

# V&V Reference Report

## L2 ASCDS Version : 10.9.2

Observation 19766 - L2 Version 3  
Chandra X-Ray Center

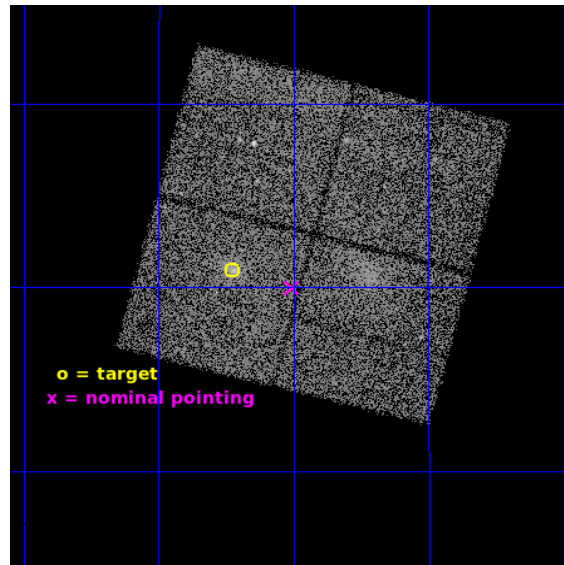
L2 Processing Date : Oct 25 2020

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# 1 Front

|          |                                                                                              |                                             |
|----------|----------------------------------------------------------------------------------------------|---------------------------------------------|
| seq_num  | 801703                                                                                       | Sequence number                             |
| obs_id   | 19766                                                                                        | Observation id                              |
| title    | Calibrating the Mass-Proxy vs. Mass Relation - from X-ray observables to Weak Lensing Masses | Proposal title                              |
| observer | Ralph Kraft                                                                                  | Principal investigator                      |
| object   | MS1224.7+2007                                                                                | Source name                                 |
| dtcycle  | 0                                                                                            | &#160                                       |
| cycle    | P                                                                                            | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 186.80625                                                                                    | Observer's specified target RA [deg]        |
| dec_targ | 19.848889                                                                                    | Observer's specified target Dec [deg]       |
| ra_nom   | 186.75160500455                                                                              | Nominal RA [deg]                            |
| dec_nom  | 19.833137719117                                                                              | Nominal Dec [deg]                           |
| roll_nom | 194.52761863062                                                                              | Nominal Roll [deg]                          |
| revision | 3                                                                                            | Processing version of data                  |
| ontime   | 24068.276994586                                                                              | Sum of GTIs [s]                             |
| livetime | 23753.807236844                                                                              | Livetime [s]                                |
| ontime0  | 24077.700185299                                                                              | Sum of GTIs [s]                             |
| ontime1  | 24077.700185299                                                                              | Sum of GTIs [s]                             |
| ontime2  | 24077.700185299                                                                              | Sum of GTIs [s]                             |
| ontime3  | 24068.276994586                                                                              | Sum of GTIs [s]                             |
| l2events | 68443                                                                                        | Number of level 2 events                    |

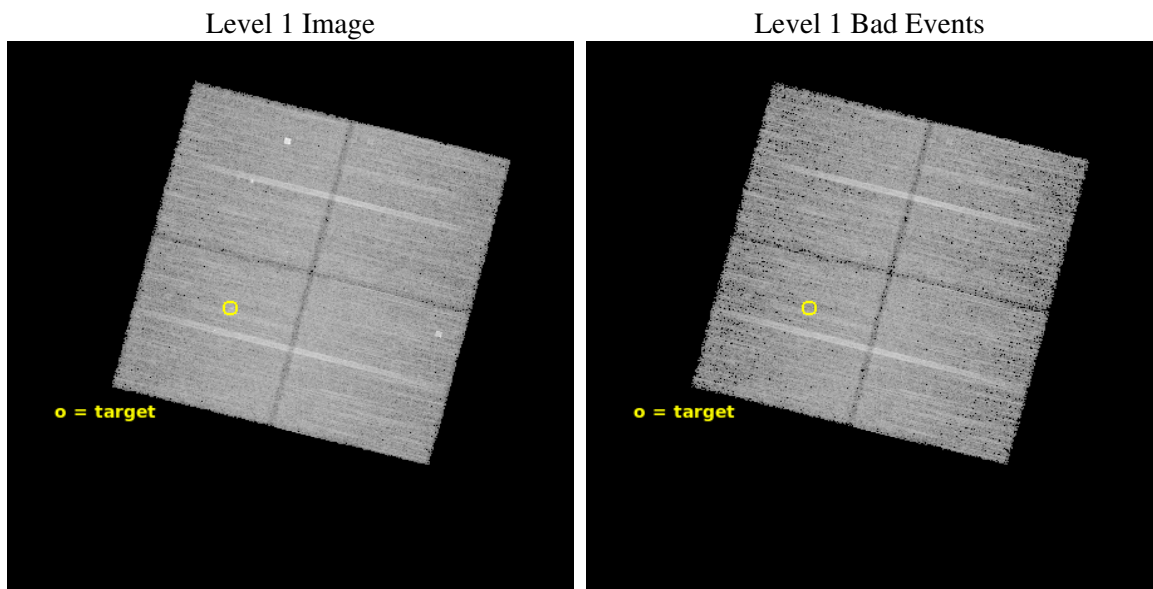




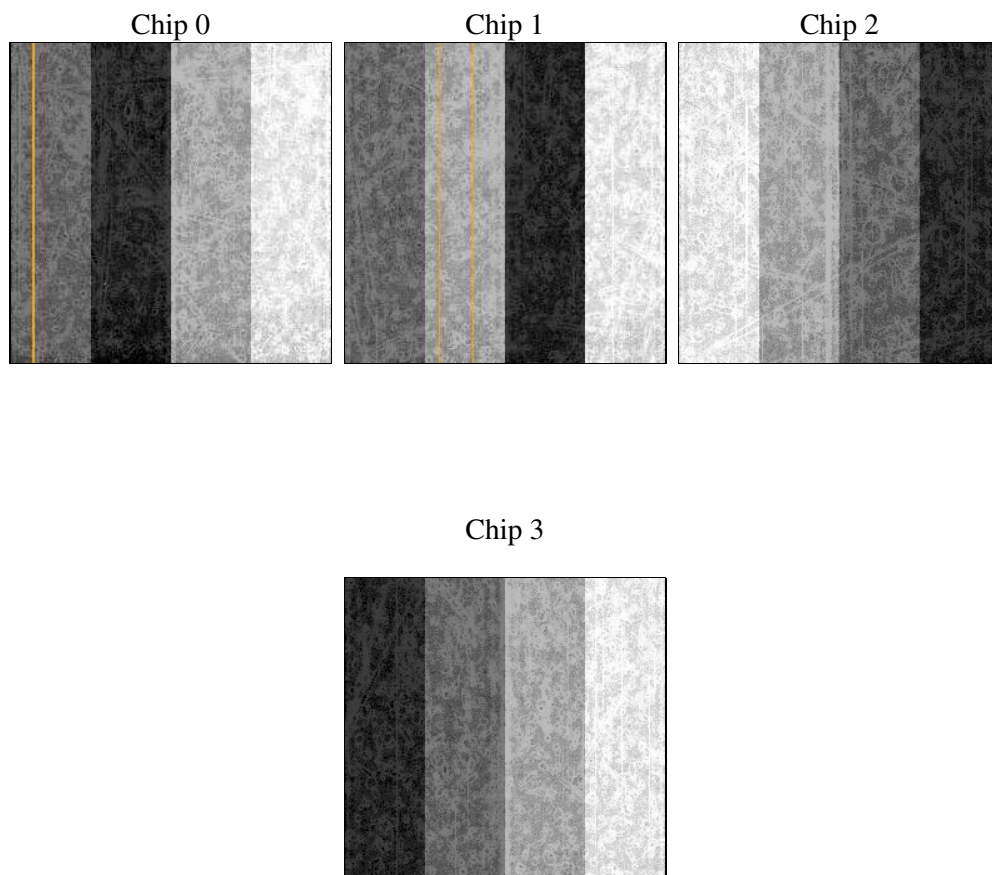
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 24000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.9.2              | Processing system revision     | ontime         | 24068.276994586 | Sum of GTIs [s]                         |
| caldsver | 4.9.3               | &#160                          | ontime0        | 24077.700185299 | Sum of GTIs [s]                         |
| date     | 2020-10-25T10:24:47 | Date and time of file creation | ontime1        | 24077.700185299 | Sum of GTIs [s]                         |
| revision | 3                   | Processing version of data     | ontime2        | 24077.700185299 | Sum of GTIs [s]                         |
|          |                     |                                | ontime3        | 24068.276994586 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 703860          | Number of level 1 events                |

