

# V&V Reference Report

## L2 ASCDS Version : 10.6

Observation 20908 - L2 Version 1  
Chandra X-Ray Center

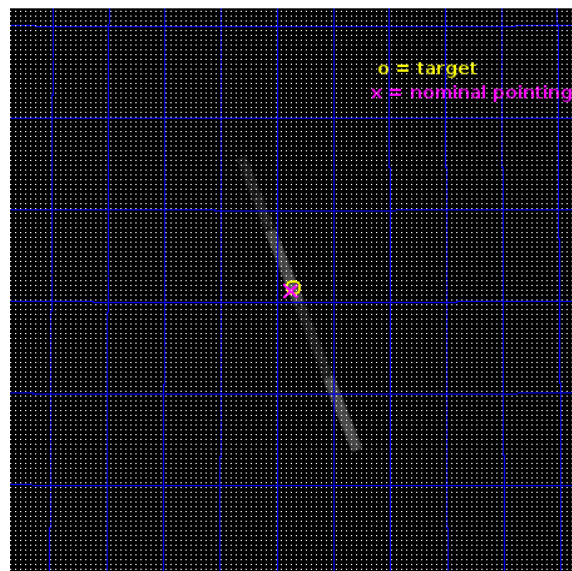
L2 Processing Date : Dec 30 2017

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# 1 Front

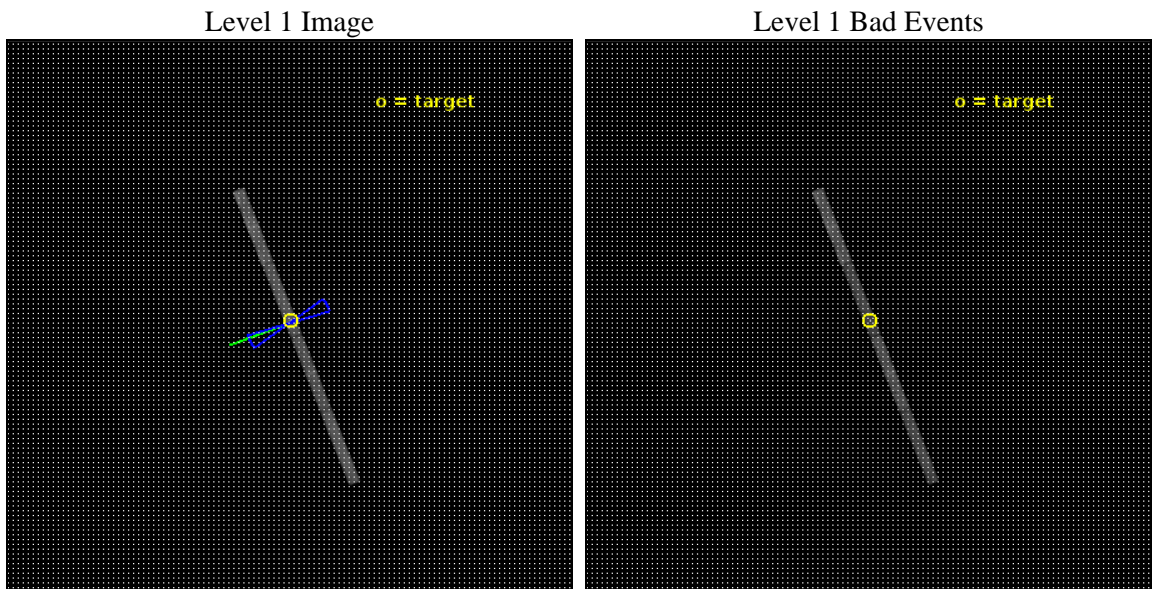
|          |  |   |
|----------|--|---|
| seq_num  | 703412   | Sequence number                             |
| obs_id   | 20908  | Observation id                              |
| title    | The 3C111 Jet: X-ray Variability, Spectrum & Broadband SED | Proposa                                     |
| observer | Eric Perlman   | Principal investigator                      |
| object   | 3C 111   | Source name                                 |
| dtycle   | 0  | &#160                                       |
| cycle    | P  | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 64.58875   | Observer's specified target RA [deg]        |
| dec_targ | 38.026667  | Observer's specified target Dec [deg]       |
| ra_nom   | 64.592333047643  | Nominal RA [deg]                            |
| dec_nom  | 38.020295464236  | Nominal Dec [deg]                           |
| roll_nom | 249.1544310276   | Nominal Roll [deg]                          |
| revision | 1  | Processing version of data                  |
| ontime   | 29087.937976003  | Sum of GTIs [s]                             |
| lvetime  | 27225.700089857  | Livetime [s]                                |
| ontime5  | 29087.896936059  | Sum of GTIs [s]                             |
| ontime6  | 29087.855895996  | Sum of GTIs [s]                             |
| ontime7  | 29087.937976003  | Sum of GTIs [s]                             |
| ontime8  | 29087.814856052  | Sum of GTIs [s]                             |
| l2events | 79812  | Number of level 2 events                    |



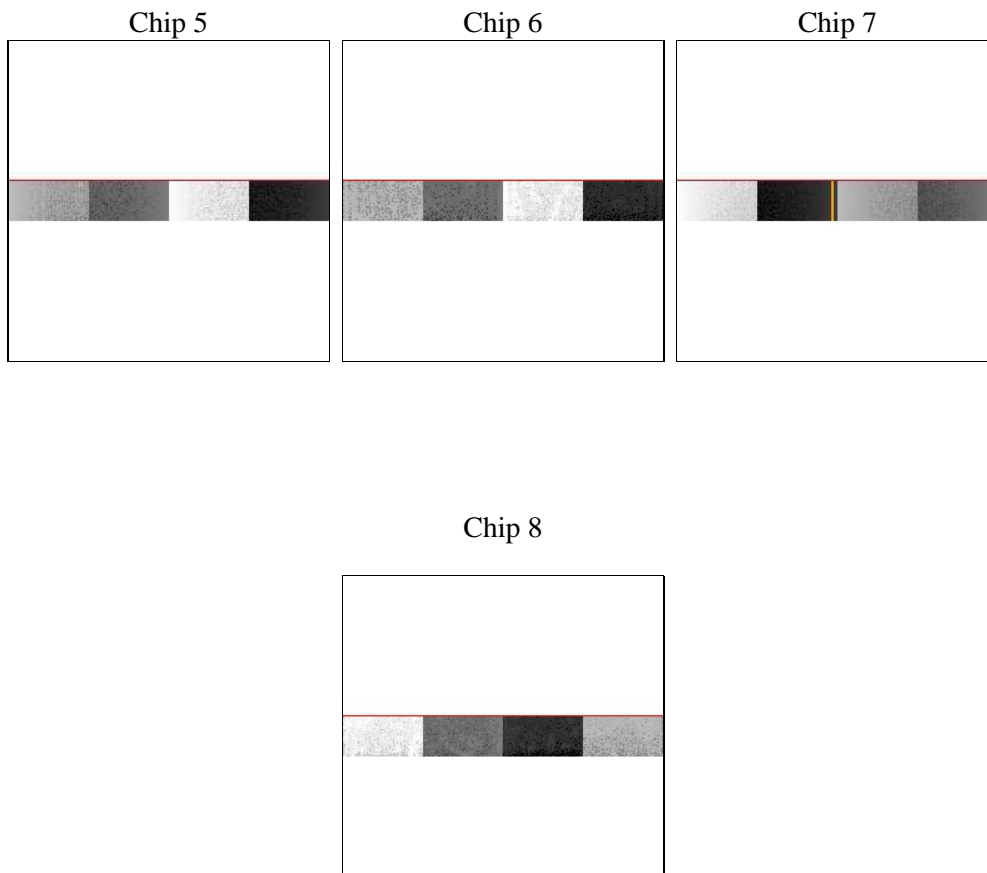
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 29000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.6                | Processing system revision     | ontime         | 29087.937976003 | Sum of GTIs [s]                         |
| caldsver | 4.7.7               | &#160                          | ontime5        | 29087.896936059 | Sum of GTIs [s]                         |
| date     | 2017-12-30T15:16:57 | Date and time of file creation | ontime6        | 29087.855895996 | Sum of GTIs [s]                         |
| revision | 1                   | Processing version of data     | ontime7        | 29087.937976003 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 29087.814856052 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 214823          | Number of level 1 events                |

