

V&V Reference Report

L2 ASCDS Version : 8.1.2

Observation 168 - L2 Version 3
Chandra X-Ray Center

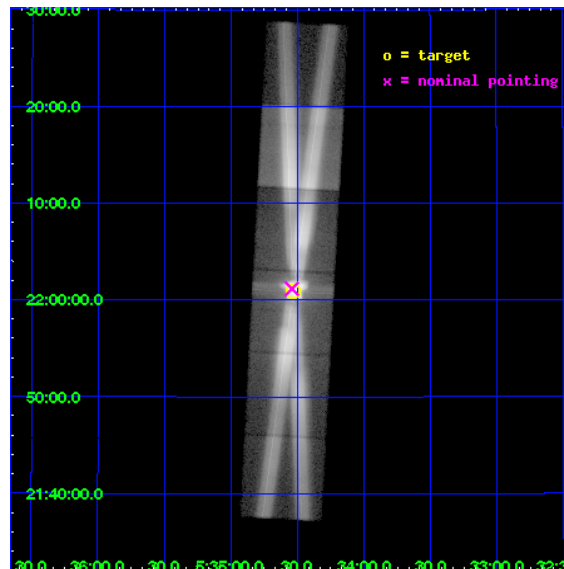
L2 Processing Date : Dec 17 2009

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1 Front

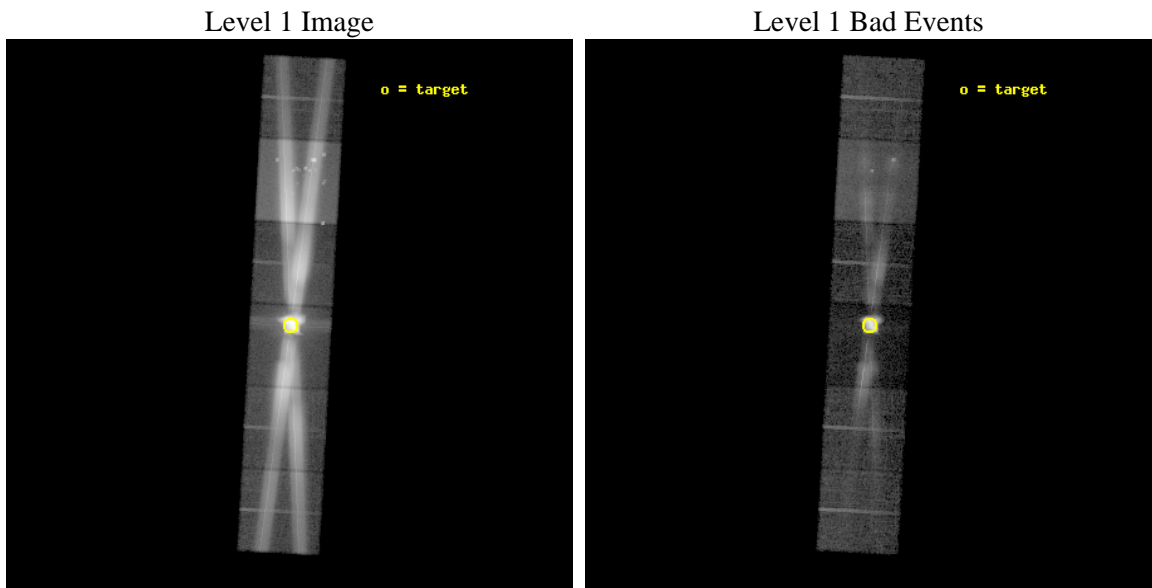
| | | |
|----------|---|---|
| seq_num | 590036 | Sequence number |
| obs_id | 168 | Observation id |
| title | CALIBRATION OF HETGS USING THE CRAB PULSAR AND NEBULA | Proposal tit |
| observer | Dr. CXC Calibration | Principal investigator |
| object | CRAB PULSAR | Source name |
| dtcycle | 0 | |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 83.633333 | Observer's specified target RA |
| dec_targ | 22.014472 | Observer's specified target Dec |
| ra_nom | 83.635402359754 | Nominal RA |
| dec_nom | 22.019331824685 | Nominal Dec |
| roll_nom | 93.09884335772 | Nominal Roll |
| revision | 3 | Processing version of data |
| ontime | 2650.0474469215 | Sum of GTIs [s] |
| livetime | 2616.4909504815 | Livetime [s] |
| ontime4 | 5486.0329386964 | Sum of GTIs [s] |
| ontime5 | 13404.068551287 | Sum of GTIs [s] |
| ontime6 | 3408.6558886766 | Sum of GTIs [s] |
| ontime7 | 2650.0474469215 | Sum of GTIs [s] |
| ontime8 | 4491.387662828 | Sum of GTIs [s] |
| ontime9 | 6393.8634823263 | Sum of GTIs [s] |
| l2events | 4771092 | Number of level 2 events |



2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|-----------------|-------------------------------------|
| obi_num | 1 | Obi number | sched_exp_time | 12000.000000 | Scheduled observation exposure time |
| ascdsver | 8.1.2 | ASCDS version number | ontime | 2650.0474469215 | Sum of GTIs [s] |
| caldbver | 4.1.4 | | ontime4 | 5486.0329386964 | Sum of GTIs [s] |
| date | 2009-12-17T12:47:42 | Date and time of file creation | ontime5 | 13404.068551287 | Sum of GTIs [s] |
| revision | 4 | Processing version of data | ontime6 | 3408.6558886766 | Sum of GTIs [s] |
| | | | ontime7 | 2650.0474469215 | Sum of GTIs [s] |
| | | | ontime8 | 4491.387662828 | Sum of GTIs [s] |
| | | | ontime9 | 6393.8634823263 | Sum of GTIs [s] |
| | | | l1events | 5553226 | Number of level 1 events |

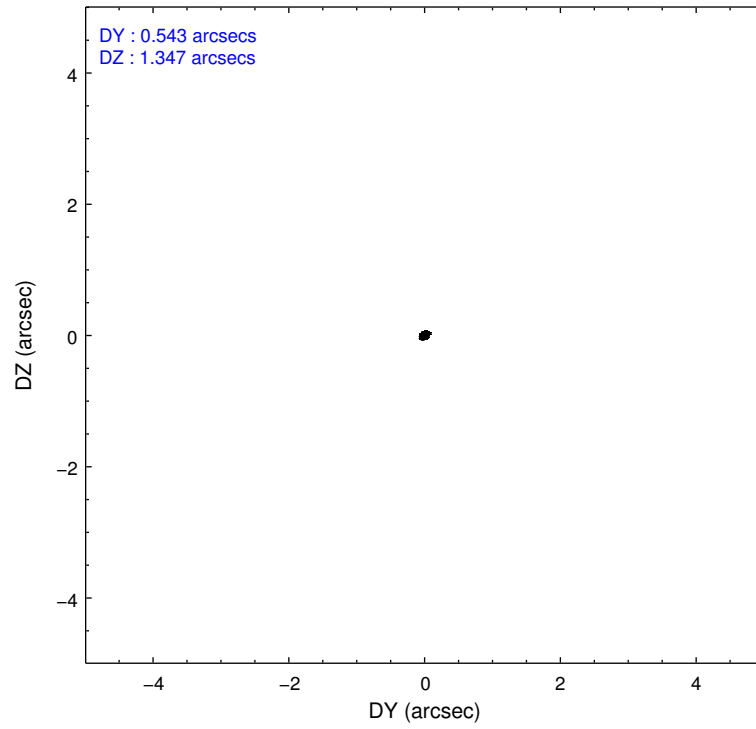
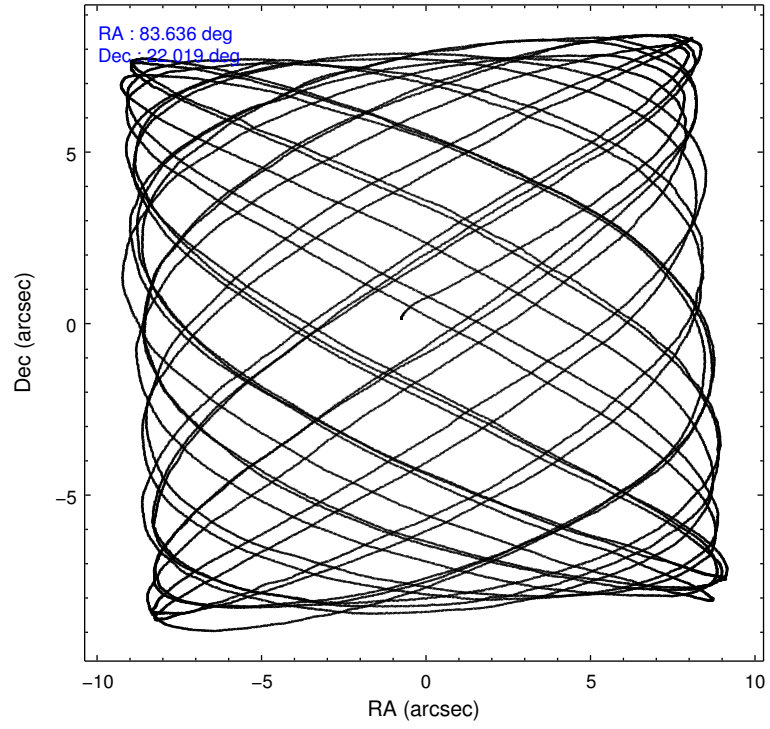
2.1.3 Events

