

# V&V Reference Report

## L2 ASCDS Version : 10.9.2

Observation 21032 - L2 Version 2  
Chandra X-Ray Center

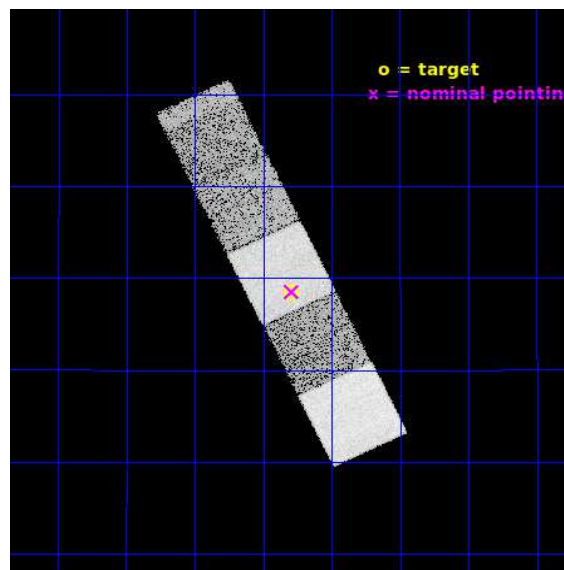
L2 Processing Date : Oct 26 2020

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# 1 Front

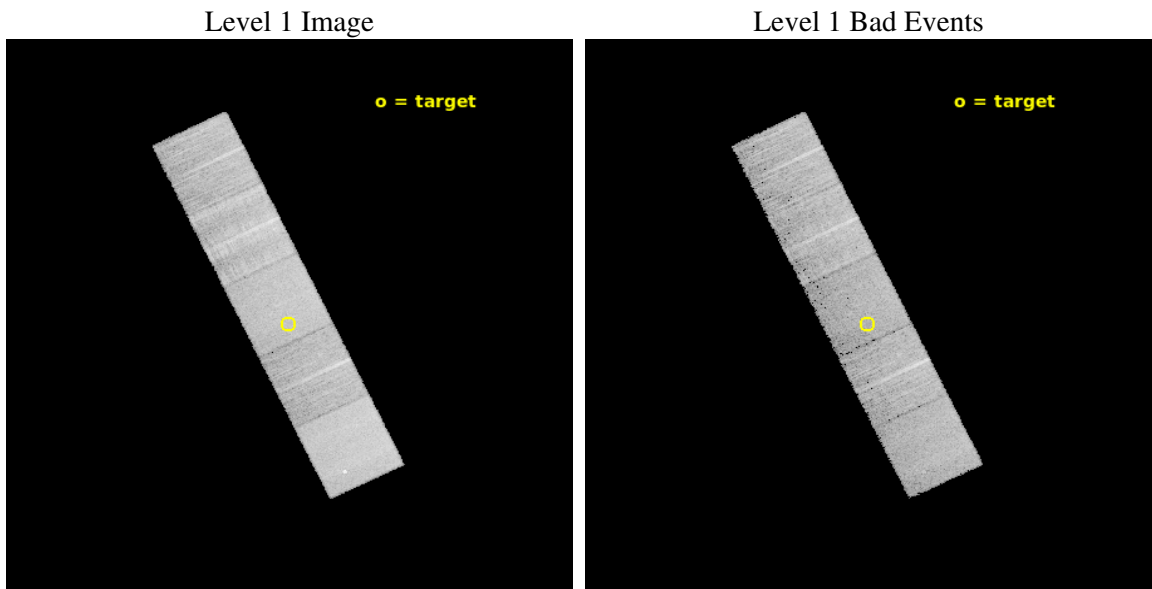
|          |  |   |
|----------|--|---|
| seq_num  | 703673   | Sequence number                             |
| obs_id   | 21032  | Observation id                              |
| title    | LOW SURFACE BRIGHTNESS GALAXIES AND THE BLACK HOLE OCCUPATION FRACTION | Proposal title                              |
| observer | Elena Gallo  | Principal investigator                      |
| object   | LSBC F570-05   | Source name                                 |
| dtcycle  | 0  | &#160                                       |
| cycle    | P  | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 171.32375  | Observer's specified target RA [deg]        |
| dec_targ | 17.808389  | Observer's specified target Dec [deg]       |
| ra_nom   | 171.32245151284  | Nominal RA [deg]                            |
| dec_nom  | 17.809117047674  | Nominal Dec [deg]                           |
| roll_nom | 244.15162014687  | Nominal Roll [deg]                          |
| revision | 2  | Processing version of data                  |
| ontime   | 9653.4000743628  | Sum of GTIs [s]                             |
| livetime | 9527.2712956615  | Livetime [s]                                |
| ontime5  | 9653.4000743628  | Sum of GTIs [s]                             |
| ontime6  | 9653.4000743628  | Sum of GTIs [s]                             |
| ontime7  | 9653.4000743628  | Sum of GTIs [s]                             |
| ontime8  | 9653.4000743628  | Sum of GTIs [s]                             |
| ontime9  | 9653.4000743628  | Sum of GTIs [s]                             |
| l2events | 112320   | Number of level 2 events                    |



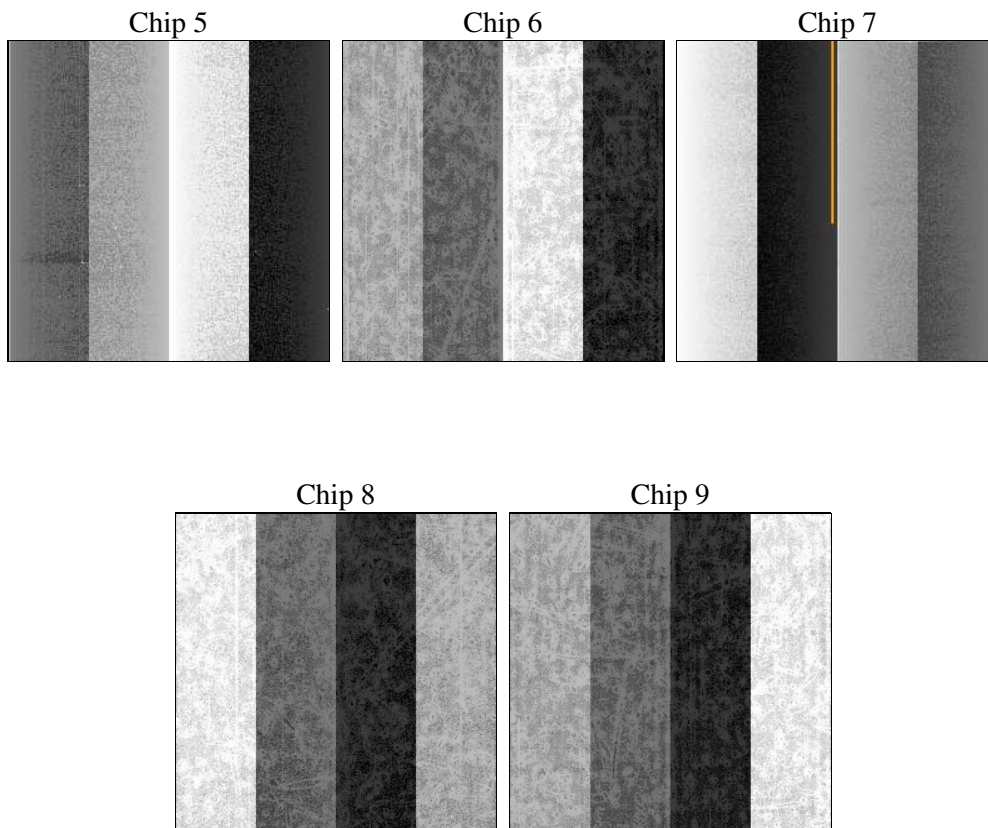
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |   |
|----------|---------------------|--------------------------------|----------------|-----------------|---|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 9600.000000     | [s] Scheduled observation exposure time |
| ascdsver | 10.9.2              | Processing system revision     | ontime         | 9653.4000743628 | Sum of GTIs [s]                         |
| caldbver | 4.9.3               | &#160                          | ontime5        | 9653.4000743628 | Sum of GTIs [s]                         |
| date     | 2020-10-26T10:43:26 | Date and time of file creation | ontime6        | 9653.4000743628 | Sum of GTIs [s]                         |
| revision | 2                   | Processing version of data     | ontime7        | 9653.4000743628 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 9653.4000743628 | Sum of GTIs [s]                         |
|          |                     |                                | ontime9        | 9653.4000743628 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 440147          | Number of level 1 events                |

