

# V&V Reference Report

## L2 ASCDS Version : 8.1.1

Observation 553 - L2 Version 3

Chandra X-Ray Center

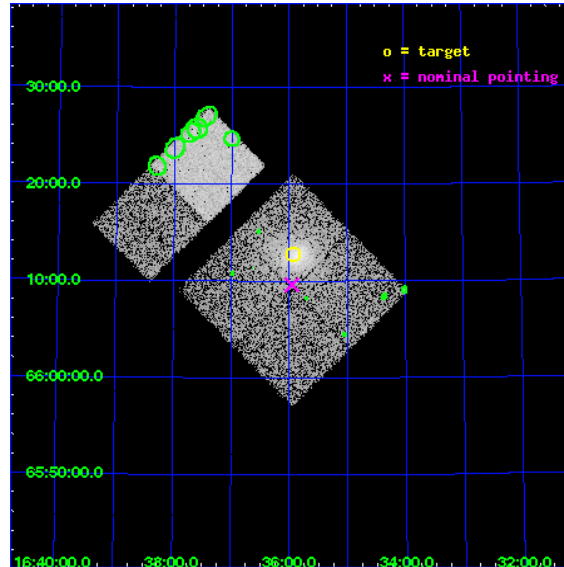
L2 Processing Date : Nov 20 2009

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# 1 Front

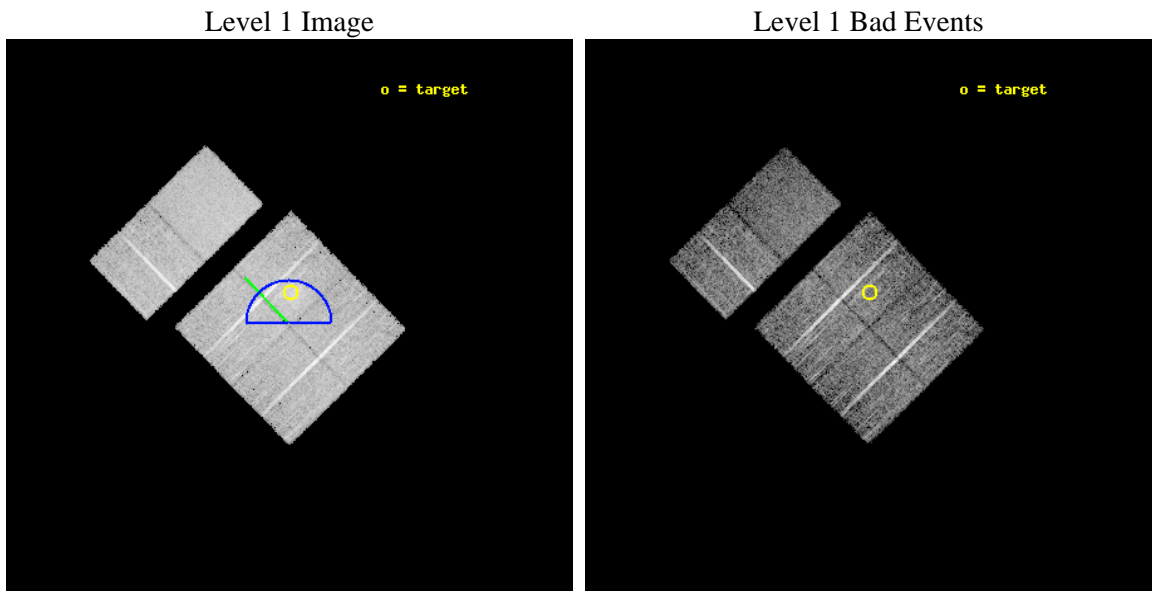
|          |                                       |   |
|----------|---------------------------------------|---|
| seq_num  | 800061                                | Sequence number                             |
| obs_id   | 553                                   | Observation id                              |
| title    | ACIS STUDY OF DARK MATTER IN CLUSTERS | Proposal title                              |
| observer | Prof Gordon Garmire                   | Principal investigator                      |
| object   | ABELL 2218                            | Source name                                 |
| dtcycle  | 0                                     | &#160                                       |
| cycle    | P                                     | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 248.983333                            | Observer's specified target RA              |
| dec_targ | 66.2125                               | Observer's specified target Dec             |
| ra_nom   | 248.98897871499                       | Nominal RA                                  |
| dec_nom  | 66.160401312402                       | Nominal Dec                                 |
| roll_nom | 315.46343396394                       | Nominal Roll                                |
| revision | 3                                     | Processing version of data                  |
| ontime   | 5958.4000055492                       | Sum of GTIs [s]                             |
| livetime | 5882.9511569612                       | Livetime [s]                                |
| ontime0  | 5958.4000055492                       | Sum of GTIs [s]                             |
| ontime1  | 5958.4000055492                       | Sum of GTIs [s]                             |
| ontime2  | 5958.4000055492                       | Sum of GTIs [s]                             |
| ontime3  | 5958.4000055492                       | Sum of GTIs [s]                             |
| ontime6  | 5958.4000055492                       | Sum of GTIs [s]                             |
| ontime7  | 5958.4000055492                       | Sum of GTIs [s]                             |
| l2events | 51515                                 | Number of level 2 events                    |



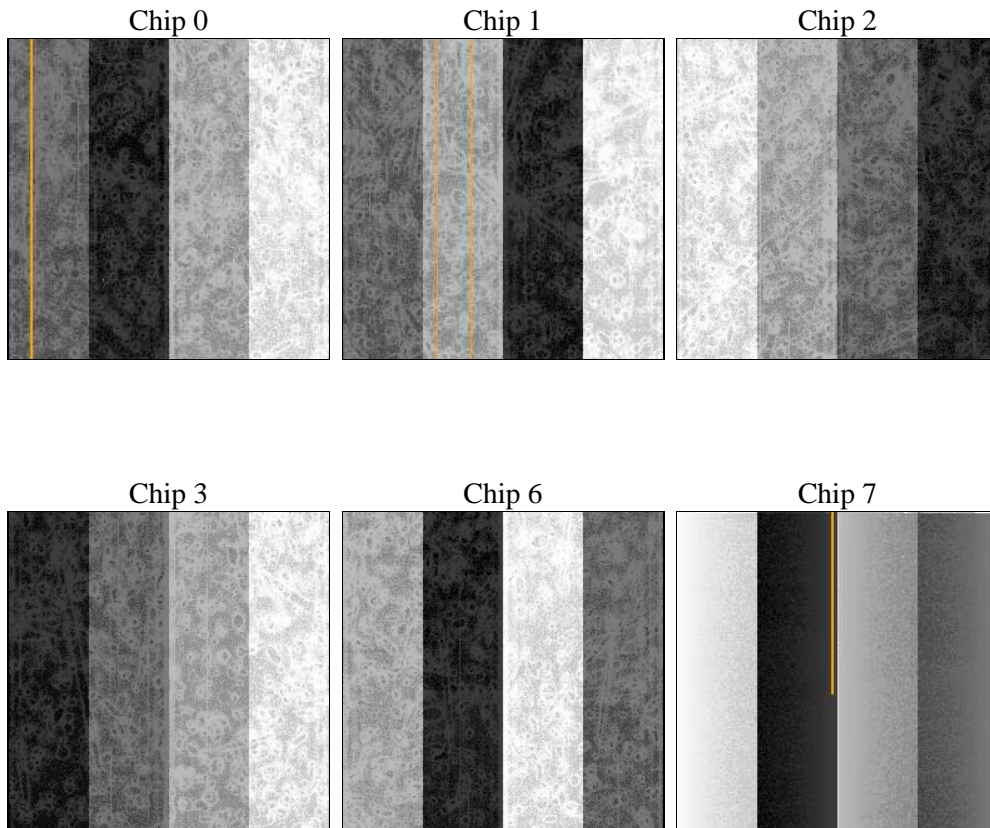
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                     |
|----------|---------------------|--------------------------------|----------------|-----------------|-------------------------------------|
| obi_num  | 1                   | Obi number                     | sched_exp_time | 6920.000000     | Scheduled observation exposure time |
| ascdsver | 8.1.1               | ASCDS version number           | ontime         | 5958.4000055492 | Sum of GTIs [s]                     |
| caldbver | 4.1.4               | &#160                          | ontime0        | 5958.4000055492 | Sum of GTIs [s]                     |
| date     | 2009-11-20T11:12:52 | Date and time of file creation | ontime1        | 5958.4000055492 | Sum of GTIs [s]                     |
| revision | 3                   | Processing version of data     | ontime2        | 5958.4000055492 | Sum of GTIs [s]                     |
|          |                     |                                | ontime3        | 5958.4000055492 | Sum of GTIs [s]                     |
|          |                     |                                | ontime6        | 5958.4000055492 | Sum of GTIs [s]                     |
|          |                     |                                | ontime7        | 5958.4000055492 | Sum of GTIs [s]                     |
|          |                     |                                | l1events       | 322544          | Number of level 1 events            |