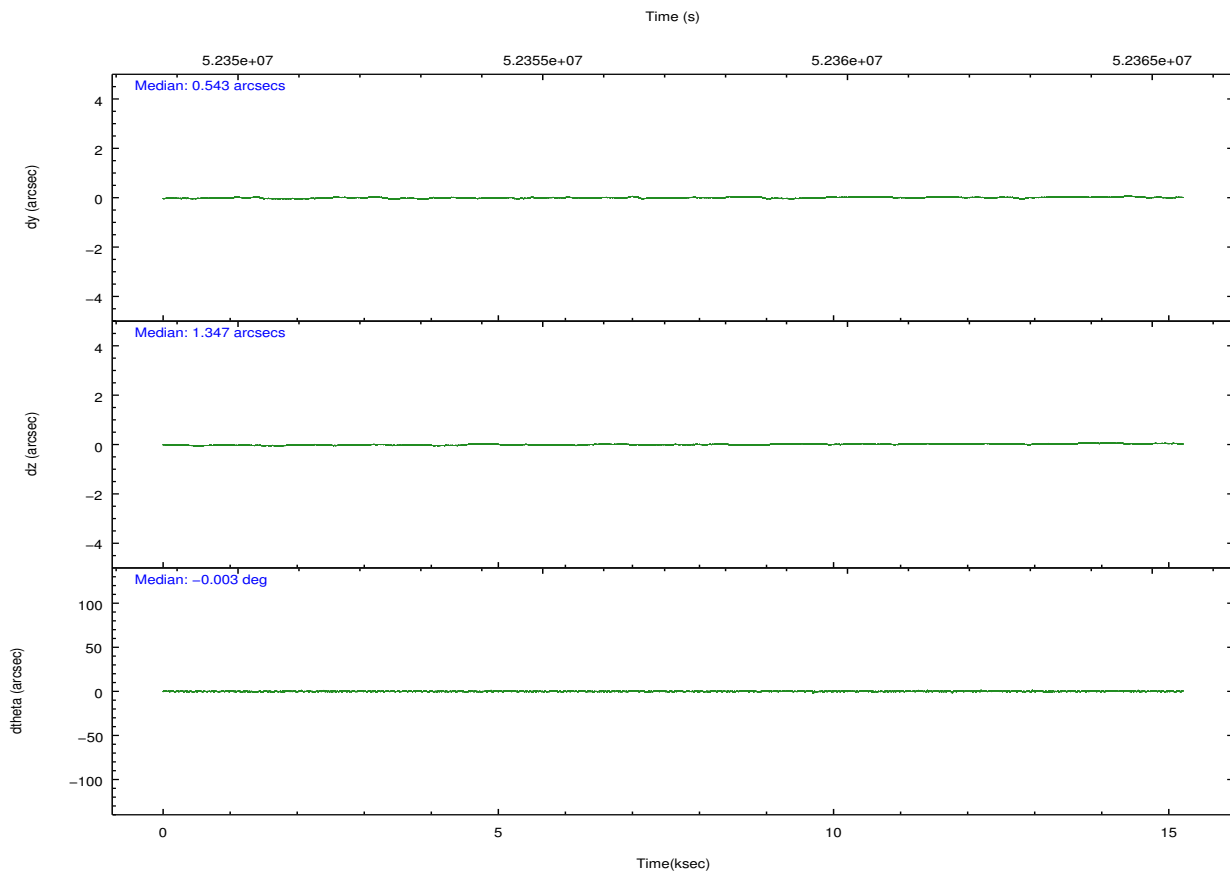
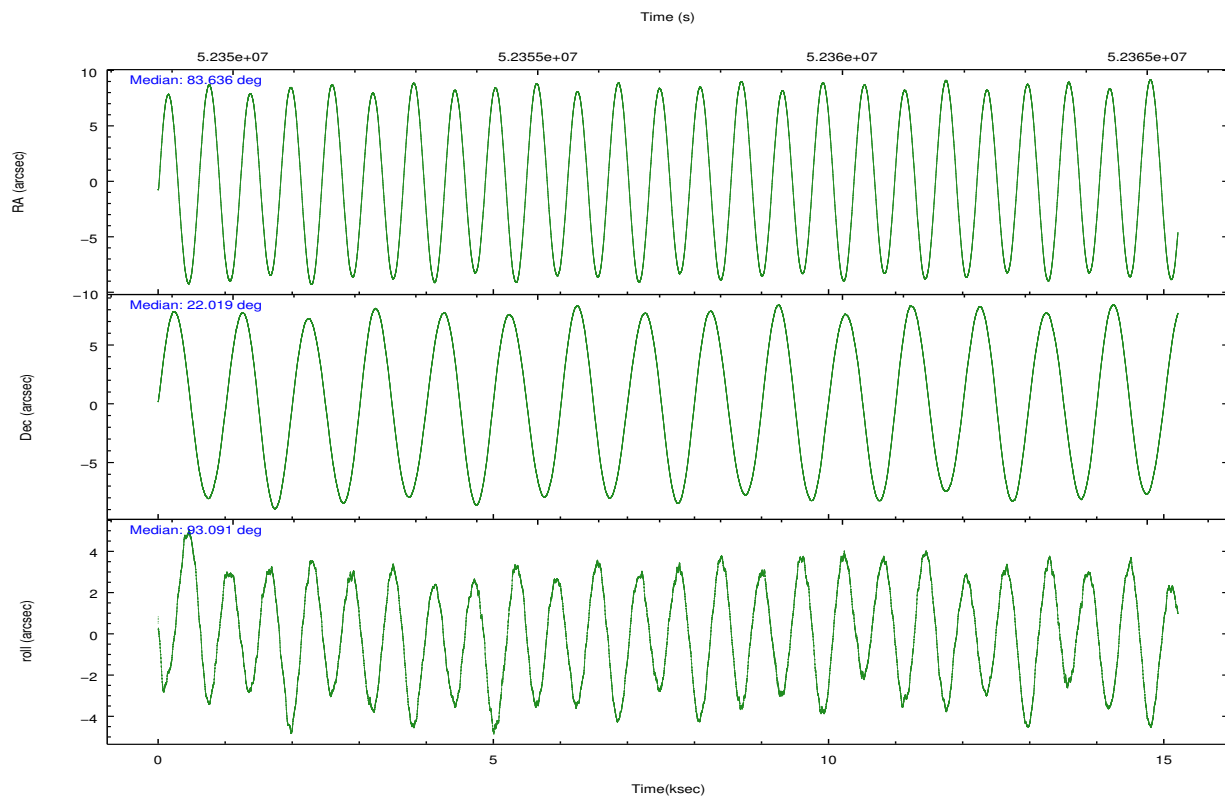
| | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 | | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|-----------------|--------|---------|---------|---------|--------|--------|----------------|-------|--------|--------|--------|--------|--------|
| level 1 events | 181235 | 1512510 | 1045559 | 1788969 | 750494 | 274459 | grade 0 events | 96168 | 449478 | 726627 | 264634 | 552865 | 168565 |
| rejected events | 57223 | 121810 | 70607 | 300281 | 66539 | 61445 | | 53% | 29% | 69% | 14% | 73% | 61% |
| rejected % | 31% | 8% | 6% | 16% | 8% | 22% | grade 1 events | 496 | 2572 | 10867 | 19829 | 5236 | 764 |
| | | | | | | | | 0% | 0% | 1% | 1% | 0% | 0% |
| | | | | | | | grade 2 events | 16509 | 320855 | 142696 | 326257 | 75149 | 25588 |
| | | | | | | | | 9% | 21% | 13% | 18% | 10% | 9% |
| | | | | | | | grade 3 events | 3919 | 187706 | 35630 | 200015 | 21391 | 6690 |
| | | | | | | | | 2% | 12% | 3% | 11% | 2% | 2% |
| | | | | | | | grade 4 events | 3925 | 169309 | 35526 | 176595 | 20754 | 6721 |
| | | | | | | | | 2% | 11% | 3% | 9% | 2% | 2% |
| | | | | | | | grade 5 events | 1554 | 19649 | 8939 | 73094 | 4922 | 2516 |
| | | | | | | | | 0% | 1% | 0% | 4% | 0% | 0% |
| | | | | | | | grade 6 events | 3570 | 265276 | 36720 | 529334 | 15301 | 5776 |
| | | | | | | | | 1% | 17% | 3% | 29% | 2% | 2% |
| | | | | | | | grade 7 events | 55094 | 97665 | 48554 | 199211 | 54876 | 57839 |
| | | | | | | | | 30% | 6% | 4% | 11% | 7% | 21% |

2.2 Compared Parameters

| Parameter | Planned | Actual | Parameter | Planned | Actual |
|-----------------------------------|---------------------|---------------------|---------------------------------------|-----------|---------|
| Instrument | ACIS | ACIS | Obspar format version number | 6 | 6 |
| Detector | ACIS-456789 | ACIS-456789 | Obspar file type | PREDICTED | ACTUAL |
| Grating | HETG | HETG | Obspar update status | NONE | UPDATED |
| Data mode | GRADED | GRADED | Number of optional ACIS chips dropped | 0 | 0 |
| Observation mode | POINTING | POINTING | On-chip summing requested | N | N |
| Pointing RA | 83.651281 | 83.63540235975388 | Subarray requested | NONE | NONE |
| Pointing Dec | 21.995966 | 22.01933182468547 | Alternating exposures requested | N | N |
| Pointing Roll | 92.936267 | 93.09884335771962 | Primary exposure time | 0.000000 | 3.2 |
| Window start time | 49852864.184000 | 49852864.184000 | | | |
| Window stop time | 55036864.184000 | 55036864.184000 | | | |
| SIM focus pos (mm) | -0.684267 | -0.7362356599963374 | | | |
| SIM defocus (mm) | 0 | -0.0519681986964412 | | | |
| SIM translation stage pos (mm) | -190.132523 | -190.1425803651734 | | | |
| SIM translation stage offset (mm) | 0 | 0.01005778216563158 | | | |
| Observation start time | 52350004.184000 | 52349337.730793 | | | |
| Observation start date | 1999-08-29T21:39:00 | 1999-08-29T21:28:57 | | | |
| Observation end time | 52364743.184000 | 52365237.018865 | | | |
| Observation end date | 1999-08-30T01:44:39 | 1999-08-30T01:53:57 | | | |
| Read mode | TIMED | TIMED | | | |

