

# V&V Reference Report

## L2 ASCDS Version : 10.9.2

Observation 20495 - L2 Version 2  
Chandra X-Ray Center

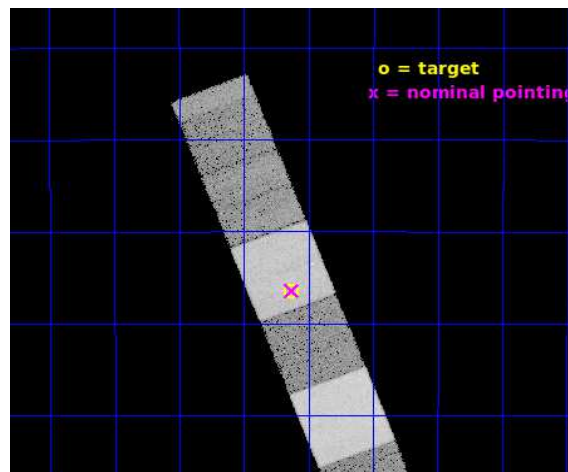
L2 Processing Date : Oct 25 2020

## Contents

|          |                               |           |
|----------|-------------------------------|-----------|
| <b>1</b> | <b>Front</b>                  | <b>2</b>  |
| <b>2</b> | <b>OBI</b>                    | <b>3</b>  |
| 2.1      | OBI . . . . .                 | 3         |
| 2.1.1    | Images . . . . .              | 3         |
| 2.1.2    | Bias . . . . .                | 3         |
| 2.1.3    | Parameters . . . . .          | 4         |
| 2.1.4    | Events . . . . .              | 4         |
| 2.2      | Compared Parameters . . . . . | 5         |
| 2.3      | Aspect . . . . .              | 6         |
| 2.4      | Star Slots . . . . .          | 9         |
| 2.4.1    | Slot 3 . . . . .              | 9         |
| 2.4.2    | Slot 4 . . . . .              | 10        |
| 2.4.3    | Slot 5 . . . . .              | 11        |
| 2.4.4    | Slot 6 . . . . .              | 12        |
| 2.4.5    | Slot 7 . . . . .              | 13        |
| 2.5      | FID Slots . . . . .           | 14        |
| 2.5.1    | Slot 0 . . . . .              | 14        |
| 2.5.2    | Slot 1 . . . . .              | 15        |
| 2.5.3    | Slot 2 . . . . .              | 16        |
| <b>A</b> | <b>Summary</b>                | <b>17</b> |
| A.1      | Status . . . . .              | 17        |
| A.2      | Comments . . . . .            | 17        |

# 1 Front

|          |                                                                                     |                                             |
|----------|-------------------------------------------------------------------------------------|---------------------------------------------|
| seq_num  | 703598                                                                              | Sequence number                             |
| obs_id   | 20495                                                                               | Observation id                              |
| title    | Confirming X-ray bright gravitationally lensed quasars identified by Gaia and ROSAT | Proposal title                              |
| observer | Cameron Lemon                                                                       | Principal investigator                      |
| object   | J0313-2546                                                                          | Source name                                 |
| dtcycle  | 0                                                                                   | &#160                                       |
| cycle    | P                                                                                   | events from which exps?<br>Prim/Second/Both |
| ra_targ  | 48.40875                                                                            | Observer's specified<br>target RA [deg]     |
| dec_targ | -25.775111                                                                          | Observer's specified<br>target Dec [deg]    |
| ra_nom   | 48.407281866437                                                                     | Nominal RA [deg]                            |
| dec_nom  | -25.773950184684                                                                    | Nominal Dec [deg]                           |
| roll_nom | 248.74916049756                                                                     | Nominal Roll [deg]                          |
| revision | 2                                                                                   | Processing version of<br>data               |
| ontime   | 19954.668223381                                                                     | Sum of GTIs [s]                             |
| livetime | 19701.990199078                                                                     | Livetime [s]                                |
| ontime4  | 19954.709263325                                                                     | Sum of GTIs [s]                             |
| ontime5  | 19954.627183318                                                                     | Sum of GTIs [s]                             |
| ontime6  | 19954.586143374                                                                     | Sum of GTIs [s]                             |
| ontime7  | 19954.668223381                                                                     | Sum of GTIs [s]                             |
| ontime8  | 19954.545103312                                                                     | Sum of GTIs [s]                             |
| ontime9  | 19954.504063368                                                                     | Sum of GTIs [s]                             |
| l2events | 245778                                                                              | Number of level 2<br>events                 |

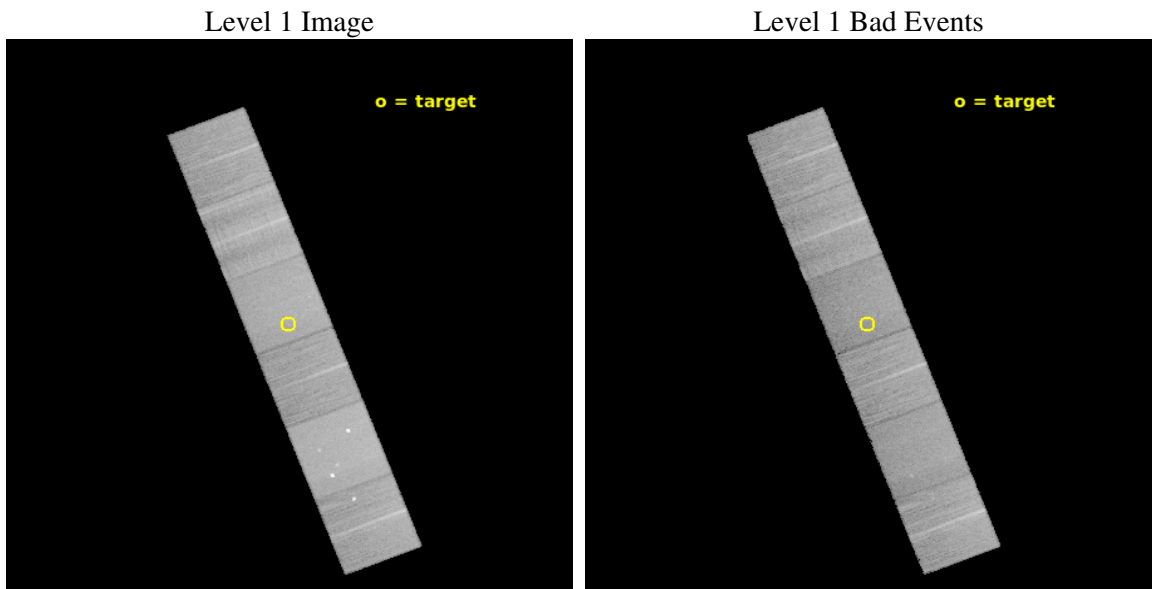




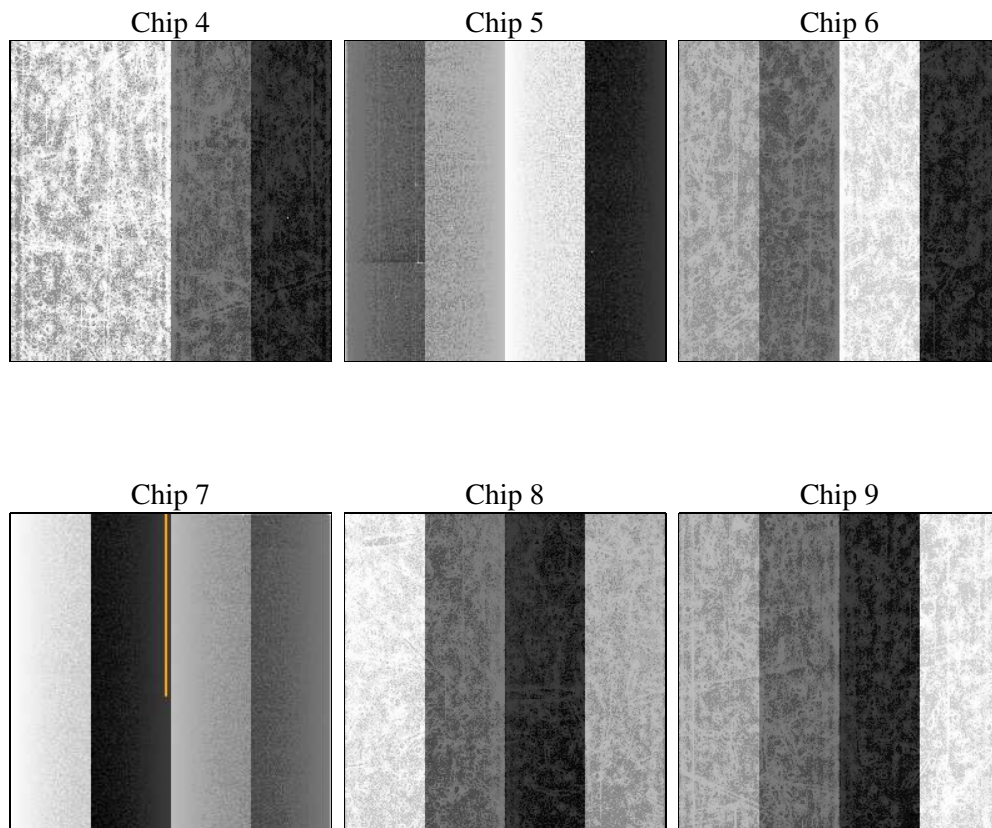
## 2 OBI

### 2.1 OBI

#### 2.1.1 Images



#### 2.1.2 Bias



### 2.1.3 Parameters

|          |                     |                                |                |                 |                                         |
|----------|---------------------|--------------------------------|----------------|-----------------|-----------------------------------------|
| obi_num  | 0                   | Obi number                     | sched_exp_time | 20000.000000    | [s] Scheduled observation exposure time |
| ascdsver | 10.9.2              | Processing system revision     | ontime         | 19954.668223381 | Sum of GTIs [s]                         |
| caldsver | 4.9.3               | &#160                          | ontime4        | 19954.709263325 | Sum of GTIs [s]                         |
| date     | 2020-10-25T04:48:07 | Date and time of file creation | ontime5        | 19954.627183318 | Sum of GTIs [s]                         |
| revision | 2                   | Processing version of data     | ontime6        | 19954.586143374 | Sum of GTIs [s]                         |
|          |                     |                                | ontime7        | 19954.668223381 | Sum of GTIs [s]                         |
|          |                     |                                | ontime8        | 19954.545103312 | Sum of GTIs [s]                         |
|          |                     |                                | ontime9        | 19954.504063368 | Sum of GTIs [s]                         |
|          |                     |                                | l1events       | 1064225         | Number of level 1 events                |