### 2.1.4 Events

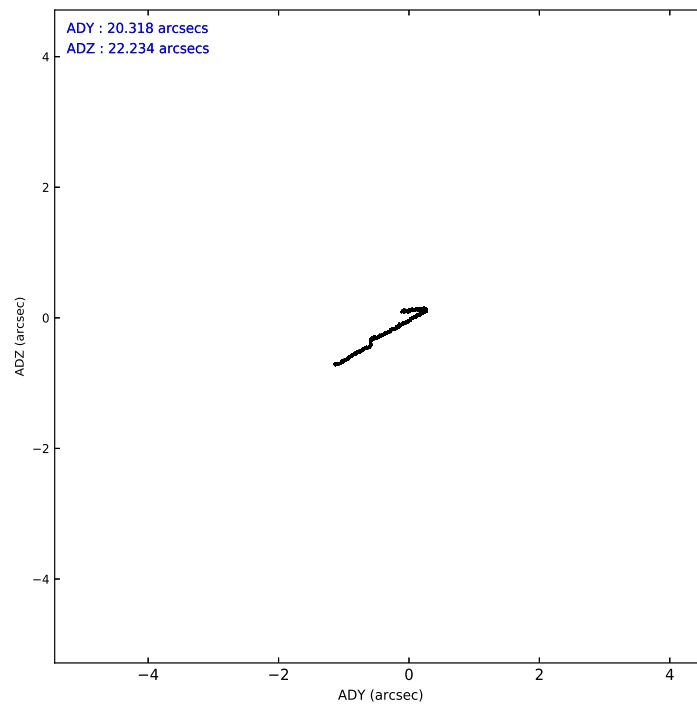
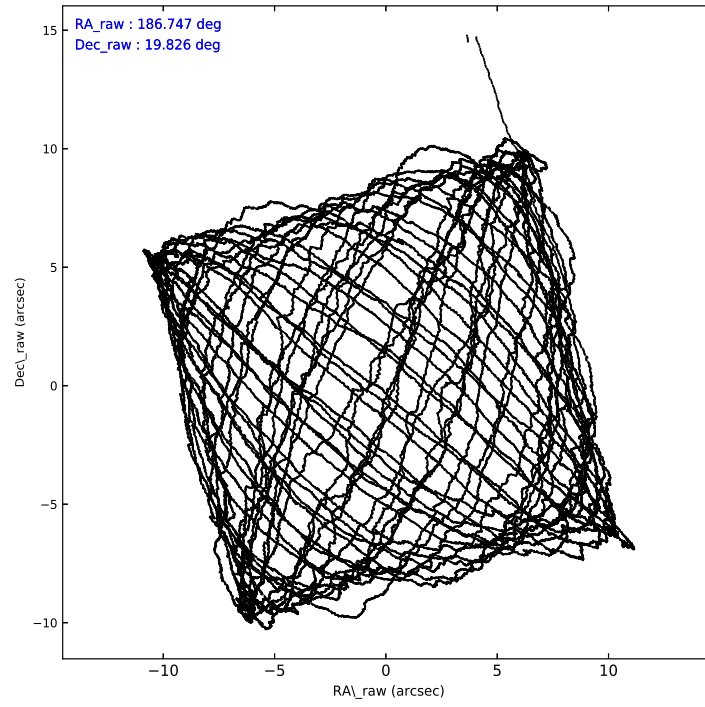
|                 | ccd 0  | ccd 1  | ccd 2  | ccd 3  |
|-----------------|--------|--------|--------|--------|
| level 1 events  | 167016 | 172010 | 188721 | 176113 |
| rejected events | 147418 | 148051 | 167106 | 156564 |
| rejected %      | 88%    | 86%    | 88%    | 88%    |

