

# V&V Reference Report

## L2 ASCDS Version : 10.4.1

Observation 17694 - L2 Version 1  
Chandra X-Ray Center

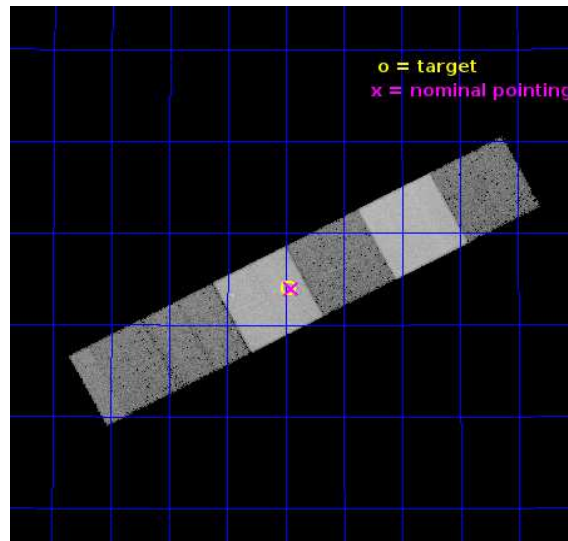
L2 Processing Date : Jul 13 2015

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# 1 Front

|          |                                                                  |                                             |
|----------|------------------------------------------------------------------|---------------------------------------------|
| seq_num  | 200975                                                           | Sequence number                             |
| obs_id   | 17694                                                            | Observation id                              |
| title    | HD191612 - constraining the structure of a massive magnetosphere | P                                           |
| observer | Dr Yael Naze                                                     | Principal investigator                      |
| object   | HD191612                                                         | Source name                                 |
| dtcycle  | 0                                                                | &#160                                       |
| cycle    | P                                                                | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 302.369167                                                       | Observer's specified target RA [deg]        |
| dec_targ | 35.733694                                                        | Observer's specified target Dec [deg]       |
| ra_nom   | 302.36262365469                                                  | Nominal RA [deg]                            |
| dec_nom  | 35.732639337171                                                  | Nominal Dec [deg]                           |
| roll_nom | 152.1604528928                                                   | Nominal Roll [deg]                          |
| revision | 1                                                                | Processing version of data                  |
| ontime   | 36335.227842212                                                  | Sum of GTIs [s]                             |
| livetime | 35875.129308826                                                  | Livetime [s]                                |
| ontime4  | 36335.268882155                                                  | Sum of GTIs [s]                             |
| ontime5  | 36335.186802149                                                  | Sum of GTIs [s]                             |
| ontime6  | 36335.145762205                                                  | Sum of GTIs [s]                             |
| ontime7  | 36335.227842212                                                  | Sum of GTIs [s]                             |
| ontime8  | 36335.104722142                                                  | Sum of GTIs [s]                             |
| ontime9  | 36335.063682199                                                  | Sum of GTIs [s]                             |
| l2events | 318161                                                           | Number of level 2 events                    |

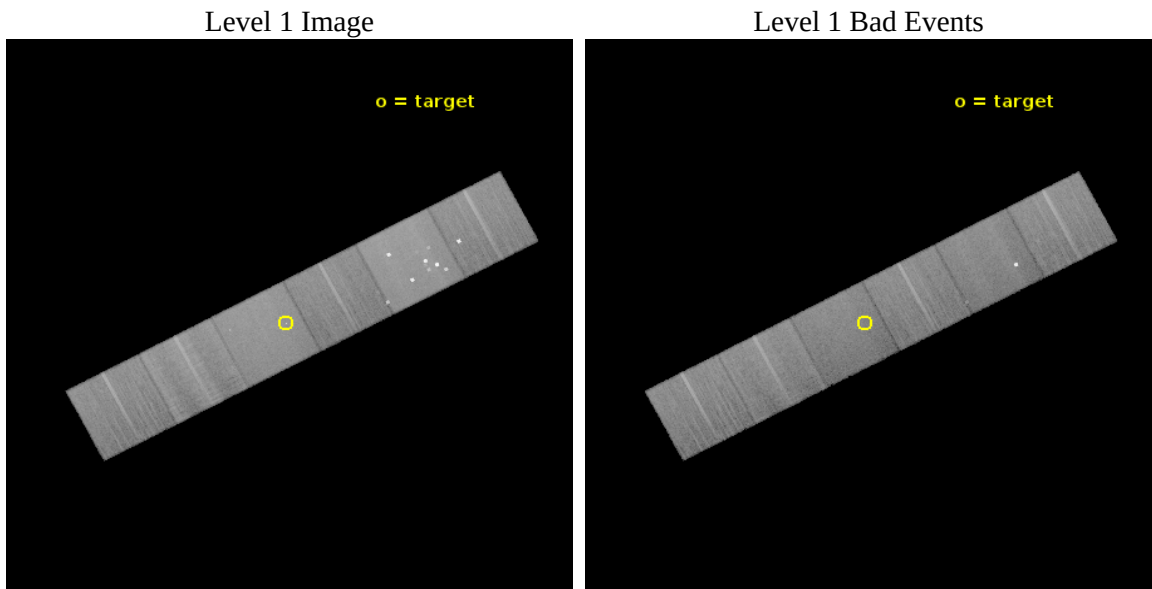




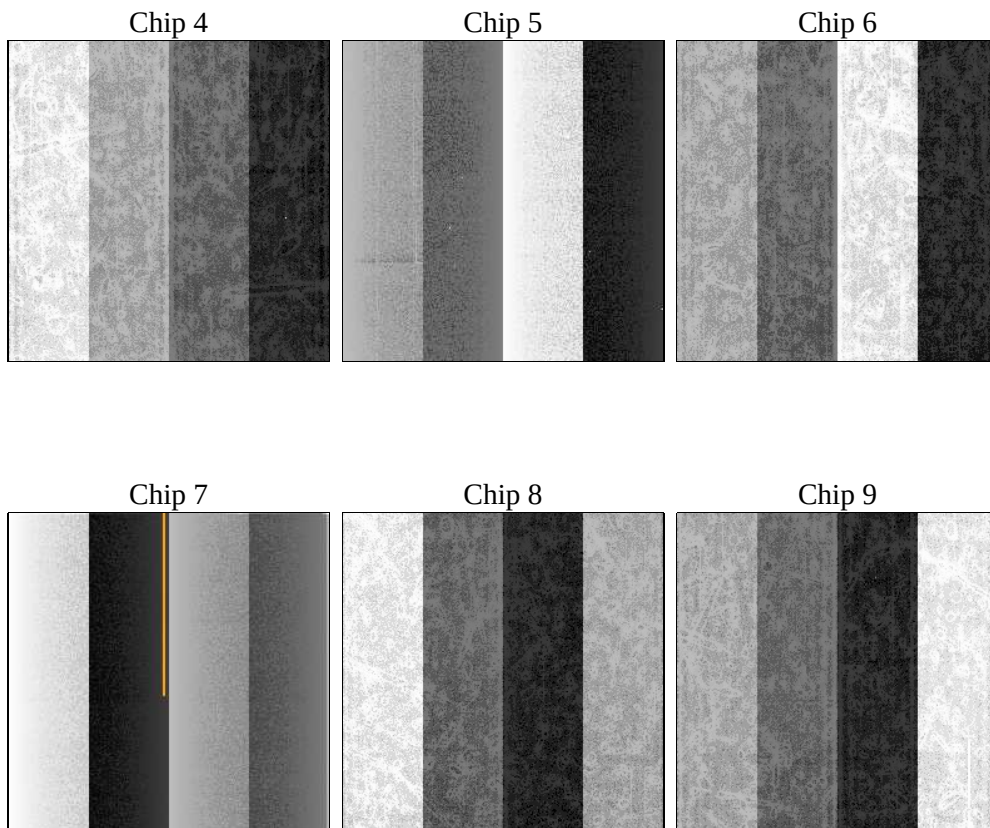
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                    |                                         |
|----------|---------------------|--------------------------------|----------------|--------------------|-----------------------------------------|
| obi_num  | 2                   | Obi number                     | sched_exp_time | 36400.000000       | [s] Scheduled observation exposure time |
| ascdsver | 10.4.1              | Processing system revision     | ontime         | 36335.227842212    | Sum of GTIs [s]                         |
| caldsver | 4.6.8               | &#160                          | ontime4        | 36335.268882155    | Sum of GTIs [s]                         |
| date     | 2015-07-13T03:47:06 | Date and time of file creation | ontime5        | 36335.186802149    | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime6        | 36335.145762205    | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 36335.227842212    | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 36335.104722142    | Sum of GTIs [s]                         |
|          |                     |                                | ontime9        | 36335.063682199    | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 1462406            | Number of level 1 events                |
|          |                     |                                | tgmethod       | TGDETECT           | Method used to create src1a file        |
|          |                     |                                | ra_pos         | (4057.02, 4104.52) | src1a sky pixel position                |

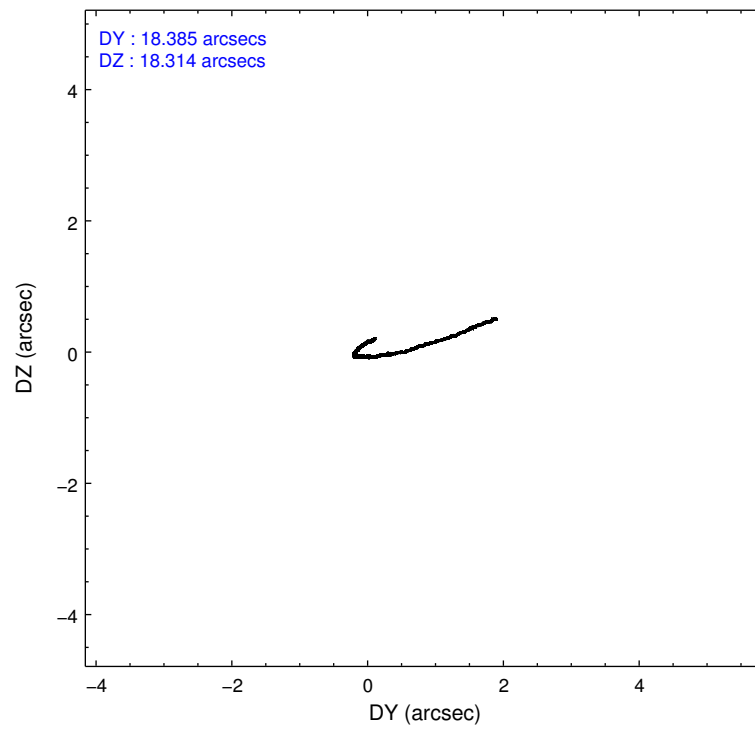
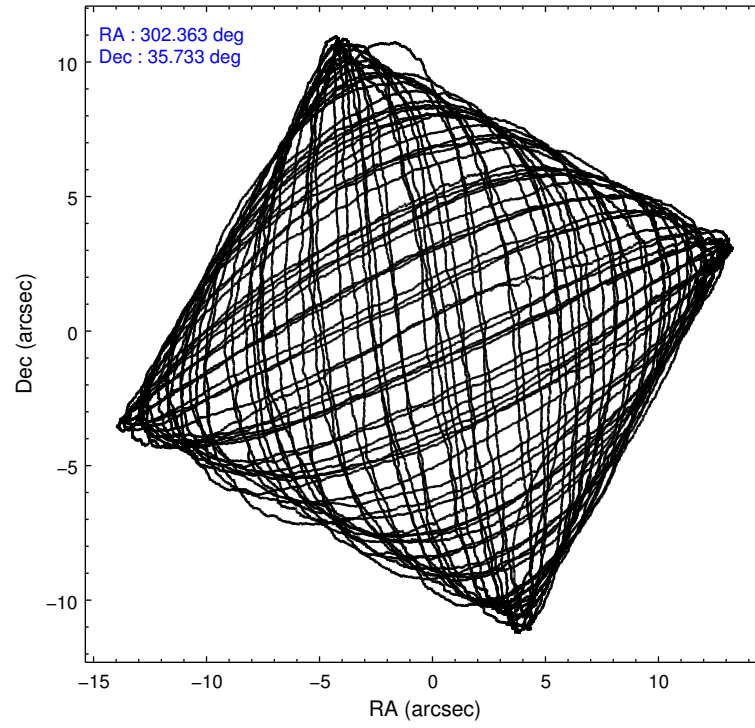
### 2.1.4 Events