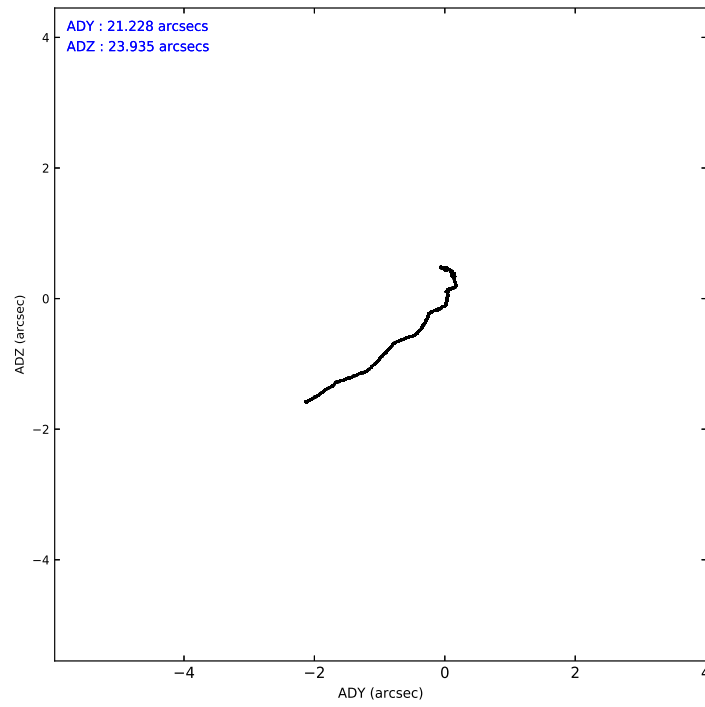
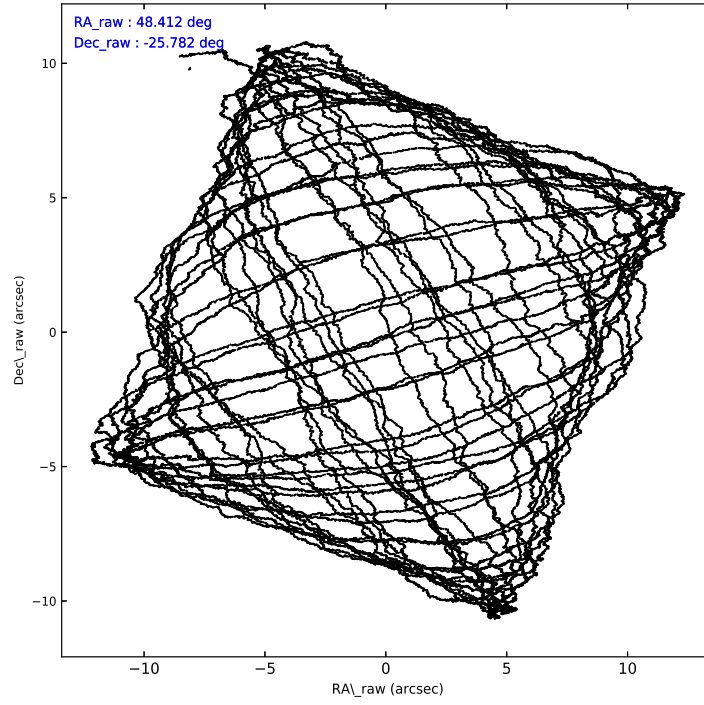
### 2.1.4 Events

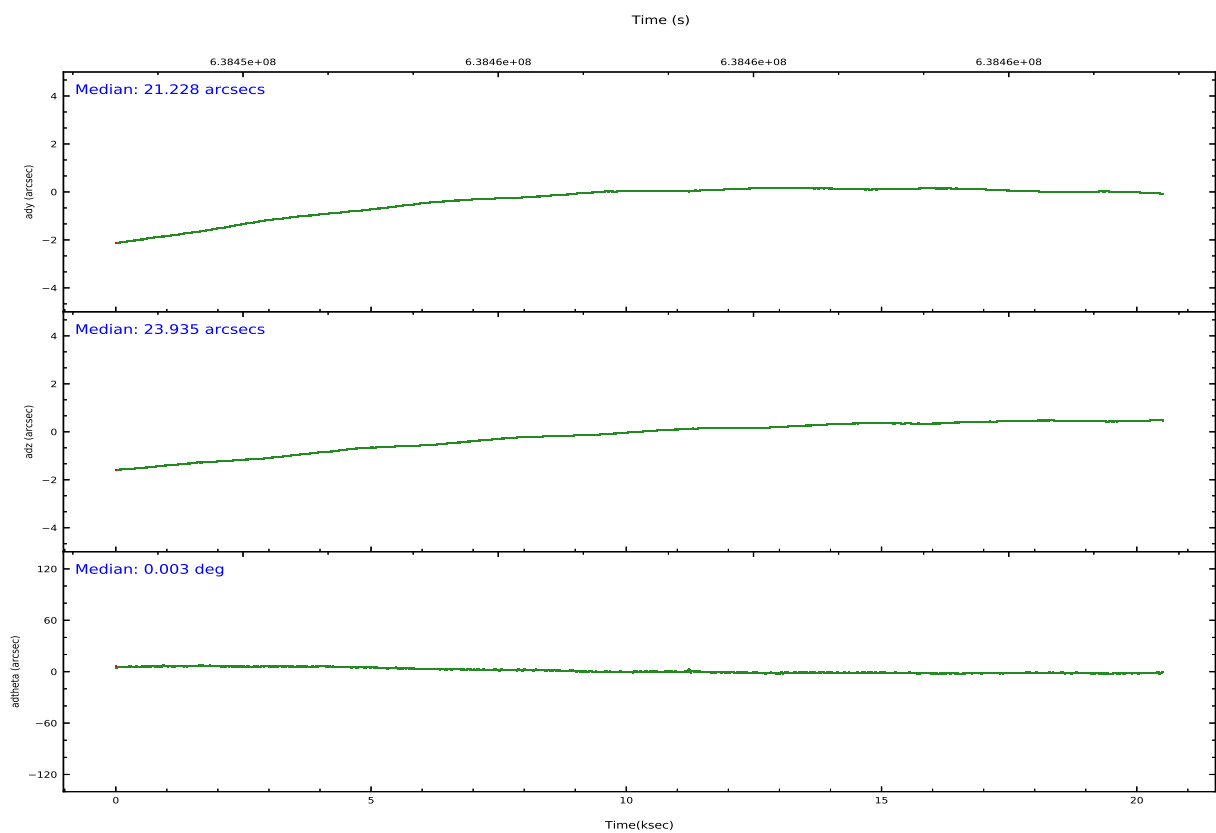
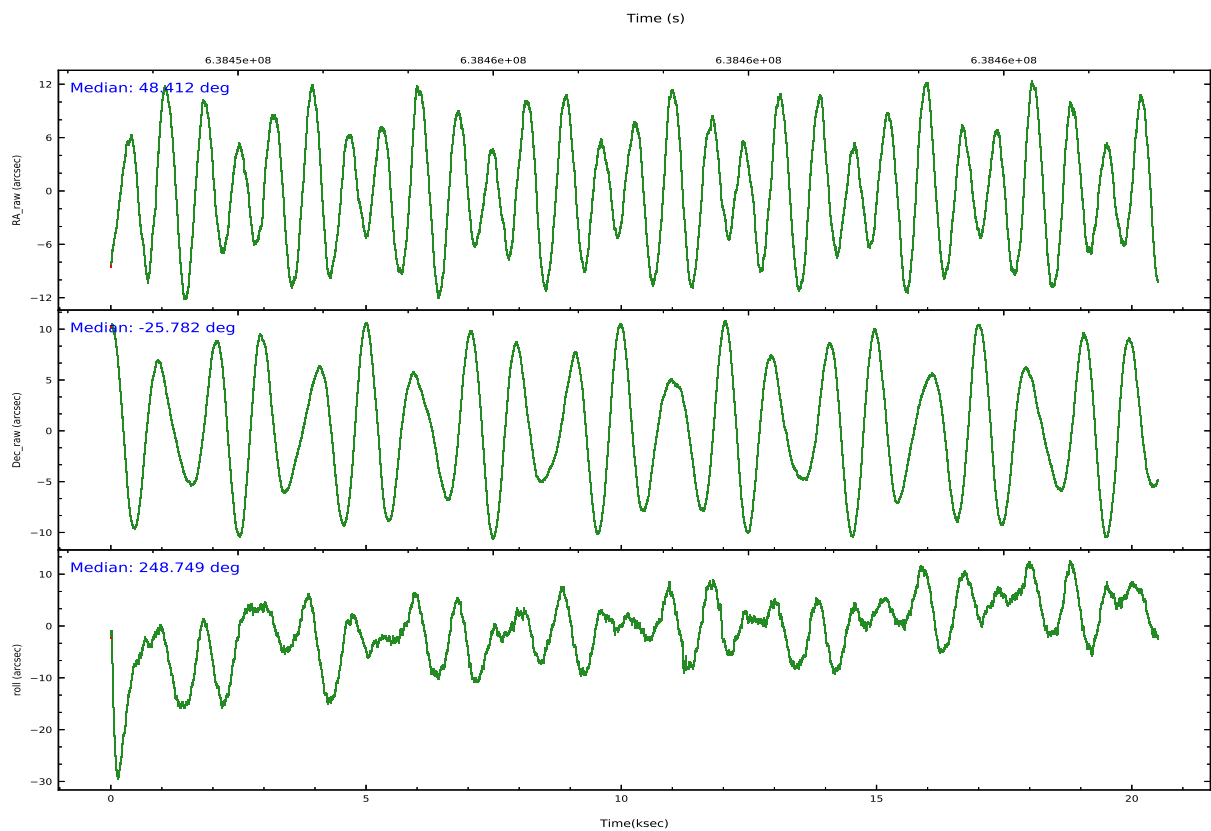
|                 | ccd 4  | ccd 5  | ccd 6  | ccd 7  | ccd 8  | ccd 9  |                | ccd 4  | ccd 5 | ccd 6  | ccd 7 | ccd 8  | ccd 9  |
|-----------------|--------|--------|--------|--------|--------|--------|----------------|--------|-------|--------|-------|--------|--------|
| level 1 events  | 165059 | 234368 | 141861 | 184078 | 192993 | 145866 | grade 0 events | 9842   | 12769 | 5404   | 7167  | 15865  | 6574   |
| rejected events | 143968 | 117060 | 125650 | 102765 | 138871 | 127813 |                | 5%     | 5%    | 3%     | 3%    | 8%     | 4%     |
| rejected %      | 87%    | 49%    | 88%    | 55%    | 71%    | 87%    | grade 1 events | 187    | 726   | 87     | 269   | 149    | 81     |
|                 |        |        |        |        |        |        |                | 0%     | 0%    | 0%     | 0%    | 0%     | 0%     |
|                 |        |        |        |        |        |        | grade 2 events | 4508   | 37351 | 3804   | 17146 | 13105  | 4109   |
|                 |        |        |        |        |        |        |                | 2%     | 15%   | 2%     | 9%    | 6%     | 2%     |
|                 |        |        |        |        |        |        | grade 3 events | 1830   | 3702  | 1659   | 6484  | 5492   | 1826   |
|                 |        |        |        |        |        |        |                | 1%     | 1%    | 1%     | 3%    | 2%     | 1%     |
|                 |        |        |        |        |        |        | grade 4 events | 1756   | 3613  | 1616   | 6527  | 5197   | 1718   |
|                 |        |        |        |        |        |        |                | 1%     | 1%    | 1%     | 3%    | 2%     | 1%     |
|                 |        |        |        |        |        |        | grade 5 events | 7036   | 16487 | 6767   | 18409 | 10202  | 7652   |
|                 |        |        |        |        |        |        |                | 4%     | 7%    | 4%     | 10%   | 5%     | 5%     |
|                 |        |        |        |        |        |        | grade 6 events | 3159   | 59893 | 3734   | 43998 | 14483  | 3830   |
|                 |        |        |        |        |        |        |                | 1%     | 25%   | 2%     | 23%   | 7%     | 2%     |
|                 |        |        |        |        |        |        | grade 7 events | 136741 | 99827 | 118790 | 84078 | 128500 | 120076 |
|                 |        |        |        |        |        |        |                | 82%    | 42%   | 83%    | 45%   | 66%    | 82%    |