### 2.1.4 Events

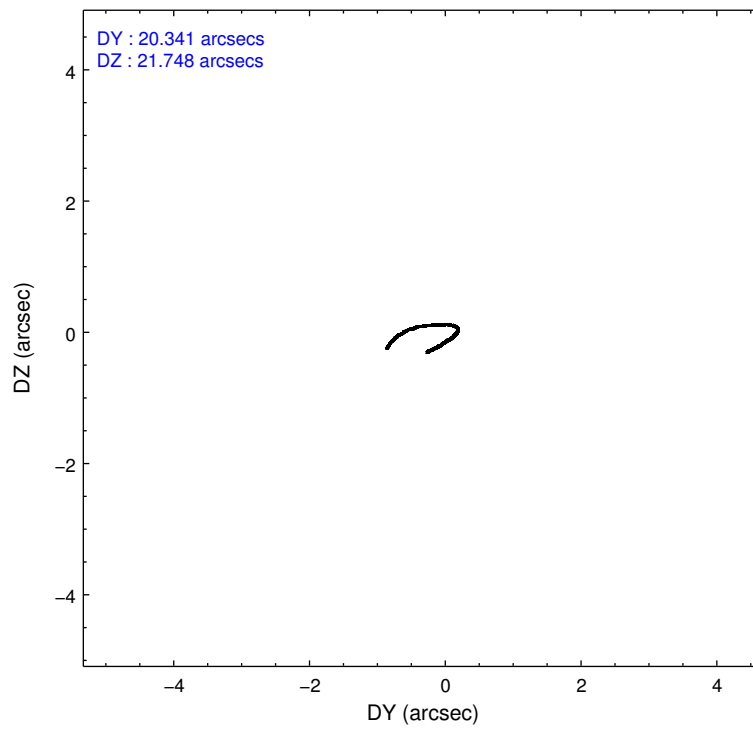
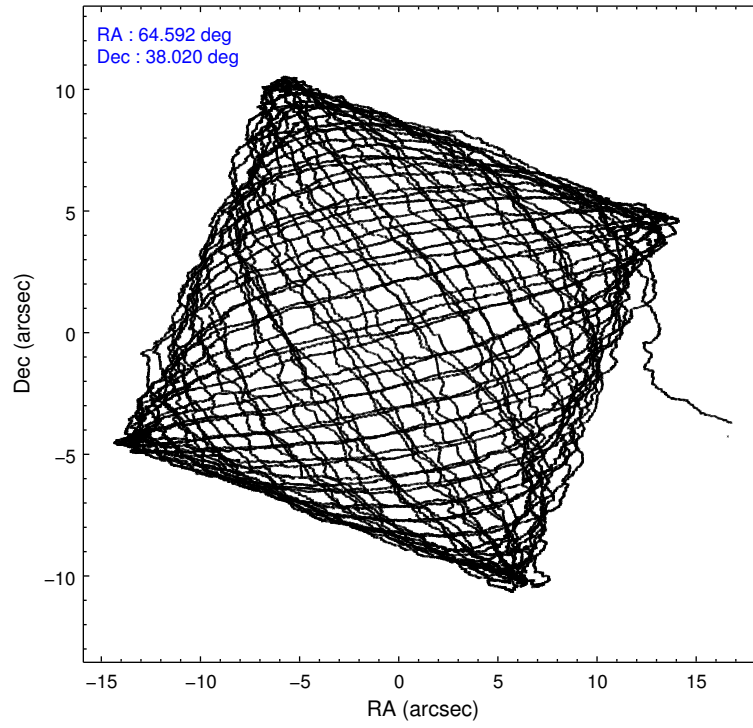
|                 | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|-----------------|-------|-------|-------|-------|
| level 1 events  | 43447 | 35102 | 86435 | 49839 |
| rejected events | 22635 | 31162 | 32671 | 38817 |
| rejected %      | 52%   | 88%   | 37%   | 77%   |

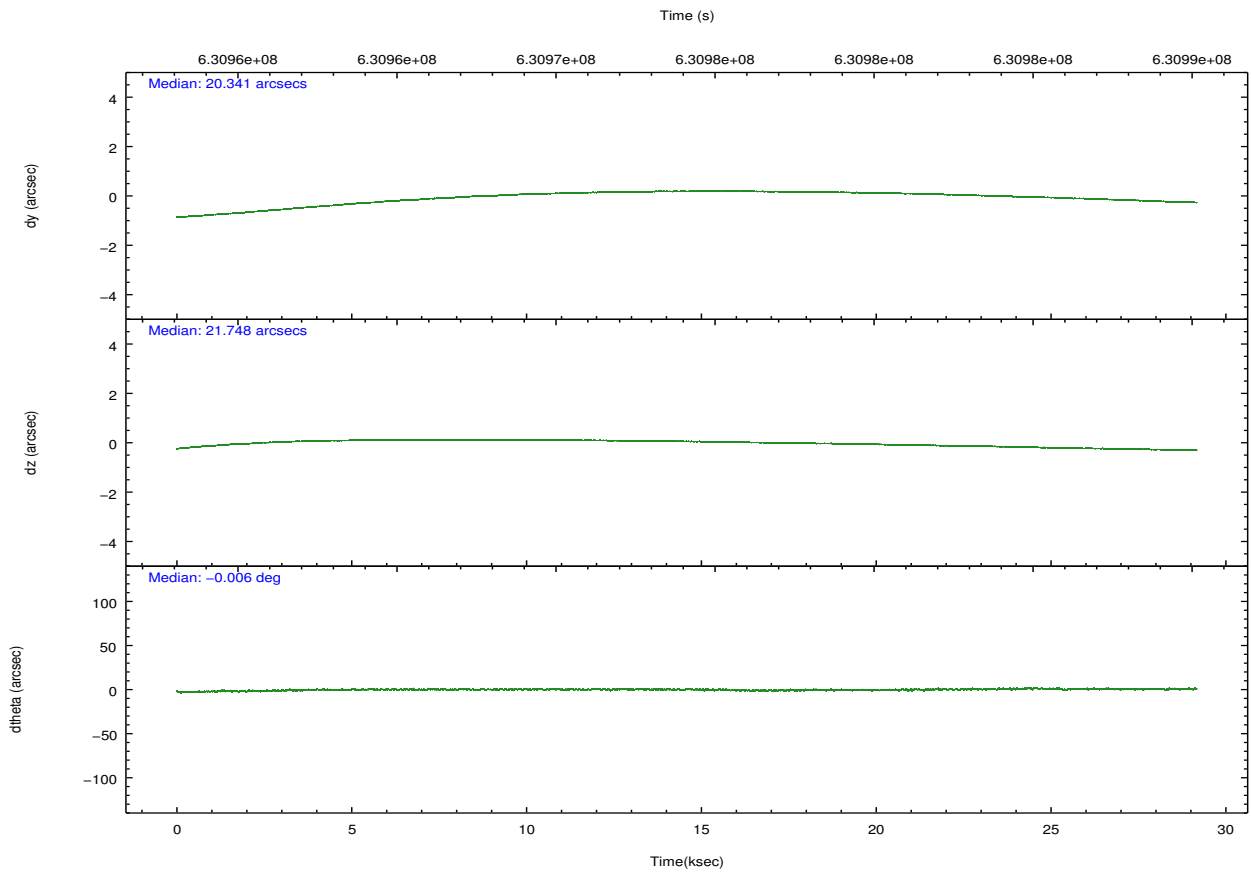
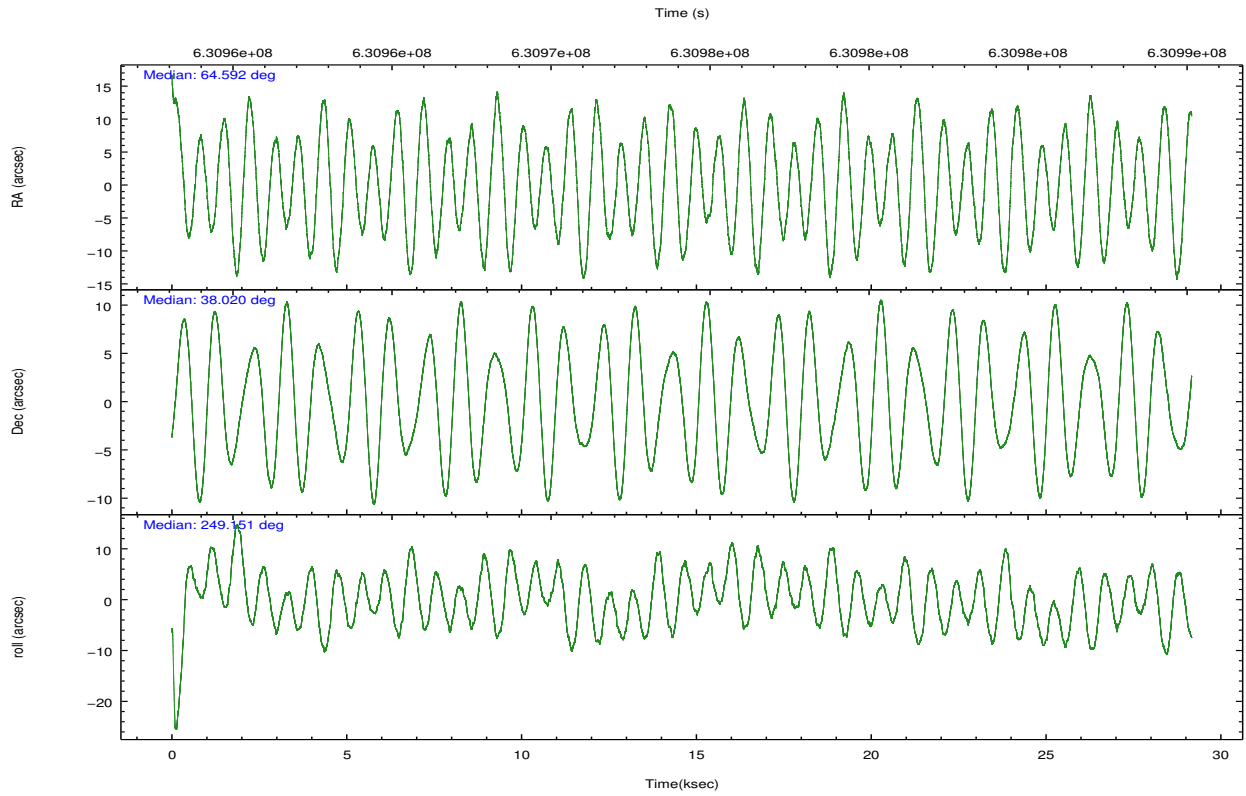
|                | ccd 5 | ccd 6 | ccd 7 | ccd 8 |
|----------------|-------|-------|-------|-------|
| grade 0 events | 1223  | 1065  | 7757  | 2418  |
|                | 2%    | 3%    | 8%    | 4%    |
| grade 1 events | 112   | 9     | 782   | 15    |
|                | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 6471  | 776   | 11297 | 2443  |
|                | 14%   | 2%    | 13%   | 4%    |
| grade 3 events | 1085  | 683   | 5627  | 1358  |
|                | 2%    | 1%    | 6%    | 2%    |
| grade 4 events | 1033  | 623   | 5510  | 1322  |
|                | 2%    | 1%    | 6%    | 2%    |
| grade 5 events | 3049  | 1224  | 7433  | 1875  |
|                | 7%    | 3%    | 8%    | 3%    |
| grade 6 events | 11001 | 793   | 23575 | 3481  |
|                | 25%   | 2%    | 27%   | 6%    |
| grade 7 events | 19473 | 29929 | 24454 | 36927 |
|                | 44%   | 85%   | 28%   | 74%   |

