

# V&V Reference Report

## L2 ASCDS Version : 10.9.1

Observation 4935 - L2 Version 4  
Chandra X-Ray Center

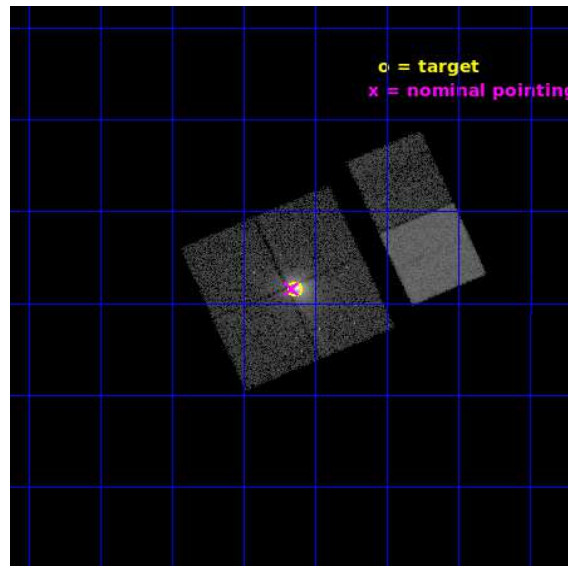
L2 Processing Date : Sep 21 2020

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# 1 Front

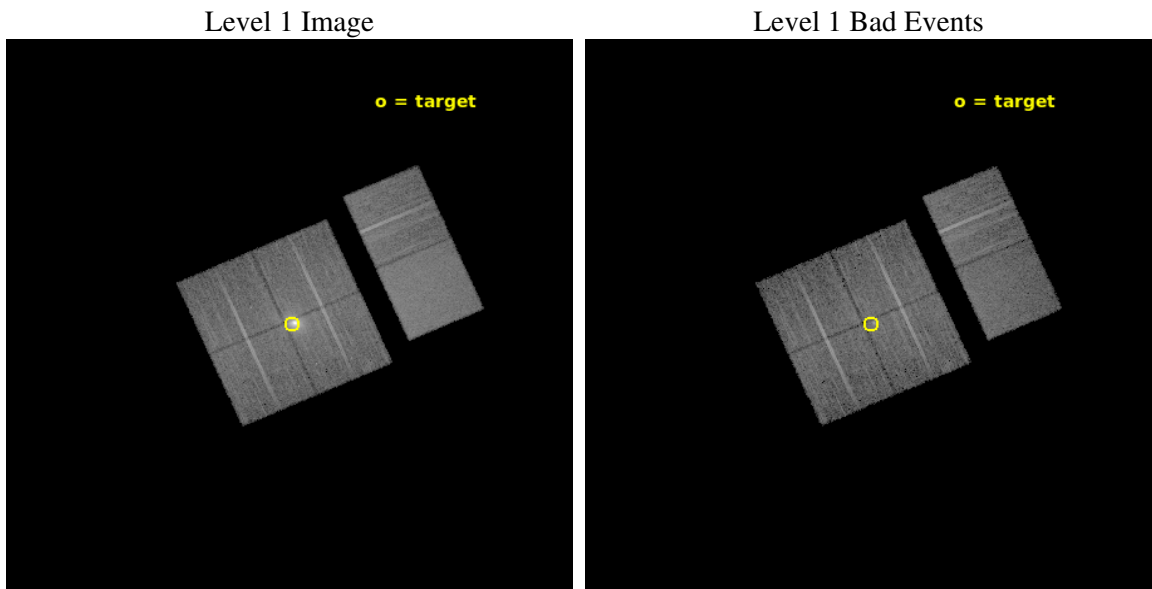
|          |   |   |
|----------|---|---|
| seq_num  | 800386  | Sequence number                             |
| obs_id   | 4935  | Observation id                              |
| title    | An X-ray Study of the extremely luminous Galaxy Cluster<br>RXCJ 1504.1-0248 | Proposal title                              |
| observer | Dr. Peter Predehl   | Principal investigator                      |
| object   | RXC J1504.1-0248  | Source name                                 |
| dtycycle | 0   | &#160                                       |
| cycle    | P   | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 226.035417  | Observer's specified target RA [deg]        |
| dec_targ | -2.806806   | Observer's specified target Dec [deg]       |
| ra_nom   | 226.04094557758   | Nominal RA [deg]                            |
| dec_nom  | -2.8067277247606  | Nominal Dec [deg]                           |
| roll_nom | 66.224528198686   | Nominal Roll [deg]                          |
| revision | 4   | Processing version of data                  |
| ontime   | 13465.599949837   | Sum of GTIs [s]                             |
| livetime | 13295.090415261   | Livetime [s]                                |
| ontime0  | 13465.599949837   | Sum of GTIs [s]                             |
| ontime1  | 13465.599949837   | Sum of GTIs [s]                             |
| ontime2  | 13465.599949837   | Sum of GTIs [s]                             |
| ontime3  | 13465.599949837   | Sum of GTIs [s]                             |
| ontime6  | 13465.599949837   | Sum of GTIs [s]                             |
| ontime7  | 13465.599949837   | Sum of GTIs [s]                             |
| l2events | 131069  | Number of level 2 events                    |



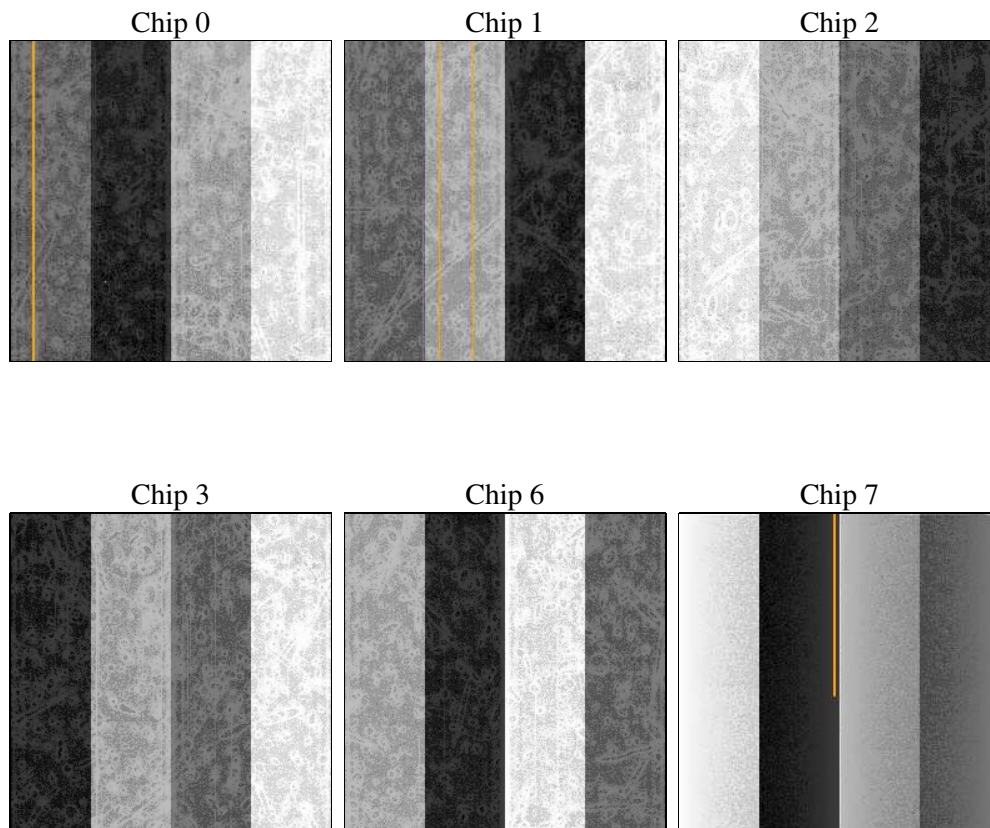
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 13500.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.9.1              | Processing system revision     | ontime         | 13465.599949837 | Sum of GTIs [s]                         |
| caldbver | 4.9.2               | &#160                          | ontime0        | 13465.599949837 | Sum of GTIs [s]                         |
| date     | 2020-09-22T01:09:08 | Date and time of file creation | ontime1        | 13465.599949837 | Sum of GTIs [s]                         |
| revision | 4                   | Processing version of data     | ontime2        | 13465.599949837 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 13465.599949837 | Sum of GTIs [s]                         |
|          |                     |                                | ontime6        | 13465.599949837 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 13465.599949837 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 537908          | Number of level 1 events                |