### 2.1.4 Events

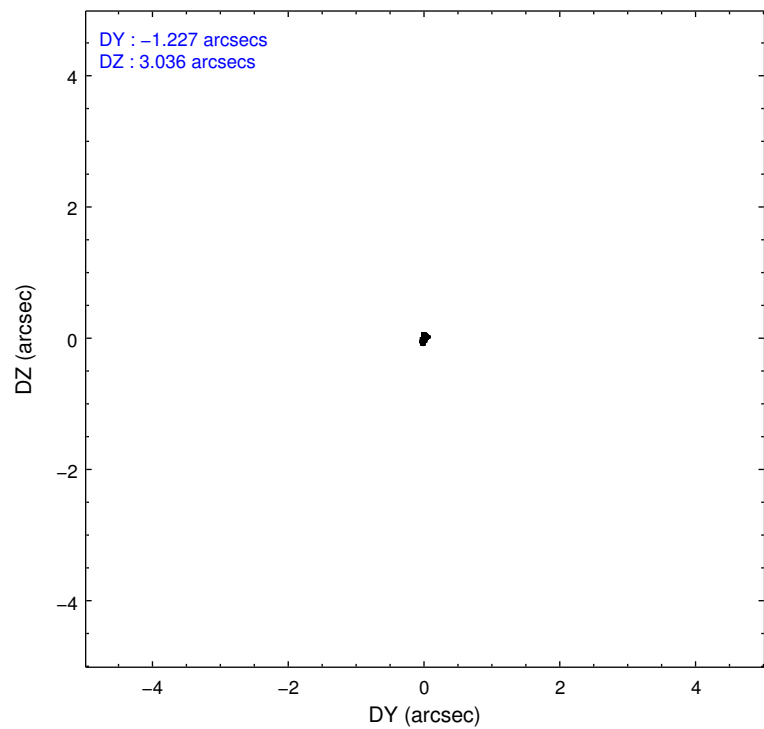
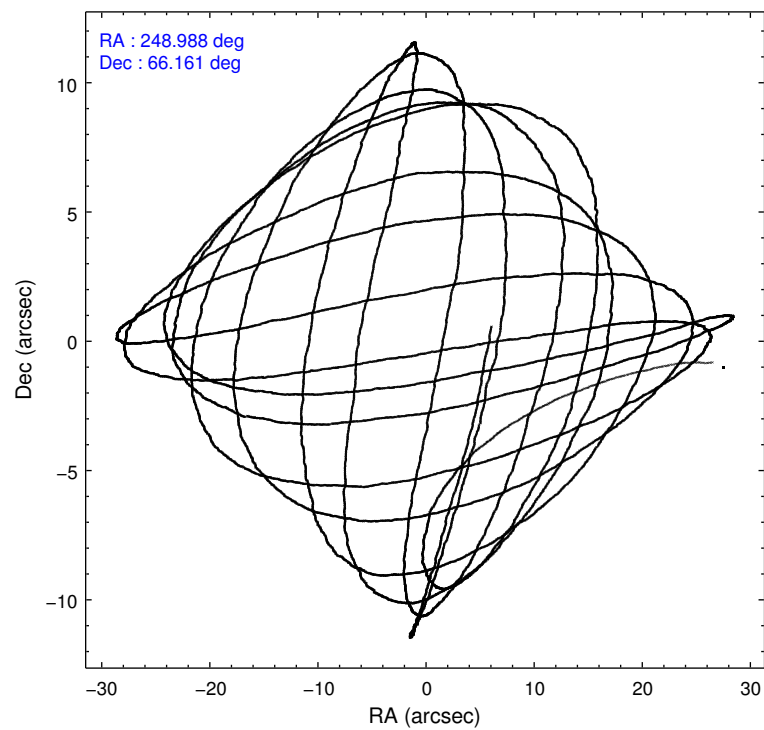
|                 | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |                | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|-----------------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|
| level 1 events  | 49870 | 49859 | 56136 | 57524 | 52490 | 56665 | grade 0 events | 1316  | 1728  | 1456  | 4811  | 1066  | 1387  |
| rejected events | 44596 | 43656 | 50737 | 46438 | 47206 | 35084 |                | 2%    | 3%    | 2%    | 8%    | 2%    | 2%    |
| rejected %      | 89%   | 87%   | 90%   | 80%   | 89%   | 61%   | grade 1 events | 14    | 14    | 19    | 27    | 12    | 36    |
|                 |       |       |       |       |       |       |                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
|                 |       |       |       |       |       |       | grade 2 events | 2001  | 2164  | 2087  | 4064  | 2078  | 4511  |
|                 |       |       |       |       |       |       |                | 4%    | 4%    | 3%    | 7%    | 3%    | 7%    |
|                 |       |       |       |       |       |       | grade 3 events | 371   | 460   | 327   | 421   | 345   | 1251  |
|                 |       |       |       |       |       |       |                | 0%    | 0%    | 0%    | 0%    | 0%    | 2%    |
|                 |       |       |       |       |       |       | grade 4 events | 397   | 437   | 346   | 379   | 351   | 1120  |
|                 |       |       |       |       |       |       |                | 0%    | 0%    | 0%    | 0%    | 0%    | 1%    |
|                 |       |       |       |       |       |       | grade 5 events | 1022  | 1049  | 907   | 1044  | 1089  | 3350  |
|                 |       |       |       |       |       |       |                | 2%    | 2%    | 1%    | 1%    | 2%    | 5%    |
|                 |       |       |       |       |       |       | grade 6 events | 1194  | 1416  | 1183  | 1414  | 1446  | 13322 |
|                 |       |       |       |       |       |       |                | 2%    | 2%    | 2%    | 2%    | 2%    | 23%   |
|                 |       |       |       |       |       |       | grade 7 events | 43555 | 42591 | 49811 | 45364 | 46103 | 31688 |
|                 |       |       |       |       |       |       |                | 87%   | 85%   | 88%   | 78%   | 87%   | 55%   |