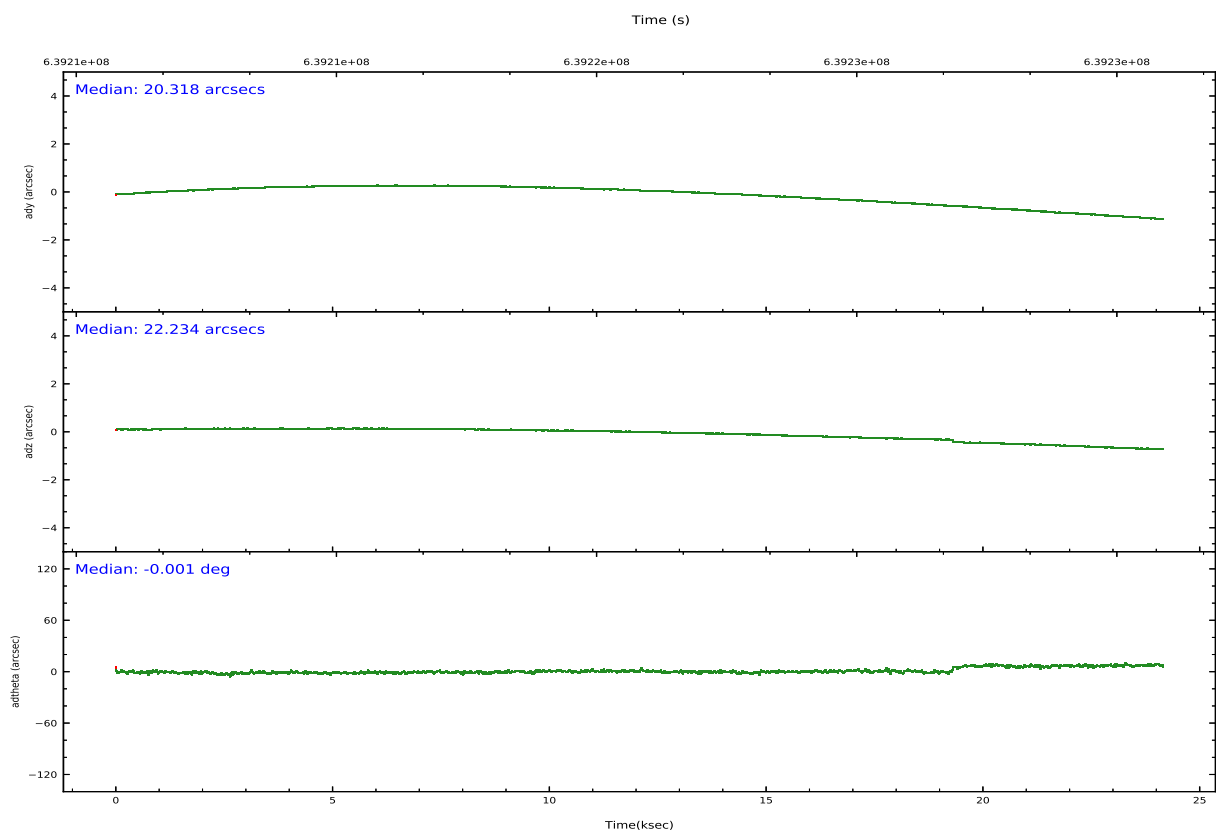
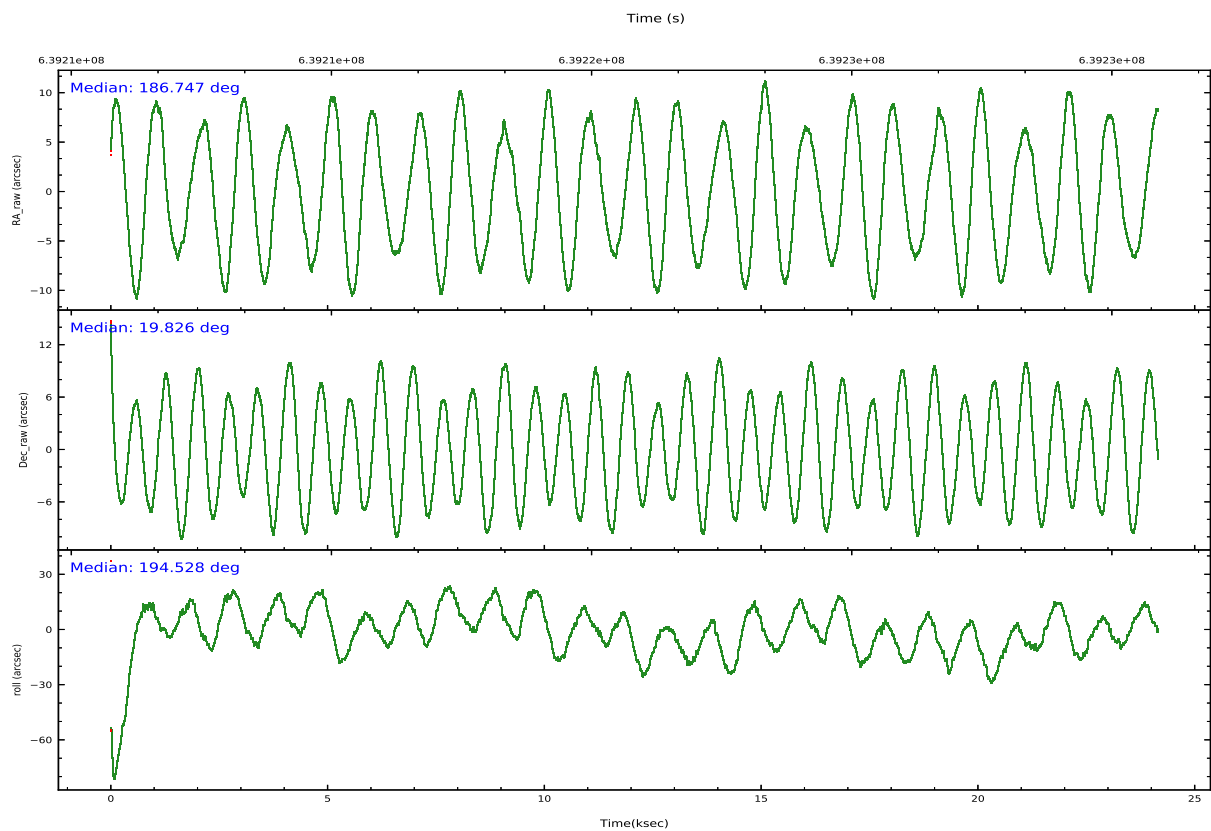
|                | ccd 0  | ccd 1  | ccd 2  | ccd 3  |
|----------------|--------|--------|--------|--------|
| grade 0 events | 6681   | 9737   | 9100   | 7340   |
|                | 4%     | 5%     | 4%     | 4%     |
| grade 1 events | 223    | 110    | 129    | 104    |
|                | 0%     | 0%     | 0%     | 0%     |
| grade 2 events | 4947   | 5288   | 4782   | 4185   |
|                | 2%     | 3%     | 2%     | 2%     |
| grade 3 events | 1999   | 1972   | 1870   | 1920   |
|                | 1%     | 1%     | 0%     | 1%     |
| grade 4 events | 1826   | 1935   | 1960   | 1991   |
|                | 1%     | 1%     | 1%     | 1%     |
| grade 5 events | 7095   | 7493   | 6930   | 8238   |
|                | 4%     | 4%     | 3%     | 4%     |
| grade 6 events | 4153   | 5035   | 3911   | 4117   |
|                | 2%     | 2%     | 2%     | 2%     |
| grade 7 events | 140092 | 140440 | 160039 | 148218 |
|                | 83%    | 81%    | 84%    | 84%    |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar version number                 | 8         | 8       |
| Detector                          | ACIS-0123           | ACIS-0123            | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | VFAINT              | VFAINT               | CCD I0 on                             | Y         | Y       |
| Observation mode                  | POINTING            | POINTING             | CCD I1 on                             | Y         | Y       |
| [deg] Pointing RA                 | 186.768214          | 186.75160500455      | CCD I2 on                             | Y         | Y       |
| [deg] Pointing Dec                | 19.844877           | 19.833137719117      | CCD I3 on                             | Y         | Y       |
| [deg] Pointing Roll               | 194.322630          | 194.52761863062      | CCD S0 on                             | N         | N       |
| [mm] SIM focus pos                | -0.782348           | -0.7809083437167272  | CCD S1 on                             | N         | N       |
| [mm] SIM defocus                  | 0                   | 0.001439871863259334 | CCD S2 on                             | O1        | N       |
| [mm] SIM translation stage pos    | -225.842463         | -225.8433433320239   | CCD S3 on                             | N         | N       |
| [mm] SIM translation stage offset | -7.75               | -7.749109670905796   | CCD S4 on                             | N         | N       |
| [s] Observation start time (MET)  | 639209068.184000    | 639208167.68915      | CCD S5 on                             | N         | N       |
| Observation start date            | 2018-04-04T06:03:19 | 2018-04-04T05:49:27  | Number of optional ACIS chips dropped | 1         | 1       |
| [s] Observation end time (MET)    | 639233068.184000    | 639233741.95316      | On-chip summing requested             | N         | N       |
| Observation end date              | 2018-04-04T12:43:19 | 2018-04-04T12:55:41  | Subarray requested                    | NONE      | NONE    |
| Read mode                         | TIMED               | TIMED                | Alternating exposures requested       | N         | N       |
|                                   |                     |                      | [s] Primary exposure time             | 0.000000  | 3.1     |