## 2.2 Compared Parameters

| Parameter                         | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                        | ACIS                | ACIS                 | Obspar version number                 | 8         | 8       |
| Detector                          | ACIS-456789         | ACIS-456789          | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                           | NONE                | NONE                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                         | VFAINT              | VFAINT               | CCD I0 on                             | N         | N       |
| Observation mode                  | POINTING            | POINTING             | CCD I1 on                             | N         | N       |
| [deg] Pointing RA                 | 48.406842           | 48.407281866437      | CCD I2 on                             | N         | N       |
| [deg] Pointing Dec                | -25.754985          | -25.773950184684     | CCD I3 on                             | N         | N       |
| [deg] Pointing Roll               | 248.599171          | 248.74916049756      | CCD S0 on                             | O2        | Y       |
| [mm] SIM focus pos                | -0.684267           | -0.6828225247311905  | CCD S1 on                             | O3        | 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)  | 638448024.184000    | 638446748.95675      | CCD S5 on                             | O1        | Y       |
| Observation start date            | 2018-03-26T10:39:15 | 2018-03-26T10:19:08  | Number of optional ACIS chips dropped | 0         | 0       |
| [s] Observation end time (MET)    | 638468024.184000    | 638469147.77057      | On-chip summing requested             | N         | N       |
| Observation end date              | 2018-03-26T16:12:35 | 2018-03-26T16:32:27  | Subarray requested                    | NONE      | NONE    |
| Read mode                         | TIMED               | TIMED                | Alternating exposures requested       | N         | N       |
|                                   |                     |                      | [s] Primary exposure time             | 0.000000  | 3.2     |

## 2.3 Aspect



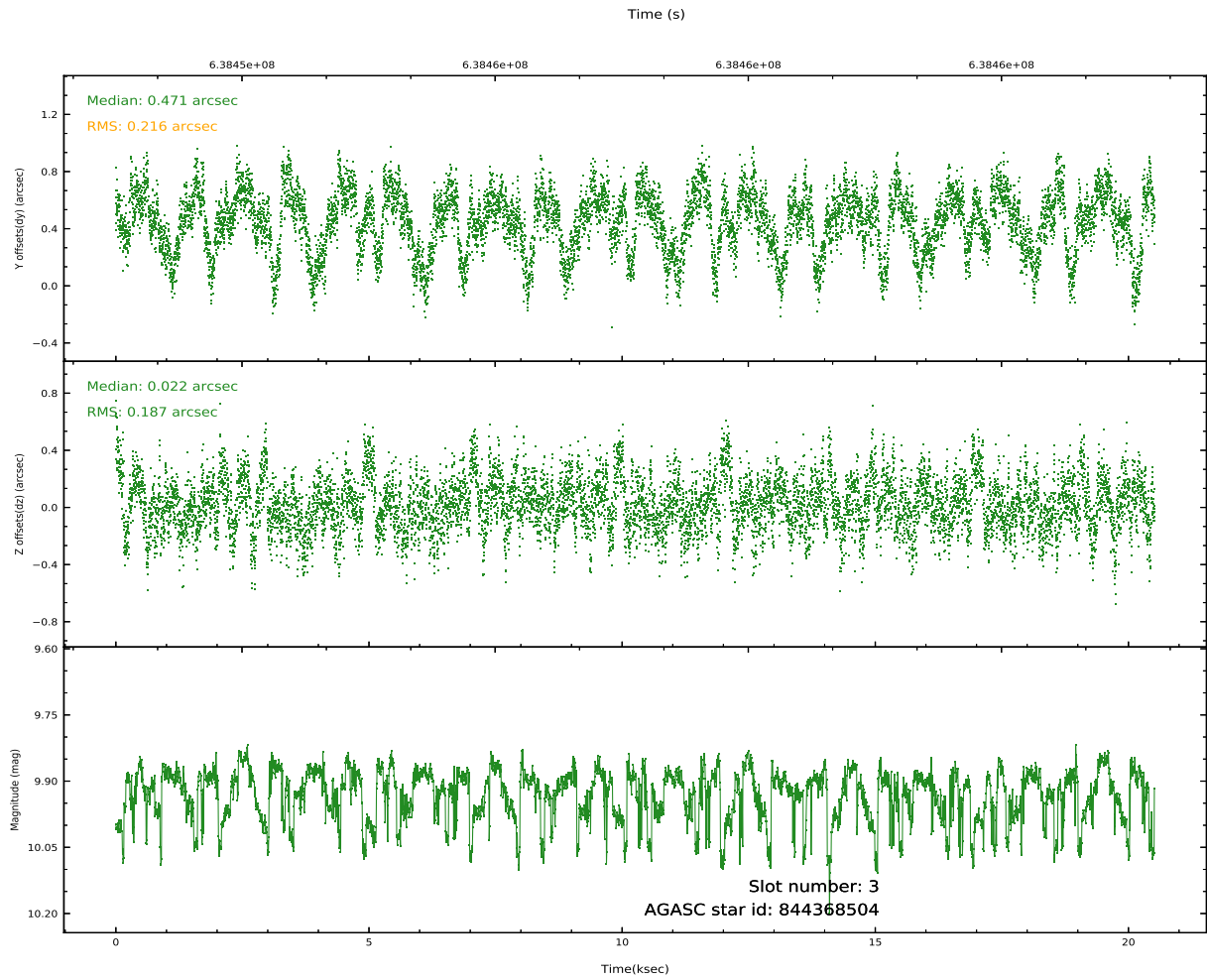
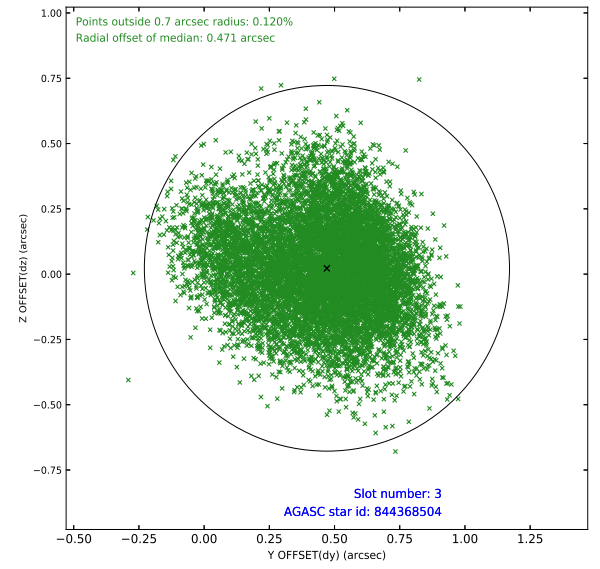
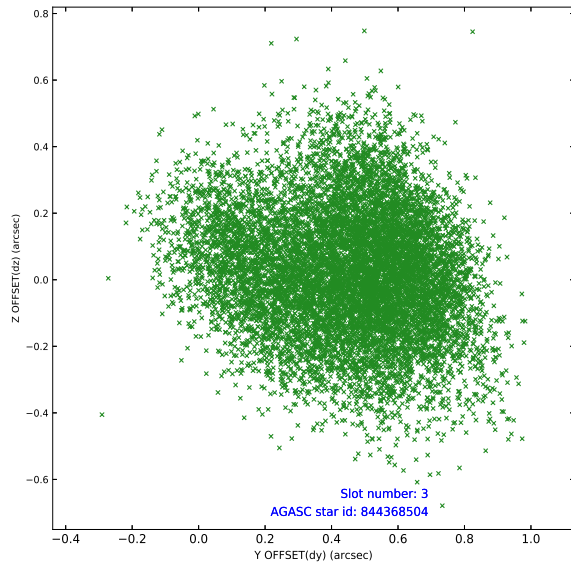