2.3 Aspect



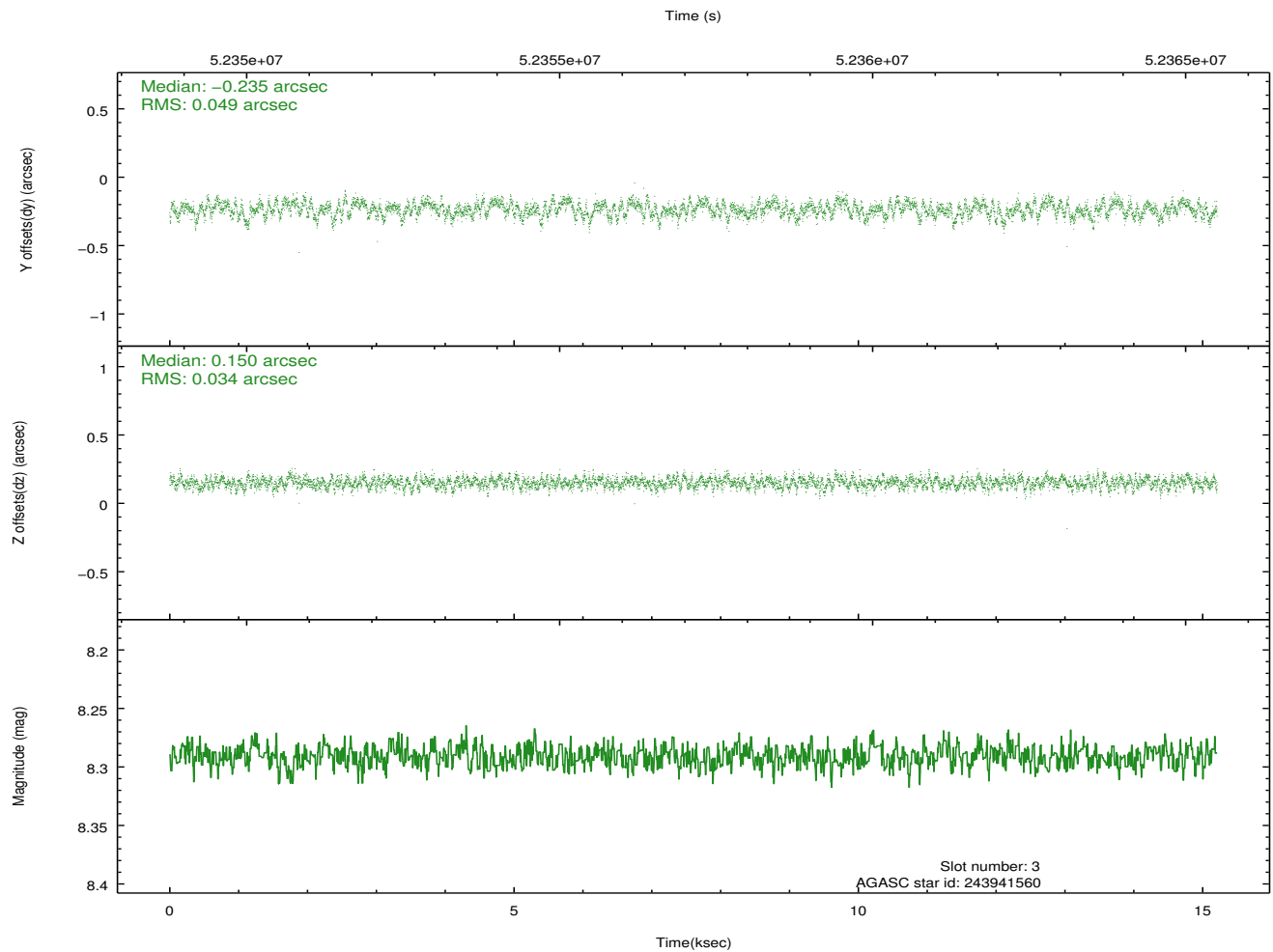
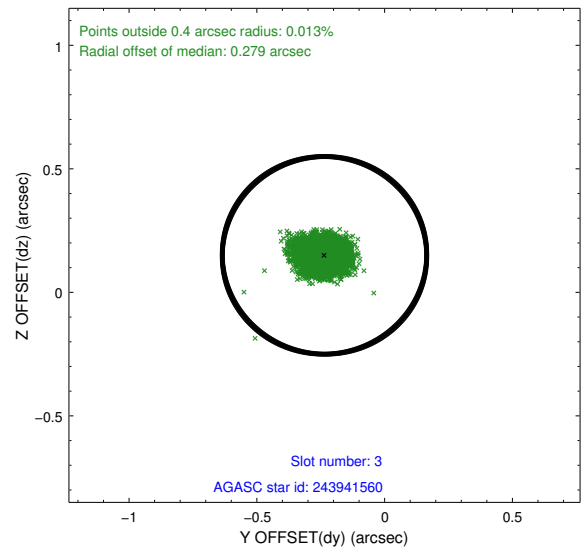
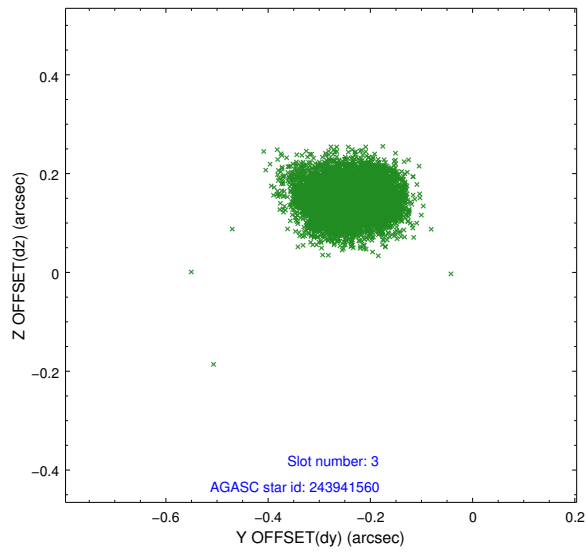


Slot Statistics

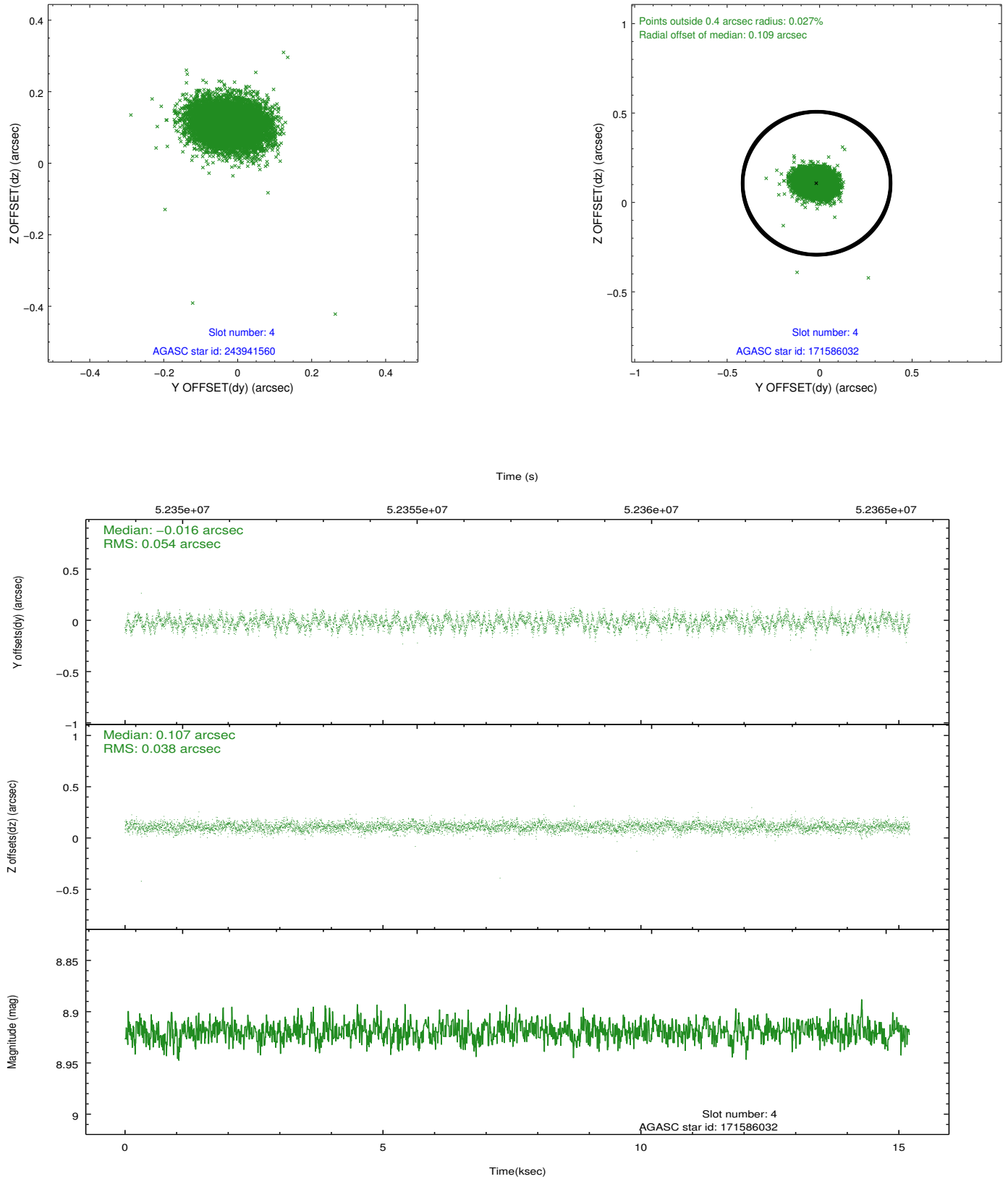
| slot | status | id | mag | n_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mean_z |
|------|--------|-----------|------|-------|--------|--------|-------|-------|-----------|-----------|----------|----------|
| 0 | FID | ACIS-S-2 | 7.12 | 7420 | -0.018 | 0.003 | 0.006 | 0.011 | 0.000000 | 0.000000 | -753.16 | -1722.28 |
| 1 | FID | ACIS-S-4 | 7.22 | 7416 | 0.068 | 0.008 | 0.005 | 0.009 | 0.000000 | 0.000000 | 2160.19 | 186.07 |
| 2 | FID | ACIS-S-5 | 7.25 | 7416 | -0.081 | -0.002 | 0.006 | 0.010 | 0.000000 | 0.000000 | -1805.94 | 179.89 |
| 3 | GUIDE | 243941560 | 8.29 | 7412 | -0.235 | 0.150 | 0.063 | 0.102 | 83.733264 | 22.568598 | 2046.27 | -376.90 |
| 4 | GUIDE | 171586032 | 8.92 | 7415 | -0.016 | 0.107 | 0.070 | 0.112 | 83.950197 | 22.083225 | 265.58 | -1011.42 |
| 5 | GUIDE | 171597832 | 9.16 | 7415 | 0.280 | -0.145 | 0.089 | 0.139 | 83.183230 | 21.366702 | -2178.01 | 1683.03 |
| 6 | GUIDE | 171721904 | 9.19 | 7412 | -0.101 | 0.148 | 0.075 | 0.122 | 84.272676 | 22.116922 | 334.39 | -2091.32 |
| 7 | GUIDE | 171598712 | 9.42 | 7410 | 0.066 | -0.262 | 0.099 | 0.163 | 82.978369 | 21.681417 | -1009.31 | 2305.72 |