## 2.3 Aspect



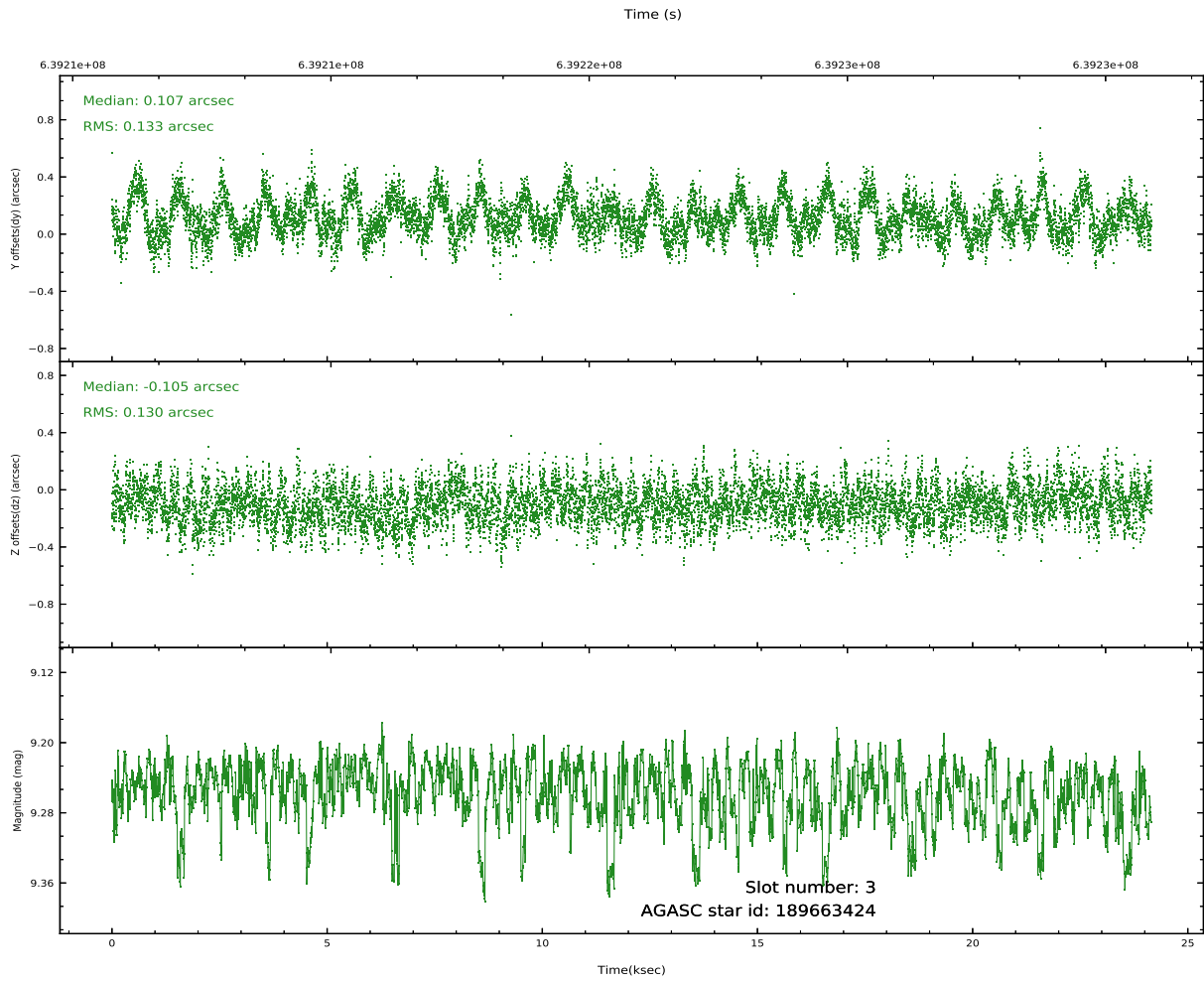
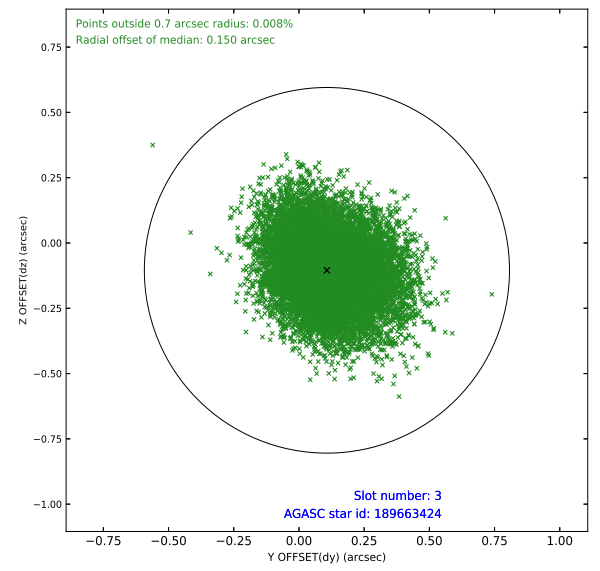
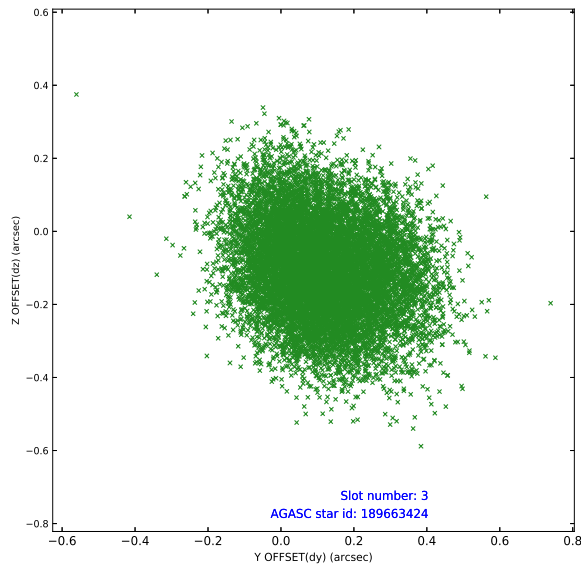


Slot Statistics

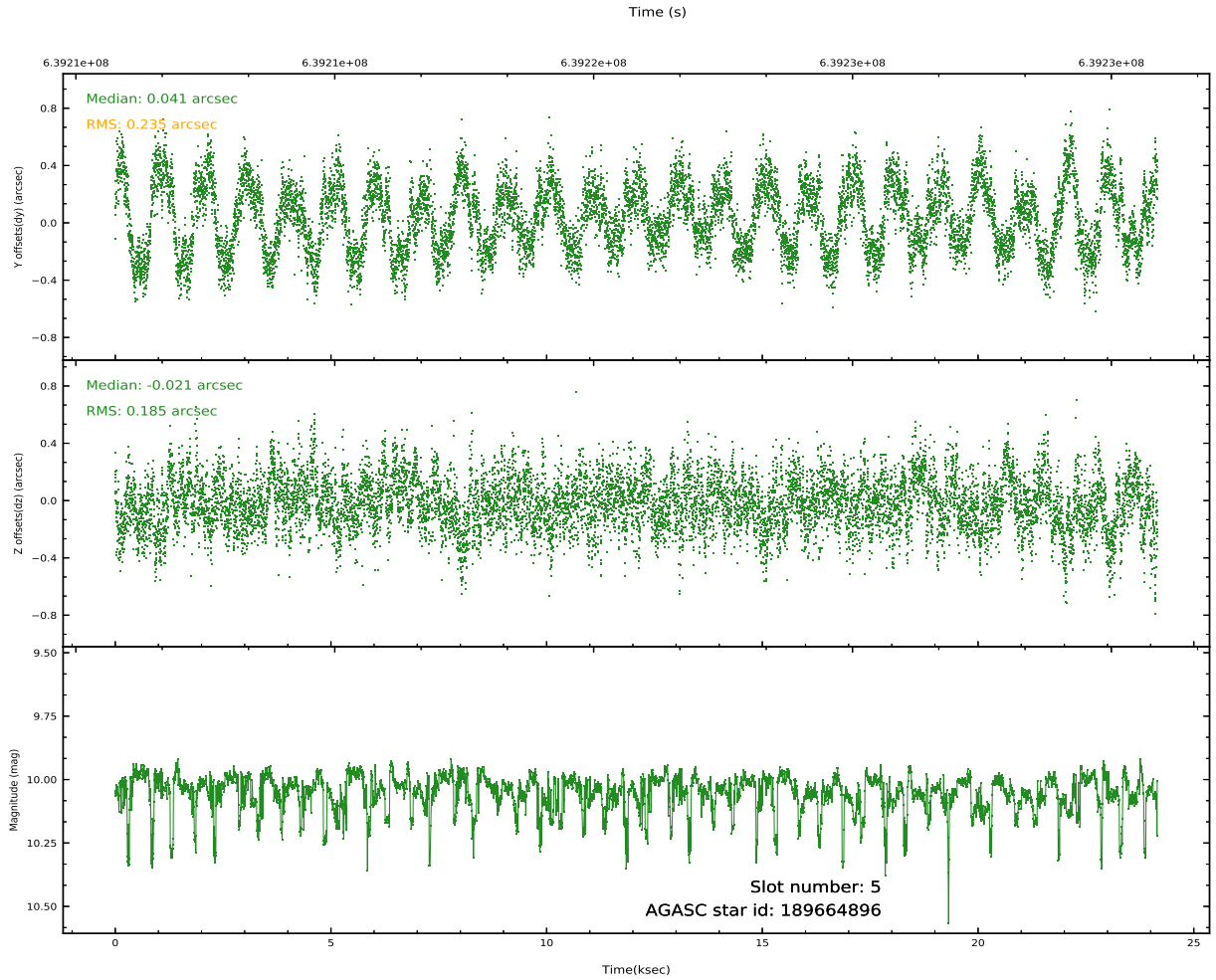
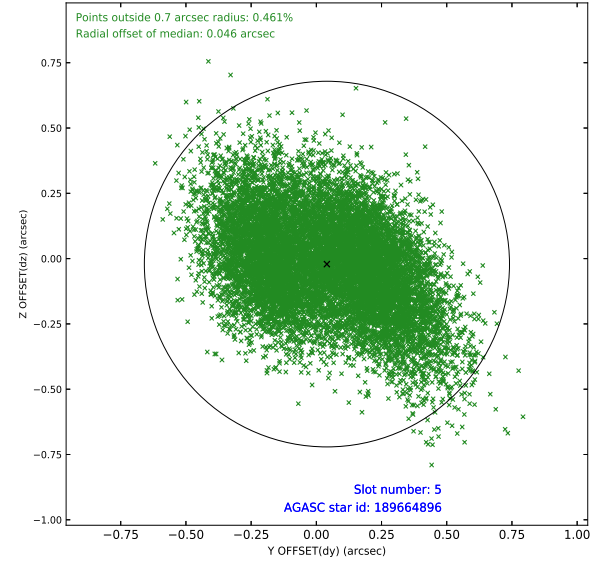
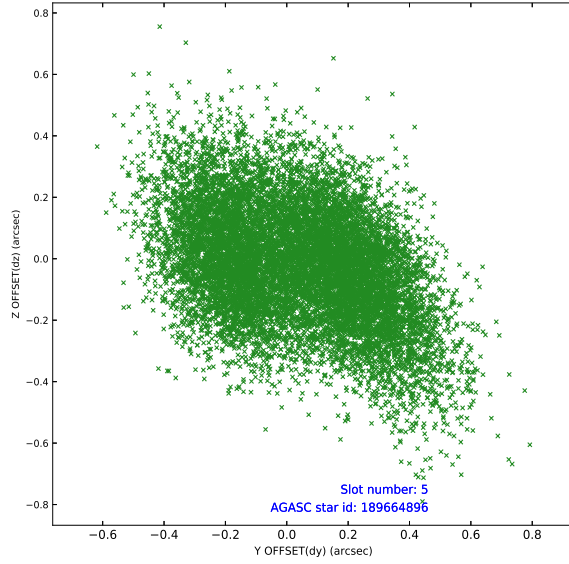
| pt | status  | used | id        | mag   | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mea   |
|----|---------|------|-----------|-------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|-------|
| 0  | FID     |      | ACIS-I-1  | 7.19  | 5892  | 1.000    | 0.177  | -0.025 | 0.025 | 0.088 | 0.000000   | 0.000000  | 919.17   | -1005 |
| 1  | FID     |      | ACIS-I-2  | 7.12  | 5891  | 1.000    | -0.231 | 0.045  | 0.015 | 0.060 | 0.000000   | 0.000000  | -775.66  | -1010 |
| 2  | FID     |      | ACIS-I-4  | 7.10  | 5891  | 1.000    | -0.042 | 0.050  | 0.017 | 0.042 | 0.000000   | 0.000000  | 2138.37  | 895   |
| 3  | GUIDE   | used | 189663424 | 9.25  | 11772 | 1.000    | 0.107  | -0.105 | 0.199 | 0.318 | 186.825866 | 20.078365 | -395.85  | -765  |
| 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 | 189664896 | 10.04 | 11706 | 1.000    | 0.041  | -0.021 | 0.318 | 0.511 | 187.353039 | 19.315328 | -1454.33 | 2335  |
| 6  | GUIDE   | used | 189683328 | 7.89  | 11720 | 1.000    | -0.102 | 0.121  | 0.171 | 0.274 | 187.188915 | 19.951844 | -1473.62 | -22   |
| 7  | GUIDE   | used | 189663528 | 8.84  | 11768 | 1.000    | -0.041 | 0.004  | 0.175 | 0.301 | 187.536017 | 19.341810 | -2081.22 | 2394  |