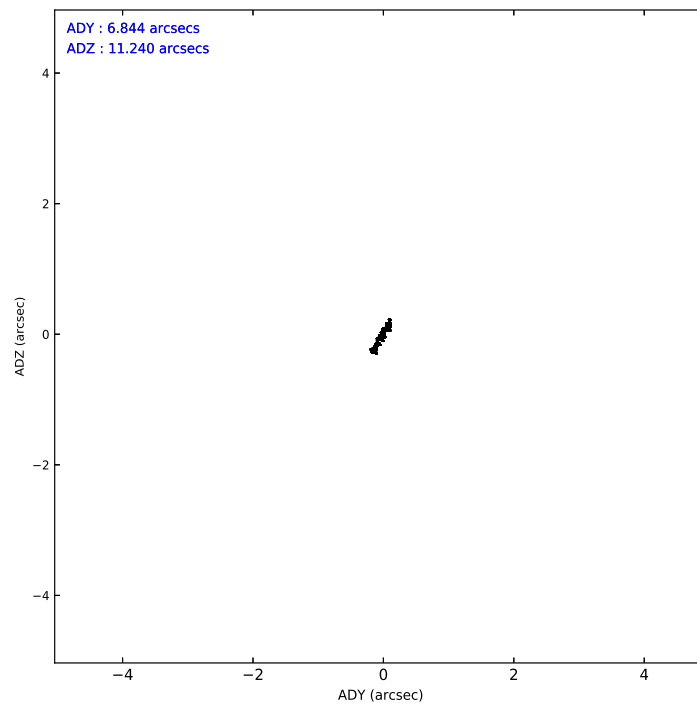
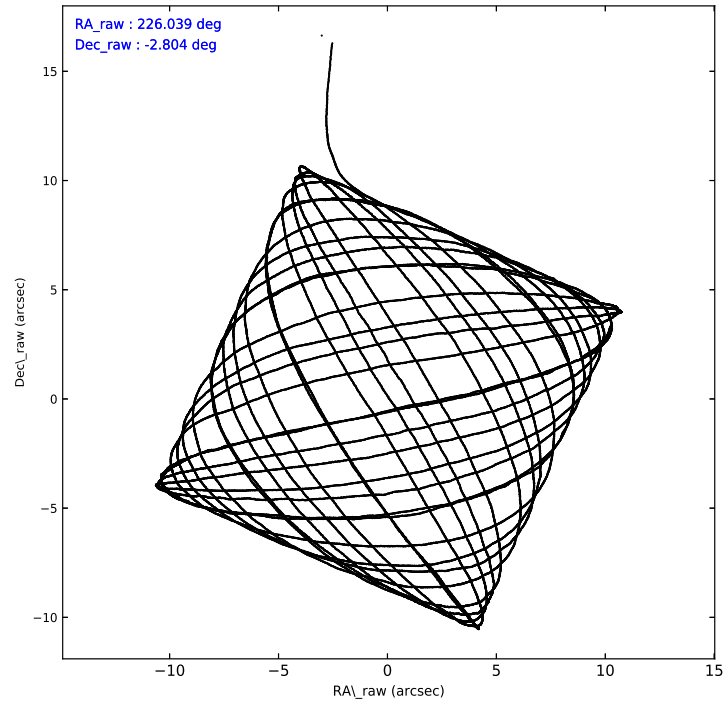
### 2.1.4 Events

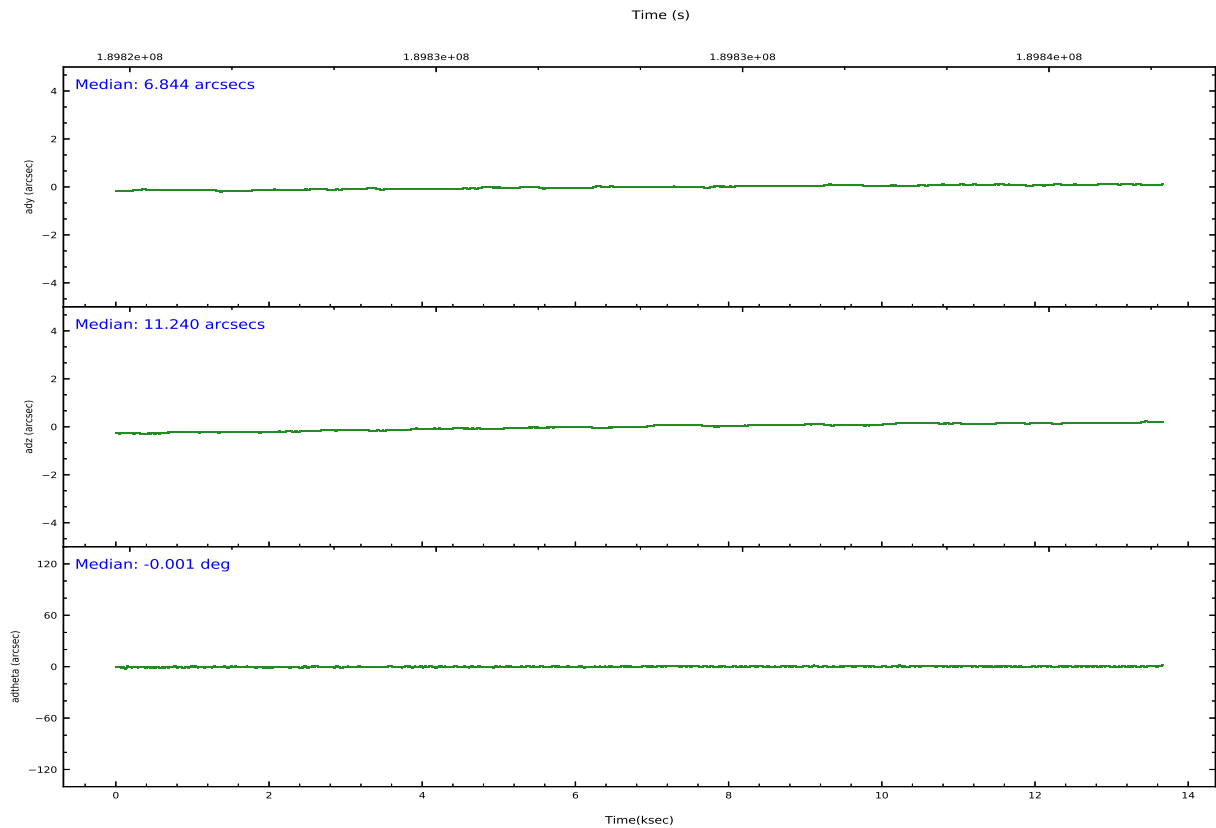
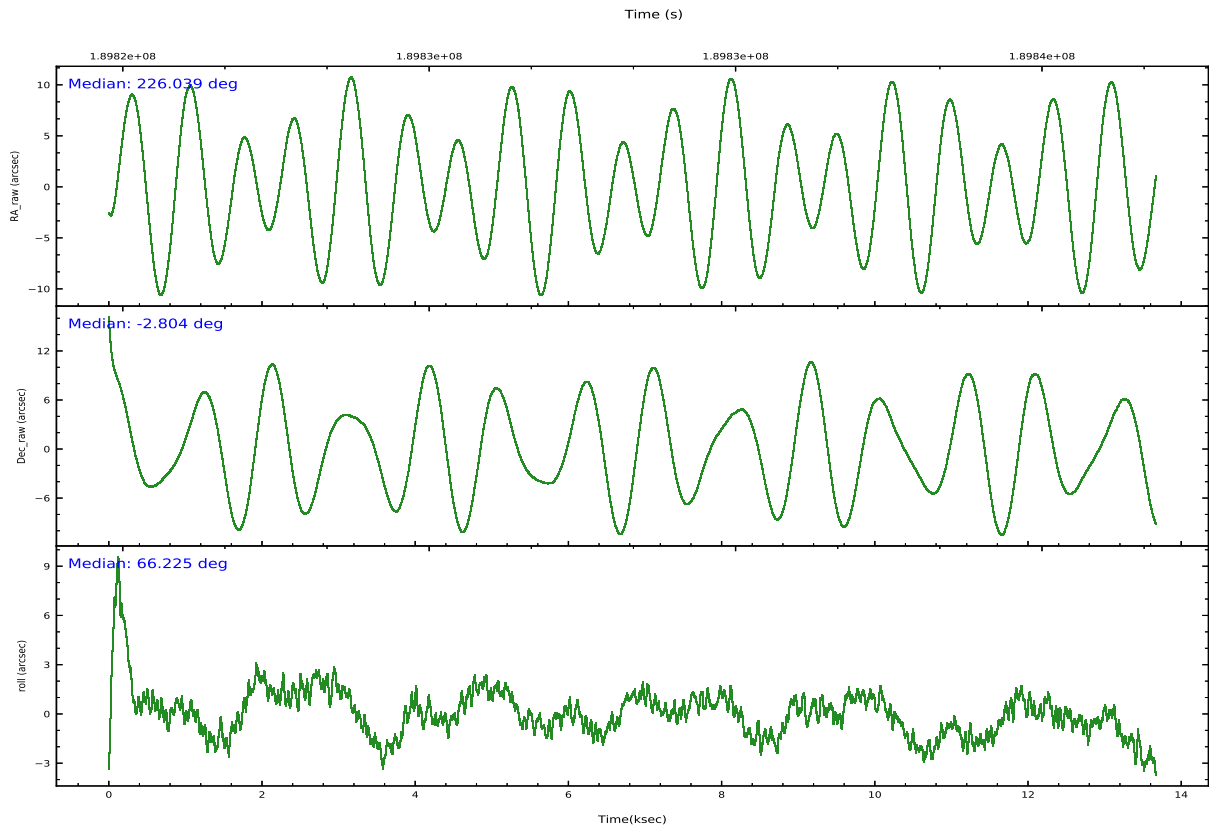
|                 | ccd 0 | ccd 1 | ccd 2 | ccd 3  | ccd 6 | ccd 7  |                | ccd 0 | ccd 1 | ccd 2 | ccd 3 | ccd 6 | ccd 7 |
|-----------------|-------|-------|-------|--------|-------|--------|----------------|-------|-------|-------|-------|-------|-------|
| level 1 events  | 72123 | 74976 | 83080 | 115327 | 83807 | 108595 | grade 0 events | 5487  | 5485  | 8002  | 33492 | 4385  | 4249  |
| rejected events | 60590 | 62811 | 68706 | 69640  | 73129 | 63109  |                | 7%    | 7%    | 9%    | 29%   | 5%    | 3%    |
| rejected %      | 84%   | 83%   | 82%   | 60%    | 87%   | 58%    | grade 1 events | 51    | 39    | 65    | 293   | 44    | 93    |
|                 |       |       |       |        |       |        |                | 0%    | 0%    | 0%    | 0%    | 0%    | 0%    |
|                 |       |       |       |        |       |        | grade 2 events | 2247  | 2487  | 2456  | 5586  | 2287  | 9006  |
|                 |       |       |       |        |       |        |                | 3%    | 3%    | 2%    | 4%    | 2%    | 8%    |
|                 |       |       |       |        |       |        | grade 3 events | 1023  | 1034  | 1016  | 2048  | 1005  | 3858  |
|                 |       |       |       |        |       |        |                | 1%    | 1%    | 1%    | 1%    | 1%    | 3%    |
|                 |       |       |       |        |       |        | grade 4 events | 948   | 1019  | 1091  | 1935  | 947   | 4035  |
|                 |       |       |       |        |       |        |                | 1%    | 1%    | 1%    | 1%    | 1%    | 3%    |
|                 |       |       |       |        |       |        | grade 5 events | 3317  | 3528  | 3223  | 3848  | 3768  | 10310 |
|                 |       |       |       |        |       |        |                | 4%    | 4%    | 3%    | 3%    | 4%    | 9%    |
|                 |       |       |       |        |       |        | grade 6 events | 1829  | 2141  | 1812  | 2636  | 2056  | 24350 |
|                 |       |       |       |        |       |        |                | 2%    | 2%    | 2%    | 2%    | 2%    | 22%   |
|                 |       |       |       |        |       |        | grade 7 events | 57221 | 59243 | 65415 | 65489 | 69315 | 52694 |
|                 |       |       |       |        |       |        |                | 79%   | 79%   | 78%   | 56%   | 82%   | 48%   |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual                | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|-----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                  | Obspar version number                 | 8         | 8       |
| 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       |
| [deg] Pointing RA                 | 226.041884          | 226.04094557758       | Subarray requested                    | NONE      | NONE    |
| [deg] Pointing Dec                | -2.830841           | -2.8067277247606      | Alternating exposures requested       | N         | N       |
| [deg] Pointing Roll               | 66.021334           | 66.224528198686       | [s] Primary exposure time             | 0.000000  | 3.2     |
| [mm] SIM focus pos                | -0.782348           | -0.7809083437167272   |                                       |           |         |
| [mm] SIM defocus                  | 0                   | 0.001439871863259334  |                                       |           |         |
| [mm] SIM translation stage pos    | -233.592463         | -233.5874344608287    |                                       |           |         |
| [mm] SIM translation stage offset | 0                   | -0.005018542100998502 |                                       |           |         |
| [s] Observation start time (MET)  | 189823990.184000    | 189823025.8956        |                                       |           |         |
| Observation start date            | 2004-01-07T00:52:06 | 2004-01-07T00:37:05   |                                       |           |         |
| [s] Observation end time (MET)    | 189837490.184000    | 189839158.8838        |                                       |           |         |
| Observation end date              | 2004-01-07T04:37:06 | 2004-01-07T05:05:58   |                                       |           |         |
| Read mode                         | TIMED               | TIMED                 |                                       |           |         |