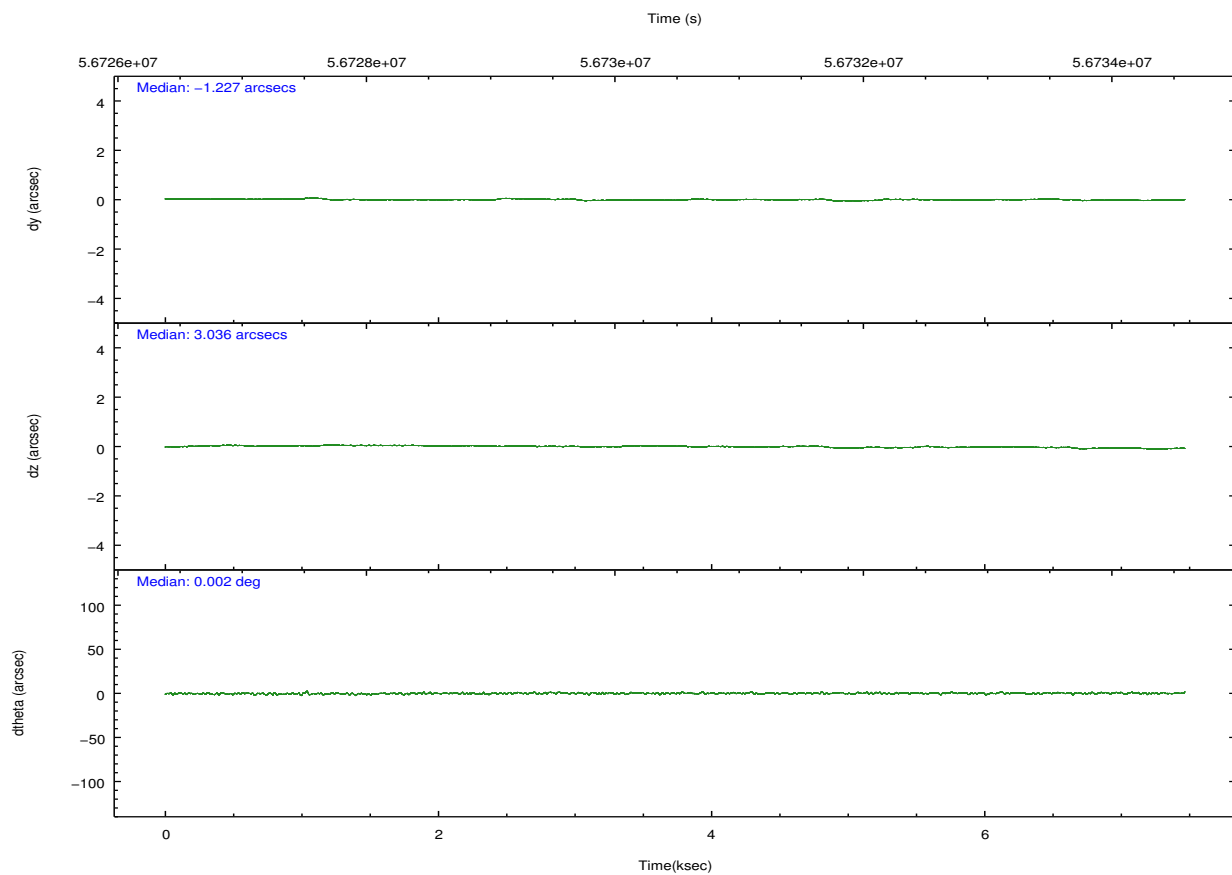
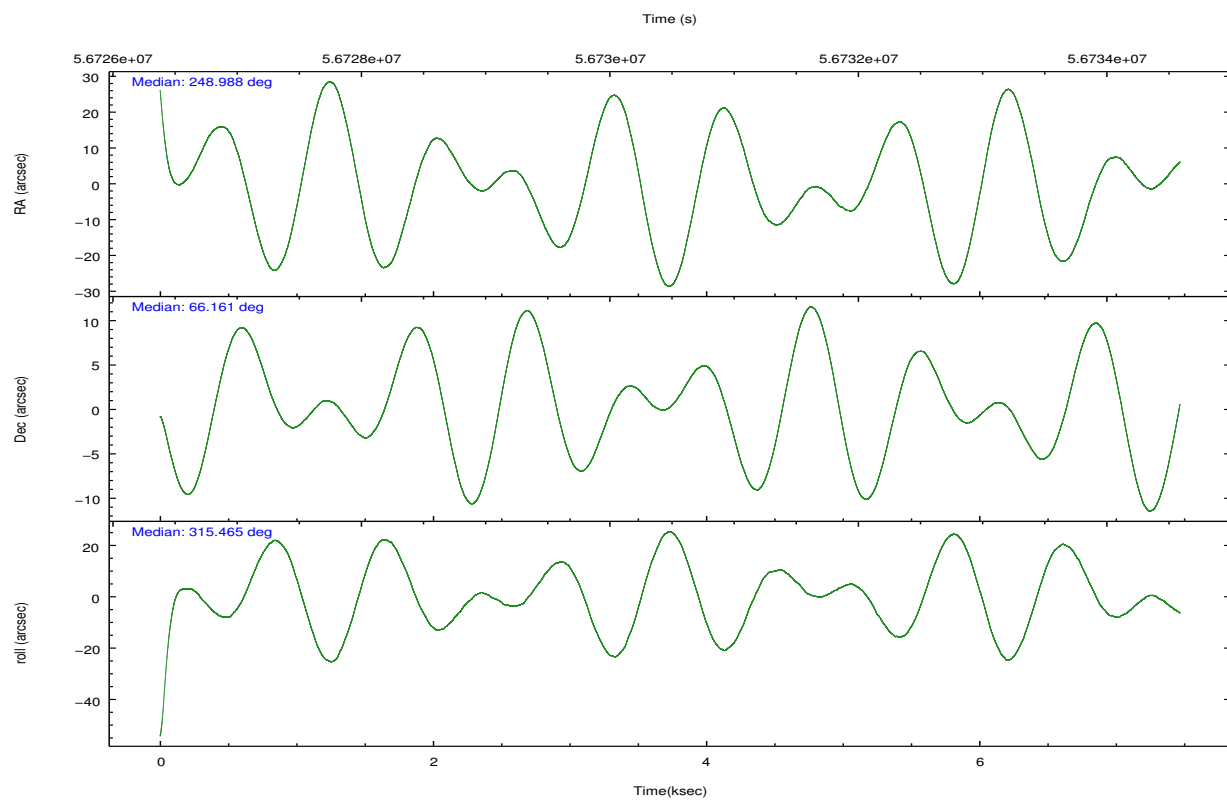


## 2.2 Compared Parameters

| Parameter                            | Planned             | Actual                | Parameter                             | Planned   | Actual  |
|--------------------------------------|---------------------|-----------------------|---------------------------------------|-----------|---------|
| Instrument                           | ACIS                | ACIS                  | Obspar format version number          | 6         | 6       |
| Detector                             | ACIS-012367         | ACIS-012367           | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                              | NONE                | NONE                  | Obspar update status                  | NONE      | UPDATED |
| Data mode                            | FAINT               | FAINT                 | Number of optional ACIS chips dropped | 0         | 0       |
| Observation mode                     | POINTING            | POINTING              | On-chip summing requested             | N         | N       |
| Pointing RA                          | 248.922585          | 248.9889787149906     | Subarray requested                    | NONE      | NONE    |
| Pointing Dec                         | 66.167812           | 66.16040131240185     | Alternating exposures requested       | N         | N       |
| Pointing Roll                        | 315.315536          | 315.4634339639362     | Primary exposure time                 | 0.000000  | 3.2     |
| Roll angle                           | 0.000000            | 0.000000              |                                       |           |         |
| Roll tolerance                       | 90.000000           | 90.000000             |                                       |           |         |
| Roll constraint allows 180D rotation | N                   | N                     |                                       |           |         |
| SIM focus pos (mm)                   | -0.782348           | -0.7809083437167272   |                                       |           |         |
| SIM defocus (mm)                     | 0                   | 0.001439871863259334  |                                       |           |         |
| SIM translation stage pos (mm)       | -233.592463         | -233.5874344608287    |                                       |           |         |
| SIM translation stage offset (mm)    | 0                   | -0.005018542100998502 |                                       |           |         |
| Observation start time               | 56727229.184000     | 56726076.105985       |                                       |           |         |
| Observation start date               | 1999-10-19T13:32:45 | 1999-10-19T13:14:36   |                                       |           |         |
| Observation end time                 | 56734149.184000     | 56734219.731279       |                                       |           |         |
| Observation end date                 | 1999-10-19T15:28:05 | 1999-10-19T15:30:19   |                                       |           |         |
| Read mode                            | TIMED               | TIMED                 |                                       |           |         |