### 2.1.4 Events

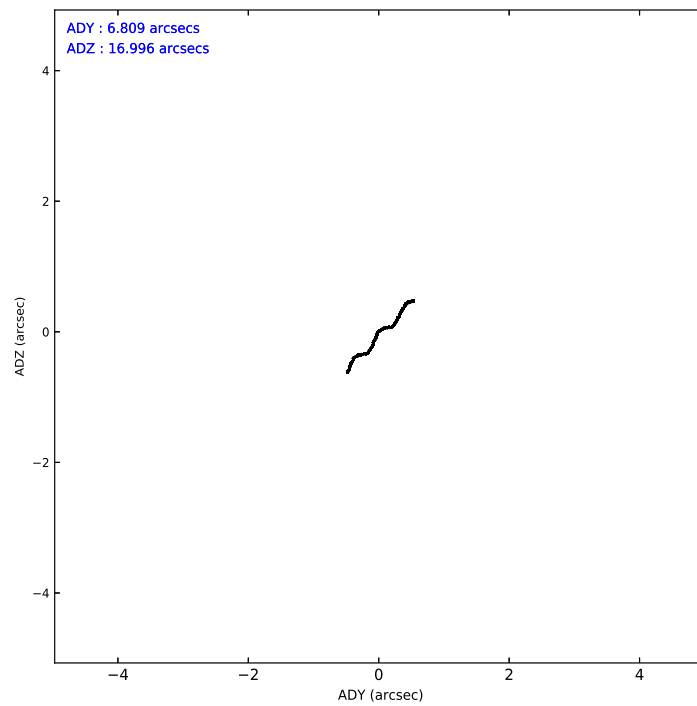
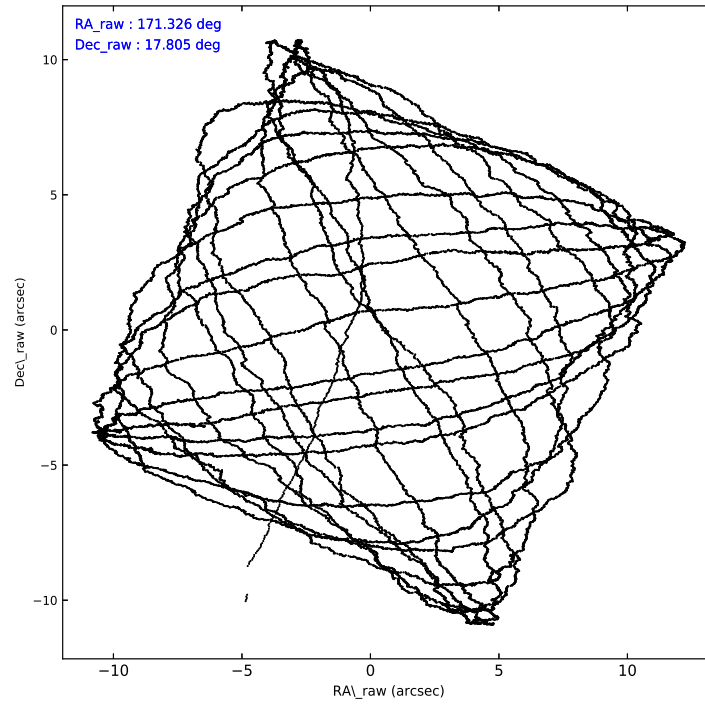
|                 | ccd 5  | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|-----------------|--------|-------|-------|-------|-------|
| level 1 events  | 111292 | 70930 | 90519 | 94256 | 73150 |
| rejected events | 58221  | 63035 | 51225 | 67932 | 64539 |
| rejected %      | 52%    | 88%   | 56%   | 72%   | 88%   |

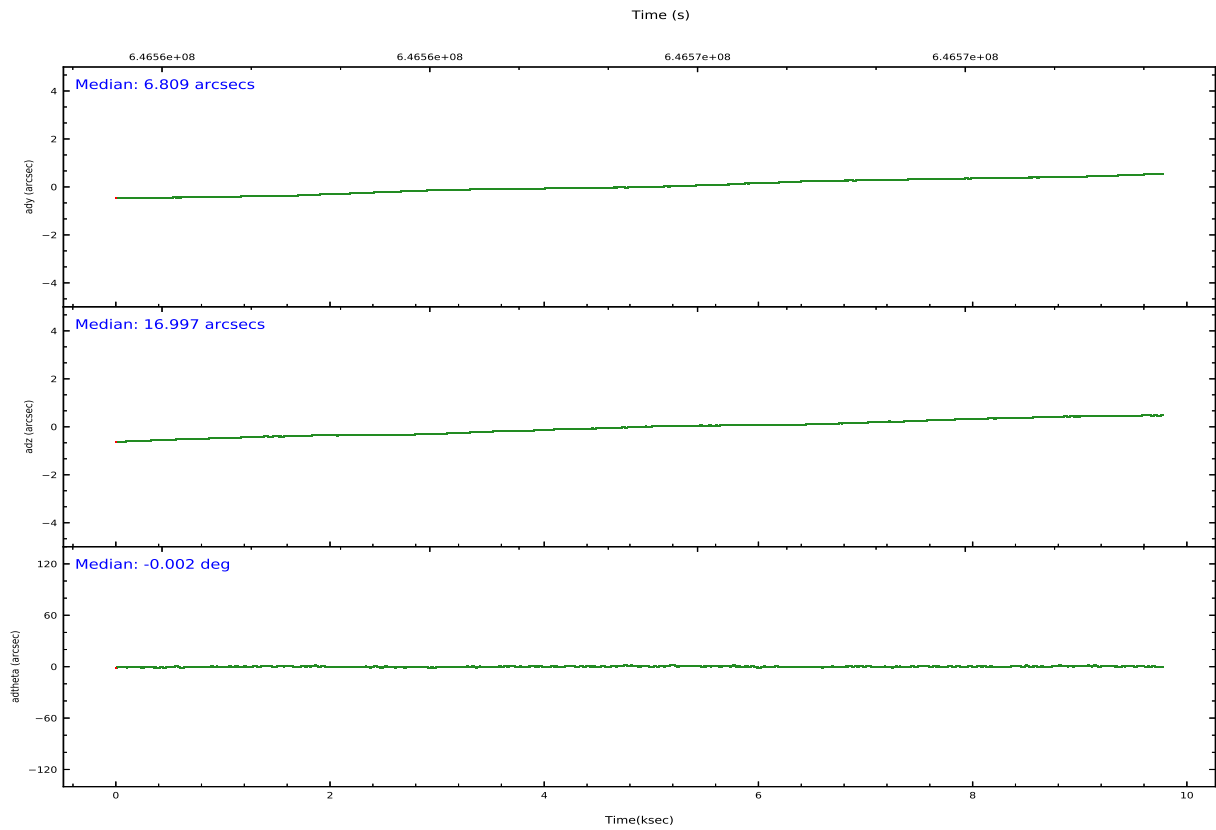
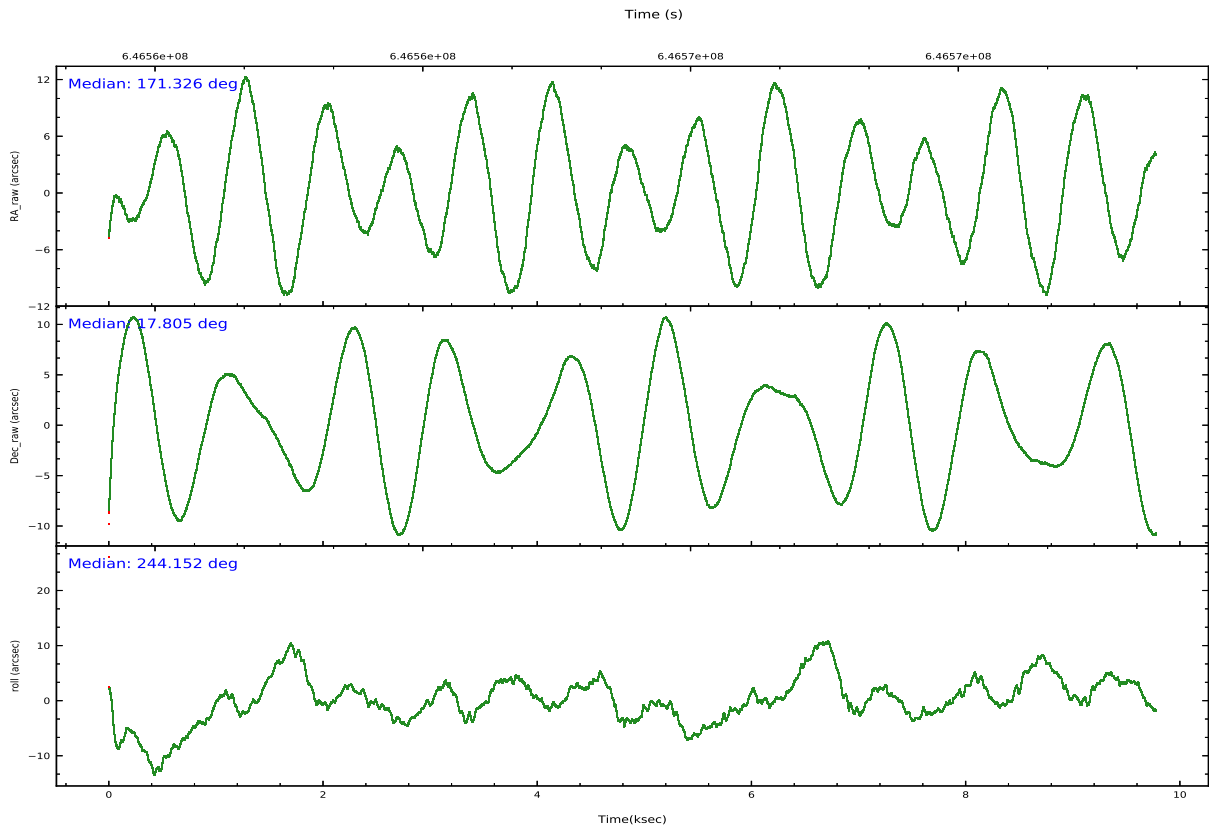
|                | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|----------------|-------|-------|-------|-------|-------|
| grade 0 events | 3147  | 2463  | 3313  | 7516  | 3058  |
|                | 2%    | 3%    | 3%    | 7%    | 4%    |
| grade 1 events | 268   | 37    | 135   | 72    | 33    |
|                | 0%    | 0%    | 0%    | 0%    | 0%    |
| grade 2 events | 17110 | 1905  | 8397  | 6223  | 1948  |
|                | 15%   | 2%    | 9%    | 6%    | 2%    |
| grade 3 events | 1657  | 779   | 3154  | 2721  | 888   |
|                | 1%    | 1%    | 3%    | 2%    | 1%    |
| grade 4 events | 1516  | 779   | 3172  | 2533  | 846   |
|                | 1%    | 1%    | 3%    | 2%    | 1%    |
| grade 5 events | 7580  | 3276  | 9178  | 5057  | 3640  |
|                | 6%    | 4%    | 10%   | 5%    | 4%    |
| grade 6 events | 29661 | 1969  | 21286 | 7337  | 1872  |
|                | 26%   | 2%    | 23%   | 7%    | 2%    |
| grade 7 events | 50353 | 59722 | 41884 | 62797 | 60865 |
|                | 45%   | 84%   | 46%   | 66%   | 83%   |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar version number                 | 8         | 8       |
| Detector                          | ACIS-56789          | ACIS-56789           | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | FAINT               | FAINT                | CCD I0 on                             | N         | N       |
| Observation mode                  | POINTING            | POINTING             | CCD I1 on                             | N         | N       |
| [deg] Pointing RA                 | 171.323662          | 171.32245151284      | CCD I2 on                             | N         | N       |
| [deg] Pointing Dec                | 17.832461           | 17.809117047674      | CCD I3 on                             | N         | N       |
| [deg] Pointing Roll               | 244.000028          | 244.15162014687      | CCD S0 on                             | N         | N       |
| [mm] SIM focus pos                | -0.684267           | -0.6828225247311905  | CCD S1 on                             | O1        | Y       |
| [mm] SIM defocus                  | 0                   | 0.001444936568705701 | CCD S2 on                             | Y         | Y       |
| [mm] SIM translation stage pos    | -190.132523         | -190.1400660498719   | CCD S3 on                             | Y         | Y       |
| [mm] SIM translation stage offset | 0                   | 0.00754346686406393  | CCD S4 on                             | Y         | Y       |
| [s] Observation start time (MET)  | 646562248.184000    | 646561151.17373      | CCD S5 on                             | O2        | Y       |
| Observation start date            | 2018-06-28T08:36:19 | 2018-06-28T08:19:11  | Number of optional ACIS chips dropped | 0         | 0       |
| [s] Observation end time (MET)    | 646571848.184000    | 646572454.3619       | On-chip summing requested             | N         | N       |
| Observation end date              | 2018-06-28T11:16:19 | 2018-06-28T11:27:34  | Subarray requested                    | NONE      | NONE    |
| Read mode                         | TIMED               | TIMED                | Alternating exposures requested       | N         | N       |
|                                   |                     |                      | [s] Primary exposure time             | 0.000000  | 3.1     |