## 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                              | NONE                | NONE                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                            | VFAINT              | VFAINT               | Number of optional ACIS chips dropped | 0         | 0       |
| Observation mode                     | POINTING            | POINTING             | On-chip summing requested             | N         | N       |
| [deg] Pointing RA                    | 64.586317           | 64.59233304764331    | Subarray requested                    | CUSTOM    | 1/8     |
| [deg] Pointing Dec                   | 38.047338           | 38.02029546423629    | Subarray start row                    | 449       | 449     |
| [deg] Pointing Roll                  | 249.001502          | 249.1544310275959    | Subarray row count                    | 128       | 128     |
| [deg] Roll angle                     | 63.500000           | 63.500000            | Alternating exposures requested       | N         | N       |
| [deg] Roll tolerance                 | 10.000000           | 10.000000            | [s] Primary exposure time             | 0.000000  | 0.6     |
| Roll constraint allows 180D rotation | Y                   | Y                    |                                       |           |         |
| [mm] SIM focus pos                   | -0.684267           | -0.6828225247311905  |                                       |           |         |
| [mm] SIM defocus                     | 0                   | 0.001444936568705701 |                                       |           |         |
| [mm] SIM translation stage pos       | -190.132523         | -190.1400660498719   |                                       |           |         |
| [mm] SIM translation stage offset    | 0                   | 0.00754346686406393  |                                       |           |         |
| [s] Observation start time (MET)     | 630959707.184000    | 630958599.74067      |                                       |           |         |
| Observation start date               | 2017-12-29T18:33:58 | 2017-12-29T18:16:39  |                                       |           |         |
| [s] Observation end time (MET)       | 630988707.184000    | 630989571.14249      |                                       |           |         |
| Observation end date                 | 2017-12-30T02:37:18 | 2017-12-30T02:52:51  |                                       |           |         |
| Read mode                            | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



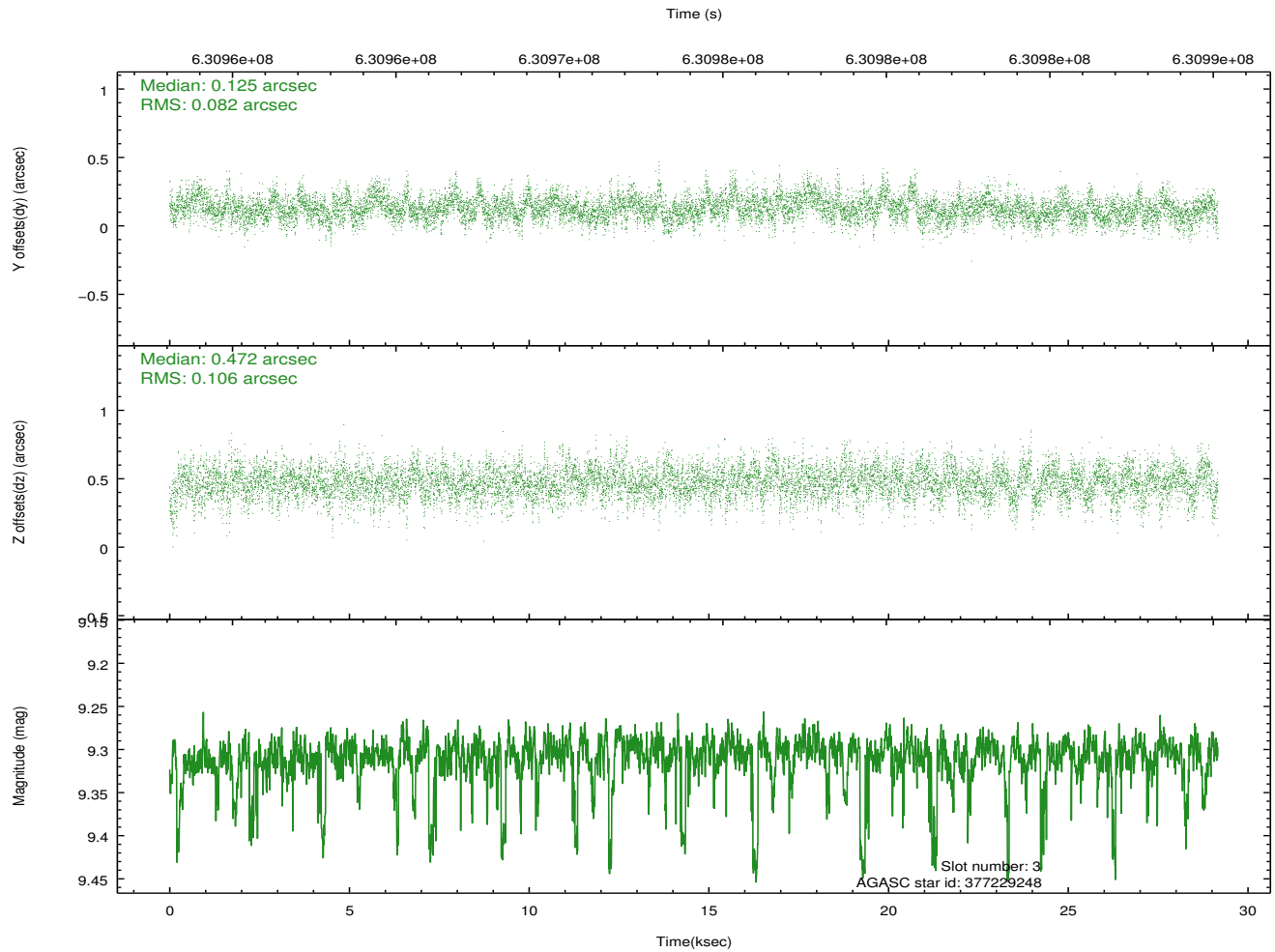
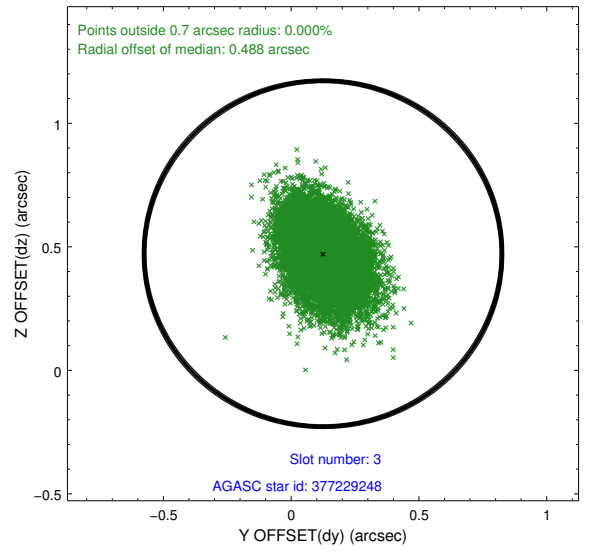
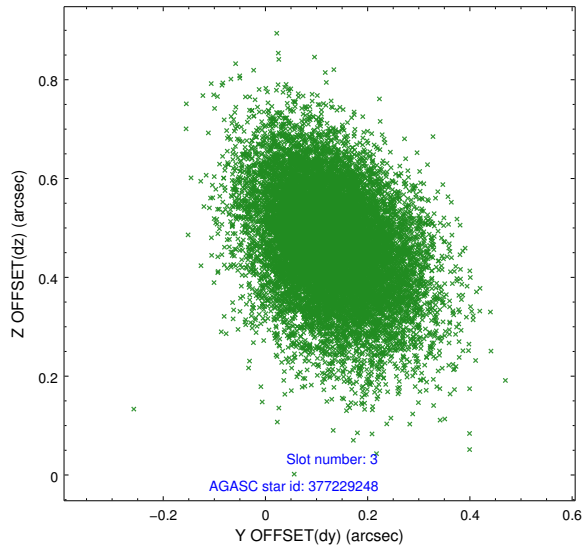