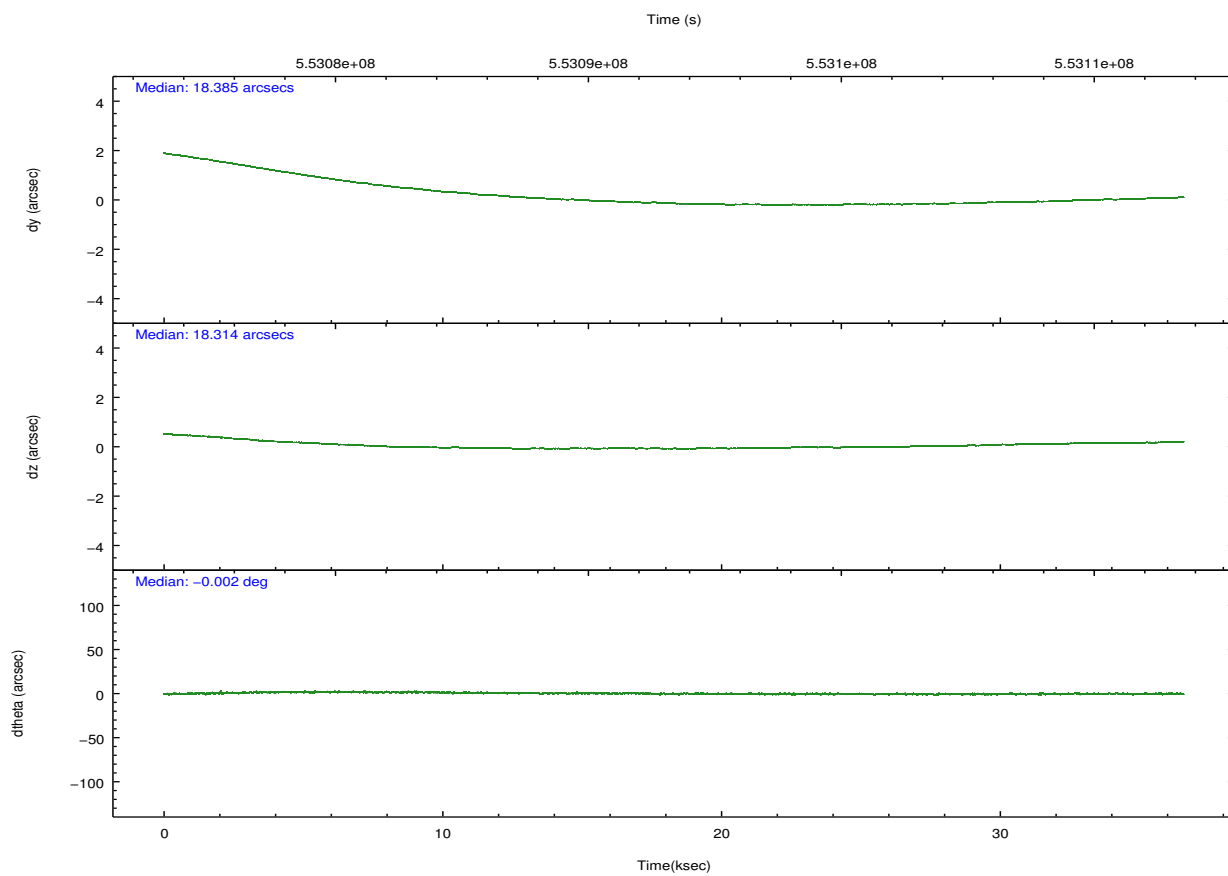
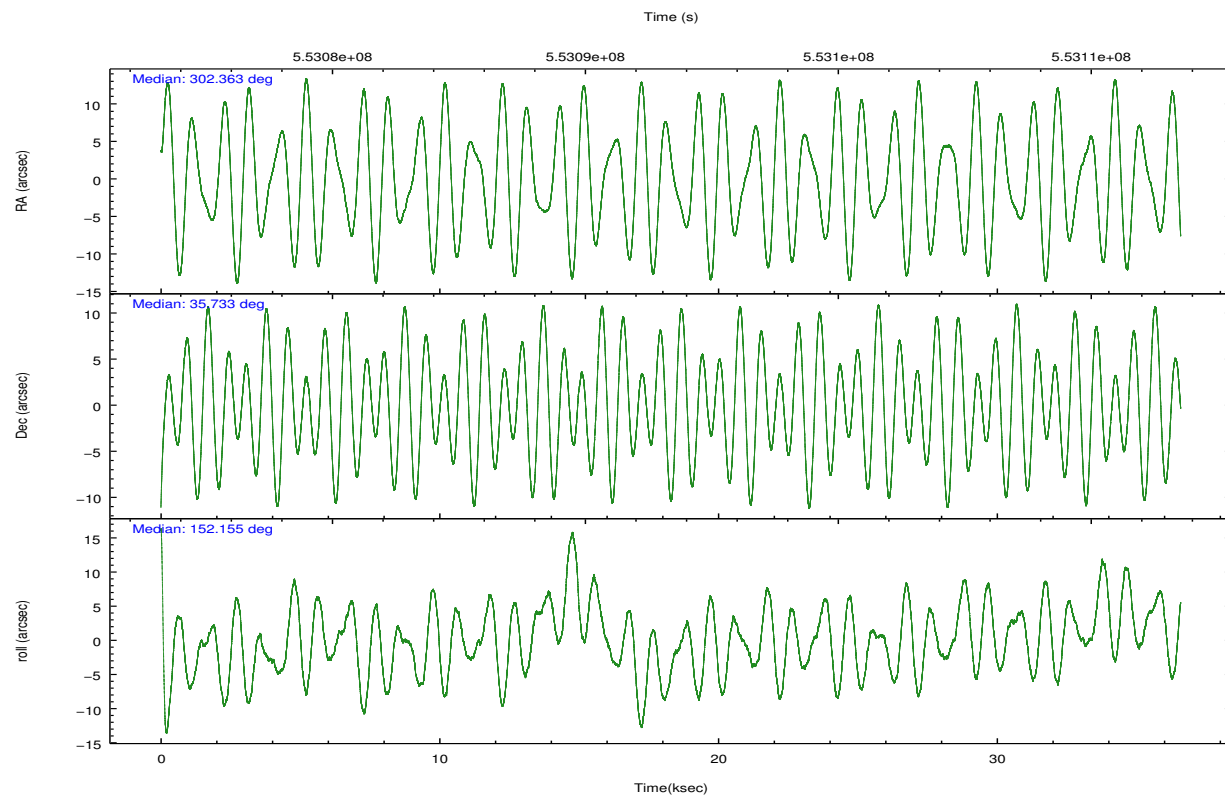
|                 | ccd 4  | ccd 5  | ccd 6  | ccd 7  | ccd 8  | ccd 9  |                | ccd 4  | ccd 5  | ccd 6  | ccd 7  | ccd 8  | ccd 9  |
|-----------------|--------|--------|--------|--------|--------|--------|----------------|--------|--------|--------|--------|--------|--------|
| level 1 events  | 225231 | 356603 | 193709 | 253413 | 242713 | 190737 | grade 0 events | 18448  | 48875  | 7393   | 8813   | 17001  | 8106   |
| rejected events | 192679 | 171189 | 171712 | 145513 | 181137 | 167513 |                | 8%     | 13%    | 3%     | 3%     | 7%     | 4%     |
| rejected %      | 85%    | 48%    | 88%    | 57%    | 74%    | 87%    | grade 1 events | 215    | 923    | 104    | 325    | 166    | 119    |
|                 |        |        |        |        |        |        |                | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     |
|                 |        |        |        |        |        |        | grade 2 events | 5384   | 46392  | 5078   | 22578  | 15190  | 5016   |
|                 |        |        |        |        |        |        |                | 2%     | 13%    | 2%     | 8%     | 6%     | 2%     |
|                 |        |        |        |        |        |        | grade 3 events | 2325   | 5227   | 2124   | 8366   | 6261   | 2440   |
|                 |        |        |        |        |        |        |                | 1%     | 1%     | 1%     | 3%     | 2%     | 1%     |
|                 |        |        |        |        |        |        | grade 4 events | 2366   | 4188   | 2027   | 8439   | 6029   | 2307   |
|                 |        |        |        |        |        |        |                | 1%     | 1%     | 1%     | 3%     | 2%     | 1%     |
|                 |        |        |        |        |        |        | grade 5 events | 9549   | 20126  | 9134   | 24910  | 13600  | 10377  |
|                 |        |        |        |        |        |        |                | 4%     | 5%     | 4%     | 9%     | 5%     | 5%     |
|                 |        |        |        |        |        |        | grade 6 events | 4033   | 80748  | 5378   | 59712  | 17098  | 5358   |
|                 |        |        |        |        |        |        |                | 1%     | 22%    | 2%     | 23%    | 7%     | 2%     |
|                 |        |        |        |        |        |        | grade 7 events | 182911 | 150124 | 162471 | 120270 | 167368 | 157014 |
|                 |        |        |        |        |        |        |                | 81%    | 42%    | 83%    | 47%    | 68%    | 82%    |

## 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                | CCD I0 on                             | N         | N       |
| Observation mode                  | POINTING            | POINTING             | CCD I1 on                             | N         | N       |
| [deg] Pointing RA                 | 302.396361          | 302.3626236546871    | CCD I2 on                             | N         | N       |
| [deg] Pointing Dec                | 35.734030           | 35.73263933717087    | CCD I3 on                             | N         | N       |
| [deg] Pointing Roll               | 151.984117          | 152.1604528928       | 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    | -190.132523         | -190.1425803651734   | CCD S3 on                             | Y         | Y       |
| [mm] SIM translation stage offset | 0                   | 0.01005778216563158  | CCD S4 on                             | Y         | Y       |
| Phase constraints                 | Y                   | Y                    | CCD S5 on                             | O2        | Y       |
| [d] Phase period                  | 537.200000          | 537.200000           | Number of optional ACIS chips dropped | 0         | 0       |
| [d] Phase epoch (MJD)             | 56637.800000        | 56637.800000         | On-chip summing requested             | N         | N       |
| Phase start                       | 0.900000            | 0.900000             | Subarray requested                    | NONE      | NONE    |
| Phase end                         | 0.100000            | 0.100000             | Alternating exposures requested       | N         | N       |
| Phase start error                 | 0.010000            | 0.010000             | [s] Primary exposure time             | 0.000000  | 3.2     |
| Phase end error                   | 0.010000            | 0.010000             |                                       |           |         |
| [s] Observation start time (MET)  | 553075249.184000    | 553073809.12017      |                                       |           |         |
| Observation start date            | 2015-07-12T07:59:41 | 2015-07-12T07:36:49  |                                       |           |         |
| [s] Observation end time (MET)    | 553111649.184000    | 553112645.85985      |                                       |           |         |
| Observation end date              | 2015-07-12T18:06:21 | 2015-07-12T18:24:05  |                                       |           |         |
| Read mode                         | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