## 2.4 Star Slots

### 2.4.1 Slot 3

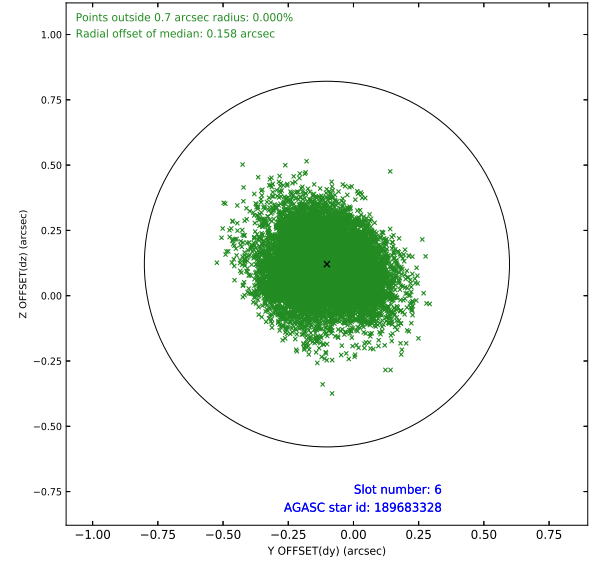
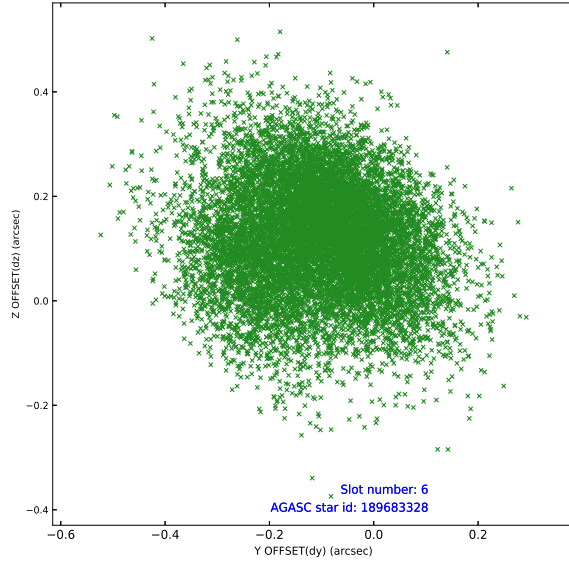


