

# V&V Reference Report

## L2 ASCDS Version : 10.9.2

Observation 20612 - L2 Version 3  
Chandra X-Ray Center

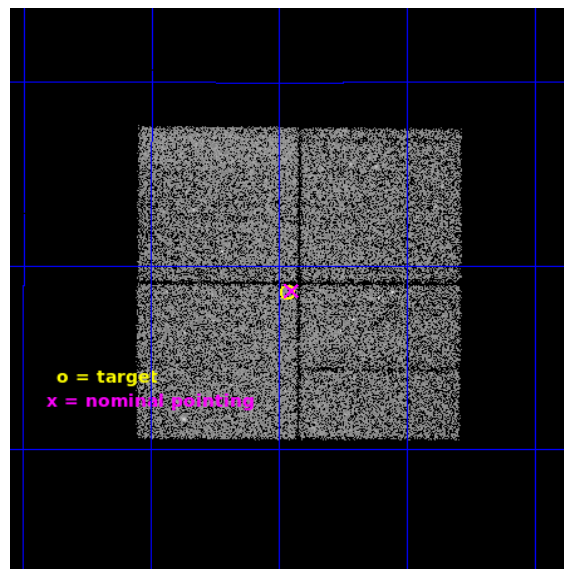
L2 Processing Date : Oct 25 2020

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# 1 Front

|          |                                                             |                                             |
|----------|-------------------------------------------------------------|---------------------------------------------|
| seq_num  | 601423                                                      | Sequence number                             |
| obs_id   | 20612                                                       | Observation id                              |
| title    | Revealing the Formation Mechanism of Ultra-Diffuse Galaxies | Propos                                      |
| observer | Gordon Garmire                                              | Principal investigator                      |
| object   | Dragonfly 44                                                | Source name                                 |
| dtcycle  | 0                                                           | &#160                                       |
| cycle    | P                                                           | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 195.241667                                                  | Observer's specified target RA [deg]        |
| dec_targ | 26.976389                                                   | Observer's specified target Dec [deg]       |
| ra_nom   | 195.23743247834                                             | Nominal RA [deg]                            |
| dec_nom  | 26.977552903229                                             | Nominal Dec [deg]                           |
| roll_nom | 180.31080564742                                             | Nominal Roll [deg]                          |
| revision | 3                                                           | Processing version of data                  |
| ontime   | 30078.966516376                                             | Sum of GTIs [s]                             |
| livetime | 29685.962675026                                             | Livetime [s]                                |
| ontime0  | 30075.702346325                                             | Sum of GTIs [s]                             |
| ontime1  | 30082.025506735                                             | Sum of GTIs [s]                             |
| ontime2  | 30078.925486445                                             | Sum of GTIs [s]                             |
| ontime3  | 30078.966516376                                             | Sum of GTIs [s]                             |
| l2events | 82499                                                       | Number of level 2 events                    |

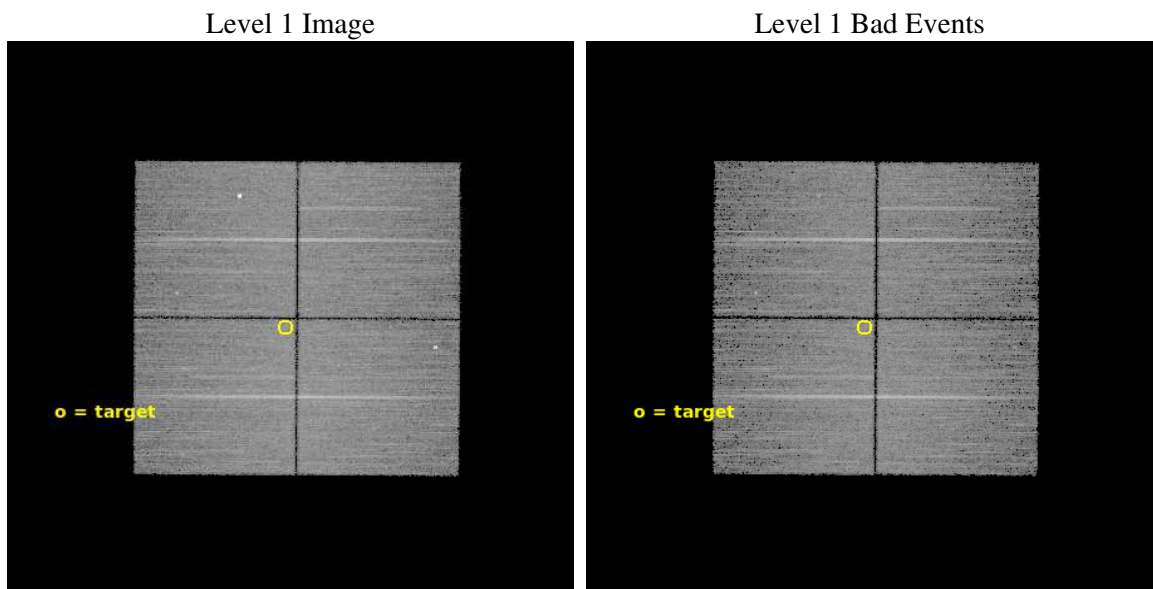




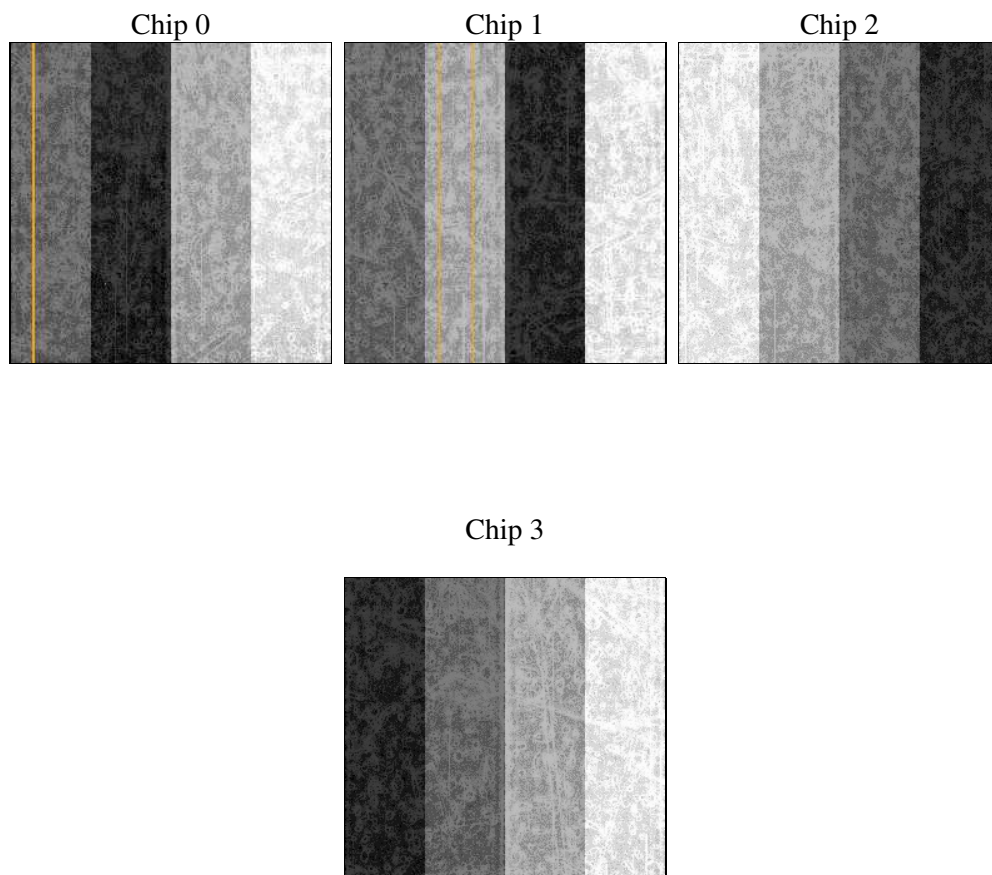
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 30000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.9.2              | Processing system revision     | ontime         | 30078.966516376 | Sum of GTIs [s]                         |
| caldsver | 4.9.3               | &#160                          | ontime0        | 30075.702346325 | Sum of GTIs [s]                         |
| date     | 2020-10-25T10:31:48 | Date and time of file creation | ontime1        | 30082.025506735 | Sum of GTIs [s]                         |
| revision | 3                   | Processing version of data     | ontime2        | 30078.925486445 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 30078.966516376 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 856429          | Number of level 1 events                |