### Slot Statistics

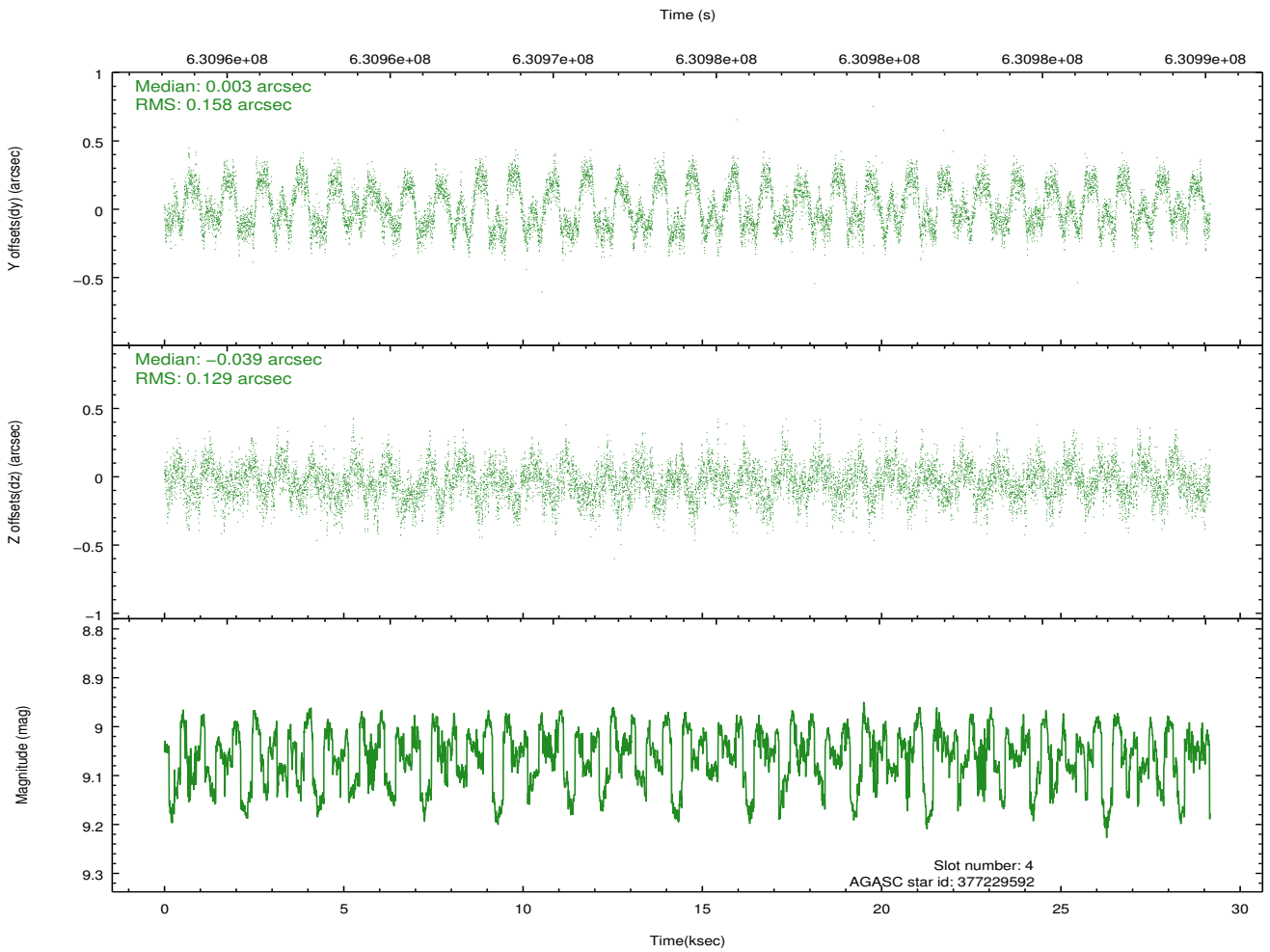
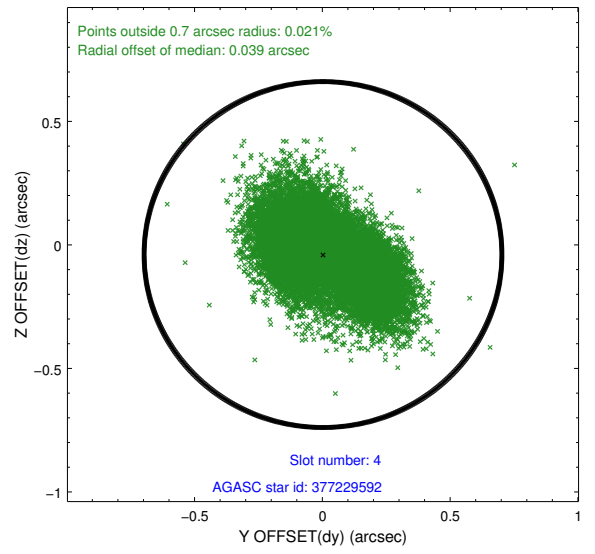
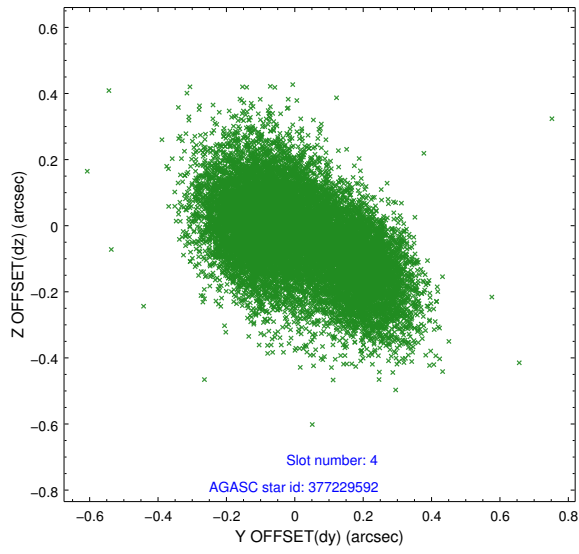
| slot | status | used | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra        | dec       | mean_y   | mean_z   |
|------|--------|------|-----------|------|-------|--------|--------|-------|-------|-----------|-----------|----------|----------|
| 0    | FID    |      | ACIS-S-1  | 7.20 | 7113  | 0.143  | -0.079 | 0.015 | 0.025 | 0.000000  | 0.000000  | 922.84   | -1738.97 |
| 1    | FID    |      | ACIS-S-5  | 7.22 | 7113  | -0.328 | 0.061  | 0.010 | 0.016 | 0.000000  | 0.000000  | -1826.61 | 158.60   |
| 2    | FID    |      | ACIS-S-6  | 7.38 | 7110  | 0.166  | 0.031  | 0.015 | 0.025 | 0.000000  | 0.000000  | 388.29   | 802.65   |
| 3    | GUIDE  | used | 377229248 | 9.31 | 14213 | 0.125  | 0.472  | 0.139 | 0.240 | 64.421964 | 38.589680 | -1656.76 | -1131.01 |
| 4    | GUIDE  | used | 377229592 | 9.06 | 14211 | 0.003  | -0.039 | 0.220 | 0.343 | 64.771333 | 38.350817 | -1206.80 | 95.72    |
| 5    | GUIDE  | used | 377232992 | 9.03 | 14214 | 0.273  | 0.059  | 0.163 | 0.284 | 63.776678 | 37.815935 | 1594.32  | -1854.38 |
| 6    | GUIDE  | used | 377363032 | 9.34 | 14211 | 0.120  | 0.008  | 0.213 | 0.333 | 65.027918 | 38.365214 | -1517.12 | 752.57   |
| 7    | GUIDE  | used | 312349048 | 6.33 | 14227 | -0.547 | -0.498 | 0.121 | 0.213 | 65.050136 | 37.200711 | 2365.63  | 2333.02  |