## 2.3 Aspect



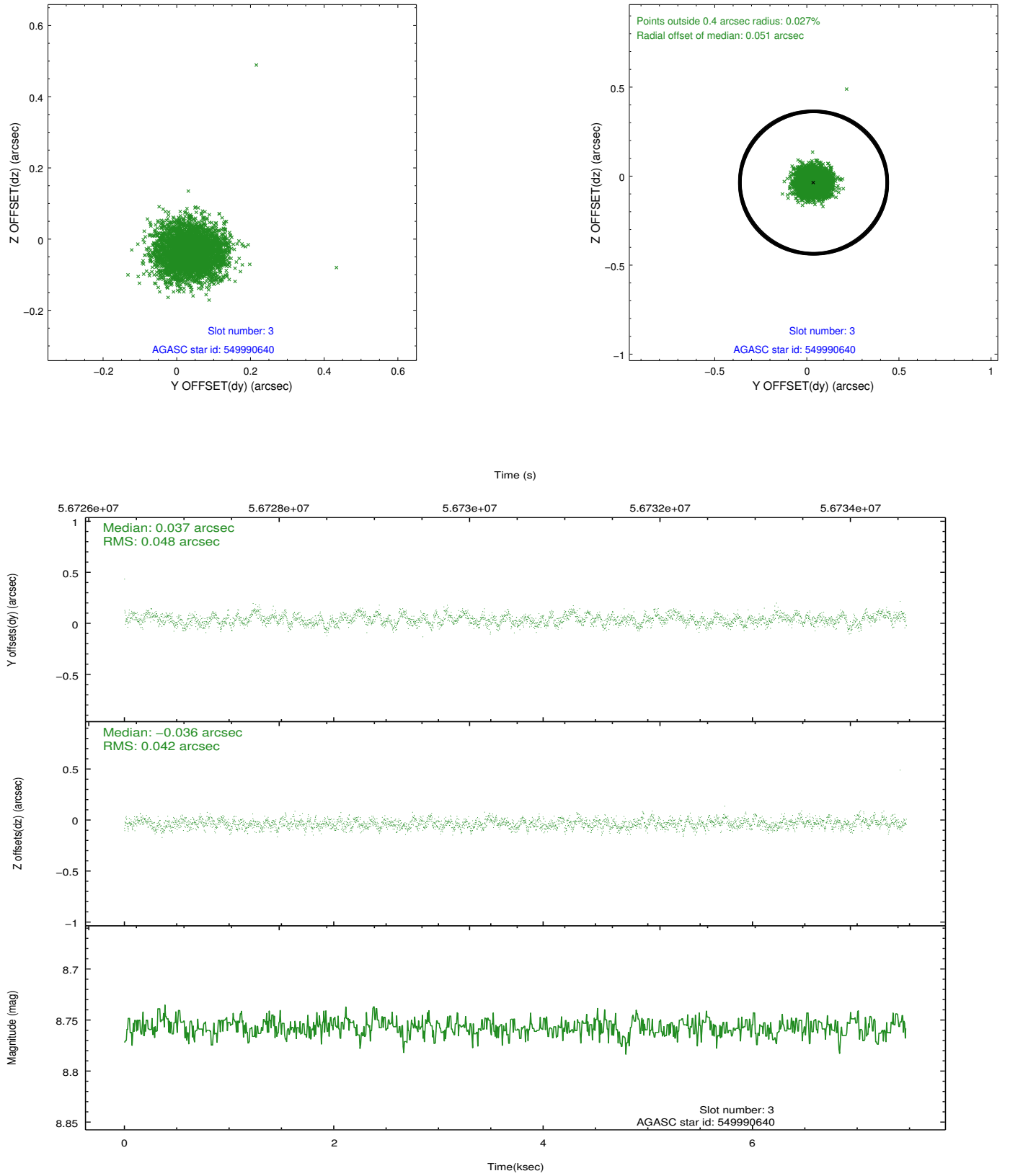


Slot Statistics

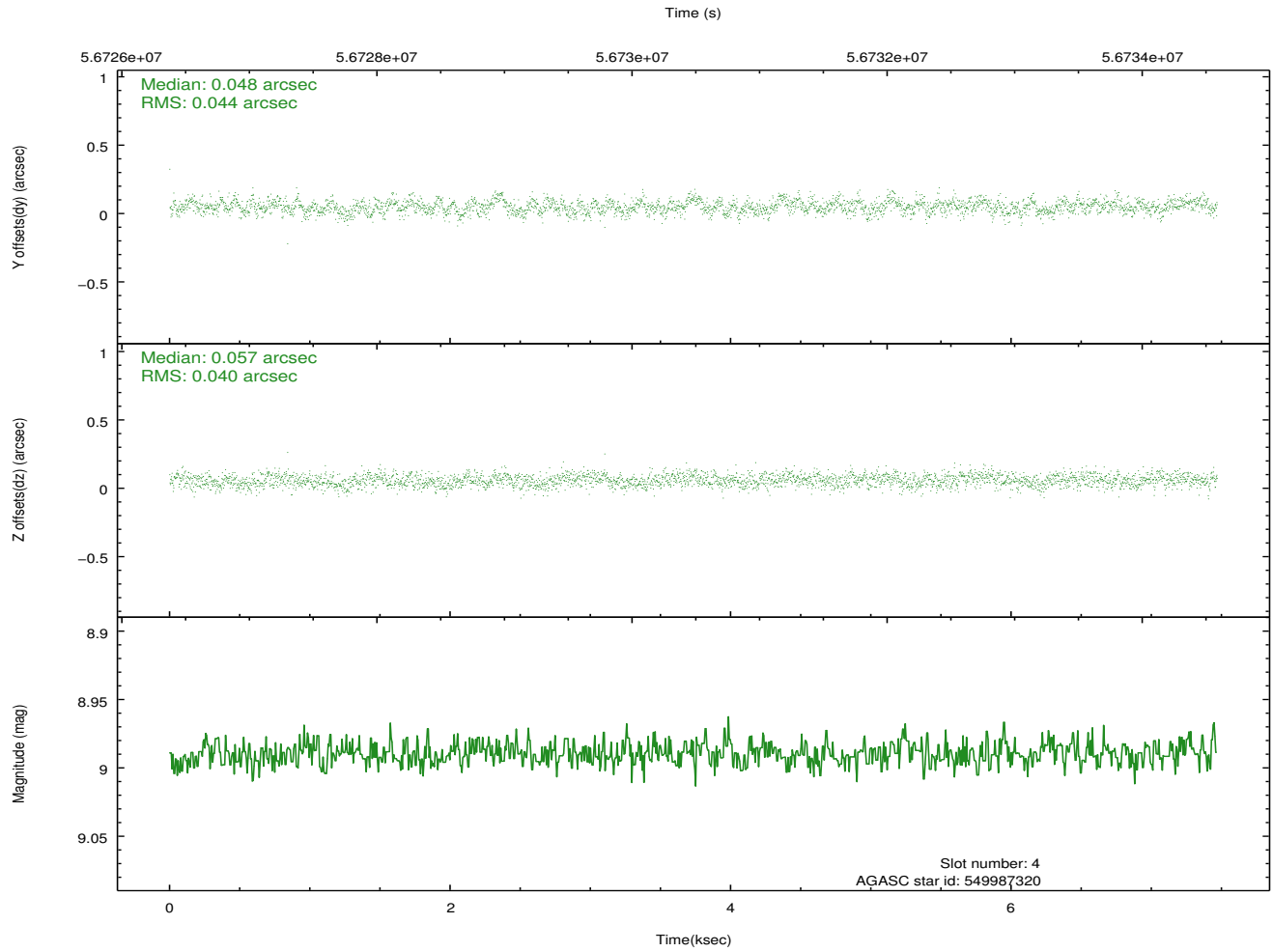
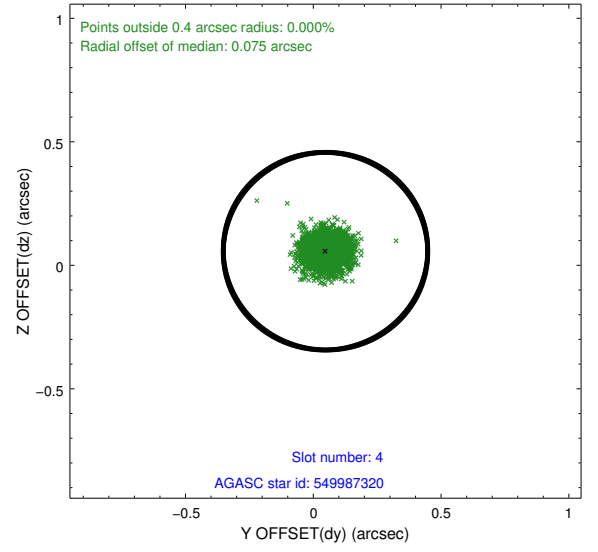
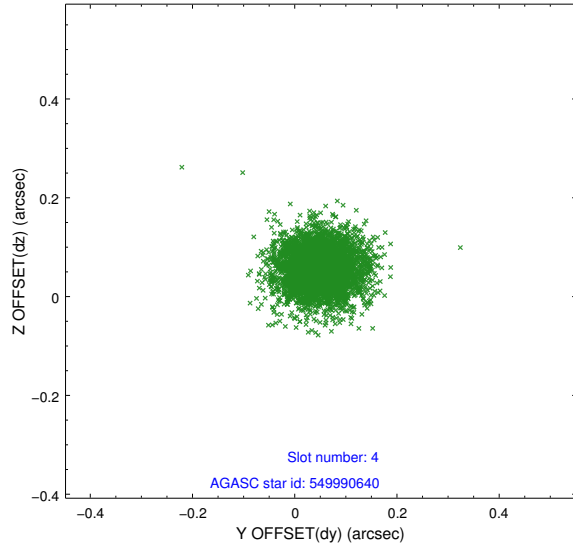
| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z  |
|------|--------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|---------|
| 0    | FID    | ACIS-I-2  | 7.20 | 3643  | -0.042 | 0.066  | 0.016 | 0.042 | 0.000000   | 0.000000  | -753.14  | -832.56 |
| 1    | FID    | ACIS-I-4  | 7.22 | 3644  | 0.110  | 0.014  | 0.018 | 0.032 | 0.000000   | 0.000000  | 2161.07  | 1073.20 |
| 2    | FID    | ACIS-I-5  | 7.23 | 3644  | -0.168 | -0.010 | 0.014 | 0.023 | 0.000000   | 0.000000  | -1806.56 | 1071.66 |
| 3    | GUIDE  | 549990640 | 8.76 | 3644  | 0.037  | -0.036 | 0.069 | 0.106 | 247.861354 | 66.249817 | -1309.09 | -863.30 |
| 4    | GUIDE  | 549987320 | 8.99 | 3644  | 0.048  | 0.057  | 0.063 | 0.103 | 248.451292 | 66.216160 | -609.41  | -356.23 |
| 5    | GUIDE  | 549988912 | 9.03 | 3642  | -0.010 | 0.036  | 0.080 | 0.122 | 248.551855 | 66.304656 | -727.46  | -26.31  |
| 6    | GUIDE  | 549990920 | 9.12 | 3643  | -0.077 | -0.004 | 0.072 | 0.114 | 249.731920 | 66.195262 | 762.61   | 902.08  |
| 7    | GUIDE  | 549992648 | 9.36 | 3641  | -0.002 | -0.051 | 0.078 | 0.123 | 249.957584 | 65.815808 | 1969.30  | 181.00  |