### 2.1.4 Events

|                 | ccd 0  | ccd 1  | ccd 2  | ccd 3  |
|-----------------|--------|--------|--------|--------|
| level 1 events  | 203206 | 210254 | 224085 | 218884 |
| rejected events | 178380 | 179112 | 198277 | 195922 |
| rejected %      | 87%    | 85%    | 88%    | 89%    |

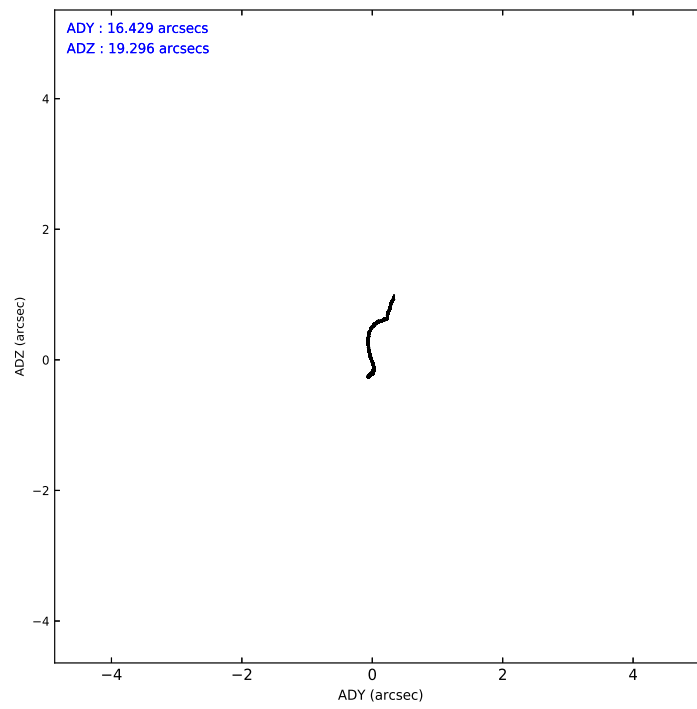
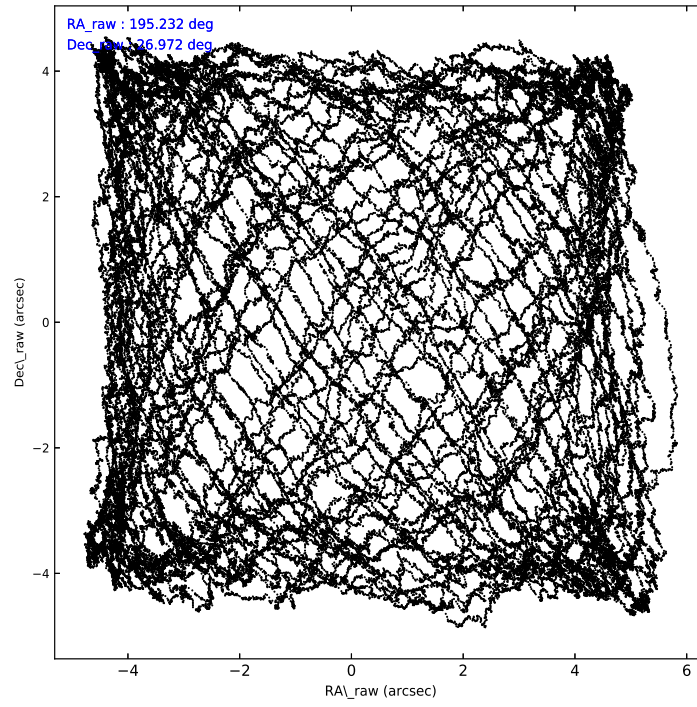
|                | ccd 0  | ccd 1  | ccd 2  | ccd 3  |
|----------------|--------|--------|--------|--------|
| grade 0 events | 8503   | 13152  | 10065  | 7916   |
|                | 4%     | 6%     | 4%     | 3%     |
| grade 1 events | 123    | 158    | 137    | 122    |
|                | 0%     | 0%     | 0%     | 0%     |
| grade 2 events | 6334   | 6765   | 6135   | 5070   |
|                | 3%     | 3%     | 2%     | 2%     |
| grade 3 events | 2555   | 2634   | 2345   | 2438   |
|                | 1%     | 1%     | 1%     | 1%     |
| grade 4 events | 2314   | 2462   | 2441   | 2504   |
|                | 1%     | 1%     | 1%     | 1%     |
| grade 5 events | 9324   | 9685   | 8861   | 10578  |
|                | 4%     | 4%     | 3%     | 4%     |
| grade 6 events | 5123   | 6138   | 4829   | 5042   |
|                | 2%     | 2%     | 2%     | 2%     |
| grade 7 events | 168930 | 169260 | 189272 | 185214 |
|                | 83%    | 80%    | 84%    | 84%    |