## 2.3 Aspect





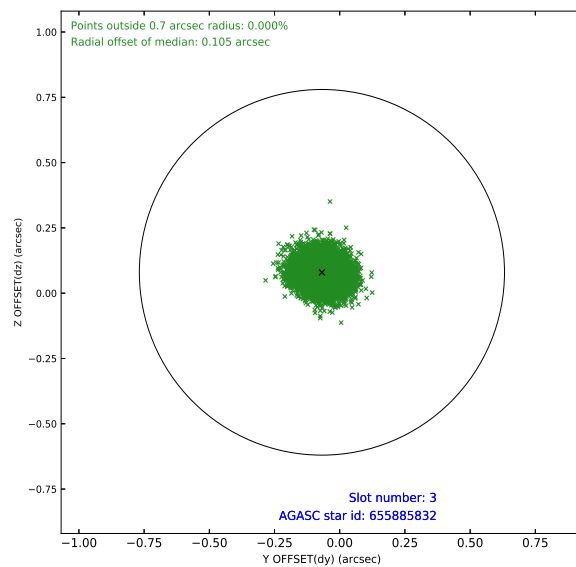
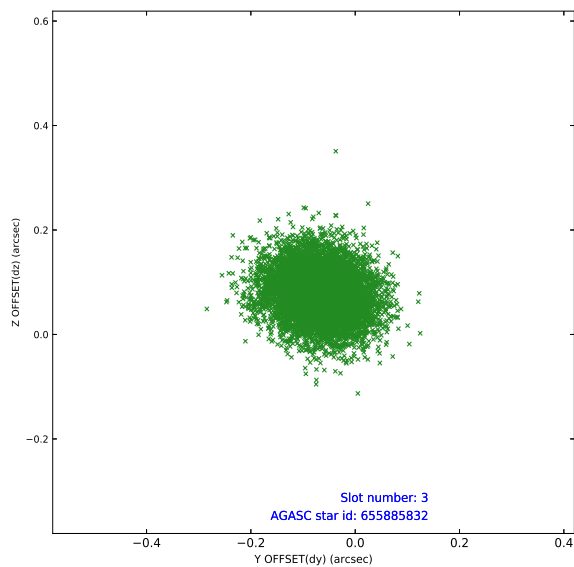
### Slot Statistics

| pt | status | used | id        | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mea  |
|----|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|------|
| 0  | FID    |      | ACIS-I-1  | 7.24 | 3335  | 1.000    | 0.035  | -0.028 | 0.007 | 0.013 | 0.000000   | 0.000000  | 932.88   | -834 |
| 1  | FID    |      | ACIS-I-5  | 7.23 | 3334  | 1.000    | -0.175 | 0.045  | 0.007 | 0.012 | 0.000000   | 0.000000  | -1815.22 | 1062 |
| 2  | FID    |      | ACIS-I-6  | 7.25 | 3335  | 1.000    | 0.049  | 0.054  | 0.007 | 0.012 | 0.000000   | 0.000000  | 398.09   | 1707 |
| 3  | GUIDE  | used | 655885832 | 9.35 | 6669  | 1.000    | -0.068 | 0.080  | 0.076 | 0.122 | 226.255485 | -2.527966 | 1308.46  | -258 |
| 4  | GUIDE  | used | 655887528 | 8.19 | 6669  | 1.000    | -0.042 | -0.097 | 0.057 | 0.089 | 225.707931 | -2.599687 | 272.06   | 1435 |
| 5  | GUIDE  | used | 655887976 | 8.61 | 6670  | 1.000    | 0.218  | -0.055 | 0.065 | 0.108 | 225.483318 | -3.038087 | -1498.10 | 1531 |
| 6  | GUIDE  | used | 655888504 | 9.27 | 6667  | 1.000    | -0.139 | 0.104  | 0.085 | 0.142 | 226.393678 | -2.410162 | 1897.55  | -540 |
| 7  | GUIDE  | used | 655891488 | 6.96 | 6670  | 1.000    | 0.029  | -0.034 | 0.057 | 0.097 | 225.686953 | -3.031386 | -1178.19 | 872  |