## 2.4 Star Slots

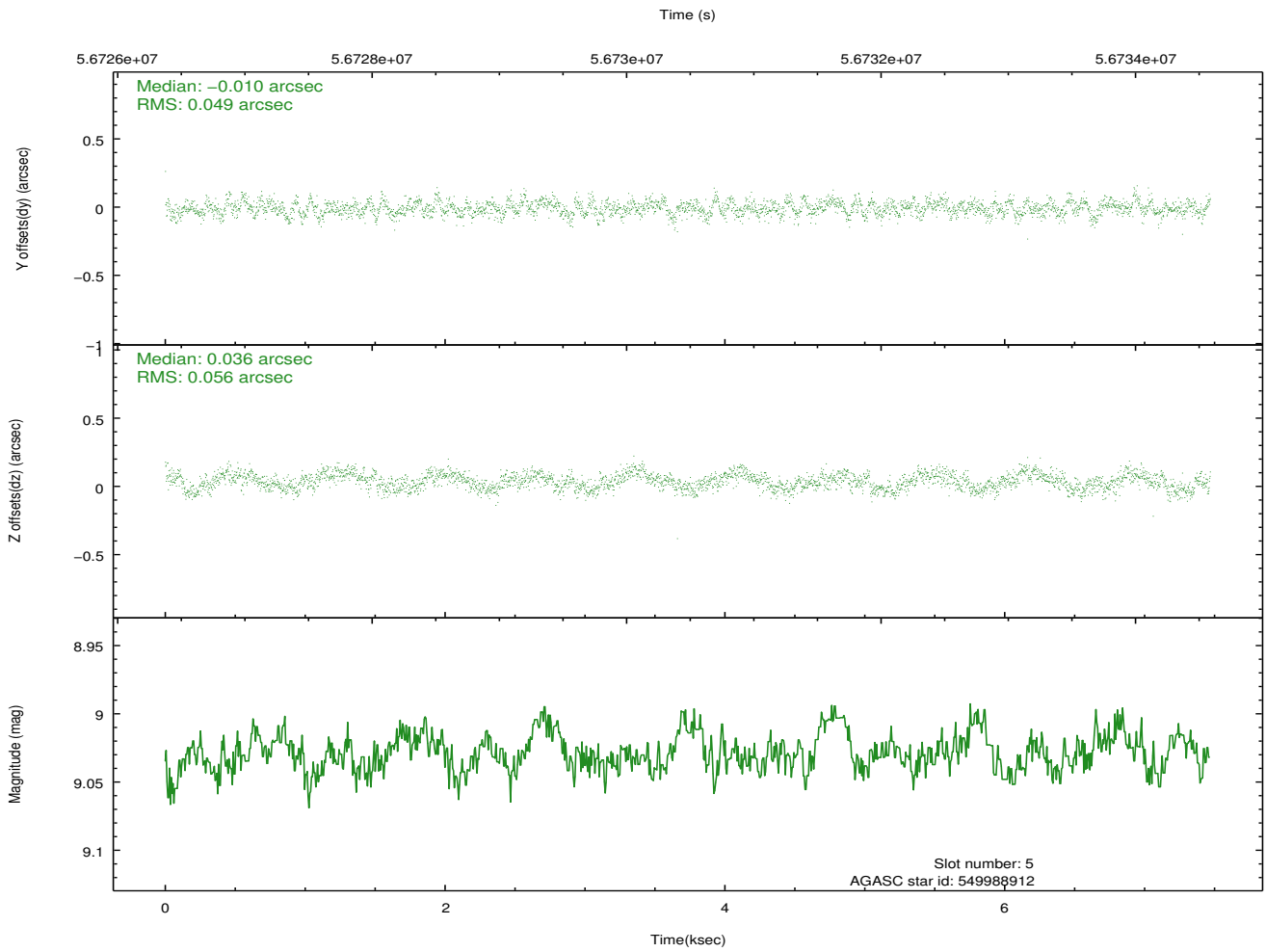
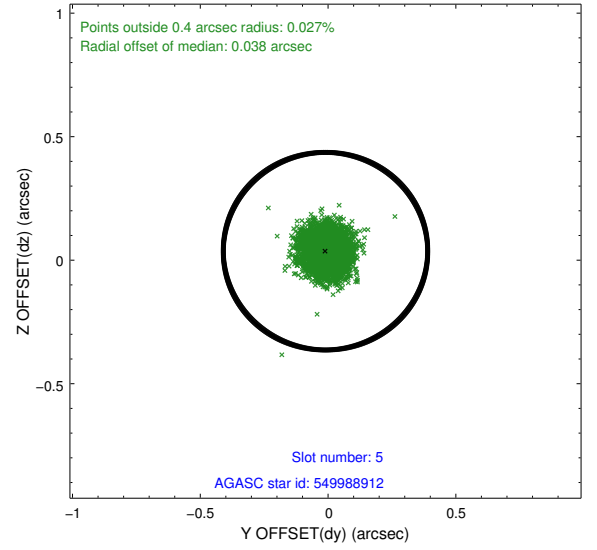
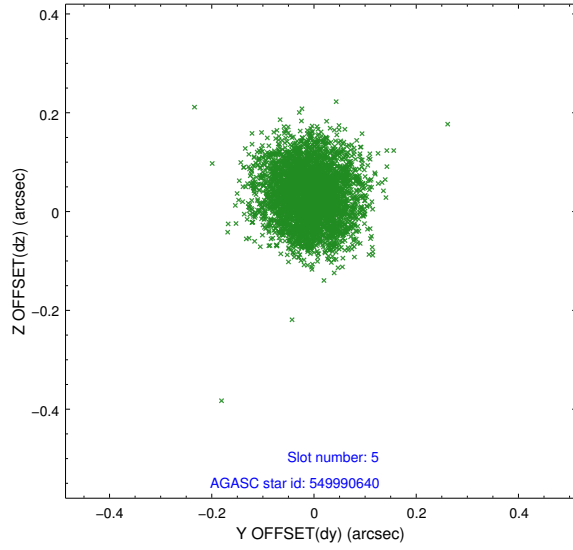
### 2.4.1 Slot 3



