| ontime6 | 39663.940024972 | Sum of GTIs [s] |
| ontime7 | 39667.163175225 | Sum of GTIs [s] |
| ontime8 | 39667.040055275 | Sum of GTIs [s] |
| l2events | 565574 | Number of level 2 events |



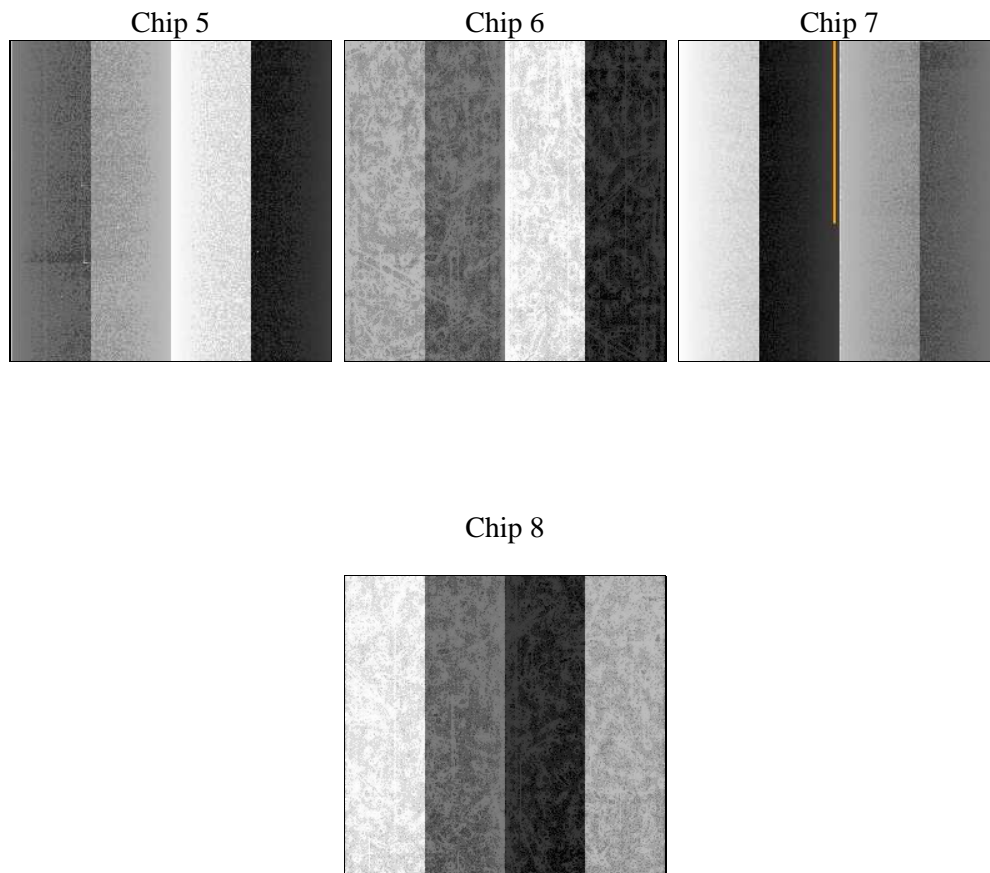
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|--------------------|---|
| obi_num | 0 | Obi number | sched_exp_time | 39602.775000 | [s] Scheduled observation exposure time |
| ascdsver | 10.8.1 | Processing system revision | ontime | 39667.163175225 | Sum of GTIs [s] |
| caldsver | 4.8.4.2 | | ontime5 | 39667.122135282 | Sum of GTIs [s] |
| date | 2020-01-02T21:30:28 | Date and time of file creation | ontime6 | 39663.940024972 | Sum of GTIs [s] |
| revision | 2 | Processing version of data | ontime7 | 39667.163175225 | Sum of GTIs [s] |
| | | | ontime8 | 39667.040055275 | Sum of GTIs [s] |
| | | | l1events | 1846403 | Number of level 1 events |
| | | | tgmethod | TGDETECT | Method used to create src1a file |
| | | | zo_pos | (4133.08, 4079.15) | src1a sky pixel position |

2.1.4 Events

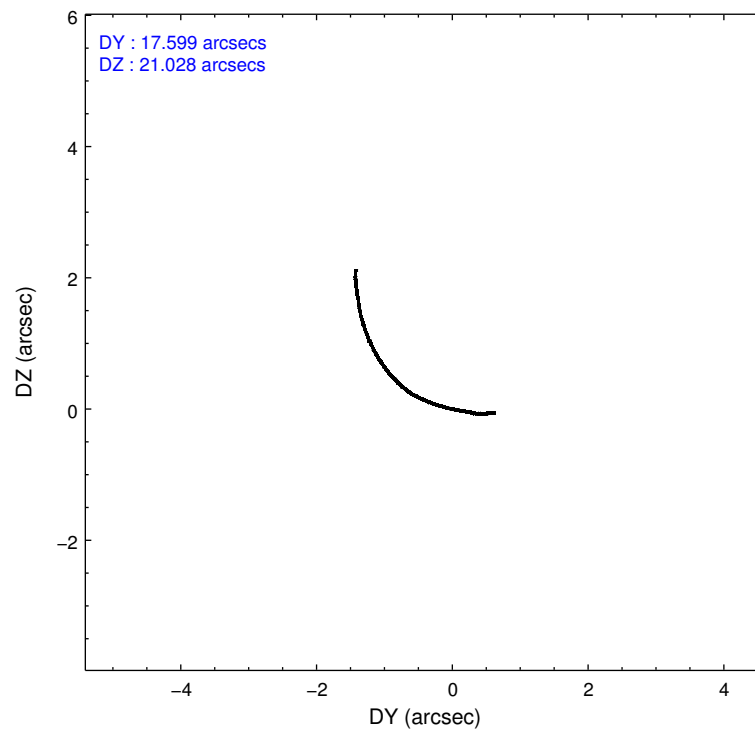
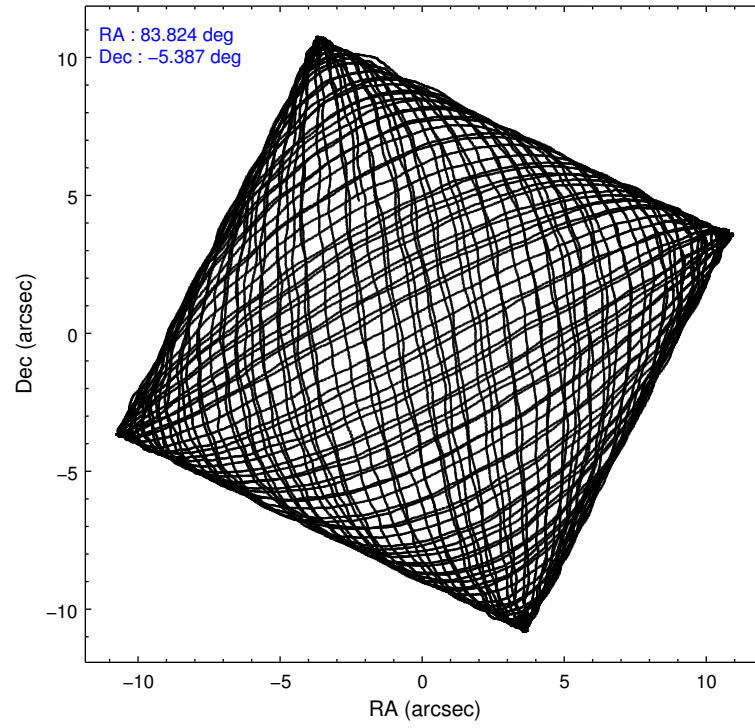
| | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|-----------------|--------|--------|--------|--------|
| level 1 events | 611764 | 346748 | 469114 | 418777 |
| rejected events | 283292 | 281006 | 233271 | 300186 |
| rejected % | 46% | 81% | 49% | 71% |