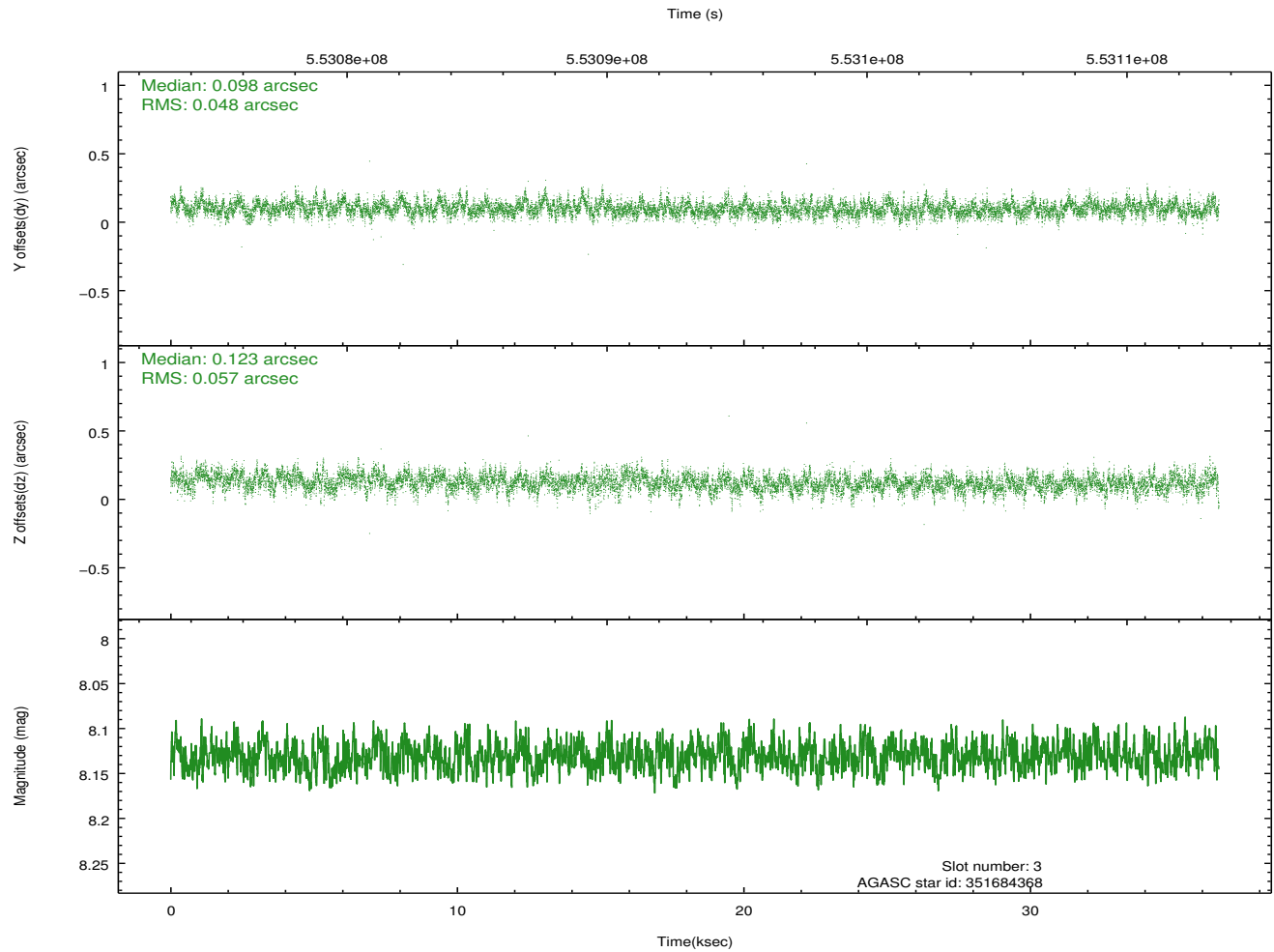
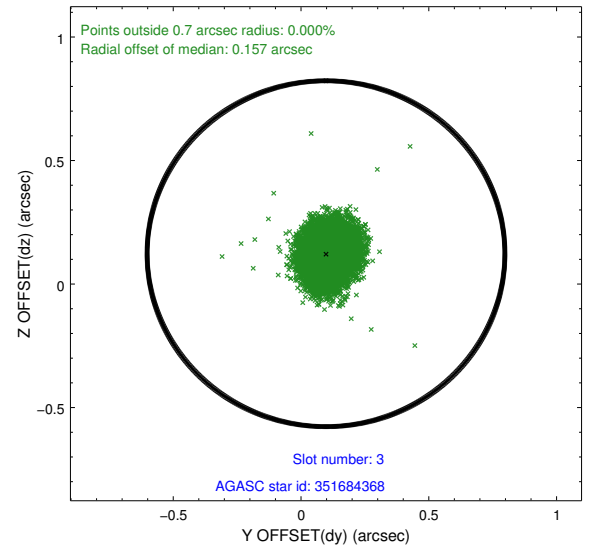
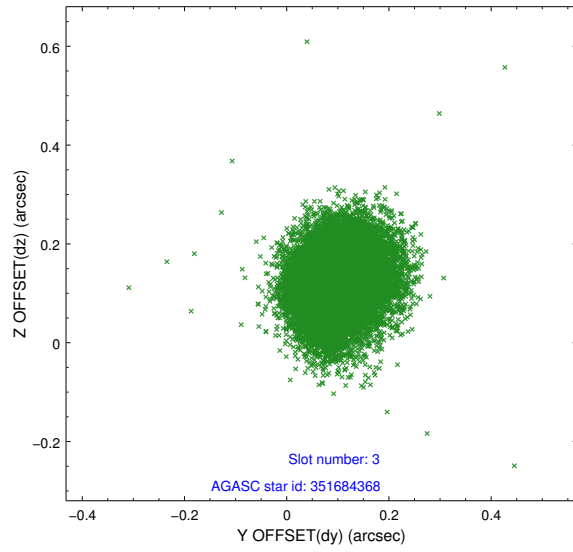


# Slot Statistics

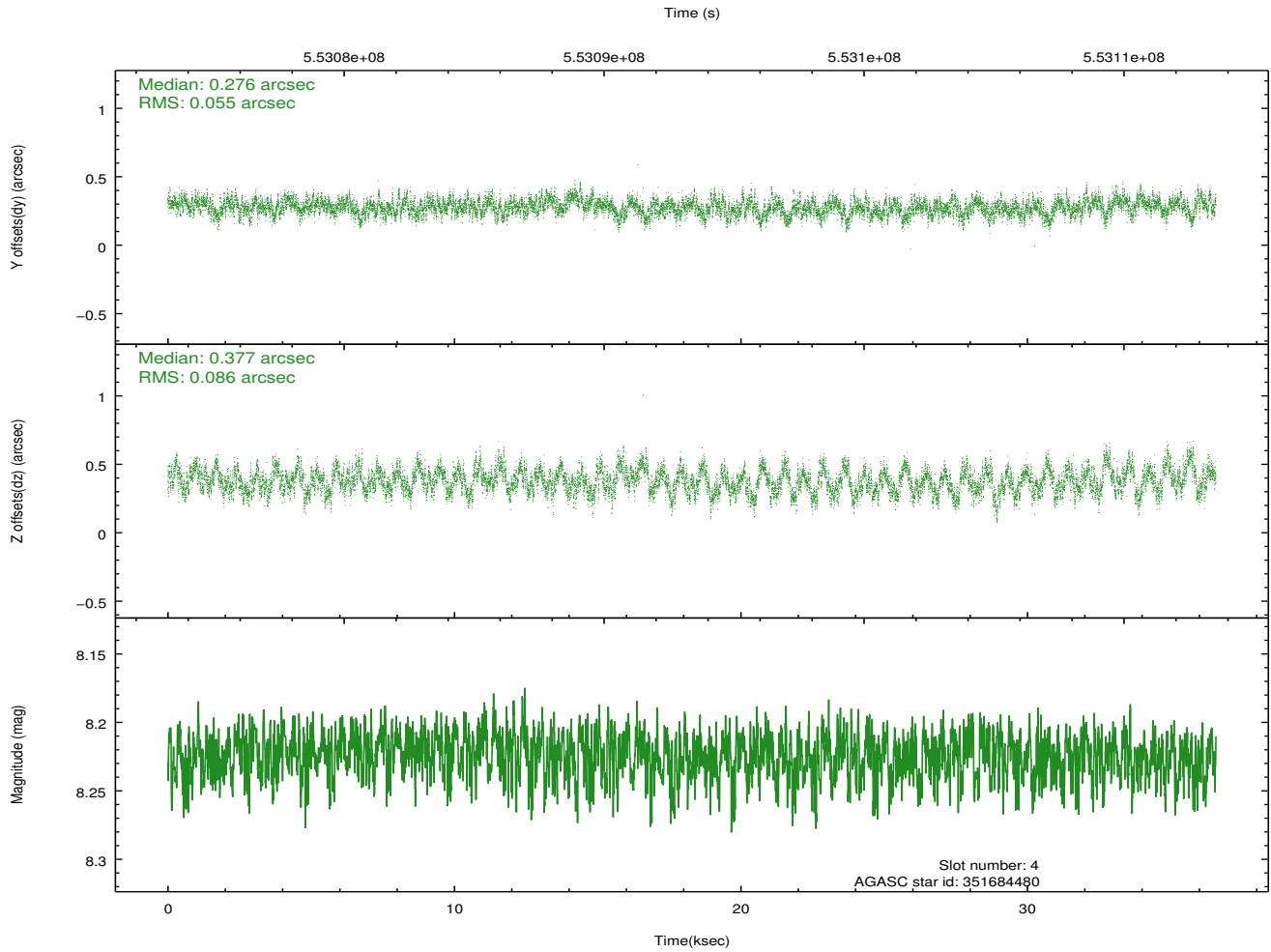
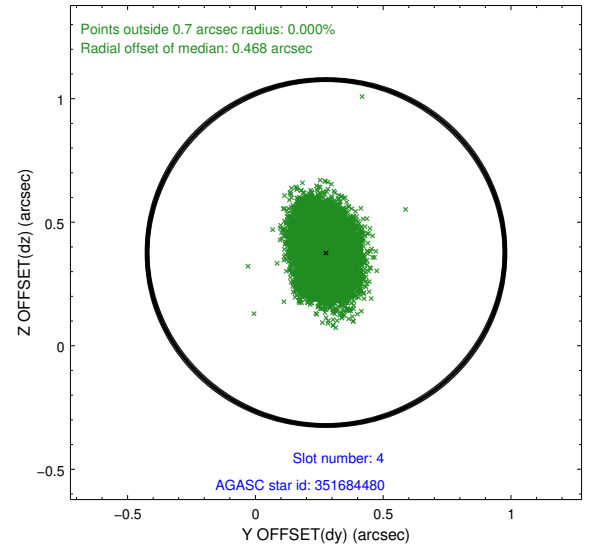
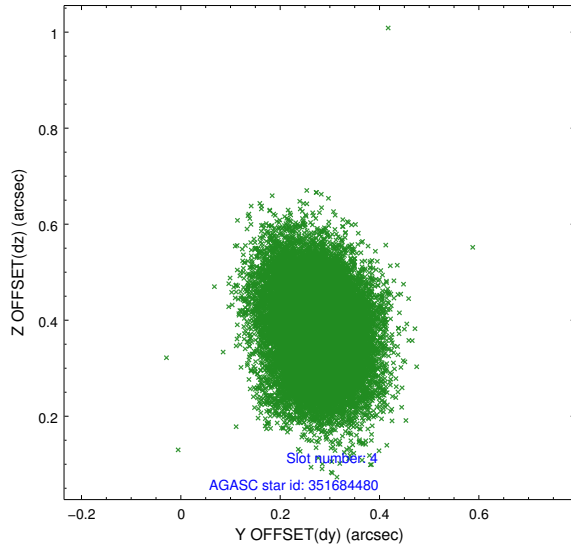
| slot | status | used | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y  | mean_z   |
|------|--------|------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|---------|----------|
| 0    | FID    |      | ACIS-S-2  | 7.10 | 8924  | -0.235 | -0.155 | 0.013 | 0.032 | 0.000000   | 0.000000  | -772.00 | -1739.92 |
| 1    | FID    |      | ACIS-S-4  | 7.19 | 8923  | 0.268  | 0.132  | 0.014 | 0.026 | 0.000000   | 0.000000  | 2141.84 | 168.72   |
| 2    | FID    |      | ACIS-S-6  | 7.32 | 8922  | -0.059 | 0.030  | 0.010 | 0.016 | 0.000000   | 0.000000  | 390.29  | 806.11   |
| 3    | GUIDE  | used | 351684368 | 8.13 | 17838 | 0.098  | 0.123  | 0.078 | 0.129 | 302.607758 | 35.866756 | -319.12 | -711.65  |
| 4    | GUIDE  | used | 351684480 | 8.22 | 17840 | 0.276  | 0.377  | 0.109 | 0.177 | 302.973035 | 36.197373 | -692.32 | -2263.24 |
| 5    | GUIDE  | used | 351692784 | 8.58 | 17840 | -0.206 | -0.236 | 0.091 | 0.155 | 301.645698 | 35.740635 | 1951.60 | 1002.10  |
| 6    | GUIDE  | used | 351011688 | 8.04 | 17844 | -0.397 | -0.438 | 0.112 | 0.175 | 301.415835 | 35.607774 | 2326.83 | 1737.03  |
| 7    | GUIDE  | used | 351693800 | 8.13 | 17842 | 0.226  | 0.169  | 0.088 | 0.138 | 302.737590 | 35.953172 | -505.61 | -1164.50 |