## 2.3 Aspect





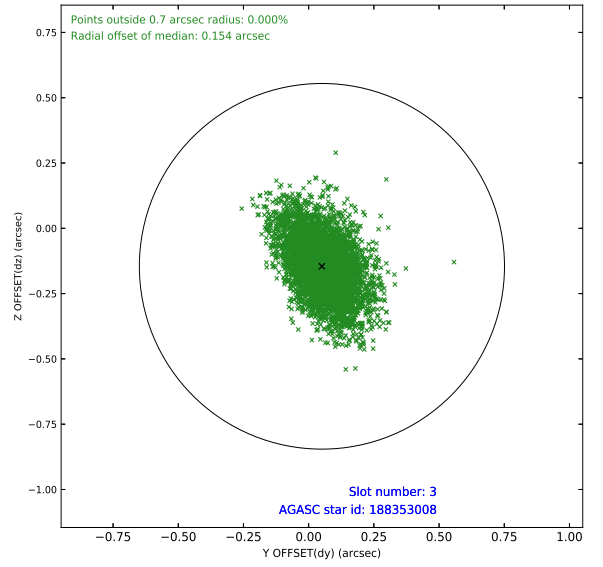
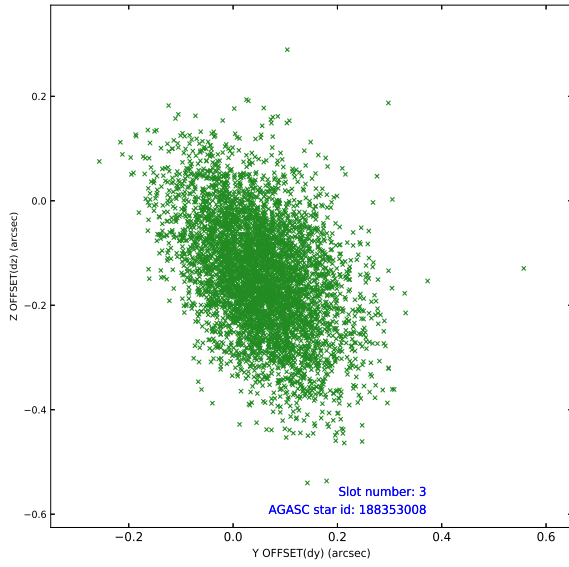
### Slot Statistics

| slot | status | used | id        | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_x |
|------|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|------------|-----------|----------|--------|
| 0    | FID    |      | ACIS-S-1  | 7.14 | 2386  | 1.000    | 0.182  | -0.139 | 0.016 | 0.027 | 0.000000   | 0.000000  | 936.54   | -1734  |
| 1    | FID    |      | ACIS-S-5  | 7.17 | 2386  | 1.000    | -0.165 | 0.141  | 0.015 | 0.021 | 0.000000   | 0.000000  | -1812.39 | 163    |
| 2    | FID    |      | ACIS-S-6  | 7.30 | 2386  | 1.000    | -0.038 | 0.010  | 0.024 | 0.042 | 0.000000   | 0.000000  | 401.43   | 807    |
| 3    | GUIDE  | used | 188353008 | 9.19 | 4766  | 1.000    | 0.051  | -0.146 | 0.141 | 0.248 | 170.546065 | 17.814725 | 1222.24  | -2369  |
| 4    | GUIDE  | used | 188363824 | 9.67 | 4760  | 1.000    | -0.135 | 0.002  | 0.228 | 0.355 | 171.384136 | 17.566948 | 768.43   | 605    |
| 5    | GUIDE  | used | 188364512 | 7.34 | 4771  | 1.000    | 0.062  | -0.131 | 0.154 | 0.259 | 171.108212 | 17.343678 | 1906.44  | 105    |
| 6    | GUIDE  | used | 188366960 | 6.89 | 4770  | 1.000    | 0.171  | -0.003 | 0.156 | 0.258 | 170.620607 | 17.437015 | 2336.49  | -1549  |
| 7    | GUIDE  | used | 188357536 | 9.17 | 4760  | 1.000    | -0.163 | 0.272  | 0.164 | 0.260 | 171.923065 | 17.908783 | -1147.82 | 1726   |