## 2.4 Star Slots

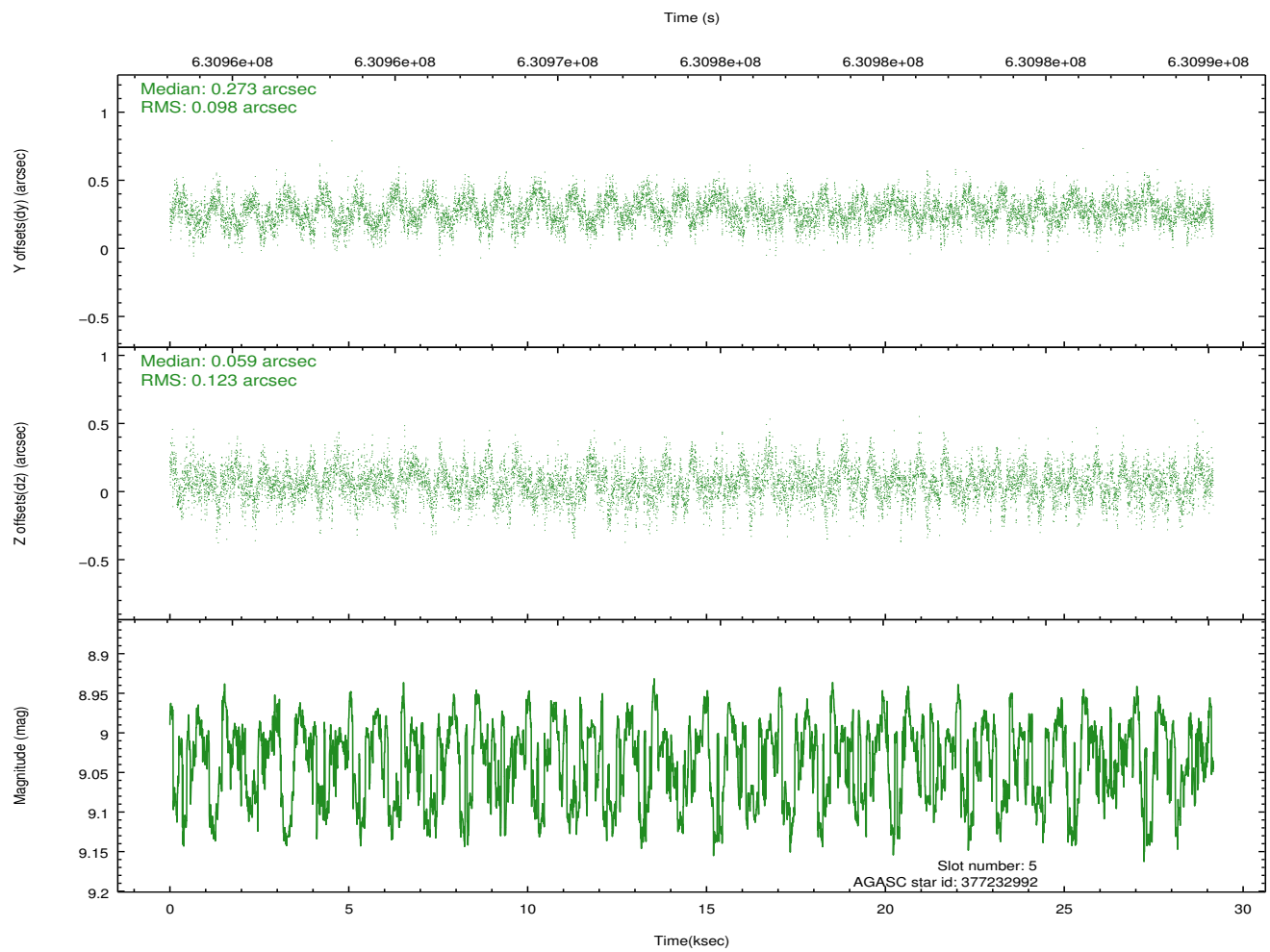
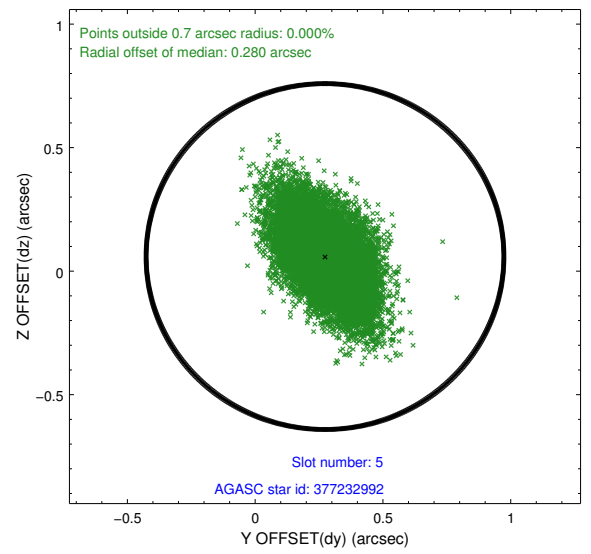
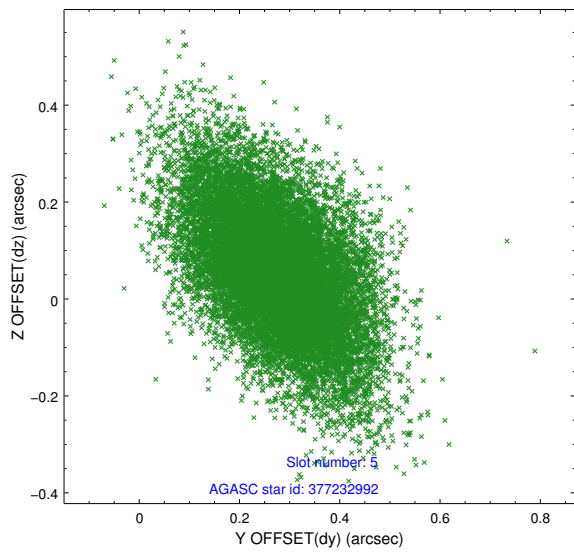
### 2.4.1 Slot 3



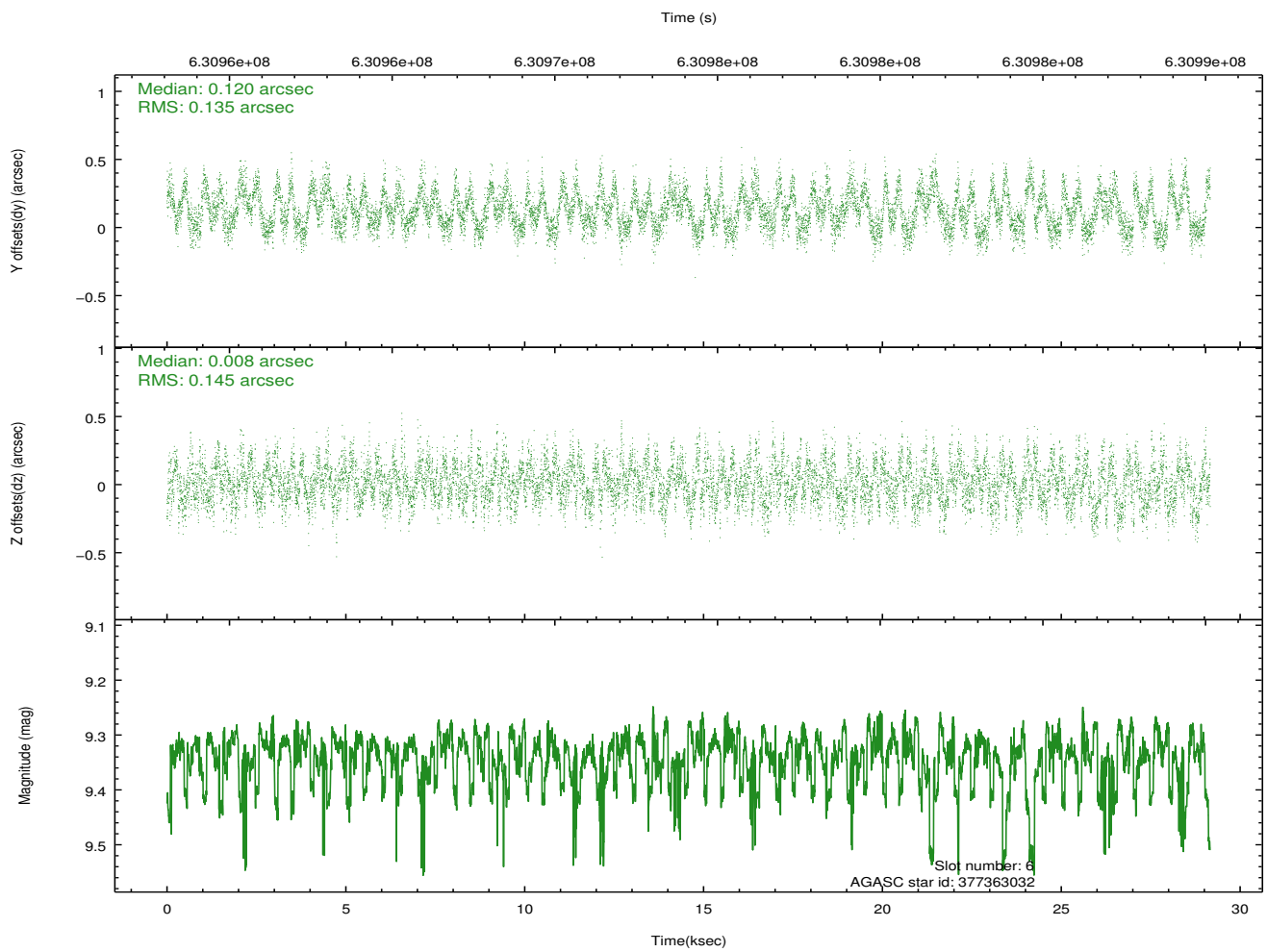
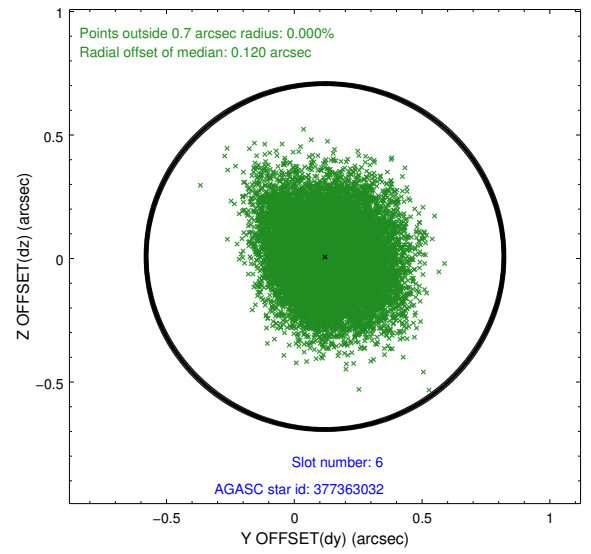
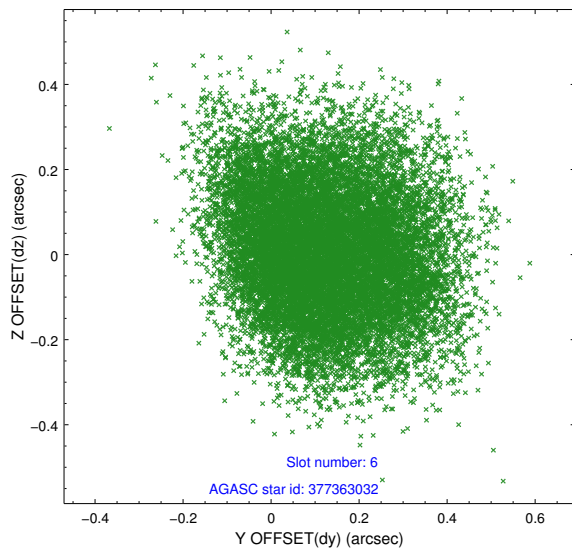
## 2.4.2 Slot 4