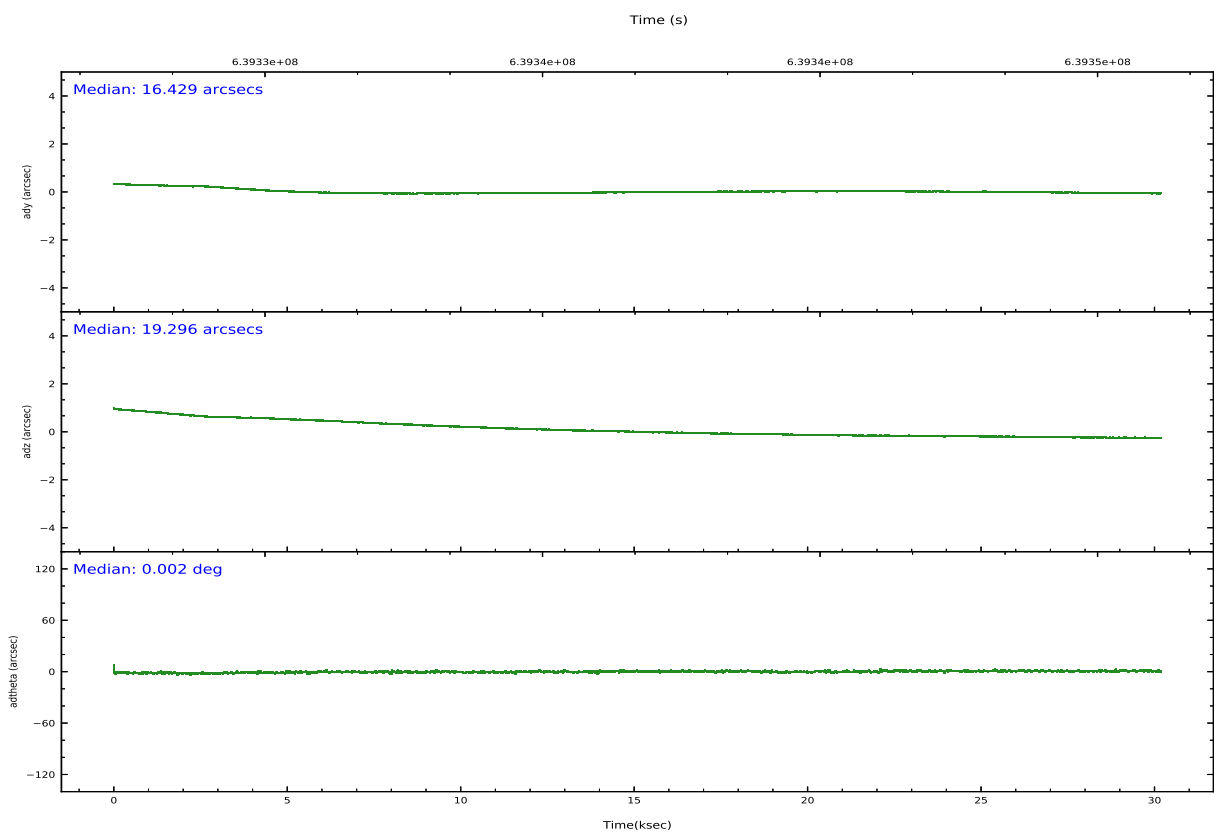
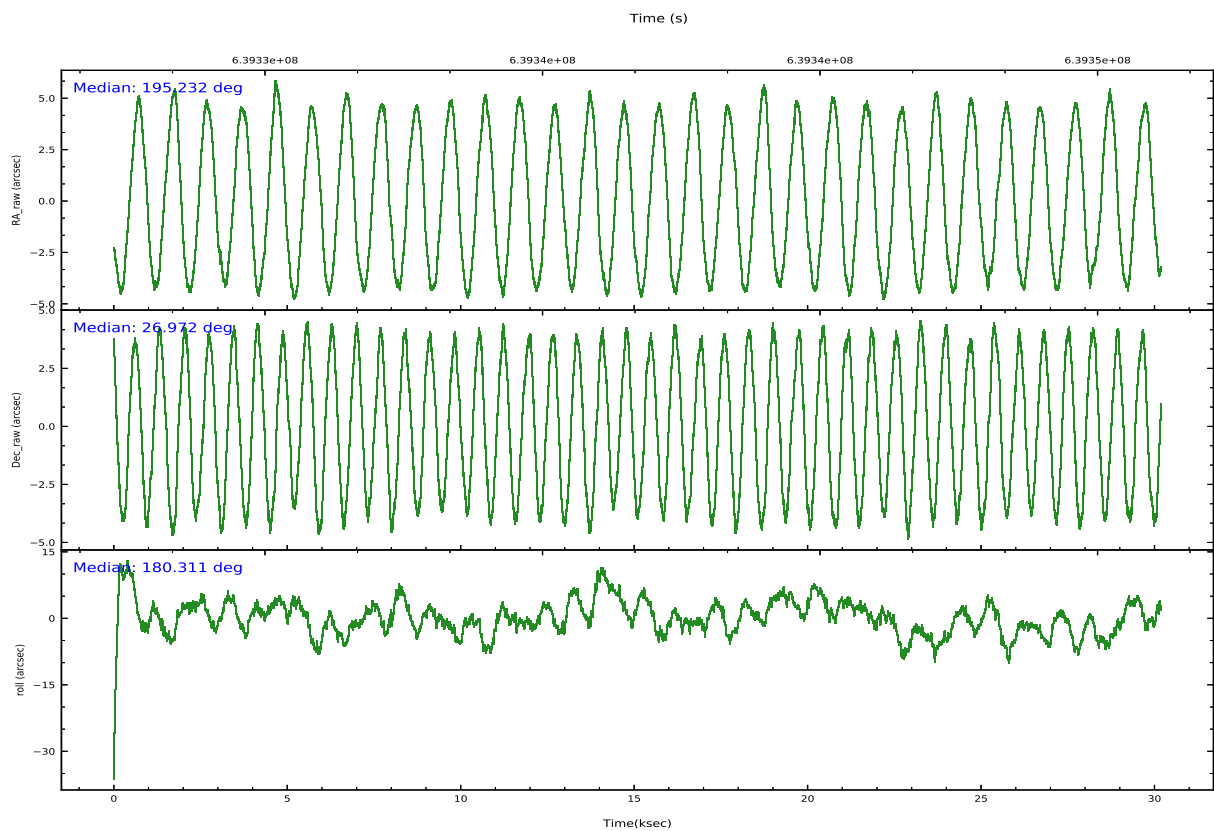
## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual                |
|-----------------------------------|---------------------|-----------------------|
| Instrument                        | ACIS                | ACIS                  |
| Detector                          | ACIS-0123           | ACIS-0123             |
| Grating                           | NONE                | NONE                  |
| Data mode                         | VFAINT              | VFAINT                |
| Observation mode                  | POINTING            | POINTING              |
| [deg] Pointing RA                 | 195.258917          | 195.23743247834       |
| [deg] Pointing Dec                | 26.986058           | 26.977552903229       |
| [deg] Pointing Roll               | 180.092170          | 180.31080564742       |
| [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)  | 639323832.184000    | 639323042.5209301     |
| Observation start date            | 2018-04-05T13:56:03 | 2018-04-05T13:44:02   |
| [s] Observation end time (MET)    | 639353832.184000    | 639353981.63525       |
| Observation end date              | 2018-04-05T22:16:03 | 2018-04-05T22:19:41   |
| Read mode                         | TIMED               | TIMED                 |

| Parameter                             | Planned   | Actual  |
|---------------------------------------|-----------|---------|
| Obspar version number                 | 8         | 8       |
| Obspar file type                      | PREDICTED | ACTUAL  |
| Obspar update status                  | NONE      | UPDATED |
| Number of optional ACIS chips dropped | 0         | 0       |
| On-chip summing requested             | N         | N       |
| Subarray requested                    | NONE      | NONE    |
| Alternating exposures requested       | N         | N       |
| [s] Primary exposure time             | 0.000000  | 3.1     |