Slot Statistics

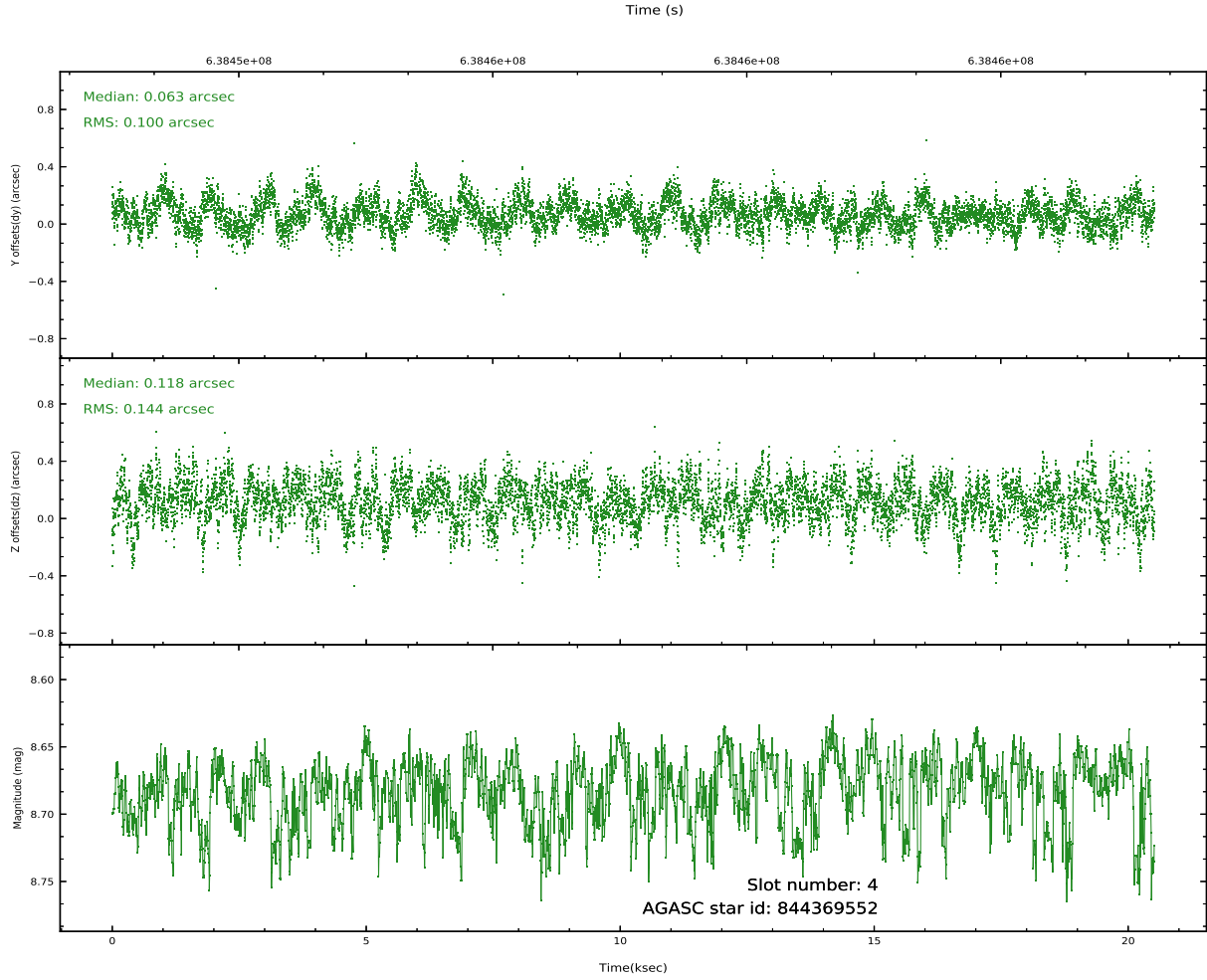
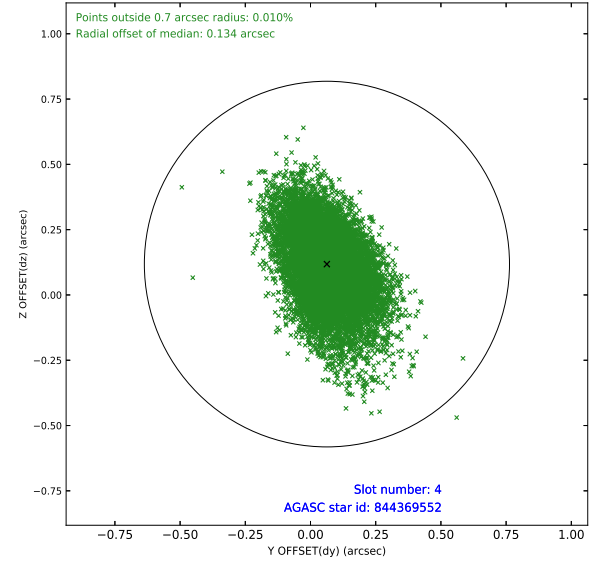
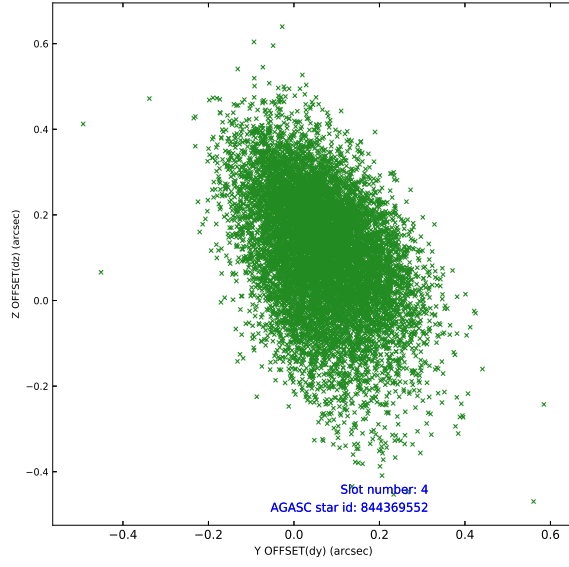
| pt | status | used | id        | mag  | n_pts | frac_pts | med_dy | med_dz | dr1   | dr2   | ra        | dec        | mean_y   | mea   |
|----|--------|------|-----------|------|-------|----------|--------|--------|-------|-------|-----------|------------|----------|-------|
| 0  | FID    |      | ACIS-S-2  | 6.97 | 5004  | 1.000    | 0.119  | -0.057 | 0.032 | 0.058 | 0.000000  | 0.000000   | -774.10  | -1745 |
| 1  | FID    |      | ACIS-S-4  | 7.07 | 5005  | 1.000    | 0.059  | -0.041 | 0.009 | 0.035 | 0.000000  | 0.000000   | 2139.28  | 162   |
| 2  | FID    |      | ACIS-S-5  | 7.09 | 5005  | 1.000    | -0.208 | 0.109  | 0.028 | 0.053 | 0.000000  | 0.000000   | -1826.80 | 157   |
| 3  | GUIDE  | used | 844368504 | 9.92 | 9987  | 1.000    | 0.471  | 0.022  | 0.308 | 0.489 | 47.675023 | -25.724076 | 769.27   | -2247 |
| 4  | GUIDE  | used | 844369552 | 8.68 | 10001 | 1.000    | 0.063  | 0.118  | 0.179 | 0.314 | 48.685932 | -26.446248 | 1986.91  | 1749  |
| 5  | GUIDE  | used | 844370392 | 8.95 | 10002 | 1.000    | -0.735 | -0.096 | 0.252 | 0.402 | 47.870992 | -25.536959 | -91.86   | -1903 |
| 6  | GUIDE  | used | 844374568 | 9.73 | 9988  | 1.000    | 0.295  | 0.049  | 0.345 | 0.510 | 48.135519 | -25.894912 | 789.13   | -632  |
| 7  | GUIDE  | used | 844375872 | 6.69 | 10004 | 1.000    | -0.075 | -0.077 | 0.138 | 0.244 | 48.751133 | -26.100461 | 753.89   | 1490  |