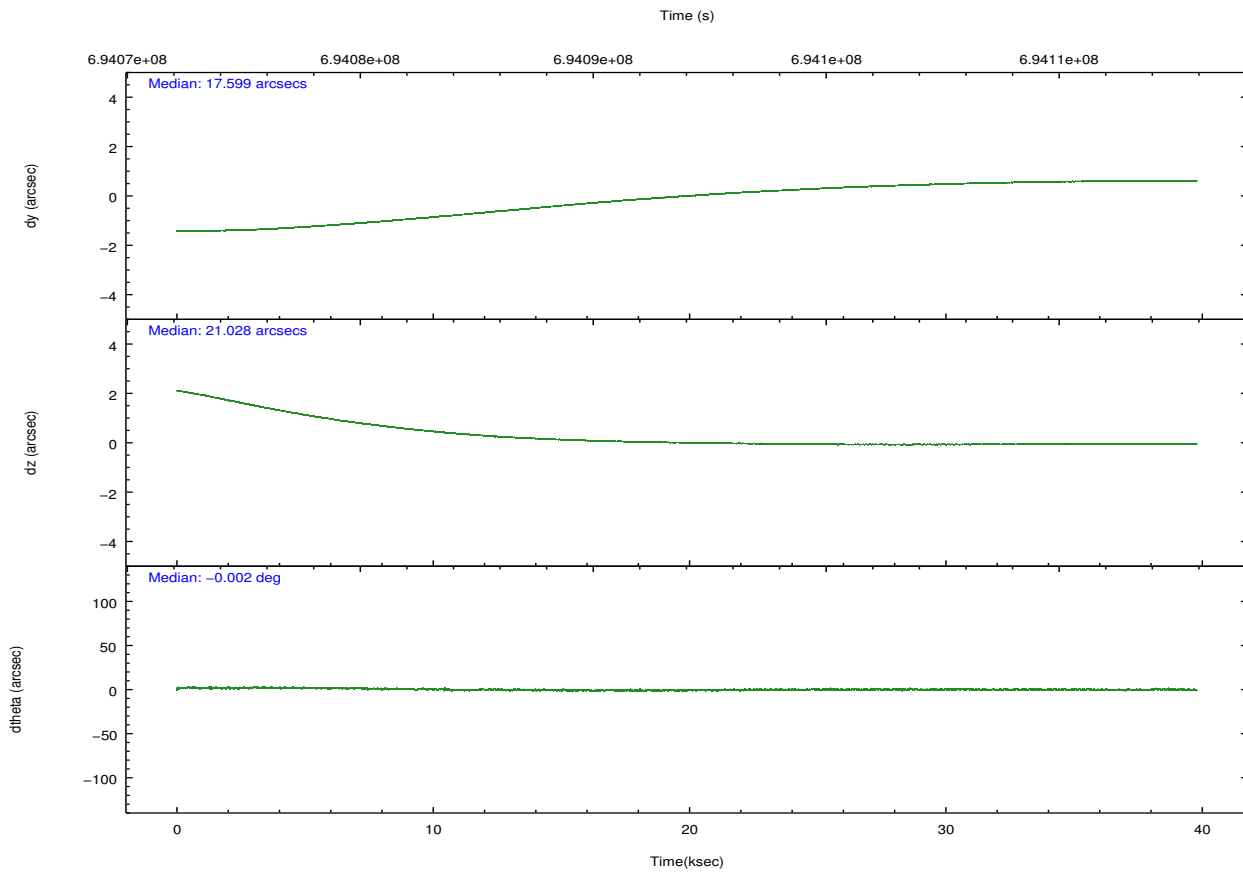
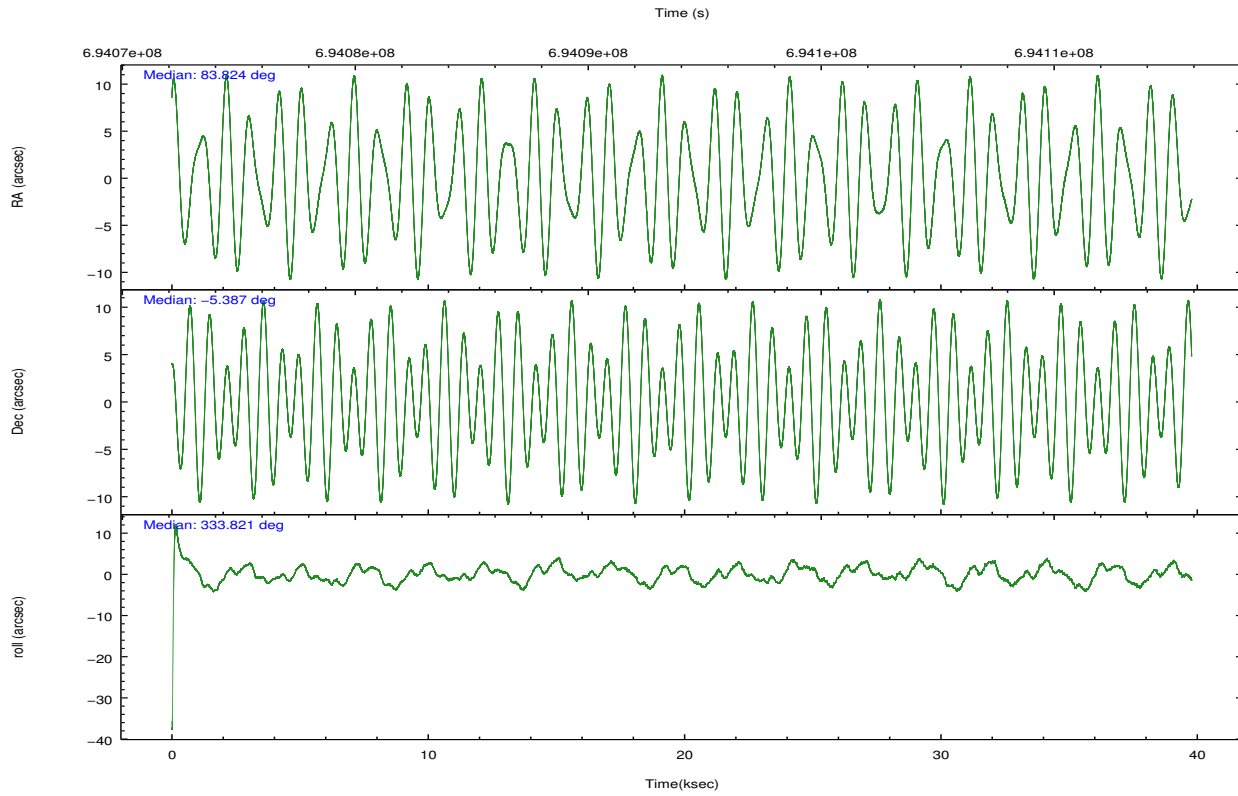
| | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|----------------|--------|--------|--------|--------|
| grade 0 events | 89274 | 33528 | 27387 | 39722 |
| | 14% | 9% | 5% | 9% |
| grade 1 events | 1407 | 246 | 868 | 358 |
| | 0% | 0% | 0% | 0% |
| grade 2 events | 89227 | 13715 | 52468 | 27355 |
| | 14% | 3% | 11% | 6% |
| grade 3 events | 8627 | 4209 | 19837 | 11249 |
| | 1% | 1% | 4% | 2% |
| grade 4 events | 7188 | 4004 | 19661 | 10670 |
| | 1% | 1% | 4% | 2% |
| grade 5 events | 35353 | 13686 | 39924 | 21665 |
| | 5% | 3% | 8% | 5% |
| grade 6 events | 134198 | 10292 | 116511 | 29623 |
| | 21% | 2% | 24% | 7% |
| grade 7 events | 246490 | 267068 | 192458 | 278135 |
| | 40% | 77% | 41% | 66% |

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 | 83.796211 | 83.82369624804203 | CCD I2 on | N | N |
| [deg] Pointing Dec | -5.389565 | -5.38736325120764 | CCD I3 on | N | N |
| [deg] Pointing Roll | 333.673149 | 333.8323564253407 | 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 | -190.1400660498719 | CCD S3 on | Y | Y |
| [mm] SIM translation stage offset | 0 | 0.00754346686406393 | CCD S4 on | Y | Y |
| [s] Observation start time (MET) | 694074293.184000 | 694073001.13394 | CCD S5 on | O2 | N |
| Observation start date | 2019-12-30T06:23:44 | 2019-12-30T06:03:21 | Number of optional ACIS chips dropped | 2 | 2 |
| [s] Observation end time (MET) | 694113896.184000 | 694114420.87394 | On-chip summing requested | N | N |
| Observation end date | 2019-12-30T17:23:47 | 2019-12-30T17:33:40 | Subarray requested | NONE | NONE |
| Read mode | TIMED | TIMED | Alternating exposures requested | N | N |
| | | | [s] Primary exposure time | 0.000000 | 3.1 |

2.3 Aspect





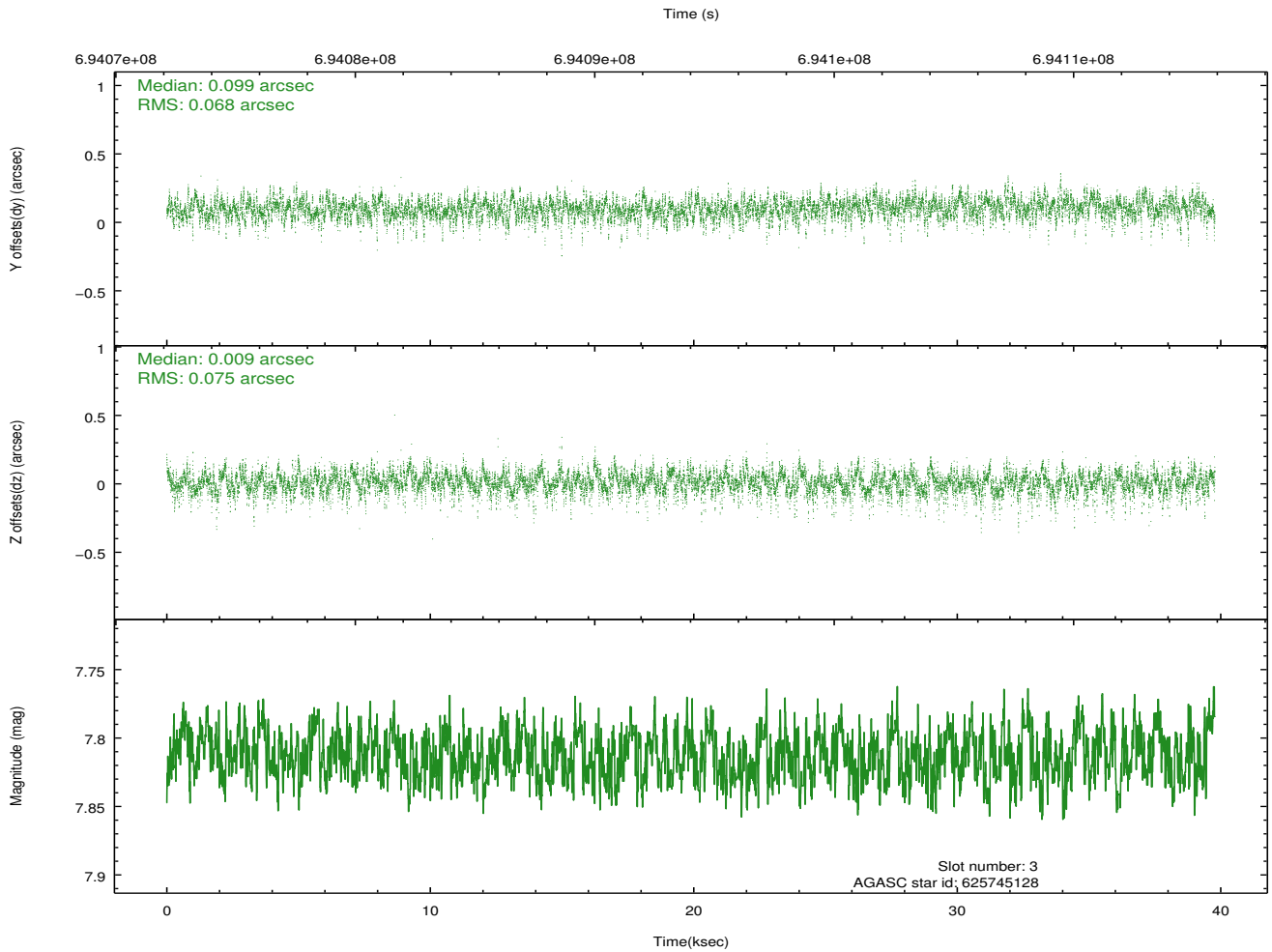
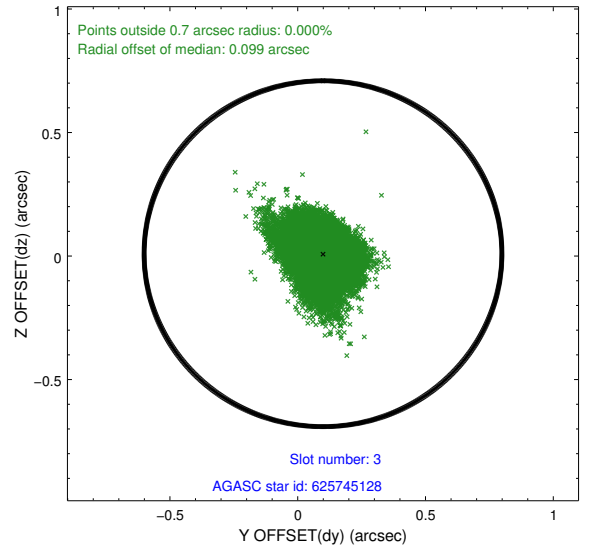
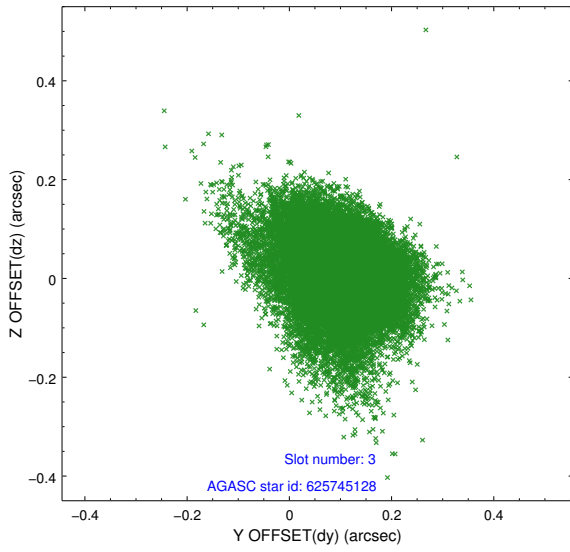
Slot Statistics