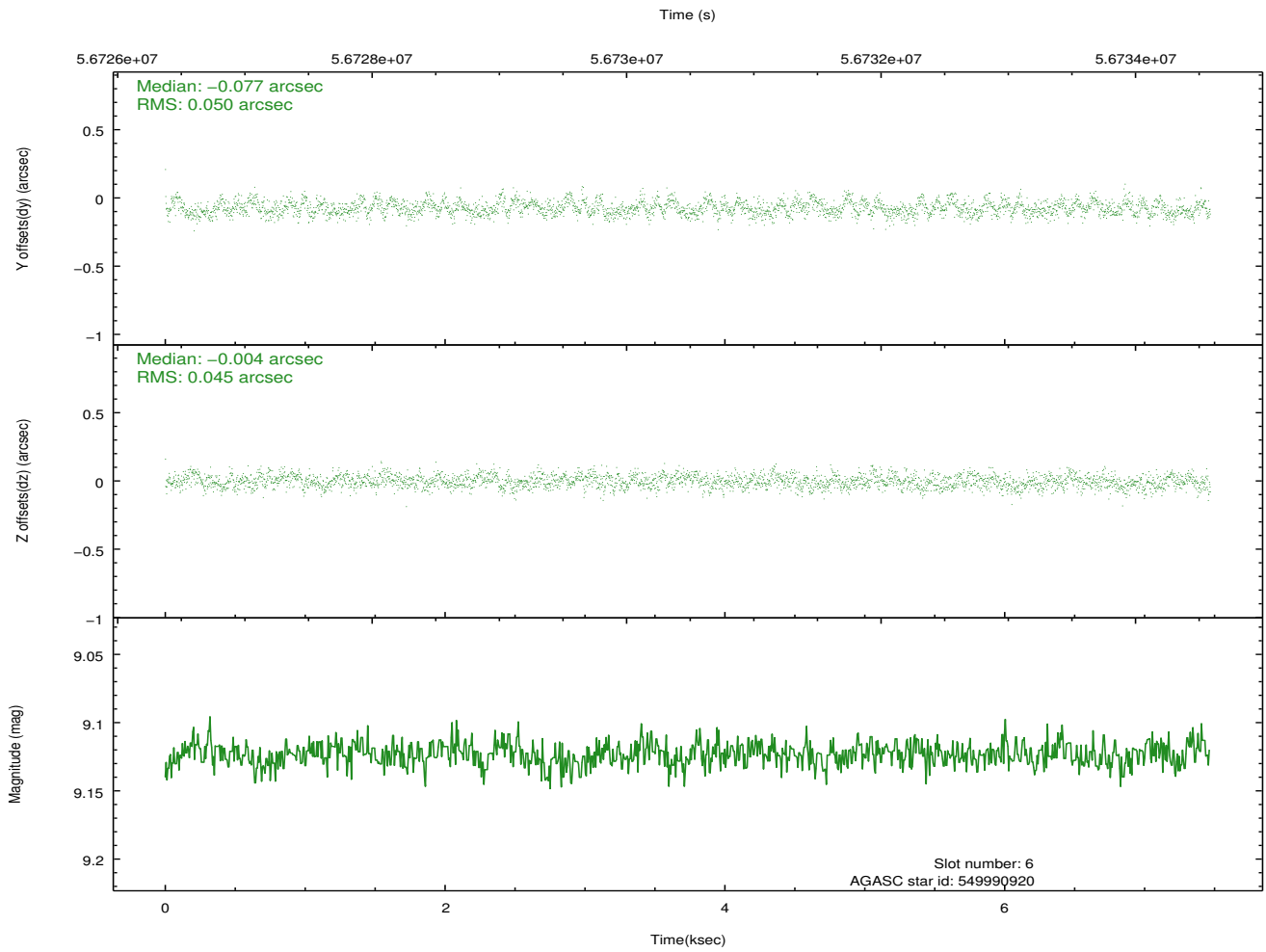
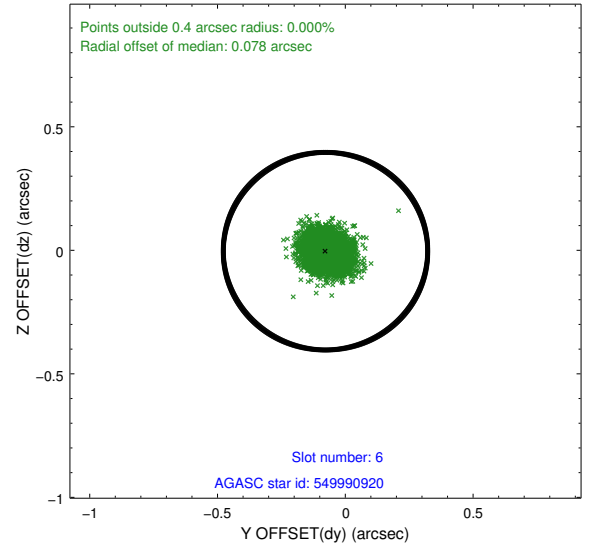
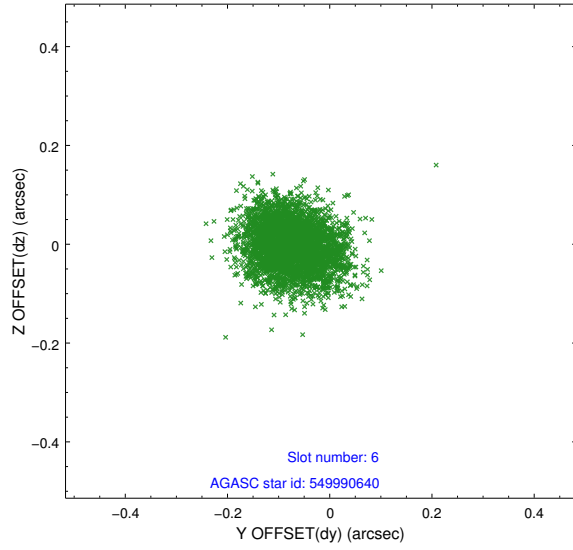
## 2.4.2 Slot 4