## 2.4 Star Slots

### 2.4.1 Slot 3

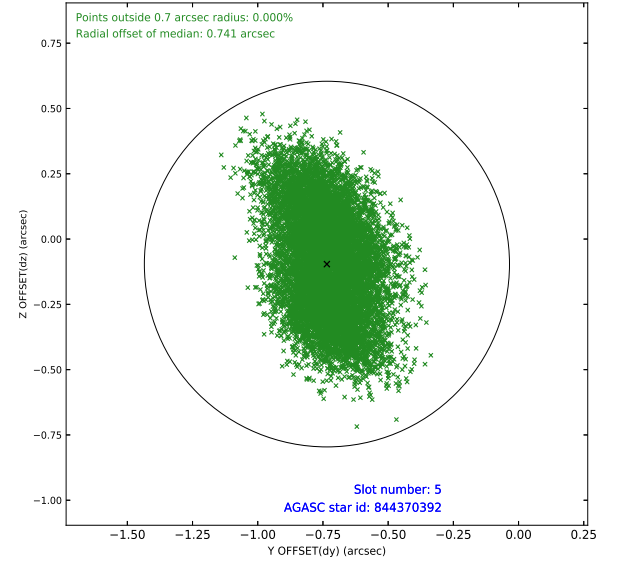
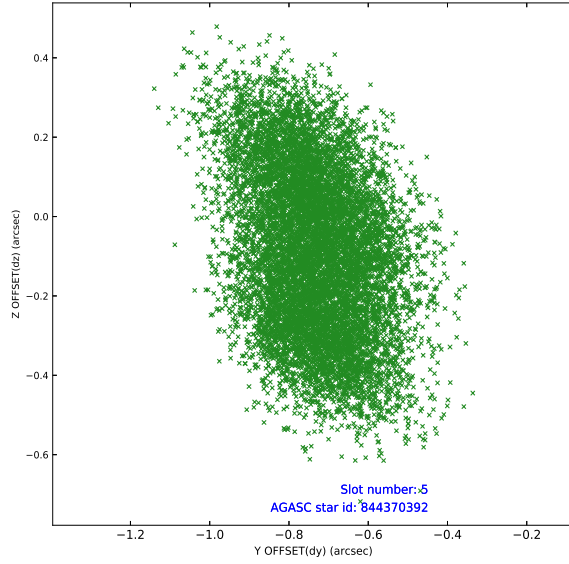


## 2.4.2 Slot 4

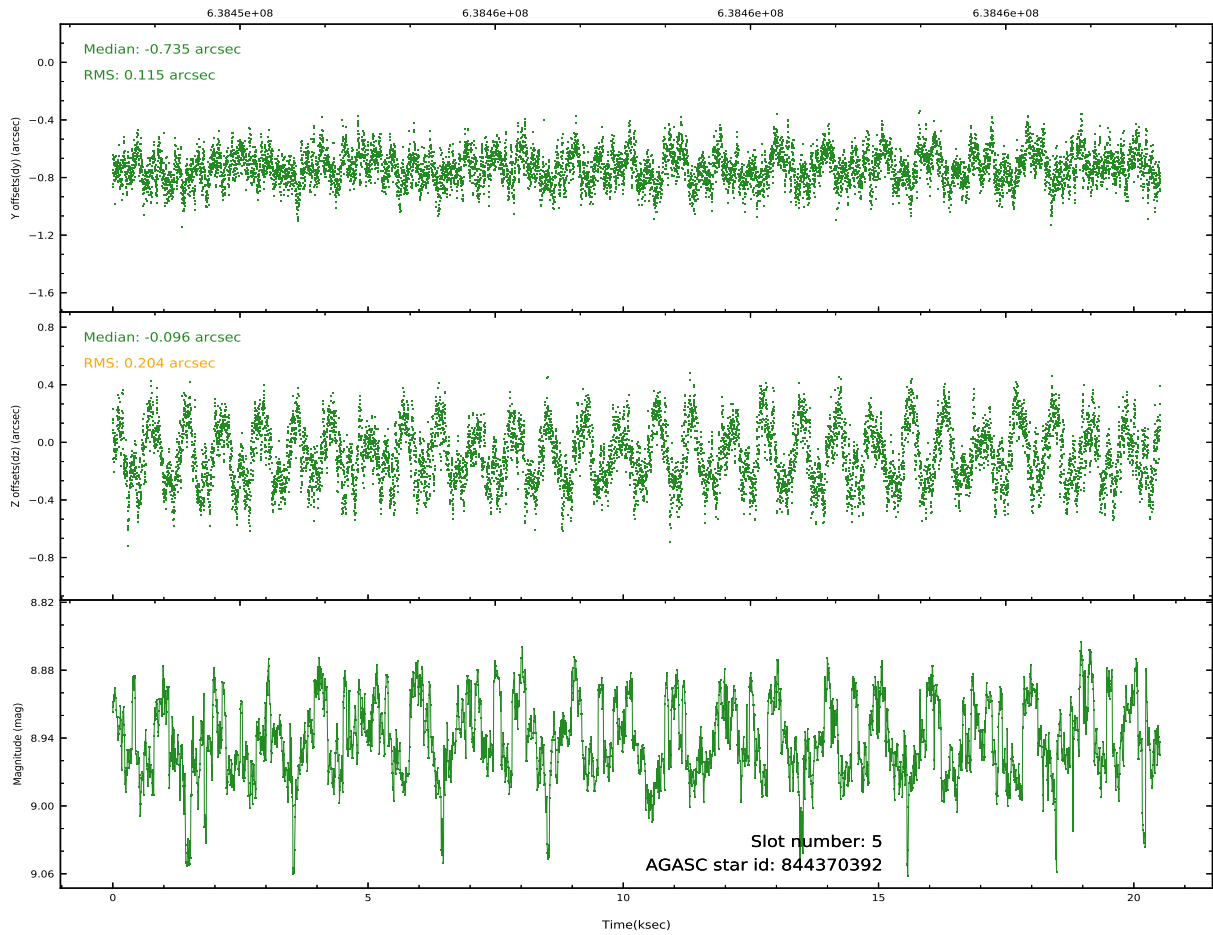




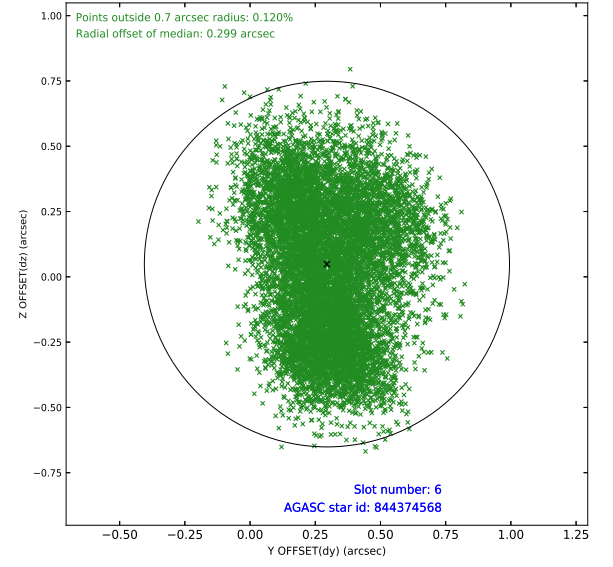
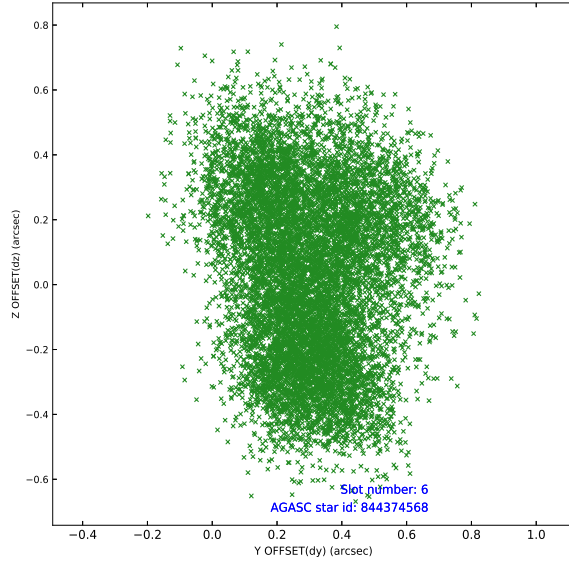
### 2.4.3 Slot 5