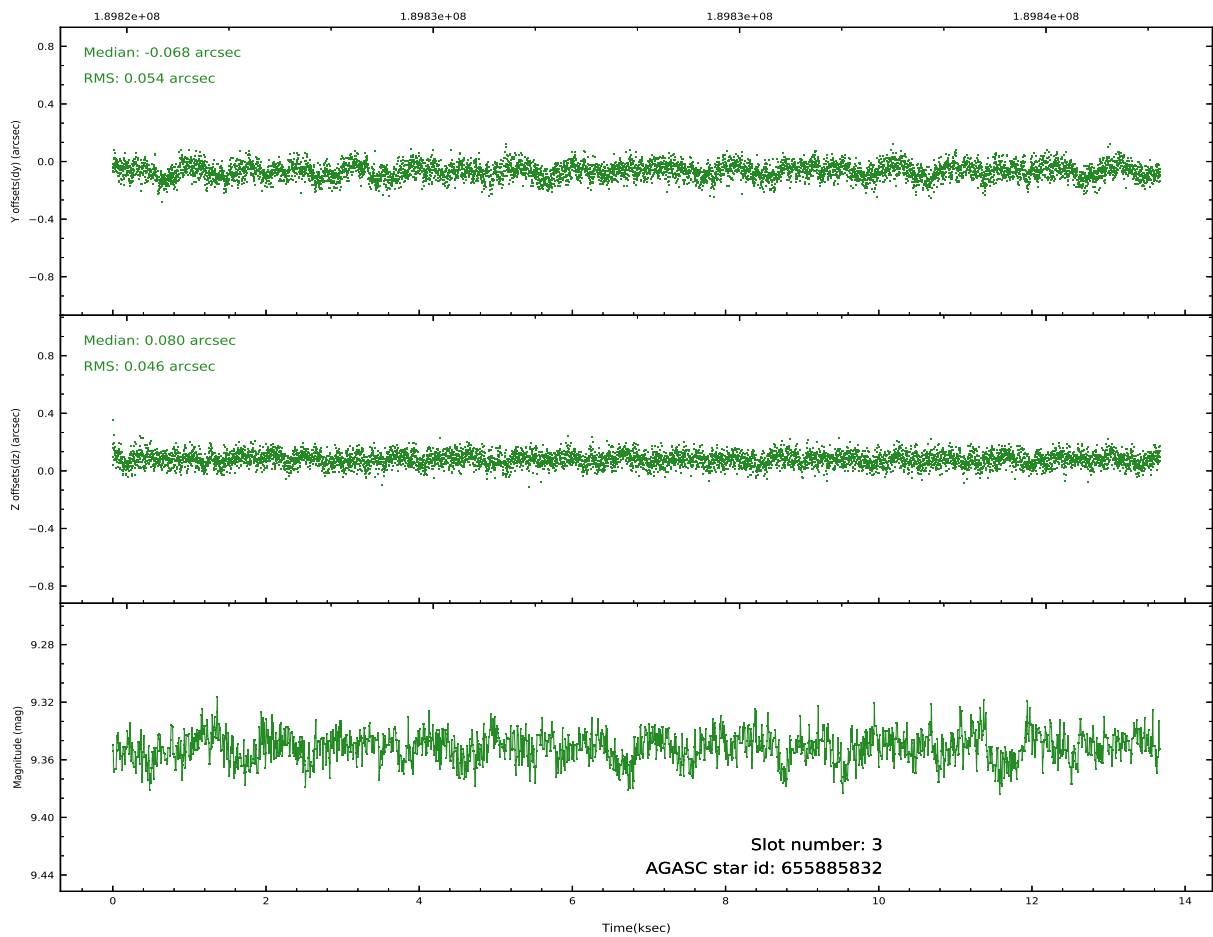
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## 2.4 Star Slots

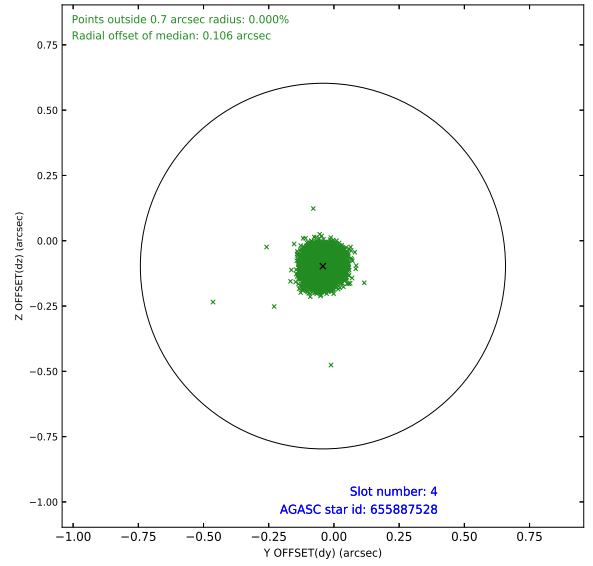
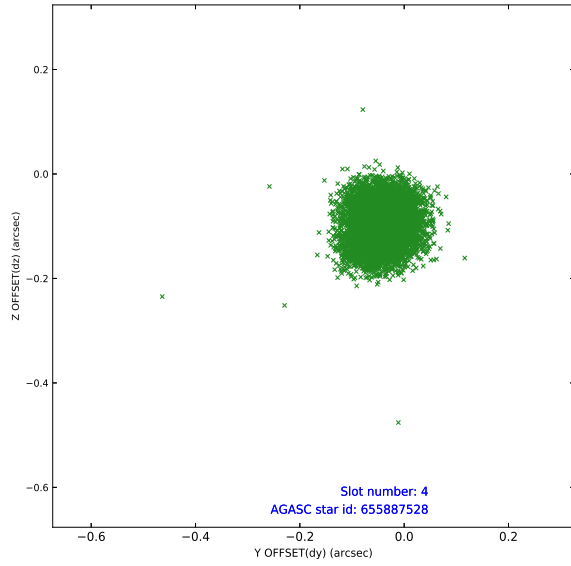
### 2.4.1 Slot 3



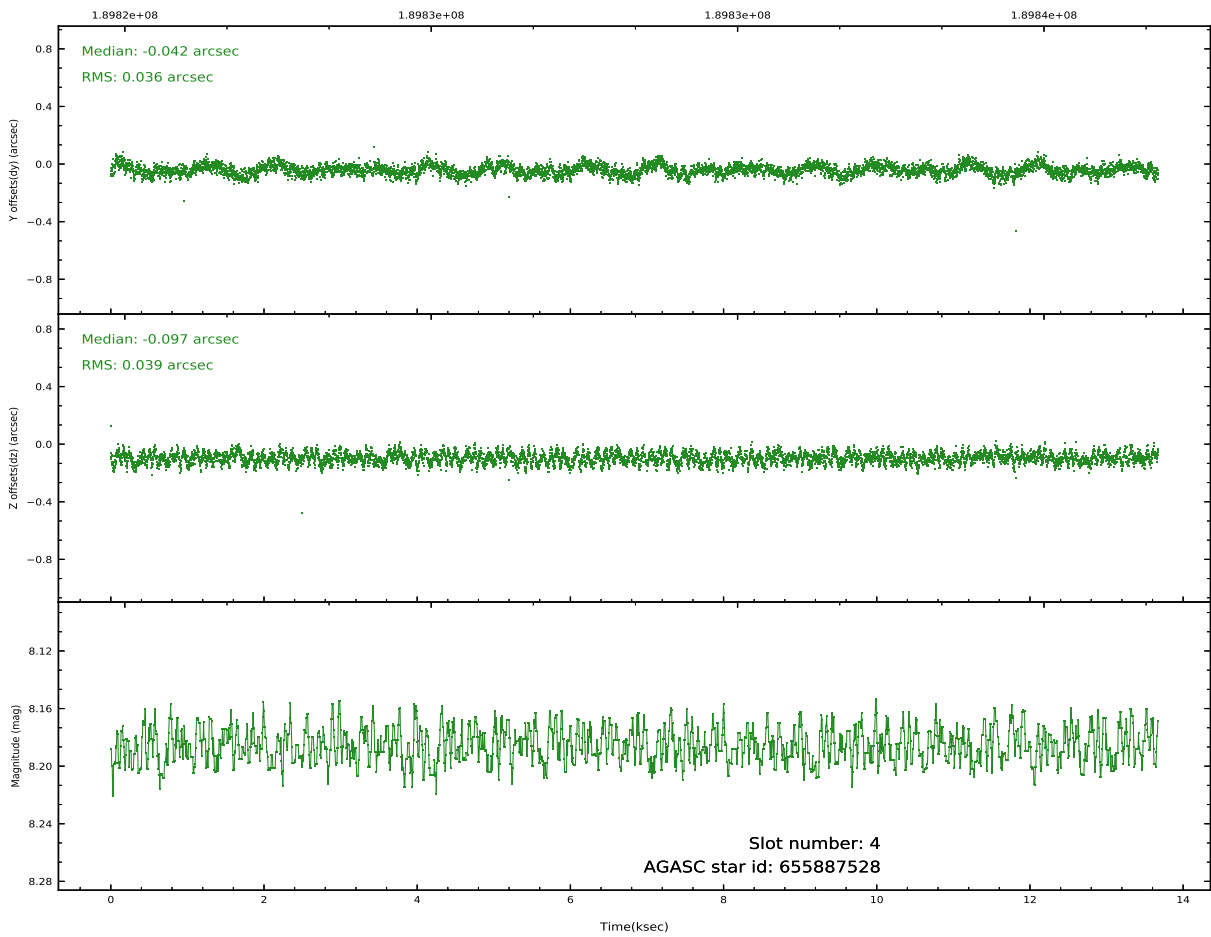
Time (s)