2.4 Star Slots

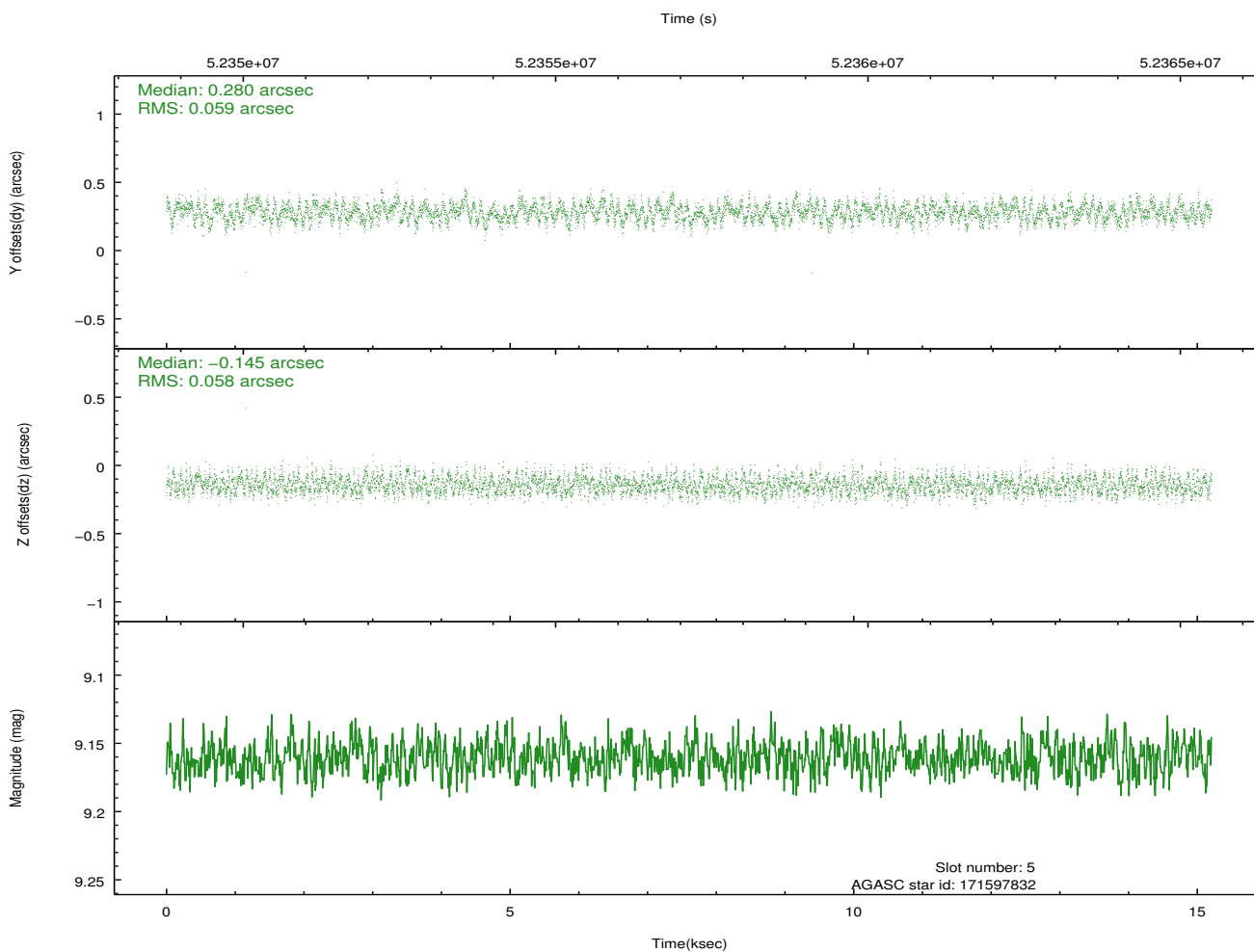
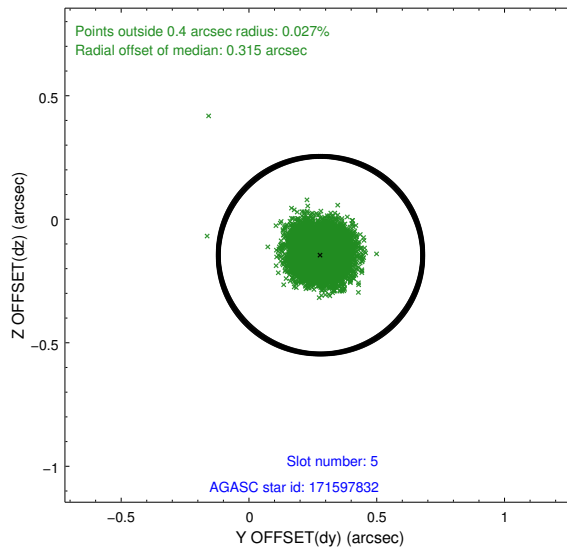
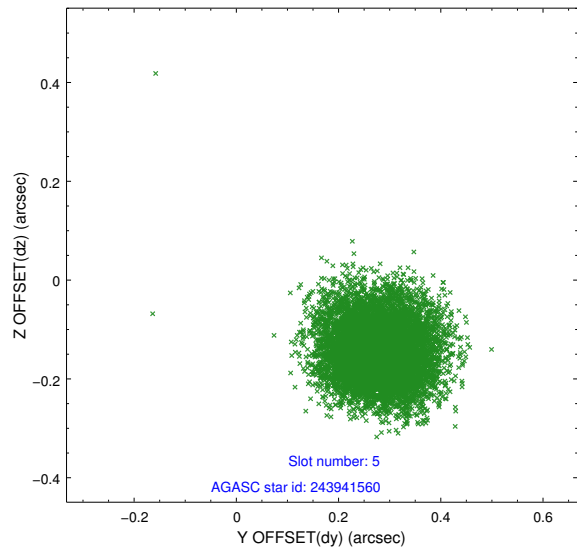
2.4.1 Slot 3



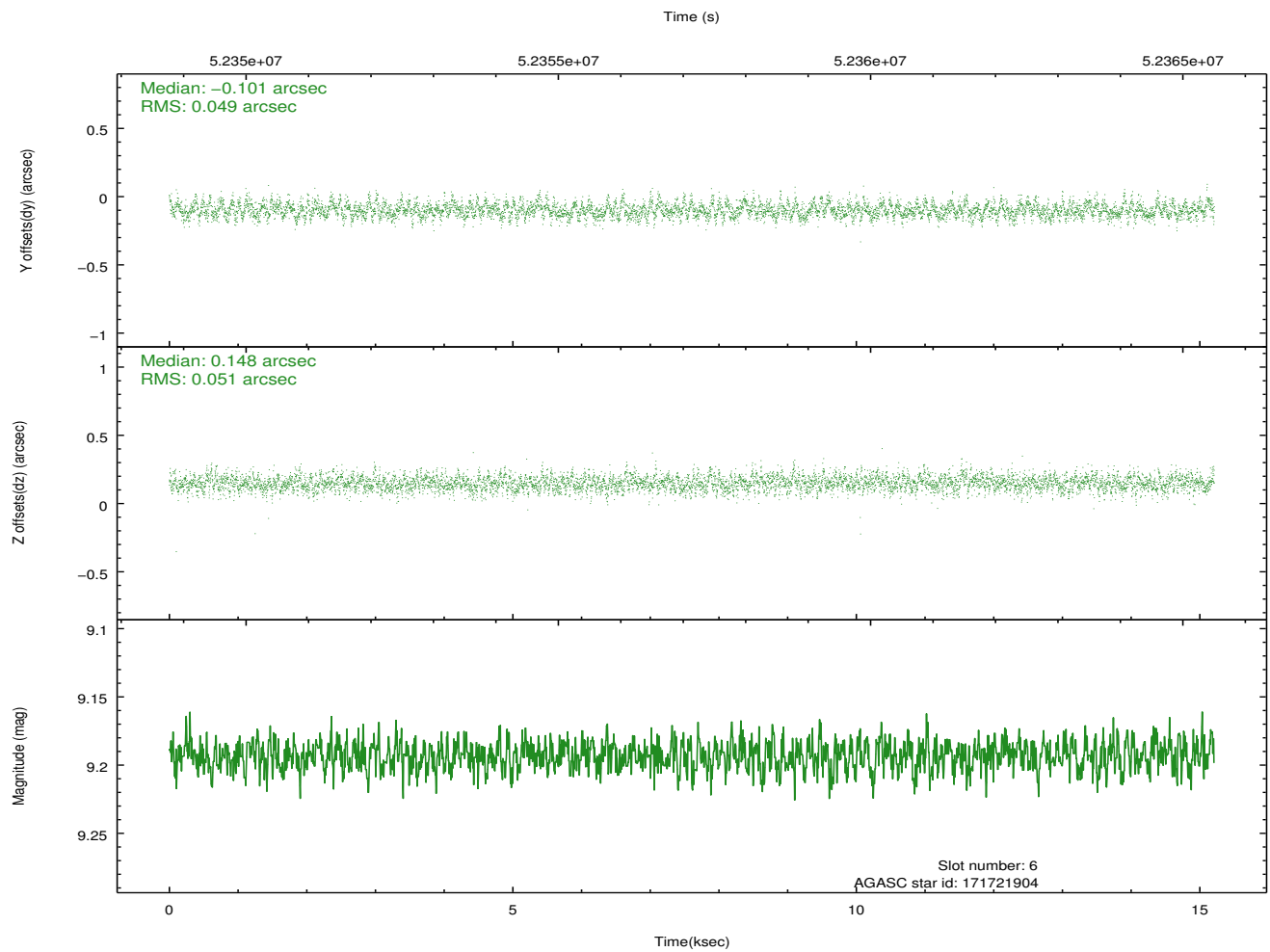
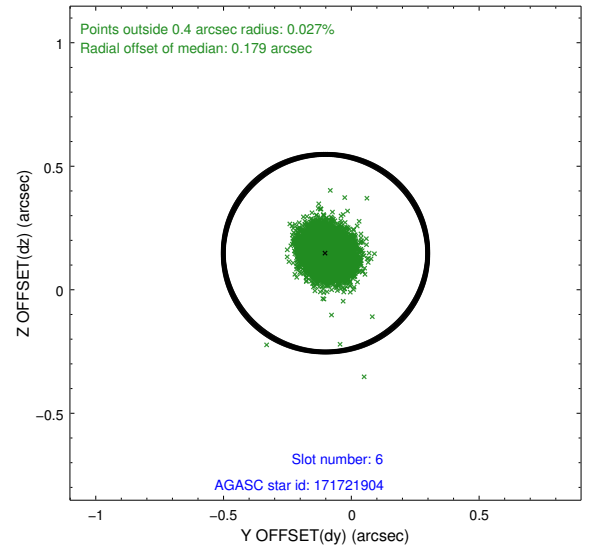
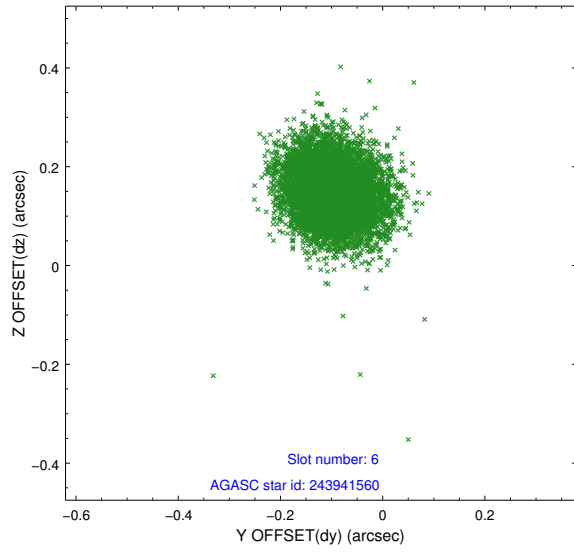
2.4.2 Slot 4