## 2.4 Star Slots

### 2.4.1 Slot 3

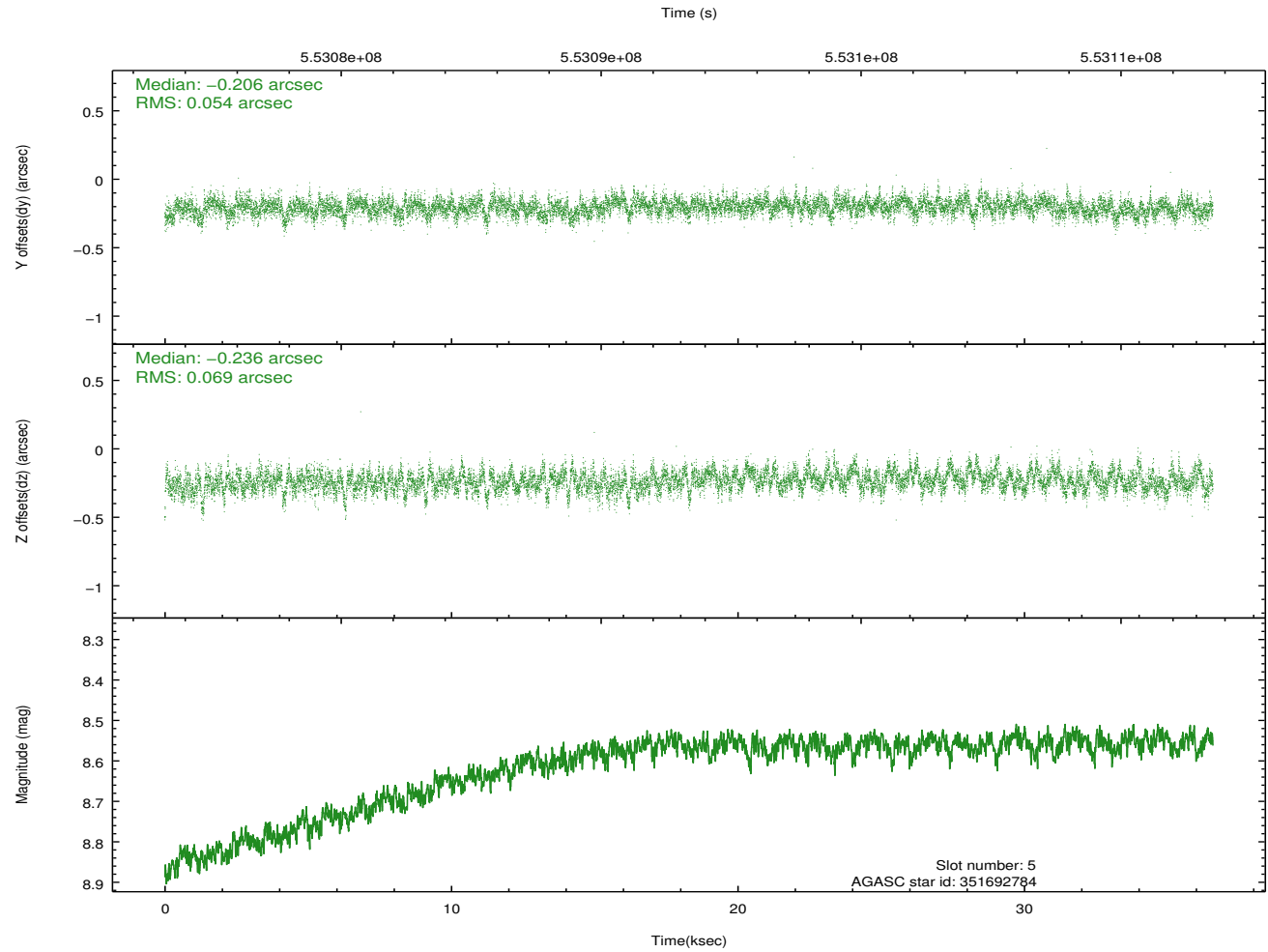
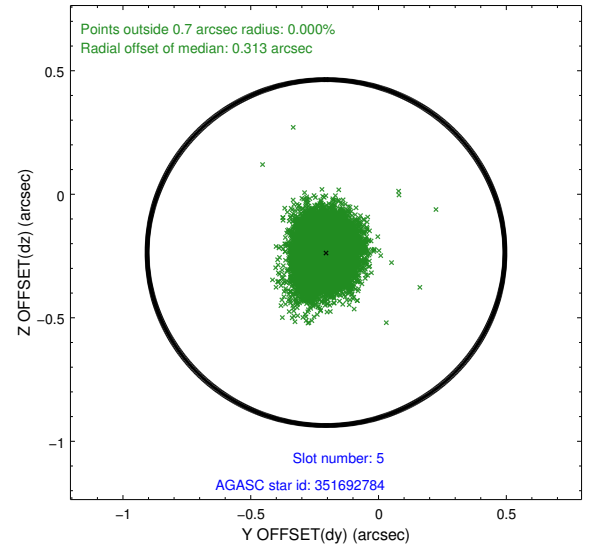
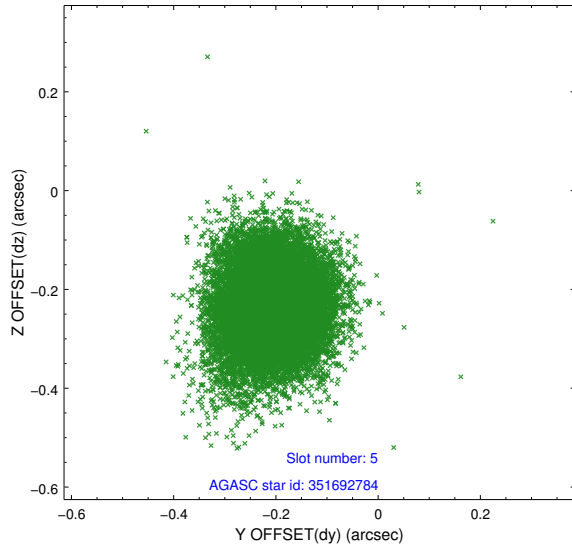