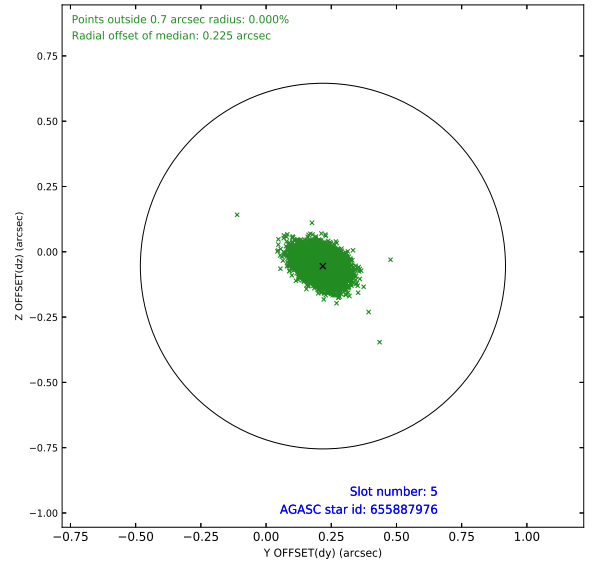
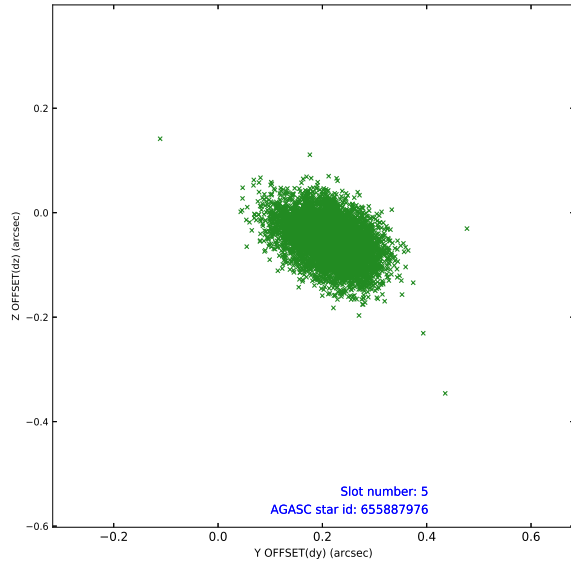
## 2.4.2 Slot 4



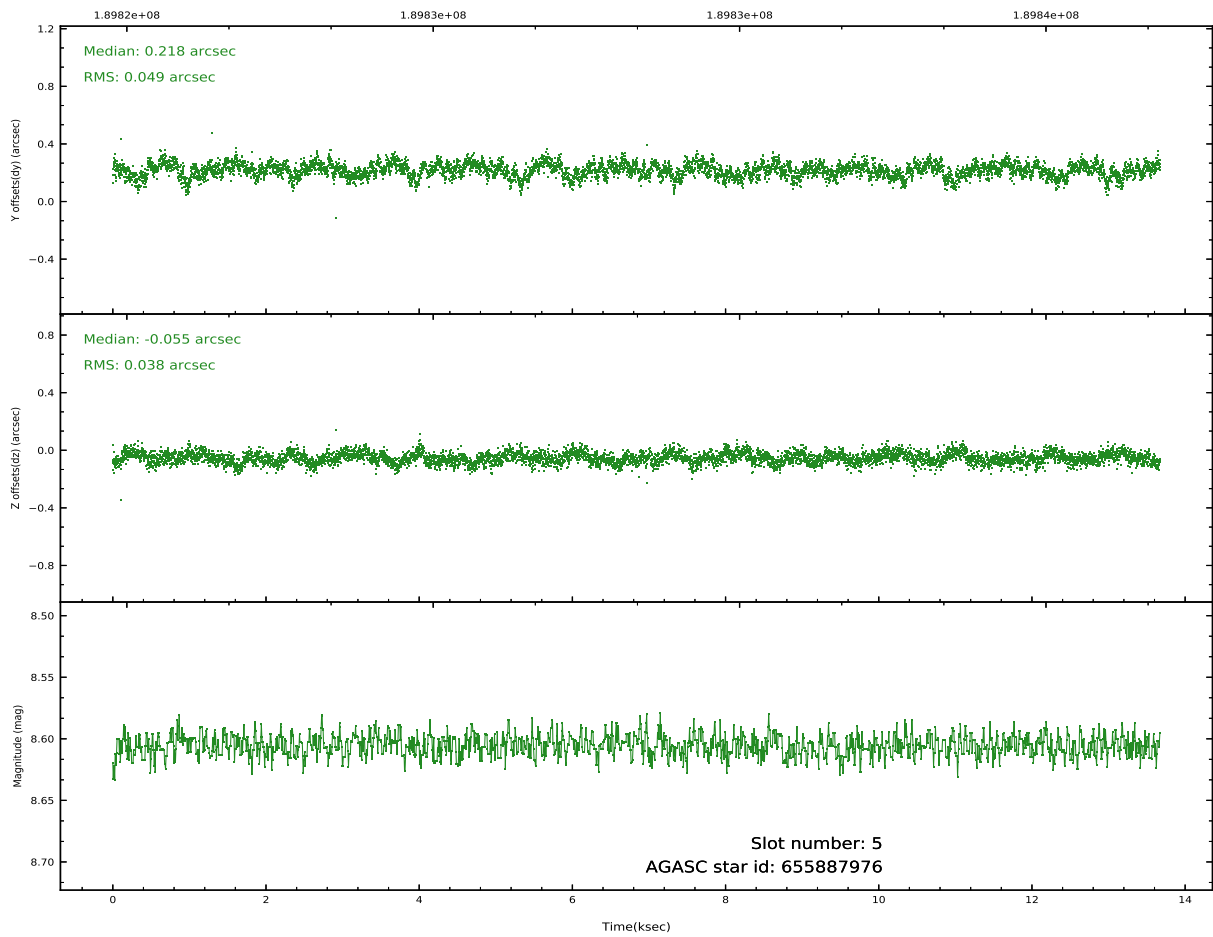
Time (s)



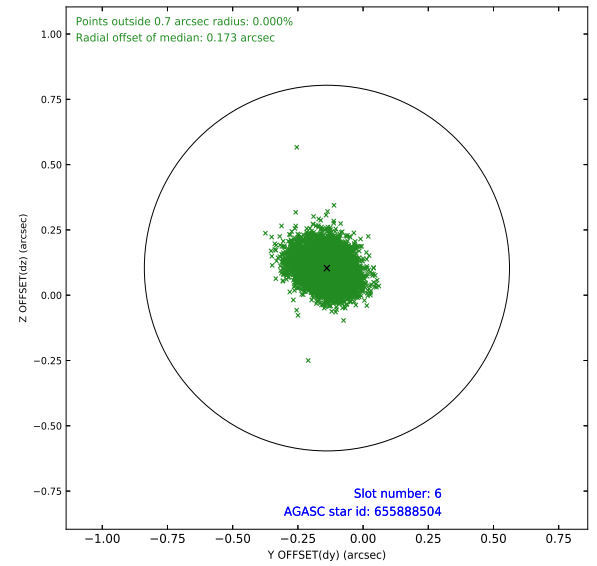
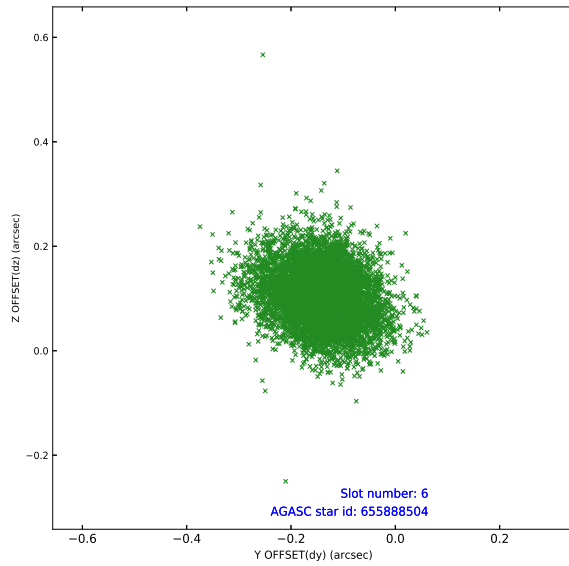
### 2.4.3 Slot 5