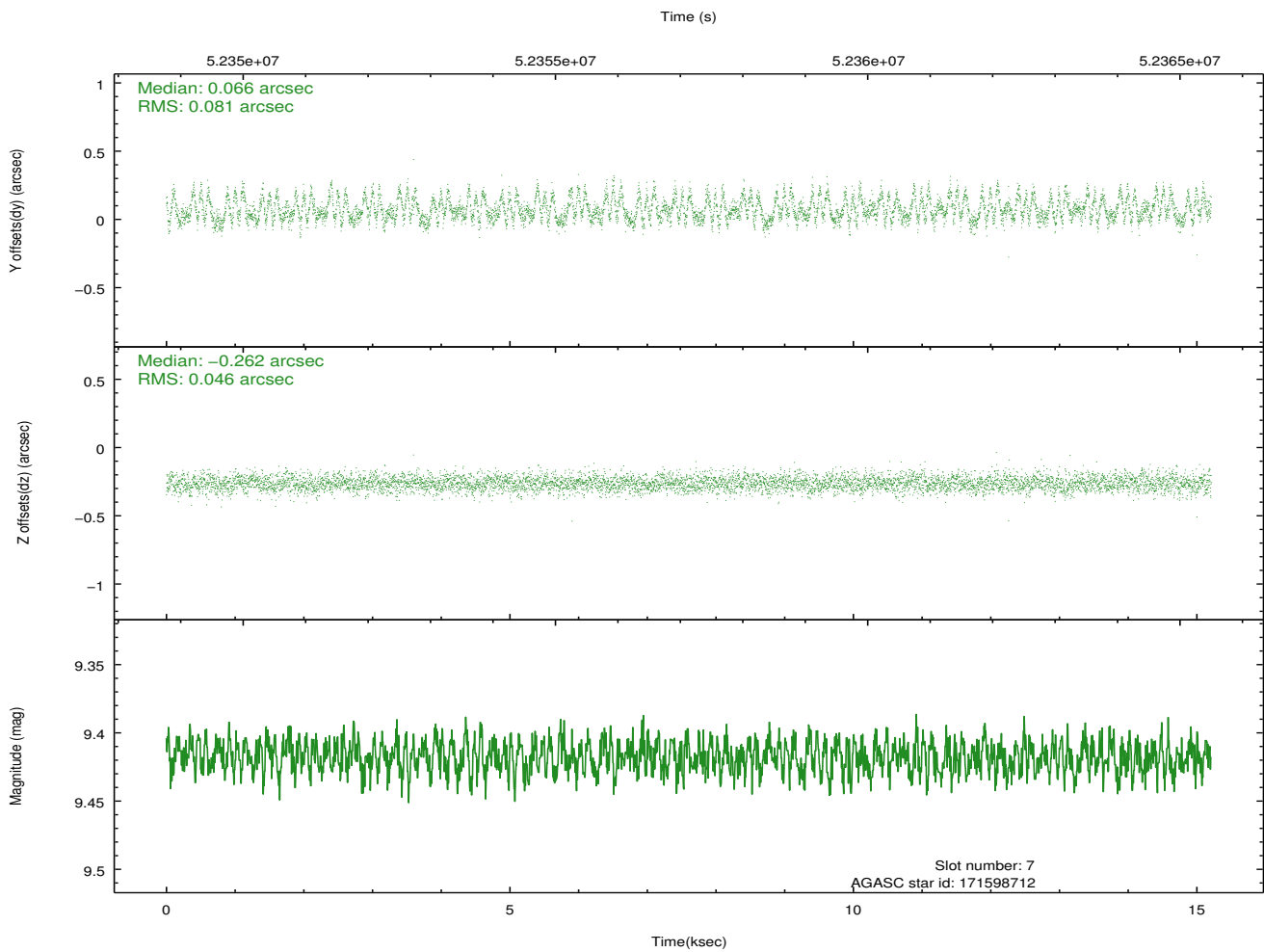
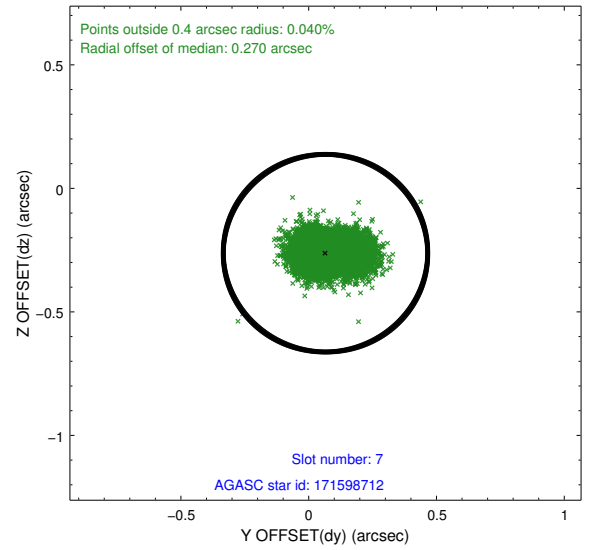
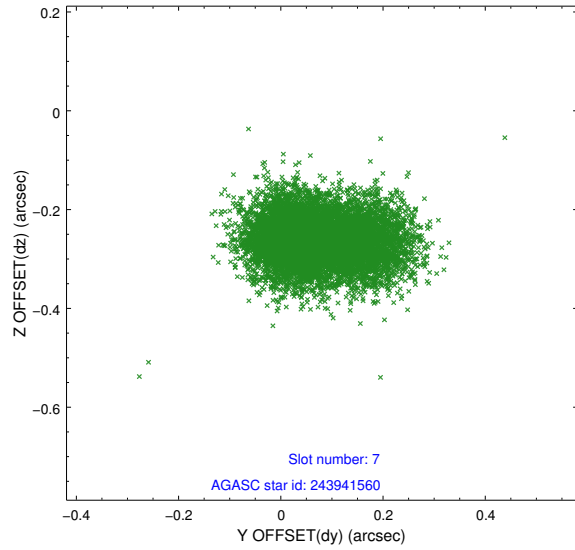
2.4.3 Slot 5