## 2.4.2 Slot 4

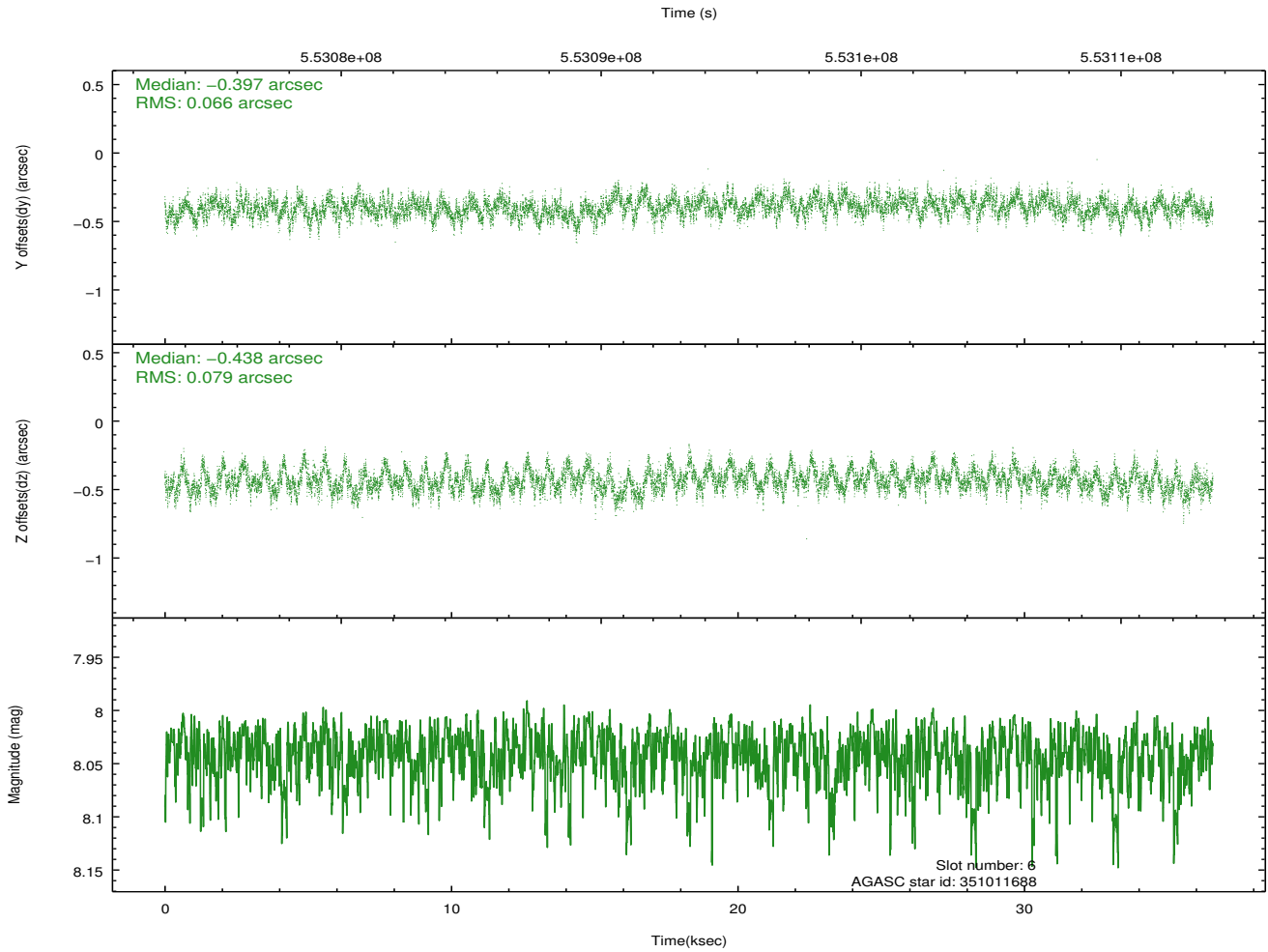
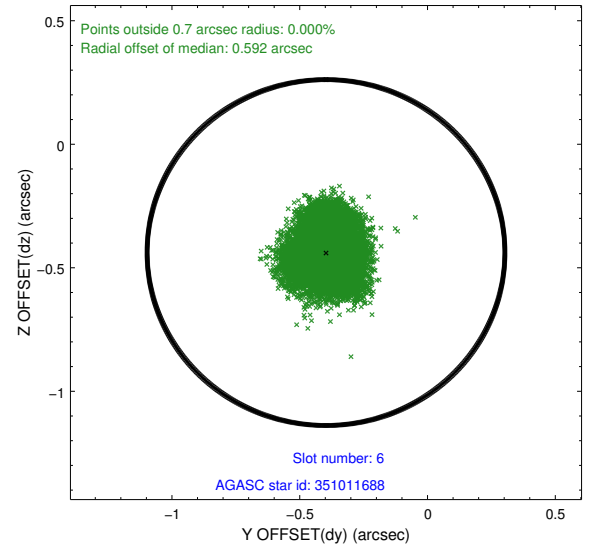
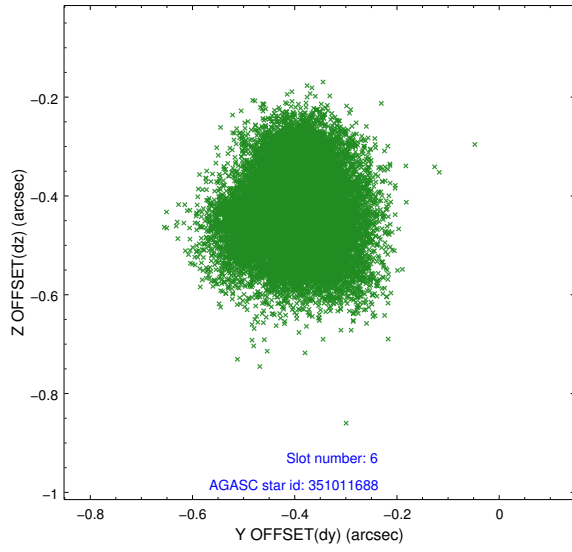




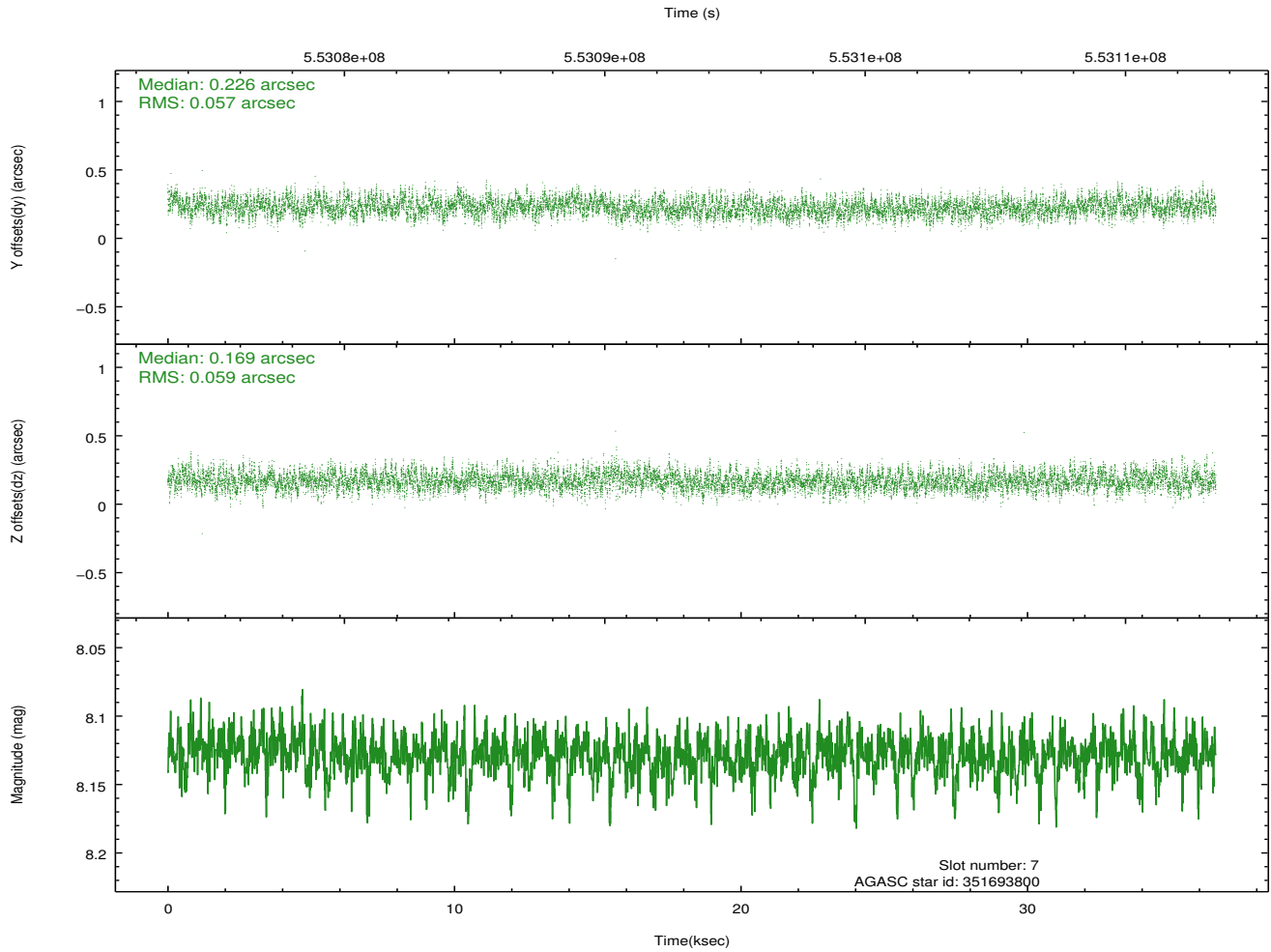
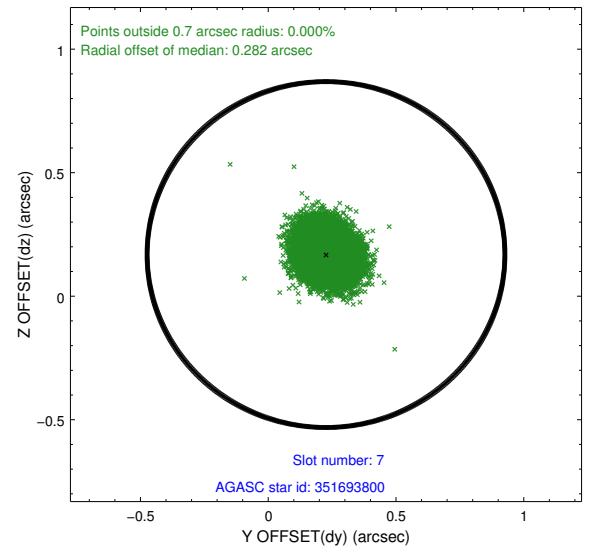
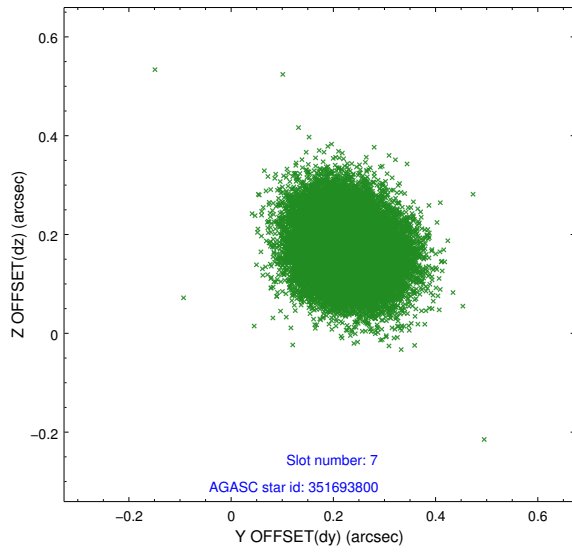
### 2.4.3 Slot 5