## 2.4.2 Slot 5

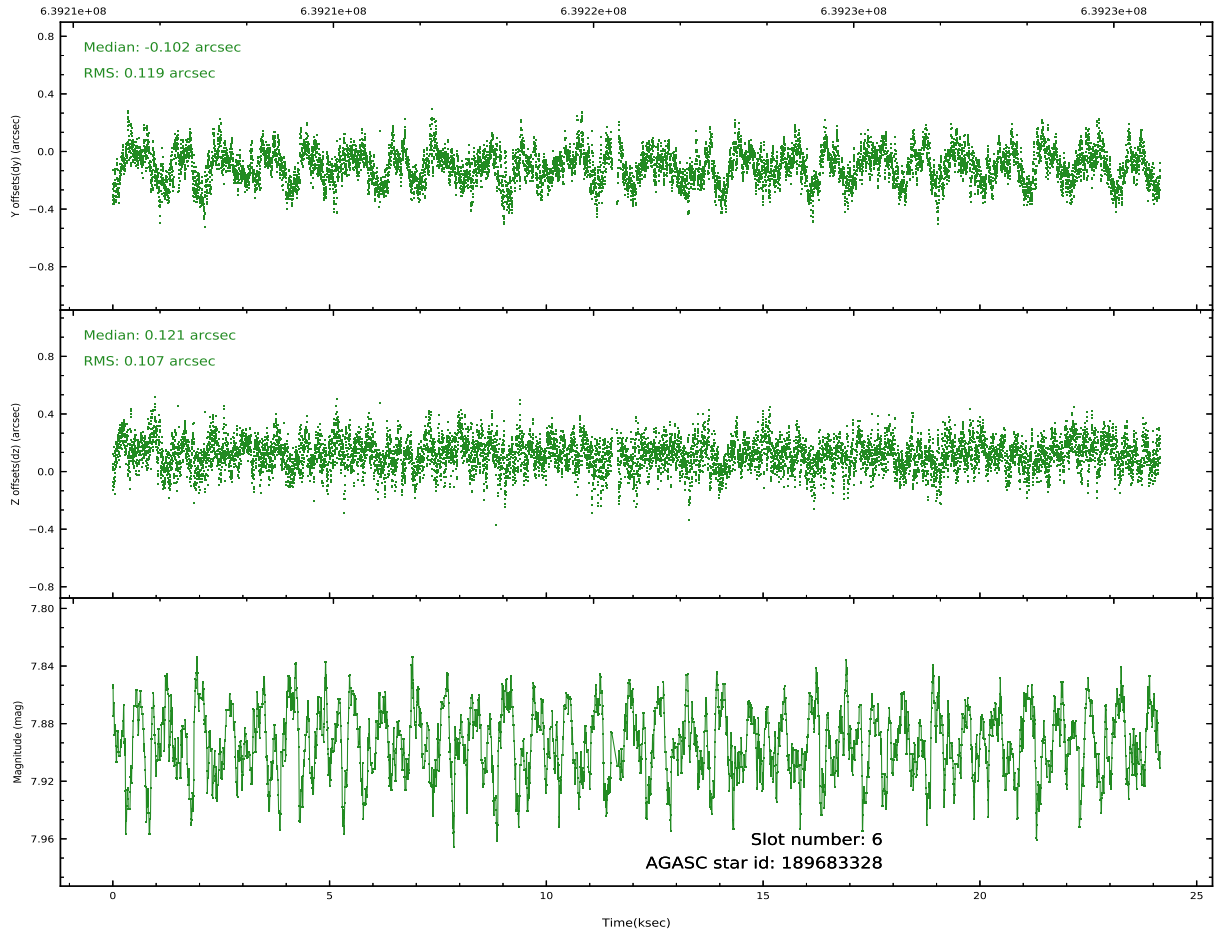




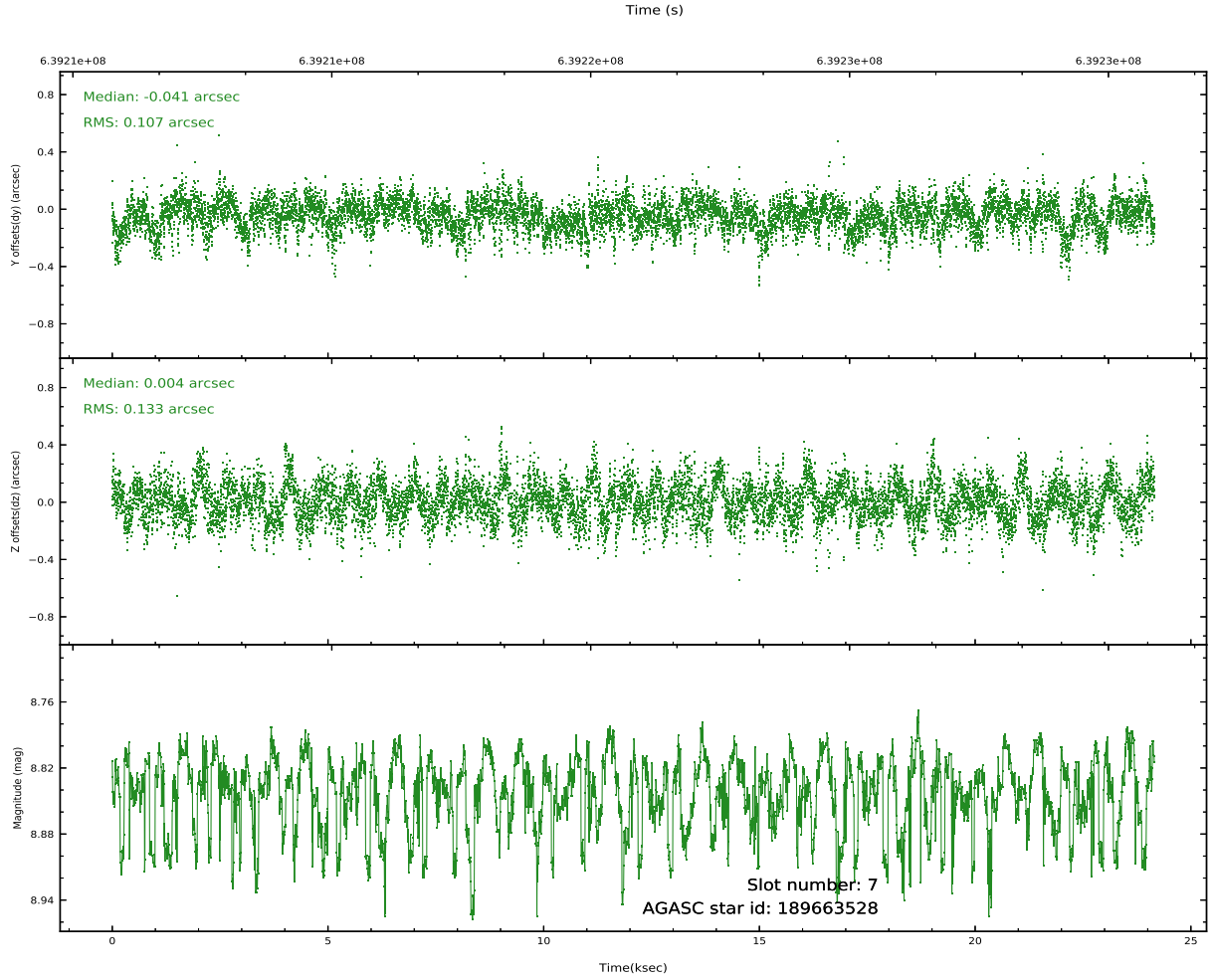
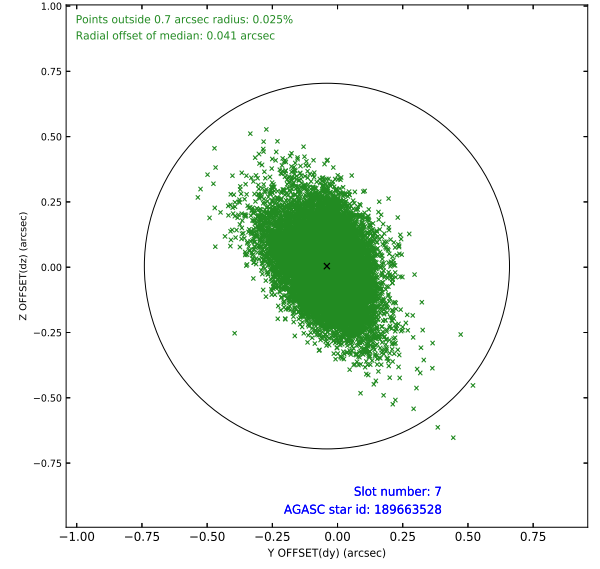
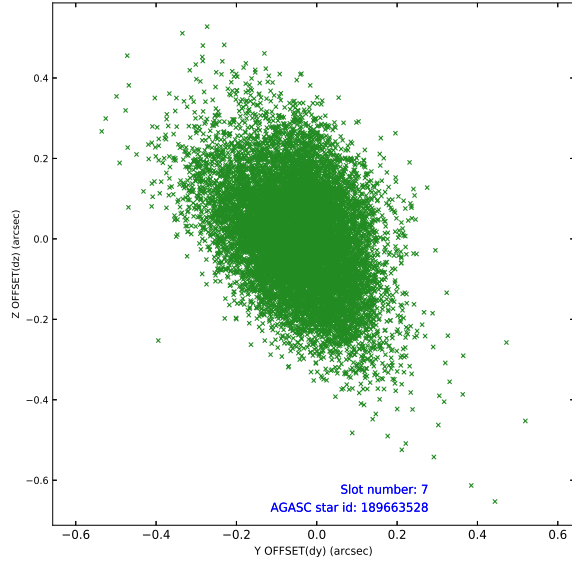
### 2.4.3 Slot 6



Time (s)