| pt | status | used | id | mag | n_pts | frac_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mea |
|----|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|-----------|-----------|----------|-------|
| 0 | FID | | ACIS-S-2 | 7.10 | 9703 | 1.000 | -0.506 | -0.369 | 0.054 | 0.068 | 0.000000 | 0.000000 | -771.00 | -1743 |
| 1 | FID | | ACIS-S-4 | 7.22 | 9700 | 1.000 | 0.514 | 0.293 | 0.036 | 0.045 | 0.000000 | 0.000000 | 2143.35 | 165 |
| 2 | FID | | ACIS-S-6 | 7.36 | 9703 | 1.000 | -0.033 | 0.085 | 0.022 | 0.046 | 0.000000 | 0.000000 | 391.56 | 803 |
| 3 | GUIDE | used | 625745128 | 7.81 | 19400 | 1.000 | 0.099 | 0.009 | 0.104 | 0.177 | 83.769930 | -4.731835 | -1134.64 | 2079 |
| 4 | GUIDE | used | 625745136 | 7.20 | 19406 | 1.000 | -0.094 | 0.229 | 0.104 | 0.177 | 83.600341 | -4.804339 | -1564.10 | 1576 |
| 5 | GUIDE | used | 626272880 | 7.68 | 19400 | 1.000 | 0.079 | 0.172 | 0.156 | 0.245 | 83.815609 | -6.032748 | 1089.88 | -2044 |
| 6 | GUIDE | used | 625874672 | 7.65 | 19401 | 1.000 | -0.192 | -0.609 | 0.129 | 0.204 | 84.403143 | -4.934124 | 1224.19 | 2433 |
| 7 | GUIDE | used | 626272976 | 7.95 | 19394 | 1.000 | 0.120 | 0.195 | 0.114 | 0.192 | 83.795875 | -5.926912 | 857.71 | -1734 |

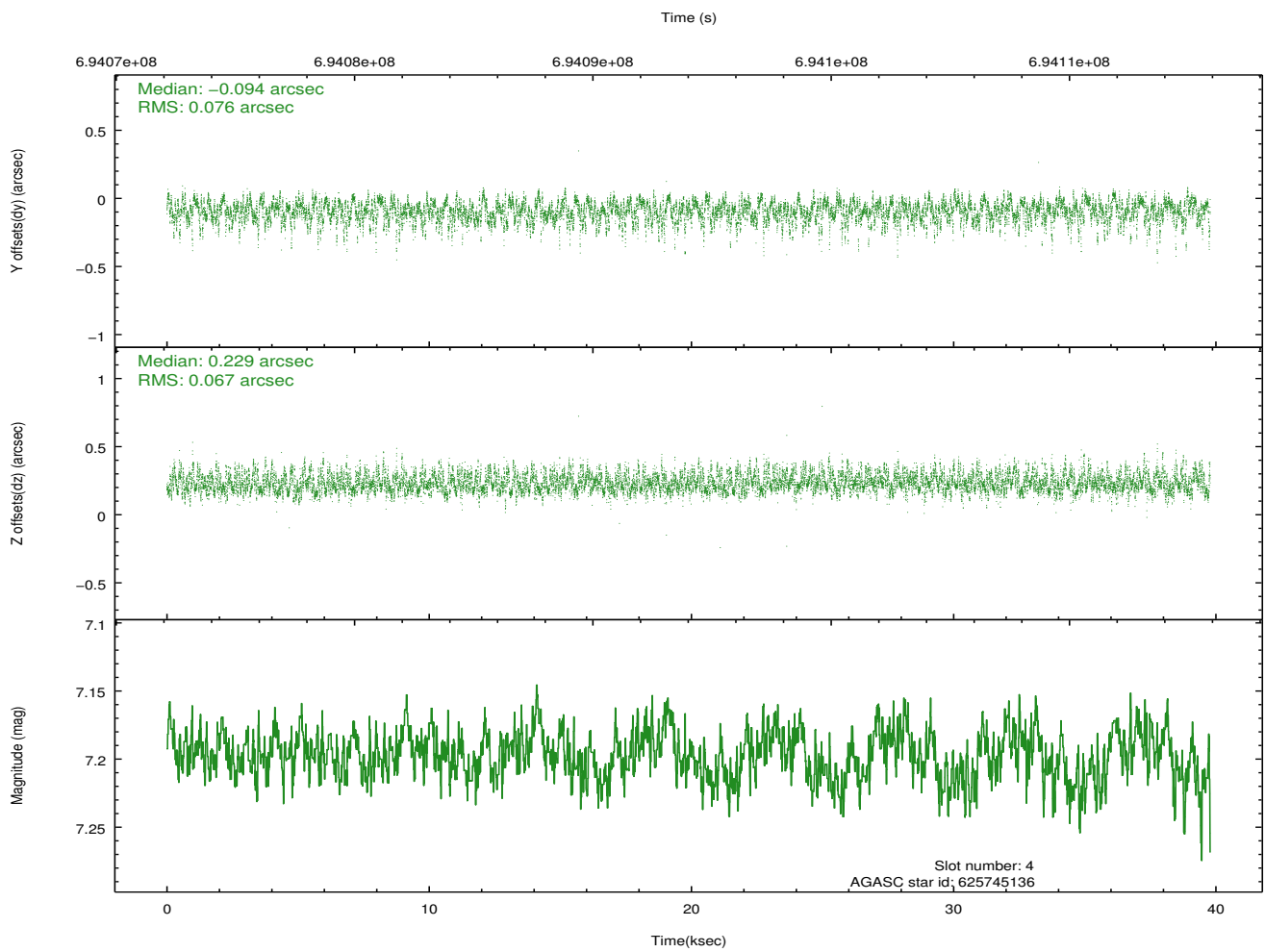
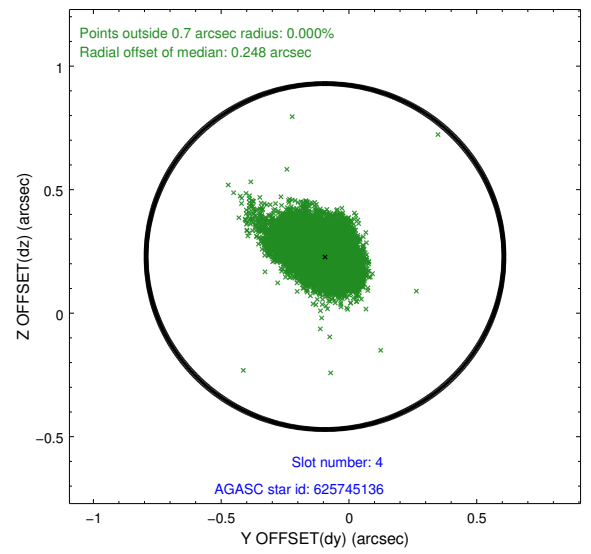
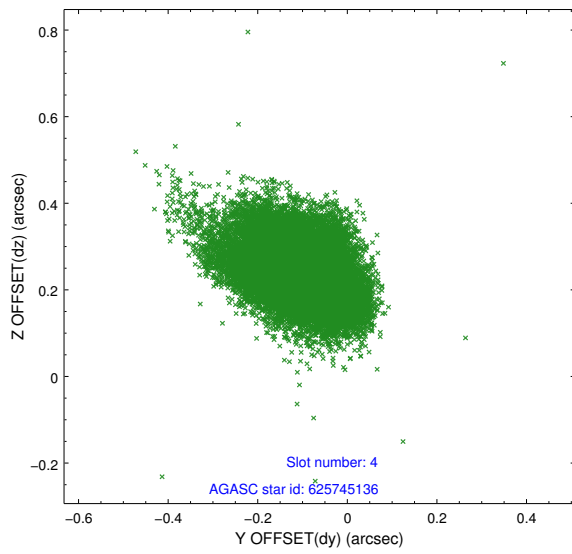
∞

2.4 Star Slots

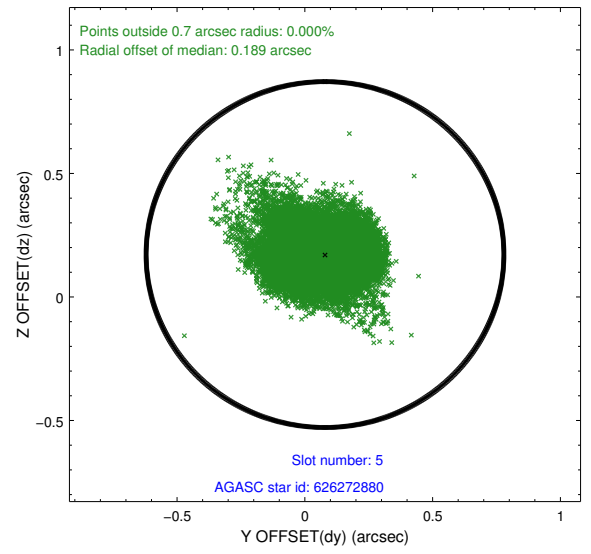
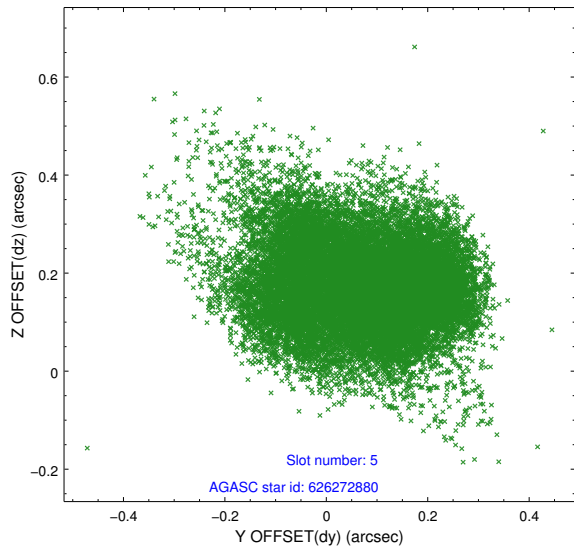
2.4.1 Slot 3