## 2.3 Aspect



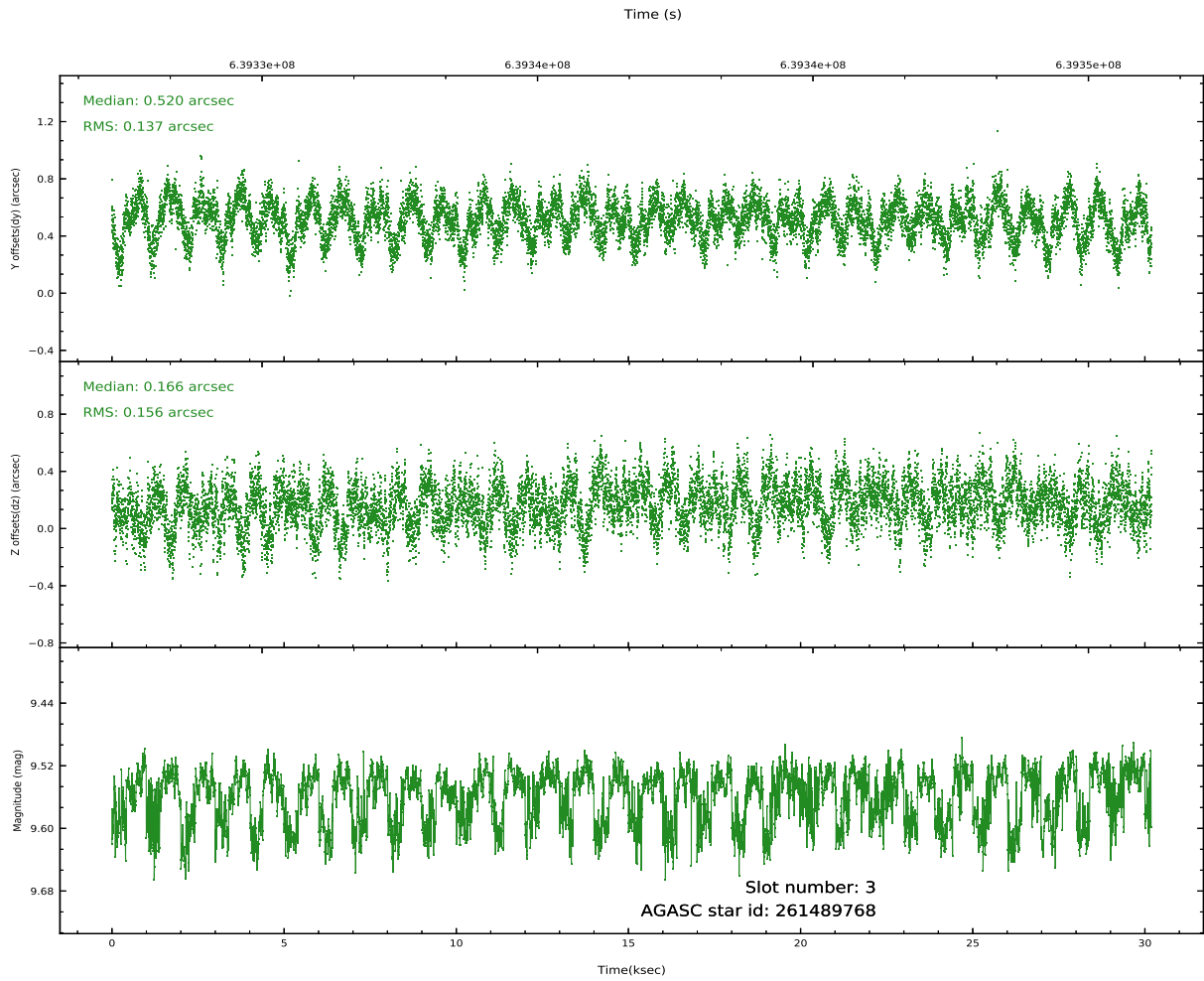
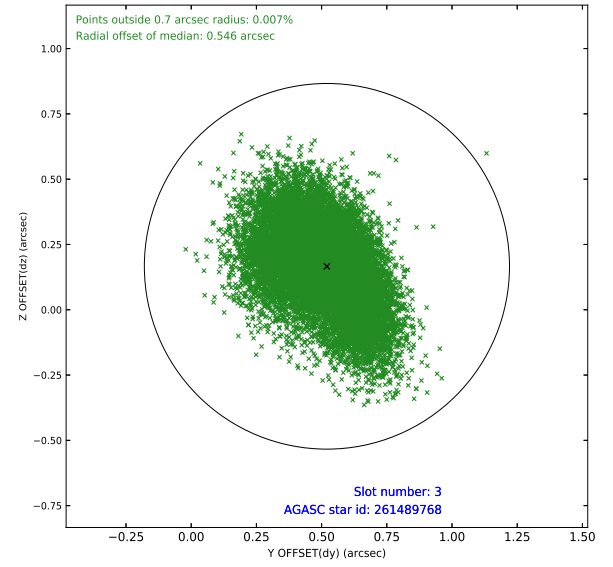
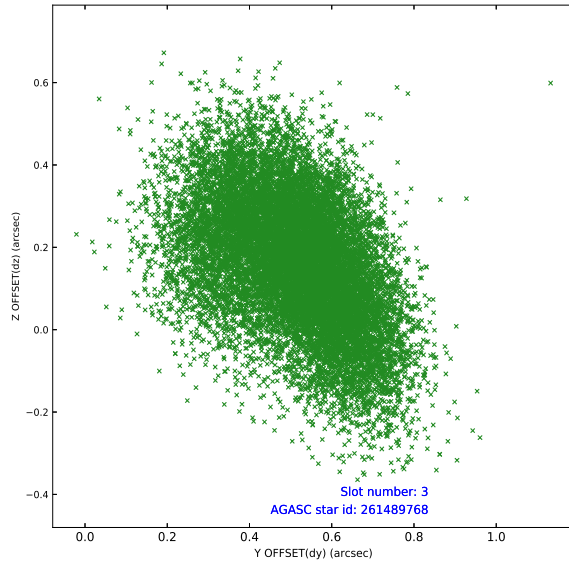


Slot Statistics

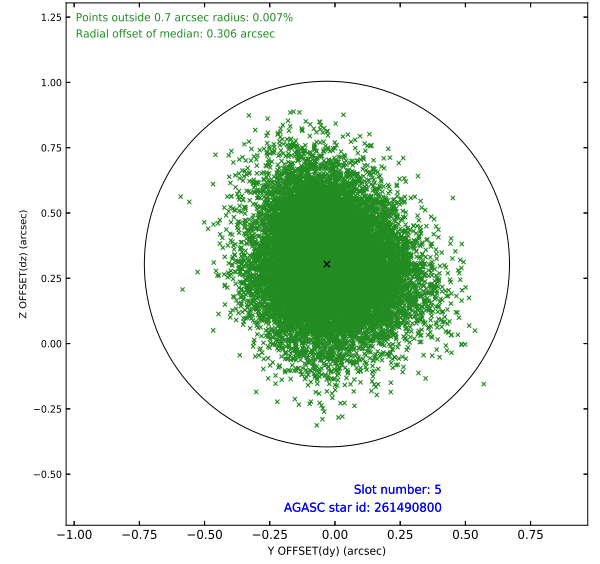
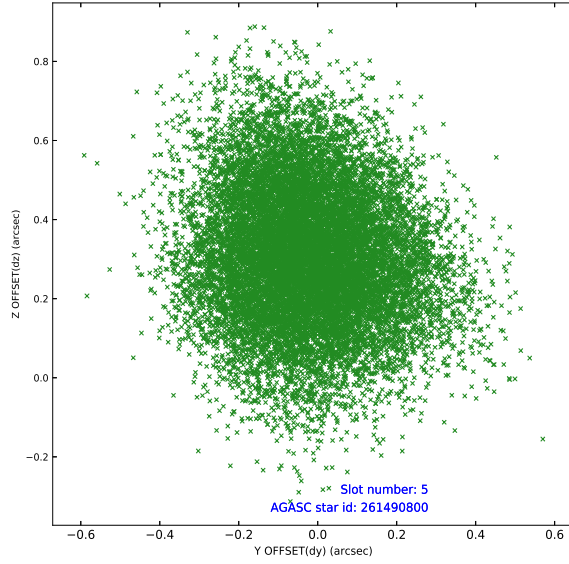
| pt | status  | used | id        | mag   | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mea   |
|----|---------|------|-----------|-------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|-------|
| 0  | FID     |      | ACIS-I-2  | 7.03  | 7363  | 1.000    | 0.083  | -0.002 | 0.016 | 0.024 | 0.000000   | 0.000000  | -771.18  | -849  |
| 1  | FID     |      | ACIS-I-4  | 7.08  | 7363  | 1.000    | 0.133  | -0.027 | 0.009 | 0.015 | 0.000000   | 0.000000  | 2143.02  | 1056  |
| 2  | FID     |      | ACIS-I-5  | 7.11  | 7363  | 1.000    | -0.316 | 0.099  | 0.015 | 0.021 | 0.000000   | 0.000000  | -1825.19 | 1054  |
| 3  | GUIDE   | used | 261489768 | 9.55  | 14710 | 1.000    | 0.520  | 0.166  | 0.221 | 0.363 | 195.906248 | 27.591842 | -2068.29 | -2183 |
| 4  | OMITTED |      |           | 0.00  | 0     | 0.000    | 0.000  | 0.000  | 0.000 | 0.000 | 0.000000   | 0.000000  | 0.00     | 0     |
| 5  | GUIDE   | used | 261490800 | 10.15 | 14633 | 1.000    | -0.031 | 0.304  | 0.247 | 0.394 | 195.029641 | 27.224508 | 732.92   | -860  |
| 6  | GUIDE   | used | 261492456 | 9.75  | 14701 | 1.000    | 0.050  | -0.072 | 0.390 | 0.532 | 195.725596 | 26.391055 | -1501.44 | 2141  |
| 7  | GUIDE   | used | 261490008 | 8.60  | 14722 | 1.000    | -0.525 | -0.424 | 0.281 | 0.465 | 194.679481 | 27.119494 | 1855.17  | -488  |