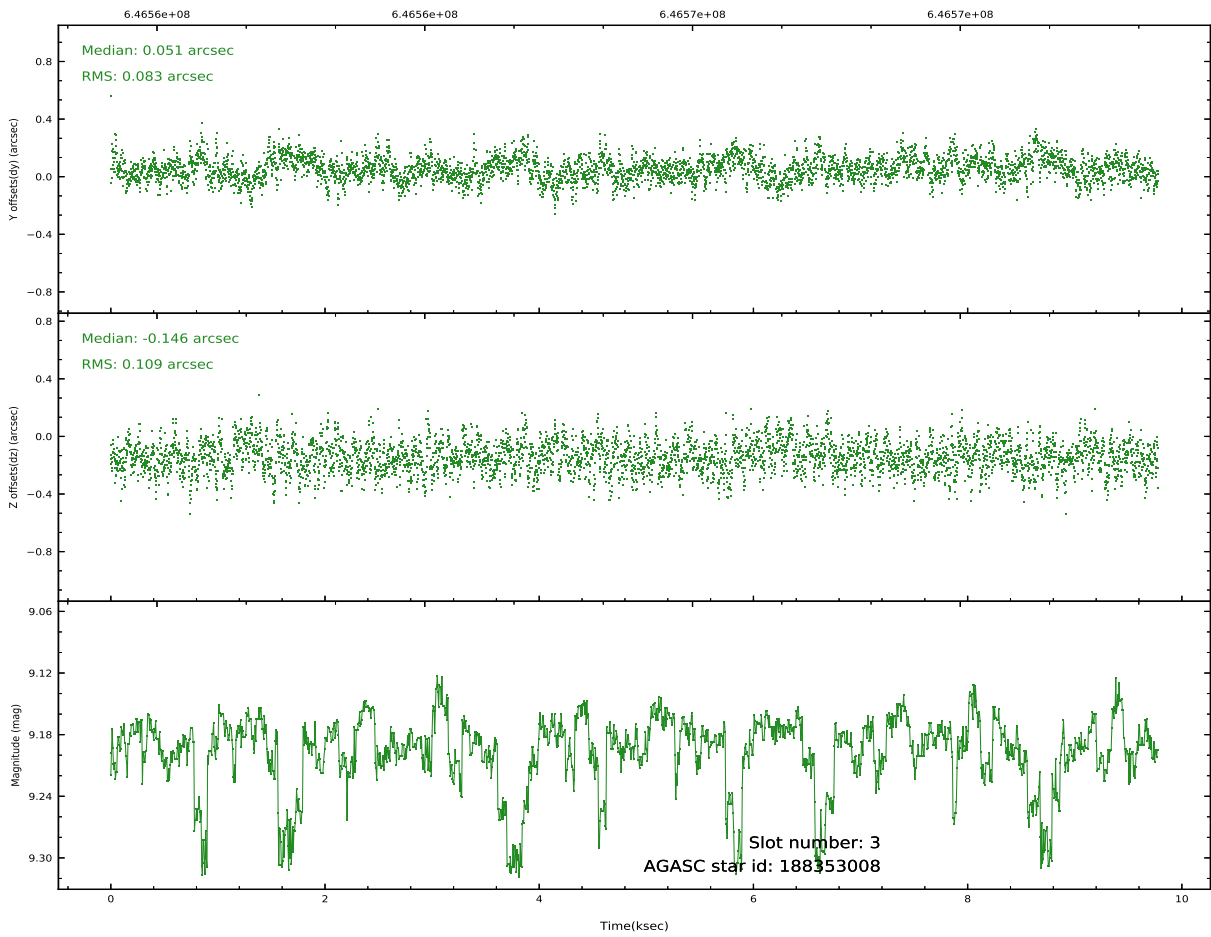
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## 2.4 Star Slots

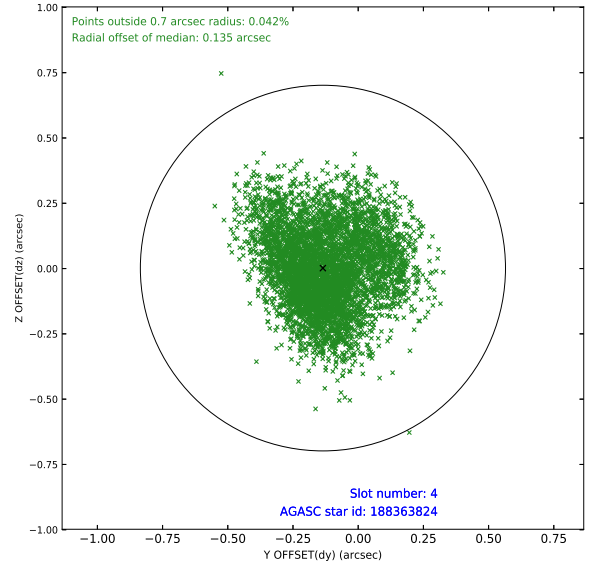
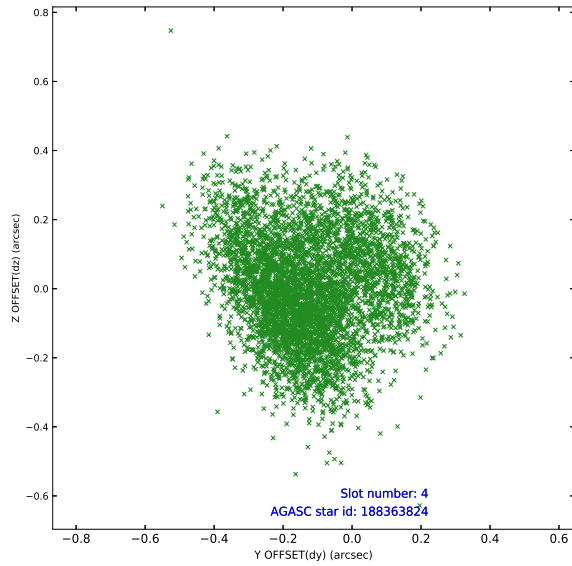
### 2.4.1 Slot 3



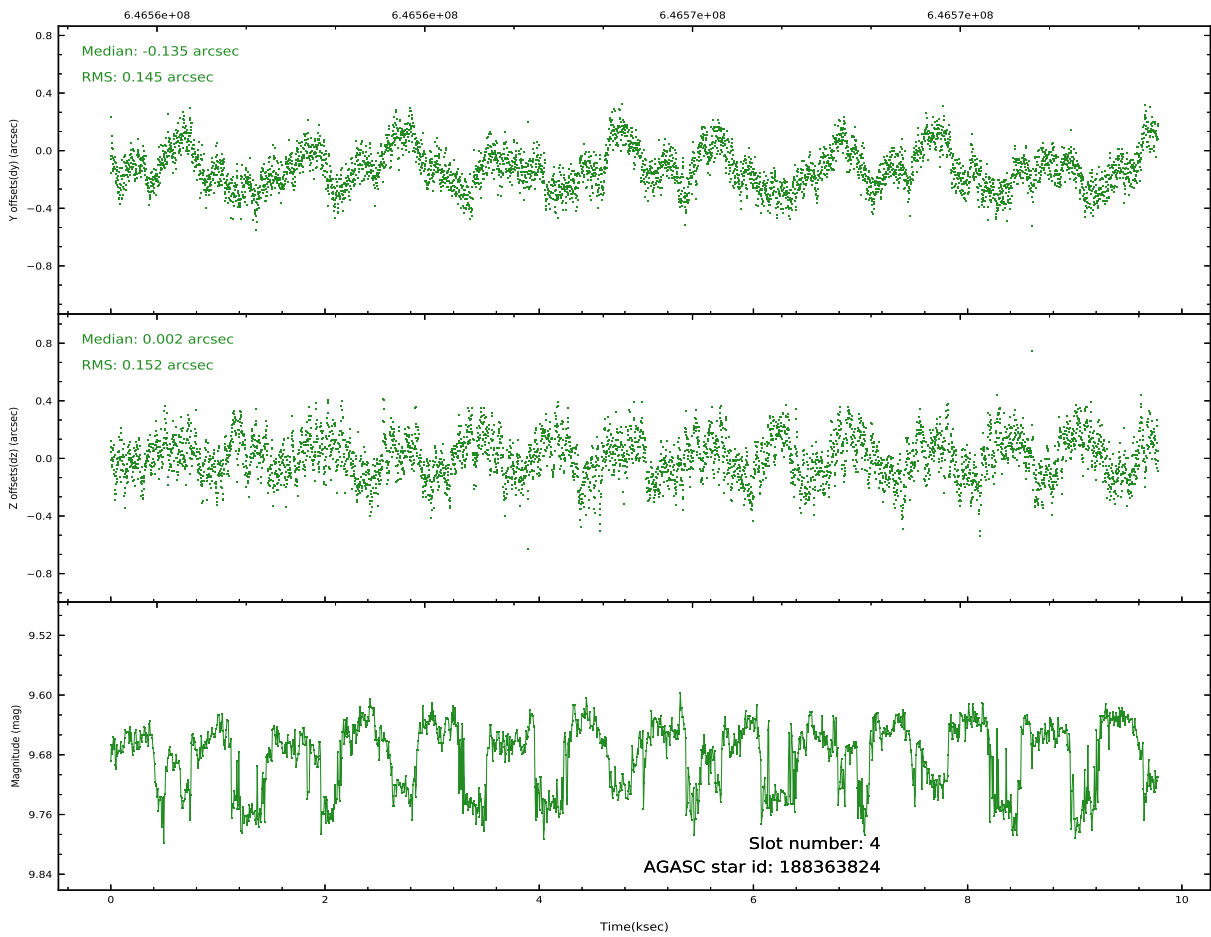
Time (s)