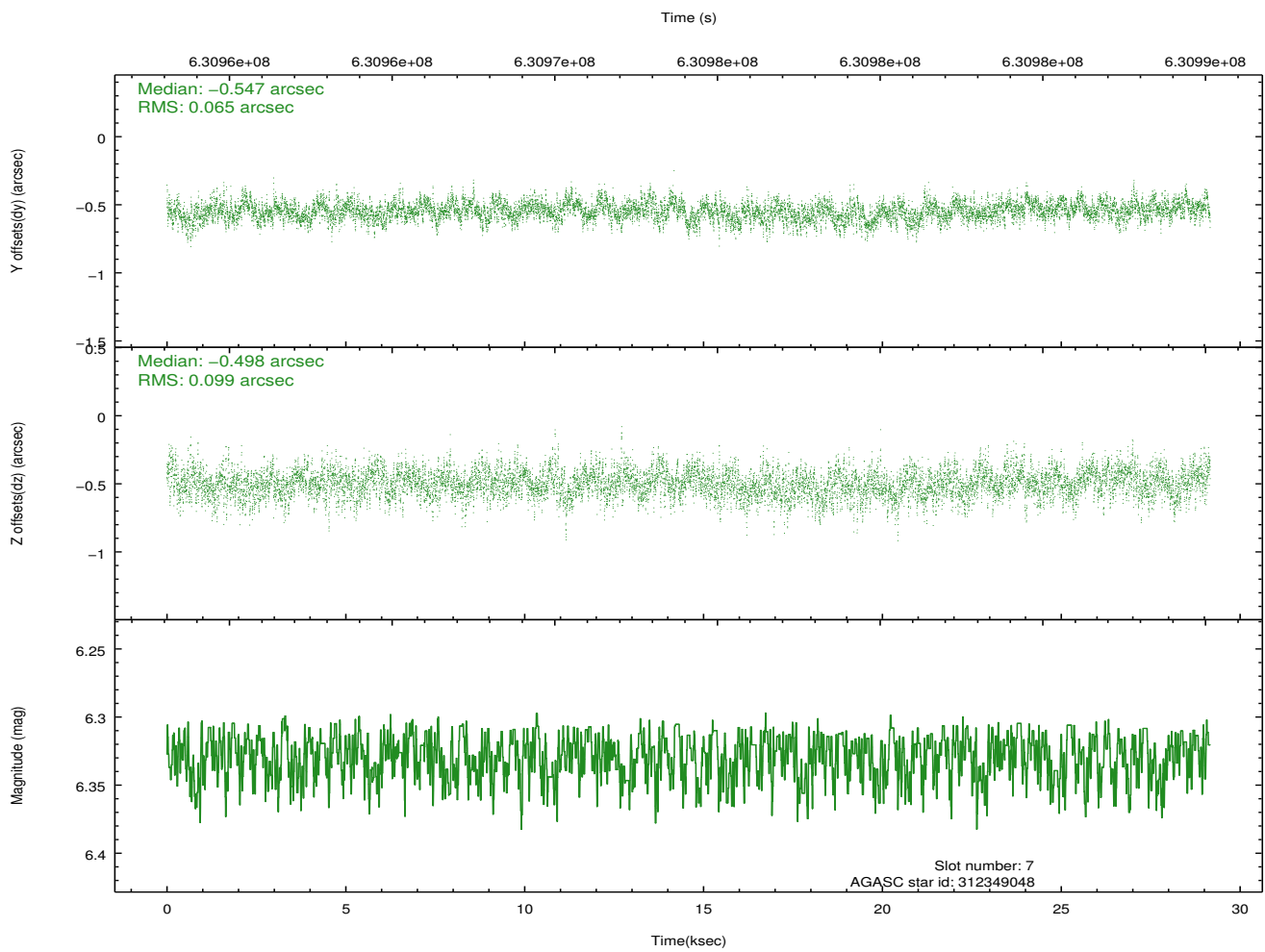
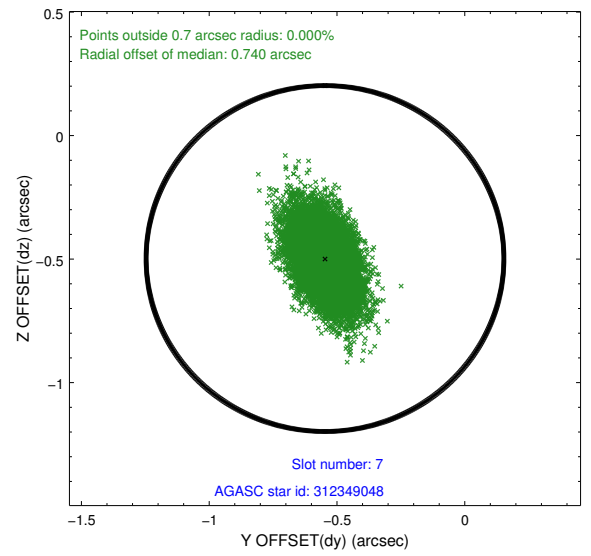
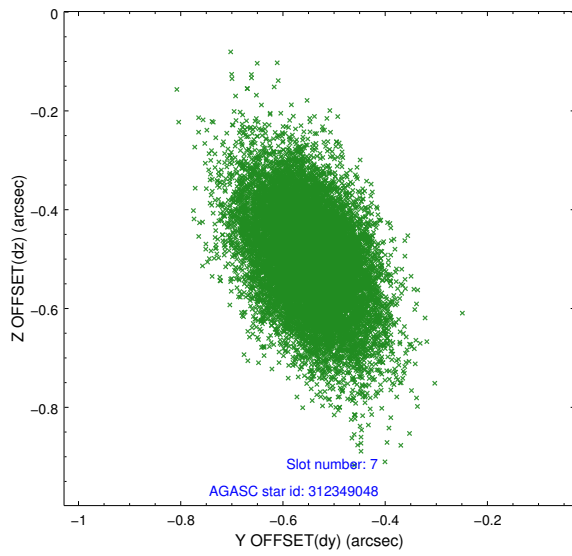
### 2.4.3 Slot 5