### 2.4.3 Slot 5

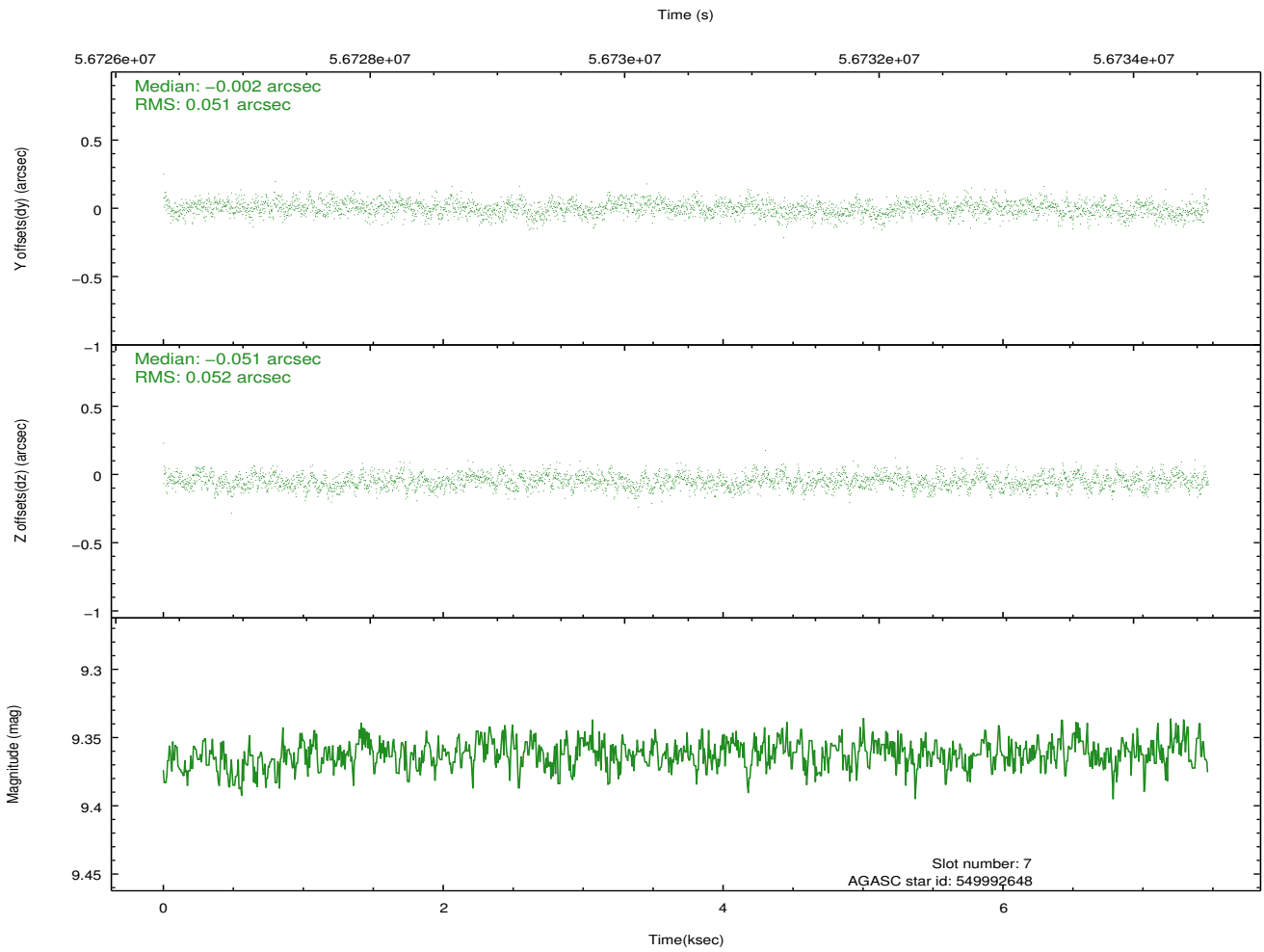
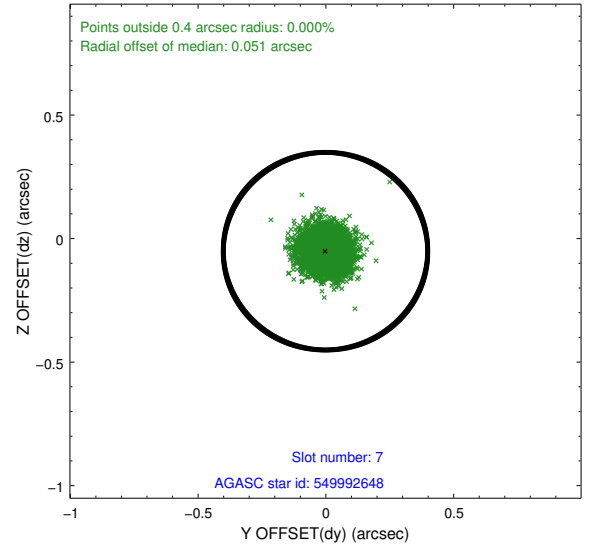
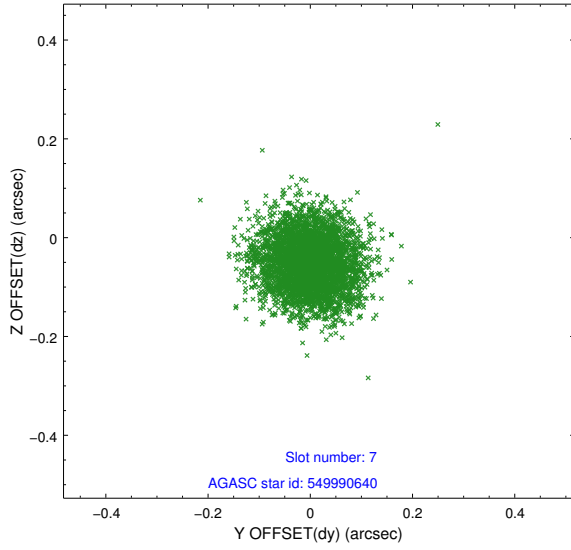