2.4.4 Slot 6

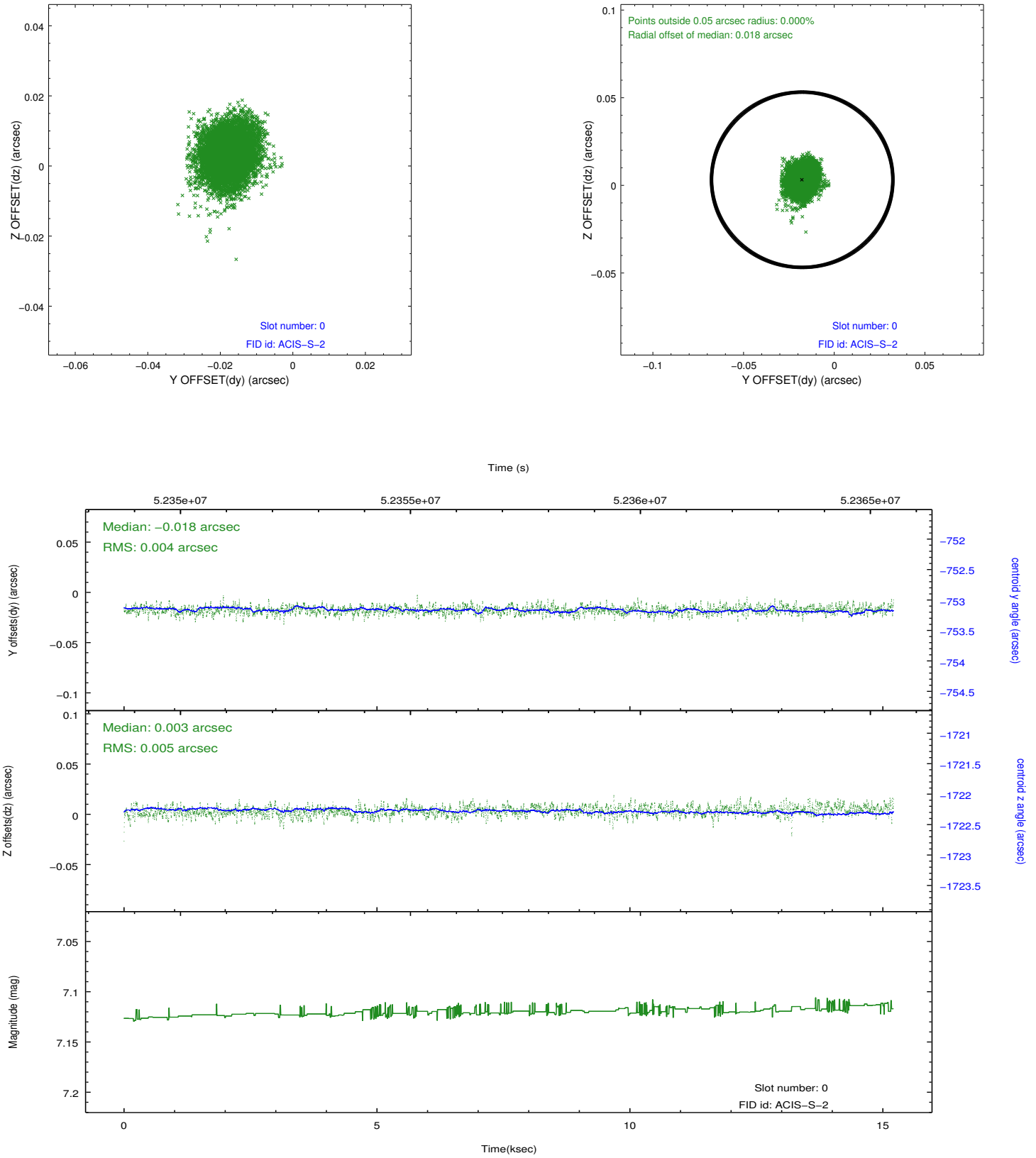


2.4.5 Slot 7

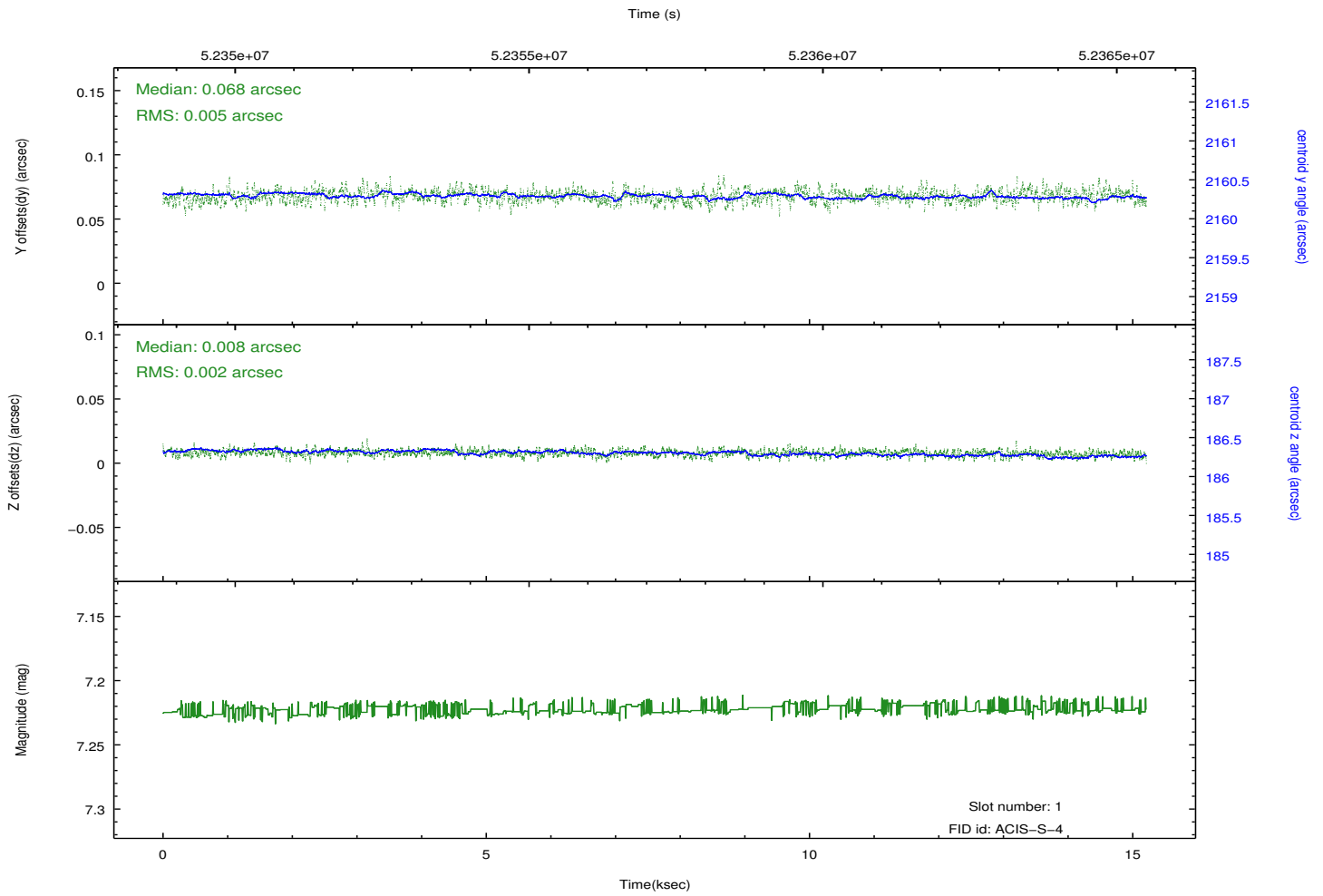
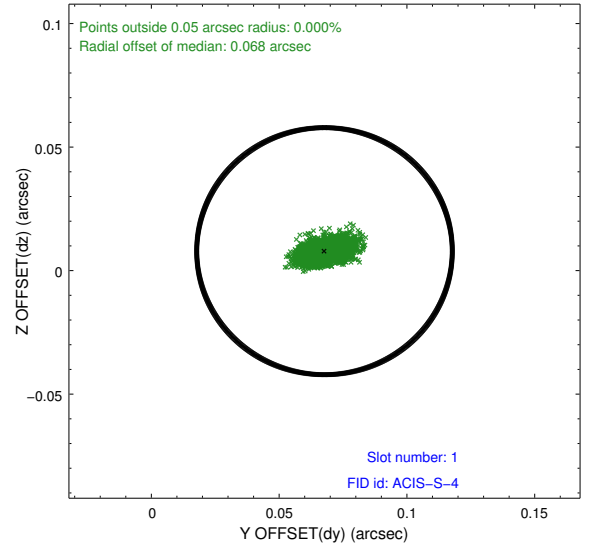
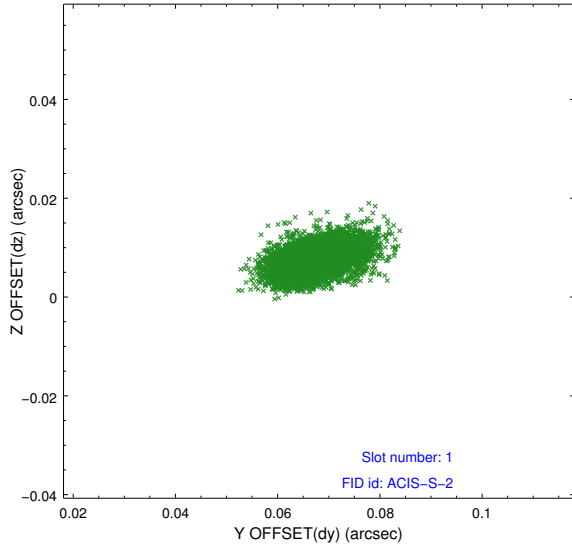