## 2.4.4 Slot 6

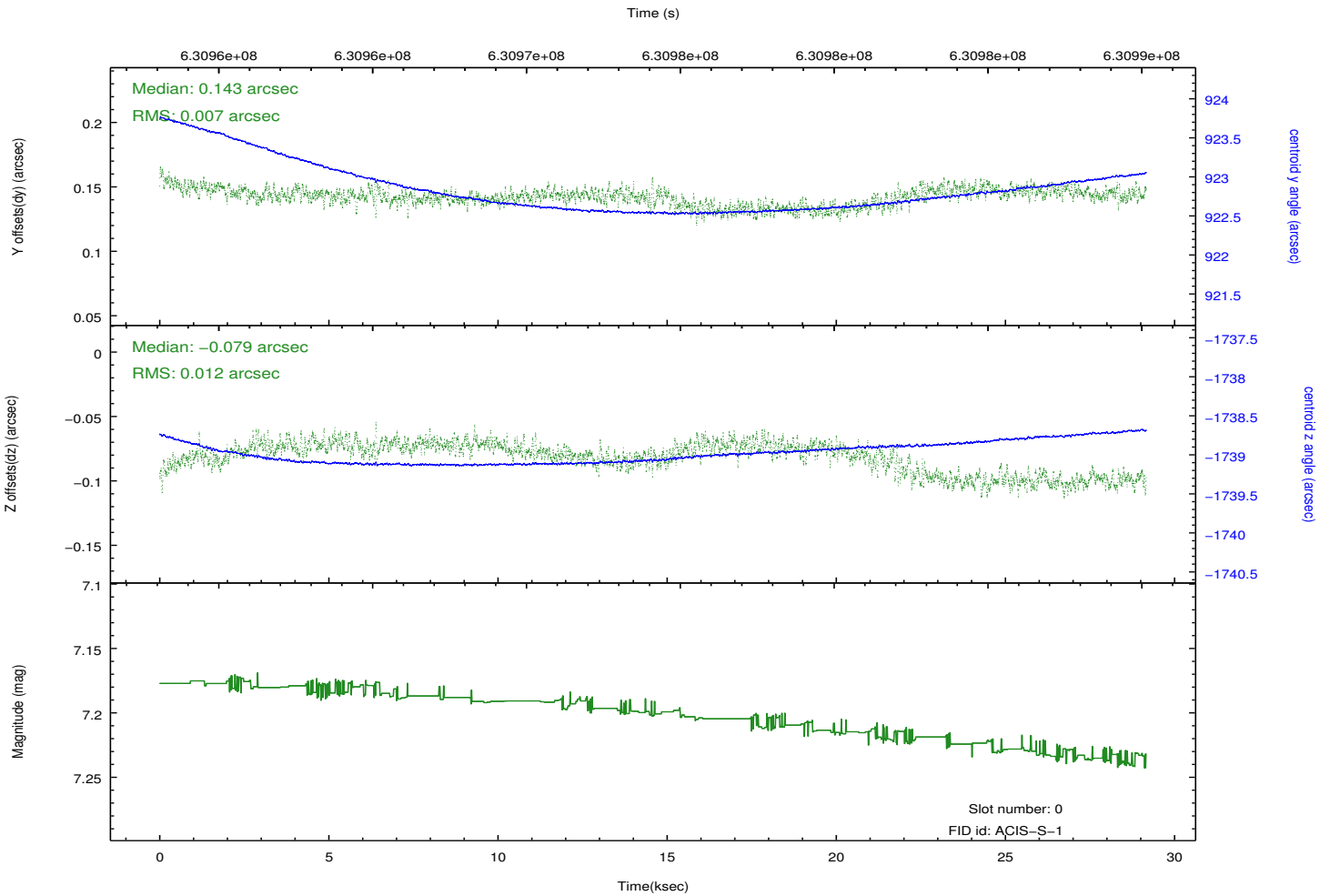
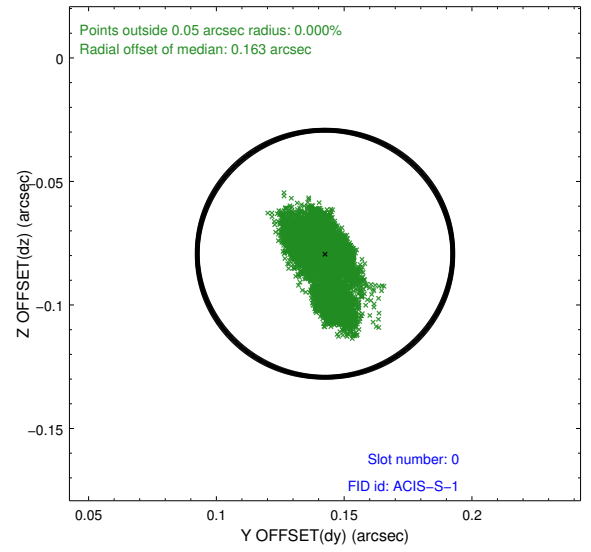
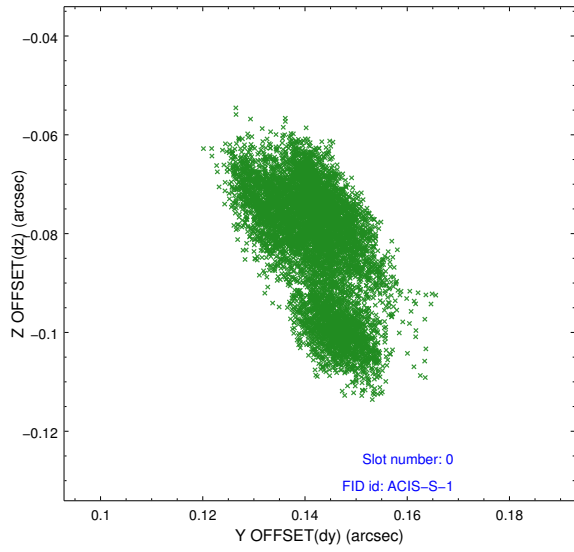


## 2.4.5 Slot 7

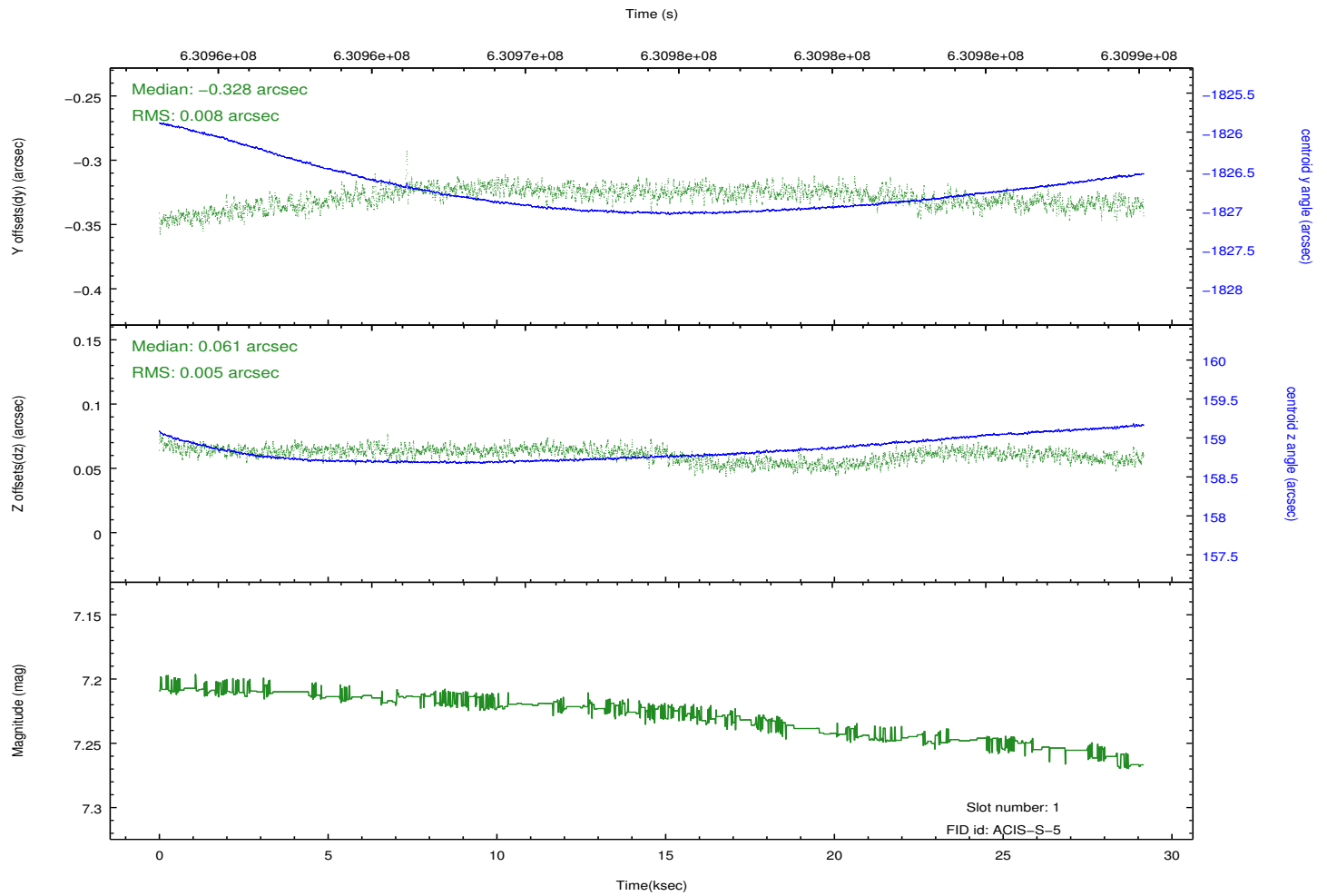
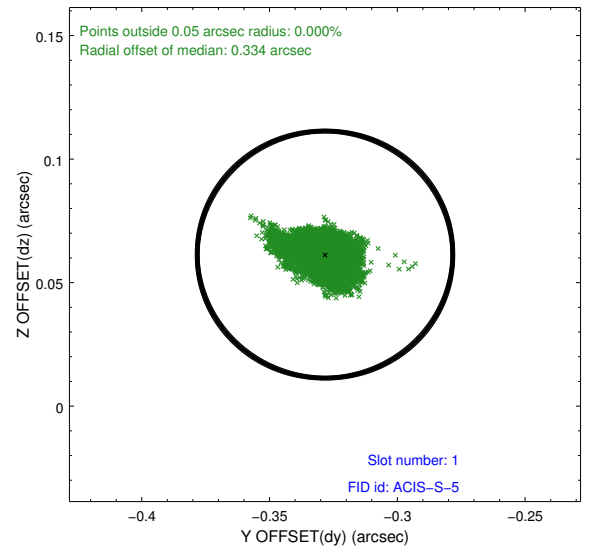
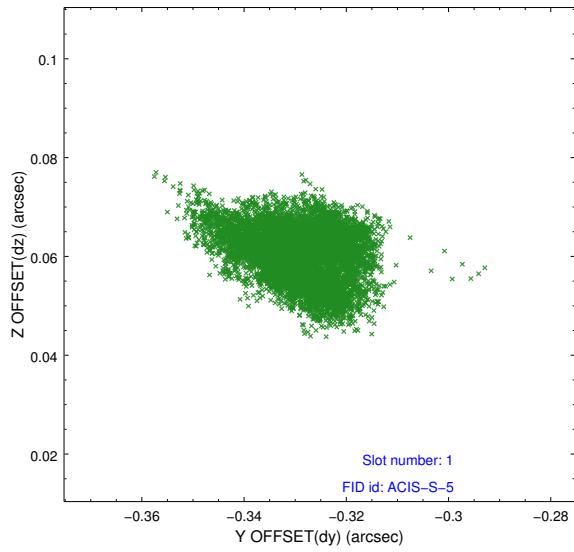