## 2.4 Star Slots

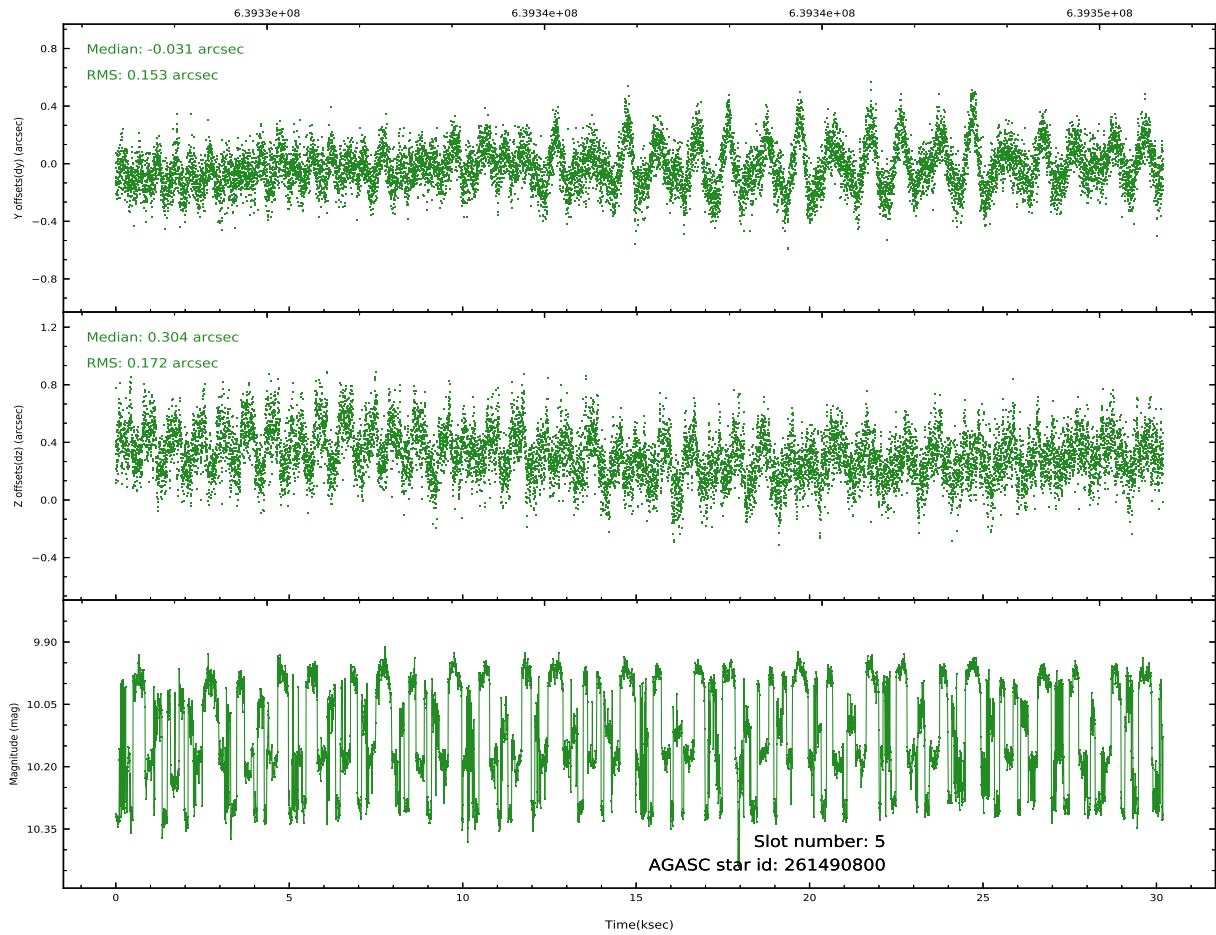
### 2.4.1 Slot 3



## 2.4.2 Slot 5

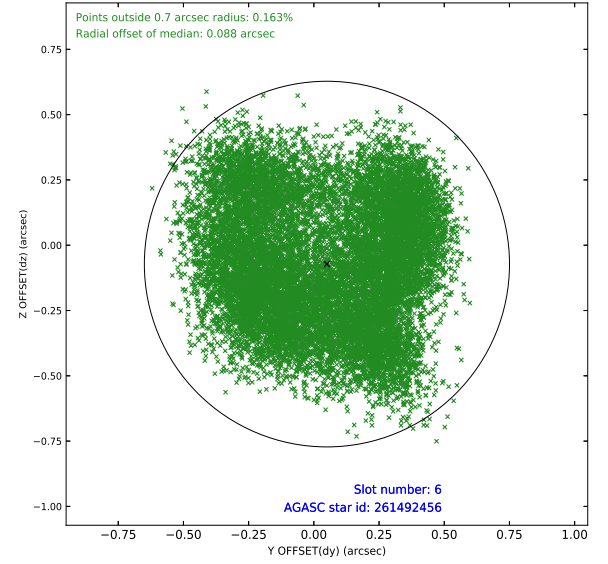
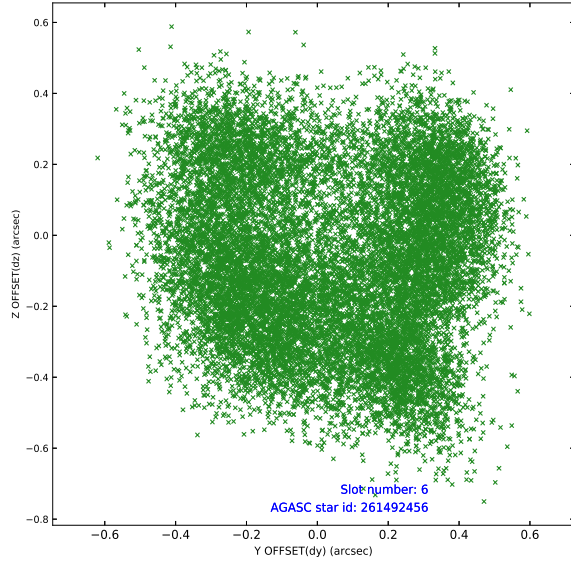


Time (s)