2.5 FID Slots

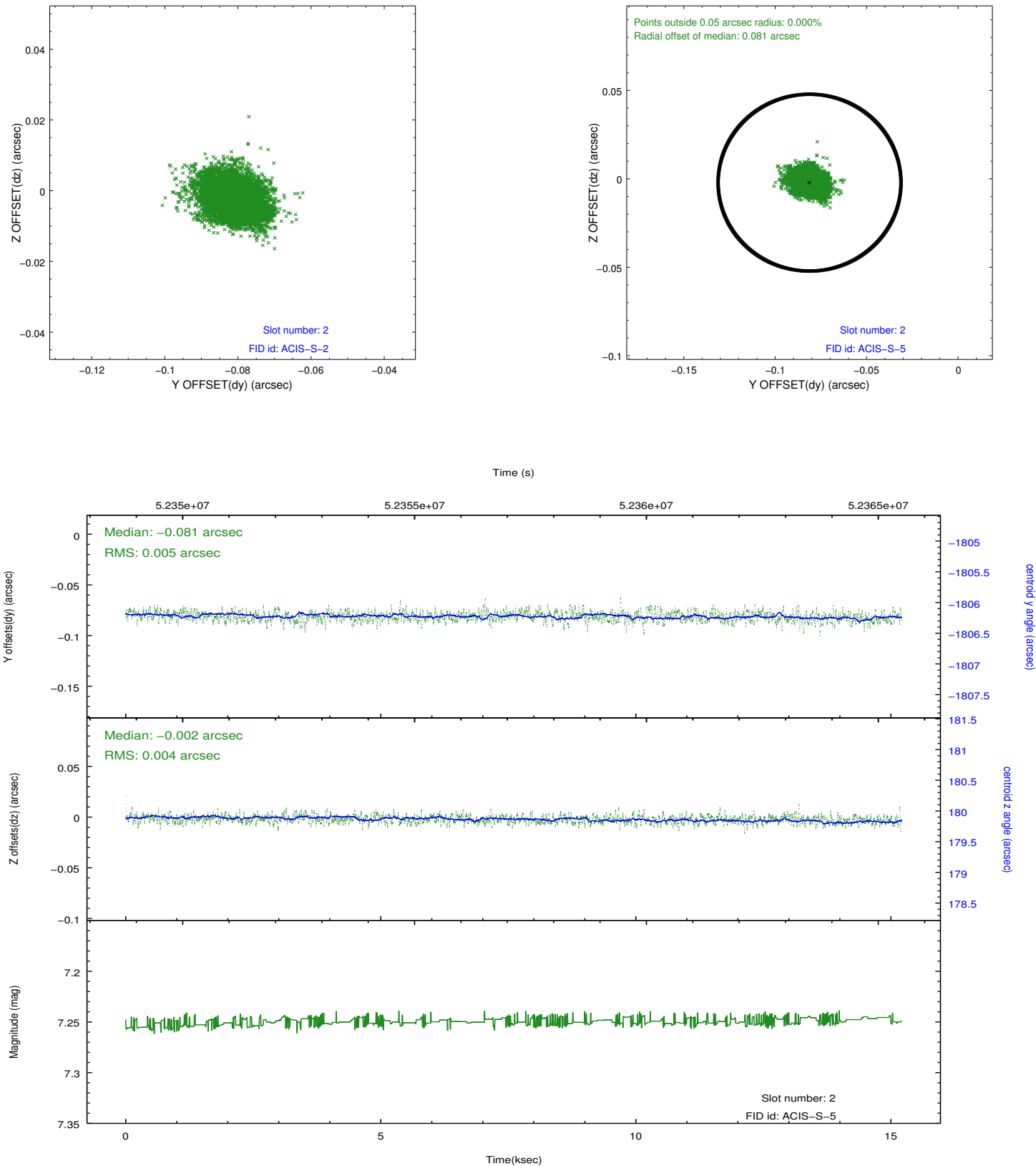
2.5.1 Slot 0



2.5.2 Slot 1

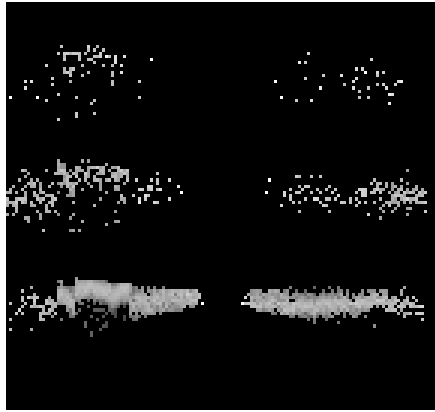


2.5.3 Slot 2



3 Gratings

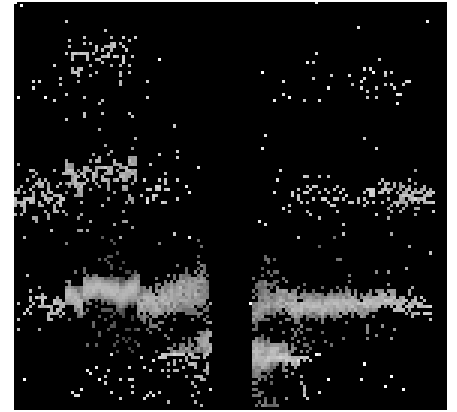
3.1 HEG Arm



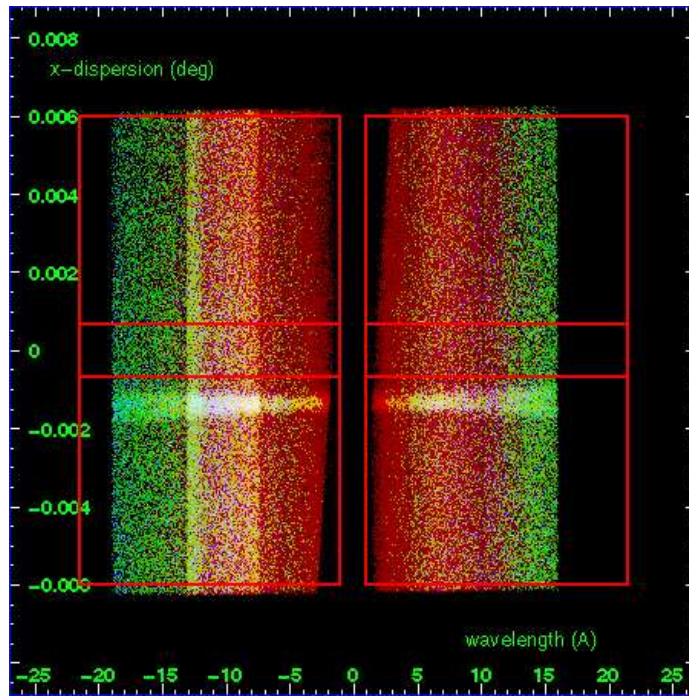
HEG Order Sort 123



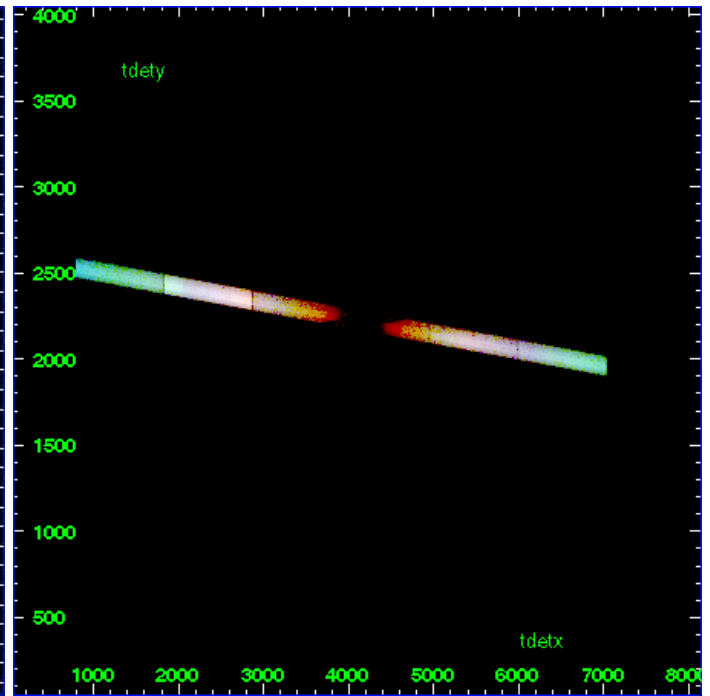
HEG Zero Order



HEG Order Sort ALL

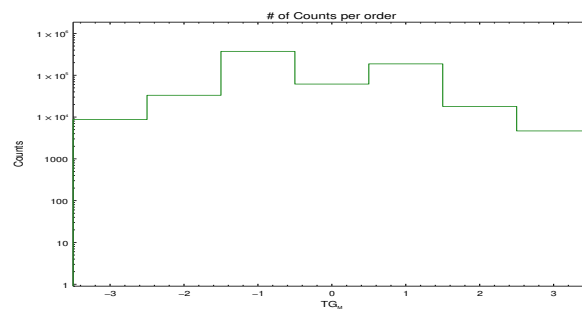


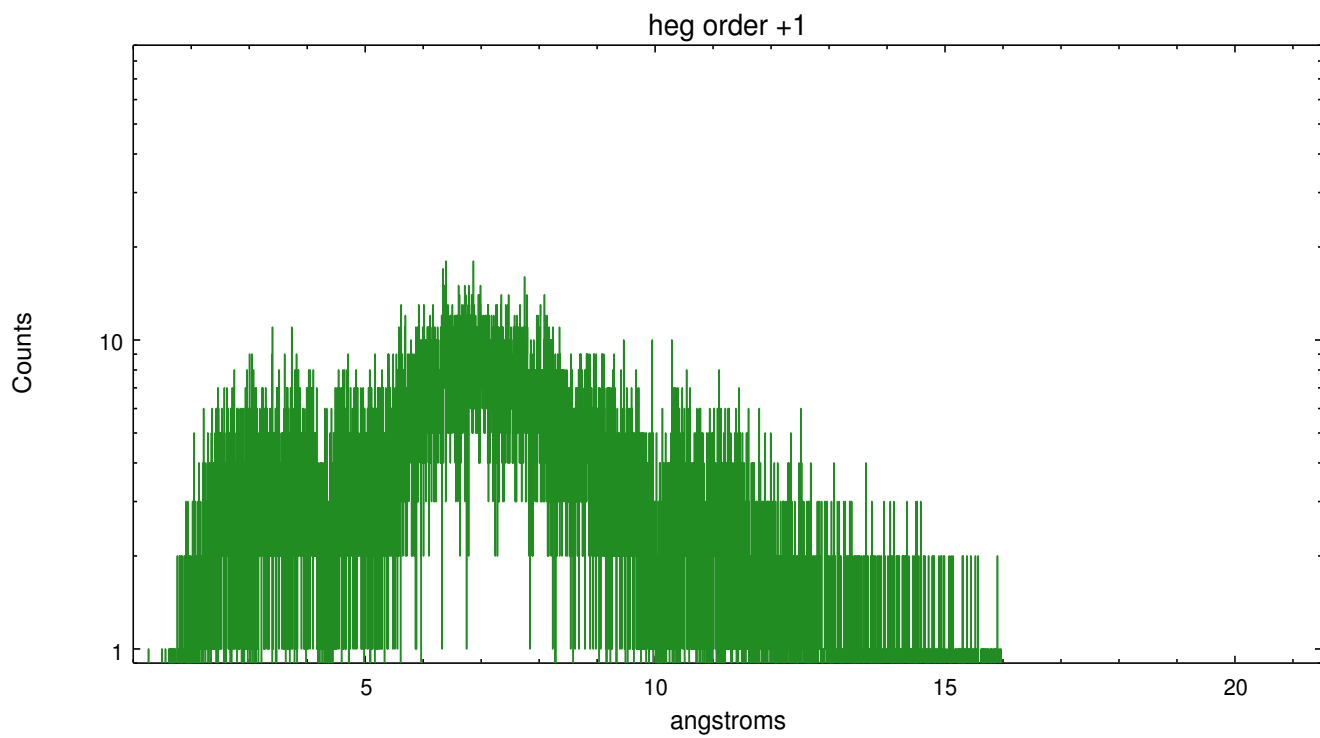
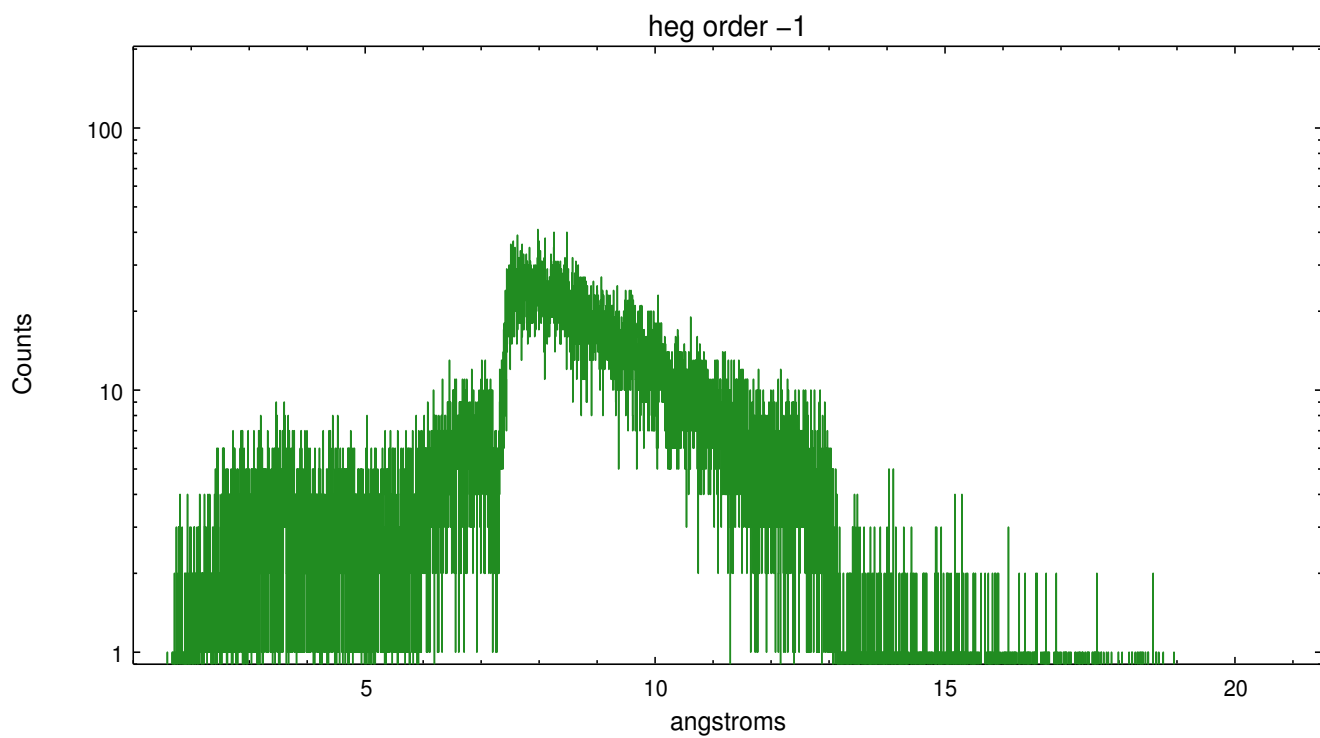
Spot Image HEG



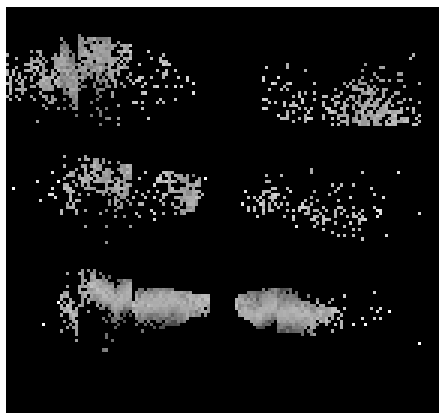
Full Detector HEG

| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|----------|----------|----------|---------|---------|---------|---------|
| Events | 8707 | 33165 | 372578 | 61542 | 187354 | 17940 | 4658 |