## 2.5 FID Slots

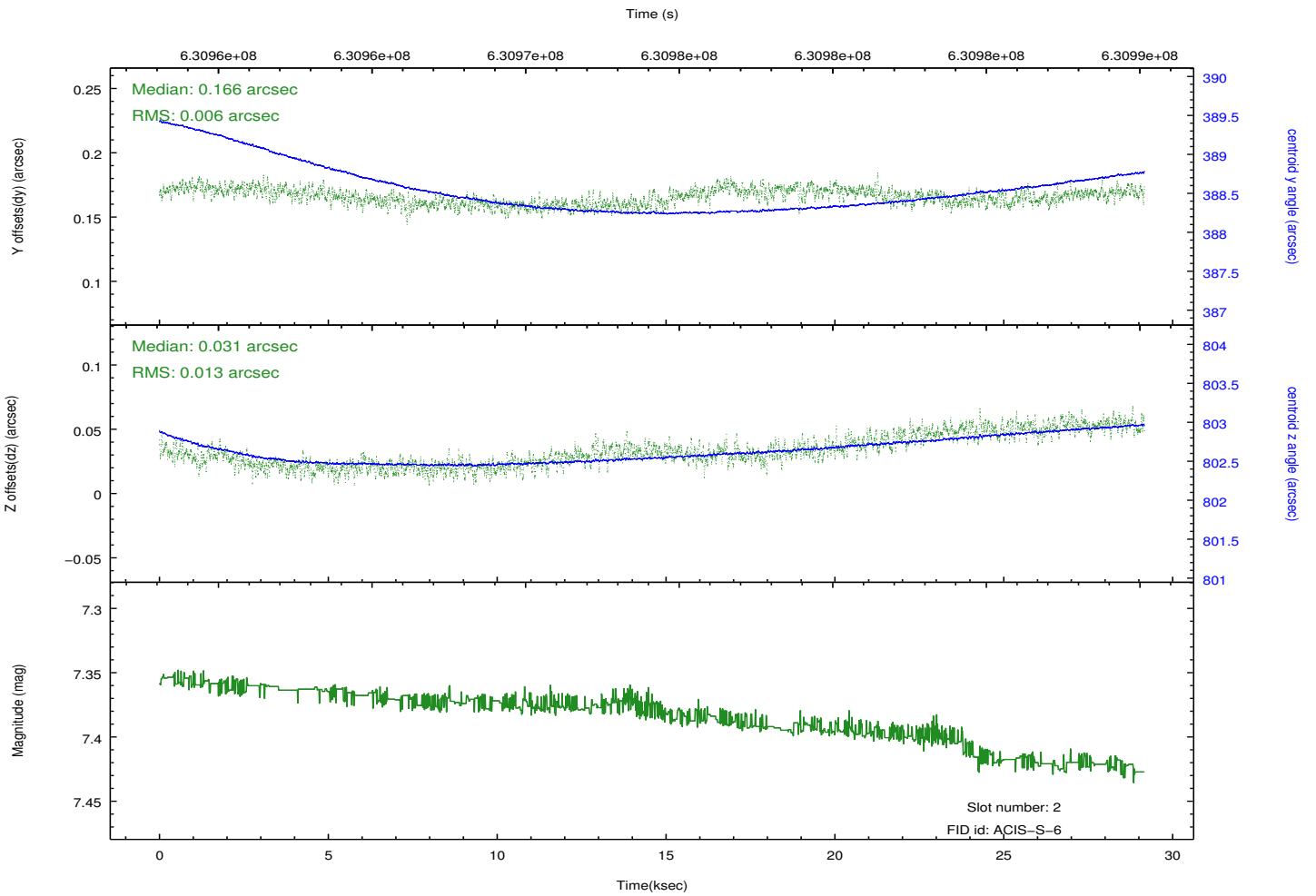
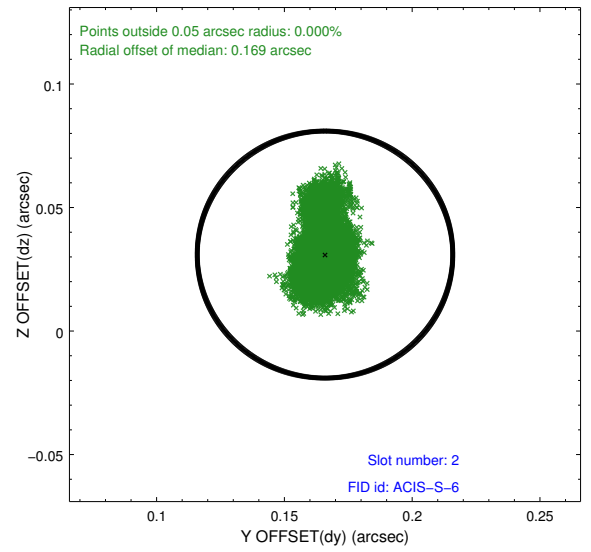
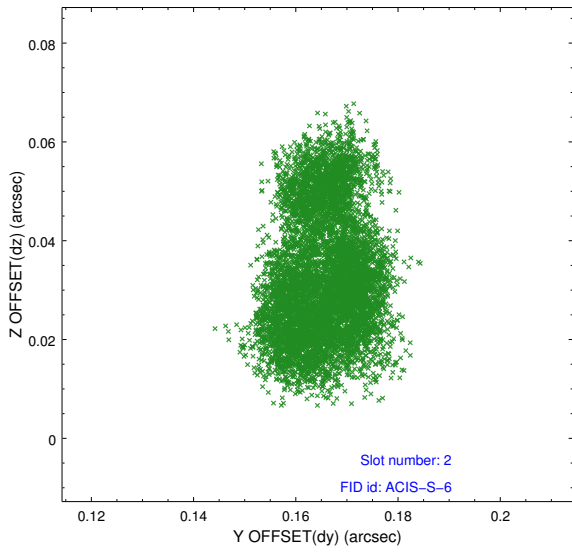
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



# A Summary

## A.1 Status

|                            |                 |
|----------------------------|-----------------|
| V&V Scientist              | Beth Sundheim   |
| V&V Date (YYYY-MM-DD)      | 2017.12.30      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 29.087937976003 |

## A.2 Comments

Joint proposal with HST and NuSTAR.

Roll preference met.