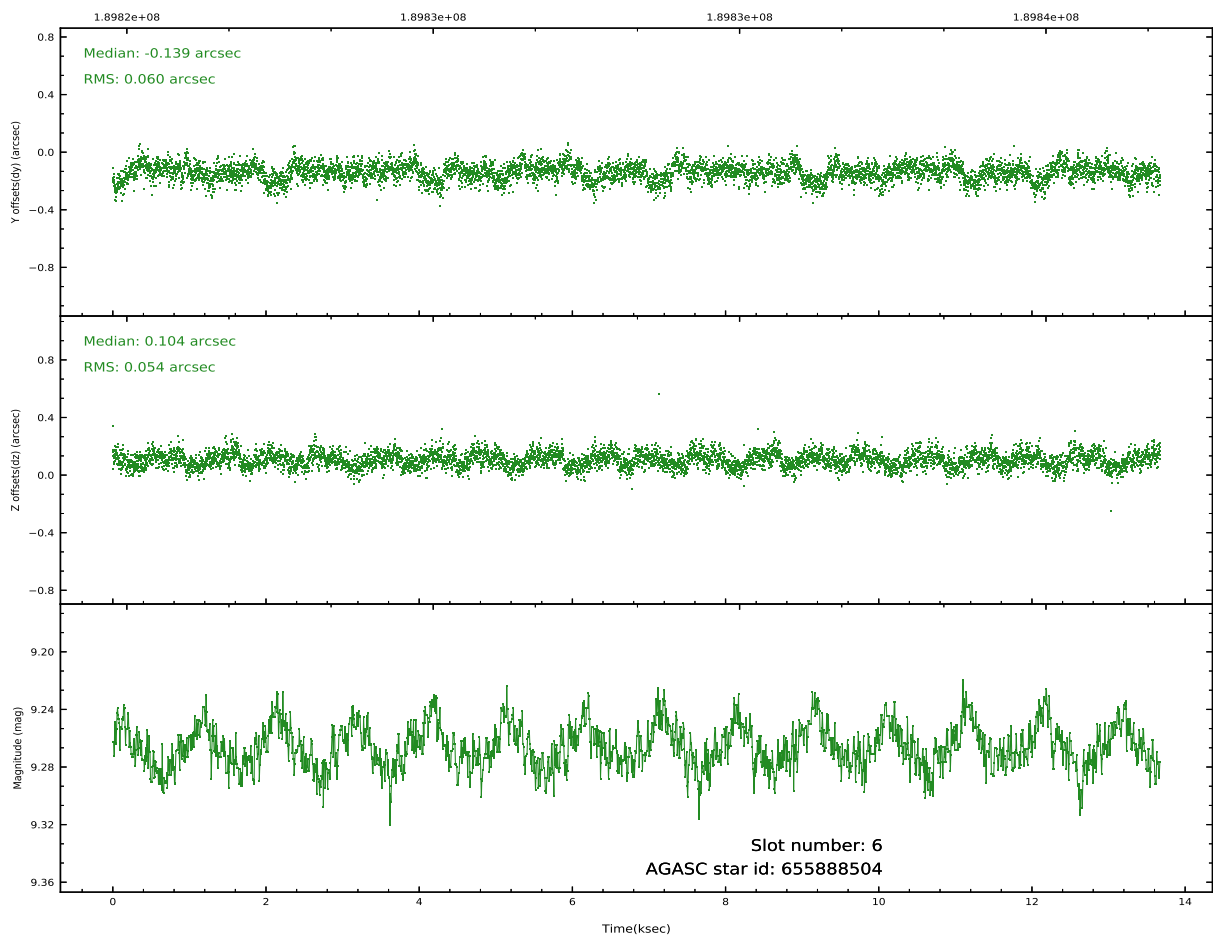
Time (s)



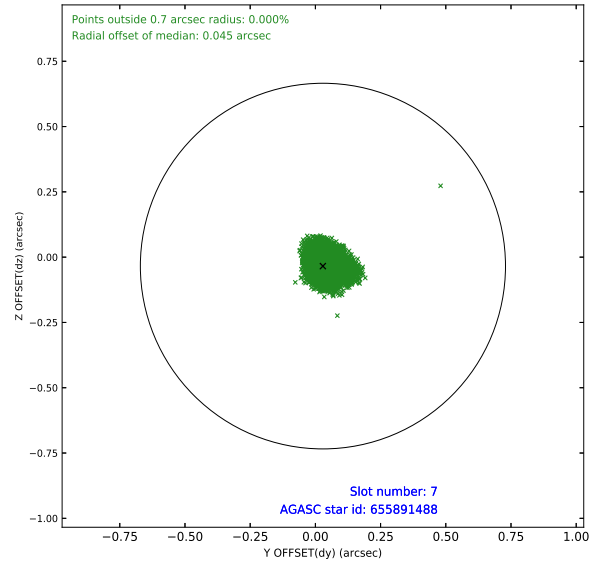
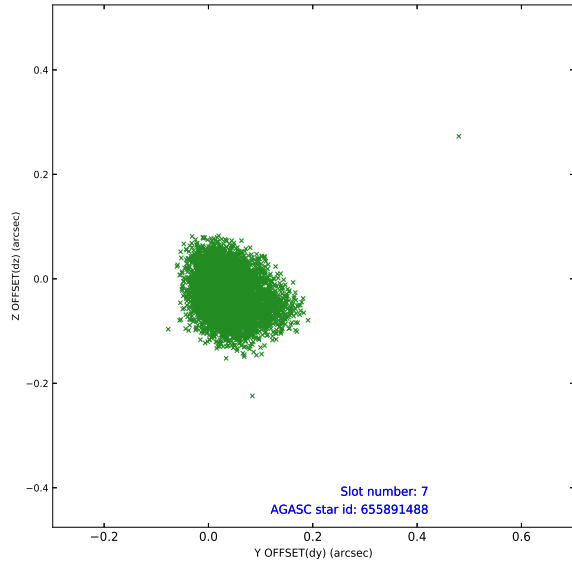
## 2.4.4 Slot 6



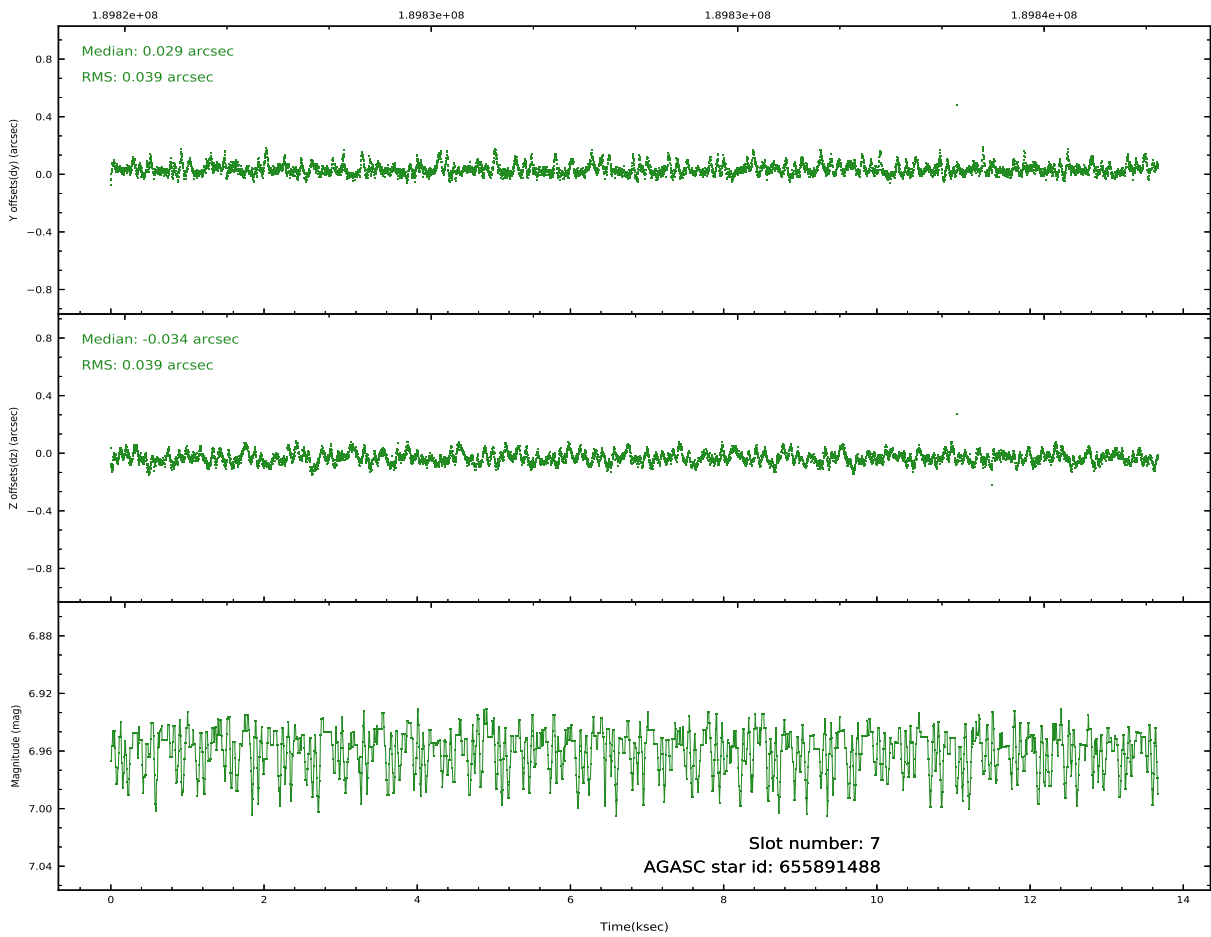
Time (s)