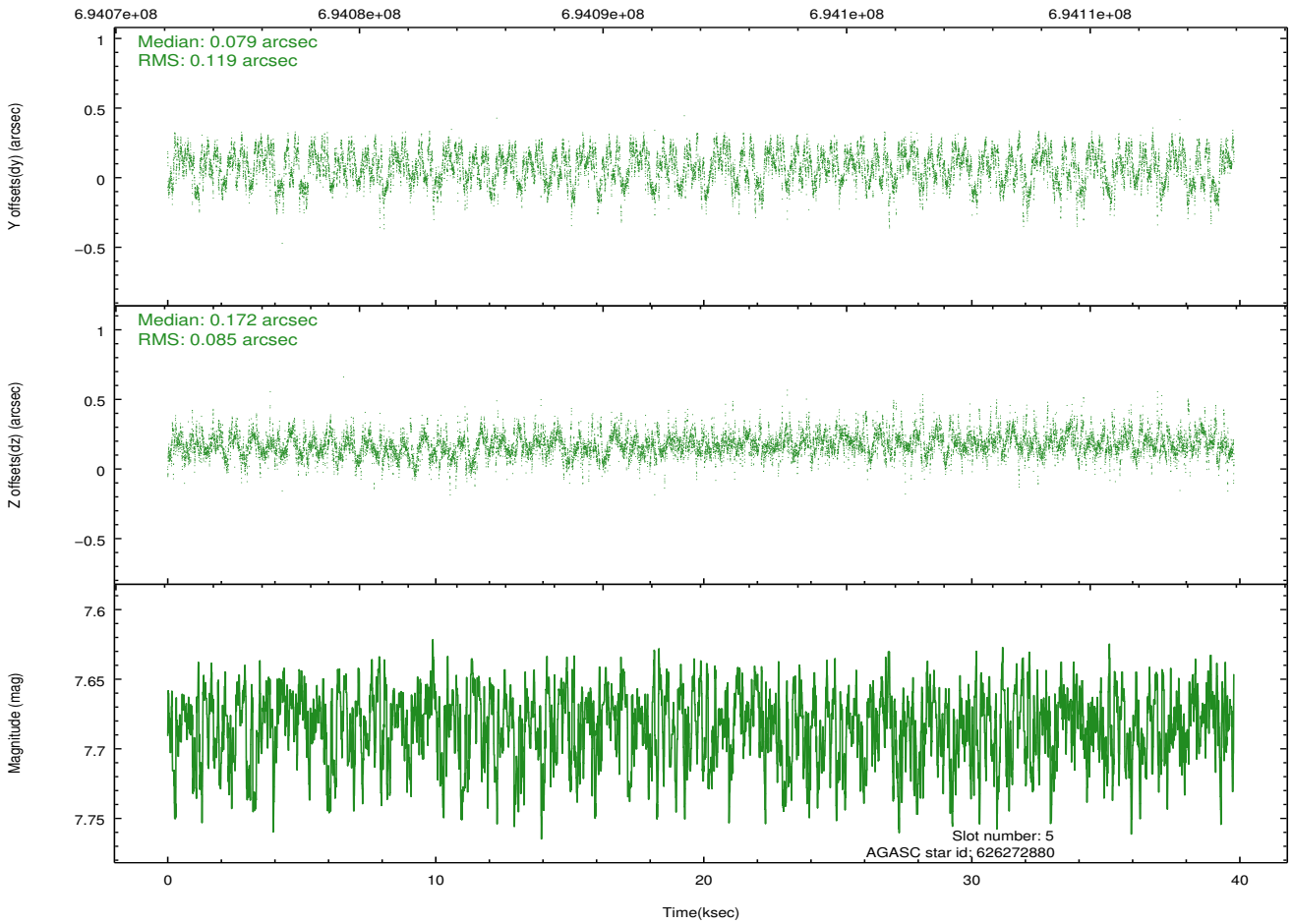
2.4.2 Slot 4



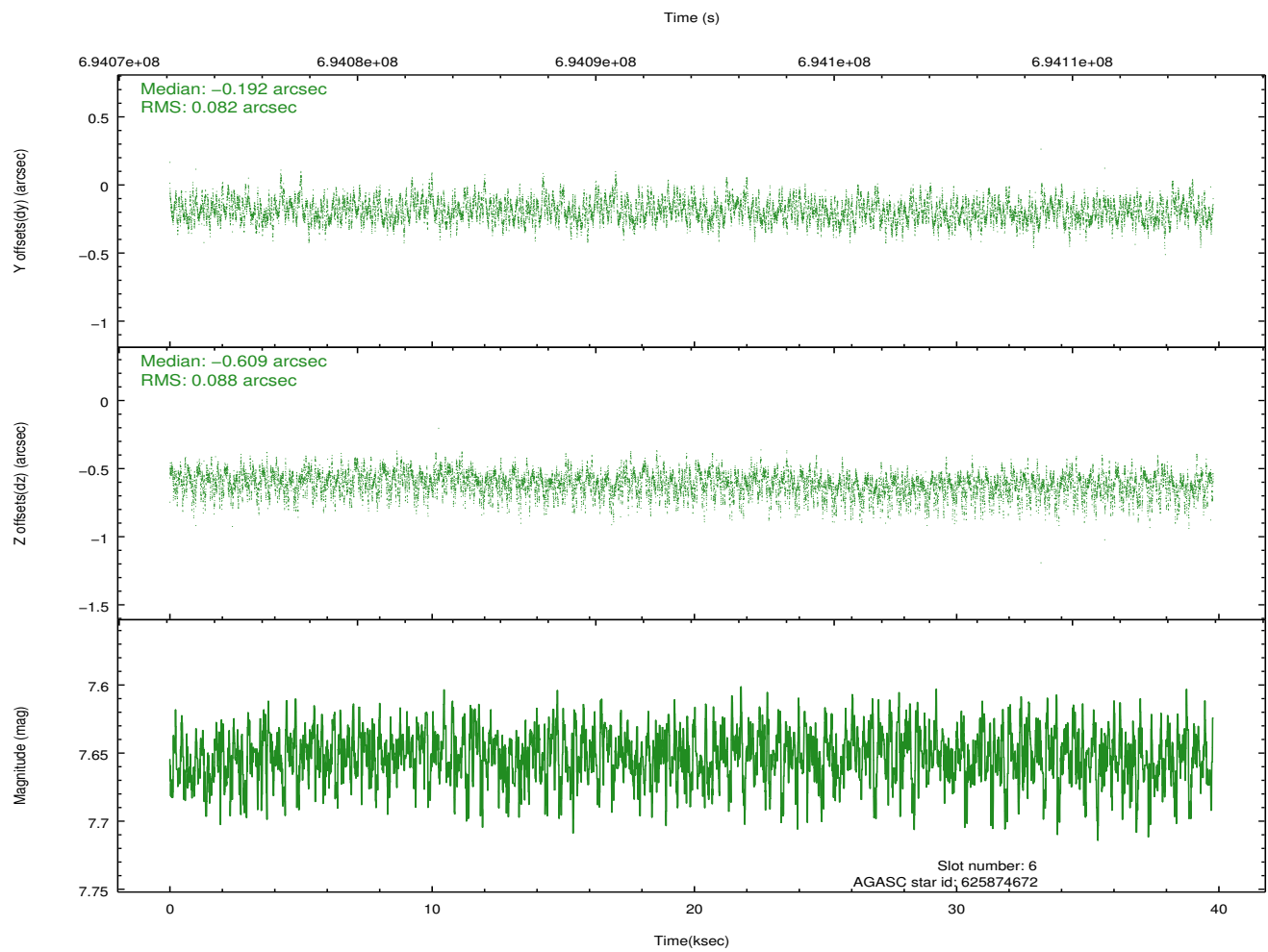
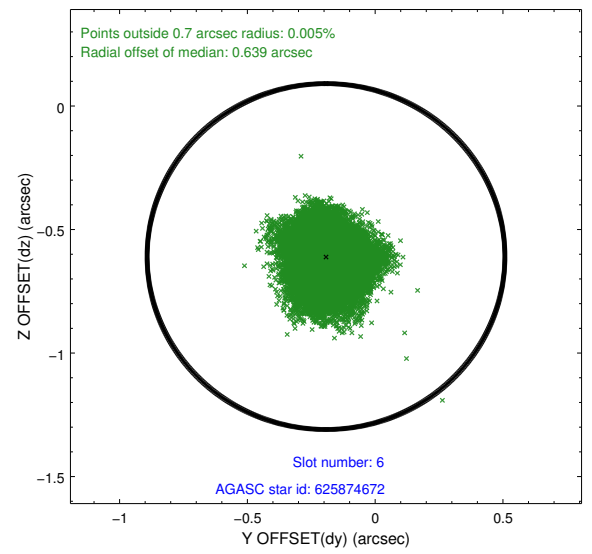
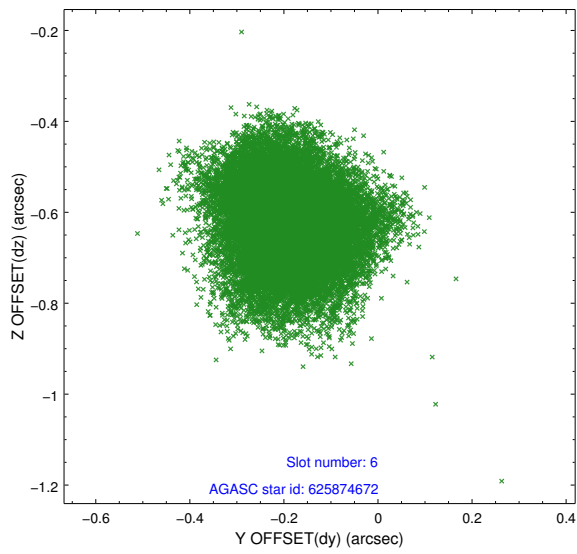
2.4.3 Slot 5