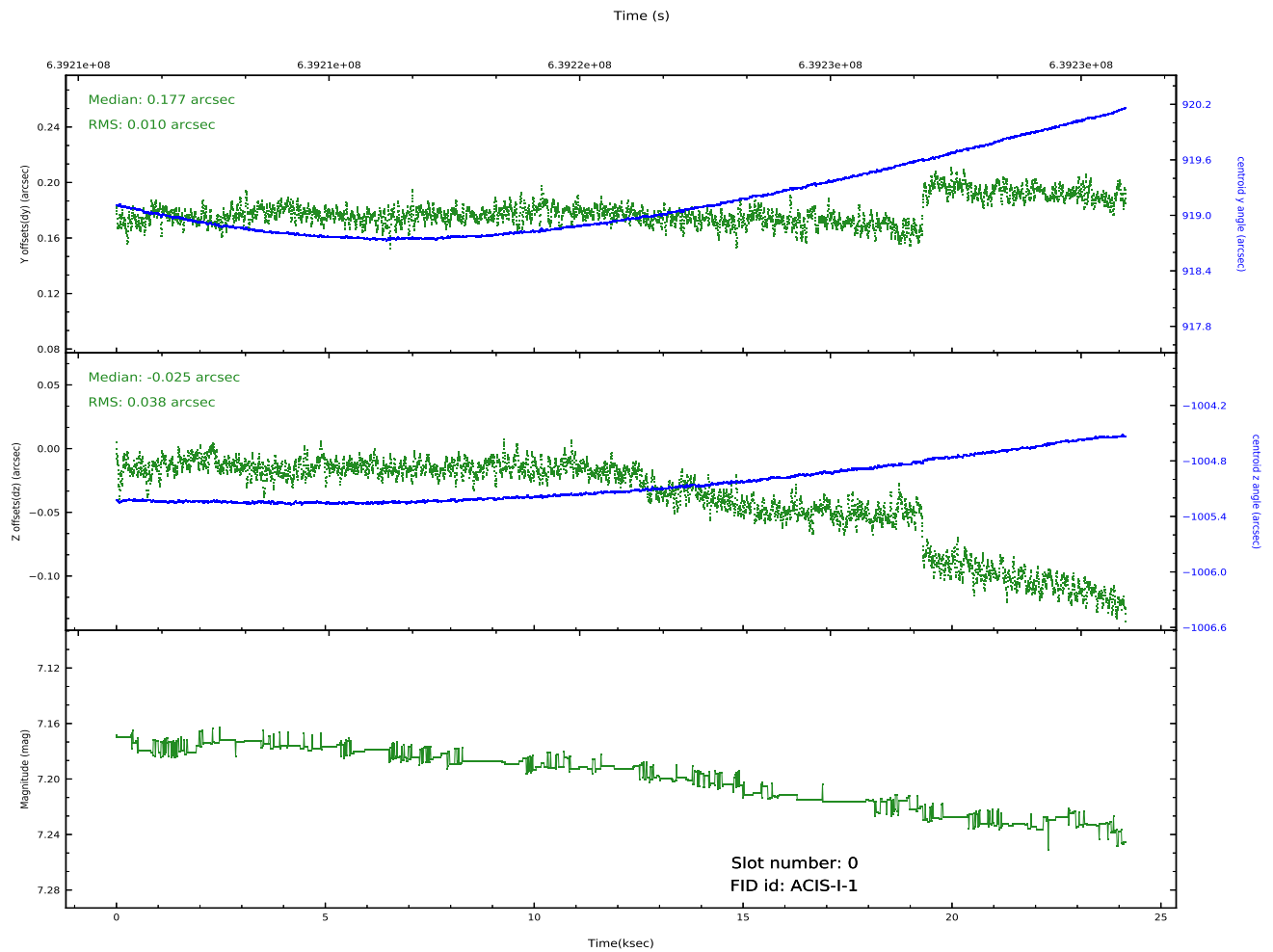
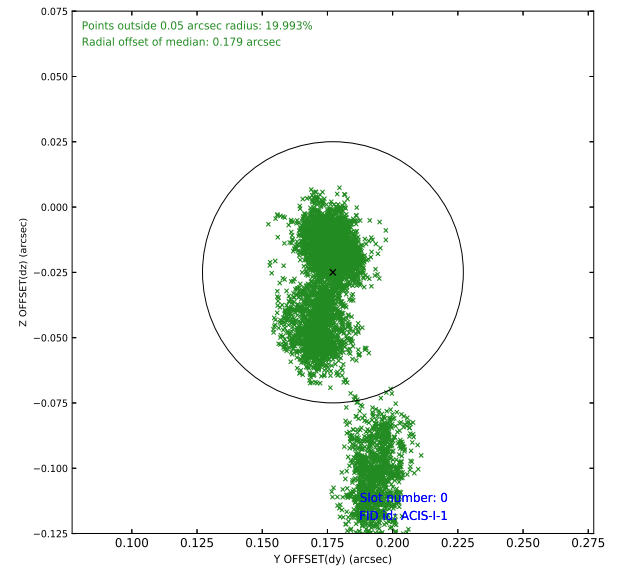
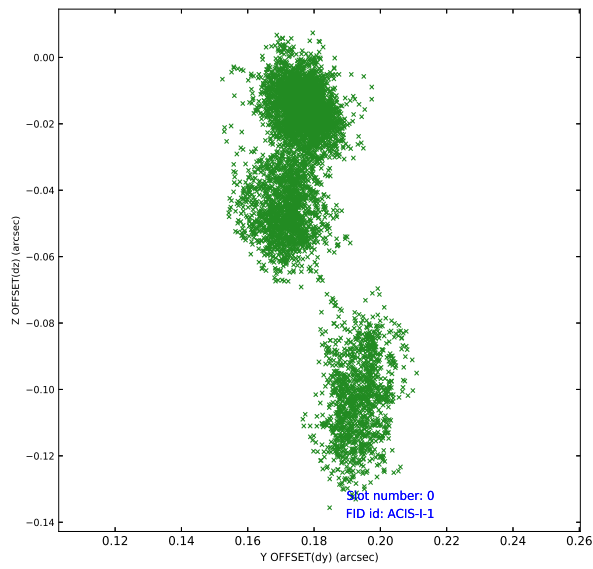


## 2.4.4 Slot 7

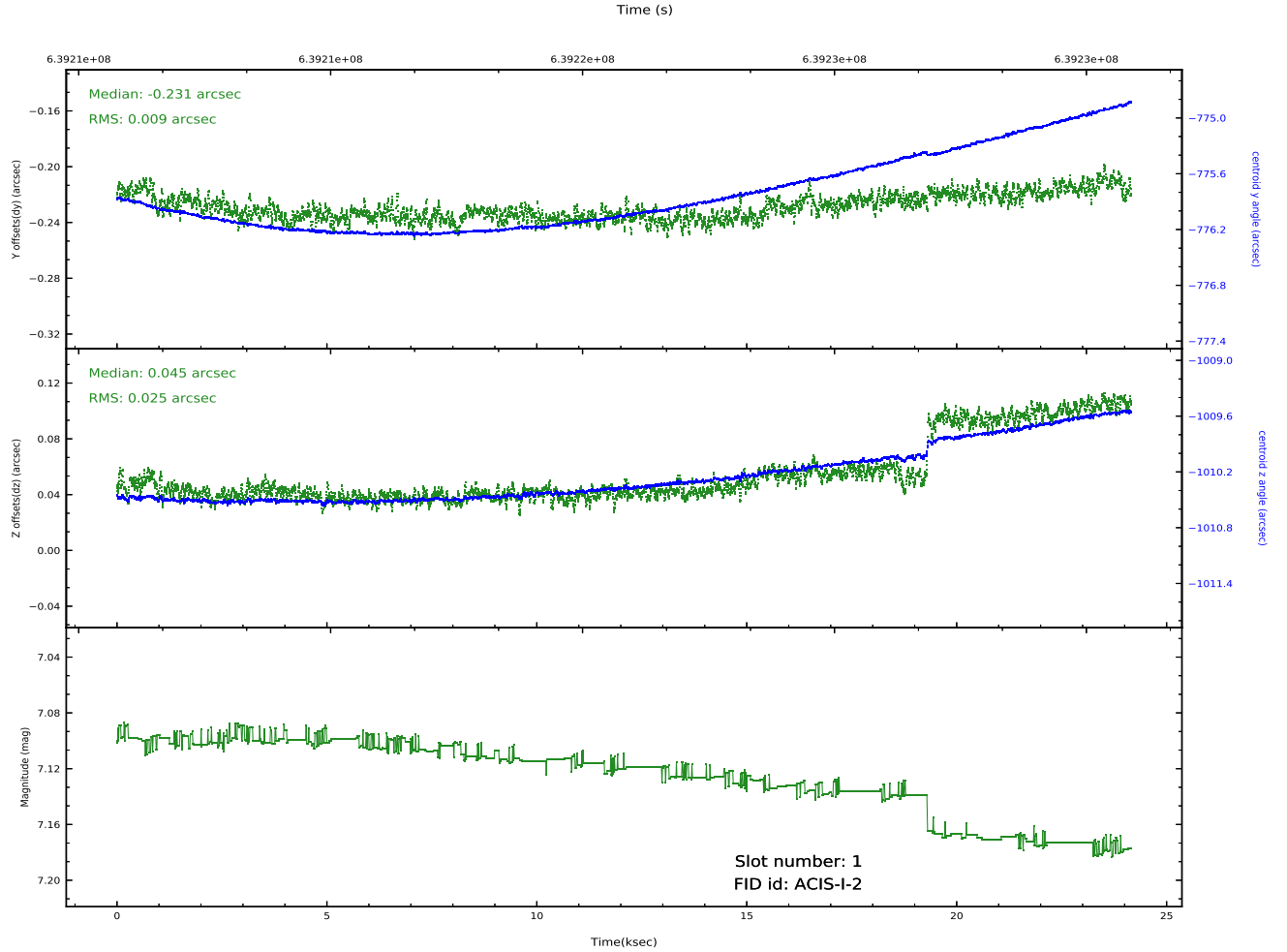
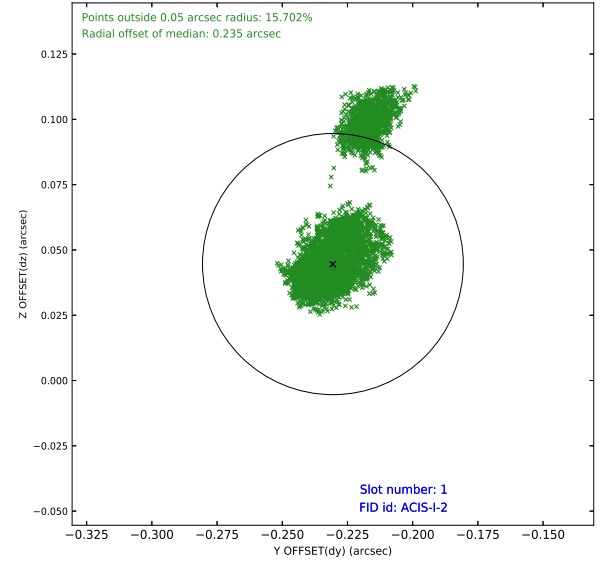
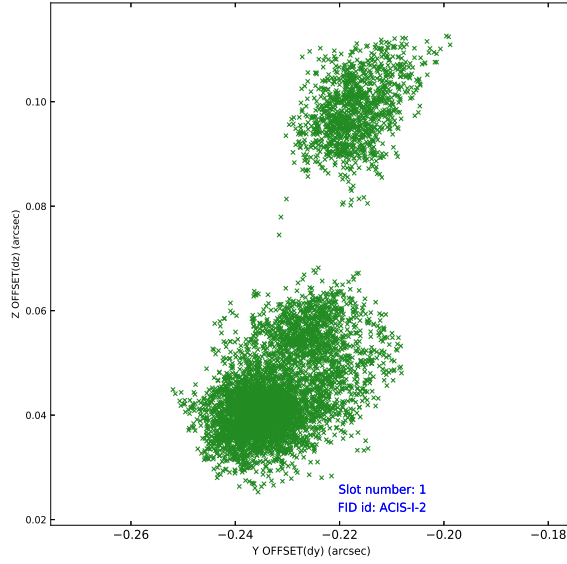