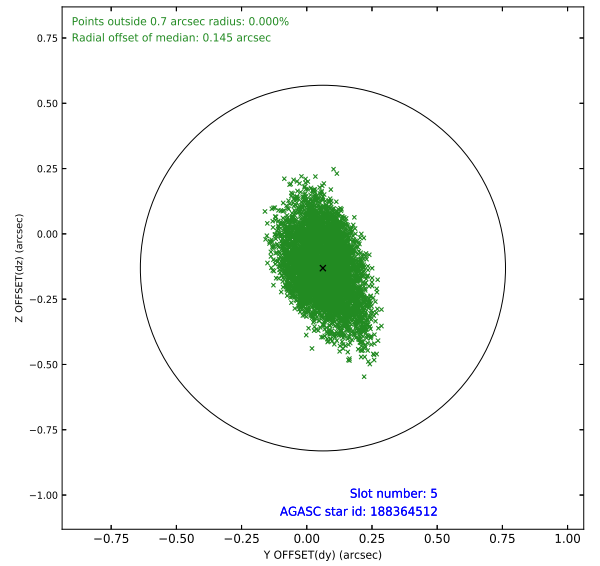
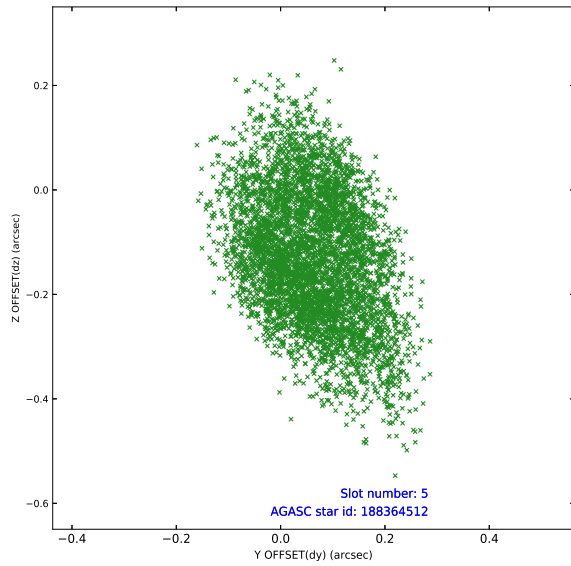
## 2.4.2 Slot 4



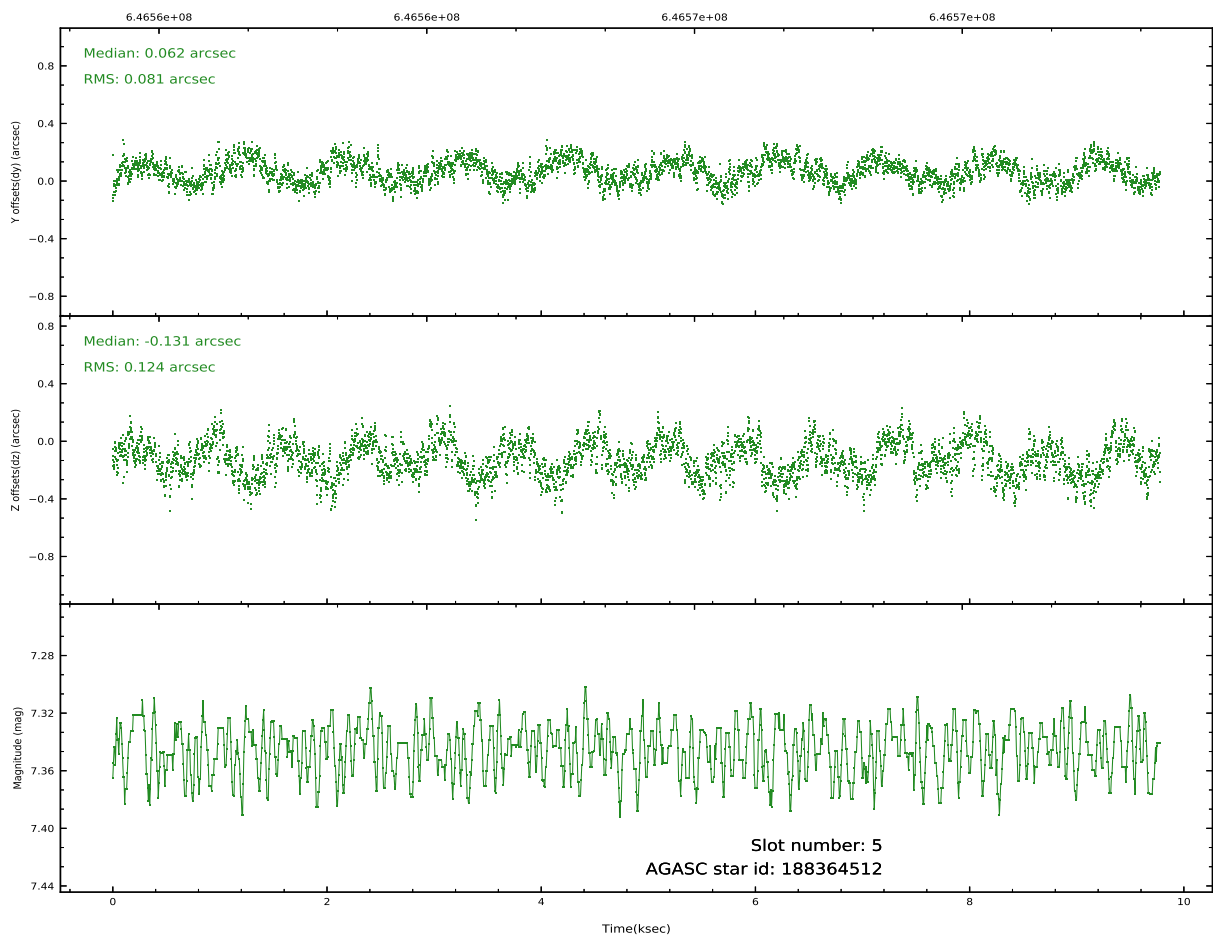
Time (s)



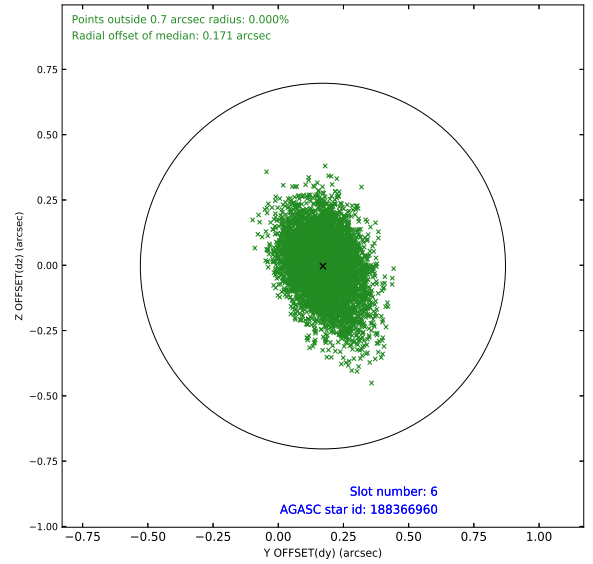
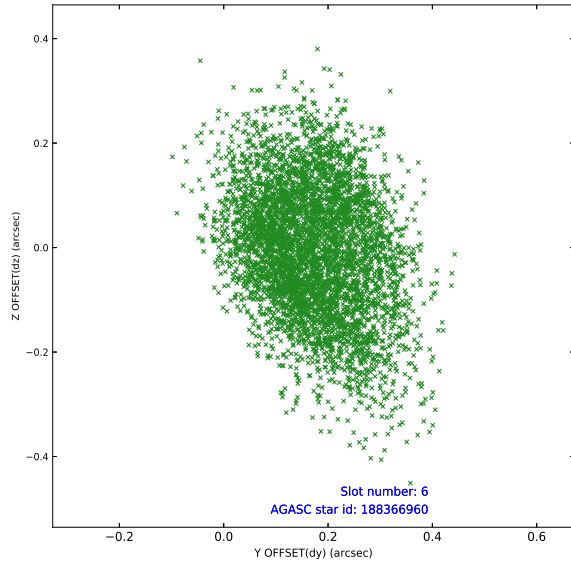
### 2.4.3 Slot 5