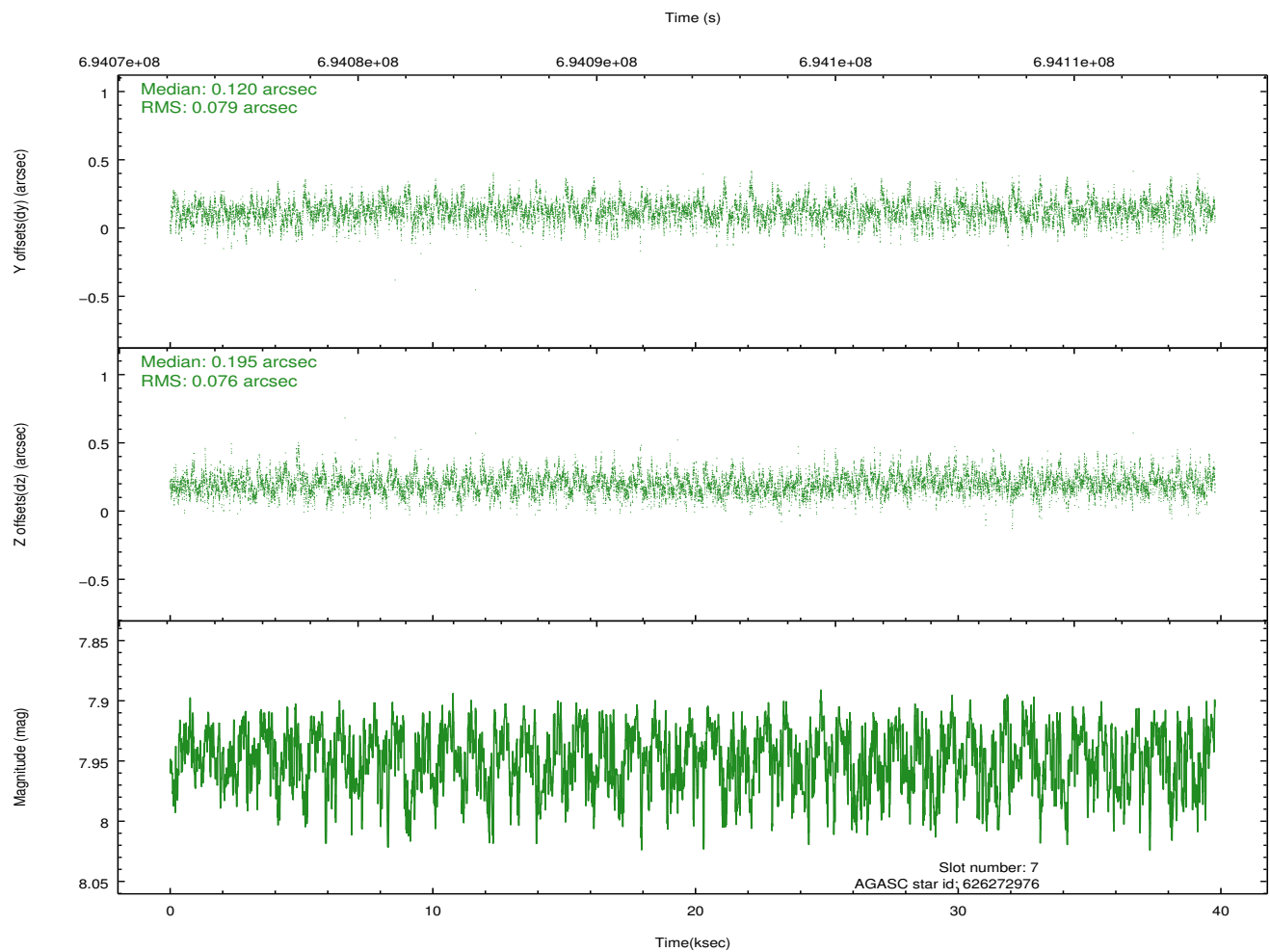
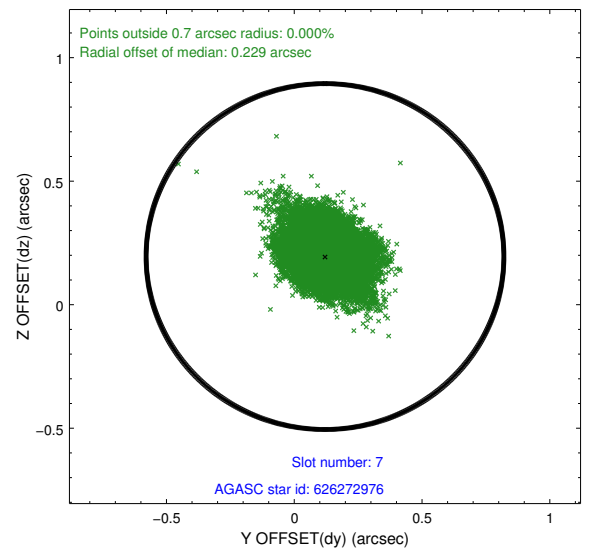
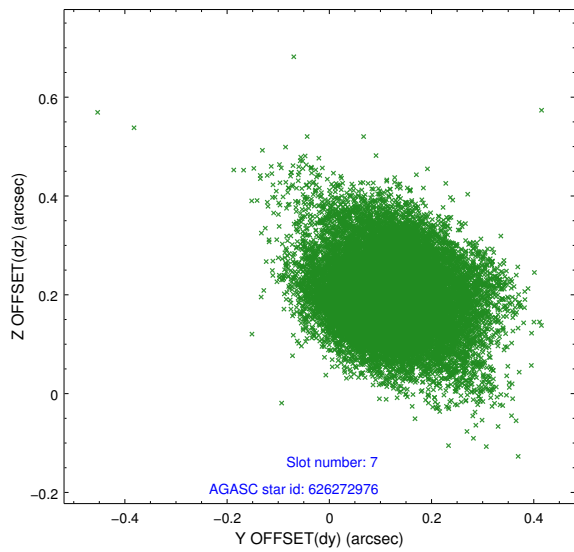
Time (s)



2.4.4 Slot 6

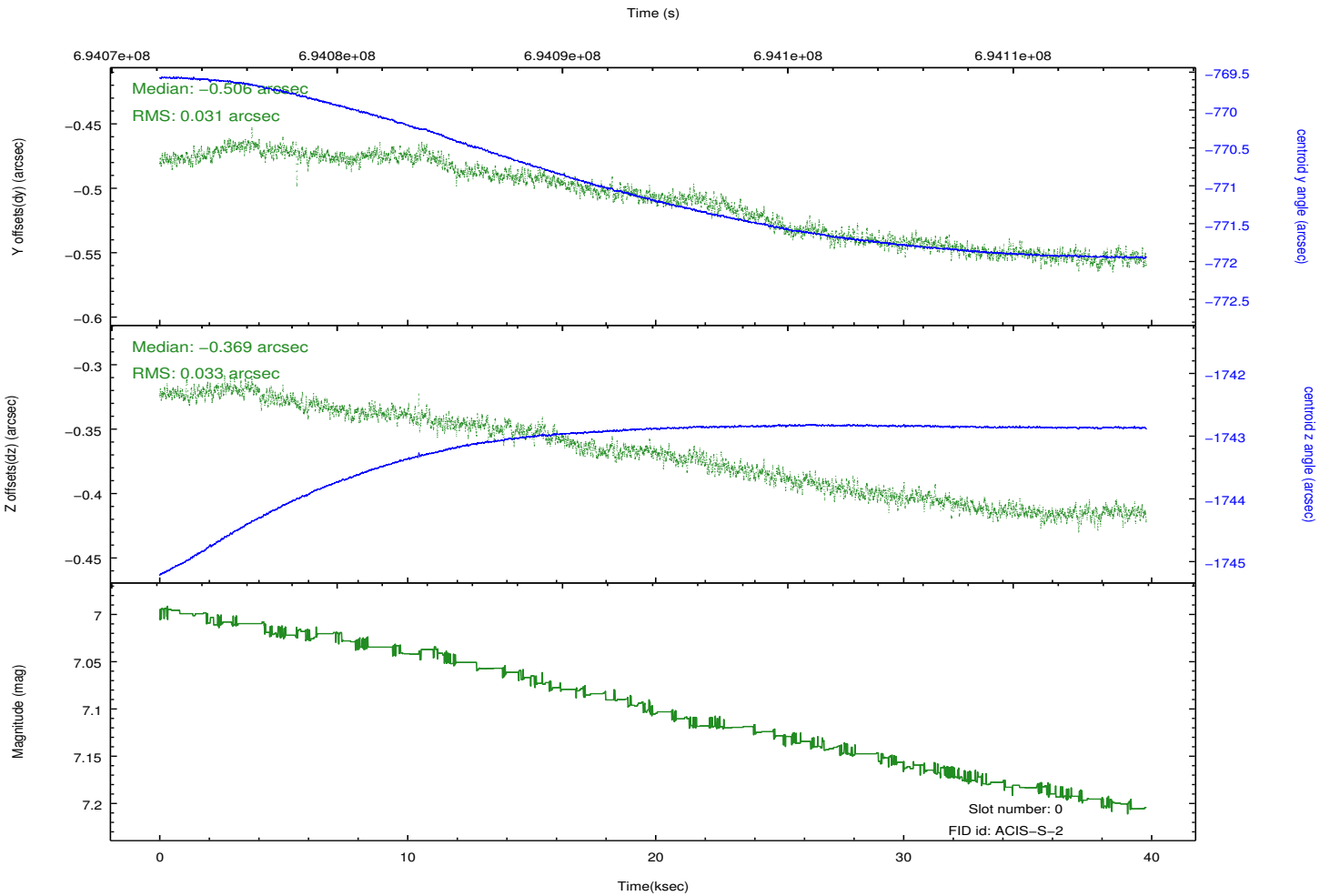
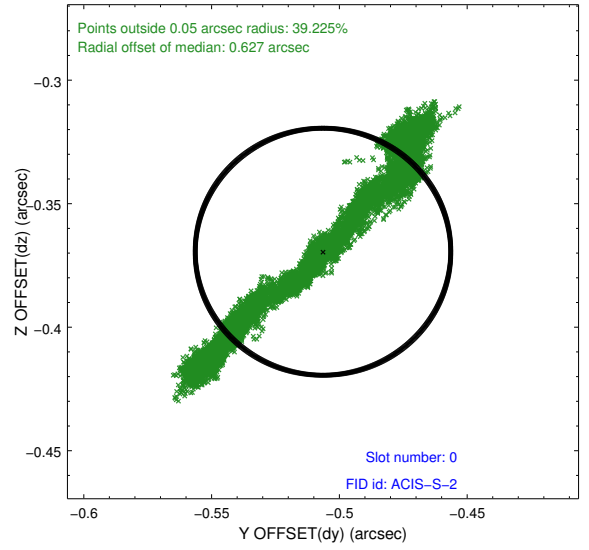
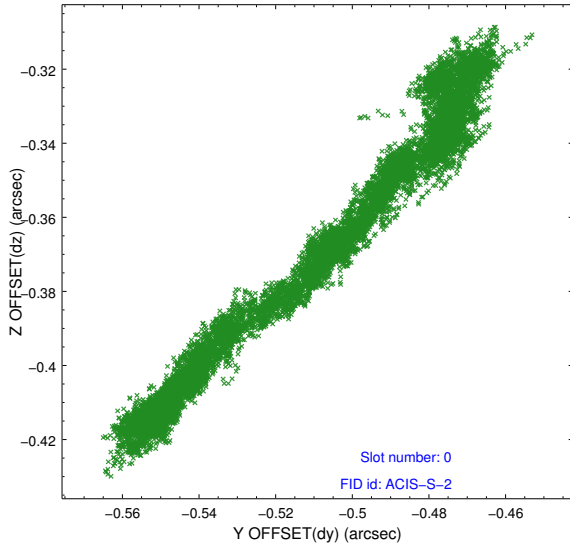