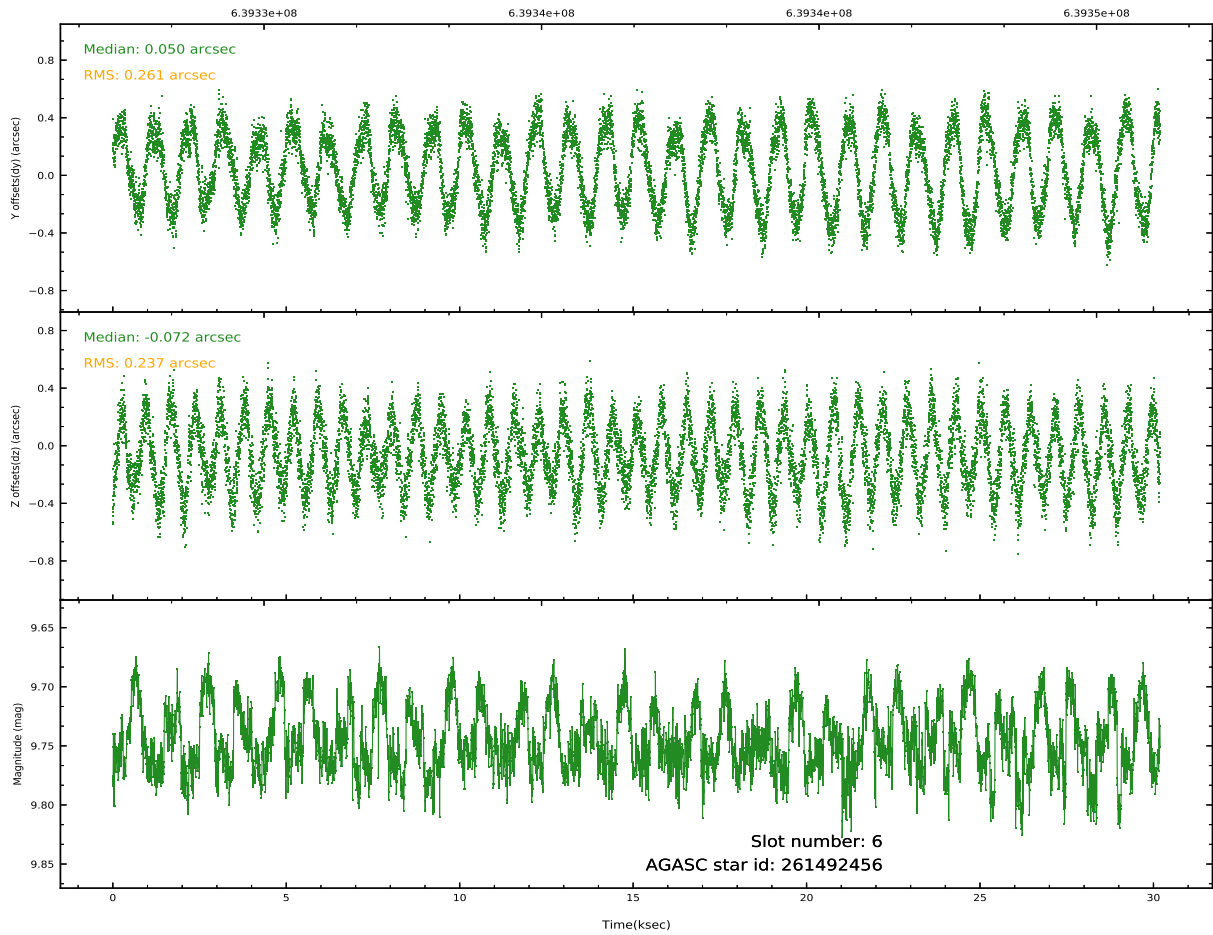




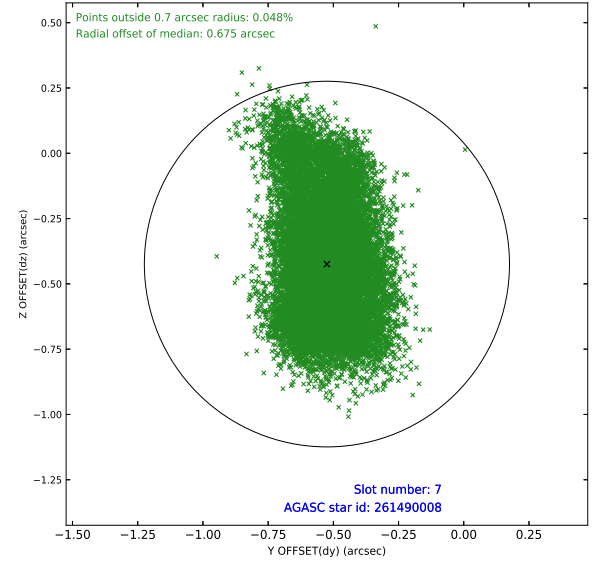
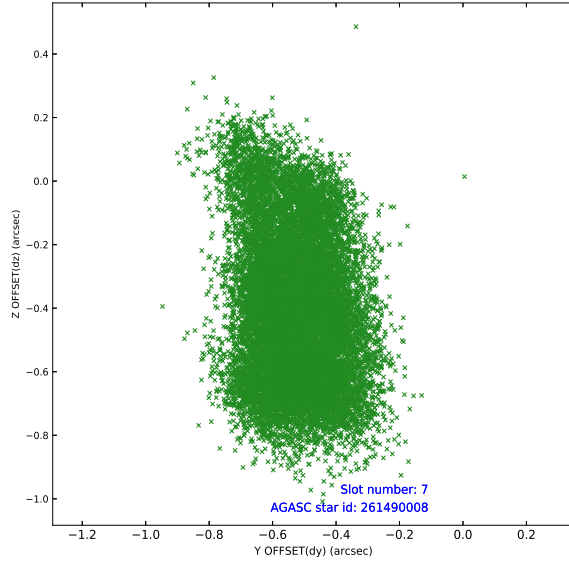
### 2.4.3 Slot 6



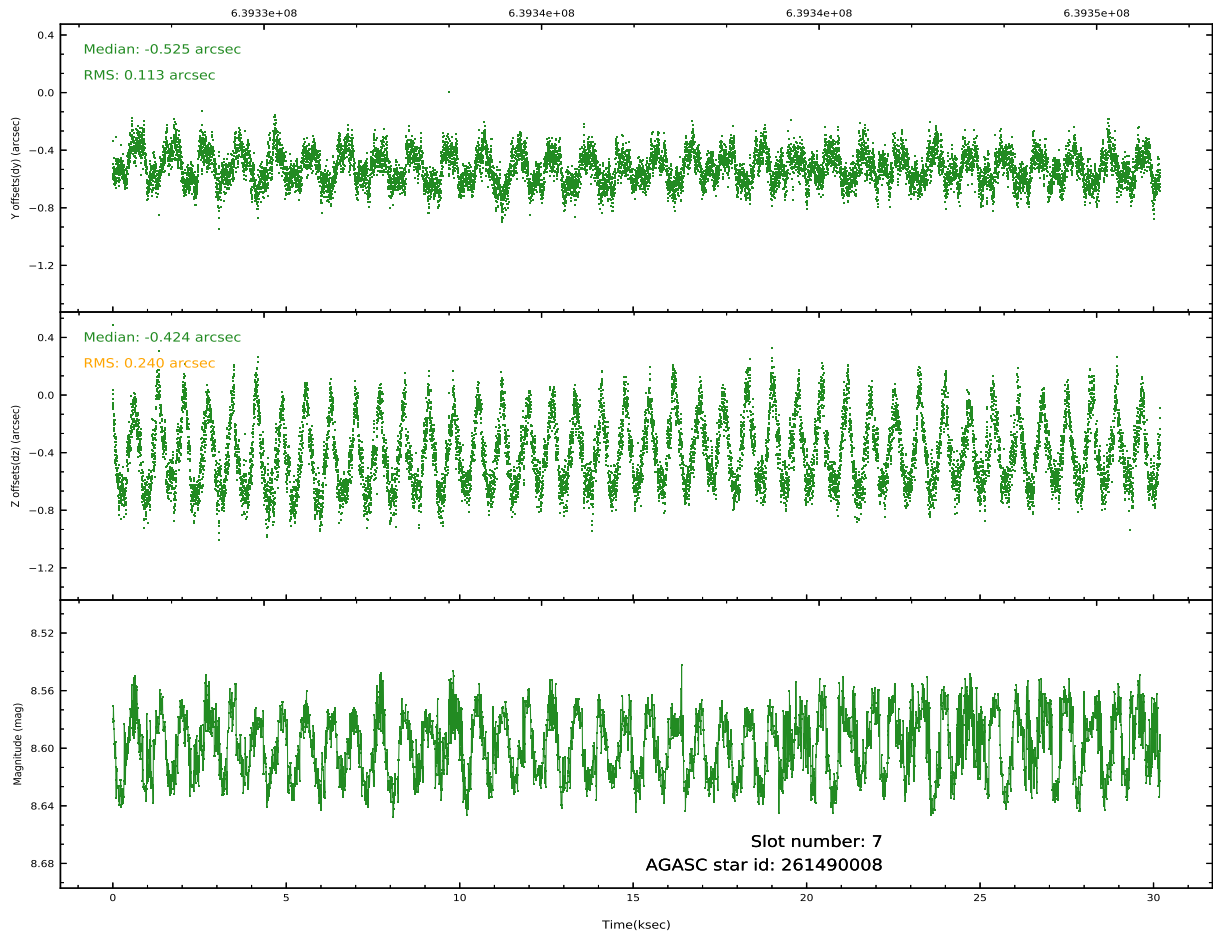
Time (s)