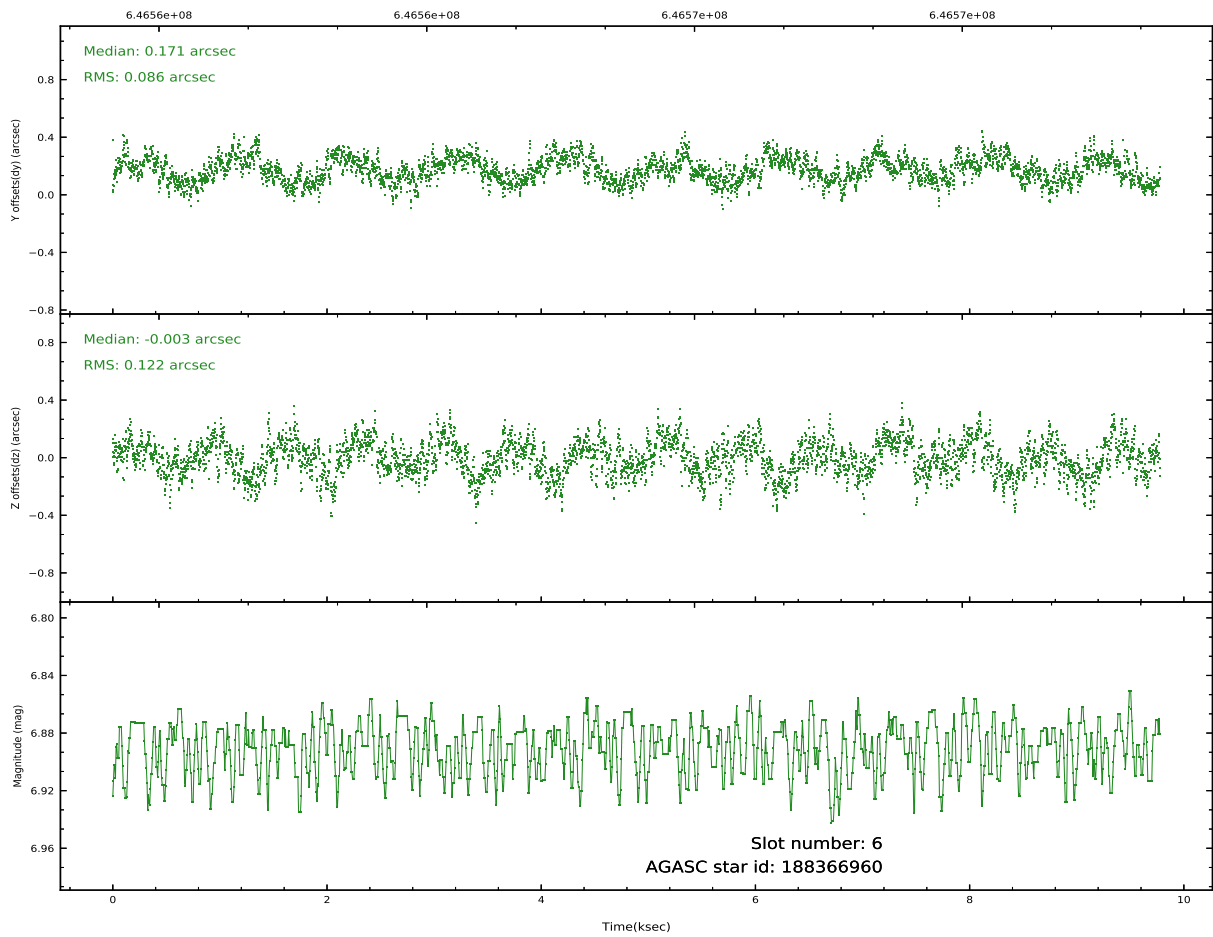
Time (s)



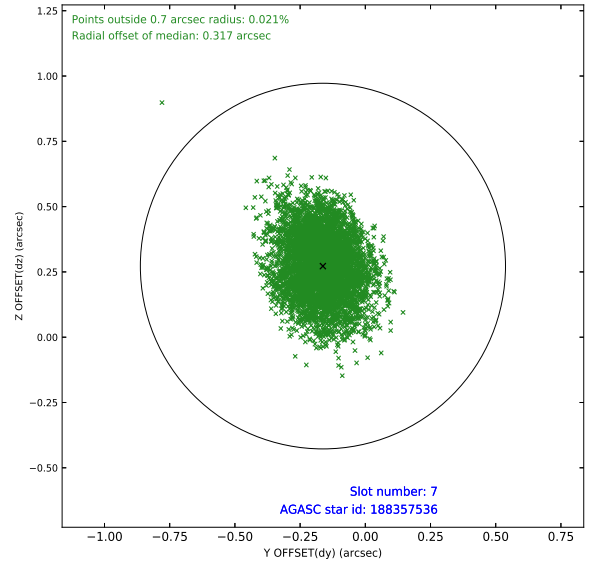
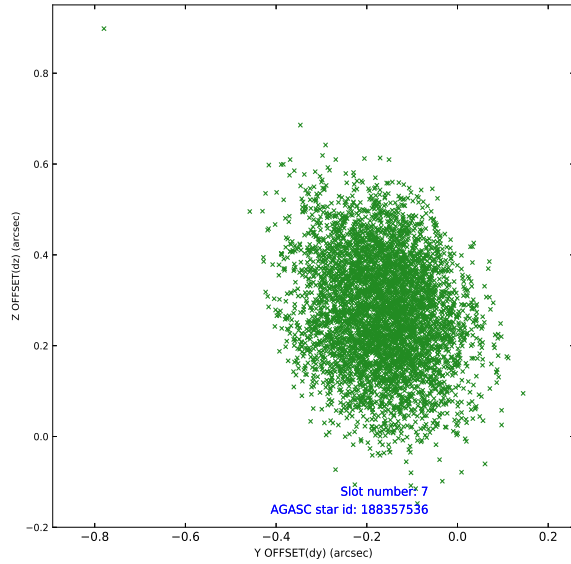
## 2.4.4 Slot 6



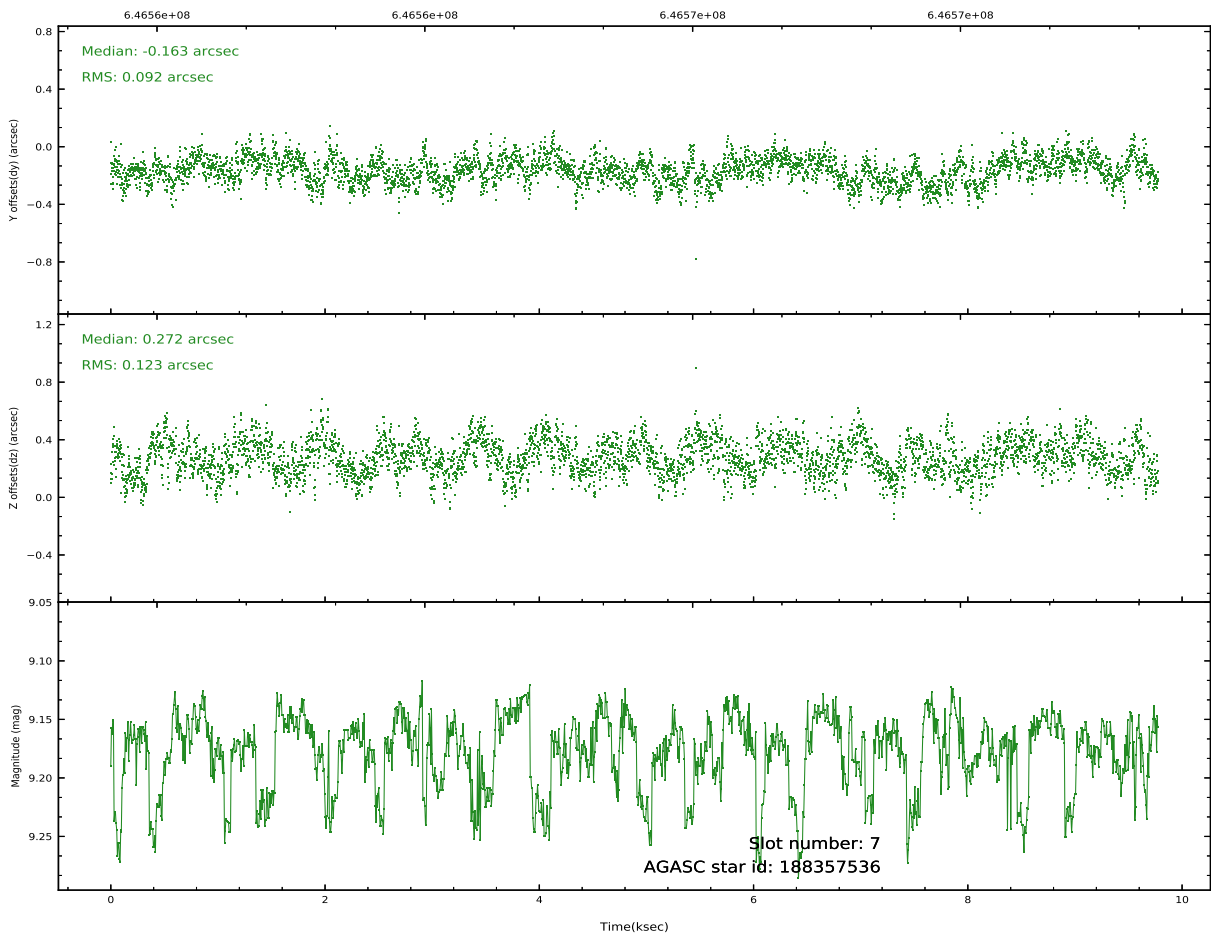
Time (s)