## 2.4.5 Slot 7

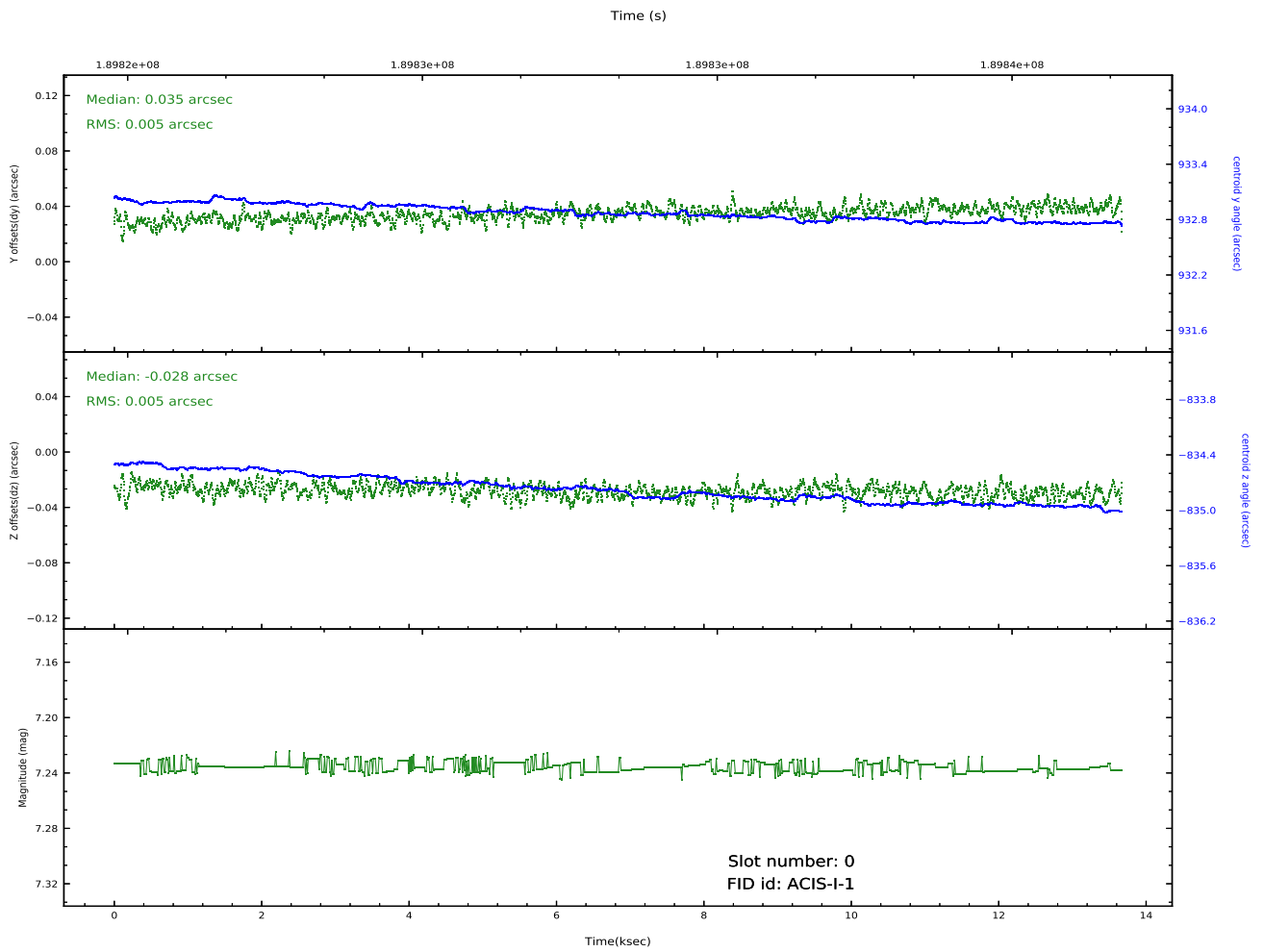
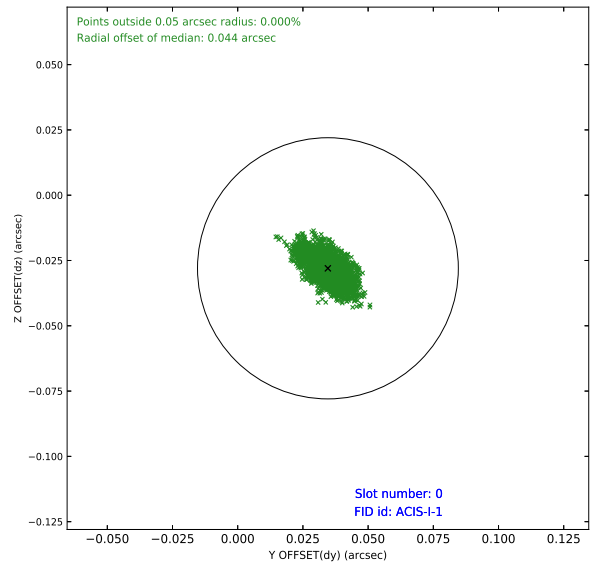
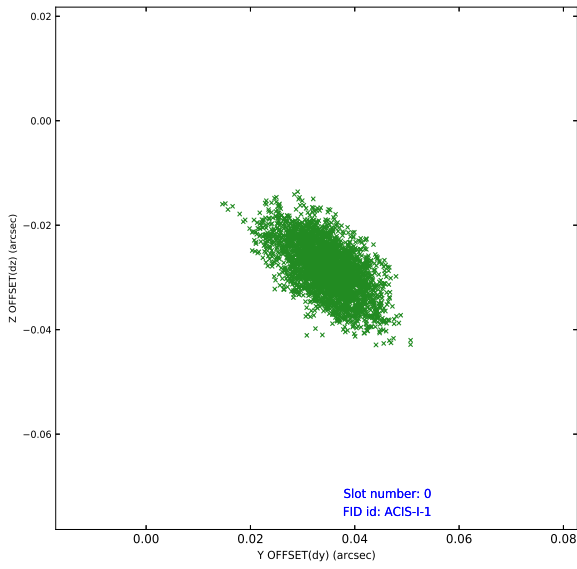


Time (s)

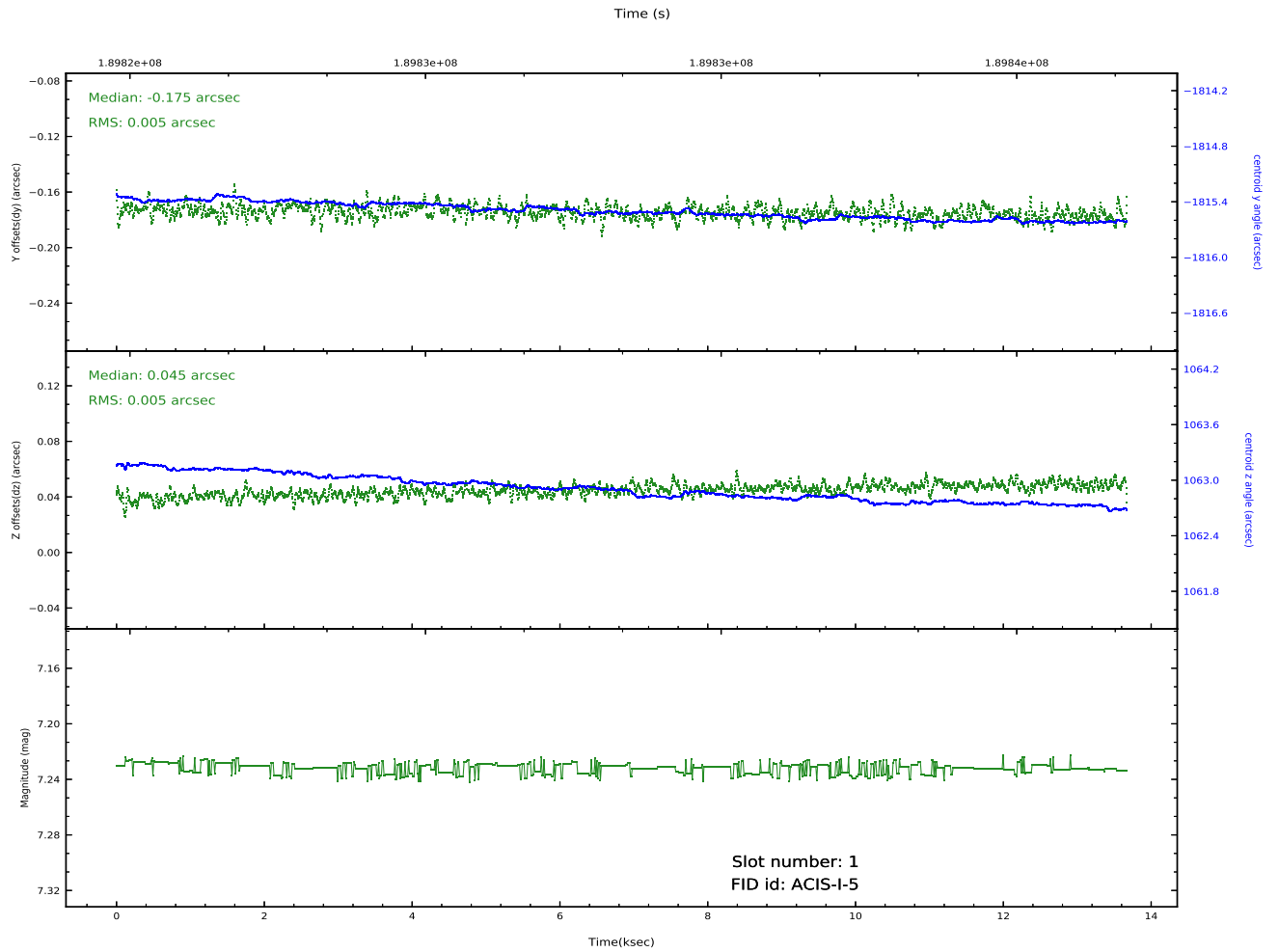
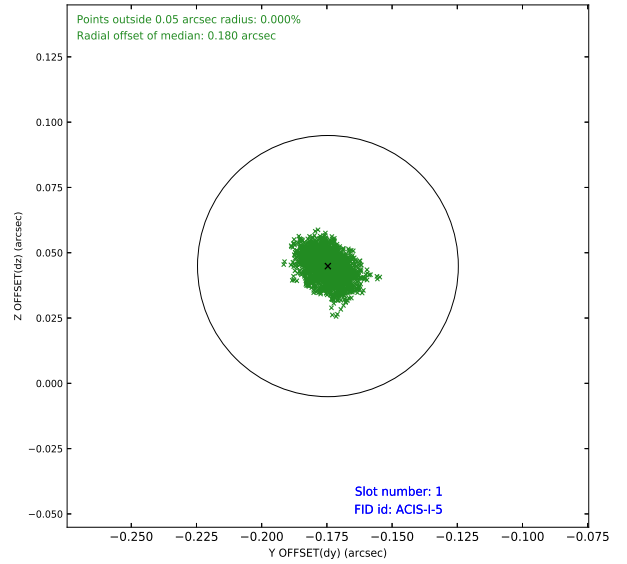
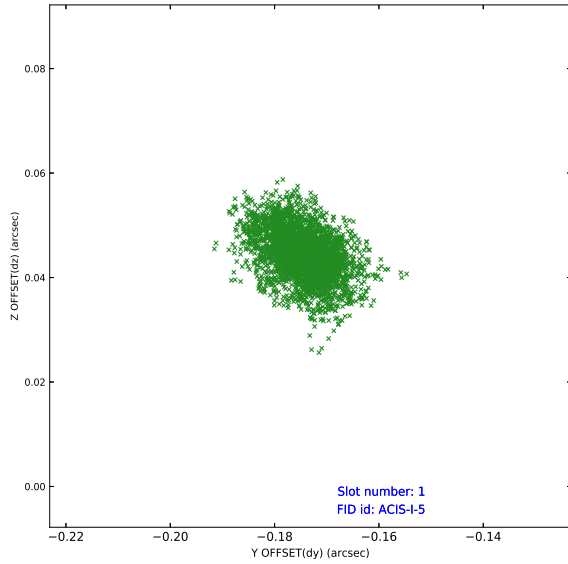