2.4.5 Slot 7

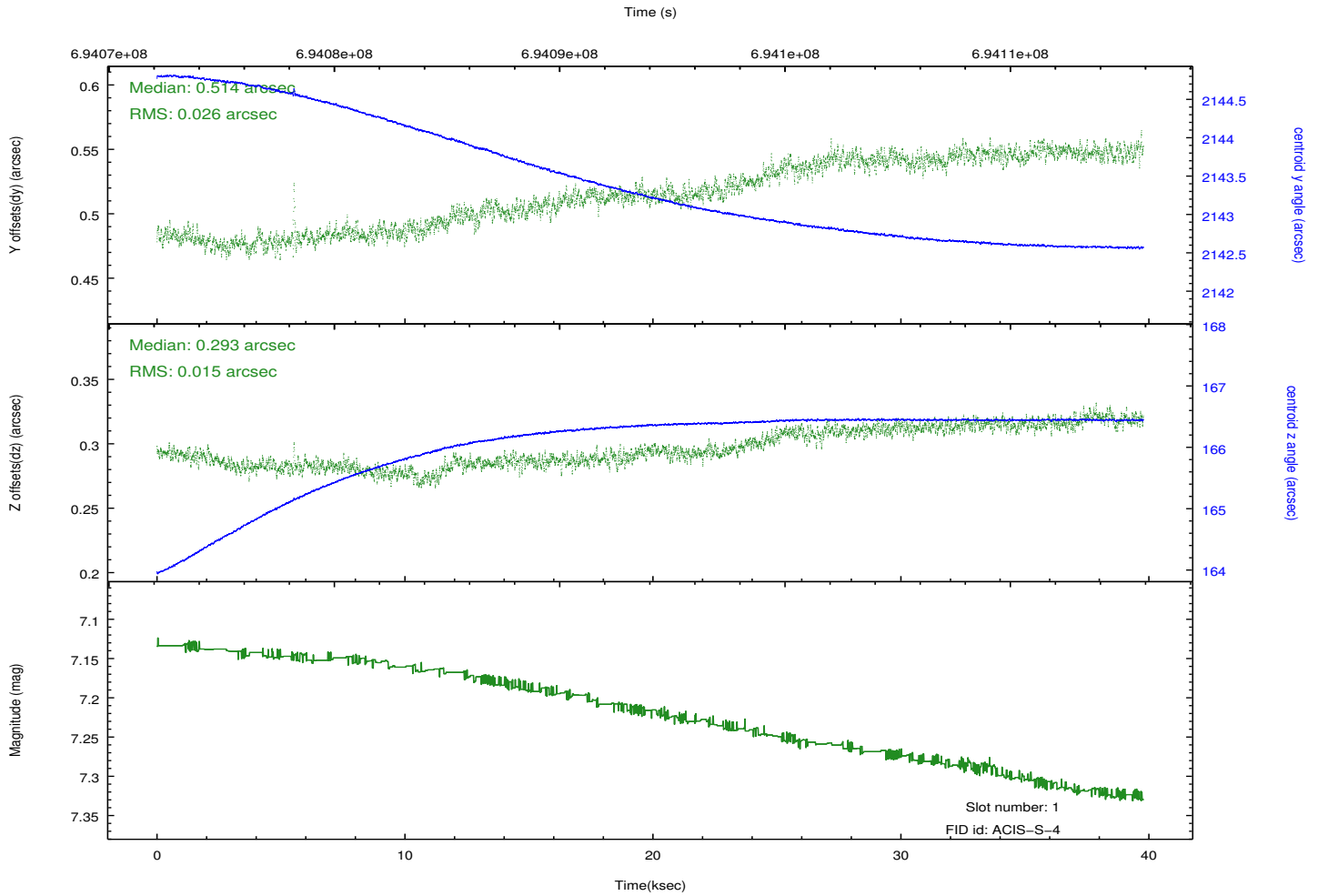
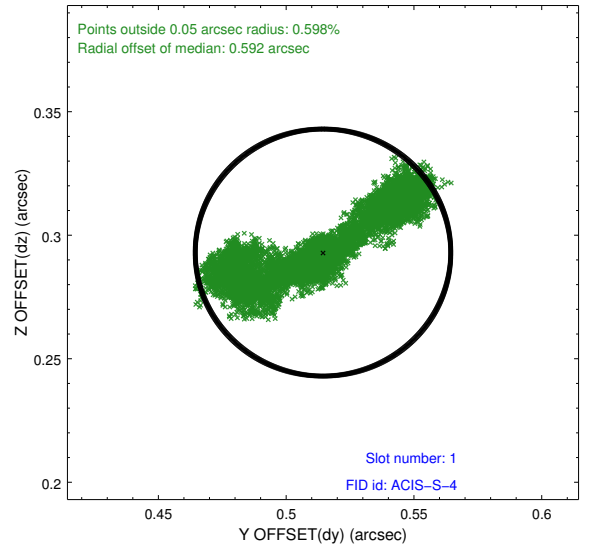
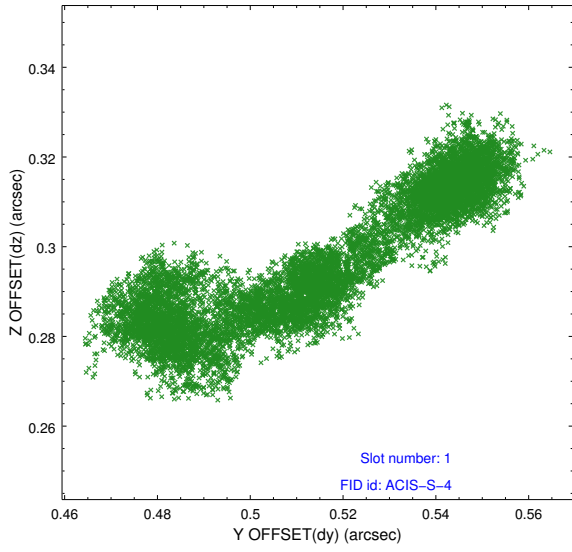


2.5 FID Slots

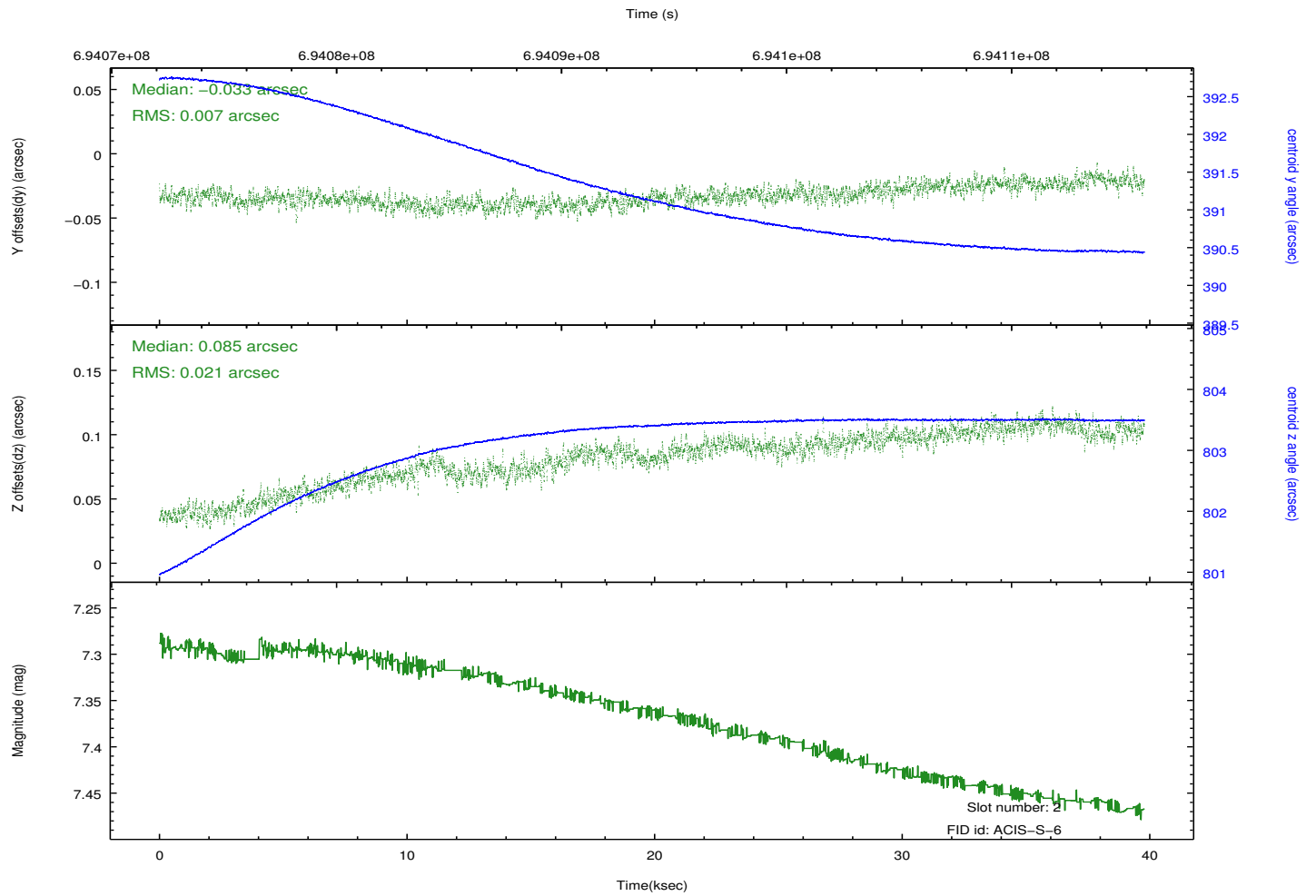
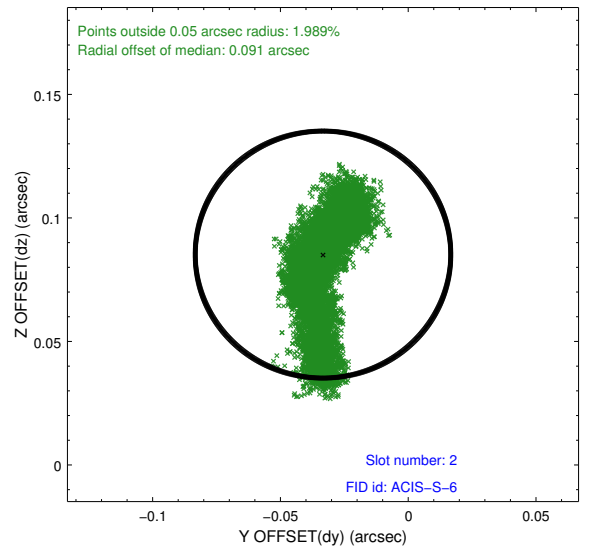
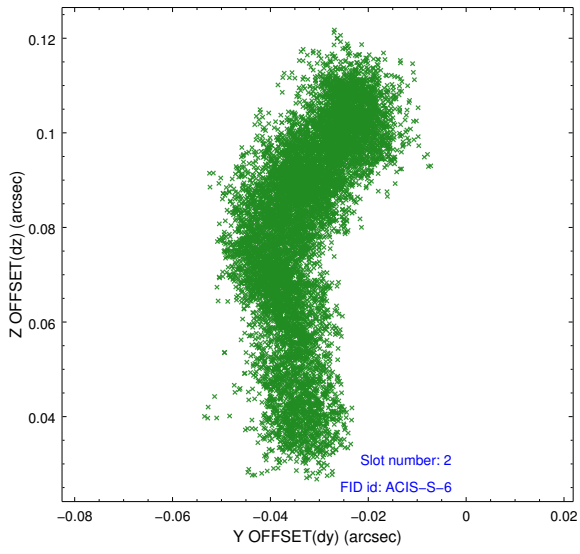
2.5.1 Slot 0