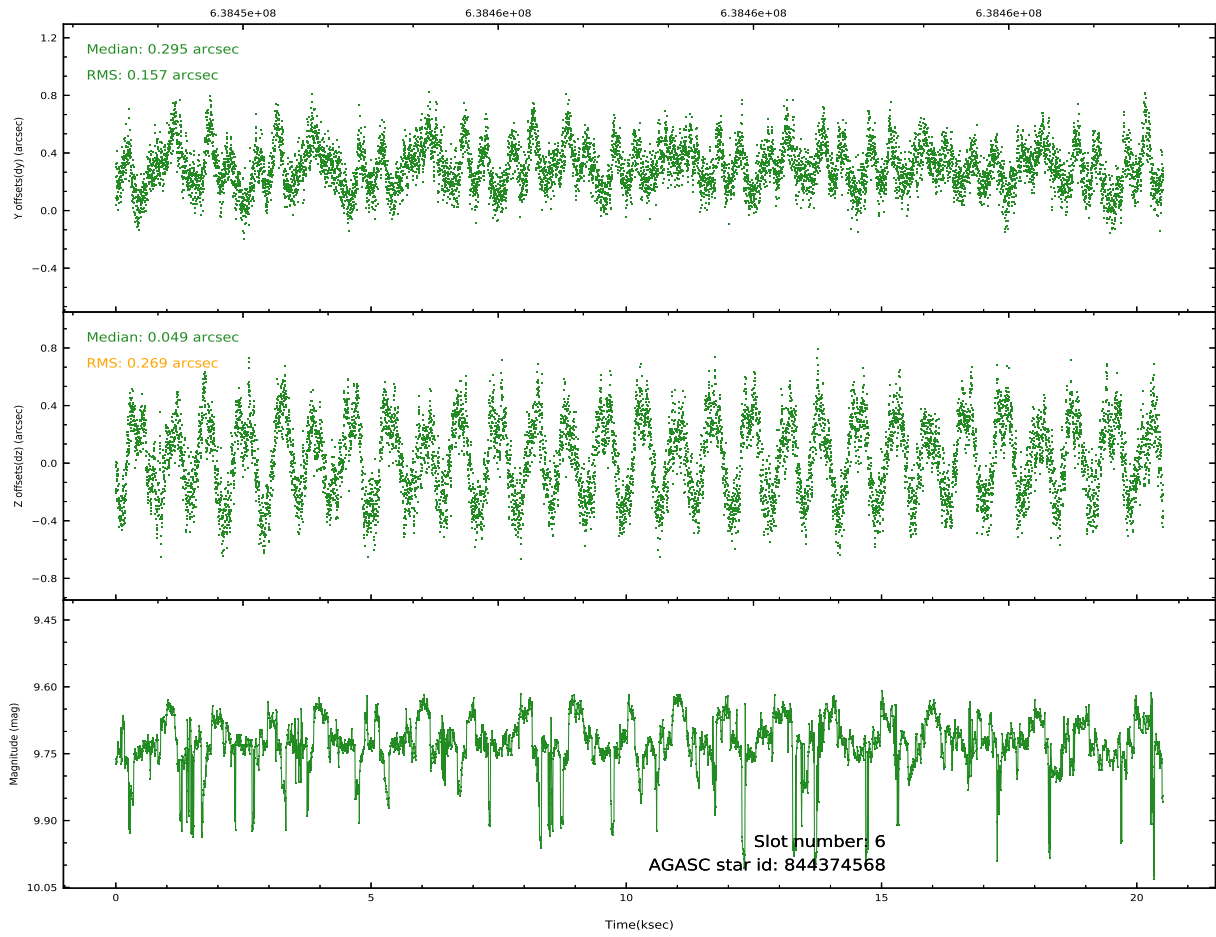
Time (s)



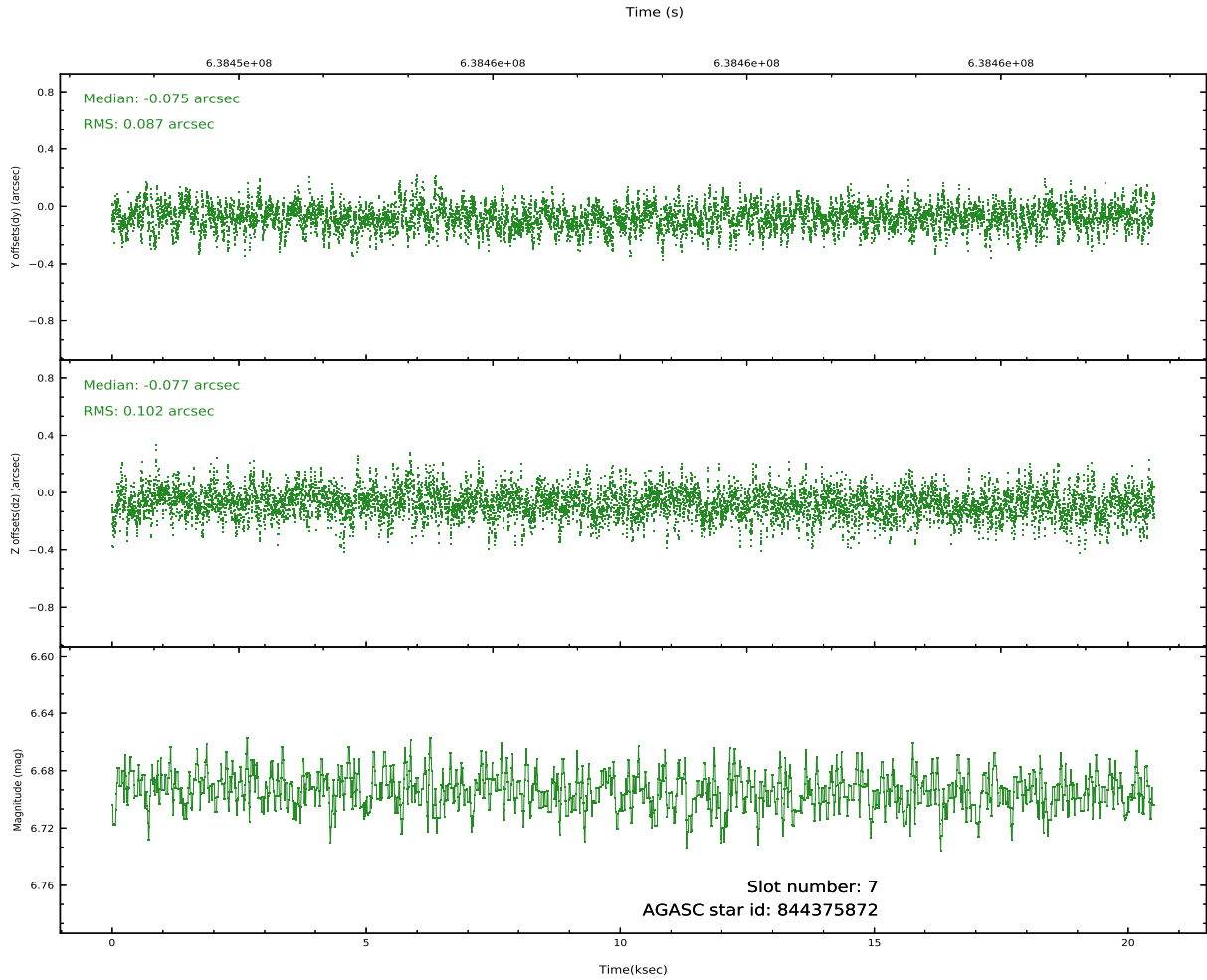
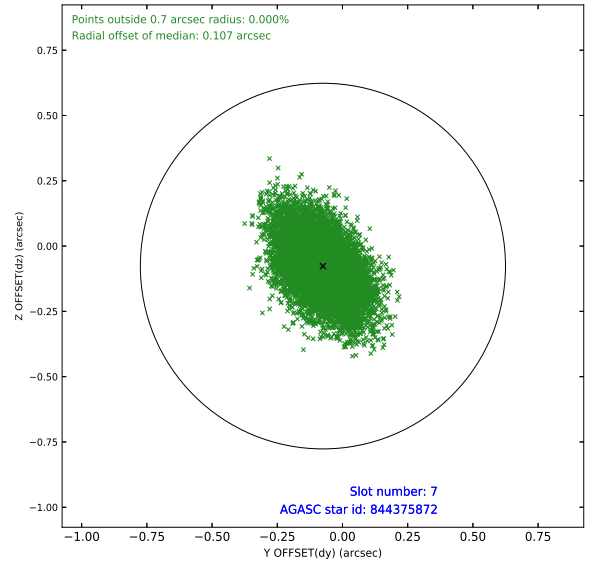
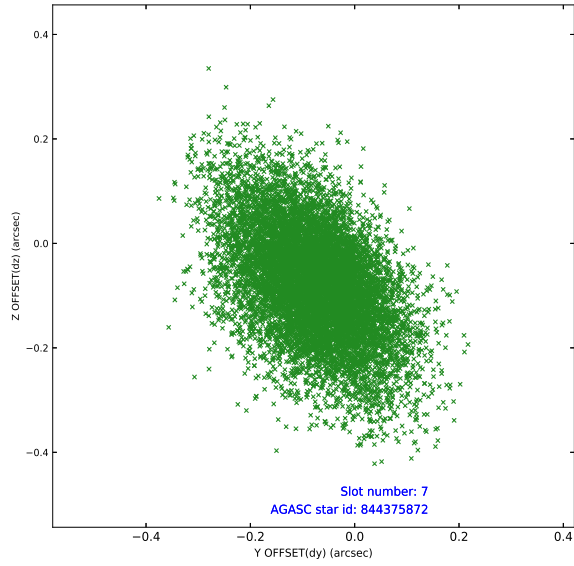
## 2.4.4 Slot 6