## 2.4.4 Slot 6

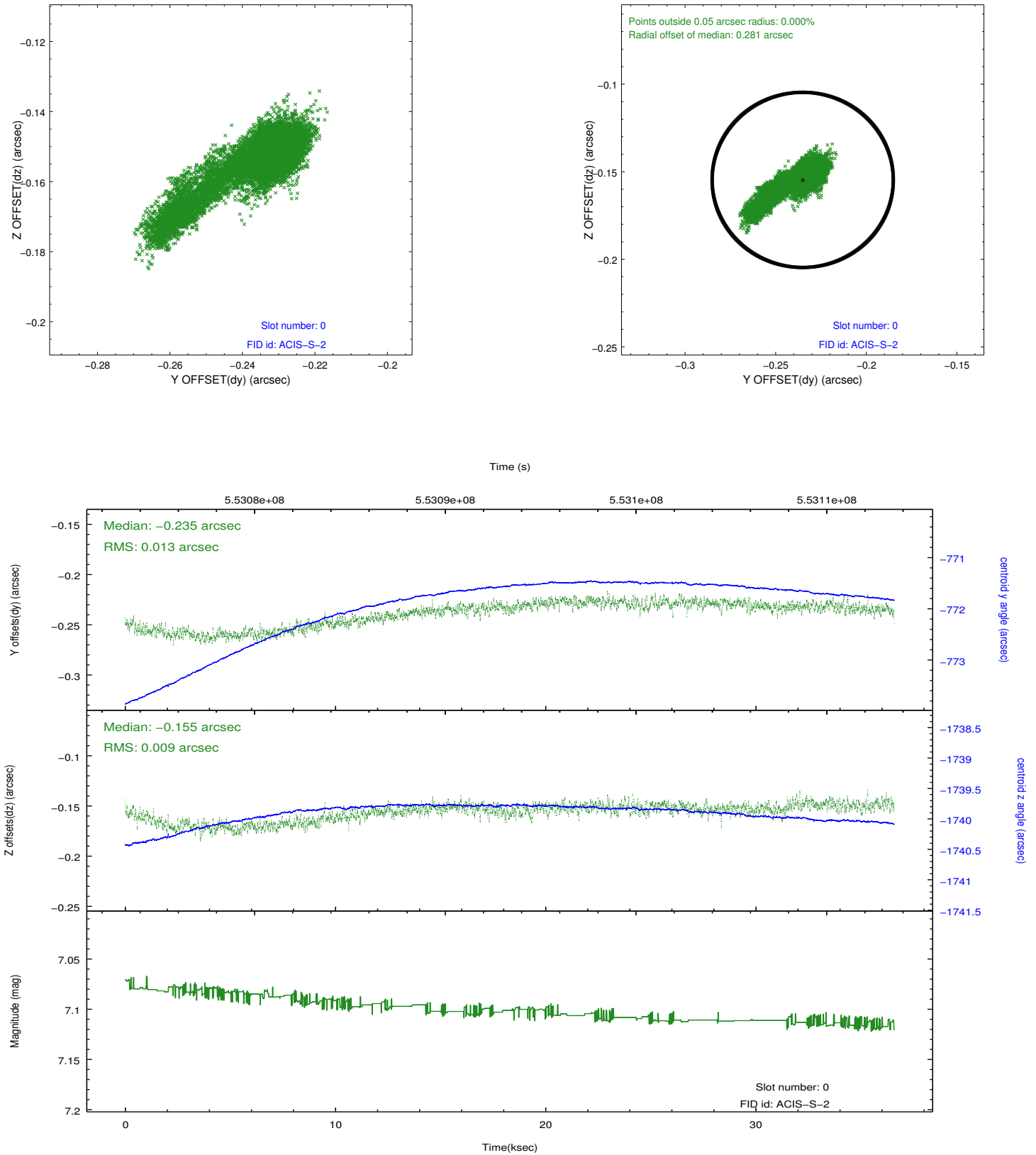


## 2.4.5 Slot 7

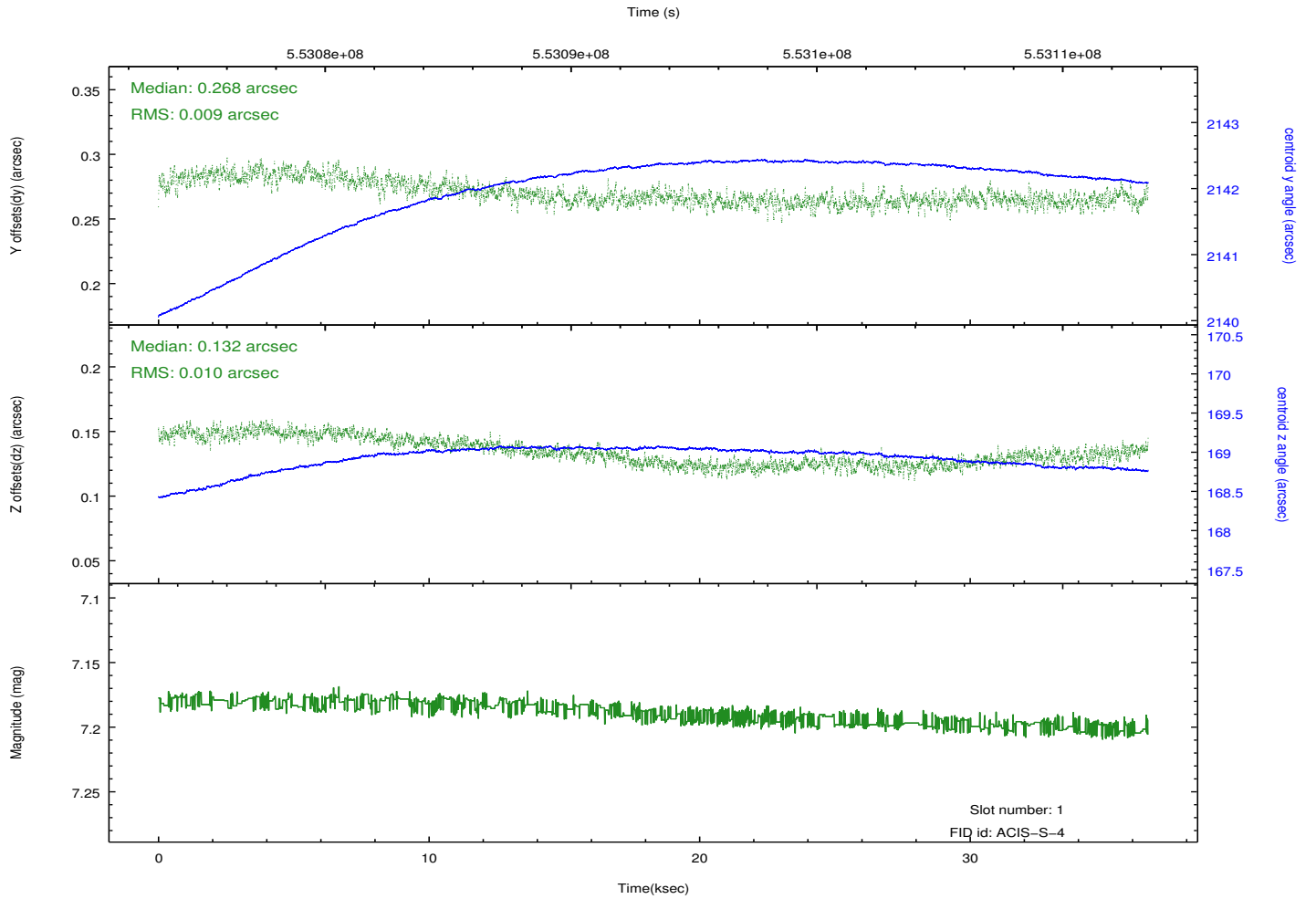
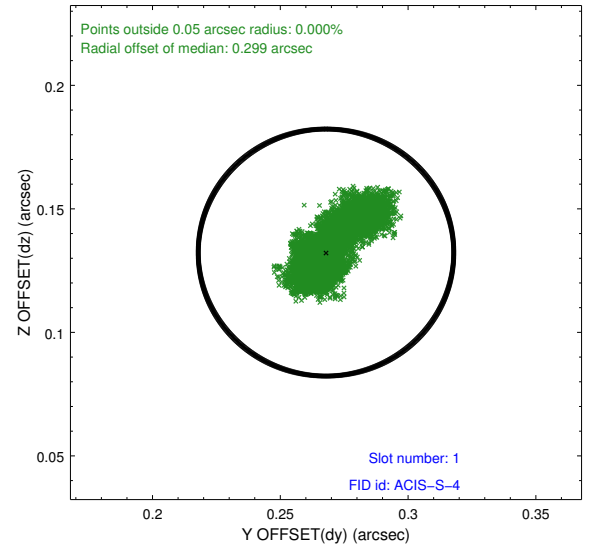
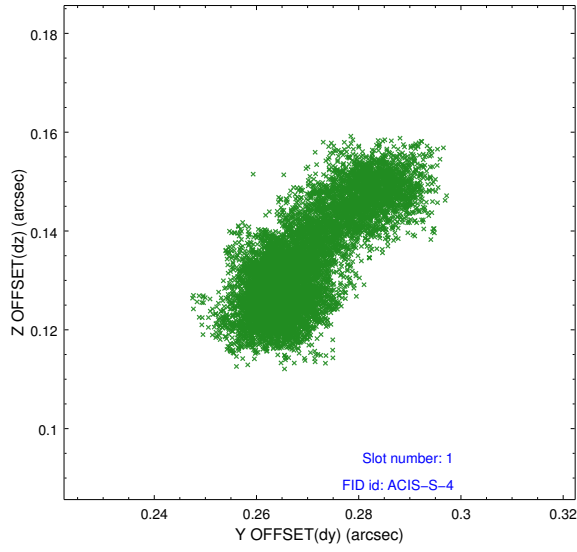


## 2.5 FID Slots

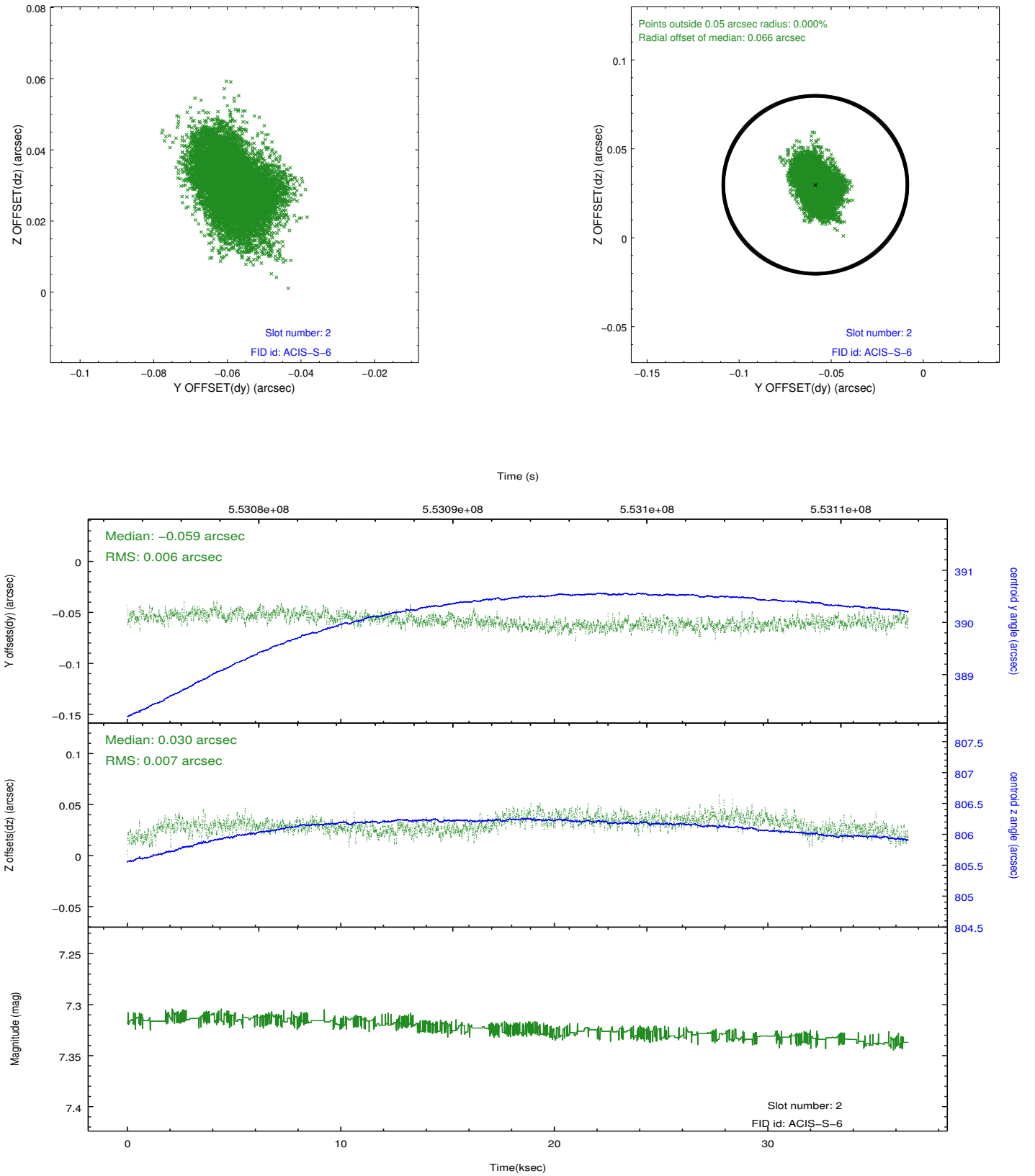
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2