## 2.5 FID Slots

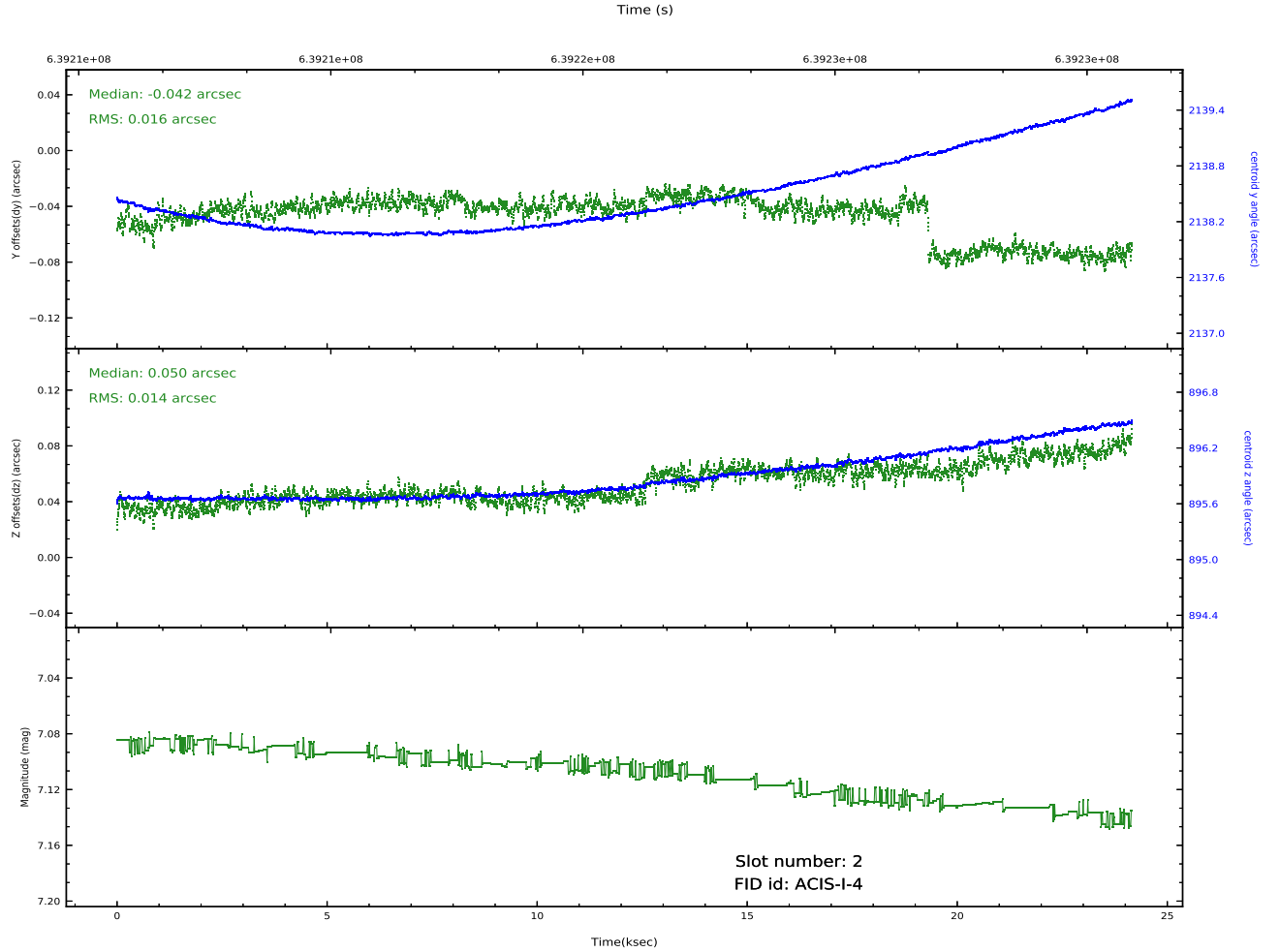
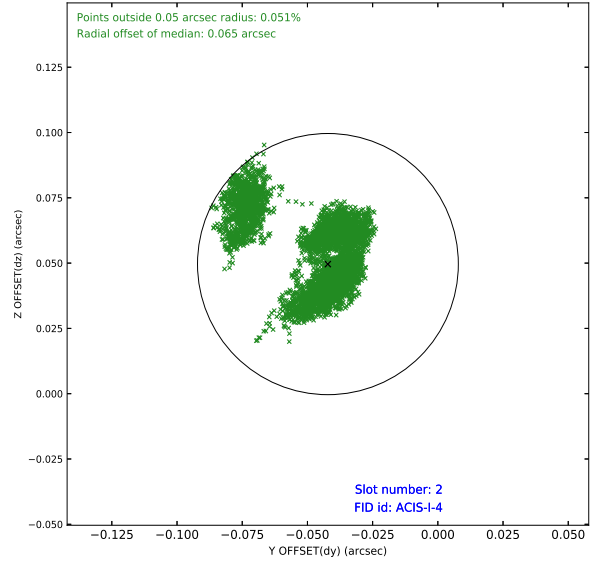
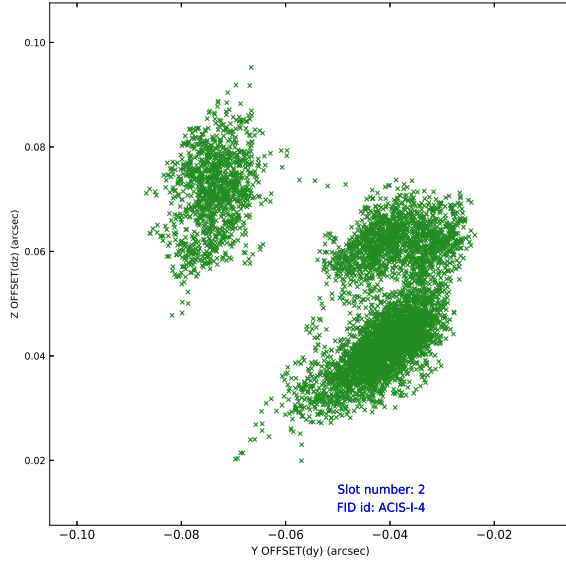
### 2.5.1 Slot 0



## 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)      | 2020.10.26      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 24.068276994586 |

## 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 guide star from the solution.

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One optional chip was dropped.