Time (s)

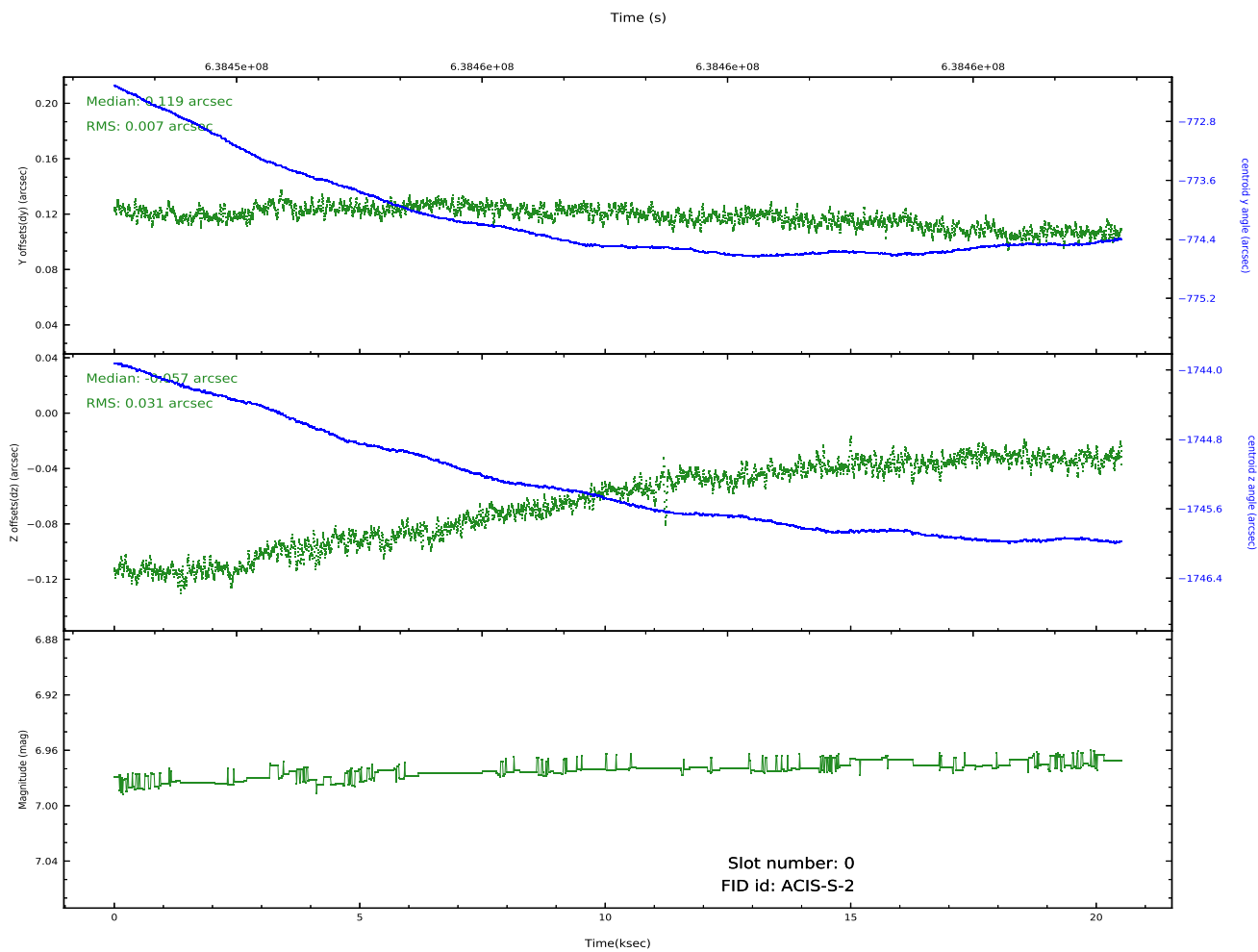
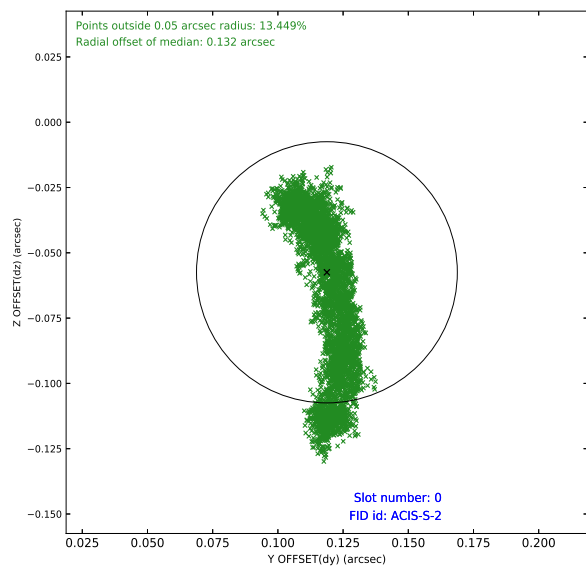
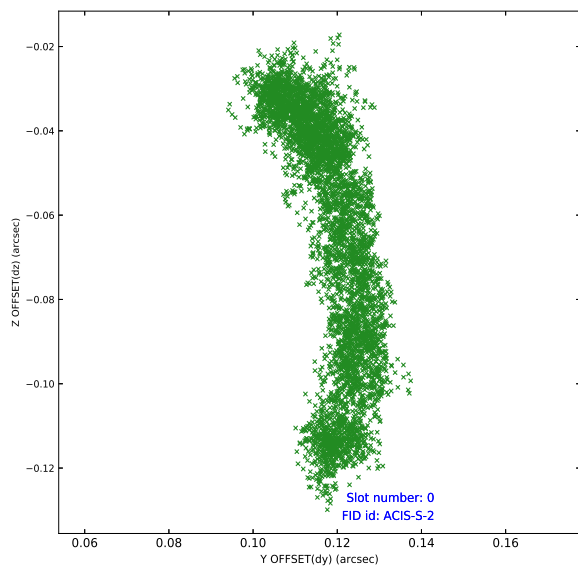