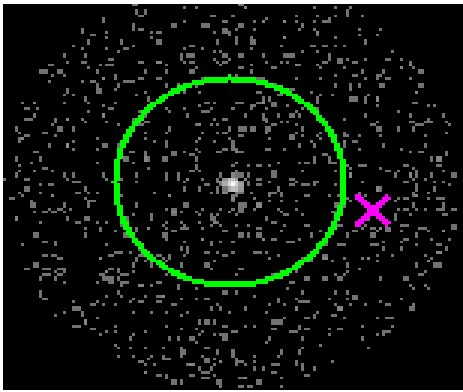


# 3 Gratings

## 3.1 HEG Arm



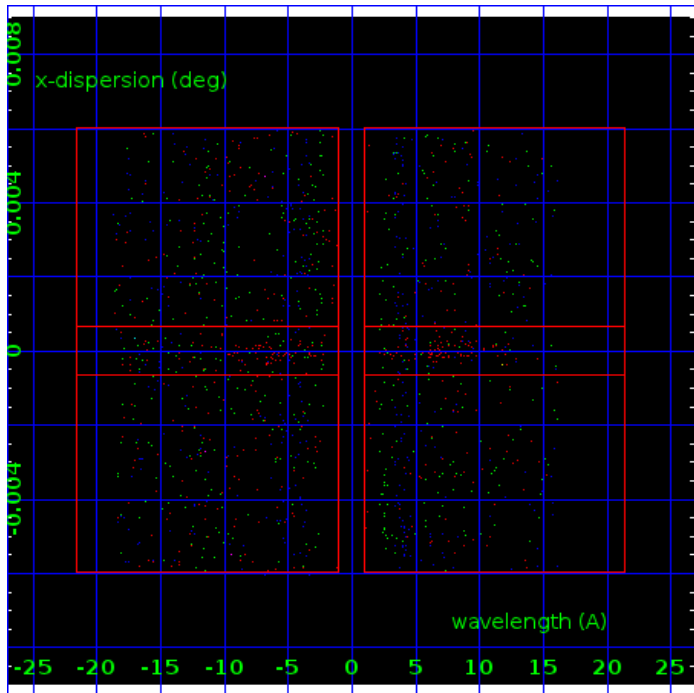
HEG Order Sort 123



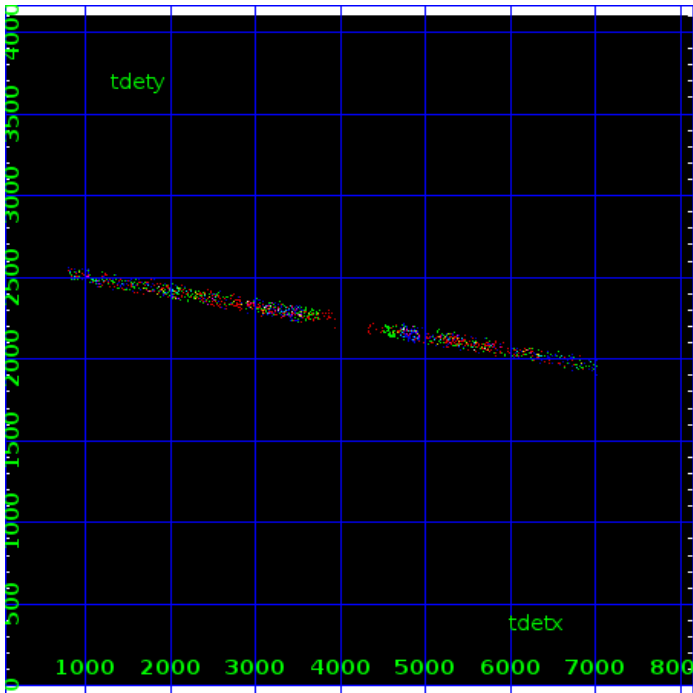
HEG Zero Order



HEG Order Sort ALL

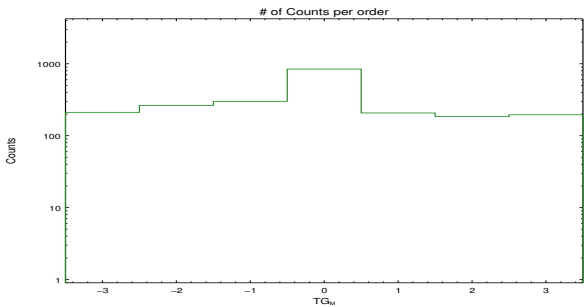


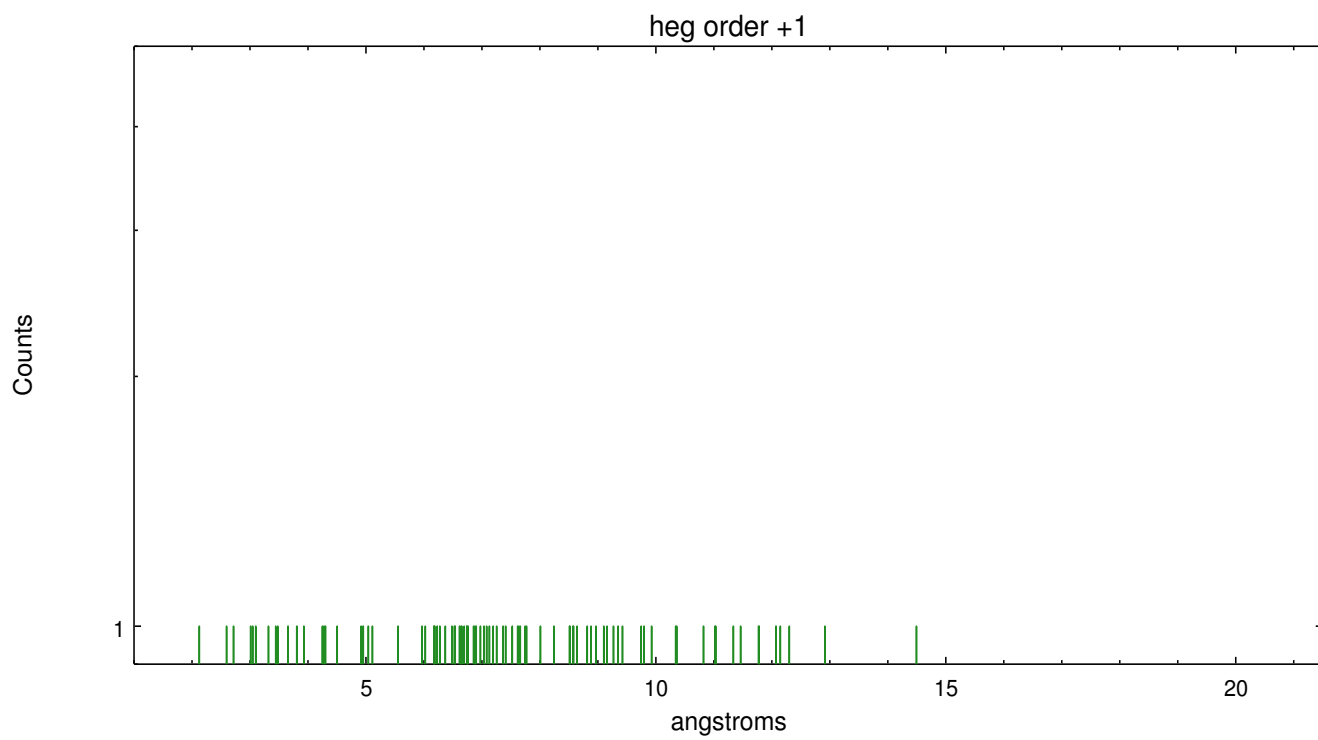
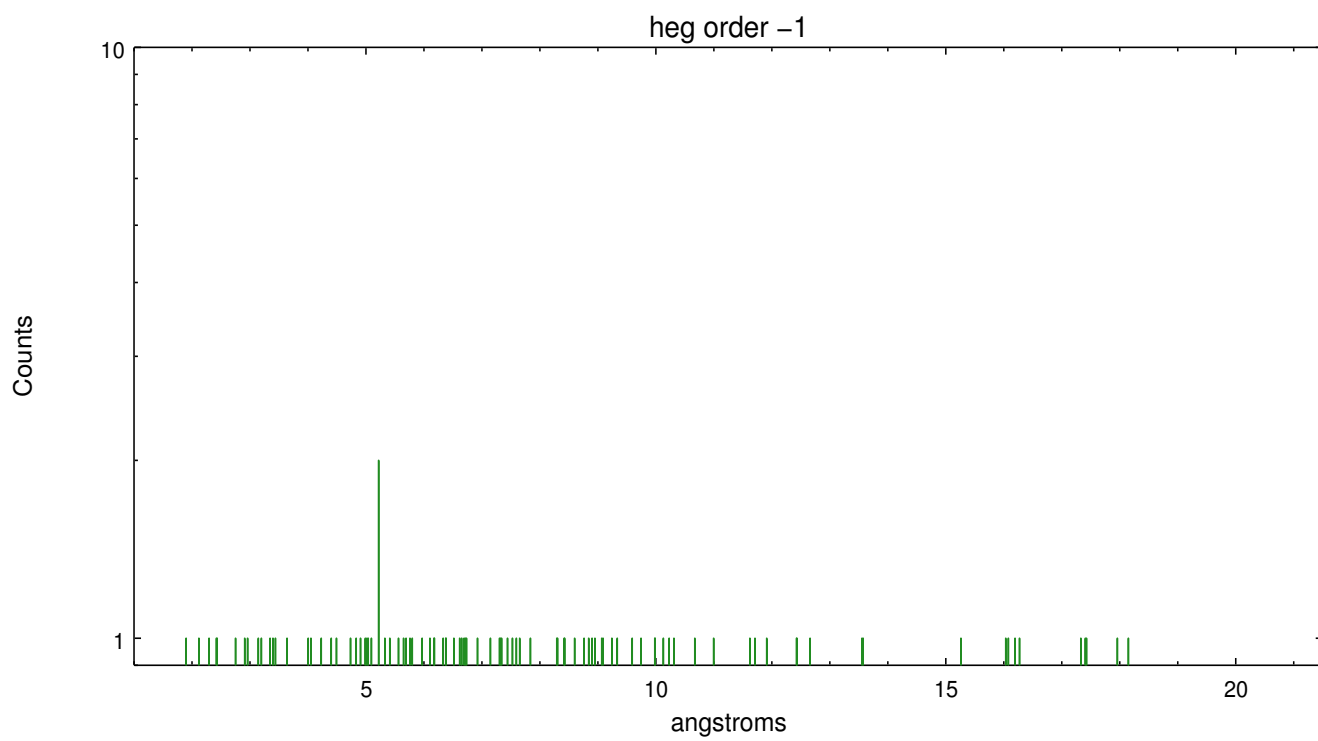
Spot Image HEG