2.5.2 Slot 1

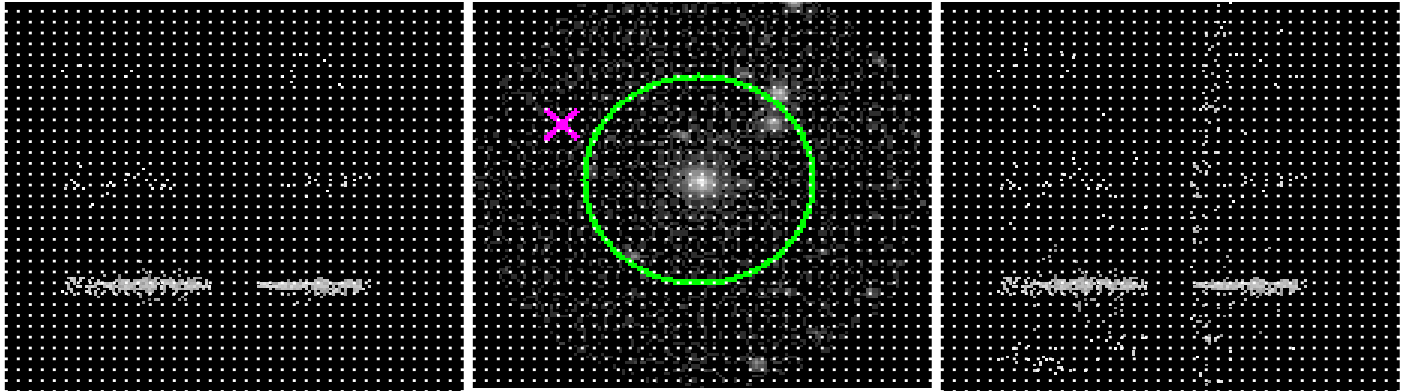


2.5.3 Slot 2



3 Gratings

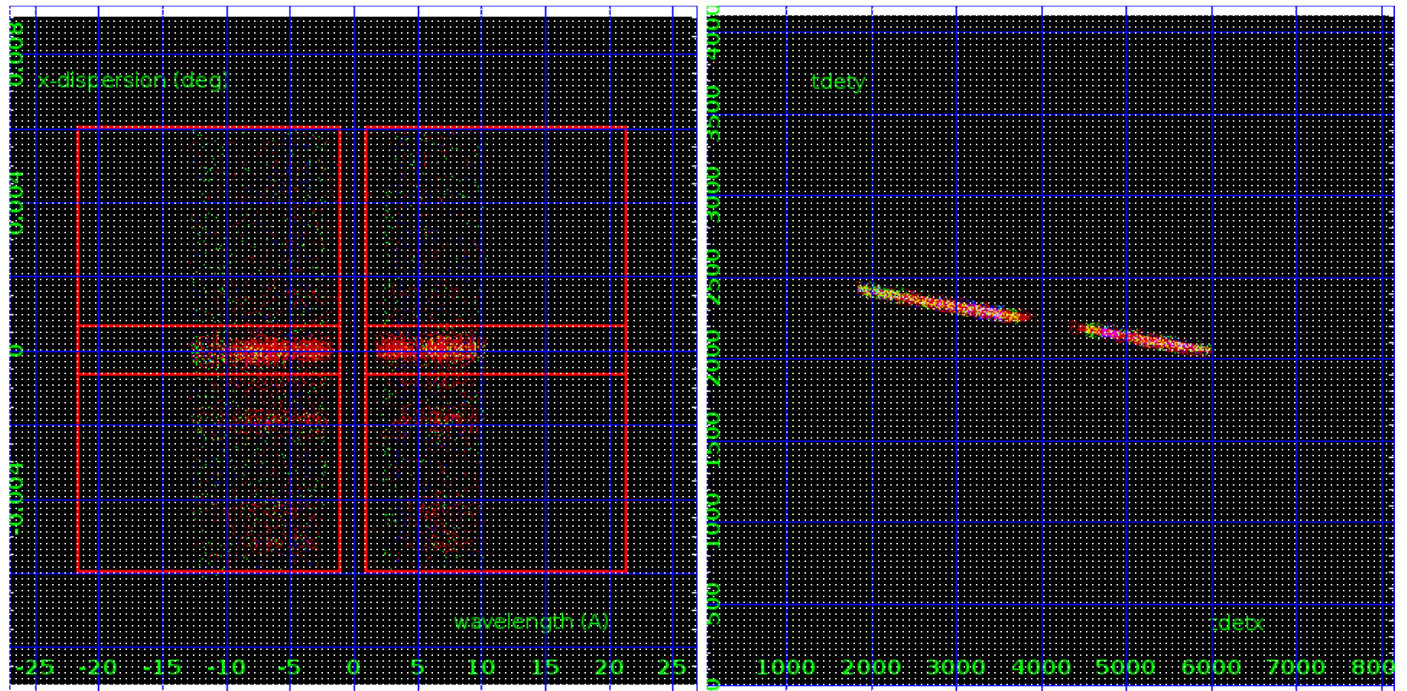
3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

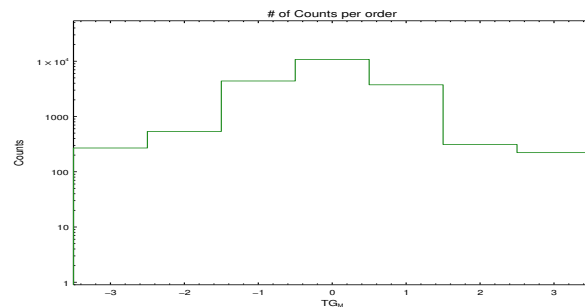
HEG Order Sort ALL



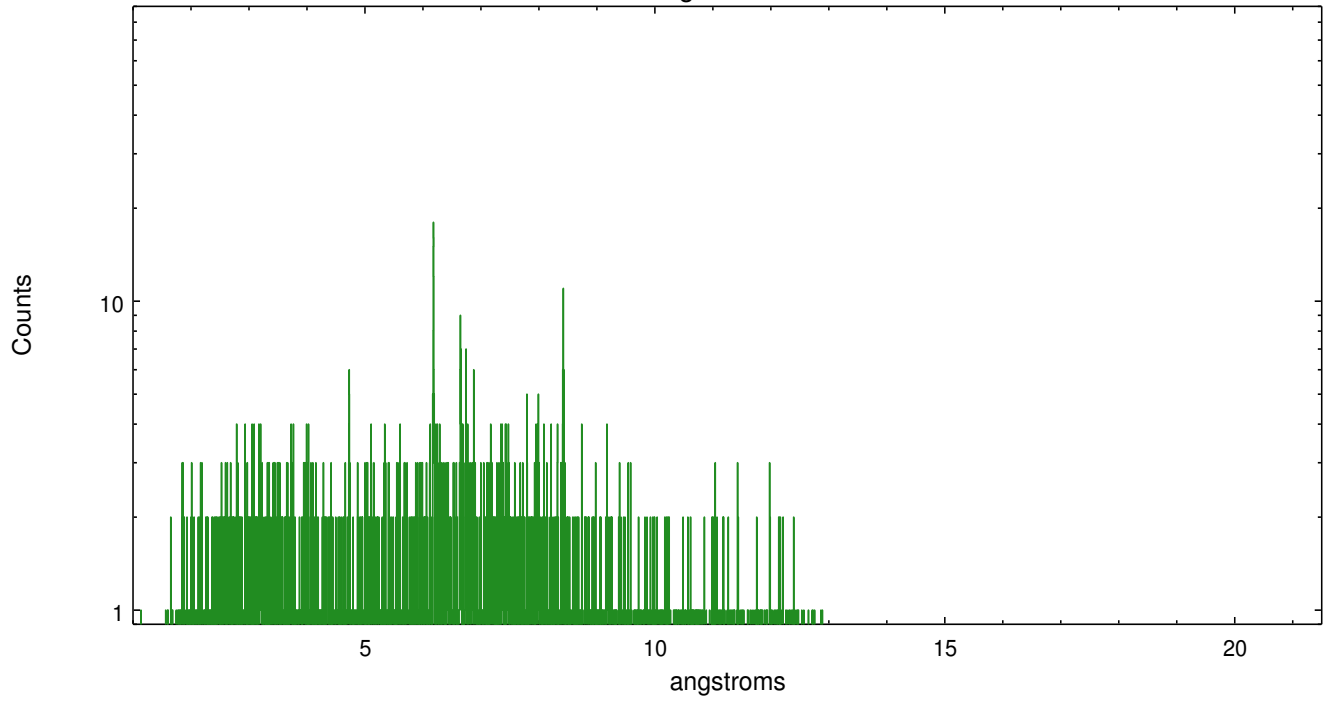
Spot Image HEG

Full Detector HEG

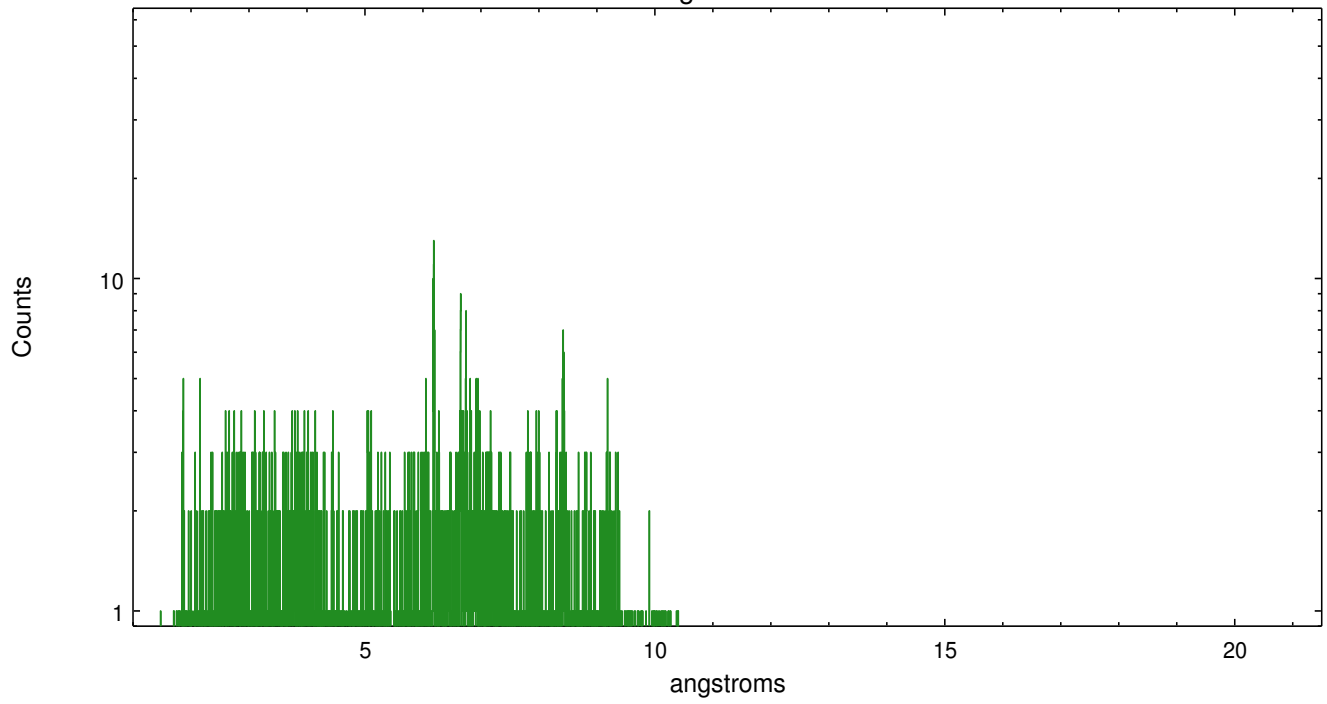
| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|----------|----------|----------|---------|---------|---------|---------|
| Events | 269 | 537 | 4391 | 10791 | 3748 | 311 | 222 |