## 2.5 FID Slots

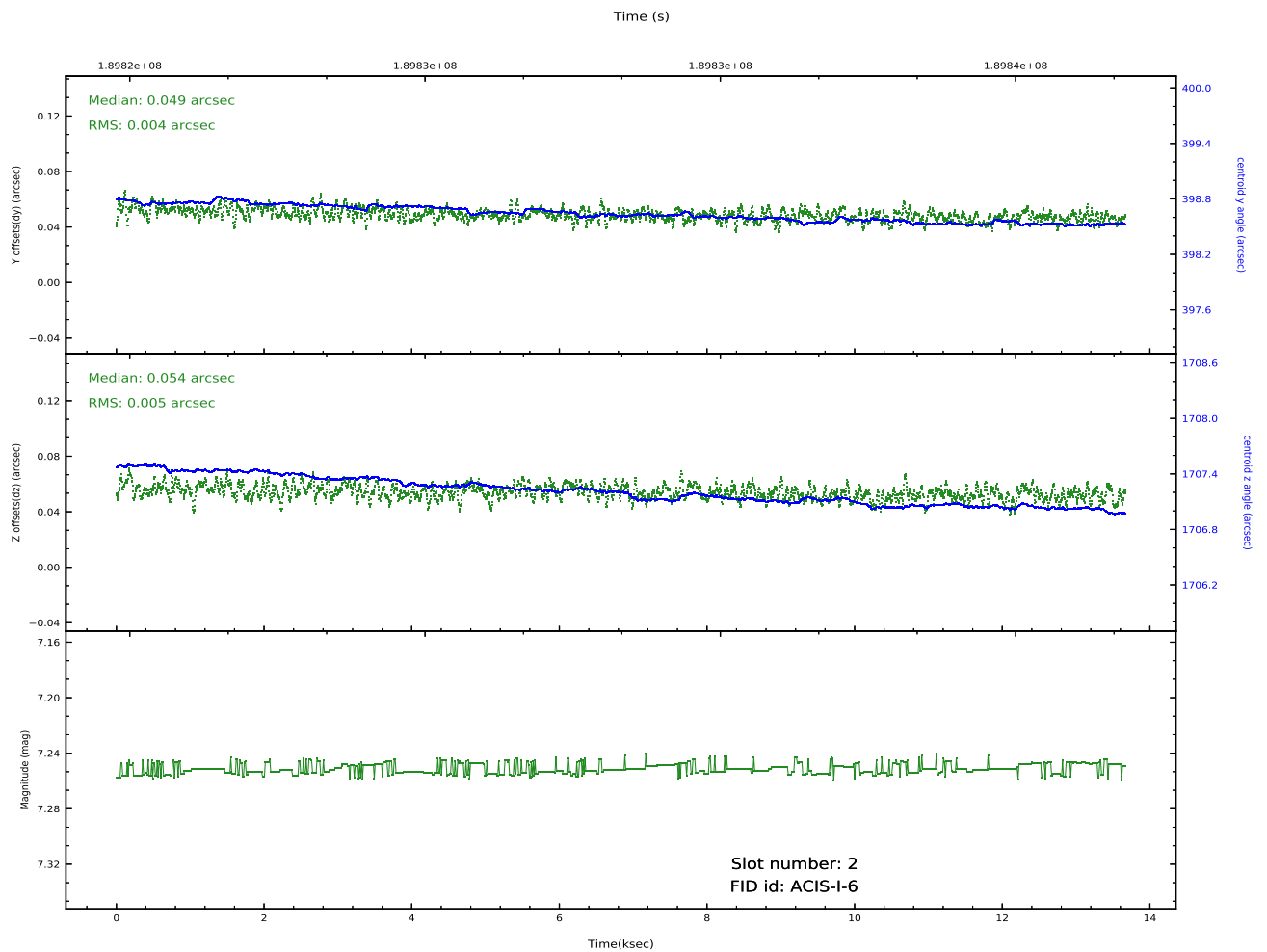
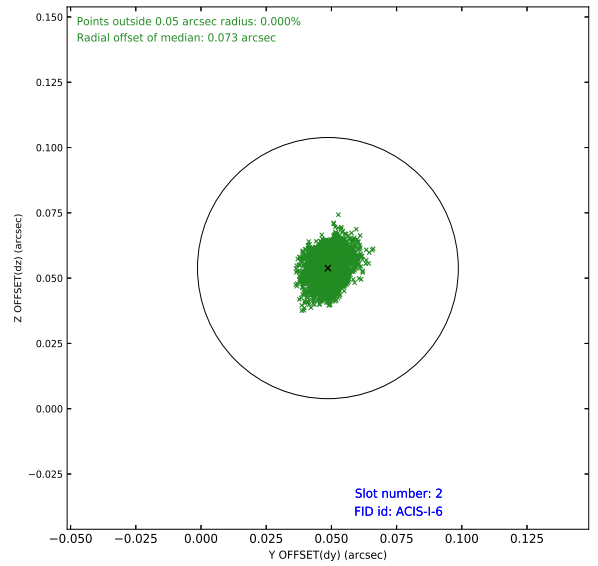
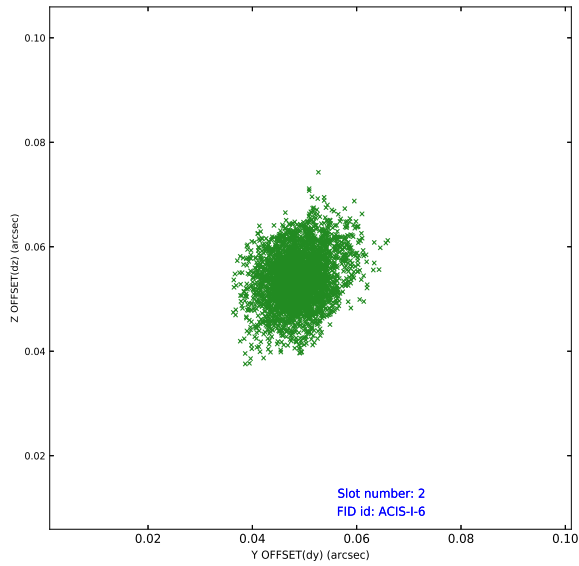
### 2.5.1 Slot 0



## 2.5.2 Slot 1



### 2.5.3 Slot 2



# A Summary

## A.1 Status

|                            |            |
|----------------------------|------------|
| V&V Scientist              | Jen Lauer  |
| V&V Date (YYYY-MM-DD)      | 2020.09.22 |
| V&V Edition                | 1          |
| V&V Disposition and Status | OK         |
| V&V Charge Time            | 13.468     |

## A.2 Comments

Centroid of x-ray emission offset from requested coordinates to the west by about 15 arcsec. Some x-ray flux at the edge of the extended source falls on the gaps between the chips and has been dithered over these gaps.