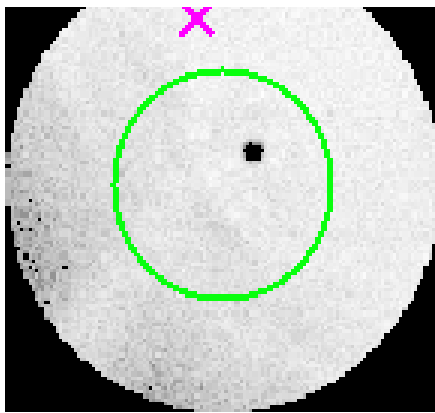




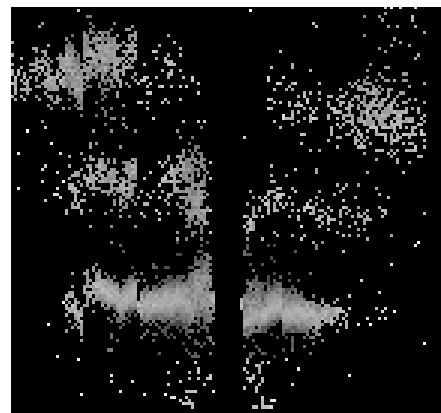
3.2 MEG Arm



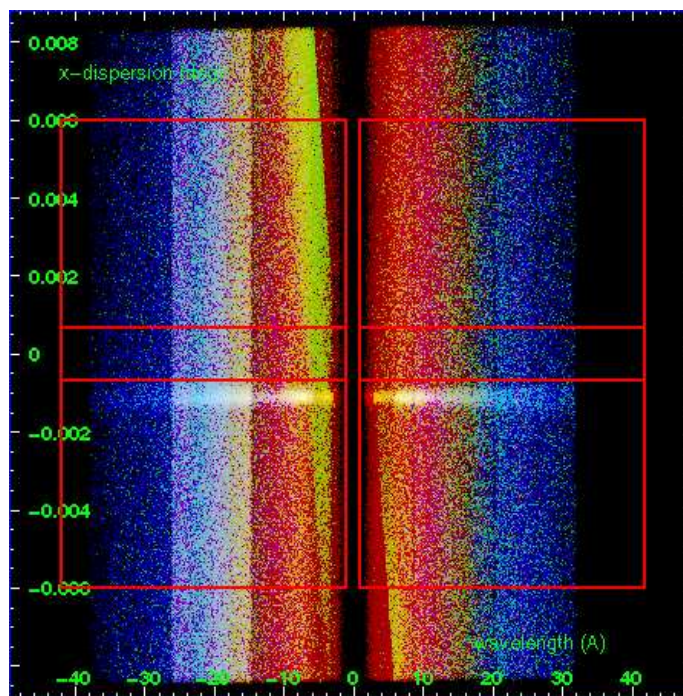
MEG Order Sort 123



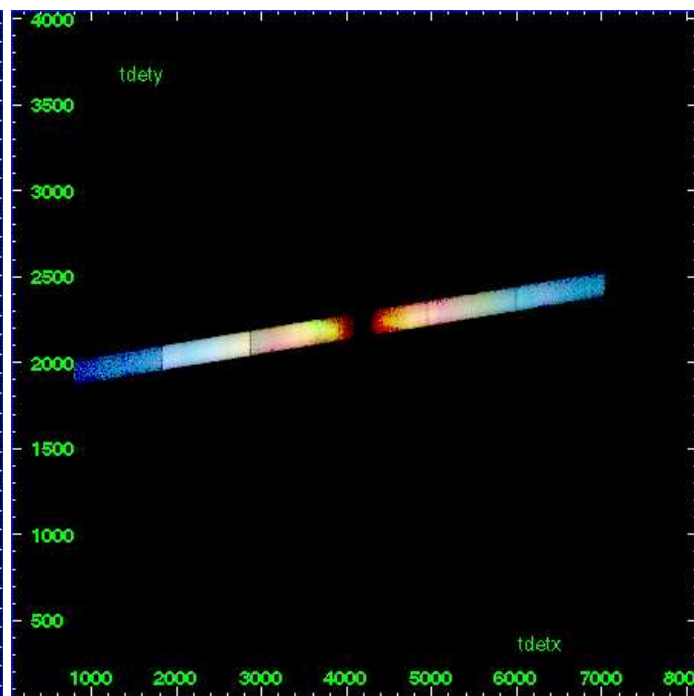
MEG Zero Order



MEG Order Sort ALL

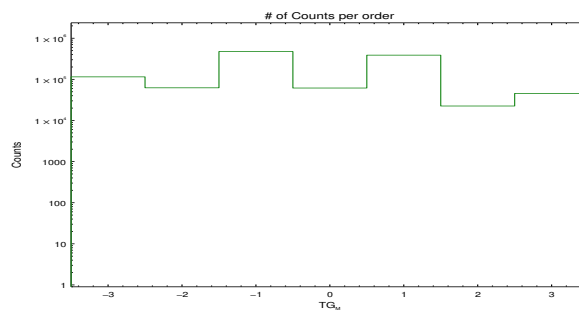


Spot Image MEG

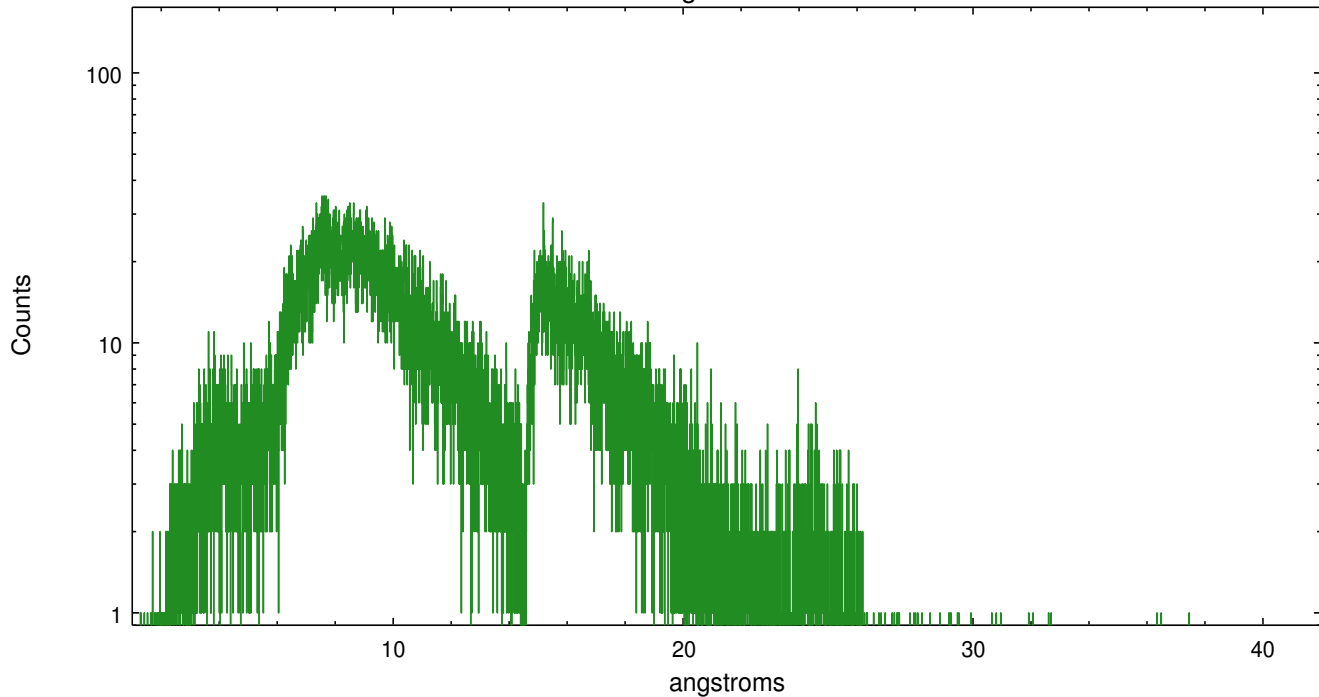


Full Detector MEG

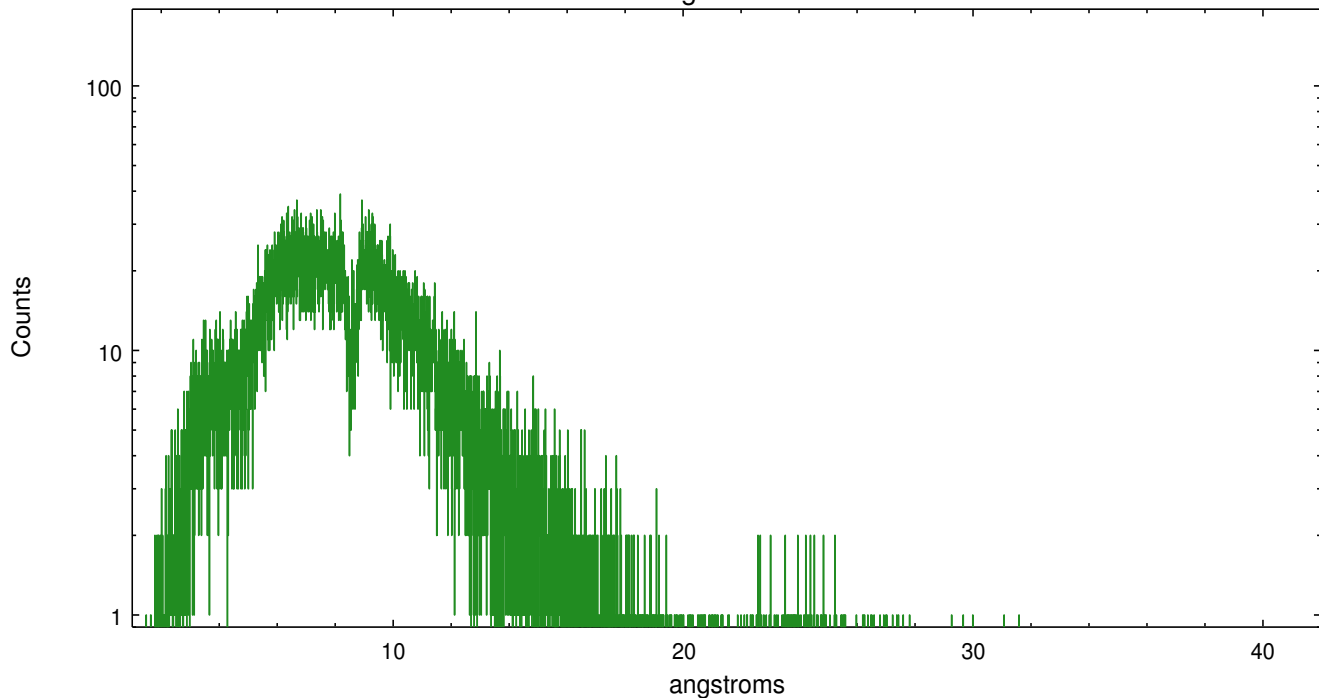
| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|----------|----------|----------|---------|---------|---------|---------|
| Events | 115154 | 62370 | 474989 | 61542 | 387722 | 22484 | 45373 |



meg order -1



meg order +1



A Summary

A.1 Status

| | |
|----------------------------|------------|
| V&V Scientist | John Houck |
| V&V Date (YYYY-MM-DD) | 2010.03.19 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 2.65004744 |

A.2 Comments

Charge time:

New charge time is less than existing charge time used in previously distributed version

NEW CHARGE TIME = 2.650047 ks, 1 Obis

EXISTING CHARGE TIME = 13.404000 ks, 1 Obis.

Variation in Chips > 15% threshold.

Low Chip 7, ONTIME=2650.047447 seconds

High Chip 5, ONTIME=13404.068551 seconds

Chip 9, ONTIME=6393.863482 seconds is less than 80% of scheduled time=12000.000000 seconds

Chip 8, ONTIME=4491.387663 seconds is less than 80% of scheduled time=12000.000000 seconds

Chip 7, ONTIME=2650.047447 seconds is less than 80% of scheduled time=12000.000000 seconds

Chip 6, ONTIME=3408.655889 seconds is less than 80% of scheduled time=12000.000000 seconds

Chip 4, ONTIME=5486.032939 seconds is less than 80% of scheduled time=12000.000000 seconds

ONTIME of 2650.0474469215 seconds is less than 85% of expected scheduled time of 12000 seconds