## 2.4.4 Slot 7

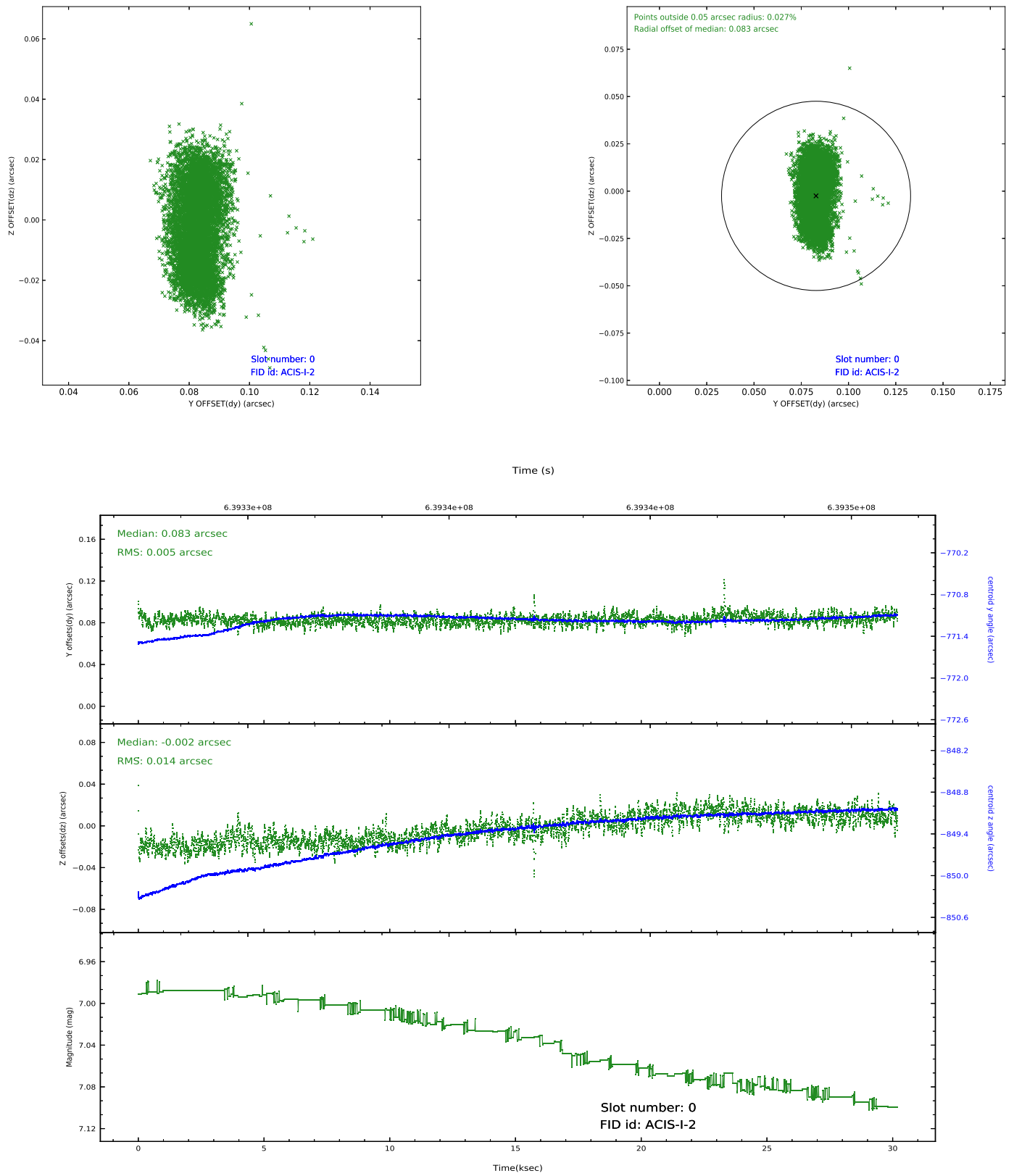


Time (s)

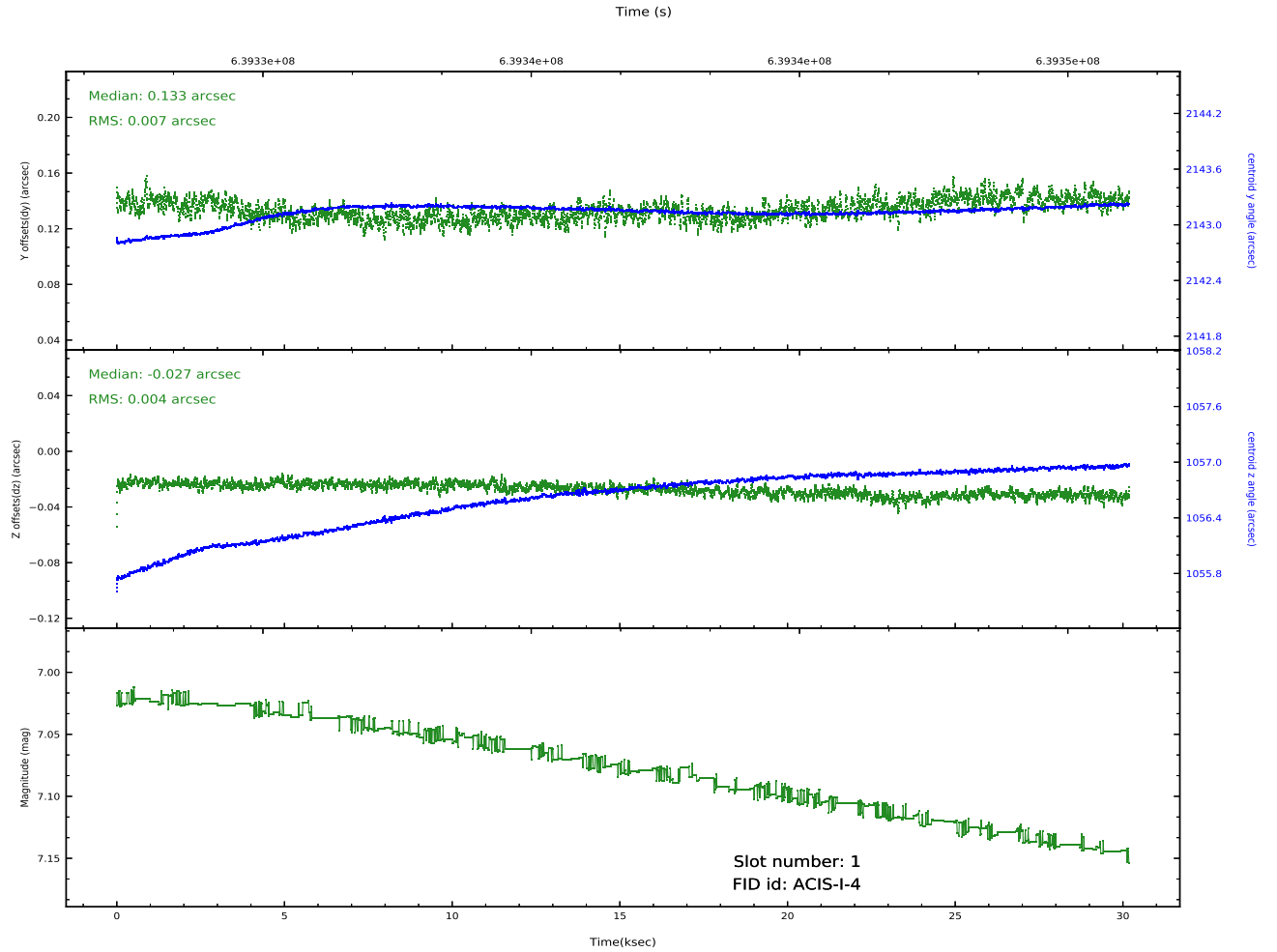
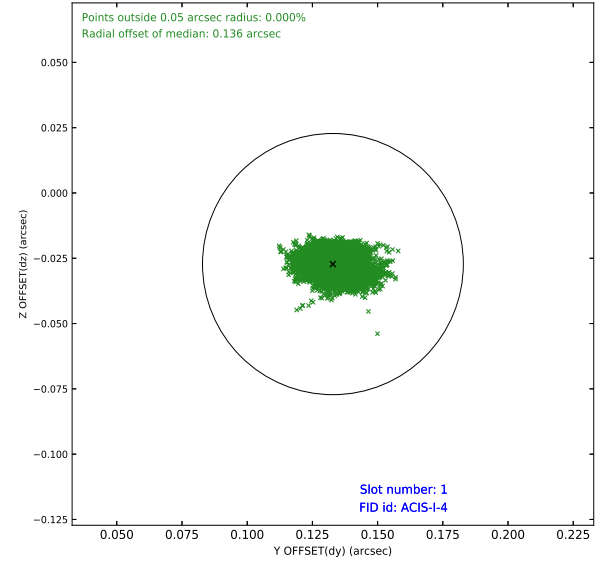
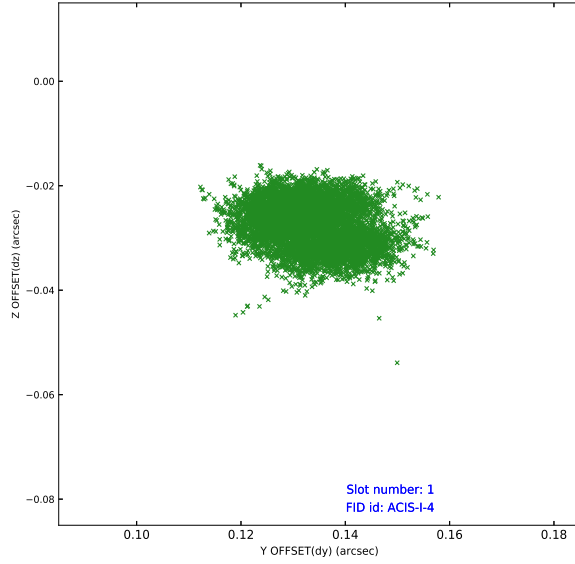