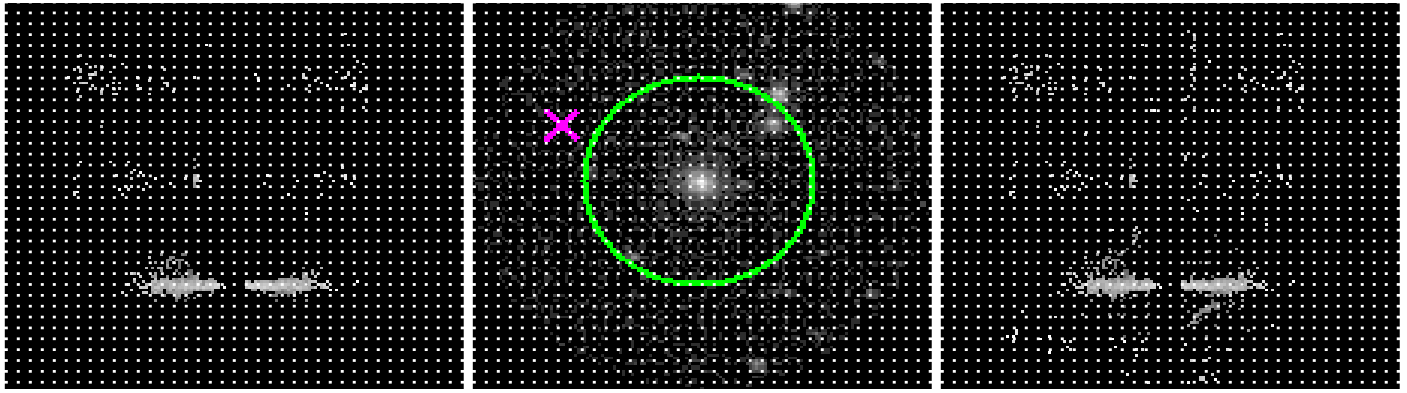
heg order -1



heg order +1



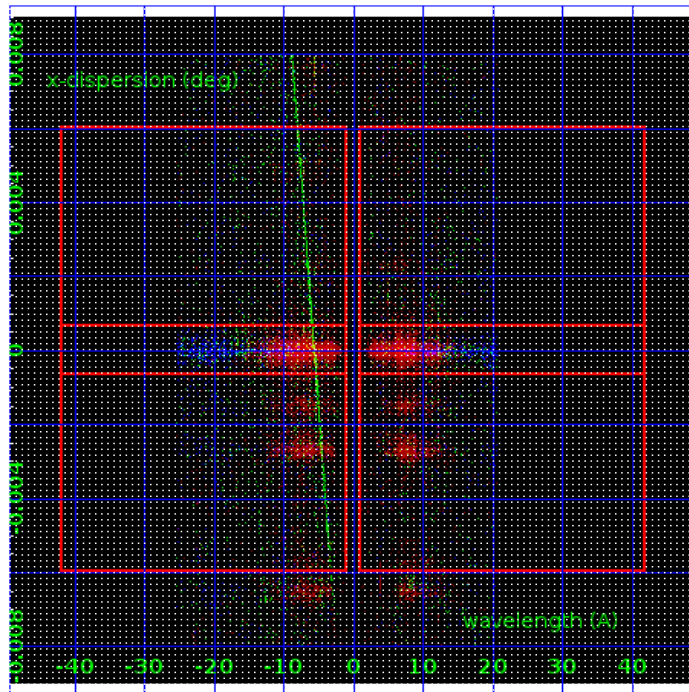
3.2 MEG Arm



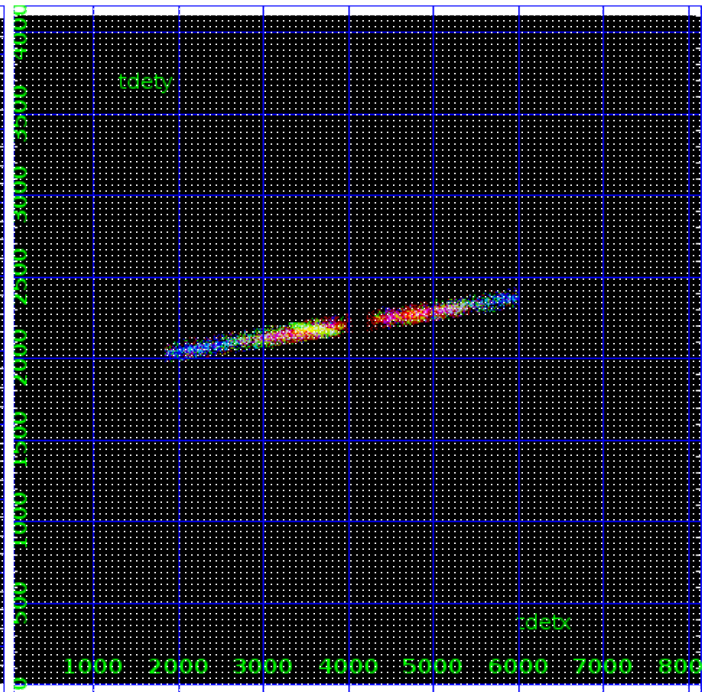
MEG Order Sort 123

MEG Zero Order

MEG Order Sort ALL

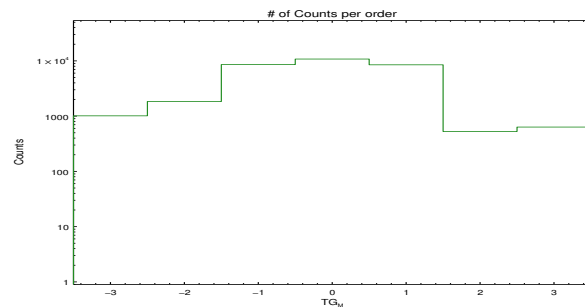


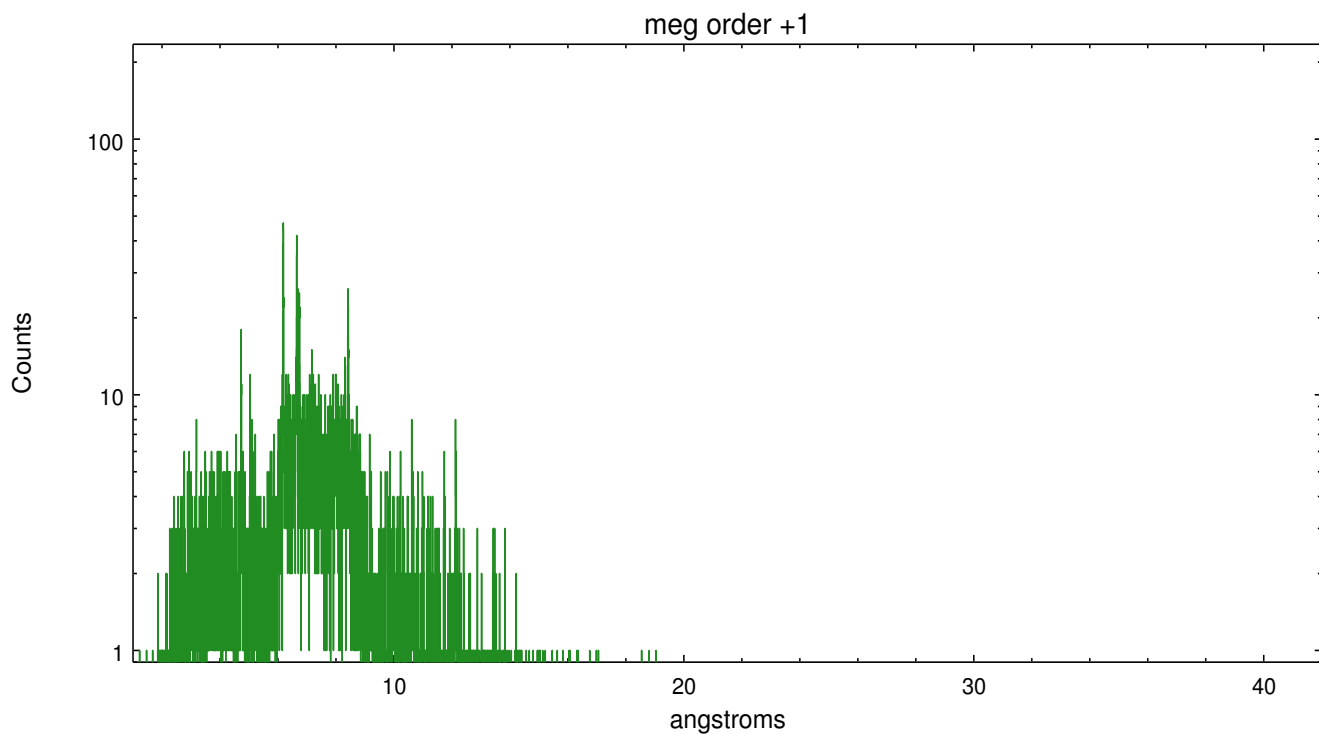
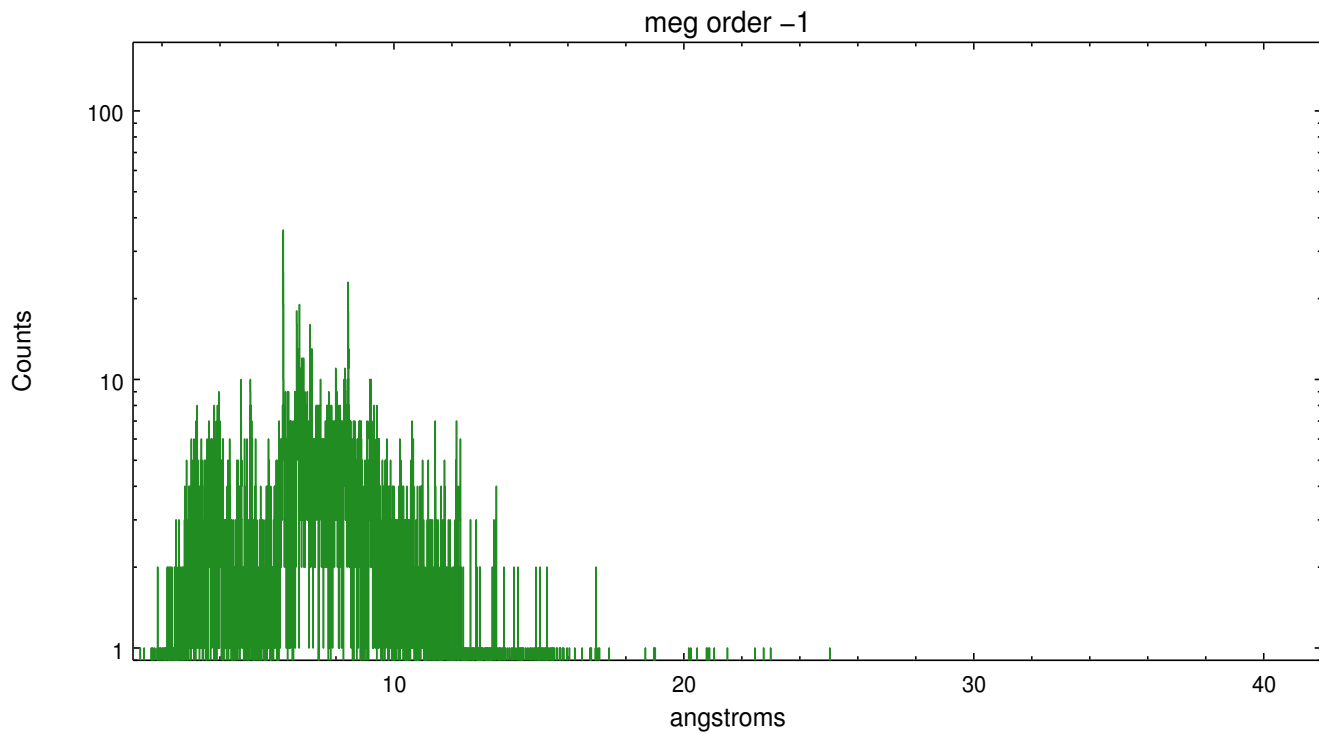
Spot Image MEG



Full Detector MEG

| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 1013 | 1838 | 8563 | 10791 | 8491 | 527 | 634 |





A Summary

A.1 Status

| | |
|----------------------------|-----------------|
| V&V Scientist | Melania Nynka |
| V&V Date (YYYY-MM-DD) | 2020.01.05 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 39.667163175225 |

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).