## 2.4.5 Slot 7

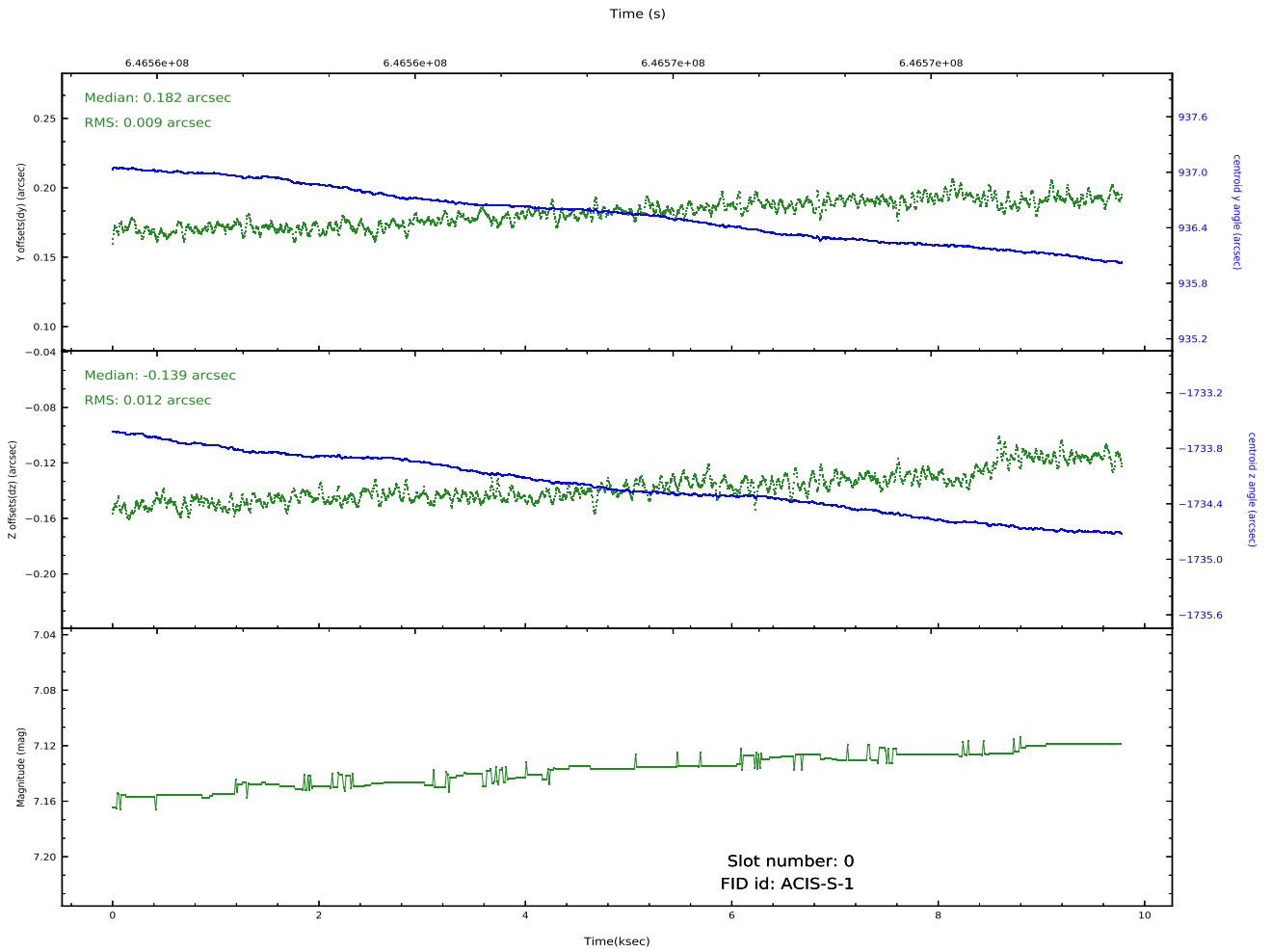
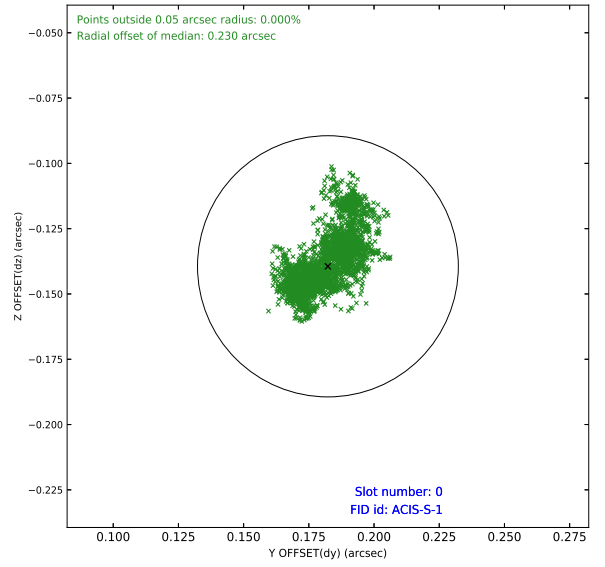
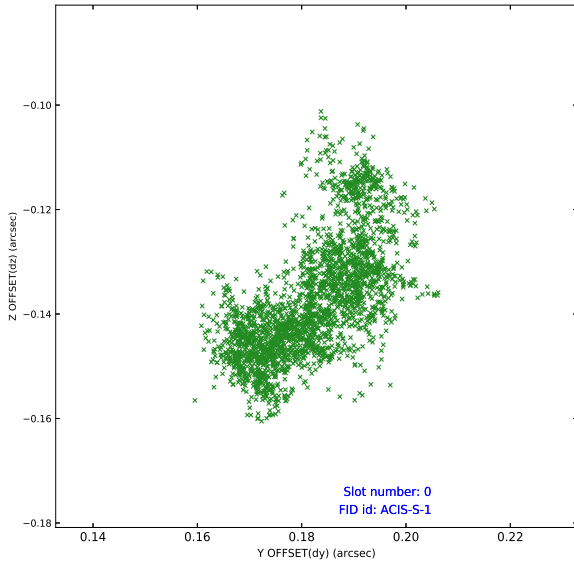


Time (s)

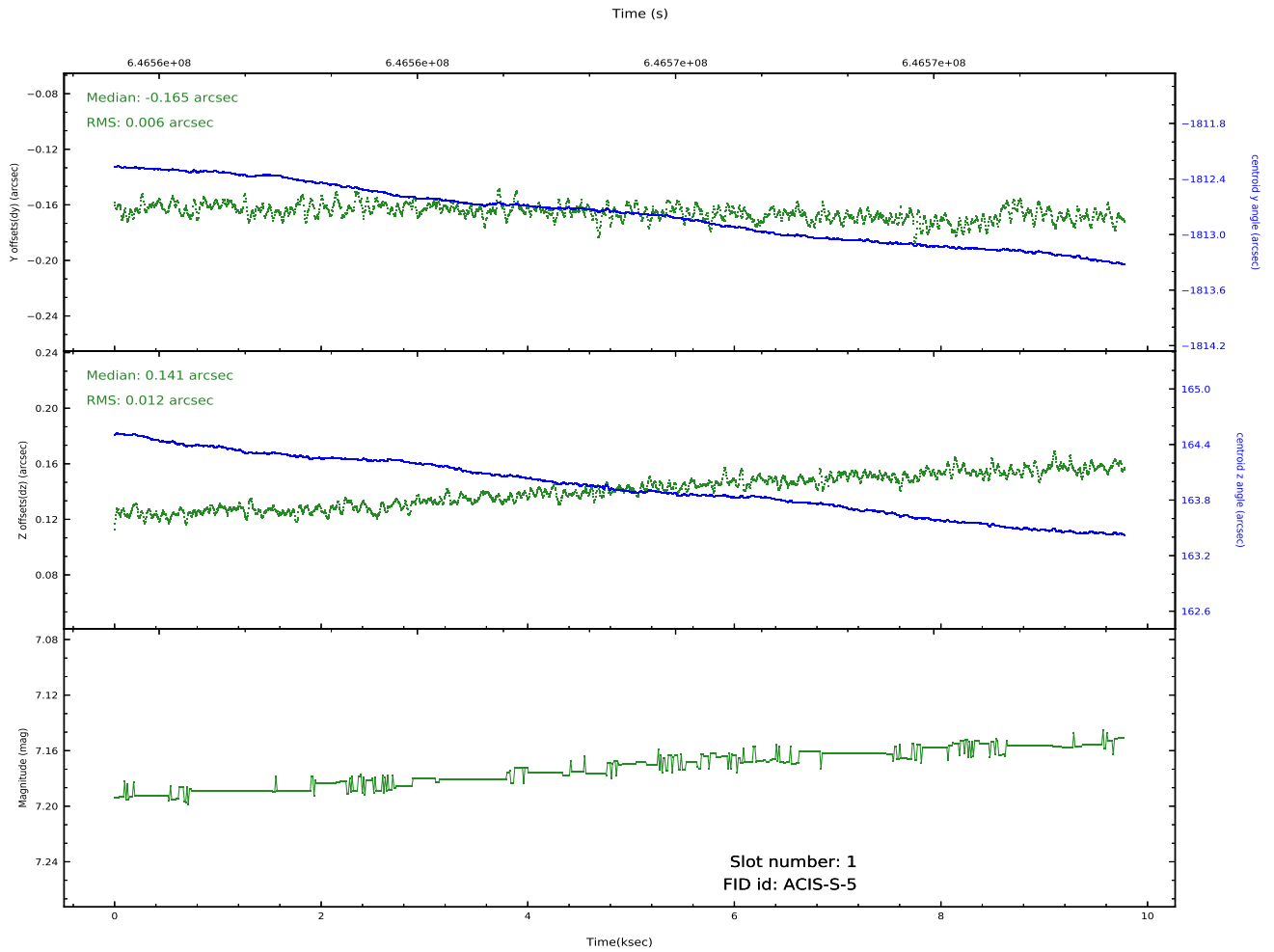
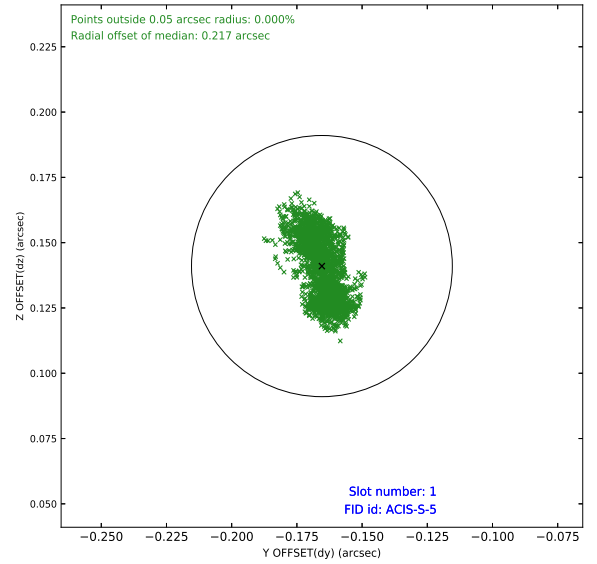
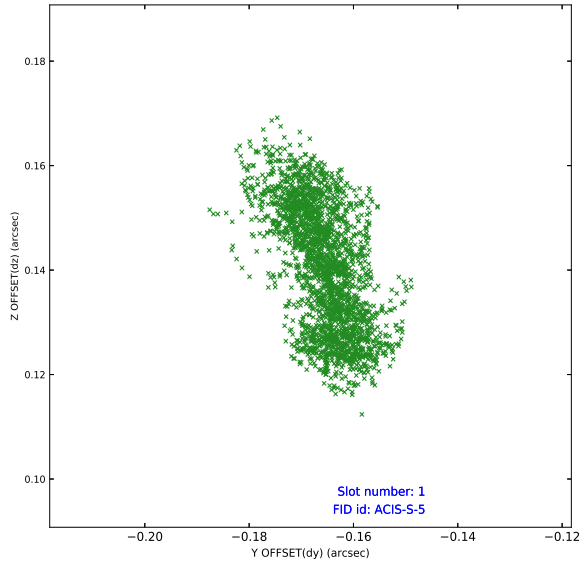