## 2.5 FID Slots

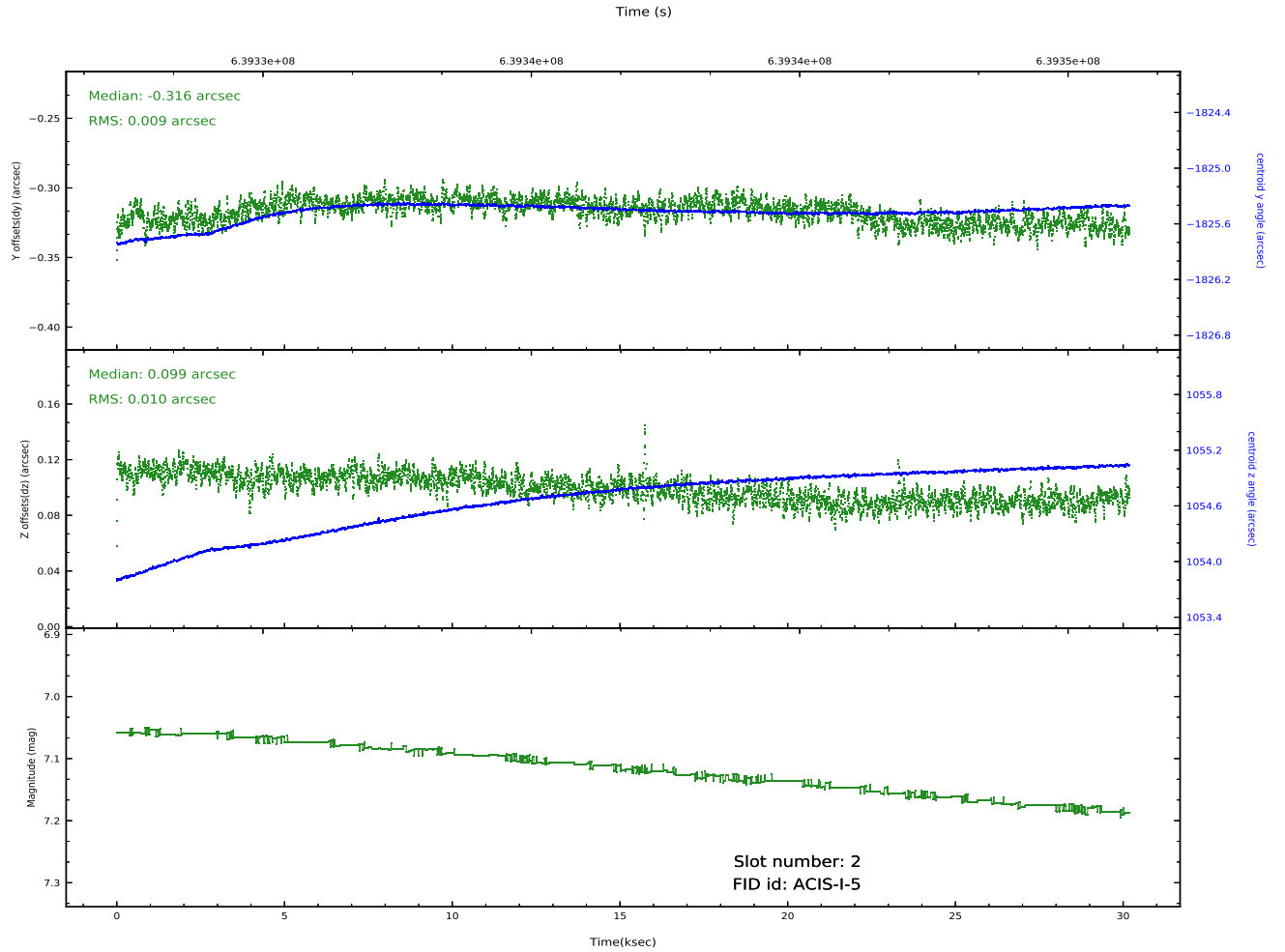
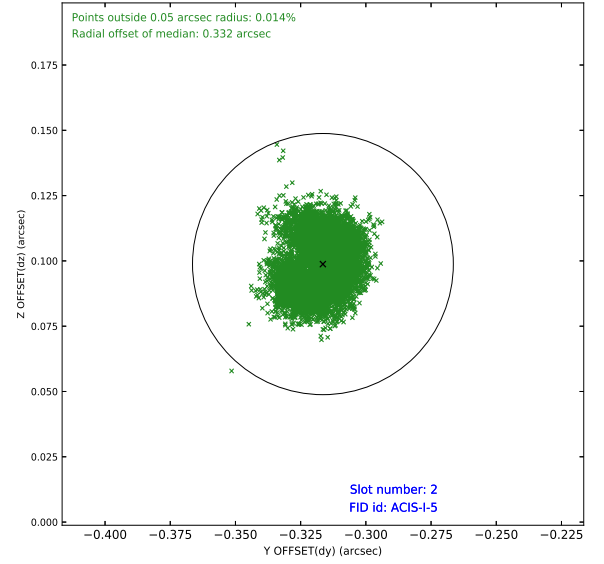
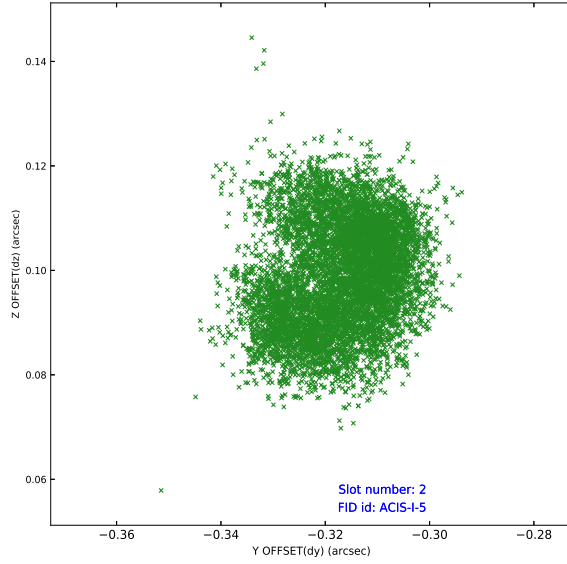
### 2.5.1 Slot 0



## 2.5.2 Slot 1



## 2.5.3 Slot 2



# A Summary

## A.1 Status

|                            |                 |
|----------------------------|-----------------|
| V&V Scientist              | Beth Sundheim   |
| V&V Date (YYYY-MM-DD)      | 2020.10.28      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 30.078966517806 |

## A.2 Comments

The guide star in slot 4 was removed from the aspect solution due to poor data quality. The aspect solution is improved by the removal of this slot from the solution.