Full Detector HEG

|        | order<br>-3 | order<br>-2 | order<br>-1 | order<br>0 | order<br>1 | order<br>2 | order<br>3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 211         | 263         | 300         | 844        | 207        | 184        | 195        |



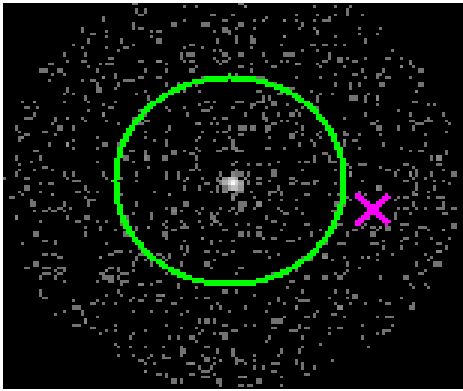




3.2 MEG Arm



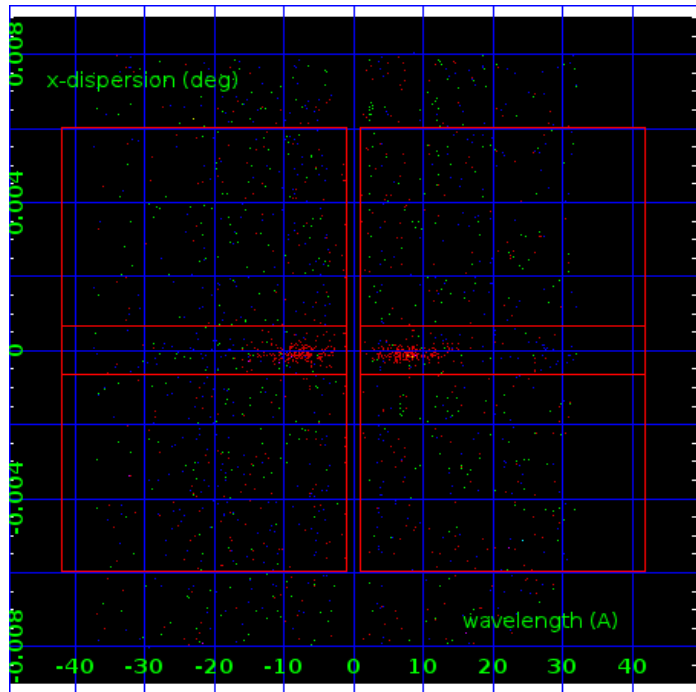
MEG Order Sort 123



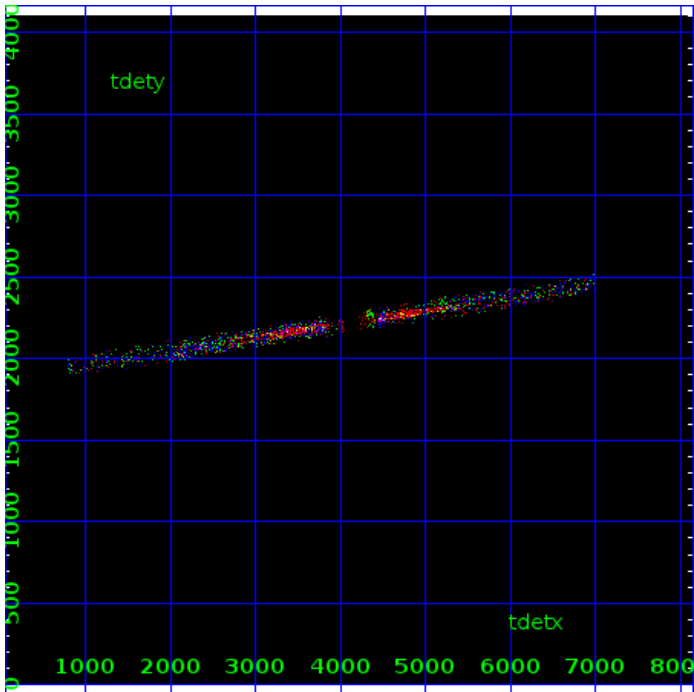
MEG Zero Order



MEG Order Sort ALL

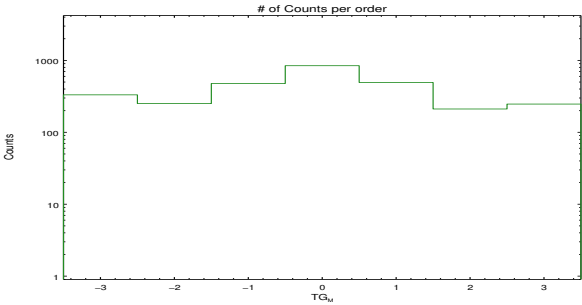


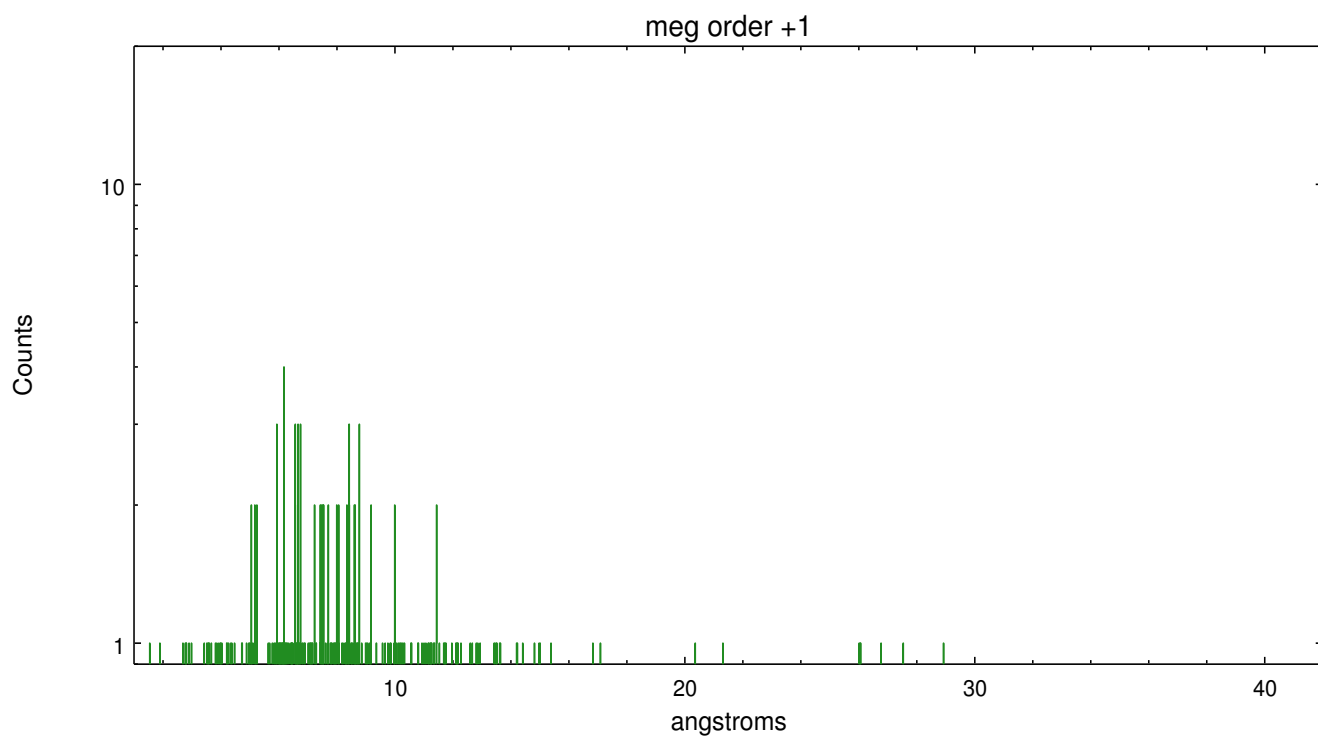
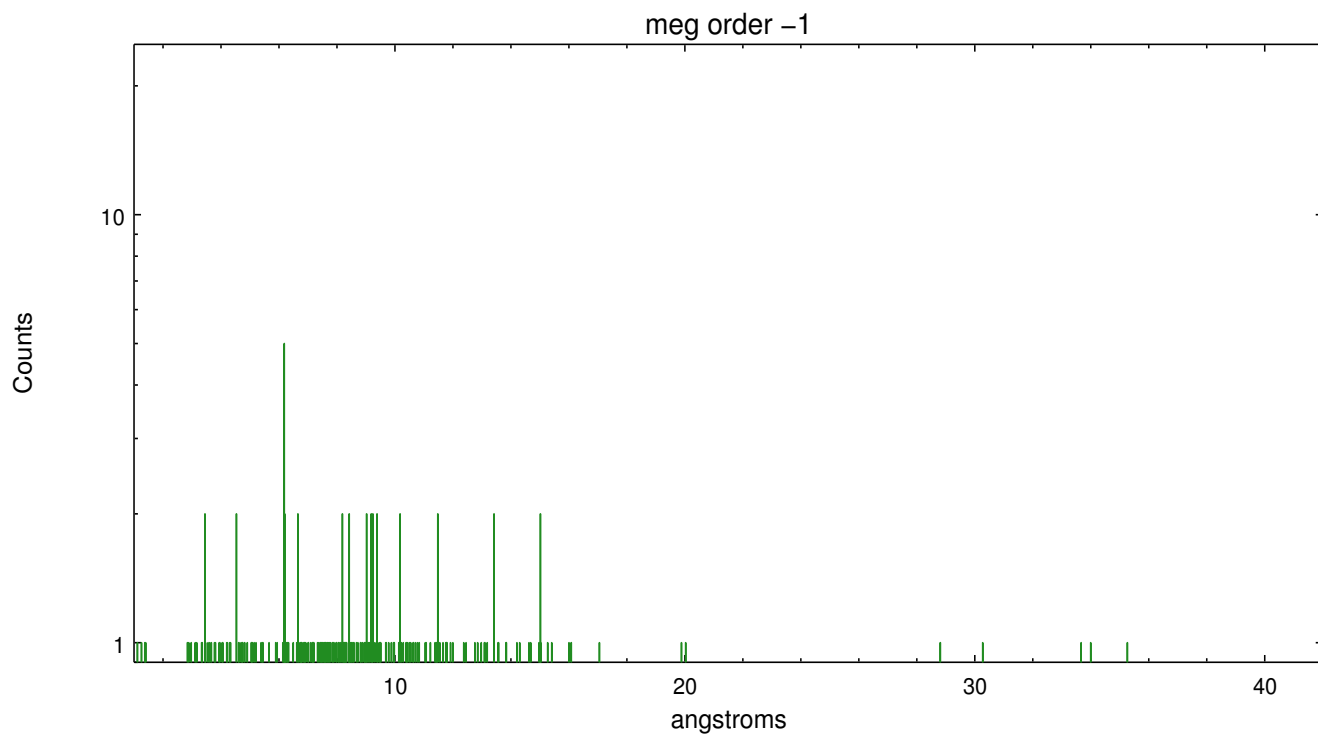
Spot Image MEG



Full Detector MEG

|        | order<br>-3 | order<br>-2 | order<br>-1 | order<br>0 | order<br>1 | order<br>2 | order<br>3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 332         | 251         | 477         | 844        | 493        | 211        | 247        |





## A Summary

### A.1 Status

|                            |                 |
|----------------------------|-----------------|
| V&V Scientist              | Joy Nichols     |
| V&V Date (YYYY-MM-DD)      | 2015.07.13      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 36.335227842212 |

### A.2 Comments