## 2.5 FID Slots

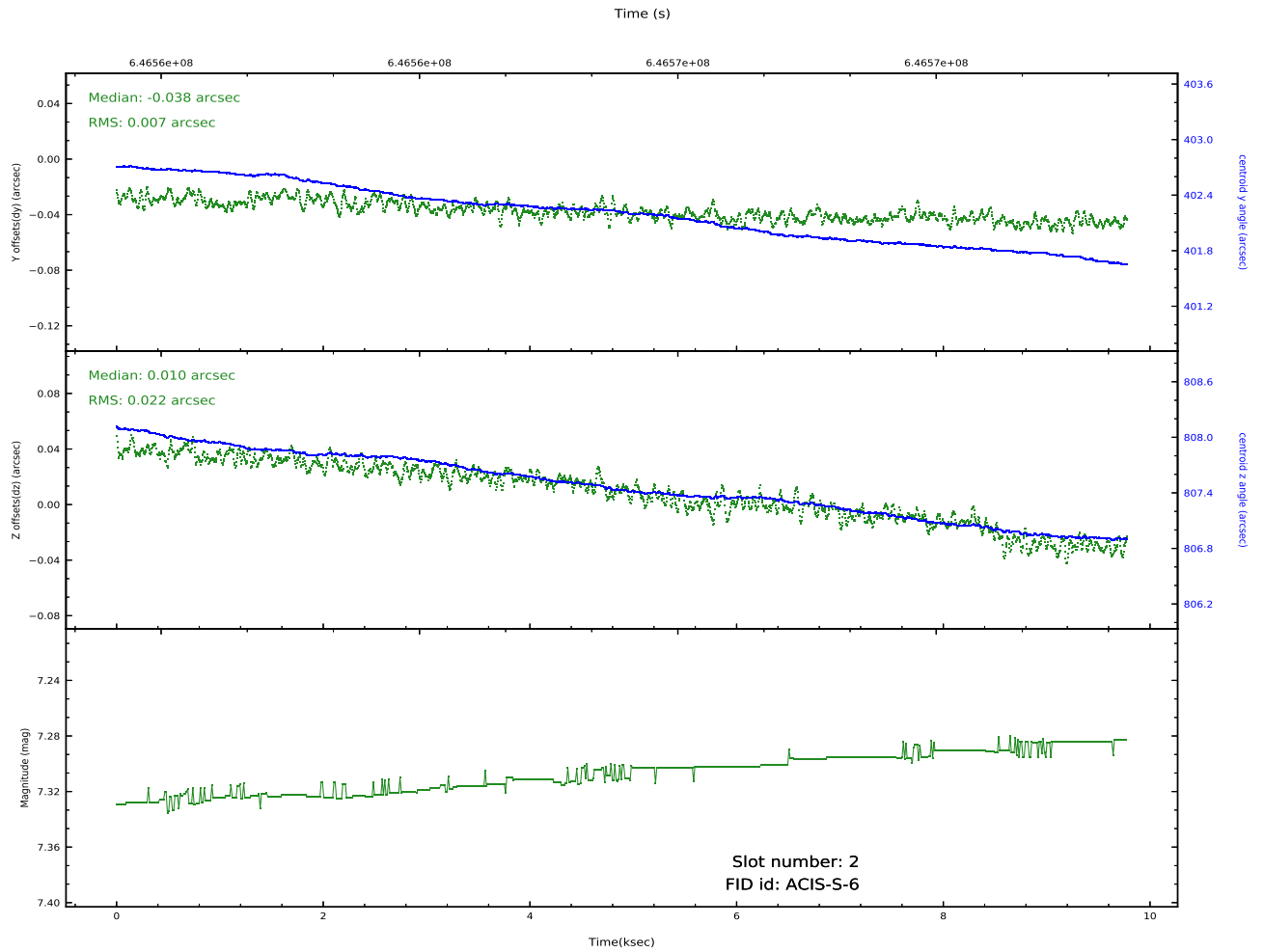
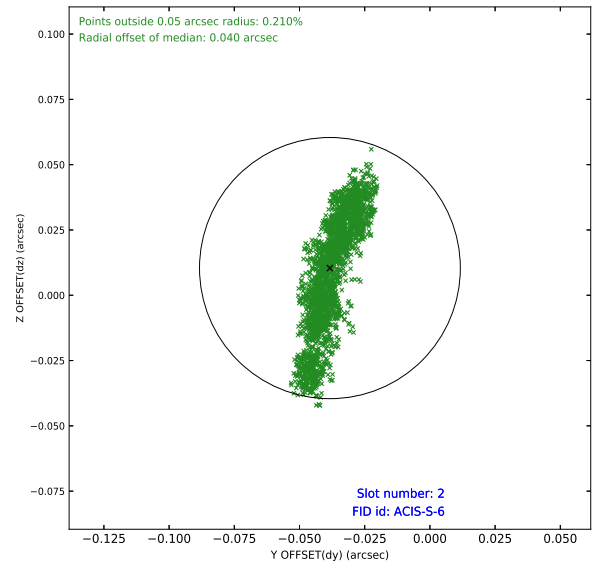
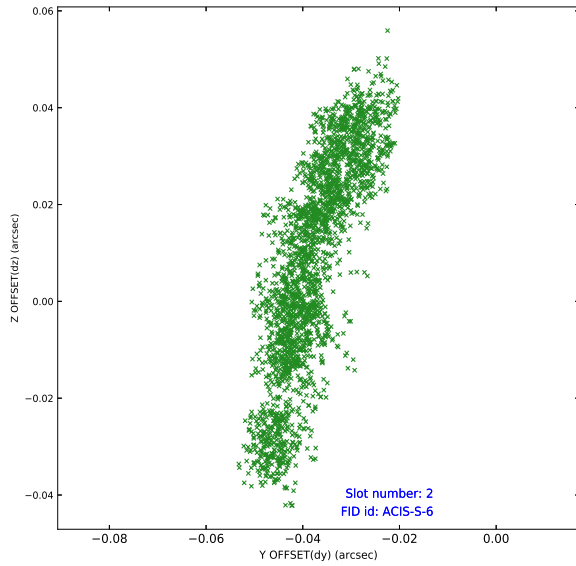
### 2.5.1 Slot 0



## 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)      | 2020.10.29      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 9.6534000743628 |

## A.2 Comments