## 2.4.5 Slot 7

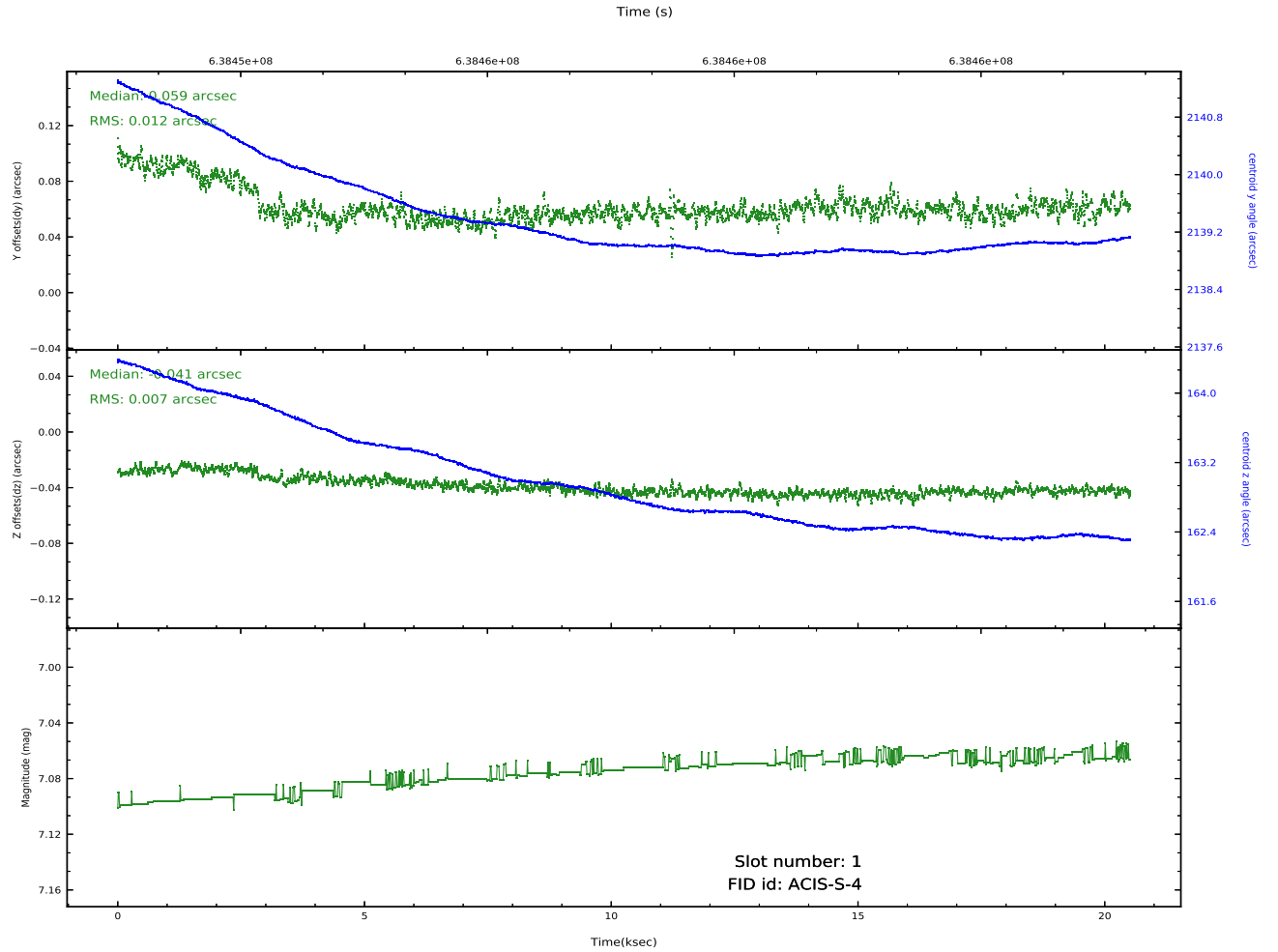
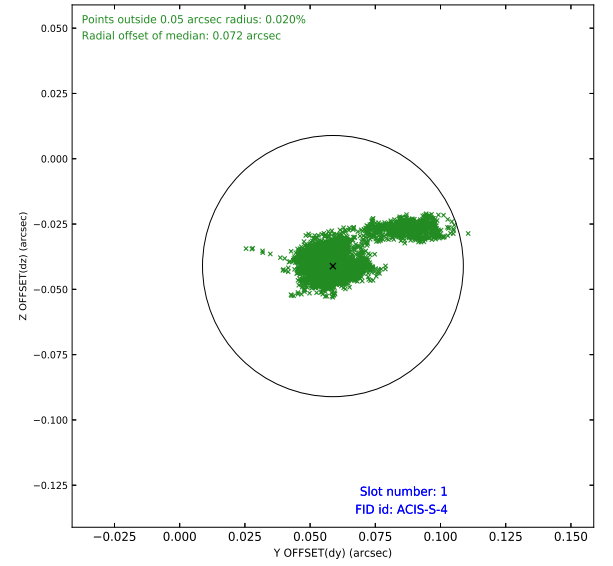
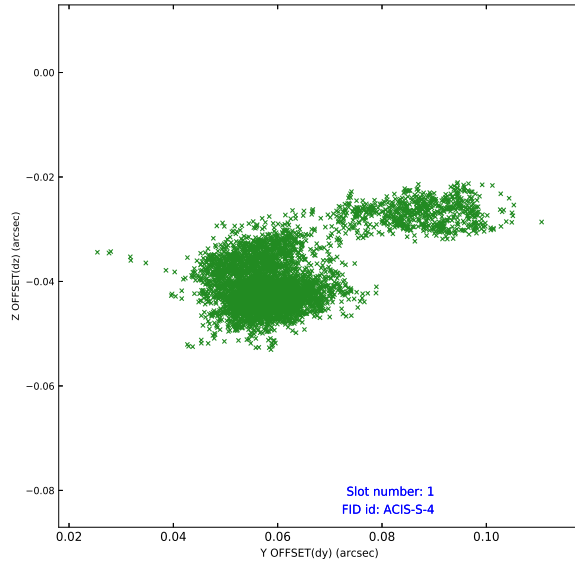


## 2.5 FID Slots

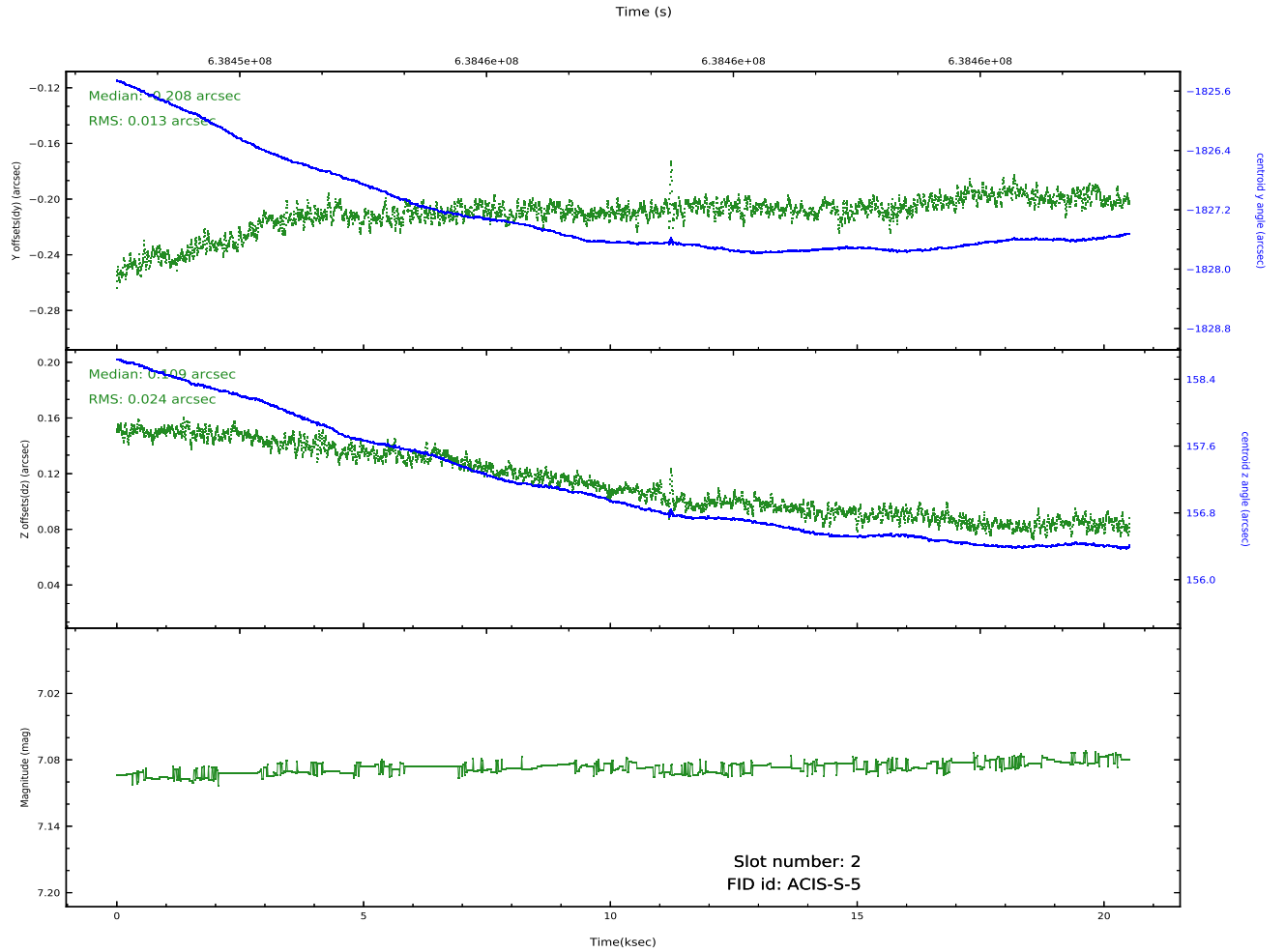
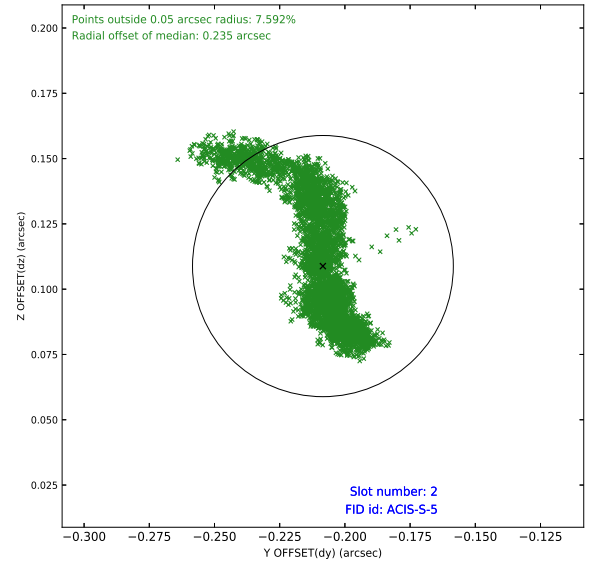
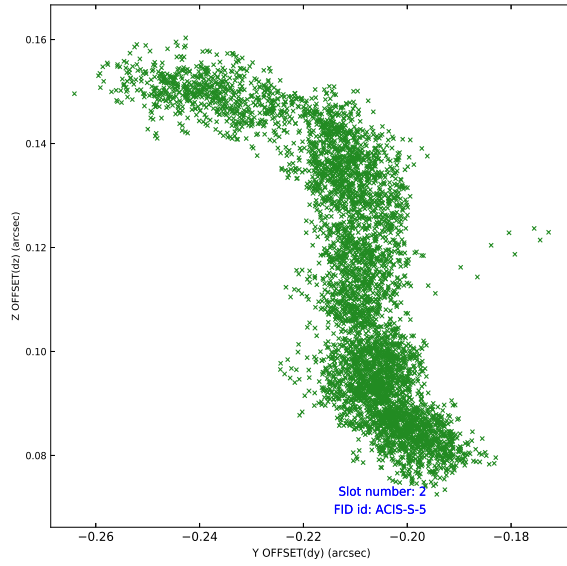
### 2.5.1 Slot 0



## 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)      | 2020.10.27      |
| V&V Edition                | 1               |
| V&V Disposition and Status | OK              |
| V&V Charge Time            | 19.954668219328 |

### A.2 Comments