## 2.4.4 Slot 6



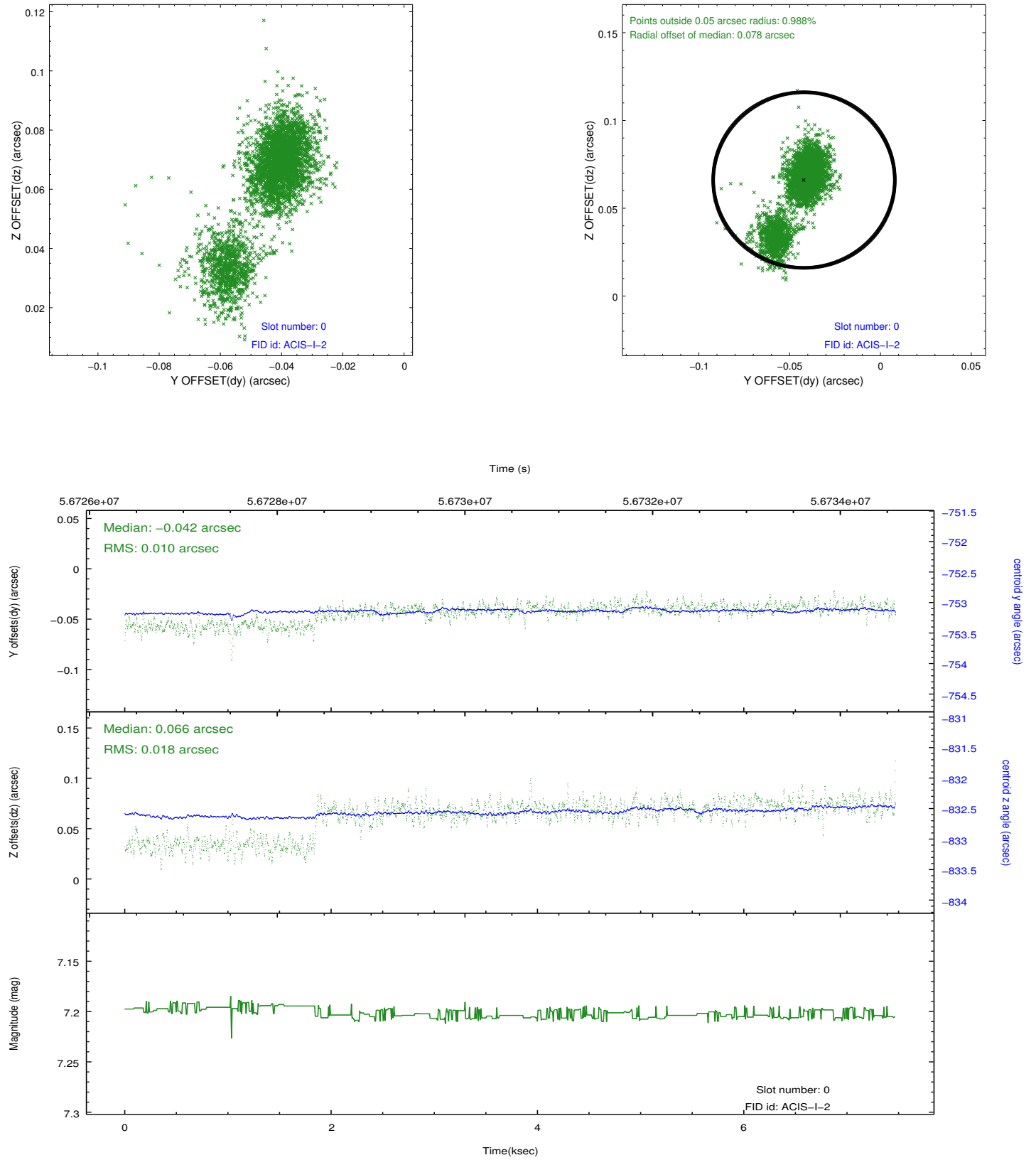


## 2.4.5 Slot 7

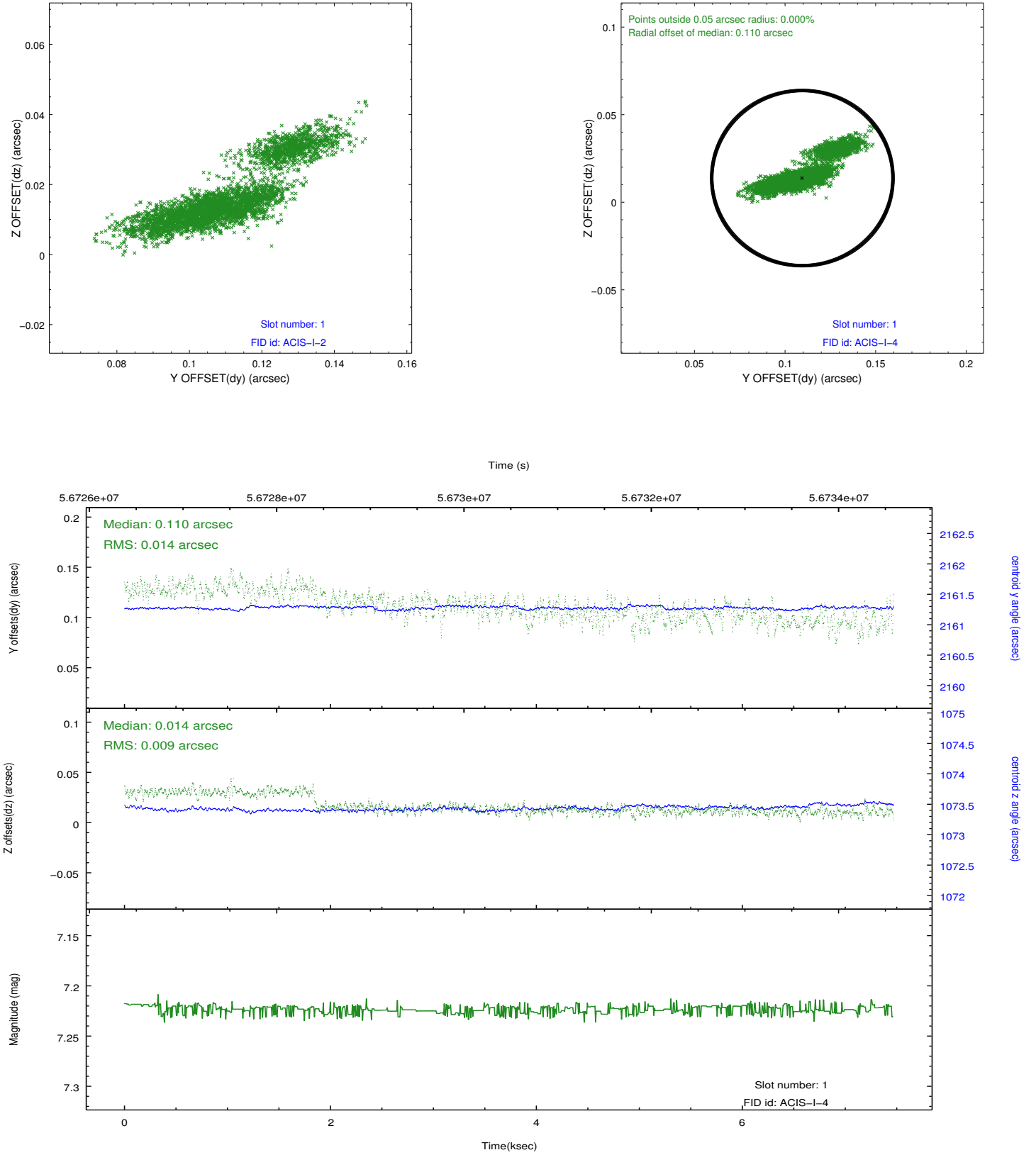


## 2.5 FID Slots

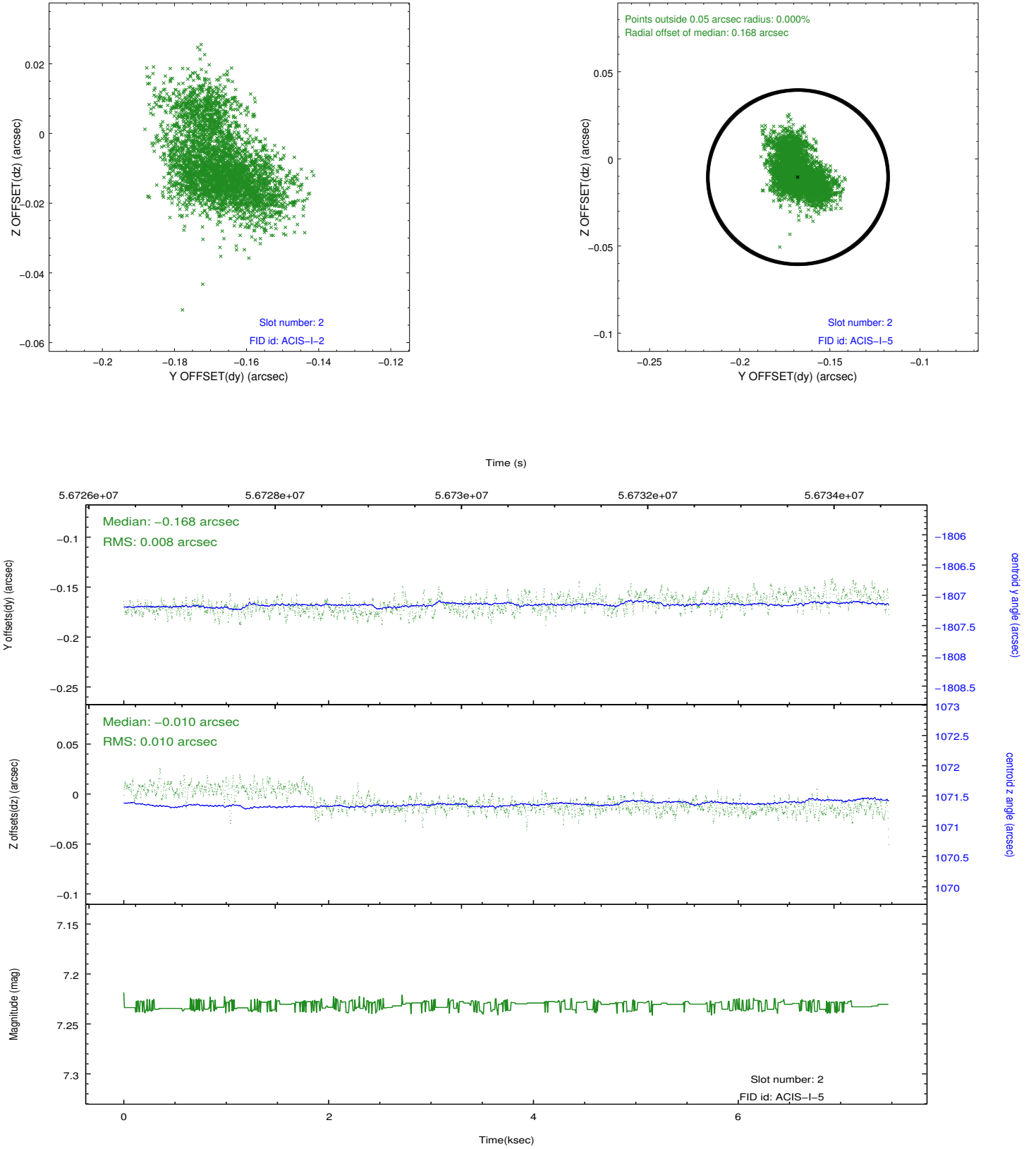
### 2.5.1 Slot 0



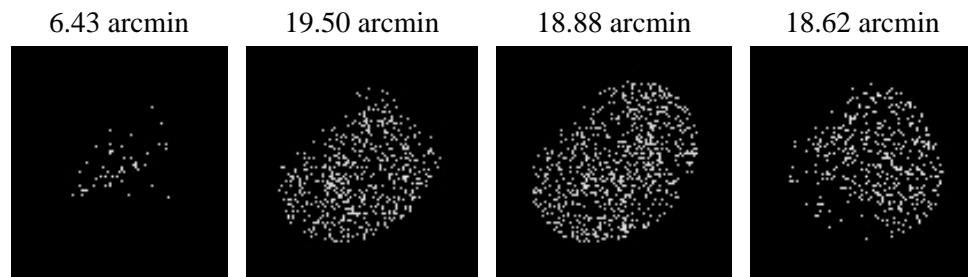
## 2.5.2 Slot 1



### 2.5.3 Slot 2



### 3 Point Sources



# A Summary

## A.1 Status

|                            |             |
|----------------------------|-------------|
| V&V Scientist              | Joy Nichols |
| V&V Date (YYYY-MM-DD)      | 2010.02.17  |
| V&V Edition                | 1           |
| V&V Disposition and Status | OK          |
| V&V Charge Time            | 5.961       |

## A.2 Comments

Roll preference met.===

The focal plane temperature is approximately -110 C during this observation. This reprocessing of the data applies no CTI correction because none is available for this temperature at present.

The ACIS CTI correction has not been calibrated at this temperature, because it was early in the mission, and ACIS had not yet been lowered to the standard -119.7 C. Both front and back illuminated chips are affected. However a T\_GAIN correction has been applied to the BI chips (ACIS-5 and ACIS-7) data included here.

The ACIS spectral response calibration is less accurate at these warmer temperatures than it is at -119.7 C. Users whose science objectives depend on the most accurate spectral response (ie: fitting line-rich spectra) may notice an effect. Users whose science objectives do not depend on the most accurate spectral response should not notice an effect.